File No. G-7

PROSPECT CARDS

Code No.

Property Name Al Sarena Mine

Property Owner

Submitted by

Location: State Ore.

County Jackson Co

Mining D.

T 31S R 2E Sec. 29

Followup Recom. ~~no~~ maybe

Later Review Recom.

Examined by ✓

Company

Date

Where filed

Metals

Cu
Mo
Pb
Zn
Ag
Au X
Fe
Mn
Cr
Ni
W
U
Re
P_2O_5
K_2O
Sn
Be
Coal
Hg
Other

Production Metal

AMS Quad

Other Quad

Production

None 10^2 10^3 10^4 10^5 50^5 10^6

TONS

Geology

Host Rock rhyolite porphyry

Mineralization

Type disseminated sulfides

Trend

Ore very low grade

Gangue

Alteration

Type

Extent

Bibliography

USGS

USBM

Other

Field Time

None
1 Day
1 Week
1 Mo
+1 Mo

Remarkes: Too low-grade

Follow-up Recom.

Al Sarena

FACT SHEETS

"Fact Sheets" will be mailed to you periodically to give you the true facts about claims made by the opposition. If you wish a fact sheet to be issued on any particular subject, please send your request to state headquarters, 525 S. W. Broadway, Portland.

Fact Sheet No. 1

April 23, 1956

What About Al Serena?

Opposition claim: That McKay "gave away" valuable federal timber to "lumber barons" by issuing patents on "phony" mining claims that were filed for the sole purpose of obtaining the timber on the claims. The only example given is the Al Serena claims filed in the Rogue River National Forest.

HERE ARE THE FACTS

1. The owners of the Al Serena claims are mining people who had never engaged in the logging or lumber business. (Incidentally, they are Democrats)

2. The original claims were filed in 1897 and the last in 1939, when timber could have been bought for $2.00 an acre. (It costs $5 an acre to file on a mining claim)

   If you wanted timber, would you file on a phony mining claim and pay more than twice the amount it would cost you to buy timber?

3. The owners have invested more than $200,000 in the mining operation and the mines have been operated with as many as 50 employees.

   If you filed a phony mining claim for the purpose of obtaining timber, would you throw away nearly a quarter of a million dollars needlessly to develop non-existent minerals?

4. The charges by Morse and Neuberger have been reviewed with a fine tooth comb by what is probably the most anti-administration investigating committee of the Congress in a patient and diligent search for material to use against Eisenhower and McKay. This committee was forced to conclude that McKay had merely administered the law as it was written and the matter was dropped abruptly without so much as a report.

   If the committee had found so much as a shred of evidence to support Morse and Neuberger, wouldn't they now be shouting it from the housetops?

5. The sincerity of Morse's tears for the loss of federal timber may be accurately measured. In 1951, a Republican legislature under Republican Governor Douglas McKay passed and sent to Congress a memorial (SJM 5) asking Congress to tighten the mining laws to prevent the filing of mining claims for the purpose of obtaining timber. Under the provisions of this memorial a copy was sent to Senator Wayne Morse. Morse completely ignored the wishes of the people of Oregon as expressed by their elected representatives - he introduced no bill to implement the purpose of the memorial..he made no Senate speeches in support of it. HE WAS TOO BUSY TALKING FOR NEWSPAPER HEADLINES TO PAY ATTENTION TO WHAT OREGON WANTED AND NEEDED. (Incidentally, Maurine Neuberger in the House voted <u>against</u> adoption of the memorial.

6. It was finally pressure from the Eisenhower Administration that induced the Congress in 1955 to amend the law to accomplish in part the objective of the 1951 legislative memorial from Oregon. And WAYNE MORSE WAS NOT A CO-SPONSOR OF THE CONGRESSIONAL ACT! (Public Law 167, signed by the President, July 23, 1955)

Fact Sheet No. 2

April 23, 1956

What About McKay Opening Wildlife Reserves to Oil and Gas Leasing?

Opposition claim: That McKay "gave away" precious wildlife reserves by opening them for oil and gas leasing.

HERE ARE THE FACTS

1. McKay did not "open" wildlife areas for oil and gas drilling. It had been done since it was authorized by Congress under a Democratic administration by the Mineral Leasing Act of 1920.

2. McKay WAS THE FIRST SECRETARY OF THE INTERIOR TO CLOSE CERTAIN REFUGES to exploration in deference to irreplaceable wildlife values.

3. Soon after he took office, Secretary McKay noted that the Department's regulations relating to oil and gas leases, adopted in 1947 under a Democratic Secretary were inadequate. On August 31, 1953 he issued a stop order suspending leasing by the Bureau of Land Management - the order to remain in effect until new regulations could be drawn.

4. After two years of careful study by career specialists in wildlife management and land use, and after consultation with authorities throughout the nation, new regulations were adopted on Dec. 2, 1955 and leasing was reopened under the new regulations.

5. One of the noteworthy provisions of the new regulations FOR THE FIRST TIME gives the Fish and Wildlife Service a veto authority over proposed leases; this agency and its career specialists will decide where, when, how and by whom drilling will be permitted on the refuges!

6. Mr. J. Clark Salyer, chief of the Fish and Wildlife Service's Branch on Wildlife Refuges, and a national authority, testified before Congress that the new regulations were "100 per cent protection" for wildlife values.

Fact Sheet No. 3

April 23, 1956

What About Hells Canyon?

Opposition claim: That McKay "gave away" one of the greatest hydroelectric sites in the Northwest to a private power company.

HERE ARE THE FACTS

1. McKay could not give away Hells Canyon for the conclusive reason that power to issue or refuse a license is the EXCLUSIVE authority of the Federal Power Commission.

2. McKay withdrew the intervention of the Department of the Interior in the proceedings of the Federal Power Commission nearly four months after the Department of Agriculture withdrew its intervention in the case - but Morse never mentions that.

3. Morse has no evidence to support his claim that a high federal dam at Hells Canyon would ever be built by the federal government. Proposals for the construction of a high federal dam have been before Congress in three sessions and could not be passed. Recently, the House Democratic Majority Leader placed Hells Canyon on the "must" list for this session with a demand that it be passed to save Morse in Oregon and Magnuson in Washington. Even with the highest political priority and pressure NOTHING YET HAS BEEN DONE - NOT EVEN THE GESTURE OF SUPPORT DEMANDED BY MORSE.

4. McKay accepts the decision of the Federal Power Commission and refuses to prolong and delay a controversy that threatens the power supply of the Northwest. McKay's interest is in getting power for Oregon. He has supported the construction of projects both by public and private agencies, believing that we need every kilowatt of power we can get from every source.

5. (Background information: The Federal Power Commission was created by a Democratic Administration in 1935 to take the great hydroelectric projects out of the politics and log-rolling of Congress and place the decision in the hands of an independent and non-partisan agency that would have unlimited facilities for basing decisions on the best scientific and engineering opinion. The FPC held hearings over two years on Hells Canyon. Morse now proposes that Congress reverse the FPC which would end the usefulness of FPC and put these questions back in Congress where the Northwest would again be outvoted when it asked for appropriations.)

McKay for Senator Committee
W. L. (Bill) Phillips, Chairman
525 SW Broadway Portland 5, Oregon

Fact Sheet No. 1
April 23, 1956

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1. The owners of the Al Sarena claims are mining people who had never engaged in the logging or lumber business. (Incidentally, they are Democrats)

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DEPARTMENT OF THE INTERIOR

INFORMATION SERVICE

OFFICE OF THE SECRETARY

For Release JANUARY 26, 1956

UNDER SECRETARY DAVIS SETS FORTH FACTS ON AL SARENA CASE

A detailed account of the role of the Department of the Interior in the Al Sarena case was laid before a congressional committee today by Under Secretary Clarence A. Davis.

Mr. Davis documented his presentation with more than 20 documents from Department files tracing the history of the dispute over more than a five-year period.

The Under Secretary testified before a joint Senate-House subcommittee which is holding hearings on the Department's action early in 1954 granting patents on 15 mining claims in the Rouge River National Forest in Oregon to the Al Sarena Mines, Inc.

Mr. Davis, who was the Department's Solicitor at the time the decision was made to grant the patents, is the senior Department official who handled the Al Sarena matter.

"I regret that others have chosen to try this case in the newspapers and to try it on issues which in large part are quite immaterial to the actual problems involved," Mr. Davis said.

"The Department has been subjected to long weeks of criticism, and I am very grateful for the opportunity, at last, of laying before you all of the facts and circumstances."

Asserting that the problems involved in the Al Sarena case are legal and not political, Mr. Davis said: "I heard the case in the same mental attitude as any appelate court would hear a case on appeal, trying, from a confused record to ascertain the truth."

The Under Secretary's statement was prepared for delivery before the Subcommittee on Legislative Oversight of the Senate Interior and Insular Affairs Committee and the Subcommittee on Power and Natural Resources of the House Committee on Government Operations.

Excerpts from the statement are given below:

The Mining Laws

"Under the mining laws, which had not been changed since 1872 until last year, a miner who stakes out his claim on public lands and files on it, spends $500 in the development of it, and proves that he has a valid discovery of minerals, is entitled to a patent...There is no reference to timber in the mining laws; whether there is much, little, or no timber makes no difference whatever as a matter of law...

"Nevertheless, a few years ago, the Department of the Interior attempted to inject into the mining laws a standard of discovery which required profitable operation and a showing that the mineral deposits had the greater comparative value than other uses. This is not the standard set up by law...

"To allow mining claims to be located and then to judge them on standards other than those set up by the Congress and the Supreme Court is administrative legislation.

"If we are to adopt the philosophy that any Department of Government is vested with such vast powers, then it should be done by an act of Congress and not by administrative decision...

"The wise use of our great national forests is a program supported by all of us. However meritorious that objective, I trust you will agree that we should never distort the law in order to attain it."

The Timber Values

"...I must reemphasize at all times that the value of timber on mining claims is not material; that the Congress has never passed legislation which denies mining claims merely because there is timber on them; but there has been comment in the press and I believe from some of the members of your Subcommittees to the effect that these claims constitute a timber grab. Let me point out:

"1. At the time these claims were filed on as mining claims, there can be no dispute that similar timber could have been purchased in Oregon for as low as $2 and $3 an acre. The fact that all the claims were staked between 1897 and 1939 would demonstrate conclusively that at least in the beginning there could have been no thought of any profits out of the timber.

"2. The only testimony in the record at the time I passed on the case was the testimony of Mr. G. Robert Leavengood of the United States Forest Service...His testimony is... 'the value of the timber which we would cut now runs about $77,000 on the contested claims.'

"Admittedly, timber has increased in value since this record was made up in 1950, but I have difficulty in believing that it has increased as fantastically as some of the figures which have been so freely used.

"3. If the mine had been developed, even without the issuance of any patent, the timber would have been available for the purposes of timbering the mine if underground workings were pursued and would have been largely lost to the Government..."

The Missing Records

"After the violent protests from the McDonalds (the Al Sarena owners) that they had been shabbily treated, that much of their own evidence was not of record, and that a lot of evidence which had been filed had not been sent to Washington, I caused inquiry to be made of the Portland Office as to whether there were additional papers and documents in that office which had not been sent forward, and some documents were forwarded."

Did the Previous Administration Deny the Al Sarena Claims?

"The statement so frequently made in the press and perhaps in your record to the effect that these claims had been denied by the previous Secretary of the Interior is not supported by any document of any kind in the record. ...It is apparent that at least as late as November 22, 1952, Secretary Chapman had not passed on the case and had not even considered it, and there are no records to the contrary, as far as the files disclosed."

The Procedure Adopted

"In view of the substantial delays and the muddled state of the record in this case, I was frankly puzzled to know what to do with it. ...

"The first and most obvious alternative was to send the matter back to the Bureau of Land Management in Portland to start all over with another hearing.

"At first that seemed to me to be the thing to do. I seriously considered it, but in view of the fact that five years had then elapsed during which this matter had been dragging along...the accusations of collusion that the McDonalds were making against the Bureau of Land Management and the Forest Service...the fact that the first hearing had broken up in confusion...that much of the evidence of the claimants either intentionally or unintentionally did not appear in the record...that the hearing officer had been reluctant to render a decision...it seemed to me a certainty that to remand the claims to the same field office which made the original record would be a vain act..."

Decision to Have Bureau of Mines Make New Assays

"The third alternative seemed to be to get some independent assay of the minerals, if any, on these claims from some disinterested agency that was not a party to any of the previous controversy. ...I made up my mind that the thing to do was to submit the problem to the Bureau of Mines to secure new assays which would be dependable and beyond dispute."

The Problem Involved

"The problem involved was to take new mineral samples, dependable samples, on these claims and to have them accurately and honestly assayed. I think it will be conceded that if assays showed adequate mineralization, these people were entitled to their patent under the mining law.

"The United States Bureau of Mines is a great technical organization. ...I had then and I have now complete confidence in the integrity of the Bureau of Mines, and if I may say so frankly, I regret the numerous aspersions that have been cast upon what I consider to be loyal and faithful career employees of that bureau.

"If the Bureau of Mines cannot be trusted to take mineral samples and have them properly assayed and report on them, then I wonder what agency can be trusted with an assignment of this character.

"It is, incidentally, a little unfair to attempt to attribute to Secretary McKay in the first year he was in office all of the claimed errors of a bureau which was completely built and staffed by the preceding Administration.

"I should also like to point out that the personnel of the bureau had not been changed in any manner by the present Administration; that all these people, so far as I know, had been employed for many years as career people in the Bureau.

"... from the time that I issued the instructions September 3, 1953, until after the assays had been completed and the reports returned, neither I nor any other official of the Department of the Interior outside the Bureau of Mines, so far as I know, had anything whatever to do with the taking, shipment or assaying of these samples. I relied upon the procedure adopted by the mining engineers."

The Reports of the Assays

"When the assays were completed, as your records already show, duplicate originals were sent to the Bureau of Mines and to the claimants.

"The claimants, upon receipt of their copies of the assays, either brought or mailed...a set of assays to Washington...they...were delivered in person to me. ...I, in turn, handed them over to Mr. J. Reuel Armstrong, the attorney working on the case.

"On December 29, 1953, Mr. Armstrong came to my office, advised me that a check of the assays had verified what I had been told was the result... We had not received the other set of assays which had gone to the Bureau of Mines, and I suggested to Mr. Armstrong that we call Mr. Appling in the Bureau of Mines in Oregon to find out whether he had one of the sets of the assays and how the situation looked to him.

"The call was placed in my name. I am happy that your committee asked for confirmation of that call and that we produced not only the telephone slip showing the call but the operator who placed the call..."

"Both Mr. Armstrong and I talked at some length...to Mr. Appling....I especially questioned him about the whole matter, the methods of taking the samples, about how carefully they had been guarded against any possible tampering, about how they had been shipped, where to, and asked him why the assay house had been chosen in Mobile. Finally, I asked him as a mining engineer who had been all over the property for several days whether, in his opinion, a man would be justified in developing the property. He stated that in his opinion the property was good enough to well warrant further development."

Selection of an Assay House

"Mr. Appling has already explained to you why these samples which he took had been sent to Mobile. My instructions to the Bureau of Mines were to select an assay house that was mutually acceptable to the Bureau and to the mining engineer of the claimants. A choice of that nature, by the agreement of the parties, is a very common practice, and in this particular case seemed particularly appropriate, in view of the friction and disagreement that there had been between the Bureau of Land Management, the Forest Service and the claimants.

"Mr. Appling advised me that before sending the samples to the Williams Company in Mobile...the Bureau of Mines office in Tennessee had called the State Geologist's office of Alabama which had informed them that the Williams Company was well known and a reputable assay house. They had also checked the fact that the Williams Company was on the list of the Department of Commerce as a recognized assay house....

"I felt justified in relying upon the same evidence of reliability on which the Bureau of Mines felt justified in relying."

"High Level Interference" in Case

"Mr. Chairman, the language has been used that there was some kind of "high level interference" in this case. I am a little puzzled as to what is meant by that term...

"If you mean by 'interference' that the Secretary has overruled the decisions of one of the numerous bureaus, then I must protest the use of the language.

"The Secretary of the Interior, and by delegation in this case, the Solicitor, is the final judge of the decisions of the Department. All of the actions of this vast army of 50,000 people employed by the Interior Department can be appealed ultimately to the Secretary for decision....

"To say that the Secretary should not reverse field decisions or decisions of the bureaus is simply to argue that the decisions of field offices or bureaus should be final, and that we should have government by bureaucracy without interference from the elected executive branch. I hope it was not meant to imply that I am in error merely because I reverse the decision of some bureau. If so, then there is no need for a Solicitor, there is no need for Assistant Secretaries, and there is little need for a Secretary himself."

Role of Secretary McKay

"I should next point out to you that the matters here involved are not matters of discretion or of political action, but are matters of law and evidence. For that reason, for a very great many years the authority to decide appeals with relation to public lands has been vested in the Solicitor of the Department. His opinions on these matters are final. They are not reviewed by the Secretary unless the Secretary specifically requests it, and they are not in the ordinary course ever presented to the Secretary at all. I should like to make clear, therefore, that Secretary McKay has had no part in this sequence of events, and aside from one or two mentions of it in staff conference, he was totally uninformed of any of these events until after the opinion in the case was rendered."

x x x

Al Sarena

DEPARTMENT OF THE INTERIOR
Information Service

Return to Hollis Dole

Attached are the facts on the Al Sarena case as detailed by Under Secretary of the Interior Clarence A. Davis in a statement made before a joint Senate-House Committee on January 26, 1956.

For the convenience of those desiring to refer to particular parts of this statement, the following table of contents is provided.

93588

A. W. WILLIAMS INSPECTION COMPANY
MOBILE, ALABAMA

REPORT OF Assays of Gold Ores

For Al Sarena Mines, Inc.
408 1st National Bank Building
Mobile, Alabama
Sample identification: Al Sarena 1-28 Incl.

Lab. No. 53-912
Report No. 431869
Date December 17th, 1953
Client's Mat. Order No.
Client's Requisition No.
Client's Insp. Ord. No.
Our Order No. 38001

Sample submitted By Mr. D.Ford McCormick Date 11-25-53

We find the samples submitted by Mr.D.Ford McCormick to contain the following:

Sample	Au Oz/ton	Ag. Oz/ton	Au $/ton	Ag $/ton	Total Value $/ton	
1	0.05	0.15	1.75	.14	1.89	Rainbow
2	0.04	0.60	1.40	.54	1.94	
3	0.05	0.20	1.75	.18	2.03	Henry applegate
4	0.05	0.10	1.75	.09	1.84	
5	0.08	0.05	2.80	.05	2.85	Delta McKinnon
6	0.06	0.05	2.10	.05	2.15	Ono Coon
7	0.05	0.07	1.75	.06	1.81	Bruce
8	0.05	0.06	1.75	.05	1.80	Alabama
9	0.06	0.04	2.10	.04	2.14	
10	0.04	0.08	1.40	.07	1.47	
11	0.03	0.06	1.05	.05	1.10	cougar
12	0.04	0.40	1.40	.36	1.76	
13	0.02	0.10	.70	.09	.79	gw merritt
14	0.03	0.11	1.05	.10	1.15	
15	0.04	0.07	1.40	.06	1.46	we Leon
16	0.05	0.10	1.75	.09	1.84	
17	0.07	0.05	2.45	.05	2.50	
18	0.03	0.03	1.05	.03	1.08	JD McKinnon
19	0.05	0.02	1.75	.02	1.77	
20	0.03	0.06	1.05	.05	1.10	manganese
21	0.05	0.10	1.75	.09	1.84	
22	0.06	0.04	2.10	.04	2.14	ampo verde
23	0.05	0.07	1.75	.06	1.81	
24	0.06	0.04	2.10	.04	2.14	La Jolla
25	0.04	0.64	1.40	.58	1.98	Eagle
26	0.06	0.60	2.10	.54	2.64	
27	0.12	0.72	4.20	.65	4.85	Sulphide
28	0.10	0.50	3.50	.45	3.95	

Assays by J.A.McDaniel

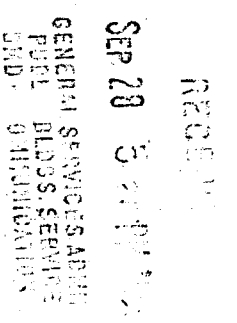
4 Reports To: Al Sarena Mines, Inc.
408 1st. National Bank Bldg.
Mobile, Ala.

A. W. WILLIAMS INSPECTION CO.

By _____

FORM NO. 600-REV.—GILL, MOBILE.

Jim Edelstein
Please return this to
me when you are through
with this Lanigan



26 WA PD /I-BLM/

PORTLAND ORG 9-28-50 148P

JAMES A LANIGAN ASST CHIEF COUNSEL

BLM WA

RETEL 28 MINERAL CONTEST FOREST SERVICE V AL SARENA MINES, INC OREGON 0665. CLAIMANTS TRACKED GOLDY TO HIS CALIFORNIA VACATION. HE REFERRED THEM HERE. AT CONFERENCE HERE AFTERNOON SEPTEMBER 8 WITH ME THEY SAID THEY HAD EMPLOYED NO COUNSEL AND VOLUNTEERED ASSERTION OF WILLINGNESS SURRENDER ALL TIMBER ON CLAIMS TO FOREST SERVICE. LOCATED PROPER FOREST SERVICE PERSONNEL FOR THEM BUT THEY MADE NO EFFORT AT CONTACT.

HEARING COMMENCED MORNING SEPTEMBER 13. CLEAR INDICATION MACMAHON ENROUTE HERE AT SAME TIME CLAIMANTS WERE ASSERTING THEY HAD NO COUNSEL. ON OPENING HEARING MACMAHON AND CLAIMANTS APPEARED WITH BOXES OF EXHIBITS AND OWN WIRE RECORDER. MACMAHON LAUNCHED GENERAL ATTACK ON PROCEEDINGS AND ORALLY ADVANCED FORMALISTIC MOTIONS RESPECTING PROPRIETY OF PROCEEDINGS AND APPARENTLY QUESTIONING JURISDICTION. THESE MOTIONS SET FORTH IN WRITTEN ANSWER FILED BY COMPANY RESPONDING TO NOTICE OF CONTEST. MANAGER OVERRULED MOTIONS AND MACMAHON REFUSED TO PROCEED STATING THAT HE HAD PERSONAL AGREEMENT WITH SOLICITOR THAT /1/ DEPARTMENTAL RULES OF PRACTICE AND PROCEDURE WOULD NOT BE APPLICABLE TO THIS CASE /2/ THAT RULES OF CIVIL PROCEDURE FOR DISTRICT COURTS WOULD APPLY AND /3/ THAT IF PRELIMINARY MOTIONS WERE OVERRULED APPEAL WOULD IMMEDIATELY BE IN ORDER AND FURTHER PROCEEDINGS ON MERITS WOULD BE POSTPONED UNTIL FINAL DETERMINATION SUCH APPEAL. HE ADDED THAT ANY TESTIMONY PRODUCED BY OTHER PARTIES AT PROCEEDING ON 13TH WOULD BE VIOLATION SUCH AGREEMENT AND HE WOULD ATTACK AS SUCH.

/MORE/

#103

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26 WA PD /PAGE TWO/

MACMAHON THEREUPON GATHERED EXHIBITS, WIRE RECORDER AND DEPARTED WITH COMPANY REPRESENTATIVES.

FOREST SERVICE PROCEEDED TO INTRODUCE TESTIMONY.

MACMAHON RETURNED FOLLOWING DAY. FILED FORMAL APPEAL FROM RULINGS ON MOTIONS. APPEAL STATES AL SARENA INTRODUCED NO EVIDENCE BECAUSE MANAGERS OBVIOUS BIAS INDICATED RESULTS WOULD BE ADVERSE REGARDLESS OF TESTIMONY.

FOR LACK OF MONEY PROCEEDINGS TRANSCRIBED BY LAND OFFICE STENOGRAPHER. MACMAHONS RAPID SPEECH, SHOUTING AND BOISTROUS CONDUCT PRECLUDED ACCURATE TRANSCRIPT WHILE HE WAS PRESENT. WHEN APPEAL FILED RICE REQUESTED COPY MACMAHONS WIRE TRANSCRIPTION. MACMAHON REFUSED.

RICE EXPECTS TRANSCRIPT TO BE COMPLETED, FOREST SERVICE BRIEF TO BE FILED AND RECOMMENDED DECISION TO BE FORWARDED WITH RECORD TO DIRECTOR IN ABOUT 10 DAYS.

IN VIEW CLAIMANTS CONDUCT SUGGEST UTTER CAUTION TALKING WITH THEM OR RELYING ON ANY REPRESENTATIONS THEY MAKE. MACMAHONS PERSONAL CONDUCT IN HEARING MAY RAISE QUESTION PROPRIETY HIS CONTINUED ADMISSION TO PRACTICE BEFORE DEPARTMENT.

SEE DIRECTORS TELETYPE AUGUST 9 /AD-FF/ MY TELETYPE AUGUST 15 AND DIRECTORS RESPONSE.

If ~~your consent~~ need these, please call Mrs Bradshaw.

LEONARD B NETZORG

28 0665 8 13 /1/ /2/ /3/ 13TH 10 9 /AD-FF/

IH 157P

25

Al Sarena (Buzzard) Gold, Silver, Lead, and [illegible] Baker

NAME OLD NAMES PRINCIPAL ORE MINOR

31 South 2 East 29
T R S

PUBLISHED REFERENCES

Jackson ..... COUNTY

Unclassified ..... AREA

..... ELEVATION

Highway, 5 miles mt. road .. ROAD OR HIGHWAY

47 miles from Medford .... DISTANCE TO SHIPPING POINT

Oregon Metals Handbk. 14-C Vol.II Sec.2

MISCELLANEOUS RECORDS

PRESENT LEGAL OWNER (S) ....H.P., W.G. and H.P.(Jr.) McDonald Address .....

OPERATOR .....

Name of claims	Area	Pat.	Unpat.
21 or 22 unpatented claims			

Name of claims	Area	Pat.	Unpat.

EQUIPMENT ON PROPERTY Flotation plant on property

MI-21

BLANK B—ANNUAL REPORT

This report must be properly executed and filed with the Corporation Commissioner on or before July 1, 1930, in order to entitle a corporation mining for any of the precious metals, coal, or prospecting or operating for oil, or operating an oil well, to pay a license fee of only $10. If not so filed, such corporation must pay the same license fees as are required to be paid by other corporations for gain.—Section 6890, Oregon Laws.

Annual Report to the Corporation Department

FOR THE YEAR ENDING JUNE 30, ~~1930~~ 1937

Of Al Sarena Mines Inc.,
(Give legal name in full)

a corporation organized and existing under and pursuant to the laws of the State of Oregon.

The location of its principal office is at No. ..... *Street, in the city of* Trail, *in the state of* Oregon

The names and addresses of principal officers, with the postoffice address of each, are as follows:

NAMES	OFFICE	BUSINESS ADDRESS
H.P.McDonald, Sr.	President	Trail, Oregon
H. P. McDonald, Jr.	Secretary	Trail, Oregon
H. P. McDonald, Jr.	Treasurer	Trail, Oregon

The date of the annual election of officers is June 15th

The date of the annual election of directors is June 15th

	Common With Par Value	Common No Par Value	Preferred
Amount of authorized capital stock	$ 80,000.00	Shares	$
Number of shares of authorized capital stock	800		
Par value of each share	$ 100.00	xxxxxx	$
Amount of capital stock subscribed	$ 39,600.00	Shares	$
Amount of capital stock issued	$ 39,600.00	Shares	$
Amount of capital stock paid up	$ 34,904.00	Shares	$
Price at which no par value stock issued	xxxxxx	$	xxxxxx

State amount of capital, represented by stock of no par value, with which the corporation began business . . . . . $ None

Total amount of its properties in Oregon (name of claims, lodes, or placers)
Ten lode claims known as the "Buzzard Group"

The location of its properties Buzzard Mining District, Jackson County

The amount of work done thereon and improvements made thereon since the time of filing last report have expended in excess of $20,000.00 for development work.

The amount of output or products of the mines or wells of such corporation from January 1, ~~1929~~ 1936, *to December 31,* ~~1929~~ 1936, *inclusive,* Twelve tons of concentrates

The value of output or products of the mines or wells of such corporation from January 1, ~~1929~~ 1936 *to December 31,* ~~1929~~ 1936, $ 741.13

IN WITNESS WHEREOF, I, H. P. McDonald, Jr., Secretary *of said corporation, have signed this report, this* 11th *day of* June, *A. D. 193 7.*

[CORPORATE SEAL]

(signed) H. P. McDonald, Jr.

STATE OF OREGON,
County of ..... } *ss.*

I, ...,
being first duly sworn, depose and say, upon oath, that I am ..... *of the foregoing corporation; that said corporation is not engaged in or transacting any other business except that of locating, prospecting, developing or operating mines for any of the precious metals, coal, or prospecting or operating for oil, or operating an oil well; that the value of the output or products of the mines or wells of said corporation from January 1, 1929,*

Alsarena Mines, Inc.
(private interview) Elk Quadrant T. 31 S.

Alsarena Mines Inc., - Dr. H. P. McDonald, Rogue-Elk, Pres.; W. G. McDonald, Rogue-Elk, V. P.; H. P. McDonald, Jr., Secry-Treas. Incorporated for $80,000, 400 acres, purchased old Buzzard property. The mine is located 4 miles south of Umpqua Divide on headwaters of Elk Cr., in Secs. 28 & 29, T. 31 S., R. 2 E. The ore is gold and silver; zinc and lead are incidental. Information can be secured at Rogue-Elk Hotel & store.
(Treasher)

Jackson County AL SARENA

unclassified as to district

Al Sarena Mines, Inc. (gold-silver)
Oregon Corporation H P McDonald, Pres Trail Oregon
H P McDonald Jr. Sec-Treas, Trail, Oregon
capitalization $10,000
Property; 10 claims known as the "Ruggard Group"
Q[illegible]
(get late information)

Jackson County

Name Buzzard Mine

Ownership ?

Location Secs 19, 20, and 29, T. 31 S., R. 2 E., on the head waters of Elk Creek, northeastern Jackson County. The property is about 47 miles from Medford and 20 mi. from the Crater Lake Highway at the mouth of Elk Creek.

Area 10 claims.

History The claims were located in 1897 by Peter and Mark Applegate. Individuals and corporations shipped ore in the amount of about $24,000 chiefly in gold between 1909 and 1918.

Topography The area is mountainous. Mine workings are on a heavily timbered ridge lying near the divide between the drainage systems of the Rogue & Umpqua Rivers, trending northeastern at an approximately 4000 feet in elevation, and slopes toward the south. The ravines on the east and west sides are about 700 feet and 300 feet respectively below the summit.

Geology The vein occurs near the center of an area of altered and bleached volcanic breccias containing dikes and flows of rhyolite and andesite. No diorite intrusives were found, and evidence of deformation was lacking. The strike of the vein in which almost all the work has been done is N 40 W with a dip ranging from vertical to 85° E. Vein matter consists of altered rock with streaks and lenses of sulphides, chiefly sphalerite together with some pyrite and galena. There is a little clayey gouge, no comb or quartz. The occurrence of sulphides seems without

Al Sarena Mines, Inc., Trail, has obtained an Oregon permit to dispose of 250 shares of $100 par value common stock for development purposes. H. P. McDonald, Trail, Oregon, is president.
(Mining & Contracting Review, Jan. 15, 1940, p. 14)

Union Calendar No. 932
84th Congress, 2d Session - - - - - - House Report No. 2408

THE AL SARENA CASE

TWENTIETH INTERMEDIATE REPORT

OF THE

COMMITTEE ON GOVERNMENT OPERATIONS

JUNE 20, 1956.—Committed to the Committee of the Whole House on the State of the Union and ordered to be printed

UNITED STATES
GOVERNMENT PRINTING OFFICE
79167 WASHINGTON : 1956

LETTER OF TRANSMITTAL

HOUSE OF REPRESENTATIVES,
Washington, D. C., June 20, 1956.

Hon. SAM RAYBURN,
Speaker of the House of Representatives,
Washington, D. C.

DEAR MR. SPEAKER: By direction of the Committee on Government Operations, I submit herewith the twentieth intermediate report of its Subcommittee on Public Works and Resources.

WILLIAM L. DAWSON, *Chairman.*

Union Calendar No. 932

84TH CONGRESS, 2d Session } HOUSE OF REPRESENTATIVES { REPORT No. 2408

THE AL SARENA CASE

JUNE 20, 1956.—Committed to the Committee of the Whole House on the State of the Union and ordered to be printed

Mr. DAWSON of Illinois, from the Committee on Government Operations, submitted the following

TWENTIETH INTERMEDIATE REPORT

SUBMITTED BY THE PUBLIC WORKS AND RESOURCES SUBCOMMITTEE

On June 20, 1956, the Committee on Government Operations had before it for consideration a report of its subcommittee entitled, "The Al Sarena Case."

After consideration of the report as submitted, upon motion made and seconded, the report was approved and adopted as the report of the full committee. The chairman was directed to transmit a copy to the Speaker of the House.

SUMMARY

I

On February 15, 1954, the United States Department of the Interior granted patent to 475 acres of the Rogue River National Forest, in Oregon, to Al Sarena Mines, Inc.

The United States Forest Service, charged with responsibility for management of the National Forest, had protested against 15 of the 23 claims of Al Sarena Mines, Inc. on grounds of inadequate proof of mineralization.

Patent to its 23 mining claims, under the Federal mining law of 1872, conveyed to the company full title to this part of the Rogue River National Forest, in return for $2,375, the statutory payment of $5 an acre.

Since receiving its patent from the Interior Department, Al Sarena Mines, Inc. has not mined one cupful of ore from the national forest land conveyed to it. Since receiving its patent from the Interior Department, however, Al Sarena Mines, Inc., has cut more than 2,000,000 board-feet of timber from this former national forest land.

II

To grant patent to the claims of Al Sarena Mines, Inc. in the Rogue River National Forest, the Department of the Interior invented a procedure without precedent in the administration of our public lands and contrary to the principles of the Administrative Procedure Act. Al Sarena Mines, Inc., had been unsuccessful in obtaining patents under the normal procedures applicable, then as now, to all other mining claims.

On April 13, 1950, the United States Forest Service had filed its protest against 15 of the Al Sarena claims, based on samples taken by Government mineral examiners and assayed by commercial laboratories in Oregon and California; and in September 1950, assays by the Bureau of Mines Laboratory at Albany, Oreg., of additional samples taken by a Government mineral examiner had shown only traces of mineral values.

At a hearing on the Al Sarena claims and the Forest Service's protest, scheduled by the Bureau of Land Management under normal procedures on September 13, 1950, the representatives of Al Sarena Mines, Inc., had walked out without presenting any evidence. After the Bureau of Land Management decided not to grant patent on the 15 contested claims, the company on appeal had been offered a second opportunity for a hearing in 1951, to be conducted under usual BLM procedures, and had refused this opportunity.

Instead, the company sought to obtain political backing for its application for patent to its claims in the Rouge River National Forest without having to overcome the protest of the Forest Service with proof of mineralization under normal procedures. These efforts failed under Secretary Chapman's administration of the Department of the Interior. No patent was granted.

III

After Mr. Douglas McKay took office as Secretary of the Interior and Mr. Clarence A. Davis as Solicitor of that Department in 1953, the latter worked out with Representative Ellsworth of Oregon, on behalf of the Al Sarena company, a novel procedure for reappraisal of the company's claims outside of the record previously made under normal administrative procedures.

On September 3, 1953, Mr. Davis gave the instructions for the new procedure in the form of two letters to the representatives of the company and a short covering memorandum to the Director of the Bureau of Mines—a bureau which normally has no role in the adjudication of mineral contests on the public lands. In these documents, which are set forth in full on pages 17–18 of the present report, Mr. Davis stated that he desired to give the company another opportunity to make their showing and "to approve patent for them if the assays afford us the well established legal basis therefor." He further stated that, in agreement "with Congressman Ellsworth, who has interceded on behalf of the company," he was asking a representative of the Bureau of Mines to accompany the company's mining engineer to take new samples from the 15 claims contested by the Forest Service. Under his instructions, these samples were to be assayed by an assayer acceptable to the company as well as the representative of the Bureau of Mines.

Under this unique requirement of company consent to the choice of assayer, which was the crux of Mr. Davis's special instructions, Al Sarena Mines, Inc., rejected three western assayers suggested by the Government representatives and demanded that the assays be made by a company with which it had done business in the past—the A. W. Williams Inspection Co. of Mobile, Ala., where Al Sarena Mines, Inc., had its home office.

No provision was made for any notice to the contestant Forest Service. In fact, the Forest Service did not receive any notice whatsoever of these special proceedings and had no opportunity to examine the new evidence, cross-examine witnesses, or submit evidence in rebuttal.

On Christmas Eve, 1953, a messenger from Representative Ellsworth's office delivered to Mr. Davis the report of assays of the A. W. Williams Inspection Co., the assayer selected by the Al Sarena company, which reported mineral values on the Al Sarena claims far in excess of those found in three prior assays of samples taken by the Bureau of Land Management.

On January 6, 1954, Mr. Davis ordered patent granted to the Al Sarena claims.

IV

Mr. Davis's decision to grant patent to the Al Sarena company's 23 claims in the Rogue River National Forest had no evidentiary basis other than the report of assays from the A. W. Williams Inspection Co. On this basis, Mr. Davis overruled the findings of fact and the conclusions which responsible officials of the Bureau of Land Management had reached after three assays of samples taken under regular BLM procedures. In his haste to patent the Al Sarena claims, Mr. Davis did not even wait for a written report from the engineer of the Bureau of Mines who had participated in taking the samples on which he granted the patent.

On the basis of this one report of assay resulting from the special and unprecedented procedure which he had invented for Al Sarena Mines, Inc., Mr. Davis overruled the protests of the United States Forest Service—without ever having given that Service any notice whatever of this special procedure, of the results of the A. W. Williams assay, or of his intention to grant patent.

In his decision to grant the Al Sarena patent, Mr. Davis brushed aside all the contentions of Al Sarena Mines, Inc., against the prior procedures as "untenable," "immaterial and without substance." Thus Mr. Davis sustained every step of the Bureau of Land Management which had resulted in its upholding the protest of the Forest Service against the 15 contested Al Sarena claims. Nevertheless, he then decided solely on the basis of one report of the A. W. Williams Inspection Co., received under the unusual circumstances related above, to give Al Sarena Mines, Inc., patent to 475 acres of the Rogue River National Forest.

The United States Forest Service, charged with the administration, forestry management, and conservation of that national forest, was never afforded an opportunity to learn of the only evidence on which the decision was based, to comment on it or to meet it in support of its protest against patent to the 15 contested claims.

FINDINGS AND CONCLUSIONS

The committee submits the following findings and conclusions:

1. Al Sarena Mines, Inc., sought patent to the 23 mining claims in the Rogue River National Forest in order to obtain a title to and market the timber, knowing from past failures and from analysis after analysis that the property offered no hope as a profitable mining venture. This conclusion is supported by the following:

(*a*) The company could have continued exploration and mining under its claims without patents.

(*b*) There has been no mining on the Al Sarena claims since 1943.

(*c*) Since patent was granted in 1954, the patentee has sold in excess of 2 million board-feet of timber from the claims.

(*d*) Every fact thus far developed about the area as a mining venture in its more than 20-year history of exploration, testing, promotion and actual mining on the uncontested claims only, shows that it holds no future promise as a mining project.

(1) Total ore production from all of the 23 claims since 1935, when Al Sarena Mines, Inc., first acquired its interest, to 1943 when production stopped, was:

Kind of ore	Volume	Value
Lead concentrate	21,716 pounds	$1,218.18
Gold	406.6 troy ounces	14,231.00
Silver	1,982 9 ounces	873.26
Total		16,322.44

(The operating payroll costs alone to produce this ore were at least $47,553.09, nearly 3 times the gross return. Assessment work on 23 claims at $100 per claim per year would considerably exceed the total gross return from the sale of the mineral production.)

(2) Careful review of loan applications to the Reconstruction Finance Corporation in 1940 resulted in denial of the applications on grounds of lack of pay ore in sufficient quantity to assure repayment of even a $20,000 loan on not just the 15 contested claims but the 8 uncontested claims as well.

(3) Requirements of a lease-purchase agreement between Al Sarena Mines, Inc., and the Al Sarena Corp. as to ore production could not be met.

(4) All assays put in evidence in support of patent claims under regular Bureau of Land Management procedure failed to show adequate mineralization to justify operations.

(Testimony of Mr. George B. Holderer, committee staff mining engineer, was that Al Sarena ore would have to show a value of $20 a ton in order to operate the property at a profit.)

(*e*) The Al Sarena claimants, at all times, were aware of the increasing value of the timber on the claims.

(1) In 1936 and again in 1940, long prior to issuance of patent, the Al Sarena officials emphasized the timber values as security for Reconstruction Finance Corporation loans, claiming 12 million to 20 million board-feet worth $80,000.

(2) The timber values on the 15 contested claims skyrocketed from $10,650 in 1935, when Al Sarena Mines, Inc., first acquired an interest in the claims, to $82,900 when it filed for patents in

1948, and to $136,240 in 1953. These estimates reflect appraised values; if timber were sold under competitive bidding, prices would increase by about 50 percent.

2. The methods used to obtain evidence supporting issuance of patent and adjudication of the matter violated the Administrative Procedure Act and the most elementary concepts of proper judicial and administrative procedure.

(*a*) No notice was given one of the parties to the contest—the contestant, United States Forest Service.

(*b*) No opportunity was given the contestant to examine the new evidence or to submit rebuttal evidence or testimony.

(*c*) The preponderance of evaluated evidence of record against issuance of patent was ignored. Unevaluated evidence submitted by the contestee, Al Sarena Mines, Inc., was accepted as valid and controlling.

(*d*) The official instructions applicable to the procedure followed in obtaining new mineral assays not only excluded the contestant, United States Forest Service, from participation in that procedure, but in effect permitted the contestee successfully to insist upon an assay company of its own choice.

(*e*) No evaluation of either the A. W. Williams Inspection Co. assay report or the report of the Bureau of Mines engineer who took the mineral samples for assaying was made by any qualified minerals expert prior to the issuance of the Solicitor's decision to grant patent.

3. The provisions of the Administrative Procedure Act relating to hearings, under decisions of the Supreme Court, were applicable to this proceeding. That act was violated by:

(*a*) Receiving evidence without giving one of the parties a chance to rebut it, cross-examine on it, or even see it.

(*b*) Taking into account evidence and advice received outside the record of the proceedings and without notice to one party.

4. The Solicitor of the Department of the Interior was not required to order the issuance of a patent on the basis of the record in the case and in doing so, he violated all known departmental precedents.

Recommendations

The committee makes the following recommendations based upon its findings and conclusions:

1. That the entire record in the Al Sarena case, including documentary evidence filed subsequent to the close of the hearings and the file of record in the Department of the Interior, be transmitted to the Attorney General with a formal request that he (*a*) take appropriate steps, including actions to cancel these patents, in order to protect the interests of the United States; (*b*) investigate the truth or falsity of statements relating to the extent of improvement work that had been allegedly performed on five of the contested claims.

2. That the Secretary of the Interior take appropriate steps to assure observance of the Administrative Procedure Act by the Department of the Interior.

3. The committee recommends that the Department of the Interior adopt regulations consistent with the Administrative Procedure Act to assure that in the case of any contest with respect to any mining claim located on lands administered by any agency of the Federal Government other than the Department of the Interior, such other agency be given notice and an opportunity to be heard, whenever any evidence or report is to be accepted or whenever any exami-

nation at any administrative level of the claim is ordered to be made by the Department of the Interior.

BACKGROUND

The Subcommittee on the Legislative Oversight Function of the Senate Interior and Insular Affairs Committee and the Public Works and Resources Subcommittee of the House Committee on Government Operations (hereafter referred to as the joint committee), sitting jointly, held hearings on the matter known as the Al Sarena case in November 1955, at Portland, Oreg., and in January and February of 1956, in Washington, D. C. Because of the availability of key Government officials in the field who had participated in events leading to the Al Sarena decision, it was decided to take testimony from these witnesses in Oregon during the course of the joint committee hearings on the overall problem of Federal timber sales and management policies in the Pacific Northwest.

During 1955, the chairman of the Senate Committee on Interior and Insular Affairs received numerous complaints from persons in Oregon and elsewhere that the Secretary of the Interior had acquiesced in a giveaway of valuable national forest timber on certain mining claims located in the Rogue River National Forest in southern Oregon.

In substance, the complaints alleged that Al Sarena Mines, Inc., of Mobile, Ala., had acquired mining patents on these claims from the Department of the Interior in order to obtain title to the timber, and not for the bona fide purpose of conducting a mining operation.

By reason of the jurisdiction of the Senate Interior Committee over the mining laws and national forests reserved from the public domain, the chairman of the committee directed that the charges be investigated. At his request, the Department of the Interior made available to the committee its departmental files relating to the patent application submitted by Al Sarena Mines, Inc.

Analysis of the material in these files disclosed:

1. The United States Forest Service protested issuance of patents to 15 of the 23 mining claims of Al Sarena Mines, Inc., basing its protest on evidence showing:

(*a*) Lack of sufficient mineralization on all 15 protested claims;

(*b*) Failure to meet the statutory requirement of $500 worth of improvement work per claim on 5 of the 15 claims.

2. A copy of the protest was served on the applicant, Al Sarena Mines, Inc., and that company answered, requesting that the protest be dismissed and patents be granted.

3. A hearing on the contested case was held before the manager of the United States Land Office in Portland, Oreg. on September 13, 1950, at which time the United States Forest Service with counsel, representing the Federal Government, and representatives of Al Sarena Mines, Inc., including counsel, were present.

4. Counsel for Al Sarena Mines, Inc., demanded a radical departure from the established rules and regulations applying to such hearings. When that demand was overruled by the Hearing Officer, counsel for the company refused to submit any evidence, documentary or otherwise, or to cross-examine any witnesses. After noting an appeal, counsel and other Al Sarena representatives withdrew from the hearing.

5. On December 14, 1950, the Manager of the Land Office rendered a decision sustaining the protest of the Forest Service, which decision was thereafter affirmed by the Assistant Director of the Bureau of Land Management on April 27, 1951.

6. Solicitor Mastin G. White heard arguments by representatives and counsel for Al Sarena Mines, Inc., and offered by letter, under date of August 3, 1951, to remand the case for a new hearing, but Al Sarena Mines, Inc. did not accept that offer.

7. Solicitor of the Department of the Interior, Mr. Clarence A. Davis, within two months after assuming office in 1953, was subjected to political pressure to grant the patent application. The effect of this pressure was readily discernible in the official instructions and accompanying correspondence issued by Mr. Davis to employees of the Bureau of Mines, whom he directed to take new mineral samples from the claims.

8. Solicitor Davis ordered an unusual and unprecedented procedure to obtain evidence of mineralization. The procedure so ordered permitted the patent applicant, Al Sarena Mines, Inc., to act in concert with the United States Bureau of Mines and largely to control that procedure. At the same time, Solicitor Davis' modus operandi effectively precluded any notice to or participation by the other party to the contest; i. e., the Forest Service, which represented the United States Government in the contested case and which had protested granting the patent application of Al Sarena Mines, Inc.

9. The decision of Solicitor Davis on January 6, 1954, expressly overruled and set aside all the basic contentions of Al Sarena Mines, Inc., and thus affirmed all the actions and proceedings taken and followed by the officials of the Bureau of Land Management. Nevertheless, Mr. Davis ruled in favor of Al Sarena Mines, Inc. He acted solely on the basis of after-procured and unevaluated evidence consisting of a single report which presented mineral values far exceeding those contained in any assay reports theretofore made a part of the record.

In the light of these disclosures from the files of the Department of the Interior, and following a staff investigation in the field, the chairmen of the joint committee decided to hold a public hearing in Portland, Oreg. on November 25, 1955. These hearings were resumed in Washington, D. C., on January 10, and terminated on January 31, 1956, subject to taking testimony from the Secretary of the Interior and the principal officers of Al Sarena Mines, Inc. Subsequently both were invited to appear before the joint committee, but stated they did not wish to testify.

The joint committee believes that a statement of facts is important to an understanding of the Al Sarena matter. Therefore, this report will set forth in some detail the basic facts as developed through investigations and testimony, followed by a consideration of the major points at issue.

BASIC FACTS

I. THE APPLICANT FOR PATENT

Al Sarena Mines, Inc. is a corporation chartered by the State of Oregon for mining and related purposes. It was organized under the laws of Oregon on May 17, 1935.

The McDonald family, of Mobile, Ala., owns a majority of the stock of the corporation. The corporation at times maintains offices in Mobile, Ala., and its mailing address is Trail, Oreg. Charles R. McDonald is president, and H. P. McDonald, Jr., is secretary-treasurer.

II. HISTORY OF THE CLAIMS

The 23 mining claims involved in the case were located on nationa. forest lands in the Rogue River National Forest in southern Oregonl The lands of the Rogue River National Forest were reserved for national forest purposes under Presidential proclamation of September 28, 1893. These national forest lands are subject to mineral location under the general mining laws in the same manner as public domain lands not reserved for national forest purposes.

In 1897 Peter and Mark Applegate filed the first mining claims on lands now under patents held by Al Sarena Mines, Inc. Pearl Mining Co. succeeded in interest to the Applegates, and that company's possessory right in 10 of the 23 claims was acquired by the Al Sarena Co under an installment purchase contract dated May 11, 1935, and amended on December 11, 1945. Eleven other mining claims were acquired by purchase from individual owners and the remaining two claims were obtained by location in 1939.

Total ore production from the 23 claims between 1897, when the Applegate brothers filed the first claim, and 1935, when the McDonald family became interested in the property, according to data supplied by the Oregon State Department of Geology, and referred to in the report of the Government mineral examiner, had a value of some $24,000, all of which came, as is shown by the hearing record, from 4 of the claims that were not contested. (See hearings, p. 38.) There is no record of any ore production from any of the 15 contested claims.

III. TIMBER RESOURCES

According to figures submitted by the Al Sarena Corp., in an application for mining loans from the Reconstruction Finance Corporation in 1940, timber growing on the 23 claims was estimated to consist of 20 million board-feet valued by the corporation at $80,000. (Al Sarena Corp., No. 3529, 35.47 Oregon AUAG, 3–30–40.) At the time of the application for patent, October 4, 1948, merchantable timber growing on the 15 contested claims had a value of $82,980, according to data submitted by the Forest Service to the joint committee. (See hearings, p. 434.)

In 1950, according to Forest Service estimates, the volume of merchantable timber on the 15 contested claims averaged approximately 25,000 board-feet per acre, and the value was $126,190. (See letter of February 10, 1956, from Forest Service to Hon. W. Kerr Scott.) (See hearings, p. 433.)

Dr. Richard E. McArdle, Chief of the Forest Service, testified that the value of the merchantable stand in 1955 was $231,775 for timber 16 inches and over in diameter growing on the 15 contested claims. Under questioning, Dr. McArdle stated that if this timber were sold on the basis of competitive bidding, the value would be increased by approximately 50 percent. (See hearings, p. 450.) This would make the timber on the 15 claims worth $347,657.50 in 1955.

From 1943 to the present time, there has been no mining (cite).

In 1954, after patent issued, timber in excess of 2 million board feet was cut and sold by the patentees. (See hearings, p. 93.)

IV. EVENTS PRIOR TO FILING OF PATENT APPLICATION (1935–48)

A. Applications for mining loans, Reconstruction Finance Corporation

On October 14, 1936, Al Sarena Mines, Inc. filed an application for a development loan in the amount of $19,642 with the Reconstruction Finance Corporation. After intensive analysis of the loan application, it was disapproved in 1943. Exhibit A of the Al Sarena Mines, Inc., loan application, under the heading "Adaptation and Resources", contains an estimate of 12 million board feet of standing timber on the property.

On October 20, 1939, Al Sarena Mines, Inc. entered into a lease-purchase agreement with the Al Sarena Corp. of Houston, Tex. The lease was made a part of two mining loan applications filed by the Al Sarena Corp. with the Reconstruction Finance Corporation on January 23, 1940. The agreement was to run for 1 year with provision for a year-to-year extension. Under its terms the Al Sarena Corp. paid $500 cash to Al Sarena Mines, Inc., and agreed to make further payments based on a specified percentage of gross receipts. The lessee also agreed to maintain payment of installments due from Al Sarena Mines, Inc. to the Pearl Mining Co. under a contract of sale for certain of the mining claims. The optional purchase provision of the agreement stated the purchase price for the sale of the claims by Al Sarena Mines, Inc. to the Al Sarena Corp. was to be a transfer of 40 percent of the stock of the Al Sarena Corp. to Al Sarena Mines, Inc., but only if Al Sarena Corp. had developed and blocked out a quantity of commercial ore not below $6 per ton in gold and silver values and in sufficient quantities to maintain a 200-ton daily milling operation, or low grade ore below the value of $6 a ton sufficient to maintain a 500-ton daily milling operation. This condition, as the subsequent record clearly shows, was impossible to meet.

The agreement also provided that at any time during the life of the lease, the lessee, Al Sarena Corp. would have the right to patent the claims and sell the timber on such claims.

On February 20, 1940, the Reconstruction Finance Corporation rejected both loan applications and gave the following reasons for denial:

> If the mining property is to be the security for a loan, it should contain blocked out ore the net value of which, in the opinion of Reconstruction Finance Corporation, constitutes sufficient security for the loan. The data submitted in the applications show that there has been considerable work done at this mine but it appears that as a result there is very little, if any, mineralization opened up that could be mined and milled at a profit * * * It is our opinion that the mining and milling of the mineralized bodies contained within this property would result in very little, if any profit; hence it does not offer sufficient security for a loan.

In response to another appeal dated March 5, 1940, from Al Sarena Corp. regarding the loan, the Reconstruction Finance Corporation on March 14, 1940, stated:

> We have again carefully studied all the data submitted with the applications of the Al Sarena Corp. and, based upon these data, it is clearly our opinion that the project does not offer sufficient security for a general mining loan nor do we believe that through the expenditure of a development loan there would be developed a sufficient quantity of ore of a sufficient value to pay a profit upon mining operations, as required by the act. We wish to advise you that we have given very careful consideration to each report submitted and have not confined our attention to any particular one.
>
> Undoubtedly you realize that there has been a considerable amount of money spent on prospecting this property and as yet there is very little ore developed. The applications contain some general statements that the property offers development possibilities but there are also statements that considerable more work has to be done to prove this. It clearly looks to us that any work done now would be of a prospecting nature with the hopes of finding ore, a purpose for which development loans are not made. (See letters of Feb. 20 and Mar. 14, 1940, from John E. Norton, Chief, Mining Section, Reconstruction Finance Corporation, to Cecil R. Hayden, president, Al Sarena Corp., Houston, Tex., from Reconstruction Finance Corporation files, identified as—Al Sarena Corp., Nos. 3529, 35.47 Oregon AUAG, 3-30-40 (Withdrawn Mining Loan—Corresp. & Document).

On March 5, 1940, the president of Al Sarena Corp. wrote to the Reconstruction Finance Corporation asking reconsideration of its application for mining loans. The following is quoted from that letter:

> We most certainly are not questioning the judgment of the engineers of the RFC, in turning down this loan, for, as you say, there must be proper and adequate security, but taking the 2 items of blocked-out ore and the *available timber reserves on the claims*, we have a security of some $340,000 on which we ask a $51,000 loan. [Italics supplied.]

A report dated May 13, 1939, on the mining property of Al Sarena Mines, Inc., by one of the corporation's mining engineers, Mr. George P. Sopp, contains the following:

> *Timber.*—By patenting the property, the Al Sarena Mining Co. would obtain title to at least 12 million feet of timber, valued at approximately $80,000. (Identified as exhibit B–1, and filed as a part of the mining loan application submitted by the Al Sarena Corp.)

In exhibit A–6b, filed by Al Sarena Corp. in support of its loan application in 1940, the following is set forth:

> 8. Loan will be repaid as rapidly as possible from operation of 75 ton mill (or larger mill if justified and in manner prescribed by RFC). *There is also approximately 20 million feet of timber on the properties that can be sold to nearby mills.* [Italic supplied.]

It should be noted that at the time these statements were made, Al Sarena did not own the timber on the claims and had no right to

sell it. The corporation did not get title to the timber and the right to sell it until the patents were granted by the Department of the Interior in 1954.

Another mining engineer employed by the company, Mr. D. Ford McCormick, in his report of July 15, 1937, also noted the fact of timber growing on the claims by saying:

> It is estimated that there are 20 million feet of excellent fir and pine timber on the claims.

As a part of its loan application, the Al Sarena Corp. submitted what it designated as a "Proforma Balance Sheet" dated January 23, 1940, showing under "Assets", the following:

Mining claims (approx. 400 acres in 23 claims)	$80,000
Timber resources (approx. 20 million feet of timber on said claims)	80,000

V. PRODUCTION FROM THE CLAIMS SINCE 1935

A. The lead concentrate story

Al Sarena Mines, Inc., in pressing its patent application, made much of what it called the contribution made by this mining property to the war effort through its lead production.

Examination of smelter records, and of records of the Metals Reserve Co., subsidiary of the Reconstruction Finance Corporation, discloses that this contribution consisted of 21,716 pounds of lead concentrates over a 3-year period, with a total gross value of $1,218.18 including a payment of $24.60 by the Metals Reserve Co. for "excess production" over normal expectation.

Between 1935 and 1943, when all mining operations on the Al Sarena properties ceased, there was a total production of gold valued at $14,231 and of silver valued at $872.46. This production, together with that from lead, gave the operation a total gross ore production valued at $16,322.44, over an 8-year period.

This total gross from mining operations would not be adequate to defray the cost of assessment work on 23 claims at $100 per claim per year over an 8-year period.

It is significant that during the same period of time the operation had a payroll, as shown by reports filed with the Compensation Commission of the State of Oregon, in the sum of $47,553.09, which clearly corroborates expert testimony that a prudent man would not attempt to mine the property, and pinpoints why there has been no mining on any of the 23 claims since 1943.

VI. EVENTS PRIOR TO DECISION GRANTING PATENT (1948–54)

A. The application for patent

1. Chronology:

(*a*) Application filed October 4, 1948, for patent to 23 claims.

(*b*) On December 2, 1948, the supervisor of the Rogue River National Forest, wrote to the regional forester, calling attention to the publication of summons and notice of patent application. (See hearings, p. 730, appendix.)

(*c*) On December 7, 1948, the Regional Forester's Office requested a copy of the patent application from the Bureau of Land Management, and by memorandum of December 9, 1948, transmitted a copy to the Rogue River Forest Supervisor with a request for information as to when a mineral examination of claims would be undertaken. (See hearings, p. 731, appendix.)

(*d*) On December 7, 1948, the Bureau of Land Management officially notified the Forest Service of the pending application for patents in accordance with Joint Order of August 15, 1915, issued by the Secretaries of the Interior and Agriculture. (See hearings, p. 534.)

(*e*) On December 15, 1948, the Office of the Regional Forester wrote to the Regional Administrator of the Bureau of Land Management requesting the Bureau of Land Management to conduct a mineral examination of the claims because the Forest Service did not have available a qualified mineral examiner in the area at that time. The letter also pointed out that on account of bad weather conditions, the mineral examination should be deferred until the spring of 1949. (See hearings, p. 730, appendix.)

(*f*) On January 13, 1949, Al Sarena Mines, Inc., filed final proofs with the Bureau of Land Management. (See hearings, p. 535.)

(*g*) On February 8, 1949, Al Sarena Mines, Inc., was advised by the Bureau of Land Management that the purchase price would be $2,375, at the statutory rate of $5 per acre, and that upon compliance with other requirements and the receipt of the purchase money, further consideration would be given to the issuance of final clearance of mineral entry. (See hearings, p. 535.)

(*h*) On February 10, 1949, Al Sarena Mines, Inc., filed application to purchase all the claims, and on February 17, 1949, the Bureau of Land Management issued an official receipt to the company for the purchase price of $2,375, which was paid subject to later approval of the patent application. (See hearings, p. 535.)

(*i*) On April 6, 1949, the Bureau of Land Management issued a mineral certificate to Al Sarena Mines, Inc., stating that patent would be withheld pending a report by the Bureau of Land Management Regional Administrator upon the bona fides of the claims. (See hearings, p. 536.)

(*j*) At the request of the Forest Service, Mr. Elton M. Hattan, Bureau of Land Management mineral examiner, examined the claims for 5 days in May 1949, took samples from the discovery points and other points on the claims. (See hearings, p. 27.) These samples were sent to the Annes Engineering Co. Laboratory in Grants Pass, Oreg. (See hearings, p. 27.)

In July 1949, Mr. Hattan and Mr. W. C. Sanborn, mineral examiner for the Forest Service, reexamined the 15 contested claims, taking samples at places indicated by Mr. H. P. McDonald, Jr., secretary-treasurer of Al Sarena Mines, Inc., and sent the ore samples to the Abbott A. Hanks Laboratory in San Francisco, Calif. (See hearings, pp. 30–31.)

When the McDonalds submitted to minerals examiner Hattan some assays showing higher values, he made a further examination in September 1950, taking additional samples from the claims and a few from the company warehouse. Mr. Hattan sent these to the Bureau of Mines Laboratory at Albany, Oreg. (See hearings, pp. 34, 35.)

In addition, Mr. Hattan took that portion of the sample pulps retained by the Annes Co., in accordance with their practice, and submitted them to the Abbott A Hanks Laboratory for recheck. The recheck by Hanks confirmed the original assay by Annes. (See hearings, p. 31.)

The results of these assays and of the assays submitted by the A. W. Williams Inspection Co. of Mobile, Ala., are shown on the following chart:

15 contested claims	Exhibit No. 1, A. W. Williams Inspection Co., Mobile, Ala., Dec. 17, 1953				Exhibit No. 2, Annes Engineering Co., Grants Pass, Oreg., May 31, 1949				Exhibit No. 3, Abbot A. Hanks, San Francisco, Calif., Aug. 10, 1949				Exhibit No. 4, Bureau of Mines, Albany, Oreg., Sept. 13, 1950			
	Sample No.	Gold	Silver	Total value	Sample No.	Gold [1]	Silver [1]	Total value	Sample No.	Gold [2]	Silver [2]	Total value	Sample No.	Gold [3]	Silver [3]	Total value [3]
Cougar	10	$1.40	$0.07	$1.47	5	Trace	Trace	0	5	$0.17	0	$0.17	5-A	$0.17	$0.04	$0.21
	11	1.05	.05	1.10					7	Trace	0	0	4-A	.17	.04	.21
									1	Trace	Trace	0				
J. W. Merritt	12	1.40	.36	1.76	1	Trace	Trace	0	2	.35	0	.35	6-A	.17	.04	.21
	13	.70	.09	.79					6	Trace	0	0				
Oro Escondido	6	2.10	.05	2.15	17	Trace	Trace	0	16	Trace	0	0				
W. C. Leever	14	1.05	.10	1.15	20	Trace	Trace	0	13	Trace	0	0				
	15	1.40	.06	1.46												
J. D. McKinnon	16	1.75	.09	1.84	22	Trace	Trace	0	14	Trace	0	0				
	17	2.45	.05	2.50												
	18	1.05	.03	1.08												
J. L. Grubb	7	1.75	.06	1.81	18	Trace	Trace	0	15	Trace	0	0				
					19	Trace	Trace	0								
Henry Applegate	3	1.75	.18	2.03	10a	Trace	Trace	0	24	Trace	Trace	0	1-A	.17	.04	.21
	4	1.75	.09	1.84	10	Trace	Trace	0								
Rainboe	1	1.75	.14	1.89	14	Trace	Trace	0	8	Trace	0	0	2-A	.17	.04	.21
	2	1.40	.54	1.94					9	Trace	0	0				
Delia McKinnon	5	2.80	.05	2.85	13	Trace	Trace	0	10	Trace	0	0				
Sulfide	26	2.10	.54	2.64	23	Trace	Trace	0	18	0	Trace		3-A	.17	.04	.21
	27	4.20	.65	4.85					22	Trace	0	0				
	28	3.50	.45	3.95												
Alabama	8	1.75	.05	1.80	15	Trace	Trace	0	17	Trace	0	0				
	9	2.10	.04	2.14												
Staples	25	1.40	.58	1.98	12a	Trace	Trace	0								
La Jolla	23	1.75	.06	1.81	11	Trace	Trace	0	11	Trace	Trace	0				
	24	2.10	.04	2.14												
Arroyo Verde	21	1.75	.09	1.84	12	Trace	Trace	0	12	.17	0	.17				
	22	2.10	.04	2.14												
Manganese	19	1.75	.02	1.77	24	Trace	$0.12	0.12	19	Trace	0	0	7-A	.17	.04	.21
	20	1.05	.05	1.15												

[1] A trace in gold rated 21 cents or less per ton; silver, 7 cents or less per ton.
[2] A trace in gold rated less than 17 cents per ton; silver, a fraction of 1 cent per ton.
[3] Less than amount shown.

Values based on $35 per ounce for gold and 90 cents for silver.

79167—56—2

(Samples submitted for assay were taken from points on the claims designated by representatives of Al Sarena Mines, Inc.)

(Testimony of Mr. George B. Holderer, committee staff mining engineer, was that Al Serena ore would have to show a value of $20 a ton in order to operate the property at a profit.)

(*k*) On April 13, 1950, the United States Forest Service filed formal protest against 15 of the 23 claims based on: (1) Minerals had not been found in sufficient quantities to constitute a valid discovery; and (2) That on 5 of the 15 claims the $500 statutory improvement work had not been made.

(*l*) On April 25, 1950, the Bureau of Land Management notified Al Sarena Mines, Inc. of the protest by the United States Forest Service.

(*m*) On May 22, 1950, Al Sarena Mines, Inc. filed its answer to the charges, requesting that the protest be dismissed and patents be issued.

(*n*) On September 13, 1950, a hearing was held before Pierce N. Rice, manager of the Bureau of Land Management office in Portland, Oreg., with the United States Forest Service present, representing the United States Government, and representatives of the Al Sarena Mines, Inc., represented by counsel, also present.

(1) The manager opened the proceedings. Counsel for Al Sarena Mines, Inc. demanded rulings on certain motions and demurrers he had filed preliminary to the proceedings. The manager listened to the arguments made by counsel, overruled the demurrers and dismissed the motions. (See hearings, pp. 6, 9.)

(2) At that time the Forest Service asked for permission to proceed with the hearing. The counsel for Al Sarena Mines, Inc. asserted that he had an agreement with the then solicitor of the Department of the Interior to the effect that the Federal Code and Regulations and the Rules of Practice prescribed by the Department would not govern in this particular case. (See hearings, pp. 15, 16.) The manager stated that he had not been advised officially of the alleged agreement and "in view of the fact that it was very unusual, (he) was (not) prepared to accept counsel's interpretation of the agreement". (See hearings, pp. 15–16.) The manager offered to telephone to Washington, D. C., to check on the alleged agreement, but the Al Sarena representatives refused to wait. (See hearings, p. 16.) (The former Solicitor has denied any such agreement.) (See letter, November 16, 1950, White to MacMahon, p. 642, hearings.)

(3) Counsel for the company then stated that he would not participate in the proceedings, that he would offer no evidence orally, documentary or otherwise at the hearing. He then advised the company representatives not to attend any further proceedings and they left the hearing room.

(*o*) Mr. Rice testified he was greatly disturbed by the actions and attitude of the company's counsel and representatives. He therefore sent the complete file to the Director of the Bureau of Land Management on October 2, 1950, suggesting that the Director render a decision in the case. On November 24, 1950, the Director returned the file to Mr. Rice with instructions to render a decision on the basis of the record, in accordance with the regularly established procedure of the Bureau.

(*p*) On December 14, 1950, Manager Rice rendered the decision sustaining the protest of the Forest Service.

(*q*) On April 27, 1951, the Assistant Director of the Bureau of Land Management in Washington, D. C. affirmed that decision not to grant patents on 15 of the contested claims, but this ruling did not invalidate the mining claims, nor disturb possession of the claims by the applicants.

(*r*) On May 21, 1951, Al Sarena Mines, Inc. appealed to the Secretary of the Interior.

(*s*) On July 28, 1951, the Al Sarena Mines, Inc. brought an action in the United States District Court for the Southern District of Alabama to compel the Secretary of the Interior to issue a patent for the 15 claims. (The company maintained this action until June 17, 1954, which was after the patents were issued on February 15, 1954.)

(*t*) On August 3, 1951, Solicitor Mastin G. White offered to remand the case to the field for another hearing (cite). The files disclosed no answer to the offer.

(*u*) This was the posture of the case when Clarence A. Davis was sworn in as Solicitor of the Department of the Interior on February 17, 1953.

VII. PROCEDURE AGREED UPON TO PRODUCE ADDITIONAL EVIDENCE UPON WHICH TO ISSUE PATENT

A. The Office of the Solicitor of the Department of the Interior

Mr. Clarence A. Davis was sworn in as Solicitor of the Department of the Interior on February 17, 1953. The Solicitor is the highest ranking legal officer of the Department. He is the principal legal adviser of the Secretary and is responsible for and has supervision over all legal work of the Department. The authority to decide appeals relating to the public lands is vested in the Solicitor, and his decisions are final.

B. Congressional intervention

The Al Sarena applicants, from time to time, sought to enlist congressional assistance. The record contains communications from Congressman Frank Boykin of Alabama to the Department of the Interior. (See hearings, pp. 555, 556, 557, 558, 559.) The office of Senator Eugene Millikin, of Colorado, inquired about the case and Senator Estes Kefauver, of Tennessee, had some correspondence with the McDonald family about the matter. (See hearings, pp. 560, 575, 576.)

However, former Secretary Chapman and his Solicitor, Mastin G. White, did not grant the patents. When these officials left office by reason of the change of administration, Al Sarena Mines, Inc., was still maintaining its action in the Federal District Court in Alabama, seeking to compel issuance of the patents—which Mr. Chapman and Mr. White had steadfastly refused to do.

After Mr. Douglas McKay took office as Secretary of the Interior, and Mr. Clarence A. Davis as Solicitor, Representative Harris Ellsworth of Oregon took an interest in the case. There is, of course, nothing improper or unusual in a Representative or Senator seeking to advance legitimate interests of his constituents. The committee merely wishes to point out that it was only after active intervention by Representative Ellsworth and his administrative assistant, Mr. H. S. Garber, that Solicitor Davis ordered the Al Sarena case to be processed in a highly unusual and unprecedented manner.

In a letter of September 3, 1953, to Mr. D. Ford McCormick, mining engineer for Al Sarena, with a copy to the Director of the Bureau of Mines, Mr. Davis says:

> In an effort to determine the matter fairly, I have agreed with Congressman Ellsworth, who has interceded in behalf of the company to ask you and Mr. Volin of the Bureau of Mines or his substitute to procure personally sufficient samples of the deposits on each claim to afford adequate assays on which the Secretary can base his decision on the validity of the discovery.

This letter constituted a part of the official instructions from the Solicitor of the Department of the Interior to subordinate employees who were assigned the task of conducting a so-called independent investigation. It is also notable that in advising the Director of the Bureau of Mines of the modus operandi that would be undertaken, Mr. Davis sent him a copy of his letter to the applicant, which contains the following language:

> Pursuant to my conversation with Mr. Garber, administrative assistant to Congressman Ellsworth, the following modus operandi is acceptable to me in acquiring further evidence of a valid discovery on your contested claims. * * *

C. Procedure adopted to produce additional evidence

In his testimony on January 26, 1956, Mr. Davis stated that there were three possible alternatives to dispose of the Al Sarena case. He asserted that the first and most obvious was to send the case back to the Bureau of Land Management in Portland, Oreg., for another hearing. However, he decided not to do this, because (1) there had been a 5-year delay; (2) the Al Sarena people had accused officials of the Bureau of Land Management and the Forest Service of collusion; (3) the first hearing "had broken up in confusion"; "much of the evidence of the claimants * * * did not appear in the record to send to Washington"; "the hearing officer had been reluctant to render a decision"; and "the record of the entire affair was not such as to inspire any confidence in me for a speedy determination of the matter." He said that to remand the case for a further field hearing seemed to him a vain act. He asserted that he felt the "same suspicions and hostile attitudes would be present" and that this would delay final decision for another period of years. (See hearings, p. 539.)

He also discarded the idea of having the case decided through the courts, claiming that if the Al Sarena Co. appealed from a finding of fact by the Solicitor that there was a lack of sufficient mineralization, that finding would be conclusive on the court and relief would be denied. With this in mind, Mr. Davis stated that "the company would get no complete review in the courts." (See hearings, p. 539.)

He then decided to have the Bureau of Mines and the applicant company jointly take new samples from the claims and submit them to an assayer "mutually acceptable" to both parties. Mr. Davis' testimony on January 31, 1956, in commenting on the new procedure is worthy of note:

Mr. COBURN. Then the point is, is it not, that despite the evidence on file of various assay reports, numerous assay reports——

Mr. DAVIS. Yes.

Mr. COBURN. You decided to start all over again?

Mr. DAVIS. That is right. That is a very fair statement. I am glad you made it because that is exactly my attitude on the thing. (See hearings, p. 661.)

Here Mr. Davis admits that the record in the case which was before him on appeal was ignored insofar as the vital and fundamental question of mineralization was concerned. The whole procedure was conceived and carried out without any notice of any kind to the Forest Service or the regional solicitor of the Department of Agriculture, charged with the duty and responsibility of representing the interests of the United States as the contesting party in the proceedings. (See hearings, p. 579.)

On September 3, 1953, Mr. Davis wrote certain letters and a memorandum, designed to govern the procedure in obtaining evidence of mineralization. These documents, constituting the official instructions, are quoted in full:

AL SARENA MINES, INC.,
Trail, Oreg.

GENTLEMEN: Pursuant to my conversation with Mr. Garber, the following modus operandi is acceptable to me in acquiring further evidence of a valid discovery on your contested claims:

1. I should like M. E. Volin, a mineral expert from the Bureau of Mines in Spokane, to accompany Mr. D. Ford McCormick when samples are obtained for assaying purposes. In the event Mr. Volin is unable to take the assignment, he will designate one or more substitutes from the Bureau of Mines who will be available.

2. The two men may arrange the time and place of meeting to suit their convenience. They should meet as promptly as possible, however.

3. Accurate record should be kept of the location from whence each sample is taken.

4. Samples should be taken from each of the following claims: Henry Applegate, J. W. Merritt, Rainboe, Sulphide, Delia McKinnon, Cougar, Oro Escondido, W. C. Leever, J. L. Grubb, J. D. McKinnon, manganese claim, Staples, Arroyo Verde, Alabama, and La Jolla.

You may take as many samples of whatever weight from each claim as you desire.

5. The samples should be retained in the possession of Mr. McCormick and the Government representative until shipped or delivered to a qualified assayer who is acceptable to both men.

6. The assay report should be labeled so that they are easily identified to the claims from which they are procured and the reports sent to me promptly.

7. Mr. McCormick's salary and expense and the assaying costs will have to be borne by you. The Government will bear only the expense of its representative.

Very truly yours,

CLARENCE A. DAVIS, *Solicitor.*

Copy to: Director, Bureau of Mines,
Congressman Ellsworth,
Mr. D. Ford McCormick, Eagle Point, Oreg.
Memorandum to: Director
Bureau of Mines
From: The Solicitor
Subject: Al Sarena Mines, Inc.

Enclosed please find a copy of a memorandum which I have sen to the above subject, and a copy of my letter to Mr. McCormick They are self-explanatory.

In view of the fact that the company did not introduce evidence o discovery at the hearing for patent, it is my desire to give them thi opportunity to make their showing. I am aware of the peculiar natur of the area that they say is mineralized and want to approve paten for them if the assays afford us the well established legal basis therefor All people concerned should, therefore, cooperate in obtaining sam ples and assays upon which no doubts will be harbored by anybody The decision on the application for patent should be considerably easier after we have the new assays.

Mr. Armstrong of my office has talked to you and Mr. Miller con cerning this matter and has been told that Mr. Volin at Spokan should be available to represent the Government when the assay samples are taken. I would appreciate your cooperation in sending him the suggested procedure and instruction to contact Mr. McCor mick at Eagle Point, Oreg. My principal concern is to have a quali fied Government representative present to see that the assay sample are fairly taken from each claim and then delivered to a competen assayer.

CLARENCE A. DAVIS, *Solicitor.*

Mr. D. FORD MCCORMICK,
Route 1, Box 125, Eagle Point, Oreg.

DEAR MR. MCCORMICK: As you know, the Al Sarena paten application has been appealed to the Secretary of the Interior. The application, to this point, has been rejected on the ground that the company has not produced satisfactory evidence of a valid discovery on certain of the claims.

In an effort to determine the matter fairly, I have agreed with Congressman Ellsworth, who has interceded on behalf of the company to ask you and Mr. Volin of the Bureau of Mines, or his substitute to procure personally, sufficient samples of the deposits on each claim to afford adequate assays on which the Secretary can base his deci sions on the validity of the discoveries.

I am enclosing herewith a copy of the procedure which I have suggested for you and Mr. Volin to follow. I have also asked Mr. Volin to contact you promptly so that you can arrange the time and place of meeting, convenient to both of you.

Sincerely yours,

CLARENCE A. DAVIS, *Solicitor.*

These instructions stated:

> I am aware of the peculiar nature of the area that they say is mineralized and *want to approve patent for them if the assays afford us the well established legal basis therefor. All people concerned should, therefore, cooperate in obtaining samples and assays upon which no doubts will be harbored by anybody.* The decision on the application for patent should be considerably easier after we have the new assays. [Italic supplied.]

This statement could well have been interpreted by employees of the Bureau of Mines as notice that the Solicitor was desirous of obtaining such evidence of mineralization as would permit him to issue patent.

D. The mineral examination by the Bureau of Mines

Mr. N. E. Volin, of the Spokane office of the Bureau of Mines, designated Mr. Richard N. Appling, one of his subordinates stationed at Grants Pass, Oreg., to carry out the instructions. Mr. Appling met with Mr. D. Ford McCormick, the mining engineer retained by Al Sarena Mines, Inc., on November 12, 1953, and together with the McDonalds they took samples from points indicated by the company representatives. A portion of each sample was sent to the A. W. Williams Inspection Company of Mobile, Ala., for assay. Another portion of each sample was placed in the office of the Oregon State geologist at Grants Pass., Oreg., for safekeeping. Mr. Appling had no instructions to keep such duplicate samples, but stated that he did so to avoid retaking samples if those sent to Mobile were lost in transit.

Under the instructions from Solicitor Davis, Al Sarena Mines, Inc., was to pay for the cost of the assays. The assay house selected had to be acceptable to both the applicant and the United States Bureau of Mines. Both Mr. Appling and Mr. Volin of the Bureau of Mines stated that they had suggested to Al Sarena Mines, Inc., the services of three western assay houses located within a reasonable distance of the location of the claims. They were Smith-Emory and Abbott A. Hanks of San Francisco, Calif., and Union Assay Co. of Salt Lake City, Utah. (See hearings, pp. 236, 313.) Al Sarena Mines, Inc., from the very beginning insisted on the A. W. Williams Inspection Co. of Mobile, Ala. (See hearings, p. 110.) The Bureau of Mines acceded to this demand of the applicant. The fact that the company was paying for the assay, and had established credit with the A. W. Williams Inspection Co., coupled with the further fact that the applicant had offices in Mobile, Ala., and had done business in the past with the A. W. Williams Inspection Co. obviously influenced the Bureau of Mines representative in acceding to this demand.

Immediately following the receipt of the assay report from the A. W. Williams Inspection Co. at Mobile, Ala., Mr. Appling, representing the Government, and Mr. D. Ford McCormick, representing the company, decided to destroy the retained samples by throwing them in the Rogue River. The A. W. Williams Inspection Co. did not keep duplicate samples as had the western assay companies to which Mr. Hattan had sent his samples.

Mr. McDaniel of the A. W. Williams Inspection Co. testified that assaying, particularly of precious metals, was a very small part of the company's work. In fact, its first gold and silver assays were made in connection with the Al Sarena claims. At that time, Mr. McDaniel worked out assay methods with the assistance of one of the McDonald brothers and of a book on the subject. (See hearings, pp. 173, 174.)

VIII. THE OPINION AND DECISION TO GRANT PATENTS

Despite the fact that this was supposed to be an independent Government investigation, the assay report constituting the basis for the decision to grant patent was never transmitted directly by the A. W. Williams Inspection Co. to any Government agency or official.

On December 24, 1953, the assay report on the mineral values of the 15 contested claims was delivered by Mr. H. S. Garber of the office of Congressman Harris Ellsworth to Solicitor Davis. (See hearings, p. 606.) Why this assay report was sent to Congressman Ellsworth instead of to Mr. Davis, in accordance with the official instructions, has never been explained. A copy of the assay report was also supplied Mr. Appling, the Bureau of Mines engineer in Trail Oreg., by Mr. D. Ford McCormick, the Al Sarena company's mining engineer.

On December 29, 1953, Solicitor Davis and Associate Solicitor J. Reuel Armstrong telephoned Mr. R. N. Appling in Grants Pass Oreg. (See hearings, p. 545.) According to the testimony of both Mr. Appling and Mr. Davis, the purpose of this call was to get Mr. Appling's opinion of the value of the minerals on the disputed claims. Mr. Appling testified:

> I would like to say that I was reluctant to answer for the reason that I did not have all the facts. I did not have enough time to make a thorough investigation of the property. I answered it with reluctance. In effect I said to him that I thought the assays were sufficiently good in my own personal opinion to warrant a program of exploration of the property. (See hearings, p. 352.)

He said he was asked by Mr. Davis to submit his written report directly to the latter, instead of through regular channels. Mr. Appling testified:

> We have rather strict regulations in a region such as that regarding correspondence and channels through which reports should be sent. I was not aware that Mr. Davis would have the authority to supersede those instructions that we had had. That was the reason that I did not want to send the report directly to him. I wanted it to go through channels. (See hearings, p. 351.)

Apparently Mr. Davis did not insist on a direct report because he issued his decision and opinion in the case at least 2 days before the written report made by Mr. Appling could have reached the Department here in Washington, D. C. (See hearings, p. 657.)

On January 6, 1954, Mr. Davis granted the patent application submitted by Al Sarena Mines, Inc. His opinion reciting the reasons for the favorable decision is a curious one. In the first 12 pages of that decision, Mr. Davis sets aside all the contentions of the Al Sarena Co. For example: Al Sarena contended that it was entitled

to a patent prior to the filing of the protest by the Forest Service and that, therefore, the Department of the Interior had no authority to entertain the protest. Mr. Davis held "the contention is untenable". (See hearings, p. 11.)

Another contention of Al Sarena was that there were certain irregularities in the protest and in the manner in which the hearing before the Bureau of Land Management in Portland, Oreg. was conducted. Mr. Davis brushes these contentions aside and says:

> * * * for the most part they appear to be immaterial and without substance. (See hearings, p. 13.)

Thus Mr. Davis, in effect, sustained all the actions taken by the Bureau of Land Management in the original proceedings, and the subsequent decisions of both the Manager of the Land Office at Portland, Oreg., and the Assistant Director of the Bureau of Land Management, in Washington, D. C.

Mr. Davis testified that the sole legal basis upon which he based his decision was that a sufficient mineralization of the claims was established to justify a prudent man in the further development of the property. (See hearings, p. 600.) Mr. Davis also testified on January 31, 1956, that after the record had been presented to him, he had decided to start all over again to obtain evidence of mineralization. This procedure resulted in a single unchecked report of assays by the A. W. Williams Inspection Co. of Mobile, Ala., which was the only new documentary evidence before Mr. Davis when he rendered his decision on January 6, 1954.

Mr. Davis' decision to overrule the findings of fact and the conclusions reached by the responsible officials of the Bureau of Land Management and to approve the patent application thus had no evidentiary support save and except the aforesaid A. W. Williams Inspection Co. assay report.

Attention is called to the fact that as early as 3 years prior to the time Mr. Davis's subordinates acceded to the demand of the Al Sarena Co. that the A. W. Williams Inspection Co. do the supplemental Al Sarena assays, the General Services Administration had found this company's services unsatisfactory and erratic as is shown by the following official report from the General Services Administration:

> Many of the assay reports on imported bauxite by the Williams laboratory were questioned by contractors supplying the bauxite, and as a result, such reports had to be umpired for settlement purposes. *In each instance the umpire proved the Williams laboratory results were incorrect.* (See hearings, pp. 216, 217.) [Italics supplied.]

When asked whether the written Appling report that came to him from the field or the assay report from the A. W. Williams Inspection Co. had been evaluated by any of the mineral experts of the Bureau of Mines, Mr. Davis replied in the negative. (See hearings, p. 658.) He attempted, however, to substantiate his decision on one other basis—the aforesaid telephone call from him to a relatively inexperienced mining engineer of the Bureau of Mines, Mr. R. N. Appling, who testified he reluctantly told Davis over the telephone that the claims should be further explored. (See hearings, p. 352.)

It should be reemphasized that Mr. Davis did not wait to issue his decision until the written report on the claims had been received from

Mr. Appling. The record clearly shows that Mr. Davis was so anxious to approve the patent application that he did not even take the time to obtain expert evaluation of any written report submitted to him. Thus, we have a decision by the top-ranking legal officer of the Department of the Interior based on: (1) an unevaluated assay report from an assayer selected by the applicant for the patent, (2) a telephone conversation, (3) and some incidental statements in a 1949 report never admitted in evidence. (See Davis' decision, hearings, p. 10.)

COMMENT

EVIDENCE IGNORED

Mr. Davis conveniently overlooked a preponderence of uncontroverted evidence adverse to the applicant on file in the record of this case, evidence that had been made the subject matter of a duly and legally constituted hearing; evidence submitted by both the United States Forest Service and the Bureau of Land Management. He ignored the numerous assay reports already on file in that record which clearly showed a lack of sufficient mineralization to justify issuance of patent on the 15 contested claims.

In his opinion Mr. Davis stated that he did not wish to penalize the applicant for the patent on account of "the conduct of its counsel." (See hearings, p. 14.) In effect this means that Mr. Davis decided to reward the applicant for its refusal to submit any evidence in the regular course of the hearing procedure. The opinion of Mr. Davis further sets out that while it appears to be of little or no legal significance, the applicant had expended some $200,000 in the development of the claim. This gratuitous and meaningless observation as to fancied expenditures is not supported by any testimony or facts of record but, whatever its source, it seemed to have some peculiar significance to Mr. Davis.

Illustrative of Solicitor Davis' apparent dedicated purpose to grant the patents despite his own stated belief that administrative procedures based upon the law should be followed is the following quotation from his decision:

> The purpose of the hearing under the Department's rules of practice is to give both parties full opportunity to present their evidence, and if a claimant chooses to withdraw from the hearing without submitting his evidence or subjecting the Government's witnesses to cross-examination, he must bear the consequences. (See hearings, p. 13.)

Despite this dictum in his decision Mr. Davis in his testimony before the Joint Committee took the position that he had no choice but to grant this patent under law. This presumption is clearly rebutted not only by the complete departmental record which was available to Mr. Davis, had he not chosen to ignore it, but also by the Reconstruction Finance Corporation records containing the loan applications filed by Al Sarena Mines, Inc. and its lessee, which show beyond any doubt that there was not sufficient mineralization of the claims even to warrant approval of a loan for only $20,000. This entire Reconstruction Finance Corporation record was available to Mr. Davis in the files of his own Department of the Interior.

It is certainly hoped that the decision in the Al Sarena case will not constitute a precedent. Otherwise any mining claimant who wants to obtain a patent could easily do so by—

1. Refusing to comply with the rules and regulations of the Department of the Interior;
2. Refusing to submit any evidence in the regular course of the proceedings;
3. Bring about political intervention so that a procedure patterned for his exclusive use and benefit will be ordered to procure questionable evidence sustaining his application;
4. Exclude one of the parties—the contestant—from participation in the production or examination of that new evidence;
5. Allege that he has invested large sums of money in the development of the claim, and persuade the official deciding the case to ignore the facts of record.

THE EXTRAORDINARY PROCEDURE ORDERED IN THIS CASE

Solicitor Davis, in considering the Al Sarena claims, ordered what is admitted by everyone to be an extraordinary procedure in this one case. The committee believes that this procedure was grossly unfair to the public interest and to the Government; that it was unprecedented; that it sets a dangerous precedent for the future and that it was illegal because it violated two specific provisions of the Administrative Procedure Act, which the committee believes apply to these proceedings.

EVENTS PRECEDING THE DAVIS "MODUS OPERANDI"

Briefly, what occurred was this. The contest brought by the Forest Service on behalf of the Government was set for hearing in Portland, Oreg., on September 13, 1950. Representatives of the Al Sarena Mines, Inc., appeared at the hearing with their attorneys as did representatives of the Forest Service. The Al Sarena Mines, Inc., demanded that the hearing officer abandon and disregard the rules of practice of the Department of the Interior (43 C. F. R. pt. 221) which govern the conduct of hearings held by the Department and instead adopt and follow the rules governing cases in the Federal district court. The Al Sarena people asserted that the Interior Department's then Solicitor, Mastin G. White, had agreed that this particular proceeding would be governed by the Federal court rules. This amazing and unsubstantiated allegation was later denied completely by Mr. White. (See Davis decision, hearings, p. 10.)

The hearing officer refused to accept this unprecedented demand, and offered to adjourn the hearing and call Washington, D. C., to check on the assertion. The Al Sarena representatives would not wait for such a call and walked out of the hearing, refusing to put any evidence into the record. The hearing official proceeded with the hearing and took the Forest Service's evidence. This evidence was subject to cross-examination and rebuttal by the Al Sarena representatives, but this was not done because they refused to participate further in the hearing. The Forest Service evidence showed that the mineral values were negligible on the 15 contested claims.

The hearing officer was concerned about the "personal and violent charges" of the Al Sarena representatives, (cite), so he sent the file

to the Director of the Bureau of Land Management in Washington, suggesting that the latter issue the initial decision. The Director, however, followed the established procedure and the principles of the Administrative Procedure Act by returning the file to the hearing officer to issue a decision based on the record of the case. The hearing officer then denied patent on the 15 contested claims.

Al Sarena Mines, Inc., appealed to the Director, who affirmed the hearing officer. The company appealed to Secretary of the Interior Chapman on May 21, 1951. The case was referred to Solicitor White who had final authority to act on appeals to the Secretary. By this time, the record seemed to be in bad shape from the company's standpoint because it had failed to present whatever evidence it might have had and had refused to cross-examine the Forest Service witnesses, despite its opportunity so to do.

Solicitor White offered on August 3, 1951, to remand the case to the field for a further hearing. This would have given the Al Sarena Co. every opportunity to cross-examine the Forest Service witnesses. It would also have permitted the company to present its evidence in the open and to allow its witnesses to be cross-examined by the attorney for the Forest Service.

The Al Sarena representatives refused this opportunity. They demanded that Solicitor White order the patent to be issued. They also sought to tie his hands by a suit in the Federal court in Alabama to compel Secretary Chapman to issue a patent. This device effectively prevented the Secretary from issuing a final adverse decision.

The committee notes there has been a marked reluctance on the part of the McDonalds, who control the company, to present whatever their case may be in open proceedings. They walked out of the 1950 hearing; they turned down a new chance in 1951 to present their case; and in 1955 and 1956 they declined opportunities to testify at these joint committee hearings (cite). On the other hand, they exerted terrific pressure behind the scenes to secure the issuance of a patent without following the regular procedures that apply to all other applicants for patents.

THE PROCEDURE ORDERED BY SOLICITOR DAVIS

After Mr. Davis became Solicitor under the new Secretary of the Interior, Mr. Douglas McKay, he received literally a barrage of letters and material from an Oregon Congressman and from the McDonalds. Vicious accusations were made by representatives of Al Sarena, Inc., against the Forest Service and Bureau of Land Management employees. Apparently this pressure caused Mr. Davis to conclude that Mineral Examiner Hattan was biased and prejudiced against the applicant for patent, merely because Mr. Hattan in his official report had mentioned that there was timber growing on the claims, which certainly was a factor in considering the good faith of the applicants. So far as the committee could learn, Mr. Hattan's fairness, objectivity, and impartiality had never before or has since been questioned.

Mr. Davis, however, did not call Mr. Hattan in for consultation nor did he make any other effort to verify or check his conclusion that Hattan was prejudiced. Instead, he agreed with the Oregon Congressman to have a representative of the Bureau of Mines go to the claims with a representative of the company and take ore samples which

could be sent only to an assayer on which the company would agree. This turned out to be a relatively inexperienced Mobile, Ala., concern, but one with which the Al Sarena Co. had done considerable business. This procedure was carried out secretly so far as the other party to the contest, the United States Forest Service, was concerned. The Forest Service was representing the interests of the United States.

Copy of the assay report showing a modest amount of mineral content was delivered to Solicitor Davis by the office of the Oregon Congressman. Mr. Davis then deliberately disregarded all previous evidence, since he testified he had determined to start out anew, and issued a decision granting the patent. The decision was written and signed before Mr. Davis even received the official Bureau of Mines report (cite). He had, however, telephoned long distance to the employee who had cooperated in taking the samples to see if he had the same assay report and to ask him what he thought of the results. In response, the employee said he thought the claims would merit further exploration (cite).

The Forest Service, which represented the Government as the other party in the hearings, was not notified of the procedure; was not permitted to see the "evidence" gathered by the Bureau of Mines in cooperation with the company; was given no opportunity to cross-examine the Al Sarena or Bureau of Mines representatives; was not allowed to question the sampling, assays or the methods used; and, in fact, had no knowledge at all of the proceedings until after Mr. Davis' decision granting patents had been issued and after all remaining vestiges of the ore samples had been destroyed.

Mr. Davis violated departmental precedent. Every Forest Service, Bureau of Land Management, and Bureau of Mines official who testified stated that they had never before heard of such a procedure. Mr. Davis attempted to go back 44 years to cite *U. S.* v. *Cameron* (cite) as a precedent, but, in fact, as will be shown under a separate heading, that case completely refutes Mr. Davis' position. Of course, the mere fact that an action has not been taken before does not necessarily make it bad. In the opinion of the committee, however, Mr. Davis' action was bad and sets a dangerous precedent.

The action was obviously contrary to all normal concepts of American justice. If any judge dared to disregard all evidence submitted by one party to a lawsuit and to send out an agent to work secretly with the other side to gather and submit evidence for that other party, then received that evidence without any notice to the first party and decided the case thereon, that judge would certainly face impeachment proceedings. Yet that is exactly what Mr. Davis did in the Al Sarena case.

Mr. Davis testified:

> Mr. COBURN. Then the point is, is it not, that despite the evidence on file of various assay reports, numerous assay reports * * *
>
> Mr. DAVIS. Yes.
>
> Mr. COBURN. * * * you decided to start all over again?
>
> Mr. DAVIS. That is right. That is a very fair statement. I am glad you made it because that is exactly my attitude on the thing. (See hearings, pp. 660, 661.)

His directive did not lend itself to qualifying Bureau of Mines employees to act with absolute impartiality in a mining patent matter, particularly when they were told that Mr. Davis, Solicitor of the Department, wanted to approve the patents and were instructed to cooperate with the mining claimant in obtaining the evidence necessary to furnish a legal basis for doing so. The Bureau of Mines representatives testified that this job was one which, so far as anyone could learn, the Bureau had never been called on to perform before. (See hearings, p. 263.)

APPLICABILITY OF THE ADMINISTRATIVE PROCEDURE ACT

Sections 5, 7, and 8 of the Administrative Procedure Act (5 U. S. C. sec. 1004, 1006, and 1007) govern quasi-judicial administrative proceedings before Federal agencies. They are designed to establish a rule of law, not of man in such proceedings, by assuring fair and open procedures under sound and established rules. In several respects they were particularly designed to prevent the reception of evidence and advice behind the scenes without notice to the parties in the proceedings.

Decisions of the Supreme Court make it clear that the Administrative Procedure Act is applicable to mining claim contests.

Congress has passed a number of laws concerning hearings before subordinate officers of the Bureau of Land Management (43 U. S. C. 100–106). There is no explicit statutory requirement that proceedings for the cancellation of an entry on public lands be determined on the record after opportunity for an agency hearing. However, in *Wong Yang Sung* v. *McGrath* ((1950) (339 U. S. 33, 50)) the Supreme Court held that—

> the limitation to hearings "required by statute" in section 5 of the Administrative Procedure Act exempts from that section's application only those hearings which administrative agencies may hold by regulation, rule, custom or special dispensation; not those held by compulsion.

The Court has also indicated that hearings for the cancellation of an entry under the public land laws are held under compulsion of law. In *Cameron* v. *United States* 252 U. S. 450, 460), it had this to say with respect to mining claims:

> Of course, the land department has no power to strike down any claim arbitrarily, but so long as the legal title remains in the Government it does have power, after proper notice and upon adequate hearing, to determine whether the claim is valid and, if it be found invalid, to declare it null and void. This is well illustrated in *Orchard* v. *Alexander* (157 U. S. 372, 383), where in giving effect to a decision of the Secretary of the Interior canceling a preemption claim theretofore passed to cash entry, but still unpatented, this court said: "The party who makes proofs, which are accepted by the local land officers, and pays his money for the land, has acquired an interest of which he cannot be arbitrarily dispossessed. His interest is subject to state taxation. *Carroll* v. *Safford* (3 How. 441); *Witherspoon* v. *Duncan* (4 Wall. 210). The Government holds the legal title in trust for him, and he

> may not be dispossessed of his equitable rights without due process of law. Due process in such case implies notice and a hearing. But this does not require that the hearing must be in the courts, or forbid an inquiry and determination in the Land Department." And to the same effect is *Michigan Land & Lumber Co.* v. *Rust* (168 U. S. 589, 593), where in giving effect to a decision of the Secretary canceling a swamp land selection by the State of Michigan theretofore approved, but as yet unpatented, it was said: "It is, of course, not pretended that when an equitable title has passed the land department has power to arbitrarily destroy that equitable title. It has jurisdiction, however, after proper notice to the party claiming such equitable title, and upon a hearing, to determine the question whether or not such title has passed. *Cornelius* v. *Kessel* (128 U. S. 456); *Orchard* v. *Alexander* (157 U. S. 372, 383); *Parsons* v. *Venzke* (164 U. S. 89). In other words, the power of the department to inquire into the extent and validity of the rights claimed against the Government does not cease until the legal title has passed."

Accordingly the Al Sarena proceedings were required by law to be determined after an opportunity for an agency hearing within the meaning of section 5 of the Administrative Procedure Act.

The United States was a party to the Al Sarena proceedings. The Forest Service and its parent agency the Department of Agriculture had the sole duty of and responsibility for representing the United States in the proceedings. This is made clear by the regulations of the Department of the Interior which read as follows (vol. 43, Code of Federal Regulations):

> SEC. 205.6 *Officers of Department of Agriculture who may file protests; notice to adverse party; hearing.* A protest may be initiated against any claim, mineral, or nonmineral, embracing lands within national forests at any time prior to patent, by the solicitor or the regional attorney, Office of the Solicitor of the Department of Agriculture filing in the land office, in triplicate, a complaint signed by the Chief, Forest Service, or the regional forester, not under oath or corroborated, setting forth clearly and briefly the grounds of the protest. Upon receipt of such complaint the manager shall issue the notice required by section 221.5 of this chapter, accompanied by a copy of the complaint and arrange for hearing, if applied for, as provided in section 205.4.
>
> SEC. 205.7 *Officer to represent Government at hearing.* In all hearings affecting lands or claims within a national forest the regional attorney, Office of the Solicitor, Department of Agriculture, will be entered of record as appearing in behalf of the Government, and will conduct the Government's side of the case.
>
> SEC. 205.9 *Notice to officers of Department of Agriculture of answers, appeals, motions, orders, and decisions.* In all Government cases before managers involving lands or claims within a national forest, the regional attorney, Office of the Solicitor of the Department of Agriculture shall be served

> with copies of all answers, appeals, motions, orders, and decisions required to be noted under the rules in cases of private contests. The proper officers of the Department of Agriculture shall have a right of appeal from any decision by the Bureau of Land Management and a right to take other like action in the same manner as a private contestant, and shall receive like notices of proceedings and decisions: *Provided, however*, That the Department of Agriculture shall not be required to take formal appeals from decisions of managers.

Mr. Davis' actions in the Al Sarena case violated sections 7 (c) and 7 (d) of the Administrative Procedure Act as well as these Interior Department regulations.

Section 7 (c) provides that—

> Every party shall have the right to present his case or defense by oral or documentary evidence, to submit rebuttal evidence, and to conduct such cross-examination as may be required for a full and true disclosure of the facts.

Section 7 (d) declares that—

> The transcript of testimony and exhibits, together with all papers and requests filed in the proceedings, shall constitute the exclusive record for decision, * * *

These clauses support the view that any party, whether an agency or a private person, is entitled to notice of the reception of evidence at any stage of the proceedings. Another provision which strengthens the same position is the stipulation in section 12 that—

> Except as otherwise required by law, all requirements or privileges relating to evidence or procedure shall apply equally to agencies and persons.

Obviously when Mr. Davis secretly procured and accepted without notice to the Forest Service the Mobile company's report of assays, the United States, represented by the Forest Service and its counsel, had no opportunity to submit rebuttal evidence or to conduct any cross-examination. It is equally obvious that Mr. Davis went outside the record to obtain this evidence when he arranged for the special procedure.

Whether these violations of the act would result in a cancellation of the patents if actions were brought by the Government, must be decided by the courts.

THE CASE OF CAMERON VERSUS UNITED STATES—AN ATTEMPT TO MISLEAD THE COMMITTEE

In his testimony before the committee, Mr. Davis stated that it was common practice in the Interior Department to refer matters before one agency to another for an analysis. He then reached back 45 years to cite an alleged precedent for his action. He said:

> I am informed of one instance in which this very question of the amount of mineralization on mining claims was referred to the Geological Survey, in the leading case of *U. S.* v. *Cameron* involving mining claims on the Bright Angel Trail in the Grand Canyon. In that case the Secretary referred

> the matter to the Geological Survey, and, I am informed, determined to follow the report of that agency, and was affirmed by the Supreme Court of the United States (cite).

In this statement Mr. Davis clearly attempts to use the action of the Secretary of the Interior in the Cameron case as a precedent for his own action and implies that action such as his has been sanctioned by the Supreme Court.

The fact is that the Cameron case stands for just the opposite of Mr. Davis' actions in the Al Sarena case. Mr. Davis' statement was a clever distortion.

We merely need to let the Cameron case speak for itself. In its decision of November 29, 1911, in *Grand Canyon Railway Co.* v. *Ralph H. Cameron,* D–70 (the Cameron case), the Department stated:

> June 10, 1909, the Department entertained a motion for review of its unreported decision of February 11, 1909, in the above entitled cause. After the service of said motion, the Department, January 9, 1911, directed that an impartial and thorough field investigation of the four lode mining claims involved be made by a competent and experienced geologist of the Geological Survey, of which action both parties were advised. The report of the geologist has been received, and both parties have been afforded an opportunity to examine it. Counsel for the Grand Canyon Railway Co., the protestant, have filed a statement that no further argument on their part is necessary; while counsel for Cameron, the protestee, have filed a supplemental argument, in view of the report.
>
> * * * * * * *
>
> Taking up the report of the geologist, it is found that it clearly corroborates the Department's above finding as to the Golden Eagle, Cape Horn, and Wizard lodes. As to the Magician claim, the report of the geologist clearly tends to show that there has been no discovery of a vein or lode, and, if accepted, would negative the testimony above outlined. While both parties have had access to this report, yet it is not under oath and there has been no opportunity for cross-examination. It should not therefore be taken as the basis of a final adjudication of the claimant's rights under his alleged location. The matter is therefore remanded with instructions that notice on such report, similar to notices issued on other field officers' reports, to the effect that there has been no discovery of a vein or lode on the Magician location, be issued for service upon the claimant. Unless claimant file sworn denial and application for hearing within 30 days from service of said notice, the location will be declared null and void. If he should file such denial and application for hearing, the Chief of Field Divisions should be notified thereof, and the same proceedings had as in those instituted upon reports of field officers.

Thus, in the Cameron case (1) both parties were fully apprised of the new evidence; (2) the Department recognized that because such evidence was not taken under oath or subject to cross-examination, it should not be used as the basis for a final decision and (3) the

Department remanded the case in order to give the parties an opportunity to cross-examine the witnesses and to rebut the evidence. None of these was done in the Al Sarena proceedings.

THE ALLEGED DELAY BY THE PREVIOUS ADMINISTRATION

There have been attempts to justify Mr. Davis' hasty actions in the Al Sarena matter because former Secretary Oscar L. Chapman and former Solicitor Mastin G. White took no action on the case between the time it was appealed to the Secretary, June 1, 1951, and the time they left office in January 1953.

The reason for their not taking action is obvious. In a letter of October 9, 1952, Secretary Chapman stated:

> After the receipt of the appeal by the Solicitor, and while it was under consideration, the corporation instituted in the United States District Court for the Southern District of Alabama a suit against the United States and the Secretary of the Interior. As the suit involves the same subject matter as the appeal in the administrative proceedings, further consideration of the appeal has been postponed until after the final disposition of the litigation. The suit is still pending (cite).

Of course if these officials had decided to grant patents they could have done so and rendered the court case moot, just as Mr. Davis did later. However, it was perfectly proper for them to delay final action on the patent applications until the court acted.

Mr. Davis and his supporters attempt to blame Secretary Chapman and Mr. White for delays in the court proceeding.

Even without knowing the condition of the Alabama court's docket, any lawyer knows that it is up to the plaintiff in an action (here the Al Sarena Mines, Inc.) to bring it to trial. Apparently Al Sarena Mines, Inc. preferred to keep the court action alive in the hope that there would be a change of administrations.

THE SO-CALLED MISSING ASSAY REPORTS

A great deal has been made of the fact that certain assay reports sent to mineral examiner Hattan by the McDonalds were not put in the case record.

The case record properly should contain only the evidence presented at a hearing. The McDonalds walked out of the hearing and did not present any evidence. Mr. Hattan and Mr. Sanborn did testify as to their examination of the claims and the resulting assays. It would have been improper for these Government representatives to present the Al Sarena Co.'s assay reports since they had no knowledge of the circumstances under which those reports were collected and could not answer any questions on cross-examination about them. Such material would have been the rankest type of hearsay evidence insofar as Mr. Hattan and Mr. Sanborn were concerned.

It should be noted, moreover, that Solicitor White offered the McDonalds a second opportunity to present all their evidence and witnesses in a regularly conducted hearing by the Bureau of Land Management. They refused this offer.

EVIDENCE REGARDING AMOUNTS INVESTED IN THE CLAIMS AND MINERALS REMOVED

At the hearings much was said about the amount of money which had been allegedly invested in the claims and about $35,000 of minerals said to have been removed.

No witness before the committee could break down the investment to show whether all or any of it related to the 8 allowed claims or could testify whether any of the minerals came from the 8 allowed claims or the 15 disallowed claims. However, all maps submitted for the record show that the meager mining operations of Al Sarena Mines, Inc., were confined to 4 of the 8 uncontested claims. In any event we do know that the amount invested does not make the claims valid and that no minerals have been removed since 1943. The know figures on the minerals removed are included in the statement of basic facts.

Mr. Davis, however, testified as follows:

> Mr. COBURN. In reciting to the committee what the McDonalds told you during this hours' conference, I noticed that they told you that there was invested about $200,000 in the development of this mining property. Does that statement necessarily mean that the McDonalds themselves had invested $200,000 of their own money in this property?
>
> Mr. DAVIS. No, I think not.
>
> Mr. COBURN. This is the accumulative investment from 1897 to that time?
>
> Mr. DAVIS. I think that's right, yes.
>
> Mr. COBURN. The statement says, "that they had well over a mile of tunnels in the mountain." Does that necessarily mean that they, themselves, constructed those tunnels?
>
> Mr. DAVIS. They hadn't constructed them, Mr. Coburn. As you know, this was an old mine on which work had been done for 50 years or better.
>
> Mr. COBURN. But the inference here is that they had constructed these tunnels and I wanted to clear that up for the record.
>
> Mr. DAVIS. You are perfectly right about it.

THE EFFECT OF THE BUREAU OF LAND MANAGEMENT DECISION

The Bureau of Land Management decision (see hearings, appendix, p. 856 et seq.) which was overruled by Mr. Davis did not deprive the Al Sarena Mines, Inc., of the mining claims. It merely held that there had not been a sufficient showing of mineralization to warrant the issuance of patents.

The Bureau decision would have left the company in possession of the claims with a full right to explore them further, to remove any amount of minerals from them, to transfer title to them, and to use the timber on the claims for mining purposes. Until a patent was issued, however, the company had no right to cut or sell the timber for a profit.

Subsequent events, i. e., the fact that no mining operations have been undertaken but that extensive timber cutting has occurred, raise a question as to whether or not these claims were patented in good faith. If this is the case, the patents may be subject to cancellation. (See *U. S.* v. *Lavenson,* District Court, Washington, 1913, 206 Fed. 755.)

MINORITY REPORT

The Al Sarena Case

INTRODUCTION

Perhaps no other matter coming before Congress and the executive departments in recent years has aroused such controversy and widespread popular misconception as that stirred by the Al Sarena case. From innocent beginnings the case has been adroitly manipulated into a giveaway cause célèbre.

When the emotionalism, the unwarranted accusations, the distortions of fact and the inverted logic of the perpetrators of this attack are stripped away the case remains—as it was at the outset—a question of law.

The mining law is clear. A miner with a valid mining claim containing mineral deposits is entitled to a patent. It is that simple. The questions involved here were not political and they were not discretionary with the Secretary or the Solicitor. They were questions of fact and questions of law.

The value of timber on the land has never entered into consideration in the granting of mining patents. There was not one word in the mining law which referred to timber.

At the time of the first filings on the Al Sarena claims, timber was being cut in Oregon to prepare the land for cultivation. In the 1930's when the McDonalds were filing additional claims there were hundreds of tax foreclosures on timberland in Oregon at from $2 to $5 per acre (hearings, p. 533). If the claimants' objective were to secure timber they could have purchased 20 to 25 times as much timber for the money that was merely invested in the claims and in the pilot mill.

The charge that the claims were filed originally as a subterfuge for securing the timber is not supported by any evidence and, in fact, is insupportable.

Objections which have been made against the Al Sarena decision could be valid only as they were directed against the law. The Department's accusers in this case have stubbornly refused to recognize the legal duty of its officials when confronted with the McDonald claims; indeed, they have brazenly stated that some other decision should have been made in disregard of the law.

To meet its obligations as delegated by Congress, the Department had no alternative but to comply with the law. Any other course would mean government by administrative decree—government by men as contrasted with government by law.

SUMMARY OF LAW

The mining laws of 1872, under which these claims were filed, provide that if a miner stakes his claim, files on it, does $500 worth of improvements and makes a valid discovery of minerals he is entitled

to a patent from the Government, including ownership of both the surface and the minerals. The Supreme Court has ruled that the discovery requirement is met if the mineral showing would justify a reasonably prudent miner spending further time, money and effort in the reasonable expectation of developing a paying mine.

Commercial or profitable operation (at the time of application for patent) is not required. Thousands of mining claims have been lawfully patented with absolutely no history of production.

The National Forest Act of 1897 specifically authorizes the location of mining claims in national forests. This provision has not been amended since 1912.

GEOGRAPHY AND GEOLOGY OF THE CLAIMS

The Al Sarena case involves 23 mining claims located in a mountainous area near Elk Creek, a tributary of the Rogue River, about 50 miles north and east of the city of Medford, Oreg. The geology indicates that the mineral formation is the result of a volcanic intrusion pushed up into the surrounding country rock. The ore is not confined to any one vein, vault, fissure, or zone but it is disseminated through a dome-shaped mass estimated to contain in excess of 150 million tons of ore. There is gold, silver, some lead, some zinc, and probably a variety of other minerals in the claims (hearings, pp. 533, 541, 715, and other places).

HISTORY OF LOCATION OF CLAIMS

The first 10 of the claims in question were filed in 1897. During the years that followed, additional claims were located by different individuals. The mining property later became known as Buzzard's Mine and the claim owners extracted and processed ores of gold, silver, lead, and zinc.

In the early 1930's, the United States Geological Survey made a study of the area and included a report in United States Geological Survey Bulletin No. 893 published in 1938. This bulletin reported the extent of the tunnels, cuts, openings and work done on the claims. It is estimated that up to 1949 $30,000 to $40,000 in gold had been taken from the mining claims. United States Geological Survey Bulletin 893, plate 3, shows an excellent example of dendritic gold taken from the mine.

FORMATION OF AL SARENA MINES, INC.

In 1935 Dr. H. P. McDonald, Sr., and family decided to consolidate their holdings and bring together other claims in the area and form a company to be known as Al Sarena Mines, Inc. The corporation was organized under the laws of the State of Oregon, and secured ownership of 21 claims, 10 of which were purchased from the Pearl Mines Co. Apparently mineralization of the area was evident to other mining companies before Al Sarena. In 1939 the corporation located 2 additional claims bringing the total to 23 claims.

The corporation engaged mining engineers and consultants to examine the property and report on the geology, mineralization, potential profitable production and recommend action for the development of the claims.

Pursuant to such recommendations, the corporation had built, by 1939, a pilot mill of a 100 tons per day capacity. Provisions were made for processing crushed ores by floating, gravity concentration, and cyanide treatment for recovery of mineral values in gold, silver, lead and zinc. This pilot operation was necessary to determine the most feasible method of development and extraction of minerals having large-scale low-grade operation on a profitable basis.

During the years up to 1939 development of the claims and pilot-mill operations were continued. Mining specialists and consultants were called upon for expert advice and checked the findings of the corporation during these operations. It was during this period of development that the last two claims were located on the fringe of the ore deposit.

Building toward a mining enterprise on the property has been extensive and over a mile of tunnels and underground workings has been constructed through the mountain and in addition to the pilot mill there are bunkhouses, an assay laboratory, a messhall, a tool shed, access roads, diesel-electric power facilities and other improvements. Total cost of this work is placed at between $100,000 and $200,000.

The majority endeavors to raise a question over the matter of the legally required assessment work on some of the mining claims. Any casual reading of the laws and regulations will show that while the mineral applicant must meet the expenditures stated in the law, the applicant himself does not make the determination of this matter as it applies to his application. The determination rests with the sole discretion of the United States cadastral engineer, an employee of the Department of the Interior, who make the determination on the basis of the bonded United States mineral surveyor's field notes and reports which must accompany the patent application. Such a certification by the United States cadastral engineer was made in this case and is shown on page 830 of the hearing record.

The majority attempts to leave the impression that the minimum amount of $500 in assessment work must be done on each individual claim. This impression is incorrect because the law and regulations provide that the claimant must file a "certificate of the office cadastral engineer that not less than $500 worth of labor has been expended or improvements made, by the applicant or his grantors, upon each location embraced in the application, or if the application embraces several contiguous locations held in common, that an amount equal to $500 for each location has been so expended upon, and for the benefit of, the entire group;" 43 Code of Federal Regulations 185.42. In this case the value of the improvements substantially exceeds the amount required.

In 1939, a Texas group became interested in the property and negotiated a contract giving them full right of operation and development of the claims looking toward the ultimate purchase of the property. The Texas group organized a new corporation called Al Sarena Mining Co., a Delaware corporation. Neither the Al Sarena Mines, Inc., nor any of its stockholders held any interest in the Al Sarena Mining Co.

The Texas group employed its own mining engineer counsel, a resident mining engineer, and proceeded with the operation and development of the property. With the approach of the defense preparation for World War II, the Texas group defaulted on its contract and the property control and management reverted to the Oregon corporation Al Sarena Mines, Inc.

Development activity and production in the pilot mill continued into the war period until it was closed because of shortage of labor and materials.[1] Records show a total payroll of $47,000 during the period of years immediately prior to closing of operations in 1943.

Sons of Dr. H. P. McDonald, namely Dr. H. P. McDonald, Jr., and Charles R. McDonald had assumed the burden of actual operations at the mine, Charles R. McDonald having become a registered engineer licensed in the State of Alabama. He now entered service with the Navy. During the war years development work was continued on a reduced scale because of wartime restrictions on labor and materials.

With the conclusion of the war, after gross expenditures on the claims since 1897 had exceeded $200,000, the owners had sufficient data to justify large investment for installation of high-tonnage capacity milling machinery and considered it desirable to secure patents on the claims. To make possible the profitable processing of the 150-million-ton ore deposit, plans involved the conversion from the small pilot hand mining operation to a highly mechanized, large tonnage, mining and processing plant. It was discovered that to finance the further engineering development and to purchase and install equipment costing in excess of $1 million, it was necessary to patent the claims if financing were to be secured.

After Charles R. McDonald was honorably discharged from his Navy service, he and Dr. H. P. McDonald, Jr., acting for the corporation took steps toward preparing the patent application. As required under law, the corporation engaged a United States mineral surveyor, who is under bond to the Government, to make the necessary examination of the property and prepare the required plat and field notes for filing in connection with mineral application for patent. This surveyor spent 3 months on the property.

MINING ENGINEERS AND CONSULTANTS

Mining engineers and consultants on whose recommendations this action was taken include Dr. Milnor Roberts, the dean of the College of Mines, University of Washington; D. N. Vendensky, then with Pan-American Engineering Corp., Berkeley, Calif.; Otto Ellerman, with the R. A. Perez Co., Los Angeles, Calif.; Harry B. Henderson, member, American Institute of Mining and Metallurgical Engineers, bachelor of science degree University of California, and master of science degree in metallurgical engineering, Montana School of Mines; D. Ford McCormick, member, Institute of Mining and Metallurgical Engineers, chemical engineering degree, University of Texas, bachelor of mining degree, Colorado School of Mines, experienced in important mining developments not only in the United States but elsewhere in this hemisphere; George P. Sopp, bachelors and masters degrees in mining engineering and geology, Colorado School of Mines and University of Arizona, formerly with the United States Geological Survey, Col. J. E. Morrison, mining geologist, graduate of Colorado School of Mines, former field geologist, Oregon Department of Geology and Mineral Industries.

Other mining engineers who later expressed favorable opinions concerning the mineralization of the claims and whose statements

[1] This and all similar mining operations were forced to discontinue under War Production Order No. L-208.

appear in the appendix to this report include F. W. Libbey; Alan Kissock; and G. Cleveland Taylor.

SUMMARY OF FACTS

On October 1, 1948, the McDonalds, for the Al Sarena Mines, Inc., filed application for patent on the 23 claims. Thereafter, the application was routinely reviewed and processed under provisions of law: publication of notice was made; final proofs filed; demand to Al Sarena Mines, Inc., for payment of gross statutory price of $2,375 (hearings, pp. 545, 848) for the lands was made by the Bureau of Land Management; payment was made and receipt was issued, without limitation or reservations, by Bureau of Land Management acknowledging purchase; and the final certificate for mineral entry was issued as of April 6, 1949 (hearings, p. 536). Later the lands were placed on the taxrolls of Jackson County, Oreg., for assessment of tax against Al Sarena Mines, Inc. A period of nearly 5 years lapsed from date of the final certificate before final decision was made on issuance of the patent.

On April 14, 1949, the acting regional administrator of the Bureau of Land Management informed the applicant that notice from the Forest Service to him, dated December 15, 1948, had been made requesting mineral examination of the claims (hearings, p. 536). Conflicting evidence (hearings, pp. 535, 729) in the file shows that such request was not made by the Forest Service until just prior (March 17, 1949) to the April 14, 1949, date of the Bureau letter. This shows that the request for examination came at the instigation of the Bureau of Land Management mineral examiner who was thereafter assigned the job of making the examination for the Forest Service. On the basis of what the record has proven to be inconclusive and careless mineral examination, this same Bureau of Land Management examiner urged the Forest Service to contest the issuance of patent to 15 of the 23 claims.

It is significant that the Forest Service conceded mineral deposits in the mountain where the claims were located by agreeing that patents should be issued on 8 of the 23 claims. Very significant was the fact that 2 of the 8 claims were the very last claims filed on in 1939. The mineral values assigned to 1 of these 2 claims by the Forest Service was nearly double that shown by the applicants in their own assay statement and exceeded the values shown by the applicants on 17 of the 23 claims.

Understandably, the majority has avoided any reference to the assays on the eight noncontested claims. Yet, in the first Hattan sampling, these noncontested claims showed the same traces of value common to the other claims sampled by Mr. Hattan. In the second Hattan sampling two of the claims showed patentable values, but no new samples were taken as to the other noncontested claims.

The no-contest decision of Mr. Hattan and the Forest Service was based on trace showings on the surface only, coupled with high assay reports for three random-picked Al Sarena pulps taken from underground cuts within the mine.

By the most conservative estimate $40,000 worth of traces have been removed from the exploratory tunnels and shafts under 6 of the noncontested claims—claims which show only traces on the surface as do all of the contested claims.

In other words, it would be reasonable to conclude that, in this particular disseminated deposit, wherever traces outcrop on the surface, there are good values underground.

The matter came on for hearing before a land office manager of the Bureau of Land Management in September 1950. The principal witness at the hearing was the employee of the Bureau of Land Management who had instigated the charges. At the hearing, a difference arose as to the procedure to follow and the mining claimants were advised by their counsel to quit the hearings and to appeal on a procedural point.

Nevertheless, the hearings were continued by the land office. Witnesses who appeared without cross-examination were Messrs. Hattan, of the Bureau of Land Management, and Sanborn and Leavengood, of the Forest Service. Hattan testified that he was suspicious of the results of his first sample assays.

> Mr. HATTAN. Because of these low results I was a little perturbed about the assays and wondered whether I had made a mistake, whether the watchman who was at the mine may have pointed out the wrong places or possibly the assayer could be in error. * * *" (hearings, p. 30).

Hattan had reason to doubt the results. First, he chose a small laboratory which was not listed as a reliable and capable assay firm. Second, his samples and assays showed no value on any of the claims examined, even including the old claims which had producing history and were known and recognized generally as mineralized. If his method of sampling or the assaying was such as to fail to show mineral values on these claims, it was obvious that no credence should be placed in the results.

The second mineral examination for the Forest Service was made by Hattan and Sanborn jointly. Samples were taken from only 17 of the 23 claims. The record reveals that the samples from this examination were carelessly handled, lost for a while, and as of the date of the Portland hearing, November 27, 1955, it was still not known who had custody of them.

Congressman Chudoff, the chairman of the House subcommittee recognized that this examination and report was without probative value as indicated by his following statement:

> But you did not keep possession of them. I am not saying it happened, but if somebody wanted to they could dump something out and put in something else. It would not be considered good business, in my opinion, not to do something that would keep it from being substituted * * * (hearings, p. 105).

However, the majority report sees fit to ignore the damaging nature of this fact. Even though Hattan or Sanborn or both, in testifying for the Forest Service contest, knew that they could not swear as to the integrity of the second samples and assays, they nevertheless presented the report of the examination as credible evidence without mention of this fatal defect and the hearing examiner failed to question the validity of the evidence and admitted it into the record.

The third Forest Service examination was conducted by Hattan. The hearing examiner accepted his testimony for the record on the basis of hearsay evidence concerning the assay reports. Hattan had

neither a certified copy of any assay report nor had he even seen such a report at the time of his testimony.

This third sampling of the claims was on only 6 of the 23 claims. A Government witness testified at the committee hearings that to his personal knowledge and experience the assay examinations by the laboratory, used in this instance, were unreliable.

> Mr. REDWINE. What is the reputation of the Bureau of Mines Laboratory at Albany?
>
> Mr. APPLING. Am I under oath?
>
> Mr. REDWINE. Yes, sir.
>
> Mr. APPLING. The assay laboratory?
>
> Mr. REDWINE. Yes, sir.
>
> Mr. APPLING. Very poor. I would please like the record to read that that is under oath.
>
> Mr. REDWINE. What is wrong with this assay laboratory?
>
> Mr. APPLING. I have a number of cases in the file where the assays were entirely incorrect by comparison with check samples (hearings, p. 117).

Mr. Leavengood testified that in 1950 the value of the timber on the contested claims was $77,000. This is the only timber valuation which appears in the entire administrative record. This statement remained in the record despite the ruling of the hearing examiner that such testimony was irrelevant and improper under the law and regulations (hearings, p. 148).

Since the land office manager's impartiality had been questioned, he, after the hearing, submitted the record to Washington for decision. After considering the record for more than a month, the Director of the Bureau of Land Management returned it to the manager for his decision and directed that the claimants be given the right of appeal.

In December, 1950, the manager's decision was rendered against the applicants and was sustained in April 1951 by the Assistant Director of the Bureau of Land Management.

The matter was then appealed by the claimants to the Secretary of the Interior where it rested until 1953. During this period, the claims were neither denied nor allowed by the then Secretary Chapman or Solicitor White. No action was taken by the Department. The claimants, however, attempted to compel a decision and filed suit against Secretary Chapman in Federal district court in July 1951. Thereafter, in the words of Solicitor White, the case was kept "on ice" (hearings, p. 555).

THE HEROISM OF DELAY

Despite the misleading overtones of the majority report, the undersigned have seen a certain amount of humor in the statement that Secretary Chapman and his Solicitor "steadfastly refused" to issue the patents. Their steadfast refusal amounted to mere administrative delay and inaction for 18 months.

The court's lack of jurisdiction in the Alabama lawsuit was obvious. The Interior Department could have obtained dismissal of that action by simply filing a motion to dismiss. We can only conclude that the former administration found it expedient not to decide the case.

If the "proper" decision was so obvious as the majority report contends, and if there was as little merit in the applications for patent

as the majority report would lead the public to believe, the question naturally follows, Why did not Secretary Chapman or his Solicitor render a decision denying the application?

It may or may not be pertinent, but it is worthy of consideration that this was the period during which the claimants were considering retaining as an attorney Mr. George Rock, Democratic national committeeman, from Denver, Colo., a personal friend of Secretary Chapman, who advised the claimants on September 9, 1952, that he had discussed the matter with Secretary Chapman (hearings, p. 440) and later on November 22, wrote them:

DENVER, COLO., *November 22, 1952.*

Dr. H. P. MCDONALD, Jr.,
Al Serena Mines, Inc., Mobile, Ala.

DEAR DR. MCDONALD: Several conferences have been held with officials of the Department of the Interior and my associates in Washington concerning the issuing of patents on your mining claims. The following report and recommendations are given to you as a result of these conferences:

Nothing can be done about the matter as long as the suit filed by your company in the United States district court in Alabama is pending. It is the policy of the Department of the Interior to hold in abeyance any administrative proceedings as long as court action is pending.

There is some doubt as to the validity of the suit that has been filed. There is a question as to whether or not a suit can be maintained against the Secretary of the Interior outside of Washington and there is also a question as to whether or not you have obtained valid service of the summons.

It is my opinion that the suit should be dismissed and it will then be possible to reopen administrative proceedings in Washington. Dismissal of the present suit will in no way prejudice your rights, as a suit can be dismissed without prejudice and a new suit filed at any time.

My associates in Washington, the law firm of Hudson, Grenke & Lipscomb, will arrange for a hearing in Washington, and are willing to represent your firm at the hearings. I will also be available to assist, *and have reason to believe that we can obtain a favorable decision.* [Italic supplied.]

The fee for this service will be $10,000, of which $2,000 is payable in advance as a retainer fee and to cover expenses. The remainder of $8,000 will be due and payable only if a favorable finding is obtained. In other words, the last $8,000 of the fee will be on a strictly contingent basis.

With very best personal wishes, I am,

Very truly yours,

GEORGE F. ROCK.

(Hearings, pp. 441–442.)

This was during the period of "steadfast refusal".

HASTE IN ACTION

The majority endeavors to make much of what it calls hasty action in this case. By comparison with the complete stall in action under Secretary Chapman in the previous administration, such might be

the appearance. The fact is that from the date the new administration assumed office until the date of issuance of patent, a period of more than 1 year elapsed. The testimony of Under Secretary Davis, then Solicitor for the Department, clearly shows that the action was deliberate in character. The case was carefully reviewed to make such determinations of fact as were possible on the record, determining the issue to be settled and then proceeding in a careful manner to make a final determination as to the credibility of the evidence before him as a basis for final decision. After the decision had been made and the Solicitor's opinion issued, the patent was withheld for a period of more than 30 days during which time any further questions and issues might have been considered prior to the signing of the patent papers.

THE SITUATION IN 1953

When Clarence A. Davis became Solicitor of the Department of the Interior in 1953 he found that 278 cases were pending in his public land appeal section. Several cases were pointed out to him as troublesome ones. The Al Sarena case was among these. It might be observed in passing, that if the matter was as cut-and-dried as the majority pretends, we cannot understand why Solicitor White's staff should have regarded it as troublesome.

The McDonalds having failed to get a decision and undoubtedly wearied of the continued stalling appealed to Congressman Ellsworth to urge some definite action on the part of the Department.

Congressman Ellsworth contacted various engineers and satisfied himself that the claims were bona fide. He quite properly made an appointment for his constituent with Solicitor Davis. At the interview the claimants outlined the history of their claims and the proceedings before the Department to that date. They were particularly disturbed over the prejudice which they alleged to exist in the Portland office of the Bureau of Land Management on the part of both Mineral Examiner Hattan and Land Office Manager Rice, who would be the hearing judge if the case were remanded to the field.

As of February 1953, the record and the hearings indicated these background facts as to mineralization:

1. The three mineralization examinations were incomplete; at no time were samples taken and assays made from all 23 claims.

2. The examiner himself was suspicious of the accuracy of the first assay reports received from an unrecognized laboratory and that is why he took a second batch of samples. He was quite properly suspicious because his assay reports showed no values on any of the claims and were at variance with the Geological Survey in its Bulletin 893 which disclosed mineralization on at least some of the claims.

3. The second group of assay reports covered only 17 of the 23 claims but they were unreliable as testimony because they were carelessly handled, lost, and were out of custody of the examiners and in the words of Congressman Chudoff could have been "substituted."

4. Evidently the examiner still doubted his findings since he took a third sampling. However, on the third try he only sampled 6 of the 23 claims and the evidence disclosed that the laboratory making the assays, as shown by testimony was unreliable (hearings, p. 117).

5. At the conclusion of three examinations the Forest Service mineral examiners had not cut samples and secured assay reports which would meet the most elementary tests of evidence.

6. From the three mineral examinations, the Forest Service examiners showed adequate mineral values in their samples and assays on only 2 of the 23 claims. These two claims were the last ones filed by the Al Sarena Mines, Inc., in 1939 and were outlying claims on the edge of the ore body.

7. At no time did the Forest Service examiner's samples, cut and assayed from the old claims, known to be mineralized, show any mineral values.

8. The examiners accepted from the applicant his records of assay values on three claims and secured pulps, made several years prior to the date of patent application, from the company files for assay check.

9. Notwithstanding these facts, the Forest Service examiner clear-listed (approved) a total of 8 cliams, of which 6 were in defiance of and contrary to his own findings.

10. The application for patent, sworn to under oath, carried as an exhibit the cliamants report showing adequate mineralization on all 23 claims.

11. The applicant submitted a second set of assay reports on samples to be included with the Forest Service report. This report was suppressed and was never made a part of the record by the mineral examiners.

12. The mineral examiner, by his action, acknowledged that the mineralization evidence of the applicant had more credibility than the examiners', where plausibility of the Forest Service reports made untenable the denial of mineralization.

13. The Forest Service examiner knew that the mineral deposit was an extensive one. In his report to the regional director of the Forest Service he said, as follows (hearings p. 151):

> From an examination of the present underground development, and the various surface openings and rock outcrops, there appears to be a dome-shaped central mass, roughly 4,000 feet in diameter which consists of volcanic breccias and rhyolite. Much of this mass of rocks is altered and bleached and pyritized. Some of it, especially in the vicinity of the main vein, consists of lead and zinc sulfide mineralization. These sulfides seem to be the carrier minerals for gold and silver which are the principal values (hearings, p. 151).
>
> * * * * *
>
> The indications are that the central mass is all mineralized to some extent, and if the prospective parallel shear and mineralization zones should prove to be extensive in length and depth, the possibilities are good that the whole mass could be developed, mined, and milled at a profit by low-cost, large-scale mining methods. The topography is such that any one of these methods might be employed, e. i., glory holing, shrinkage system, and open-pit mining (hearings, pp. 19, 153).

14. The Forest Service mineral examiner recognized that the present 100-ton mill was only a pilot mill and not a large-scale, low-grade commercial mining operation. He said in his report to the regional forester:

> The pilot mill was constructed to determine if the ores could be concentrated, but no information was available

> which would show the minimum grade of material which could be mined, concentrated, and sold at a profit (hearings, p. 153).

15. The Forest Service examiner's findings of mineral values per ton were higher than those cited by him in an example of profitable large-scale, low-grade mining operations. On page 19 of his report to the regional forester he comments:

> Of the mining methods mentioned above, the central mass, being a low-grade proposition with suitable topography, could probably best be mined by the block caving method. In any event, this method is the cheapest yet devised for large-scale, low-grade deposits. It is roughly estimated that the cost of mining with this method under average conditions would be about $0.70 per ton at the mill. The Alaska-Juneau Gold Mining Co. was, between 1934–37, one of the low-cost producers in the large-scale mining of low-grade gold ores. The mining methods used in this mine was a combination of caving and shrinkage. The cost of mining and milling over 12 million tons during those 4 years was: mining, $0.44 per ton; milling, $0.29 per ton; other operating, $0.07 per ton; total cost, $0.80 per ton.

As Mr. Davis stated, three alternatives were open to him. His first alternative was to remand the case. Whether or not prejudice did exist on the part of the land office manager, the chief witness and other Bureau personnel was beside the point. The point was that there had been a long and bitter fight because the claimants believed such a prejudice to exist, and a remand would promise a long continuation of that fight.

Secondly, he could deny the patents on the incomplete record before him, but this would call for a questionable finding of fact as to mineralization, and that was the very point which had made this a troublesome case to the previous Solicitor. Also, the claimants could not attack that finding of fact in the courts. While this solution would be within his power, it did not afford substantial justice.

The third alternative was to determine mineralization or lack of mineralization by an independent examination of the claims. This was clearly within his power and authority. He selected the United States Bureau of Mines as the agency to procure the additional information.

His detailed testimony in the record indicates the careful procedure outlined and followed. In substance, the expert services of the Bureau of Mines were called upon to make new samples with a registered mining engineer observer present representing the applicants. A well-qualified Bureau of Mines employee with two assistants cut the samples, prepared them, sealed the sample splits in envelopes identified as to claims and locations and kept careful custody of the samples until they were placed in the hands of a common carrier for transmission to a class A commercial laboratory. The point of each sample taking was surveyed, the channel cuts of the samples were photographed, 2 of the 4 splits from each sample were panned on the spot and mineralization color shown in each pan. The panning demonstrated at the point of cutting the existence of mineralization and the later laboratory assay reports established the mineral values

present in the samples. From 5 to 7 witnesses were present at all times during the sample cutting, sample preparation, panning of the splits and sealing of the other splits in envelopes. All envelopes were carefully identified to relate to the particular claim and channel cut.

The allegation that official instructions permitted the contestee to insist upon an assay company of its own choice, is clearly contrary to the testimony of the record. It is true that repeated efforts were made to put such words into the mouths of witnesses but each witness forthrightly indicated such statements or implications were untrue. The record shows that three assay companies were discussed between the representatives of the Bureau of Mines and the contestees. The latter had in the past used all 3 of these assay houses as the record indicates; certified assay reports from each of the 3 assay laboratories were submitted in the supplementary sampling—reports of which were furnished to Forest Service Examiner Hattan. The testimony in the record shows that the contestee expressed a preference for the A. W. Williams Inspection Co., and that after careful check by the Bureau of Mines the Williams Co. was found to be of good standing and competence and was approved by the Bureau of Mines.

Reports as to the procedure followed were transmitted by the Bureau of Mines examiner through channels to the Department. A separate report was prepared by the registered, professional engineer. After the laboratory completed the assays, certified copies of the report were transmitted to the Office of the Solicitor. Despite repeated innuendo, inferences, and attacks upon the assay laboratory's equipment and methods and after months of investigation by majority staff members and voluminous testimony, not one shred of evidence worthy of the name has been produced to question the integrity of the assay work or the accuracy of the certified assay report.

The final conclusive mineral examination showed values on the 15 contested claims in excess of this minimum previously acknowledged and approved by both the Forest Service and the Bureau of Land Management.

With this conclusive showing of mineralization values the Solicitor had no alternative under the law except to grant the application for mineral patent. The Forest Service mineral examiner, Regional Office of the Bureau of Land Management and the Office of the Director of the Bureau of Land Management in Washington had already approved clear-listing of claims on which the Forest Service mineral examiner from his own samples and assays had found mineral values of $1.04 per ton adequate for clear-listing claims.

PROCEDURAL CHANGES ARE INDICATED

The undersigned are gravely disturbed by relevations of the record as to the procedures used by the Forest Service in conducting its mineral examinations and bringing contest actions. The applicant for a mineral patent must conform to the specific requirements of law in preparation of his application and file such application under oath. The Forest Service under existing regulations may file a contest action but no oath is required. The applicant must engage the services of a registered United States mineral surveyor who is bonded to the United States Government. The Forest Service mineral examiner

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is under bond to no one and if his actions, willful or negligent, injure, prejudice, or compound costs to the applicant, there is no recourse.

The record of testimony reveals that a Forest Service mineral examiner may elect to present only such findings as he has made which are adverse to the mineral applicant and suppress, remain silent on, or consider confidential those parts of his findings which support and corroborate the sworn documents of the applicant, of the report of the United States Mineral Surveyor, and of the United States Cadastral Engineer. Since the mineral examiner's testimony and exhibits at the contest hearing constitute the Government's record on which final decision is to be made, responsible officials may be placed in a position of making judgment on a partial statement of fact.

Since agencies of the Federal Government in mineral contest proceedings stand essentially as prosecutor, judge, and jury, they are called upon for the highest degree of impartiality and fairness. The reports of the Government should not only be entirely accurate but they should also be entirely complete.

Much testimony was taken concerning mineral sampling of these claims. Some attention was given to the practices and methods of sample taking. The minority observes from the record that there is nothing to indicate that the Forest Service mineral examiners have any specific standards which they are required to use in their sampling of claims. Testimony showed that for low-grade ore deposits large samples must be used to get reasonably accurate results. For ore deposits of the character involved in this case, a sample weighing 2 assay-tons (about 2 ounces) was used in standard commercial practice.

Where there are no regulations setting up standards, examiners may easily reduce the size of the sample to a point where securing representative values becomes an impossibility. The use of one-half assay-ton samples, where 4 times that amount or 2 assay-tons is called for, cannot produce reliable evidence as to mineralization. Examiners using a substandard sample as against a standard sample used by an applicant would be productive only of interminable dispute.

In this case, the record reveals that the Forest Service mineral examiner prepared a detailed report of his findings for the regional forester. This report was not a part of the record in the contest hearing. The Forest Service testified as to such parts of this report as suited their purposes in sustaining the contest action. Although statements and findings in this report verified contentions of the mineral applicant and those of highly qualified mining engineers, the hearing record was devoid of such information. The hearing examiner, Mr. Rice, testified, page 19, that not only was such information from the Forest Service's mineral examiner not presented in testimony but that had the examiner's full report been offered in evidence, it would have been excluded as inadmissible. Such a procedure, in the view of the minority, leaves the case of the mineral patent applicant subject, not to the weight of credible evidence, but to the mercies of Forest Service mineral examiner and the Interior Department Land Office hearing examiner. The undersigned are of the opinion that had the mineral examiner's report been fully accurate and fully complete in the record, the probabilities are that this case would have been settled 5 or 6 years ago and the people of southwestern Oregon might be receiving employment from a new mining industry.

VACILLATING VALUE OF THE TIMBER

The majority has attempted to create the impression that the question of valid mineral discovery on a metalliferous mining claim is affected by the value of the trees on the surface. The undersigned were extremely interested in the refutation of this notion by Mr. Clarence Bradshaw, a 30-year career mineral law expert with the Department of the Interior who holds the Department's distinguished service award.

Sober thought shows, indeed, that there is no way to tell the value of a metalliferous lode deposit in the ground until it is mined out, and that the rule fabricated by the majority would be absurd. However, to the uninitiated, it might sound persuasive, and the majority has acted on that assumption.

Under the law relating to mineral patents the value of the trees is immaterial. Nevertheless, the majority has undertaken tortuous antics to avoid admitting that the only timber value ever attached to the claims by the United States Forest Service prior to these hearings was $77,000. This figure was based on the worth of the timber at appraised prices and under Government cutting practices.

No other timber value was in the record before the Department of the Interior at the time of the decision. Yet, this official figure of $77,000 is never used by the majority. They have, instead, resorted to many devices to inflate the value of the timber. One of the first political quotations of value was $185,000; the next jumped to $250,000; by January 10, 1956, it had increased to $500,000. One political columnist, represented that it was worth $600,000. The majority, while claiming to investigate a specific record of proceedings—a record which contained only the Forest Service stated valuation of $77,000—attempts to bring into the picture values estimated some years later. Fortunately such specious reasoning was not used at the time of the Louisiana Purchase, for which we paid $15 million.

THE ASSAYER

Throughout the hearings, we were shocked at the treatment afforded the A. W. Williams Co. This company performed the analysis of the Bureau of Mines samples. It is a highly rated laboratory and the National Council of Independent Laboratories has given it the same assay rating as that enjoyed by Abbott-Hanks, the assay house relied on by the majority. The Williams Co. employs 80 people. A graduate chemist of long experience performed the actual analysis.

The majority report cities a letter which the staff procured from the GSA in 1955, telling of a complaint that agency had received from a contractor supplying bauxite to GSA as to some low analyses performed by the Williams Co. But the report fails to mention that the GSA entered into three consecutive contracts with the Williams Co. during and after the time the complaints were received. The majority was willing to accept a hearsay letter, when the regional representative of the GSA, who had on-the-spot knowledge was available to testify.

The chairman of the subcommittee even refused to allow Laboratory Chief Miller of the Williams Co. to testify when he requested permission to do so in the interest of the good reputation of his company. He was rudely deferred to "the proper time" which never came.

The undersigned believe that officials of the Williams Co. should have been permitted to testify and submit that it was not fair to have closed this hearing without giving them that opportunity.

A LOW-GRADE MINERAL DEPOSIT CAN BE PROFITABLY MINED ONLY BY LARGE-SCALE PROCESSING METHODS

The statement of the majority that the testing and exploration done on this property indicates that it holds no future promise of the mining project is without a shred of support from any except one witness. The Government mineral examiner indicated in his report to the regional forester clearly that the mineral deposit could be mined and milled at a profit by large-scale mining methods. Every other engineer skilled in the mining field who had personally examined or had any familiarity with this deposit expressed the same opinion.

The only opinion to the contrary was stated by Mr. George B. Holderer of the committee staff. Mr. Holderer, his testimony clearly indicates, was given a selected handful of papers and some mineral assays and requested to express his opinion on the possible profitable operation of the present installation. Mr. Holderer testified that such was an impossibility. There is nothing in the testimony or in the record of exhibits and correspondence indicating that any person claimed that the 100-ton pilot mill could be made a profitable operation. Mr. Holderer was never on the property and had no firsthand information about it.

The Government's mineral examiner in contrast compared the mining property to the Alaska Juneau mine which operated profitably for many years by processing 10,000 tons per day of ores assaying substantially less than the assays shown for the Al Sarena Mines. It is extremely significant that Mr. Hattan, as mineral examiner, found mineral values of $1.04 per ton of ore, adequate for patent on the basis of his own findings from sampling and assays. If Mr. Holderer's testimony is accepted as proof of the majority's position, then the committee is placed in the position of impeaching the action taken by the Forest Service and the Bureau of Land Management and all officials who went so far as to approve 8 of the 23 claims on the basis of mineral values averaging about one-fourth of the minimum requirements stated by Mr. Holderer.

ADMINISTRATIVE PROCEDURE ACT

The majority makes much over administrative procedures but carefully ignores the status of this case as it reached final appeal levels of the Department. The fact is that administrative procedures were open to the Bureau of Land Management and the Forest Service and were followed by them to the point of final appeal in the Department. The Bureau of Land Management, where Mr. Hatten was the mineral examiner, received the application. If the mineral examiner knew or had reason to believe the application was defective in any manner he had a duty and an obligation to take action. The record shows that this case passed through every channel and action required by the law and was approved up to and including the issuance of the final certificate. However, the record shows that while Mr. Hattan, who could have acted on the basis of any suspected or known defect in his capacity as mineral examiner for the Bureau of Land Manage-

ment, was urging the Forest Service to bring contest and finally succeeded in doing so and was then placed on loan to the Forest Service to conduct the mineral examination as the Forest Service mineral examiner. The majority did not examine into this devious procedure.

The Forest Service had not 1 but 3 mineral examinations made. It brought notice of protest, scheduled a hearing, presented its full testimony for the record at the hearing and without objection, and the complete record and testimony reveals no instance where any testimony by the Forest Service or the Bureau of Land Management was prevented from consideration or admission to the record at any time. When this case reached the level of final appeal the Solicitor, properly within his authority and under administrative procedures, could have decided the case, upholding the contest of the Forest Service without further reference to the applicant or conversely might have decided the case in favor of the applicant without further reference to the Forest Service.

The Solicitor clearly had the duty to weigh all the facts of the case, all of the evidence, and if he were in doubt or uncertain, then he had the obligation to take such action as would satisfy his judgment for or against the patent grant. The Solicitor, to avoid any possibility of prejudice, chose the highly skilled and competent Bureau of Mines of the Department to take samples for a final determination of mineralization. The law and regulations give full authority to the Solicitor to reach such a final decision. The Solicitor, in effect, substituted the services of the Bureau of Mines mineral examiner for the Bureau of Land Management mineral examiner who was on loan to the Forest Service and whose three examinations lacked the essential substance of credibility.

THE CAMERON CASE

The majority claims that reference to the Cameron case was an effort to mislead them because it had a result opposite to that in the Al Sarena case.

In the Cameron case the Secretary of the Interior referred a mining patent case to the Geological Survey for an independent analysis. No minerals were found and patent was ultimately denied.

If the denial of patents can be based on an independent inspection then surely the allowance of patents can be based on an independent inspection.

The majority constantly stressed the point of the absolute uniqueness of the referral to an independent agency, conveniently overlooking the fact that a former Secretary had exercised such authority in a similar case.

THE MAJORITY REPORT AND THE LAW

The minority finds it deplorable that the report, which takes some 30 pages to discuss a mining claim case in which the lone issue was whether or not there had been a valid discovery of mineral, gives little more than passing attention to the discovery requirements of the mining law of 1872. Since the majority found it painfully apparent that the standards of the applicable law had been met, they chose to ignore the law and discuss instead the standards required for Reconstruction Finance Corporation loan applications. Unfortunately, these standards are not applicable to the patenting requirements under

the mining laws. The RFC loan procedures call for evidence of profitable operation as loan security. The mining laws require the issuance of patents if there is a sufficient mineral showing to warrant the taking of additional risks of loss. Assurances of economic or profitable operation or known mineral reserves are not required under the mining laws—the laws which are applicable in the Al Sarena case.

The majority know that many mining claims have been lawfully patented with no history of production whatsoever. The general soundness of the law has been demonstrated over 80 years, and the Democratic Party did not amend it in the 20 years in which that party was in full control of the executive branch of the Government.

Cases cited by the majority, such as *South End Mining Company* v. *Tinney* (22 Nev. 19), *U. S.* v. *Lavenson* (206 Fed. 755), or *Diamond Coal Company* v. *U. S.* (233 U. S. 236), are intended to mislead the reader to believe that they constitute authority for canceling the Al Sarena patents.

The cases have not the remotest applicability to the Al Sarena case. In fact, the Lavenson case relies upon *U. S.* v. *Iron-Silver Mining Company*, (128 U. S. 673), which supports fully the minority position that the presence, absence, value, or worthlessness of timber on a mining claim is completely immaterial to the patentability of such a claim under the mining laws in effect in 1948. Even though a mining locator may have considered the value of timber in selecting his claim, the Supreme Court has said,

> If such were the fact, it would not affect the applicant's claim to a patent. Probably in a majority of cases, where a placer claim is located, other matters than the existence of valuable deposits of mineral enter into the estimate of its worth. * * * A prudent miner, acting wisely in taking up a claim, whether for a placer mine or for a lode or vein, would not overlook such circumstances, and they may in fact control his action in making the location.

TACTICS OF THE MAJORITY

This investigation has been, from the beginning, a proceeding designed to produce sensational headlines that would mislead the public. Characteristically, the hearings had a carefully and secretly planned surprise start in Portland, Oreg., on November 25, 1955, where the committee had assembled to study another problem. The issue was superficially aired for press consumption after which the committee left the State and resumed its other business.

Although the majority view endeavors to create an aura of calm appraisement, it contains a number of serious misrepresentations and significant omissions and it cannot be considered separately from the propaganda barrage and the politically oriented hearings which preceded it.

The headlong political bias of the preceedings was typified in the notorious incident involving the "hottest letter in Washington." This was a letter addressed to Secretary McKay from Lew Wallace, an Oregon Democratic gubernatorial candidate. It was addressed in handwriting to "Dear Doug" and signed "Lew." The letter had no bearing upon the Al Sarena case, but for some strange but unknown reason the committee staff removed it from departmental files.

Some time later it appeared as the basis for a preposterous story in which a staff member apparently advised columnist Drew Pearson that he had a letter addressed to President Eisenhower from Mr. Wallace in which Mr. Wallace asked the President to grant the Al Sarena patents. And, the story went, the President readdressed the letter to "Dear Doug" and asked that some action be taken. On his radio program Mr. Pearson told of "the letter," labeling it "the hottest letter in Washington." When asked to produce the letter in question, Mr. Redwine, of the majority staff, said he knew of such a letter and left the hearing room to produce it. Nearly half an hour later Mr. Redwine appeared with a photostatic copy of something which minority members were not allowed to see. The request for the letter was reiterated. After continuing his bluff to the last moment, Redwine finally produced a 1955 letter which had nothing to do with Mr. Wallace. The story was proven to be totally false and columnist Pearson published a retraction.

It should also be noted that the same columnist quoted from the transcript of the Portland proceedings before the transcripts were released to the minority members of the committee. True to form, the majority committee print was also leaked to the press before the minority members were given an opportunity to review it.

Although the committee held a hearing at Medford, Oreg., a short distance from the mine, where witnesses and firsthand examination of the property was easily possible, the committee waited a few days and 200 miles away before opening the subject under the pretext that the issue had just arisen. The facts show that the committee staff had been examining records, and preparing for such hearing months previously.

The undersigned feel compelled to comment on the curious manner in which the majority handled its selection of witnesses for a "full and fair" hearing announced to get the facts. For example:

1. The committee requested the appearance of Philip Gabriel. He was present for a full week but was never called upon to testify.

2. Mr. Morris Miller, the manager of the A. W. Williams Co., attacked by the majority, was told he would be called to testify at the proper time. He was not allowed to testify.

3. Although Charles R. McDonald and H. P. McDonald, Jr., are the key figures in this entire Al Sarena mining venture, having been associated with it from its inception, they were never put on the stand. Inasmuch as the subcommittee could have compelled their appearance, it can only be concluded that they did not want the McDonalds to testify.

4. When the minority insisted on having the regional manager of the General Services Administration testify concerning the quality of work done by the A. W. Williams Co., for the Government, the majority agreed, but the witness was never called.

5. The Chief of the Forest Service was dismissed as a witness just as the minority began cross-examination and was never recalled despite promises that he would be.

The slanting of the majority report as a political document is abundantly obvious. The language is salted with sly perversions of the record and seems aimed particularly to the State of Oregon.

The affidavit of Philip Gabriel shows the political level on which the so-called investigation was pitched.

STATEMENT OF PHILIP GABRIEL BEFORE THE JOINT SENATE-HOUSE SUBCOMMITTEE HEARINGS ON THE AL SARENA MINING CLAIMS CASE, WASHINGTON, D. C., BEGINNING ON JANUARY 10, 1956

(Legislative Oversight Subcommittee, Senate Interior and Insular Affairs Committee, Public Works and Resources Subcommittee, House Government Operations Committee)

STATE OF ALABAMA,
County of Mobile, ss:

I, Phillip Gabriel, being first duly sworn, on oath, depose and say:

1. That on or about December 24, 1955, I received a letter from W. Kerr Scott, acting chairman, Legislative Oversight Subcommittee, Senate Interior and Insular Affairs Committee, dated December 22, 1955, notifying me that:

"On January 10, 1956, at 9 a. m., in room 224 of the Senate Office Building, Washington, D. C., this subcommittee will resume hearings in connection with the inquiry into the matter of Minerals Application Oregon 0665, Oregon Mineral Survey No. 879, Al Sarena Mines, Inc. * * *"

2. That the aforementioned letter specifically requested my appearance before the subcommittee at the time and place hereinabove cited in the following language:

"You are hereby requested to appear at such hearings for the purpose of answering such questions as the committee may wish to propound."

3. That, pursuant to the foregoing request, I appeared at the subject hearings and after adjournment of the entire week's session I asked Mr. Redwine when I would be heard; that Mr. Redwine declined to state when, if ever, I would be heard.

4. That had I in fact testified, I would have testified in substance as follows:

A. That during the summer of 1955 I was questioned at Mobile, Ala., by one Robert W. Redwine, who presented credentials identifying him as the accredited agent of the committee.

B. That Mr. Redwine admitted that it was his duty as a paid committee employee to uncover or create material for political purposes.

C. That Mr. Redwine stated that the patent theretofore issued to Al Sarena Mines, Inc., could not be legally revoked or placed in jeopardy; that Al Sarena Mines, Inc., as such could not be injured; that his mission was political, and that the corporation had no cause for worry.

D. That the only other possible reason for these hearings was to "get even with the McDonalds" for having brought one W. O. (Otis) MacMahon to represent them at a hearing at Portland, Oreg., in September 1950, according to Mr. Redwine, who added that such action had caused departmental employees a great deal of trouble.

E. That apparently this last statement of Mr. Redwine arose from numerous averments made by Leonard B.

Netzorg in a communication to James A. Lanigan dated September 28, 1950, apparently made to prejudice the agency against the McDonalds and MacMahon and repeatedly used against them throughout the contest, despite their protests, denials, and counteracting evidence offered. (See communication reprinted, pp. 1446–1447, Congressional Record, January 31, 1956.)

F. That Mr. Redwine advised me that he was leaving town at about 3 p. m. on the day of our conference, would proceed to Atlanta, Ga., and, would not be in Washington, D. C., until the following Tuesday—that he would not have any opportunity to discuss this with anyone, even in his own Department, until Tuesday, that no leak concerning our conversation could happen through his Department until after the following Tuesday.

G. That Mr. Redwine further suggested to me that, in the meantime, if I could, by using influence or information obtained as a director in Al Sarena Mines, Inc., or in any other way, get control of the company, I would have a very valuable mining property; that everyone would be happy if the McDonalds got "skinned" and the politicians involved in the Oregon elections were given some material with which to work for the next election.

H. That the statements made to me by Mr. Redwine are not repeated herein verbatim but are accurate in substance.

I. That I was informed by Mr. Morris Miller, of the A. W. Williams Inspection Co., Mobile, Ala., that Mr. Redwine advised Mr. Miller that the A. W. Williams Inspection Co. would be crucified for political purposes but that Mr. Redwine was gathering information to try to protect the Williams firm.

NOTE.—The record shows that Mr. Redwine himself read into the record a memorandum apparently constituting a charge of incompetence against the Williams firm. The record also shows that Mr. Redwine took this action when the firm's chief metallurgist appeared before the committee to testify that the samples and laboratory work were regular in all respects and that the samples bore no evidence, either contents or containers, of tampering, contamination, or other wrongdoing on the part of persons handling the samples prior to their receipt for assaying.

J. That the committee has not reimbursed or offered to reimburse me for any of the expenses incurred in complying with its request to appear at the hearings, as hereinbefore related.

PHILLIP GABRIEL.

Subscribed and sworn to before me this 9th day of February 1956.

MARGURIETE WALKER,
Notary Public in and for Mobile County, Ala.

My commission expires January 18, 1958 (hearings, pp. 832–833).

CONCLUSION

1. The patents issued to Al Sarena Mines, Inc., on 25 lode mining claims in Jackson County, Oreg., were properly and legally issued, and such patents could have been legally issued on the administrative record as it existed in February of 1953.

2. After having seen the witnesses and heard the evidence, the undersigned would welcome a review of the matter by the Department of Justice. Any review or investigation, however, should also encompass events which transpired prior to 1953, with particular attention to the possibility of the existence of a conspiracy to subvert the mining laws by preventing the lawful issuance of mining patents thereunder.

4. While several Congressmen and Senators have from time to time discussed the case with Department of the Interior officials both under the last administration and the present one, there is no evidence in the record of any improper action or any effort to use pressure, political or otherwise, on Department officials by either Congressmen or Senators. On the contrary, those who did display an interest were merely seeking an early determination of an unduly prolonged case. Despite this bipartisan interest in the case, the majority report reserves its aspersions and imputations for use against Republicans.

5. As an appendix to the minority views we offer the full statement of Under Secretary Clarence A. Davis before this committee. It will reveal to the most casual reader the dispassionate judgment of a highly trained, judicial mind. It refutes eloquently every contention of the majority.

Respectfully submitted.

CLARE E. HOFFMAN,
VICTOR A. KNOX,
C. R. JONAS,
WLLIAM E. MINSHALL,
Minority Members of the
Public Works and Resources Subcommittee.

ADDITIONAL VIEWS OF CLARE E. HOFFMAN

The Al Sarena Case

Under the above caption, a report released to the press the latter part of May, last,[1] read in connection with the report adopted this morning by the House Committee on Government Operations by a strict party vote; and with the printed hearings, which will not be available for some 2 weeks, demonstrates the truth of the charge made by me when the subcommittee first began its hearings, i. e., that the taxpayers' money was being used to create political propaganda for use in the November 1956, elections.

As this is written, printed hearings are still not available. Although requested, my own official stenographer's transcript of the testimony taken has not been returned to me. No opportunity has been given to compare page proofs of what purports to be the testimony—the 4 minority members of the committee and its staff were given but 1 copy—with that transcript and the corrections made by me, nor to ascertain whether all exhibits have been included.

Nevertheless, a rather vivid recollection enables me to give an accurate although only a partial summary of the amazing, the startling, and, as described by editorials in some of the influential papers of the West, a most disgraceful performance by a congressional committee. Seldom—so far as I know, never—equaled by the performance of any other such committee.

Congressional committees have frequently been unjustly criticized for their failure to safeguard the interests of witnesses, treat them courteously; to prevent the broadcasting of unfounded charges of alleged misfeasance, malfeasance, or violation of Federal statute by private citizens or public officials. On very rate occasions such criticism has been at least in part justified. These hearings show a new low standard.

If in doubt as to whether the hearings held by this committee have safeguarded the dignity, the impartiality, the soundness, the usefulness, the necessity, of congressional investigations and hearings, protected the witnesses, earnestly you are requested to read, when they become available, the printed hearings. I ask no more.

The Al Sarena hearings, if authorized at all, were held under a statement issued September 21, 1955, by Senator Murray,[2] chairman of the Senate Interior Committee, which, in part, read as follows:

> Washington, D. C., September 21—Public hearings on Federal timber sales policies in the Pacific Northwest will be conducted jointly by subcommittees of the Senate Interior and House Government Operations Committees in California, Oregon, and Washington from November 14 through December 1, according to an announcement made today by

[1] New York Times of May 30, 1956.
[2] See exhibit A, attached hereto, for full text of statement.

Senator James E. Murray, Democrat of Montana, chairman of the Senate Interior Committee, and Representative William L. Dawson Democrat of Illinois, chairman of the House Government Operations Committee.

So far as has been learned, no action was ever taken by the House Committee on Government Operations or the Chudoff subcommittee which held those hearings, justifying any investigation or hearing having to do with the granting of the Al Serena patents.

A reading of Senator Murray's statement—and so far as I know he never appeared or participated in these hearings—makes no reference to the Al Serena case.

Of the individuals named to conduct the hearings authorized by Senator Murray and Representative Dawson, only Senator Scott, Senator Neuberger, Congressman Chudoff, and the writer of this report attended the Al Serena hearings which were held in the West.

The foundation for the charge subsequently made that the patents on the Al Sarena claims were improperly granted because of political influence was first laid early in the timber hearings, when an elderly miner, accompanied by his dog and a lawyer who was working on a contingent fee and supported by photographs of his cabin and his dog, were shoved into the timber hearing.

Subsequent events demonstrated that no real attempt to obtain a patent for the aged miner was being made, but that his inability to obtain a patent would be used to bolster the allegations concerning the Al Sarena case.

The accuracy of this statement—that the Al Sarena issue was dragged in for political propaganda—is shown by a statement put out by Senator W. Kerr Scott on November 23, 1955, who was then acting as chairman of the Joint Committee on Federal Timber.

The first two paragraphs of that statement, which the Senator attempted but was not successful in recalling, read:

> The subcommittee will come to order.
>
> This morning we will go into a matter that *is not* specifically a *"timber sales policy problem"*. [Italics supplied.]

Two days later, November 25, 1955, the Senator issued a second statement. That the proposed hearing was intended, and was subsequently conducted, as a political propaganda effort, can be inferred from that statement, which reads as follows:

> STATEMENT BY SENATOR W. KERR SCOTT, CHAIRMAN, JOINT COMMITTEE ON FEDERAL TIMBER, NOVEMBER 25, 1955
>
> The subcommittee will come to order.
>
> We will go into a matter that is not specifically a timber sales policy problem.
>
> Rather, it involves the question, or questions of how certain agencies are following the intent of the Congress, the letter and spirit of the laws of the land and the democratic processes that are demanded by the Constitution of the United States in respect to our forests and mineral resources.
>
> The transcript of the hearing held by this joint committee in Roseburg, Oreg., on November 17, 1955, discloses that certain segments of the Department of the Interior are in a

hassle with an aged, disabled veteran over his rights under the mining laws of the United States Government.

There appears to be a concerted effort to hustle him off his three mining claims based on the allegation that the claims are not mineral in character.

In sharp contrast to this case, I am mindful of a considerable amount of talk in the past 18 months concerning what is known as the Al Sarena mining claims located in Jackson County, Oreg.

There are many Government records involving the Al Sarena mining claims and their background and their value, or lack of value, as mineral lands that have been cloaked in obscurity and covered with the dust of more than 15 years.

The Congress needs to know, and the people of America are entitled to know, what the facts are in connection with this case which was finally decided at the highest level of the Department of Interior.

This Senate subcommittee, *and this House subcommittee of the Government Operations Committee, and the Congress, would be derelict in its duty if it did not seek to determine the truth or falsity of the charges that have been made that, as a result of high-level interference in the Department of Interior, weasel-word legal opinions and questionable mineral sampling and assaying practices have been substituted for the dedicated judgment and experience of men trained in the art of determining which lands are, or are not, eligible for patent under the mineral laws of the land.* [Italic supplied.]

It is either true, or untrue, that the lands of the 15 Al Sarena disputed claims are mineral in character or just a site for a timber mining operation. It is the purpose of this inquiry to seek the answer to this question, and the one of just why and how the unprecedented step was taken of bypassing the Forest Service and the Bureau of Land Management to accomplish what was accomplished.

Because of the serious nature of this inquiry going, as it does, into the very fountain springs of the question of government by laws or government by influence and special privilege, all witnesses will be sworn before testifying.

In the interest of saving time and avoiding confusion, I am also asking that all members of both subcommittees refrain from asking any witness any question until after the staff has completed its questioning of each witness.

I am directing Mr. Redwine and Mr. Coburn to initiate the questioning, to be followed by Mr. Lanigan, after which I will call upon each member of the committees, in turn, to propound such inquiries as each may desire.

Please proceed, Mr. Redwine.

Note also that, instead of permitting members of the committee to interrogate the witnesses, the chairman ordered committee counsel—three in number—to direct the trend which the testimony should take.

THE HEARINGS WERE JUST A REHASH OF POLITICAL PROPAGANDA

In the 1954 campaign, certain politicians, aided by Drew Pearson, charged that the Al Sarena patents were granted because of improper

political influence. Wide publicity was given by Pearson and others, including political orators on the stump, to these charges.

Pearson's articles were incorporated in the record of the hearings. They made serious charges, not only against Republican candidates for Congress, but against Republican officials in the Department of the Interior.

Not only were the charges which were widely publicized rejected by the voters of the congressional districts involved, but an independent newspaper, the Eugene (Oreg.) Register Guard, sent a reliable reporter to make an extended personal investigation. He came up with proof that the charges were unfounded; that they were politically inspired, and his story was not only printed in the local papers, but will be found in the printed hearings, if and when they become available.

More recently, Senator Morse, formerly a Republican—then an Independent, now a Democrat—became a candidate for Senator in the November election. It is fair to assume that, to aid him and certain Democratic congressional candidates, to defeat certain Republican Congressmen, these charges—rejected by the people most deeply interested; shown by independent investigators to be false—were again dug up and the majority report or parts of it will be circulated, at the taxpayers' expense, in the coming campaign—a practice which should be repudiated by every conscientious citizen, regardless of his political affiliation.

Senator Neuberger, an exceptionally adroit individual, often presided at the hearings. Frequently proclaiming himself as the champion of the little people, he was obviously also acting as the political advocate of Senator Morse and some of his views.

Throughout the timber hearings, Senator Neuberger, at every opportunity, made a plea for the little fellow; for the owner of small tracts of timber; insisted that he was not getting a fair deal, that the Government should aid him by access roads; by individual purchasing agreements and in every other possible way.

At every opportunity, he strenuously objected to what he characterized as the improper overruling by the Secretary of a subordinate's decision.

Eventually, however, it came out that the Senator was the advocate of the big boy, the L. & H. Lumber Co. of Sutherlin, Oreg.

The Senator had complained often, loudly and with pain in his voice that Republicans had attempted to influence decisions at the top.

But, when the L. & H. Lumber Co. wanted 75 million feet of timber put up for public bids, the gentleman who posed as the champion of the common man, the little boy, appeared in behalf of this company which wanted to purchase 75 million feet, and was so successful that a subordinate's decision was overruled by the Chief of the Forest Service.

The Senator forgot or ignored the similarity of action—from a technical standpoint at least—between that of the Chief of the Forest Service and that of Secretary McKay.

Naturally, it was only a coincidence that, from one of the stockholders of the L & H Lumber Co., Senator Neuberger had received a campaign contribution of $1,000 (and this appears in the hearings).

No one charges, no one hints, that that had anything to do with the

switch of position from the champion of the little fellow to the advocate of the big boy. The Senator's explanation is a plausible one. He always has a plausible explanation for anything he may do.

His answer to someone's crude intimation that he could not understand this change was that the 75 million feet of timber which he wanted put up so that the company in which his friend who made the $1,000 political contribution was interested could bid was that this was a different kind of timber.

THE AL SARENA PATENT

The minority views accurately, insofar as they go, reveal the situation.

Unfortunately, none of the other Members of the House was able to attend the hearing in the West, primarily because they were advised, I am informed, by the chairman of the House subcommittee that there were no controversial issues involved, that the purpose of the hearings was to study timber-marketing practices that had been followed by administrations for many years.

The iron curtain manipulated by the majority has been rolled down on me and behind it is a disgraceful procedure which I lack opportunity to expose.

Respectfully submitted.

CLARE E. HOFFMAN.

EXHIBIT A

[For release Wednesday p. m., September 21, 1955]

WASHINGTON, D. C., SEPTEMBER 21.—Public hearings on Federal timber sales policies in the Pacific Northwest will be conducted jointly by subcommittees of the Senate Interior and House Government Operations Committees in California, Oregon, and Washington from November 14 through December 1, according to an announcement made today by Senator James E. Murray, Democrat, of Montana, chairman of the Senate Interior Committee, and Representative William L. Dawson, Democrat, of Illinois, chairman of the House Government Operations Committee.

Preliminary committee staff investigations of timber sales in the Northwest, based upon a 1953 study by the Comptroller General of the forestry programs of the Forest Service and Bureau of Land Management in the Pacific Northwest, indicate a need for public hearings to develop further facts and current information relative to problems of access to Government timber, including access roads; inadequate and outdated inventory data on Federal timber resources; increases in the allowable cut; revised timber sales practices to provide sales of a size and length that meet the needs of small and large operators alike; increased salvage sales of diseased and burned timber; and a reexamination of the effect of marketing area and other restrictions on Government timber sales.

The committees will also take testimony on special problems arising out of the administration of Indian timber sales on the Klamath, Quinault, and Colville Indian Reservations.

Members of the Senate subcommittee are: Senator Murray, chairman, Senators Scott (Democrat, North Carolina), Neuberger (Demo-

crat, Oregon), Maline (Republican, Nevada), and Kuchel (Republican, California). Representative Chudoff (Democrat, Pennsylvania) is chairman of the Subcommittee on Public Works and Resources, the members of which are: Dante B. Fascell (Democrat, Florida); Robert E. Jones, Jr. (Democrat, Alabama); Robert H. Mollahan (Democrat, West Virginia); John E. Moss, Jr. (Democrat, California); Charles R. Jonas (Republican, North Carolina); Victor A. Knox (Republican, Michigan); and William A. Minshall (Republican, Ohio).

Tentative dates and places for the hearings have been scheduled for November 14 at Redding, Calif.; November 15, Klamath Falls, Oreg.; November 16, Medford, Oreg.; November 17, Roseburg, Oreg.; November 18, Eugene, Oreg.; November 21 and 22, Seattle, Wash.; November 23, either Olympia or Aberdeen, Wash.; November 28, 29, and 30, Portland, Oreg.; December 2, Spokane, Wash. (Colville hearing).

In accordance with the provisions of the Legislative Reorganization Act of 1947, those who wish to testify on the subject matter of the hearings will be required to file written statements in advance of their appearance. Requests to testify and all written statements should be sent to the Joint Committee on Federal Timber, Pioneer Station, room 208, Old United States Courthouse, Portland, Oreg., not later than Tuesday, November 1, 1955.

APPENDIX TO MINORITY VIEWS

STATEMENT OF UNDER SECRETARY OF THE INTERIOR CLARENCE A. DAVIS BEFORE THE SUBCOMMITTEE ON LEGISLATIVE OVERSIGHT, OF THE SENATE INTERIOR AND INSULAR AFFAIRS COMMITTEE, AND THE SUBCOMMITTEE ON POWER AND NATURAL RESOURCES OF THE HOUSE COMMITTEE ON GOVERNMENT OPERATIONS, FOR PRESENTATION JANUARY 26, 1956

Mr. Chairman and gentlemen of the subcommittees, I am glad to at last have the privilege of appearing before you to testify to the facts with relation to these claims of Al Sarena Mines, Inc.

These claims and the problems they presented were left pending by the preceding administration. They constituted a matter which had been going through the various levels of bureaucracy of the Department of the Interior for more than 5 years, before I ever heard of them.

I should next point out to you that the matters here involved are not matters of discretion or of political action, but are matters of law and evidence. For that reason, for a very great many years the authority to decide appeals with reference to public lands has been vested in the Solicitor of the Department. His opinions on these matters are final. They are not reviewed by the Secretary unless the Secretary specifically requests it, and they are not in ordinary course ever presented to the Secretary at all. I should like to make clear, therefore, that Secretary McKay has had no part in this sequence of events, and aside from 1 or 2 mentions of it in staff conference, he was totally uninformed of any of these events until after the opinion in this case was rendered.

I came into this Department on February 17, 1953, after having been engaged in the practice of law in Nebraska for 37 years, during which time I had been attorney general of the State, counsel to my State in many interstate matters, and counsel to all of the judges of the supreme court of my State, and many other legal connections with which I shall not tire you.

Immediately after taking over the office, I asked the staff for a general briefing of the matters which were pending in the office and of its general duties. At that time I discovered that there were 278 land appeals cases pending in the Solicitor's office, of which the Al Sarena Mines was just another case so far as I knew.

I was informed by the staff that there were several of these backlog cases which had not been handled which were considered troublesome and some of which were characterized as "headaches" and been left for my handling. I was advised that the Al Sarena case was in that category.

On April 8, 1953, our records indicate that Mr. Garber, administrative assistant to Congressman Ellsworth called me. I did not talk on the call and have no idea what it was about. On March 20, 1953, during my absence from the city, Mr. Garber called and talked

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to my secretary, requesting an appointment for some of Congressman Ellsworth's constituents. Pursuant to that call, I first met the two brothers McDonald March 30, 1953, when they came into the Solicitor's office. I then learned for the first time that Al Sarena mines were located in southern Oregon; that one of these men lived in Oregon and the other in Alabama; and that they had been having trouble with reference to some mining claims.

The McDonalds asked the privilege of telling me all about their pending case, and since I had never heard of it before, I told them to go ahead.

They probably talked for an hour and recited a very long list of things which they claimed as grievances against the Interior Department and its long delay in the granting of their patents.

As well as I can remember, in substance they told me:

That they had a group of 23 mining claims, 40 of which had been filed on as early as 1897, and all of them prior to 1939; that for a long period of years they had been hoping to develop these claims into a profitable mine, that their father was a physician in Mobile, Ala.; that one of the brothers lived in Mobile, but that the other brother had lived for years on this mining property.

They told me there was invested, they estimated, nearly $200,000 in the development of this mining property; that they had well over a mile of tunnels in the mountain; that they had constructed a 100-ton-per-day mill; that they had bunkhouses, an assay lab, a messhall, tool sheds, had built access roads, etc.; that they had had dozens of assays made on the claims, some of which showed a high mineral content.

They then recited a long history of their treatment by the Bureau of Land Management; that they had applied for a patent to the claims in 1948, and despite the lapse of 5 years, still had not received a final decision. They outlined as best a layman could a very long administrative process through which the appeal had gone in the Bureau of Land Management and the Department.

They told of filing their applications for patent and of paying the $5 an acre standard fee, which is historic in connection with the patenting of such lands. They had with them, I believe, a copy of the final receipt of the land office issued in 1949, showing that all payments had been made. They complained that the land had been transferred by the Federal Government to the tax rolls of the State of Oregon, listed in their name, and that taxes were accumulating on it and they were threatened with foreclosure under the Oregon tax laws

They attacked most bitterly the procedures of the Bureau of Land Management. They described in great detail the hearing on their patent application which had been held in Oregon. They insisted that they had not been given a fair hearing. They insisted that the Department was prejudiced against the granting of mining claims. They insisted that the Bureau of Land Management had put the Forest Service up to objecting to their claims; that the mineral examiner of the Bureau of Land Management was in collaboration with the Forest Service to help defeat their claims.

They told me the hearing in the Bureau had broken up in dispute and they had walked out; that the hearing examiner had taken the testimony of the Forest Service in their absence without their cross-examination; and they complained that the record before me as Solicitor was incomplete, did not contain much of the evidence which

they had filed in the Bureau in Portland; contained only one side of the evidence; and that many of the assays which they had tendered were not in the record.

They told me that they had received the advice of a half-dozen mining engineers, State geologists and other persons familiar with mining, at the time they acquired the claims and from time to time thereafter. They named several persons in that connection who were unknown to me but some of whose opinions now constitute a part of the file, and that all of these mining engineers had indicated they had a mineral deposit which could be developed into a valuable mining property.

They told me that Congressman Frank Boykin of their home city of Mobile, Ala., had interceded in their behalf, and that because of the delay which they felt they were getting, they had started a suit in Alabama to compel the Secretary to deliver to them the patents for which they had applied. That suit had been pending for a year and a half undisposed of. They told me that until some disposition of their appeal to the Department was made, their hands were tied; that if they were granted patents, they hoped to develop a sizable mining operation on the property, but that they could not finance any such operation while their patents were under contest.

They claimed they had tendered several assay reports to the Bureau in Portland which showed paying minerals on the claims, and that many of these assays were not included in the files on which I, as Solicitor, was supposed to pass judgment.

If true, these were serious accusations which I think would cause anyone to examine the records to see if they were true.

At that stage I did make enough of an examination of the file to discover that the assays which they claimed they had filed were not present in the Solicitor's Office; that the evidence in the Solicitor's file consisted largely of testimony by the Bureau of Land Management and the Forest Service; and that all of the evidence which claimants said they had produced was not in the file.

I discovered that the claims had been registered, 10 of them in 1897; that there seemed to be little question there were minerals in more than paying quantities on at least some of their claims, and I discovered that the reports in the files made reference repeatedly to the widely diffused mass of mineral-bearing material which constituted the area on which the claims were located.

It was perfectly obvious to any lawyer that the evidence of the claimants was not in the file, and that on the state of the record as it then existed, judgment on the claimants' evidence could not be made.

I think it is fundamental to both the judicial and administrative process that both sides are entitled to be heard, and that the evidence of both sides is entitled to be considered before final judgment is rendered.

The McDonalds had with them carbons and photostatic copies of numerous assays which they insisted I should take and consider as evidence in connection with their appeal. I told them that I was in the position comparable to a supreme court, and that I could not accept evidence at that stage of the proceedings, although they were welcome to leave their assays if they wished.

They had also prepared a long document of some 28 pages, listing the chronology of events and many of their complaints. It was a

document, of course, prepared entirely from their viewpoint, but it contained many points which, if true, I regarded as serious. It is exhibit No. 63, as the files of the Department have been indexed, and it has been available to the staff of your subcommittees.

At the conclusion of that interview, I told these people that I would try to expedite a determination of their case; that I knew nothing about it except what they had told me; but that I did feel somebody ought to decide and settle any matter which had been pending for 5 years.

As soon as I could find time, I undertook to make an investigation of the files of the case to ascertain the accuracy of the representations which had been made to me. About that time, Mr. J. Reuel Armstrong, a lawyer from Rawlins, Wyo., joined the Department, and I referred the files to him for further examination.

Thereafter, from time to time, the matter of the Al Sarena case and what we might do to dispose of it was discussed between us.

THE MINING LAWS

I think it should be made clear at this point what the mining laws provide. Under the mining laws, which had not been changed since 1872 until last year, a miner who stakes out his claim on public lands and files on it, spends $500 in the development of it, and proves that he has a valid discovery of minerals, is entitled to a patent. It is just that simple. There is no reference to timber in the mining laws; whether there is much, little, or no timber makes no difference as a matter of law.

All of the mining business of the West has been established under that law. Throughout the years there have been literally thousands of mining claims gone to patent without the slightest regard to the timber on the land. As a matter of fact, it is not until very recent years that the timber attained sufficient value to be very material. In 1897, at the time the earlier of these claims were filed on, I am told they were cutting down timber in Oregon to get rid of it so the land could be used as farms; that in the 1930's there were hundreds of tax foreclosures on timber in Oregon; and the timber was sold for $2 to $5 an acre.

Whatever may be said of the situation in 1956, it would seem clear that at the time these mining claims were filed on, the timber was of little value, but the impression that has been conveyed to the public is that these people filed on these claims merely to get the timber.

I should point out to you that there was a substantial period of years prior to 1953 in which the timber values were continually rising but there was no amendment of the mining laws.

THE AREA

The area in which these claims are located is what the miners call a widely diffused mineralized mass. There are no special rich veins which can be located with certainty. There is gold, some silver, some lead, some zinc, and other minerals widely diffused on the claims. To work such a mine requires the handling of large amounts of material, but in the opinion of the many mining engineers consulted the claims were well worth developing.

The files will verify the fact that there are over a mile of tunnels on this property; that there is a 100-ton-per-day mill; that there are bunkhouses, an assay lab, a messhall, tool sheds, access roads, etc. The mine has produced throughout its history some $30,000 to $40,000 of gold. As a pilot operation sometime in the early 1940's, some lead and zinc was produced in minor quantities. In 1943 the mine was closed, allegedly because of the shortage of labor and materials.

In this period of 50 years before 1948 we are told there were literally hundreds of assays made on various parts of these claims. They must have been reasonably hopeful or no one would have been foolish enough to continue to put money in the mine.

In this connection your attention should be called to a report of the Geological Survey entitled, "Geological Survey Bulletin 893," published in the year 1930. On page 131, and following, of that report is a description of this mine, then known as the Buzzard area, giving the history of various mining operations in connection with which it was pointed out that at that time: "the mine workings consist of 3,334 feet of drifts and crosscuts, 1,000 feet of raises and winzes, and 75 feet of open cuts and trenches."

The minerals on the land are described generally, and I shall not take your time to read into the record the descirption given by the Geological Survey. I should also point out that immediately preceding the description to which I have referred, is plate No. 22, which is a sketch of levels of the Buzzard Mine, Jackson County, Oreg., to show to someone more familiar with mining than I am the approximate layout in 1930.

I have, personally, no idea of the cost or the value of these improvements. I am dependent entirely upon the estimates of mining engineers and others, but it seems to be generally considered that there is somewhere from $150,000 to $250,000 of improvements on these various McDonald claims.

The files indicate the following sequence of events:

THE PATENT APPLICATIONS

On October 1, 1948, the McDonalds filed applications for patents on all of their 23 claims.

Eight of these claims were not contested by the administration at that time. These claims have on them the same general type of timber that is on the others. They admittedly have a mineralized gold value that would justify their development, and they have been commonly accepted as valid claims by all parties to this controversy from the very beginning.

I think this is somewhat important, for it demonstrates that there are minerals on this mountain and in the immediate vicinity of these 15 claims which are under dispute, since all of the 23 claims are adjacent to each other.

It is also interesting to note that among the claims not contested by the preceding administration were the last two claims which were not even filed upon until 1939, and yet admittedly have an adequate mineralization.

It has seemed to me that this substantiates the reports of all the mining engineers that the minerals on these claims are widely diffused throughout the whole area, and it is probably impossible for anyone

to draw a distinct line around the mineralized area until actual development takes place.

October 1, 1948, the regional forester's office was officially notified by the mining company of the filing of patent application.

October 4, 1948, an affidavit of possessory right was filed by the claimants with the Bureau of Land Management.

October 25, 1948, the land office issued an official receipt for the filing fee of the patent application.

December 7, 1948, the Forest Service was officially notified by the Bureau of Land Management of the pending patent applications.

January 13, 1949, final proofs were filed by the claimants with the land office.

On February 8, 1949 (exhibit 71), the claimants were advised by the Bureau of Land Management that the purchase money due was $2,375, at the rate of $5 per acre or fraction thereof, and they were advised that upon the receipt of a properly executed application to purchase, and the required amount of money, the papers would be examined with the idea of issuing final certificates.

February 10, 1949 (exhibit 75), the company filed an application to purchase all of the claims.

February 17, 1949 (exhibit 74), the Bureau of Land Management issued its official receipt for the entire price of the property in the amount of $2,375.

I have read much about the $5 per acre price at which this land was "sold". Please let me emphasize that this price is fixed by law, that the Interior Department has nothing to do with fixing it, and in any event was the amount billed and the sum paid in 1949 and receipted for under the previous administration.

March 17, 1949 (exhibit 51), the regional forester advised the Bureau of Land Management as follows:

"Thanks to Mr. Hattan, my attention has been called to the fact that I neglected to ask you to withhold action on this application until the Forest Service had had an opportunity to have these mining claims examined. Mr. Hattan is planning to examine these claims for us as soon as weather conditions will permit. Until his report is received, we will appreciate it if action can be withheld in accordance with the provisions of regulation 44LD360."

This is directed to your attention for the reason that Mr. Hattan was an employee of the Bureau of Land Management and not of the Forest Service; that the Forest Service had been notified 3 months before of the filing of these claims and apparently had done nothing about it.

Your attention is directed to the fact that one of the complaints of the McDonalds at all times has been that the Bureau of Land Management asked the Forest Service to intervene in this proceeding; that the proceeding was before the Bureau of Land Management; that the Forest Service used a Bureau of Land Management employee to make an examination for the Forest Service, while at the same time the Bureau of Land Management was undertaking to judge the validity of the claims.

In this connection your attention is directed to a photostatic copy attached to this statement of a letter from Mr. F. W. Libbey, director of the Oregon State Department of Geology and Mineral Industries, dated June 9, 1953, and addressed to the Honorable Harris Ellsworth, the last two paragraphs of which are as follows:

"Although I hold no brief for people who locate mining claims for the purpose of obtaining timber, I believe that Bureau of Land Management people have set up roadblocks in the way of legitimate mining claim applications for patent whenever there is timber on the claims, and have been making their own rules concerning the legal definitions under the mining laws.

"It seems to be fairly well established that both the Bureau of Land Management and the Forest Service will battle to the last ditch the patenting of mining claims which contain merchantable timber irrespective of the mineral values on the claims."

April 6, 1949, the Bureau of Land Management issued its "register's final clearance of mineral entry," stating, however, on the certificate, "patent will be withheld by the Bureau of Land Management pending a report by the regional administrator, region 10, upon the bona fides of the claim."

April 14, 1949 (exhibit 75), claimants were advised by Mr. Leonard B. Netzorg, of the Bureau of Land Management, that "the Forest Service requested this office on December 15, 1948, to make a field examination and report on the mineral application because it does not have employed a qualified mineral examiner."

It will be noted that the date stated in this letter (December 15, 1948) does not conform to the date of the letter of the Forest Service just quoted (March 17, 1949, exhibit 51).

About this same date the Bureau of Land Management caused all 23 of the claims to be transferred to the tax rolls of Jackson County, Oreg., and listed on the county tax rolls for taxation in the name of Al Sarena Mines, Inc., Subsequent thereto, there is a tax receipt in the file showing that the mining company paid 1950–51 taxes in the amount of $413.29 (exhibit 80 in the files).

February 10, 1950 (exhibit 50 in the file), the Bureau of Land Management, Washington, ordered adverse proceedings against allowing the claim on the ground that there was no adequate proof of mineralization or of necessary improvements. The Bureau of Land Management knew at the time that the claims were in a national forest.

March 14, 1950, a month later (exhibit 49), the Bureau of Land Management reversed its position and ordered the adverse proceedings vacated on the ground that such proceedings, if any, should be brought by the Forest Service.

April 13, 1950, the United States Forest Service filed notice of protest against 15 of the 23 claims, based on charges that the lands were not mineral and that proper amounts had not been spent for their development, and asking the claims be declared null and void.

April 25, 1950, notice of this contest was sent to Al Sarena by registered mail.

May 22, 1950, Al Sarena filed an answer denying the Forest Service's charges, demanding a patent.

June 6, 1950, Congressman Frank W. Boykin, Alabama, wrote to the Secretary (exhibit 47), urging prompt investigation on behalf of Mr. McDonald who "is a close friend of mine and my constituent."

August 9, 1950 (exhibit 46), memorandum to files by Mastin G. White, then Solicitor, Department of the Interior, stating that McDonald had asked for a speedy hearing; that he had promised a speedy hearing, and a teletype would be sent to the manager of the

land office in Portland fixing an early date for the hearing in this proceeding.

August 9, 1950, Director Clawson of the Bureau of Land Management ordered the land office manager in Portland to hold an early hearing in the Al Sarena case.

August 15, 1950, this was answered by a telegram objecting to an early hearing.

August 17, 1950, Director Clawson sent a telegram to the regional administrator of the Bureau in Portland, stating:

"Upon request of Congressman Boykin, Solicitor White assured him that a hearing on this case would be held prior to September 23 in order to spare the company serious financial loss. Under the circumstances a hearing prior to this date is essential. Please arrange for it."

On the following day the land office manager sent to Washington for the file.

September 13, 1950, a hearing was held on the claims before the Bureau of Land Management, Portland. A transcript of the hearing is in the files. At the hearing the attorney for Al Sarena filed demurrers and insisted they be ruled on before proceeding with the hearing. He contended he had an agreement with Mastin White, Solicitor, that the matter would be heard according to the rules of the Federal courts rather than the rules of the Department, and when the examiner refused to proceed in that manner, a scene ensued in which the Al Sarena attorney and prospective witnesses quit the hearing and refused to attend. Any such agreement is explicitly denied by Solicitor White (exhibit 77) but was still insisted upon by Al Sarena counsel.

October 2, 1950, Pierce M. Rice, manager of the Portland office, who had heard the case, sent his views to the Director of the Bureau of Land Management, Washington, with only a recommendation instead of a decision, stating that because of demeanor of counsel for the mining company, an orderly hearing had not been held, but he was submitting the case with only a recommendation that the claims be denied. In his findings, however, he states a summary of the evidence of the Forest Service by Mr. Robert G. Leavengood, timber management assistant, "He estimated that the present merchantable timber to have a value of approximately $77,000 and if cut, there would remain a 25 percent stand of 8-to-14-inch growing stock."

November 2, 1950 (exhibit 84), Associate Director Zimmerman, Bureau of Land Management, sent a letter to Congressman Boykin advising him that "Solicitor White had requested that the decision in the case be expedited. The matter is under immediate consideration and it is hoped that the decision will be out in a very short time."

November 24, 1950 (exhibit 52), the Washington office sent the case back to the Portland office with directions to make a decision.

December 14, 1950 (exhibit 34), the Portland office rendered a decision sustaining the Forest Service.

April 27, 1951 (exhibit 51), the Assistant Director, William Zimmerman, of the Bureau of Land Management sustained the decision of the Portland office.

The matter was appealed to the Solicitor on June 1, 1951 (exhibit 27), and, so far as the record discloses, no action was taken from that date for the following 20 months prior to the time I assumed office in February 1953.

THE ALABAMA SUIT

July 31, 1951, the company started suit in the Federal district court in Alabama against Oscar Chapman, Secretary of the Interior, to compel delivery of the patents (exhibit 70). Since neither the claims nor the land nor the Secretary were in Alabama, it would be clearly apparent that there was no jurisdiction in the court. Interior referred the matter to the Justice Department to defend on August 24, 1951. Justice filed a motion for summary judgment (exhibit 68).

September 12, 1951 (exhibit 67), Justice filed a motion to quash the proceeding. It would seem that if these motions had been called up in court at any time, the Alabama suit would have been dismissed and the way cleared for departmental action, but, in fact, this suit was used as an excuse by the Department to keep from passing on these claims.

An example is an undated memo in the files which you may identify as "exhibit 65," photostat attached, which says:

"We will keep this 'on ice' until after the final disposition of the Alabama case. (Signed) M. G. W."

THE MISSING RECORDS

After the violent protests from the McDonalds that they had been shabbily treated, that much of their own evidence was not of record, and that a lot of evidence which had been filed had not been sent to Washington, I caused inquiry to be made of the Portland office as to whether there were additional papers and documents in that office which had not been sent forward, and some documents were forwarded.

These may well have been omitted from the record because of the confusion that arose at the hearing and because they had been tendered at other times, or because of the admitted confusion or reluctance on the part of the manager of the Portland office to pass upon the question.

The fact that the record was not complete is, I believe, substantiated by exhibit No. 90, a letter from Solicitor Mastin G. White, dated August 3, 1951, addressed to Al Sarena Mines, which says [carbon in the files]:

"It appears upon the basis of your letter dated June 23, 1951, as supplemented by information received from the manager of the land office to the effect that the reporter failed to obtain a complete transcript of the earlier portion of the proceedings at the hearing on September 13, 1950, that if you desire a further opportunity to submit evidence bearing on the question whether valuable mineral deposits have been discovered on the claims involved in your appeal (A–26248), it would be appropriate to remand the case for a supplemental hearing with respect to that issue. * * *"

THE CLAIM THAT THE PREVIOUS ADMINISTRATION HAD DENIED THESE CLAIMS

The statement has been frequently made in the press and perhaps in your record to the effect that these claims had been denied by the previous Secretary of the Interior. The statement is not supported in any manner by any document of any kind in the record. On the contrary, there is a letter dated September 27, 1952, purported to be written from Mr. George F. Rock, attorney in Denver, which says:

"DEAR OSCAR: You will recall that I mentioned a matter pending in your office when you were in Denver. The case is that of the Al Sarena Mines, Inc., of Trail, Oreg., and is pending in the Solicitor's office.

"I will appreciate it very much if you will make inquiry into this matter at your first opportunity and let me know if anything can be done toward arriving at an amicable settlement.

"With very best personal wishes, I am,

"Sincerely yours,

"(Signed) GEORGE."

In reply to that letter, there is a carbon copy of a letter Secretary Chapman wrote as follows, on October 9, 1952:

"DEAR GEORGE: In compliance with the request contained in your letter of September 27 to me, I have inquired regarding the status of the appeal of Al Sarena Mines, Inc., which is pending in the Office of the Solicitor.

"The appeal (A–26248) is from a decision of the Assistant Director of the Bureau of Land Management, who held for cancellation mineral entry Oregon 0665 insofar as that entry embraces 15 lode-mining claims situated within the Rogue River National Forest in Oregon.

"After the receipt of the appeal by the Solicitor, and while it was under consideration, the corporation instituted in the United States District Court for the Southern District of Alabama a suit against the United States and the Secretary of the Interior. As the suit involves the same subject matter as the appeal in the administrative proceeding, further consideration of the appeal has been postponed until after the final disposition of the litigation. The suit is still pending.

"Sincerely yours,

"(Signed) OSCAR,
"*Secretary of the Interior.*"

From other letters it is apparent that at least as late as November 22, 1952, Secretary Chapman had not passed on the case and had not even considered it, and there are no records to the contrary, so far as the files disclosed.

THE PROCEDURE ADOPTED

In view of the substantial delays and the muddled state of the record in this case, I was frankly puzzled to know what to do with it. It seemed to me that there were three possible alternatives.

The first and most obvious alternative was to send the matter back to the Bureau of Land Management in Portland to start all over with another hearing.

At first that seemed to me to be the thing to do. I seriously considered doing it, but in view of the fact that 5 years had then elapsed during which this matter had been dragging along, in view of the accusations of collusion that the McDonalds were making against the Bureau of Land Management and the Forest Service, in view of the fact that the first hearing had broken up in confusion, in view of the fact that much of the evidence of the claimants either intentionally or unintentionally did not appear in the record which was sent to Washington, and in view of the fact that the hearing officer had been reluctant to render a decision, the record of the entire affair was not such as to inspire complete confidence in me of any speedy determina-

tion of the matter, and it seemed to me a certainty that to remand the claims to the same field office which made the original record would be a vain act. The same suspicions and hostile attitudes would be present and this course would simply defer any final disposition of the case another period of years. If there was merit in the claims, the claimants were entitled to a determination of the controversy so that they could finance operations if they wished and pay the taxes which were accumulating. If there was no merit, they should be so told.

For these reasons it seemed to me that the alternative of sending the case back to Land Management was not a desirable alternative.

The second alternative was to somehow get the matter into court and let the court decide it. This was discussed in detail but proved to be legally impractical. If the claims were sustained, of course nobody would appeal. If the claims were denied, then it seemed clear that the Solicitor's finding of lack of minerals would be conclusive on the court; and since that was the sole ground involved, the company could get no complete review in the courts, even though an adverse ruling were given.

The third alternative seemed to be to get some independent assay of the minerals, if any, on these claims from some disinterested agency that was not a party to any of the previous controversy. I felt that I was in a situation quite comparable to that of a court in a case where 4 doctors say the defendant is sane and should be executed and 4 other equally distinguished doctors say that he is insane and ought to go free.

Under those circumstances the procedure is quite common that the court may call in disinterested experts of its own choosing, hear their testimony, and rely on it if it is believed reliable.

The question was who could be chosen as an impartial medium to secure new assays and get the facts straight. Under those circumstances and after staff discussion in Interior, as well as discussion with other lawyers on the Solicitor's staff, I made up my mind that the thing to do was to submit the problem to the Bureau of Mines to secure new assays which would be dependable and beyond dispute.

On June 4, 1953, I discussed the matter with Assistant Secretary Felix Wormser, in charge of the Bureau of Mines, and received some recommendations from him as to 1 or 2 prominent mining engineers whose advice might be dependable.

Meantime, I had discussed the matter with Congressman Ellsworth on June 1, 1953. I told the Congressman that I was much disturbed as to who was believable in connection with the mineral content of these claims. As I recall, I told him that it would be very helpful to me and I would have much more confidence in the situation if he would get for me the opinion of 3 or 4 mining engineers who knew something about the property and who would give their opinion as to whether it was a sincere mining effort.

Pursuant to that suggestion and apparently on June 4, 1953, Congressman Ellsworth wrote to four mining engineers who had previously examined the property. A copy of his letter to them, as he forwarded it to me, is shown as exhibit 12a in a photostat attached to this statement.

On June 24, 1953, Mr. Ellsworth submitted to me the originals of the responses to his letters of inquiry. His transmittal letter is

shown as exhibit 12, a photostat attached to this statement. The first response is by Alan Kissock & Co., 70 Pine Street, New York, exhibit 13, photostat attached, in which Mr. Kissock stated that:

"There is, however, absolutely no question but that there is on the Al Sarena claims a tremendous mineralized area and in my opinion it is definitely a valid mineral discovery under the mining laws. * * *

"I therefore suggested to the owners that they should patent their ground and I understand they have sincerely complied with all the necessary requirements to do so. In my opinion this application for patent very definitely merits favorable consideration.

"Very truly yours,

"(Signed) ALAN KISSOCK".

The second letter is from G. Cleveland Taylor, a mining engineer of long experience, then living in Sacramento, Calif., and a registered professional engineer of that State, shown as exhibit 14, photostat attached. Mr. Taylor had been quite familiar with the mine as the registered mineral surveyor who had examined the claims. He stated:

"I surveyed the claims for patent spending some 2 to 3 months on the ground, covering the area quite thoroughly, both on the surface and underground.

"My conclusion was that a patent should be granted to the applicants. This has been for many years what might well be termed a legitimate mining operation * * *.

"The present owners, who acquired the rights of the original locators, have always regarded the mine as a broad zone and have predicated their activities on that theory * * *.

"Of course a great deal of systematic drilling or other additional development work is necessary to actually prove a large low-grade ore deposit, but there appears to be sufficient widespread mineralization to prompt a prudent man to carry out such development."

The third letter is from Mr. D. Ford McCormick, who I believe has already appeared before your subcommittee and whose credentials, I understand, are as high as any mining engineer in that region, shown as exhibit 15, photostat attached.

Mr. MCCORMICK was, of course, employed as a consultant by the McDonalds, which quite naturally subjects him to the allegation of prejudice. Among other things, Mr. McCormick says:

"Yes, I would say that the Al Sarena, Inc., group of claims has an excellent chance of developing into a large low-grade operation if a well planned development and exploration program is carried out at the time when circumstances are right for a profitable operation if the property proves out."

The next opinion is from Col. J. E. Morrison, a registered mining engineer of the State of Oregon, then in the United States Army, as I understand it. His letter is attached as photostat exhibit 16a. Among other things, he said:

"There is a fairly large area of porphyry on Elk Creek which has been subjected to one or more periods of mineralization. Gold, silver, and other metals have been deposited along the cracks, crevices, faults, and where the formation was porous enough for the mineralizing solutions to penetrate. I have sampled and seen the assays of over a thousand samples from this mineralized area. Like all mineralized areas, the values do not run uniform throughout. Samples from the more mineralized areas will run as high as $10 or more per ton.

The low assays are obtained from the hard porphyry, which the mineralizing solutions had not penetrated. The Al Sarena people have studied this area and consolidated it into a group of claims. All 23 claims, as I remember them, show evidence of this mineralization and do carry gold and silver values.

"This property has been examined by a number of reputable mining engineers. Based upon the findings and recommendations of these engineers, the owners have spent thousands of dollars and also their time in developing the property into its present state. There are a number of large, low-grade properties in North America that have made a success of the operation on lower values than those indicated at the Al Sarena. The 90-day test run proved to me it could be made a successful operation. To declare a portion of this group of claims to be nonmineral, in my mind, would be a gross injustice to the owners who have spent so much time and money in developing the property.

"Again apologizing for the delay in answering your letter.

"Sincerely yours,

"J. E. MORRISON,
"*Mining Engineer.*

"Oregon Registry No. 1901"

I have quoted these opinions of mining men in order that you might know that before taking any action on this matter I had secured what I felt was at least enough evidence to justify my regarding the patent application as having been made in good faith.

These 4 engineers, 1 from New York, 1 from Eagle Point, Oreg., 1 from Sacramento, Calif., and 1 from the Army, wrote these letters, apparently with no consultation between themselves, and while they had all from time to time taken a look at this property, there is no evidence that they were receiving any compensation at the time, with the possible exception of Mr. McCormick, or had any interest in the matter beyond that which any professional engineer might have.

Therefore, on September 3, 1953, I sent a memorandum to the Bureau of Mines and letters to the Al Sarena Mines, Inc., and Mr. McCormick, as their engineer, assigning the task and, as I believed, fixing responsibility.

The letter to the Al Sarena Mines (exhibit 33–2) in the files is as follows:

"AL SARENA MINES, INC.,
"*Trail, Oreg.*

"Gentlemen: Pursuant to my conversation with Mr. Garber, the following modus operandi is acceptable to me in acquiring further evidence of a valid discovery on your contested claims:

"1. I should like N. E. Volin, a mineral expert from the Bureau of Mines in Spokane, to accompany Mr. D. Ford McCormick when samples are obtained for assaying purposes. In the event Mr. Volin is unable to take the assignment, he will designate one or more substitutes from the Bureau of Mines who will be available.

"2. The two men may arrange the time and place of meeting to suit their convenience. They should meet as promptly as possible, however.

"3. Accurate record should be kept of the location from whence each sample is taken.

"4. Samples should be taken from each of the following claims: Henry Applegate, J. W. Merritt, Rainboe, Sulphide, Delia McKinnon, Cougar, Oro Escondido, W. C. Leever, J. L. Grubb, J. D. McKinnon, Manganese Claim, Staples, Arroyo Verde, Alabama, and LaJolla.

"You may take as many samples of whatever weight from each claim as you desire.

"5. The samples should be retained in the possession of Mr. McCormick and the Government representative until shipped or delivered to a qualified assayer who is acceptable to both men.

"6. The assay report should be labeled so that they are easily identified to the claims from which they are procured and the reports sent to me promptly.

"7. Mr. McCormick's salary and expense and the assaying costs will have to be borne by you. The Government will bear only the expense of its representative.

"Very truly yours,

"CLARENCE A. DAVIS,
"*Solicitor.*"

"Copy to: Director, Bureau of Mines; Congressman Ellsworth; Mr. D. Ford McCormick, Route 1, Box 125, Eagle Point, Oreg."

A copy of this letter was sent to the Bureau of Mines along with a memorandum (exhibit 33–3) which is as follows:

"Memorandum
"To: Director, Bureau of Mines.
"From: The Solicitor.
"Subject: Al Sarena Mines, Inc.

"Enclosed please find a copy of a memorandum which I have sent to the above subject, and a copy of my letter to Mr. McCormick. They are self-explanatory.

"In view of the fact that the company did not introduce evidence of discovery at the hearing for patent, it is my desire to give them this opportunity to make their showing. I am aware of the peculiar nature of the area that they say is mineralized and want to approve patent for them if the assays afford us the well-established legal basis therefor. All people concerned should, therefore, cooperate in obtaining samples and assays upon which no doubts will be harbored by anybody. The decision on the application for patent should be considerably easier after we have the new assays.

"Mr. Armstrong of my office has talked to you and Mr. Miller concerning this matter and has been told that Mr. Volin at Spokane should be available to represent the Government when the assay samples are taken. I would appreciate your cooperation in sending him the suggested procedure and instructions to contact Mr. McCormick at Eagle Point, Oreg. My principal concern is to have a qualified Government representative present to see that the assay samples are fairly taken from each claim and then delivered to a competent assayer.

"CLARENCE A. DAVIS,
"*Solicitor..*

"Enclosure."

The letter to Mr. D. Ford McCormick on the same date (exhibit 33–1) is as follows:

"Mr. D. Ford McCormick,
"*Route 1, Box 125,*
"*Eagle Point, Oreg.*

"DEAR MR. MCCORMICK: As you know, the A1 Sarena patent application has been appealed to the Secretary of the Interior. The application, to this point, has been rejected on the ground that the company has not produced satisfactory evidence of a valid discovery on certain of the claims.

"In an effort to determine the matter fairly, I have agreed with Congressman Ellsworth, who has interceded on behalf of the company, to ask you and Mr. Volin of the Bureau of Mines, or his substitute, to procure personally, sufficient samples of the deposits on each claim to afford adequate assays on which the Secretary can base his decision on the validity of the discoveries.

"I am enclosing herewith a copy of the procedure which I have suggested for you and Mr. Volin to follow. I have also asked Mr. Volin to contact you promptly so that you can arrange the time and place of meeting, convenient to both of you.

"Sincerely yours,

"CLARENCE A. DAVIS,
"*Solicitor.*"

"Enclosure.
"Copy to: Director, Bureau of Mines."

This procedure of referring matters from one bureau of the Interior Department to another is actually very common. The Interior Department has several highly specialized bureaus of a technical and scientific nature which rank alongside any similar organizations in the country. The Geological Survey, the Bureau of Mines, the Bureau of Land Management, the Bureau of Reclamation, the Fish end Wildlife Service, all have the benefit of years of accumulated experience in certain technical fields.

It has been a common practice for many years when matters arise within the field of one of these agencies regarding which another agency has expert knowledge to refer it to the second agency. This has been done whenever the Secretary feels uncertain of the position of a particular bureau.

Proposed projects of the Bureau of Reclamation, for instance, have been submitted to the Geological Survey or the Fish and Wildlife Service for their appraisal of the situation. Projects of the Bureau of Indian Affairs are frequently submitted to these other bureaus for their advice and guidance. From time to time various Secretaries of the Interior have even set up special groups to advise in the solution of difficult problems.

I am informed of one instance in which this very question of the amount of mineralization on mining claims was referred to the Geological Survey, in the leading case of *U. S.* v. *Cameron,* involving mining claims on the Bright Angel Trail in the Grand Canyon. In that case the Secretary referred the matter to the Geological Survey, and, I am informed, determined to follow the report of that agency, and was affirmed by the Supreme Court of the United States.

This practice is common wherever the Secretary has felt that a bureau was overoptimistic in its plans, overzealous in its conduct, or where he felt the need of independent advice from one of the other agencies.

As a matter of fact, in the last 2 years the Department has set up an entirely new organization in the Office of the Secretary, called the technical review staff, for the specific purpose of reviewing proposed bureau actions and decisions and advising the Secretary regarding them.

This case was not only a difficult one, but was one in which, in my opinion, the record was not dependable.

The problem involved was to take new mineral samples, dependable samples, on these claims, and to have them accurately and honestly assayed. I think it will be conceded that if assays showed adequate mineralization, these people were entitled to their patent under the mining law.

The United States Bureau of Mines is a great technical organization. Out of it for many years have come the finest developments in the field of mineralogy that this country, and the world, have seen. I had then and I have now complete confidence in the integrity of the Bureau of Mines, and if I may say so frankly, I regret the numerous aspersions that have been cast upon what I consider to be loyal and faithful career employees of that Bureau.

If the Bureau of Mines cannot be trusted to take mineral samples and have them properly assayed and report on them, then I wonder what agency can be trusted with an assignment of this character.

It is, incidentally, just a little unfair to attempt to attribute to Secretary McKay in the first year he was in office all of the claimed errors of a Bureau which was completely built and staffed by the preceding administration.

I should like to point out to you that the personnel of this Bureau had not been in any manner changed by the present administration; that all of these people, so far as I know, had been employed for many years as career people in the Bureau.

Having submitted the matter in the manner that I have outlined, there is nothing that I can add of my own knowledge with reference to what was said or done until after the assays were completed. I should point out to you, however, that the taking of these assays, their preparation and their shipment, as I understand from your record, was all done directly by the Bureau of Mines and the mining engineer consultant of the applicants.

I shall have to leave to the mining people the explanations of how this was done and what they did. I can only point out to you that from the time that I issued the instructions, September 3, 1953, until after the assays had been completed and the reports returned, neither I nor any other official of the Department of the Interior outside of the Bureau of Mines, so far as I know, had anything whatever to do with the taking, shipment or assaying of these samples. I relied upon the procedure adopted by the mining engineers.

THE REPORTS OF THE ASSAYS

When the assays were completed, as your records already show, duplicate originals were sent to the Bureau of Mines and to the claimants.

The claimants, upon receipt of their copies of the assays, either brought or mailed, and I would have no way of knowing which, a set of the assays to Washington. On December 22, 1953, Mr. Garber,

Congressman Ellsworth's assistant, telephoned to make an appointment for me to see the McDonalds, which according to our records I did on the morning of December 24, 1953. The assays do not bear a filing stamp of the Interior Department, because they had been hand carried and were delivered in person to me, and only matters received through the Solicitor's docket room bear the incoming stamp. I, in turn, handed them over to Mr. J. Reuel Armstrong, the attorney working on the case.

They appeared to be duplicate originals of the assays. They were on the stationery of the assay company, and the transmittal letter was attached.

Mr. Armstrong worked over them at some length. His notations are on the duplicate originals on which the work was done. Each assay number was checked against the corresponding claim from which it had been taken. Photostats of them, bearing his notations, are attached.

On December 29, 1953, Mr. Armstrong came to my office, advised me that a check of the assays had verified what I had been told was the result, and we discussed what should be done about the claims. We were both in my office discussing the matter. We had not received the other set of assays which had gone to the Bureau of Mines, and I suggested to Mr. Armstrong that we call Mr. Appling of the Bureau of Mines in Oregon to find out whether he had one of the sets of the assays and how the situation looked to him.

The call was placed in my name. I am happy that your committee asked for confirmation of that call and that we produced not only the telephone slip showing the call but the operator who placed the call and made the slip originally, the clerk who has had the slip in custody since that time, and further verification by the Department's telephone bill. We showed to you the originals, and we supplied photostatic copies for your record.

Both Mr. Armstrong and I talked at some length (the telephone slip shows 18 minutes) to Mr. Appling. You have heard Mr. Appling's testimony. He went over the substance of his report with us on the telephone and verified the authenticity of the duplicate assays in our possession.

I especially questioned him about the whole matter, the methods of taking the samples, about how carefully they had been guarded against any possible tampering, about how they had been shipped, where to, and asked him why the assay house had been chosen in Mobile. Finally, I asked him as a mining engineer who had been all over the property for several days whether, in his opinion, a man would be justified in developing the property. He stated that in his opinion the property was good enough to well warrant further development.

Mr. Appling has already explained to you why these samples which he took had been sent to Mobile. My instructions to the Bureau of Mines were to select an assay house that was mutually acceptable to the Bureau and to the mining engineer of the claimants. A choice of that nature, by the agreement of parties, is a very common practice, and in this particular case seemed particularly appropriate, in view of the friction and disagreement that there had been between the Bureau of Land Management, the Forest Service and the claimants.

Mr. Appling advised me that before sending the samples to the Williams Co. in Mobile, the Bureau of Mines had wished to verify the

standing of the Williams Co.; that they had called the Bureau of Mines' office in Nashville, Tenn., regarding the integrity of the Williams Co.; that the Bureau of Mines office in Tennessee had called the State geologist's office of Alabama which had informed them that the Williams Co. was well known and a reputable assay house. They had also checked the fact that the Williams Co. was on the list of the Department of Commerce as a recognized assay house. These facts, of course, are in Mr. Appling's report. They were also given to me on the telephone and seemed to me at that time adequate evidence of the integrity of the Williams Co., even though it was the home city of the claimants.

I felt justified in relying upon the same evidence of reliability on which the Bureau of Mines felt justified in relying.

In this conversation Mr. Appling had gone over his entire report in connection with this matter. I asked him to send a copy promptly to me. As I recall, he told me that the copy which he had finished was not very well typewritten and he wished to have it retyped before mailing it in. At any rate, I was given to understand that it would arrive through Bureau channels in due course.

I wish at this point to make very clear that I had before me all of the information and all of the evidence in this case, the assays and the information in the report, verified by Mr. Appling of the Bureau of Mines.

THE OPINION

Having this information, the only thing remaining to be done was the preparation of an opinion on the evidence before me.

Before I came into the department, a draft of opinion had been prepared, I am told, by staff members of the Solicitor's Office, based on the record as it then existed, in which, as I have pointed out, some evidence of the claimants was missing.

There is no record, however, that that preliminary draft opinion was ever considered by the previous Solicitor or signed by him. It did, however, contain a statement of the facts and a discussion of all of the procedural points and irregularities of procedure which appear in the record. These were appropriate to any opinion and comprise the first 12 pages of the opinion in the case.

The only point left to be determined was the question of whether there were adequate minerals on the claims. That, of course, from a legal standpoint, was the only question seriously involved. Whether the timber was valuable or not valuable; whether the McDonalds were wise people or foolish people, are points that are not material. If there was a discovery of minerals on these claims, the McDonalds were entitled to patents under the mining law. That was the only point left to cover in the opinion. It depended upon the acceptance of the validity of the assays and the report from the Bureau of Mines which appeared to show adequate mineralization.

In acceptance of that fact, Mr. Armstrong prepared the last 2½ pages of the opinion. The language was modified somewhat by me and the opinion released on January 6, 1954.

At the time it did not occur to me to have been in any manner more expeditious than the occasion warranted. If the assays were accepted as authentic, that terminated the controversy.

I might also add, although perhaps it is petty detail, that these voluminous files do not make a record which is easy to work on inter-

mittently. I can well understand why Mr. Armstrong, after examining these assays and having gone back over this complicated record, felt that he knew as much about it as he would ever know and wished to complete the opinion and put the matter behind him instead of holding it for another period of time and going through it all over again. I think perhaps I shared that feeling.

You must not forget that there had been a constant complaint about delay and a constant pressure for action on this matter through the whole 5-year period that it had been pending. I have intentionally quoted repeatedly from the files to show that under both the preceding administration and my own there had been pleas to expedite action on the matter, and numerous directives to hasten action had been issued.

The record in the files shows a line of correspondence from Congressman Boykin of Alabama, highly endorsing the McDonald family and repeatedly asserting that they were being abused and were being damaged by delay and urging that prompt action was necessary. These letters of the Congressman are all photostated and attached to this statement.

In addition to these letters there are numerous other departmental orders and communications, all urging expeditious handling of this matter. There are also several other letters from Congressman Ellsworth, which also are photostated and attached to this statement, directed toward urging some kind of a termination of this controversy and avoiding further continued delays.

In order that the record in that connection may be complete and convenient to you, I should tell you that our records indicate that during the time from February 17, 1953, when I came into office, until this decision was rendered, there were four telephone calls from Mr. Ellsworth's office to me on which I talked to either Mr. Ellsworth or to Mr. Garber, the general substance of which was a plea to expedite this decision. These telephone conversations occurred on April 22, May 4, May 5, and June 25, 1953, and in addition to that I talked to Mr. Ellsworth on June 1 and August 4 in my office.

These calls and telephone conversations were similar to the dozens of other calls which the Solicitor's Office received from numerous Members of the Senate and the House when they have matters pending for constituents before the Department.

Mr. Chairman, the language has been used that there was some kind of "high level interference" in this case. I am a little puzzled as to what is meant by that term. I have placed before you very completely the evidence with relation to the various Members of Congress. If you mean by that term interference by Members of Congress, you may judge of it by the record before you.

If you mean by "interference" that the Secretary has overruled the decisions of one of the numerous bureaus, then I must protest the use of the language.

The Secretary of the Interior, and by delegation in this case, the Solicitor, is the final judge of the decisions of the Department. All of the actions of this vast army of 50,000 people employed by the Interior Department can be appealed ultimately to the Secretary for decision.

The system is quite comparable in structure to our judicial system. In both there are numerous decisions made in the field or in the trial

court. They may be appealed to bureau chiefs or to circuit courts, and may be appealed to the Secretary or the Supreme Court. If the Supreme Court reverses one of the trial courts, is that "high-level interference"? Let me point out to you that when one criticizes a decision of the Secretary merely because it does not follow the decisions of the lower bureaus, one is really criticizing the American system of appeals.

To say that the Secretary should not reverse field decisions or decisions of the bureaus is simply to argue that the decisions of field offices or bureaus should be final, and that we should have a government by bureaucracy without interference from the elected executive branch. I hope it was not meant to imply that I am in error merely because I reverse the decision of some bureau. If so, then there is no need for a Solicitor, there is no need for Assistant Secretaries, and there is little need for a Secretary himself.

And let me, as a relative newcomer to the Federal Government, point out to you some startling things that occur by reason of the type of thinking which says that no one should interfere with bureau decisions.

Not long after I came into the Interior Department, I had occasion to review a decision of the field officer of one of our bureaus. I was discussing it with the bureau chief, and it seemed to me the decision was wrong. He was inclined to agree with me, and I asked him what he would do. He said in substance, "I will have to sustain the boys in the field because if I don't sustain them, they will not sustain me." Such a statement, of course, amounts to saying that an appeal is useless and, that the decisions of bureaucracy should be final. It amounts to a complete abdication of the right of appeal and of the right of elected officials to interfere with the decisions of permanent employees who comprise the bureaus.

I regret the necessity of pointing these things out in this statement, but the implication has been made in the press extensively that merely because a decision was rendered which did not agree with the decision in the field, the top decision was necessarily in error.

There is also running through this case, and certainly through the newspaper comments upon it, a broad conflict of economic ideology.

The wise use of our great national forests is a program supported by all of us. However meritorious that objective, I trust you will agree that we should never distort the law in order to attain it. I have already set forth in this statement a letter from the Director of the Department of Geology and Mineral Industries of the State of Oregon, in which the Bureau of Land Management and the Forest Service are believed to be unsympathetic to the allowance of mining claims. The Department of the Interior, for several years, I would suspect, has been equally unsympathetic.

I have already stated the law governing the approval of mining claims, as enunciated by the Supreme Court. It is to the effect that if the miner has filed on these claims, made improvements and discovered minerals in such quantities to justify him in further exploration and development, the claims should be patented.

It is not required that the mine should be fully developed or should have established a history of profitable operation. Neither is the timber on mining claims material to the allowance of the claim.

That is the way the mining industry was built, and the maintenance of a healthy mining industry is just as essential to the economic well-

being of the United States as is the maintenance of other basic industries. For several years the Government has actually been engaged in a program of encouraging mineral prospecting and development.

Much of the economy of the Western States has been based upon mining. The results of mining operations are always speculative, since it is never possible to state with certainty the value of the minerals under the ground.

The patenting of mining claims over the years, therefore, has gone forward by the thousands, based only upon a discovery and the hope that a profitable venture can be developed. This must be remembered in any consideration of mining problems.

Nevertheless, a few years ago, the Department of the Interior attempted to inject into the mining laws a standard of discovery which required profitable operation and a showing that the mineral deposits had the greater comparative value than other uses. This is not the standard set up by law.

The Department has the authority to open and close areas to mining locations. When lands are opened, they are subject to the mining law as it exists. When they are closed no one can even stake a claim on them.

To allow mining claims to be located and then to judge them on standards other than those set up by the Congress and the Supreme Court is administrative legislation.

If we are to adopt the philosophy that any department of government is to be vested with such vast powers, then it should be done by an act of the Congress and not by administrative decision.

THE TIMBER VALUES

I am reluctant to discuss the timber values, because I must reemphasize at all times that the value of timber on mining claims is not material; that the Congress has never passed legislation which denies mining claims merely because there is timber on them; but there has been comment in the press and I believe from some of the members of your subcommittees to the effect that these claims constitute a timber grab. Let me point out:

1. At this time these claims were filed on as mining claims, there can be no dispute that similar timber could have been purchased in Oregon for as low as $2 and $3 an acre. The fact that all the claims were staked between 1897 and 1939 would demonstrate conclusively that at least in the beginning there could have been no thought of any profits out of the timber.

2. The only testimony in the record at the time I passed on the case was the testimony of Mr. G. Robert Leavengood of the United States Forest Service, who has been employed by that agency as a timber management assistant and whose duties were the preparation of timber sales in that district. His testimony is:

"We have the two values, the overstory and merchantable timber which could be harvested, incidentally * * * the appraisal on that, using the roads and cutting the timber which the Forest Service would normally cut, leaving perhaps 25 percent standing as growing stock, the value of the timber which we would cut now runs about $77,000 on the contested claims."

Admittedly, timber has increased in value since this record was made up in 1950, but I have difficulty in believing that it has increased as fantastically as some of the figures which have been so freely used.

3. If the mine had been developed, even without the issuance of any patent, the timber would have been available for the purpose of timbering the mine if underground workings were pursued and would have been largely lost to the Government. Even Mr. Hatton, who examined this property for both the Bureau of Land Management and the Forest Service, in his report said that large amounts of timber would necessarily be used in any underground mining operation, and he further said:

"Of the mining methods mentioned above, the central mass, being a low-grade proposition with suitable topography, could probably best be mined by the block caving method. In any event, this method is the cheapest yet devised for large-scale mining of low-grade deposits."

Such methods, it seems to me, would be destructive of any sustained timber yield. I cite these merely as things to be considered in connection with the charge so freely made that this is only a timber mining proposition.

IN CONCLUSION

I am a lawyer. This whole controversy is not now and never has been anything more to me than another lawsuit between contending parties.

The problems involved are legal and are not political.

I heard the case in the same mental attitude as any appellate court would hear a case on appeal, trying, from a confused record, to ascertain the truth.

I regret that others have chosen to try this case in the newspapers and to try it on issues which in large part are quite immaterial to the actual problems involved. The Department has been subjected to long weeks of criticism, and I am very grateful for the opportunity, at last, of laying before you all of the facts and circumstances.

HOUSE OF REPRESENTATIVES,
Washington, D. C., June 1, 1953.

Hon. CLARENCE DAVIS,
Solicitor, Department of Interior,
Washington 25, D. C.

DEAR MR. DAVIS: This letter is in further reference to the Al Sarena Mines, Inc. case, Oregon No. 0665, now pending in your office on appeal, and concerning which I have sent previous communications.

The issue at this point, and actually the basic issue from the beginning in this case, is the question of a valid mineral discovery such as would warrant a reasonably prudent man in developing and extracting the minerals from the deposit. The act of making application, under oath, for patent creates the presumption that the applicant has made such discovery and stands ready to support such presumption. The Government, with its obligation to protect the public domain, has the privilege of investigating and determining the validity of the application, the supporting evidence of mineralization, and compliance with the mineral laws of the United States. Obviously a file for a patent application which is deemed to lack the usual legally sufficient evidence

of mineralization creates a duty upon the officials of the Federal Government to take such steps as are necessary to verify the sworn documents of the applicant.

It is pertinent in the instant case, in connection with the proceedings heretofore had, that the application involved is not the usual common application for patent covering an area within which is located only a vein or pocket of enriched mineral. In contrast, this application covers what is legally recognized in the courts and by the Mineral Division of the Bureau of Land Management as a broad-zone claim.

At the request of the regional cadastral engineer, the applicant made an extended survey showing the interior lines of claims which would fall within the exterior boundaries of the broad-zone claims. This involved expense beyond that required for survey of a broad zone of contiguous locations and beyond the cost of the lands involved and necessitated nearly a year's delay in time. The record shows that the examiner then used these additional lines, obtained at additional expense to the applicant, to treat the application not as a broad-zone claim application as filed, but as an application for 23 separate claims.

In a broad-zone claim the mineralization is widely dispersed rather than concentrated within a pocket or vein. The limited mass of mineralized rock has the required essentially genetic oneness, and has well defined boundaries closely separating it from the surrounding rock. Some areas within these well defined boundaries will be substantially richer in mineralization than others, but the general mineral characteristics will persist throughout the broad-zone mineralized area. Such a deposit is generally practical of development only as a large volume, low-grade mining operation.

This concept becomes important in this case in understanding the nature of the decisions and contest action, bringing it on to its present status.

Turning to the specific issue of proof of mineralization in this case, the applicants, looking toward the development of the deposit for a mass production low-grade mining operation and toward patenting on the basis of a broad-zone claim, prepared their initial papers toward this end.

Despite the fact that more than 2,000 assays were of record and pulps available to the Department for verification and comparison with the assay records, the examiner in the regional office requested that the applicant perform additional sampling and submit assay reports for his report and record, made by impartial laboratories, and in his own specified form.

The file in this case is now devoid of this data showing the precise location of each sample taken and the assay reports showing mineralization, and which evidence is essential to any bona fide adjudication of the application on its merits. These reports are entirely missing.

A search of the file by Bureau of Land Management personnel and a further search by a representative from my office failed to reveal any of the correspondence between the regional office and the applicant concerning the receipt of such assay reports or the assay reports themselves which were submitted in further proof of mineralization.

To illustrate, I quote from a letter dated January 4, 1950, addressed to Mr. H. P. McDonald, Jr., secretary-treasurer, Al Sarena Mines, Inc., 408 First National Bank Building, Mobile, Ala., and signed by Mr. Elton M. Hattan, mineral examiner for the Bureau of Land

Management, region 1, Swan Island Station, Portland 18, Oreg. In the second paragraph of the letter, Mr. Hattan states: "My report was completed and submitted last month. The December 27 letter did not reach here in time to include any of the information which was enclosed with it. The assay results submitted by you in August and September were incorporated in the report."

The file does not disclose a single one of the assay reports, receipt of which is acknowledged by Mr. Hattan, and which he stated were incorporated in the report.

In the third paragraph of the same letter, Mr. Hattan states: "The information supplied as to the exact place of taking the samples last reported by you is not clear. If you will supply more definite information, I shall be glad to incorporate such information in a supplementary report." This is followed by requests for very precise survey descriptive data which would enable a person to locate the precise point from which an assay sample had been cut. The information which was transmitted pursuant to this request is not in the file and contrary to Mr. Hattan's statement, there is no supplementary report in the file carrying such data.

None of the assay reports transmitted on 20 samples, receipt of such reports being acknowledged by Mr. Hattan under date of January 4, 1950, are in the file.

Under date of December 19, 1949, Mr. Hattan transmitted his report to the regional forester, Mr. H. J. Andrews, and to the Interior Department in which he denied mineral discovery on 15 claims. This is apparently the report referred to in his letter mentioned above, and accompanying which none of the evidence furnished by the applicant as to mineralization was transmitted with the record; nor is there present any supplemental report referred to in Mr. Hattan's letter.

Following this report, the docket sheet shows an entry "adverse proceedings vacated." Thereafter the lands were placed upon the tax rolls of Jackson County, Oreg., by the Bureau of Land Management regional office. Notice of Forest Service contest was thereafter received by the applicant and such action was protested by the applicant who gave notice that all evidence of bona fides, samples and assays were again refiled and resubmitted under oath for the record. The case went on to hearing on the basis of the incomplete file, lacking the applicant's evidence of mineralization. Counsel for the applicant demurred and when the demurrers were overruled, made formal appeal to the Secretary of Interior which appeal was granted. Within the time limits prescribed by regulation, counsel for the applicant gave notice of refiling all evidence of mineralization for the record for a third time. The record came on to the central office still devoid of this evidence and the decision of Regional Manager Rice, dated December 14, 1950, was transmitted to the Bureau of Land Management denying the validity of 15 claims within the broad-zone claim, essentially repeating the substance of the previous decision by mineral examiner Hattan.

From this history it is abundantly clear that the applicant was willing and cooperative, and at very substantial cost to himself endeavored to place in the record evidence of mineralization in support of his application. Although this evidence was acknowledged and received and the applicant was led to rely upon the statements of the agency that such evidence had been or would be placed in the file,

these papers either were never placed in the file or were removed thereafter. In consequence, this case went to adjudication and went to hearing without the supporting data as to mineralization submitted by the applicant.

It is a matter of conjecture whether the decision at any point, regardless of collateral testimony of witnesses and experts, would have been accepted as sufficient in the absence of the applicant's evidence of mineralization as against the Government's assay reports, all of which are in the file. If not in substance, at least in effect, the result accomplished was essentially in the nature of accepting the evidence of the contestant and suppressing the evidence of the contestee.

Such action, willfully done, would constitute fraud and vitiate every action and decision predicated upon the incomplete file. At the very least, however, the lack of this evidence of mineralization in the file deprived the applicant of a substantial legal right to have his evidence considered; and any action taken in the absence of such data cannot result in any semblance of justice. The action taken in denying patent on the 15 claims is claimed to be justified on the record as it stands; but the record as it stands is a sham and a deceit to those who were called upon to pass judgment, and is prejudicial to any fair decision as to the rights of the applicant.

A basic function and obligation of Government is to administer justice. Wherein the Government or one of its agencies, in the course of such action, finds itself in the combined capacity of a party at interest, prosecutor, judge, and jury, the sovereign is called upon to exercise the highest degree of impartiality and for this reason the burden of proof is placed on the Government to assure fairness and equity to its citizens.

The Government should as quickly assert its powers to remedy any defect prejudicing its citizens as it would insist on such remedying of any defect prejudicing the Government. Accordingly, it would appear to be only fair and reasonable in the instant case that this record at this time be made whole by the uncovering of the missing mineralization reports in particular, and other correspondence and papers pertinent to the action in this case which are likewise not present in the file, securing the originals if possible or certified copies where originals are not available, and the record reviewed and considered as it should have been at the time the mineralization showing of the applicant was complete. Had all proofs of mineralization been in the record, it is reasonable to assume the case would never have gone to contest.

It is pertinent to note that the report of the mineral examiner who transmitted the Government assay reports, but did not transmit those of the applicant, was of such a nature that no other individual studying the report could reasonably reach any other conclusion than that expressed by him. It is little wonder that the decision of the regional director of almost a year later, in December of 1950, essentially reiterates the statements of the examining engineer in his earlier report.

It is in point, I believe, to refer to the United States Geological Survey Bulletin No. 893, entitled "Metalliferous Mineral Deposits of the Cascade Range in Oregon." This report carried information on an examination made in the early 1930's and published in 1938, carrying exhibits (pls. 3, 6, and 22) and reporting on part of the instant property then known as Buzzard's mine, on pages 131 and

132. Since that date, the development work on the broad-zone claims involved in the application and including the Buzzard's mine operation has been more than doubled.

There are more than a mile of tunnel workings, numerous surface pits, shafts, cuts, and winzes. Roads have been built involving substantial expenditures; geophysical examination has been made as further proof of the existence of the broad-zone mineralization and which information the mineral examiner refused to permit in the record. At this time there is in place at this mine a 125-ton-capacity mill and machinery for floatation, jigging, tabling, and cyanidation. The expenditure in development of this property aggregates more than a quarter of a million dollars.

The foregoing facts are easily discernible. Certification of the United States mineral surveyor certifying as to the nature, extent, and value of the work performed on and character of the property, and the further certification by the United States cadastral engineer are present. The applicant's full proof of mineralization is absent. In view of this, it is my desire that this record be made complete. Accordingly, it is my request that the Department defer further action and decision on this case until the applicant's evidence of mineralization—whether it be the originals of reports filed or whether it be certified copies or next best evidence—is secured.

As to the procedure for carrying out this recommendation, I have no specific proposal, but trust that some plan may be developed which will not compound the injustice and the cost to the applicant in again producing for the record what he has already produced, and at the same time will enable the Government to fulfill its duty under the mineral law of the United States.

Sincerely yours,

HARRIS ELLSWORTH.

STATE OF OREGON,
DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES,
Portland, June 9, 1953.

Hon. HARRIS ELLSWORTH,
House Office Building,
Washington, D. C.

DEAR MR. ELLSWORTH: This is in reply to your letter dated June 4 concerned with the patent application of the Al Sarena Mines, Inc., in Jackson County.

I am sorry that I cannot give you an opinion and answers to your questions based on a personal examination of the property. However, some members of our staff visited the property in the early 1940's and I also have had some up-to-date information from Mr. D. Ford McCormick, consulting engineer at Eagle Point. I have confidence in Mr. McCormick's opinion and judgment, even though he has, I understand, done consulting work for the owner of the Al Sarena mine.

Based on information given me by Mr. McCormick, I would feel that there is a possibility of a large low-grade disseminated ore body containing probably gold, silver, lead, and zinc. It appears that the rocks of the area, consisting of volcanic breccias, rhyolite, and andesite, are altered and bleached, and Mr. McCormick states that he

sampled over a considerable area on the surface by digging surface pits and found mineralization disseminated in sufficient amounts to warrant the opinion that a large low-grade deposit might be developed. You will, of course, understand that proving the occurrence of a large deposit is a very expensive proceeding since everything about the ore body should be known, including size and quality, before plans may be made safely for the design of the proper kind of treatment plant. That is the reason why only large experienced and well-financed companies are able to develop the large low-grade mineral deposits.

Going back to your question regarding valid mineral discovery under the mining laws, I feel that because of the underground evidence of economic mineralization as described in our reports and the report in United States Geological Survey Bulletin 893, Metalliferous Mineral Deposits of the Cascade Range, Oreg., as well as the record of production, there could be no valid question raised against the legality of mineral discovery of the claims upon which the minerals have been developed. I assume from your question regarding a large disseminated deposit that the Bureau of Land Management has questioned the sufficiency of mineral discovery on claims included in the patent application which do not have economic minerals exposed in the underground workings. It seems to me in this case, also assuming that Mr. McCormick's statement is accurate, the claims on which pits were dug, and gold, silver, lead, and zinc values found, would certainly qualify as legal locations under the mining laws.

Although I hold no brief for people who located mining claims for the purpose of obtaining timber, I believe that Bureau of Land Management people have set up roadblacks in the way of legitimate mining claim applications for patent whenever there is timber on the claims, and have been making their own rules concerning the legal definitions under the mining laws.

It seems to be fairly well established that both the Bureau of Land Management and the Forest Service will battle to the last ditch the patenting of mining claims which contain merchantable timber irrespective of the mineral values on the claims.

Sincerely yours,

F. W. LIBBY, *Director.*

HOUSE OF REPRESENTATIVES,
Washington, D. C., June 24, 1953.

Hon. CLARENCE DAVIS,
Solicitor, Department of the Interior, Washington, D. C.

DEAR MR. DAVIS: As agreed upon at the time of our last discussions in reference to the Al Serena Mines, Inc., case, Oregon 0665, I have made inquiry of sources as nearly unbiased in their judgment as I could find and at the same time having some substantial mining and engineering knowledge on which some objective opinion might be based.

I am transmitting herewith originals of four responses to my letters of inquiry. Also a copy of the text of the letters directed to each of these parties. An inquiry was directed to a former director of the State department of geology, who is now a colonel in the Air Forces. I discover that he is on leave and my letter apparently had not caught up with him.

Three of the parties are professional engineers of high standing in their profession and whose integrity I do not believe can be questioned. Mr. McCormick is a registered professional engineer and is on the Oregon State Board of Engineer Examiners. Mr. Kissock, in particular, is one of the country's outstanding experts in the mining field, listed in Who's Who, with more than 30 years' experience in responsible capacities as engineer and metallurgist and for more than 10 years engaged in mining consultant work.

This inquiry on my part satisfies me that there is no reasonable question as to the bona fide nature of the mineral discovery and compliance with the mining laws by the applicant for patent. I thought you would like to have these statements for consideration and comparison with any reports received as a result of the check which you expressed the desire to have made through reliable sources.

With cordial regards.

Sincerely yours,

HARRIS ELLSWORTH.

JUNE 4, 1953.

It is my understanding that you have some familiarity with the Al Serena Mines, Inc., development in Jackson County, Oreg. It would be helpful to me if you would give me your objective estimate of the merit of this operation.

The history of this property since the initial claims were staked in 1897 or 1898 is rather familiar to me, as well as the developments in the last few years following the application for patent on the 23 claims in the broad-zone boundaries.

I am particularly interested in any observations you may care to make as to valid mineral discovery under the mining law, and any opinions or observations you might have as to the potential development of a large-scale, low-grade mining operation.

Also, I shall welcome any other comments which might be helpful to me in appraising the merit of the application for patent. Such information and comment as you may be able to give me at your early convenience will be greatly appreciated.

Sincerely yours,

HARRIS ELLSWORTH.

ALAN KISSOCK & CO.,
New York, N. Y., June 15, 1953.

Hon. HARRIS ELLSWORTH,
House of Representatives, Washington, D. C.

DEAR MR. ELLSWORTH: I am pleased to acknowledge your letter of June 4 relative to the Al Sarena Mines, Inc., development in Jackson County, Oreg., and, as requested, I am glad to tell you what I can regarding this project.

The Al Sarena was brought to the attention of Alan Kissock & Co. by Mr. H. P. McDonald and his two sons, H. P. McDonald, Jr., and Charles McDonald. I visited and made a preliminary examination of the property in October 1945 to determine if it might be of interest to us. Briefly the results of my investigation were as follows:

Mineralization occurs in what appears to be a roughly circular "chimney" of rhyolite which is more or less surrounded by andesite.

The mineralization is unusually widespread and assuming it to be actually circular it is safe to say that the diameter of the chimney is fully 3,600 feet. Within this area it is difficult to find a single piece of rhyolite which does not at east show some pyrite or oxidation products thereof.

I do not have my notes before me, nor do I recall the amount of exploratory surface and underground work that has been done. I do know, however, that this is quite extensive and since all the claims are contiguous the cost of this alone is ample to cover the work performance requirement of the whole group. There are, in addition, a number of camp buildings and a rather complete mill for concentration and cyanidation of the ore.

A mineralized area of this extent would require a thorough investigation to properly evaluate its possibilities. It was obviously too big an undertaking for us to consider so that I limited my examination to more or less general observations did. I did, however, take a number of samples to determine what might be expected of some of the then available rhyolite exposures.

Tunnel No. 1, and laterals therefrom, crosscuts and exposes at some depth a considerable area of the rhyolite and confirms the extensive mineralization evident at the surface. This tunnel level had been carefully channel sampled (cuts were 4 inches wide by 2 inches deep and from 4 to 6 feet in length from faces, floor, backs and walls) by a Mr. George Sopp. My underground sampling was confined to "spot" samples, taken at 3-foot intervals along the walls, over several hundred feet of tunnel No. 1 and its laterals. In all, I took some 30 tunnel samples and a number of surface samples, which were assayed by Abbot A. Hanks, Inc., of San Francisco, Calif. Although definitely low grade, these samples all showed pyrite and, with few exceptions, at least some value in gold, silver, lead and zinc. Many of my "spot" samples were taken at the same points as those channeled by Mr. Sopp. Fortunately his sample pulps had been saved and my assays of these pulps checked quite closely with my "spot" sampling of comparable areas.

As stated, our company was not in position to undertake anything of this grade and magnitude. There is, however, absolutely no question but that there is on the Al Sarena claims a tremendous mineralized area and in my opinion it is definitely a valid mineral discovery under the mining laws. My recommendation to the owners was that from their own standpoint, or any interested and capable party, the property warranted a careful geological and probably geophysical study which, if favorable, should be followed by an exploratory drilling program. There could well be localized concentrations within that mineralized area and although the whole, from what is now evident, may not be considered of immediate economic value nevertheless it is to just such large low-grade occurrences that we must look for our future supplies of minerals.

I, therefore, suggested to the owners that they should patent their ground and I understand they have sincerely complied with all the necessary requirements to do so. In my opinion this application for patent very definitely merits favorable consideration.

Very truly yours,

ALAN KISSOCK.

SACRAMENTO, CALIF., *June 10, 1953.*

Hon. HARRIS ELLSWORTH,
House of Representatives, Washington, D. C.

DEAR MR. ELLSWORTH: Your letter of June 4 regarding the Al Serena mines in Jackson County, Oreg., has been duly received and I shall be glad to comply with your request.

I surveyed the claims for patent spending some 2 to 3 months on the ground, covering the area quite thoroughly, both on the surface and underground.

My conclusion was that a patent should be granted to the applicants. This has been for many years what might well be termed a legitimate mining operation. The owners have apparently carried out a policy, over the years, which was believed to be in accord with the existing laws for acquiring mineral land. Much surface and underground work has been done in good faith; many times that required for patent.

The present owners, who acquired the rights of the original locators, have always regarded the mine as a broad-zone and have predicated their activities on that theory. A pilot mill was built and mill tests are reported to have been made on material broken in numerous crosscuts driven back into the shear-zone and away from the fissure which had been mined in the early work.

I observed the large shear-zone, or broad-zone, in many places, but my work did not call for any sampling. Little of the sulfide minerals appear in the shear-zone at the surface as it has been oxidized. In some of the shallow surface tunnels, however, galena and other economic base minerals are plainly visible.

Of course a great deal of systematic drilling or other additional development work is necessary to actually prove a large low-grade ore deposit, but there appears to be sufficient widespread mineralization to prompt a prudent man to carry out such development.

Large low-grade mines are made by development and as the exact location of the ore is not known until drilling or other development work has been done the operator would not now be prudent unless he had title to an area sufficient to protect the ore-bodies expected.

If additional information is desired I shall gladly cooperate.

Yours faithfully,

G. CLEVELAND TAYLOR,
Mining Engineer.

EAGLE POINT, OREG., *June 15, 1953.*

Mr. HARRIS ELLSWORTH,
Representative, Fourth District, Oregon,
Washington, D. C.

DEAR SIR: Your letter of June 4th was received upon my return from a trip south. It pleases me to note your interest in our mining industry in Oregon, as well as in our United States of America. If incentive is not entirely snuffed out, we may see some important developments in several areas when the time is ripe.

I did some work at Al Sarena Mines, Inc., when the pilot plant was in operation. Gold, silver, lead, and zinc concentrates were made from the more concentrated mineralizations in the Buzzard Mine to demonstrate the grade of marketable minerals and the feasibility of such an operation. Samples were taken at that time over a wide area

on a number of claims and these showed that values seemed to be disseminated over a considerable area in the district, indicating the potential of a large low-grade deposit. Many assays were made of samples taken from pits, across exposed faces in open-cuts, and in creek bottom, as well as cliff wall exposures of the country rock. Since that time, I understand that considerable more work has been done by the Al Sarena Mines, Inc., on their claims in this area. It was, and is, my opinion that further exploration work be done, possibly by drilling followed by tunneling, shaft sinking and open cuts made where the most and best information can be secured at the least cost to further prove the indicated values already exposed. This is an expensive and a time-consuming operation. It often requires years of exploration and development work to reach an operating stage for volume production. I need not cite the many such instances that have occurred in our neighboring States of Arizona, California, Nevada, Idaho, and right recently in our own Oregon where we now have, at along last, the development of the nickel deposit at Riddle (which was known about for so many years but just now coming into production) or, Yerrington in Nevada; or, the laterite and kaolin-sand deposits in the Ione, Calif., district where the groups of claims or ownership of mineralized areas has been kept more or less intact for many years so that the large low-grade deposits can be handled as a unit rather than going through the tedious and often impracticable process of trying to organize many claim owners (some of whom become greedy or "impossible" to deal with and spoil the whole scheme of development) so that a working plan can be carried out and a property developed and put into production. Yes, I would say that the Al Sarena, Inc., group of claims has an excellent chance of developing into a large low-grade operation if a well-planned development and exploration program is carried out at the time when circumstances are right for a profitable operation if the property proves out.

While writing you, I wish to state that I agree with you regarding the regrettable procedure stooped to by some unscrupulous individuals in denouncing claims under false pretences to try and obtain timberlands or recreation locations, as commented on by you in the article published in the Medford Mail Tribune of June 11, 1953, under the heading, "Bill Would Require Mine Stakers to Develop a Mine", copy of which is attached. There should be some way to prevent this fraud, but to pass a law placing a time limit or even fixed added amounts of exploration or development of mineralized areas seems to me to be unfair to the prospector and discoverer of minerals on Federal lands. The prospector is not usually a rich man, he often risks his whole life in the search of minerals and spends his lifetime under rugged conditions, not always rewarded by riches, then if he does make a discovery, to pass a law depriving him of the fruits of a lifetime because he cannot spend a fortune on "developing a mine", as suggested by the heading, seems rather nearsighted legislation to me, and certainly will discourage, rather than encourage, the already fast disappearing prospector to spend his days searching the far away and often more or less inaccessible places. In our part of the country, just now, the rancher, the sheepherder, the lumber interests, fishermen, etc., seem to be agitating the passing of laws for their special benefits that would hurt the mining industry, in the long run. Still the fact remains, as is stated in your article, and I quote, "The problem is to

take away the nuisance but leave the incentive." So it is with our patent benefits. Worthy projects should be encouraged wherever valid mineral discovery such as would warrant a reasonably prudent man in developing and extracting the minerals from the deposit, as might well be the case at Al Serena.

Yours very truly,

D. FORD MCCORMICK.

HOUSE OF REPRESENTATIVES,
Washington, D. C., July 16, 1953.

Hon. CLARENCE DAVIS,
Solicitor, Department of Interior,
Washington, D. C.

DEAR MR. DAVIS: In further reference to the Al Sarena Mines, Inc., case, Oregon 0665, I am attaching herewith the original of the letter received from Col. J. E. Morrison in response to my letter of some weeks ago, the text of which has been transmitted to you with other responses from mining experts.

Colonel Morrison was formerly with the Oregon State Department of Geology and Mineral Industries and is a registered mining engineer in the State of Oregon. For some years he has been serving with the United States Air Force. Colonel Morrison was on leave at the time I wrote him and did not have the opportunity to reply to my letter until his return to his base, thus accounting for the delay in his reply.

Colonel Morrison's comments concur with those of the other individuals previously submitted, indicating valid mineral discovery on the claims covered by the patent application.

Sincerely yours,

HARRIS ELLSWORTH.

AERONAUTICAL CHART AND INFORMATION CENTER,
St. Louis, Mo., July 10, 1953.

Hon. HARRIS ELLSWORTH,
House of Representatives, Washington, D. C.

DEAR MR. ELLSWORTH: Your letter regarding the Al Sarena Mines, Inc., was waiting for me when I returned from leave. Since then I have been trying to locate what information I have on this mine but without avail. Therefore, I am going to have to depend strictly upon my memory.

I first became acquainted with the property in the summer of 1937 as the mining engineer in charge of the Grants Pass office for the Department of Geology and Mineral Industries, State of Oregon. During 1938 and up to November 1939, I visited the property at least a dozen times, looking over the geologic formations, sampling and sizing the property up as to a possible large, low-grade operation. In November 1940 I was placed in charge of a 90-day test run to determine if a 125-ton plant could pay its way on the more mineralized portion of the area.

There is a fairly large area of porphyry on Elk Creek which has been subjected to one or more periods of mineralization. Gold, silver, and other metals have been deposited along the cracks, crevices, faults, and where the formation was porous enough for the mineralizing solutions to penetrate. I have sampled and seen the assays of over

a thousand samples from this mineralized area. Like all mineralized areas, the values do not run uniform throughout. Samples from the more mineralized areas will run as high as $10 or more per ton. The low assays are obtained from the hard porphyry, which the mineralizing solutions had not penetrated. The Al Sarena people have studied this area and consolidated it into a group of claims. All 23 claims, as I remember them, show evidence of this mineralization and do carry gold and silver values.

This property has been examined by a number of reputable mining engineers. Based upon the findings and recommendations of these engineers, the owners have spent thousands of dollars and also their time in developing the property into its present state. There are a number of large, low-grade properties in North America that have made a success of the operation on lower values than those indicated at the Al Sarena. The 90-day test run proved to me it could be made a successful operation. To declare a portion of this group of claims to be nonmineral, in my mind, would be a gross injustice to the owners who have spent so much time and money in developing the property.

Again apologizing for the delay in answering your letter.

Sincerely yours,

J. E. MORRISON,
Mining Engineer, Oregon Registry No. 1901.

[Handwritten note]

Public Lands.

We will keep this "on ice" until after the final disposition of the Alabama case.

M. G. W.

HOUSE OF REPRESENTATIVES,
Washington, D. C., June 21, 1951.

Hon. MASTIN G. WHITE,
Solicitor, United States Department of the Interior,
Washington, D. C.

MY DEAR MASTIN: Thanks for your letter of June 19, 1951, acknowledging receipt of my letter of June 13, to the appeal (A–26248) of Al Sarena Mines, Inc.

First, I wanted to tell you how much I appreciate the time and all of the information that you gave to my dear friends and constituents, Messrs. Herbert and Charles McDonald, who were in to see you on June 15, and presented oral argument in support of the appeal. I note you will give careful consideration to it, and when a decision is reached, you will send me a copy.

Now, Mastin, I think I have thought of this more than anybody—maybe, with the exception of the stockholders that have spent so much money out there. I just don't believe that all of you who have so terribly much to do, really and truly understand this proposition. There are stockholders in many States, the finest men in this country, that believe in this proposition. They have been spending money out there for many, many long years. They have built roads, not only

through the property that they own, but through the Interior Department's property.

Herbert McDonald, one of the men that held the good conference with you, has been out there for 16 long years. His father has, along with his friends, over a quarter of a million cash dollars in this proposition. They already have 160 acres of land there. They only want the adjoining 300 acres of land there. I know that there are a lot of people trying to get 36,000 square miles. They don't want that. I went down to see Mr. Wyatt and spent an hour with him and told him that they did not want the timber—I am talking about the Al Sarena Mines, Inc. They only wanted enough of the timber to develop the mines, and they would be glad to sign a letter or a contract to this effect, but it seems to me that they have bought and paid for their patent, and it also seems to me, regardless of what the Interior Department thinks about this, that they would be mighty glad to see this great company, and these fine, good Americans, try and develop this. Sometime, one group of us know something that the others don't. Anyhow, I think they have a right to spend their money if they want to. We have hundreds and hundreds of thousands of acres out there, and it certainly won't hurt to give these people a chance to see if they can't develop it. Please read my letter close.

Now, these fine young men, Herbert and Charles McDonald, helped me write that letter to you, of course. Read it carefully. Why not give them a chance? Let them have this, say for 10 years, and then if they don't develop it by that time, then turn it back. You have everything to gain and nothing to lose. Look at the valuable materials that they would develop that we need just at this time, and that country needs developing so terribly bad. These are honest people.

I wish you could have seen some of the letters that were sent to Senator Kefauver—some of the letters that were sent to Senator O'Mahoney—some of the letters that were sent to about 21 other Senators, and over a hundred of the Congressmen. I asked them not to present these letters yet, but just wait, because I know we can work it out, regardless of if it hasn't been handled just according to Hoyle, and if they did make some mistakes out at the hearing, all we want is common sense. They have bought and paid for a patent and they have their receipt. They only want a chance to develop this mine. They don't want the timber—only what they will need in the development of the mine, which of course, they would have to have, and they will deed the timber back. Now why not try an let's give them this. It is costing them a lot of money to make trips here. One of these young men came all the way from Chicago, and the other from Mobile, over 1,100 miles away from here. They are spending their time and their money, 16 long years. They have gotten nothing out of it, but they believe, and they have the finances to go ahead and try and start one of the finest developments out there, that they think will do everything that I told you in that letter, that they would do.

So, why not let's let this go on. It is such a small matter. With the hundreds on hundreds of thousands of acres of land out there, and they are only asking for a small amount of 300 acres out there, wild, undeveloped land, and I understand that many people say it is no good. Well, they do. Herbert McDonald has just returned from taking a special course, and he and Charles McDonald are two of the

finest young men I know. Charles has the finest record in the Navy that I have ever read. They are all just fine, good, true, great Americans, that have lived within just a few blocks of me all of their lives, right in Mobile, Ala.

As above stated, they have good stockholders that have their hard-earned money in this proposition, and let's give them a chance to get it out. There is no telling what they will do out there. We have everything to gain and nothing to lose. It certainly can't hurt the Interior Department, it certainly can't hurt the Government, it certainly can't hurt the State, and it will only hurt the men that own this property and the stockholders that are willing to put up their money and see if they can't develop what they think is a great proposition. I think we should encourage them and get behind them and help them in every way we can. They are not getting a Government loan to do this, they are using their own money.

I shall deeply appreciate your looking at this, just in a good old Texas or Alabama practical way, and if there are any little technicalities let's knock them out of the way, and go on and try and start something.

I wish we could get some of the products that they say they can manufacture out there, in Mobile, Ala., now. They need them there very, very bad and all over this country.

I do appreciate all of the time that you have given me, and we have talked so many times about it, and I do appreciate the long conference you gave my friends, Messrs. Herbert and Charles McDonald. I hope that we can do something on this, and please, on receipt of this letter, just give me a ring, and I will run over there and talk to you, or we will talk on the phone, and let's try and finish it up and get it started.

Thanks a million and let me know when and where I can help, and with every good wish to you and yours, now and always, I am,

Sincerely your friend,

FRANK W. BOYKIN,
Member of Congress.

P. S.—If you want me to, I can bring a dozen of the finest Senators in this world, all westerners and southerners and northerners too, and about a hundred Congressmen over there, who believe in this, just as I do. Please try and help us. I will consider it a personal favor.

Since dictating this letter to you, and I did it before daylight, on the old dictaphone, down here, I have just received a letter from Dr. McDonald, the father of the two young men that you know, telling me that the buildings there have burned down. That makes no difference, they are willing to have some more put up and get new machinery. I am asking the FBI to look into it, as it looks like their buildings were set on fire. I don't know anything about that, but I do hope we can get this other matter straight.

Thanks again.

HOUSE OF REPRESENTATIVES,
Washington, D. C., June 13, 1951.

Mr. MASTIN WHITE,
Acting Assistant Secretary of the Interior,
Department of the Interior, Washington 25, D. C.

MY DEAR MR. SECRETARY: When we talked on the phone the other day, you told me my people from Mobile did not put their evidence on. I believe, after talking to my people, who are here now, that you overlooked the following facts:

1. The patent application itself, based upon the results of 4 months' work by your own Interior Department appointed expert, Mr. Taylor, and upon the findings of about a half a dozen outstanding experts, filed under oath, perfected by final proofs accepted by the Portland office is legal evidence which was refiled and resubmitted in evidence for the record in the original answer, complete with assays of ore from the claims.

2. Further and additional evidence was submitted to you for your consideration in your office last year in the form of additional assays, etc., which had been taken at the direction of the Bureau of Land Management for the record. This was filed for the official report, and consequently for the record, and should be in your hands.

3. There was an agreement between counsel authorizing the substitution of standard court civil rules of procedure. These people relied completely on that agreement and took an appeal from the rulings on the demurrers and motions only, in open hearing. This legally closed the hearing and made anything introduced after that time by either side completely inadmissible.

4. Since anything in the way of opposing evidence in the hearing is inadmissible, under the agreement, the only evidence in the record which is legal is the evidence refiled and resubmitted in the original answer—all in favor of the company—and unrefuted. The Forestry Service has therefore failed to prove any charges.

5. You will recall that the Department accepted an appeal based upon the rules of evidence and the rules of practice as obtained in Federal and State courts and sent the matter up on appeal without a decision. You will also recall that the written notice of appeal recited clearly that the appeal on demurrers and motions only was taken under such rules.

6. Your Department accepted their final proofs, kept them an ample time, demanded the money, accepted the money, gave them a final-purchase receipt reciting that the money was in payment for specific lands, reciting them, and issued a final certificate, bud did not issue the patent.

7. The only way the so-called field examination was made was by the use of false and misleading statements over the signature of the Acting Regional Administrator of the Bureau of Land Management, falsely alleging that the Forestry Service had complied with its regulations for making such request during the publication period, December 15, 1948. This is the manner in which the Bureau of Land Management obtained its original jurisdiction, as the regulations prohibit ordinarily, the Bureau of Land Management from making field examinations on its own motion in the national forest. Therefore, the only question before you is the question of demurrers and motions as appealed.

After studying all of the above facts, I wish you would give me a ring and I would like to bring my friends and constituents, Messrs. Herbert and Charles McDonald, over there and talk this over with you. For your information, we have heard a lot about people locating some 3,600 square miles of alleged placer ground within about 20 miles of the property of Al Sarena Mines, Inc. It is the feeling of some of the western delegations that a precedent is being sought by the Forestry Service in the denial of patent to a legitimate mining company on its property so that such precedent may be cited to illegitimate claimants to discourage such applications on the part of such illegitimate claimants.

My friends and constituents have been operating 16 long years and the property, itself, is of record in the production and development for 54 years.

I called the attention of the McDonald brothers to what the forestry people had to say, and they say they are not interested in timber and that they will be glad for the Interior Department or the Forestry Department to have the timber on the disputed land, with the exception of the timber needed for mining operations. This certainly shows that my folks are not trying to get timber, but that they are ready, able, and willing to go on and develop a real mining proposition that we need so badly. In addition, the defense picture has taken on an entirely new aspect in regard to this property. The matter of iron pyrite, which the property contains in large quantities, has previously been considered commercial only for the gold and silver chemically combined with the pyrite. However, the pyrite in the new scheme of critical materials has become a very valuable by-product. In the plans relating to the production and development of this property, there is also a potential production of pyrite sufficient to yield 4,912,128 pounds of sulfuric acid in the leanest areas, and 49,121,280 pounds of sulfuric acid a month in the richer areas. This being the basic defense chemical and in view of the shortage impending in raw materials for its production, it is most worthy of consideration, both for the benefit of right and justice and for the benefit of the United States. The private capital necessary for the significant defense production already planned is available contingent upon actual ownership of the property, which if course, means a patent.

With this time and the fact that they have paid for their patent and having a receipt, it does seem, regardless of how you think it has been handled, to be to the Interior Department's interest to get this great piece of property developed. The Al Sarena Mines have built roads and spent hundreds of thousands of dollars on the development of their property. So, I do hope that you will take a close look at this again and see if we cannot issue this permanent patent and go on to work.

With kind personal regards and thanking you for anything you can do to help us out on this matter, I am,

Sincerely your friend,

FRANK W. BOYKIN,
Member of Congress.

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SOLICITOR,
Washington 25, D. C., September 29, 1950.

Hon. FRANK W. BOYKIN,
House of Representatives.

MY DEAR MR. BOYKIN: This is in response to your telephone request to me for the status of a mineral contest involving Al Sarena Mines, Inc. (Oregon 0665).

The Bureau of Land Management advises me that the manager of the district land office at Portland has not completed his action in the matter.

Sincerely yours,

HARRY M. EDELSTEIN,
Assistant Solicitor.

Copy to: Bureau of Land Management.

MARCH 19, 195

Mr. W. O. MACMAHON,
Mobile, Ala.:

Talked at length to our friend Mastin White after my talk with you this morning. He had already asked Mr. Clawson to rush his decision all he could. He does not know how soon this will be, but will keep us fully posted. Warm regards.

FRANK W. BOYKIN,
Member of Congress.

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SOLICITOR,
Washington 25, D. C., October 25, 1950.

Note to Director Clawson, Bureau of Land Management:

On October 24, I received a long-distance telephone call from Representative Boykin at Mobile, Ala. The purpose of his call was to request that the decision on the appeal of Al Sarena Mines, Inc., be expedited. I explained that the appeal is presently pending before you for a determination. Mr. Boykin thereupon asked that I pass his request on to you.

MASTIN G. WHITE, *Solicitor.*

A. W. WILLIAMS INSPECTION CO.,
Mobile, Ala., December 17, 1953.

AL SARENA MINES, INC.,
Mobile, Ala.

GENTLEMEN: Forwarded herewith are four reports covering the assay of samples Al Sarena 1 through 26 submitted by Mr. D. Ford McCormick.

We regret that it has been impossible to complete and report upon this work sooner. We have been seriously hampered here by the absence of key personnel from the office and by the pressure of unexpected emergency assignments.

We sincerely hope that the delay has not operated to inconvenience you.

Yours very truly,

MORRIS MILLER.

A. W. WILLIAMS INSPECTION CO.,
Mobile, Ala.

Report of assays of gold ores.
For: Al Sarena Mines, Inc., 408 First National Bank Building, Mobile, Ala.
Sample identification: Al Sarena 1–28, inclusive.
Sample submitted: By Mr. D. Ford McCormick.

Laboratory No. 53–912. Report No. 431869. Date: December 17, 1953.

Our order No. 38001. Date: November 25, 1953.

We find the samples submitted by Mr. D. Ford McCormick to contain the following:

[Per ton]

Sample	Au	Ag	Au	Ag	Total value
	Ounce	*Ounce*			
1	0.05	0.15	$1.75	$0.14	$1.89
2	.04	.60	1.40	.54	1.94
3	.05	.20	1.75	.18	2.03
4	.05	.10	1.75	.09	1.84
5	.08	.05	2.80	.05	2.85
6	.06	.05	2.10	.05	2.15
7	.05	.07	1.75	.06	1.81
8	.05	.06	1.75	.05	1.80
9	.06	.04	2.10	.04	2.14
10	.04	.08	1.40	.07	1.47
11	.03	.06	1.05	.05	1.10
12	.04	.40	1.40	.36	1.76
13	.02	.10	.70	.09	.79
14	.03	.11	1.05	.10	1.15
15	.04	.07	1.40	.06	1.46
16	.05	.10	1.75	.09	1.84
17	.07	.05	2.45	.05	2.50
18	.03	.03	1.05	.03	1.08
19	.05	.02	1.75	.02	1.77
20	.03	.06	1.05	.05	1.10
21	.05	.10	1.75	.09	1.84
22	.06	.04	2.10	.04	2.14
23	.05	.07	1.75	.06	1.81
24	.06	.04	2.10	.04	2.14
25	.04	.64	1.40	.58	1.98
26	.06	.60	2.10	.54	2.64
27	.12	.72	4.20	.65	4.85
28	.10	.50	3.50	.45	3.95

This report is submitted for the exclusive use of the client or his representative and may not be used in any connection with advertising or sale of any product or process without our written authorization.

Assays by J. A. McDaniel.

Reports to Al Sarena Mines, Inc., 408 1st National Bank Building, Mobile, Ala.

A. W. WILLIAMS INSPECTION CO.,
By MORRIS MILLER.

PORTLAND, OREG., *September 28, 1950.*

JAMES A. LANIGAN,
Assistant Chief Counsel:

Retel 28, mineral contest, *Forest Service* v. *Al Sarena Mines, Inc.*, Oregon 0665. Claimants tracked Goldy to his California vacation. He referred them here. At conference here afternoon September 8 with me they said they had employed no counsel and volunteered assertion of willingness surrender all timber on claims to Forest Service. Located proper Forest Service personnel for them, but they made no effort at contact.

Hearing commenced morning September 13. Clear indication MacMahon en route here at same time claimants were asserting they had no counsel. On opening hearing MacMahon and claimants appeared with boxes of exhibits and own wire recorder. MacMahon launched general attack on proceedings and orally advanced formalistic motions respecting propriety of proceedings and apparently questioning jurisdiction. These motions set forth in written answer filed by company responding to notice of contest. Manager overruled motions and MacMahon refused to proceed stating that he had personal agreement with solicitor that (1) departmental rules of practice and procedure would not be applicable to this case, (2) that rules of civil procedure for district courts would apply, and (3) that if preliminary motions were overruled appeal would immediately be in order and further proceedings on merits would be postponed until final determination such appeal. He added that any testimony produced by other parties at proceeding on 13th would be violation such agreement, and he would attack as such.

MacMahon thereupon gathered exhibits, wire recorder, and departed with company representatives.

Forest Service proceeded to introduce testimony.

MacMahon returned following day. Filed formal appeal from rulings on motions. Appeal states Al Sarena introduced no evidence because manager's obvious bias indicated results would be adverse regardless of testimony.

For lack of money proceedings transcribed by land office stenographer. MacMahon's rapid speech, shouting and boistrous conduct precluded accurate transcript while he was present. When appeal filed Rice requested copy MacMahon's wire transcription. MacMahon refused.

Rice expects transcript to be completed, Forest Service brief to be filed and recommended decision to be forwarded with record to director in about 10 days.

In view claimant's conduct suggest utter caution talking with them or relying on any representations they make. MacMahon's personal conduct in hearing may raise question propriety his continued admission to practice before department.

See director's teletype August 9 (AD–FF) my teletype August 15, and director's response.

If you need these, please call Mr. Bradshaw.

LEONARD B. NETZORG.

UNITED STATES SENATE,
COMMITTEE ON FINANCE,
October 21, 1950.

Dr. MARION CLAWSON,
Director, Bureau of Land Management,
Department of the Interior, Washington 25, D. C.

DEAR DR. CLAWSON: Senator Millikin has had correspondence with Mr. Pierce M. Rice, manager of the land office at Portland, Oreg., regarding mineral entry Oregon 0665, contest No. 38. In a letter just received from Mr. Rice he states that a hearing on the contest was held September 13, 1950, and on October 2, 1950, the record and recommendations were forwarded to your office for consideration.

The applicant is anxious to get final clearance of this patent. It will be appreciated if you will advise Senator Millikin whether it may be possible to expedite action by your office.

Very truly yours,

RHODA M. ARNOLD,
Secretary.

UNITED STATES SENATE,
COMMITTEE ON FINANCE,
November 8, 1950.

Mr. H. P. MCDONALD,
President, Al Sarena Mines, Inc.,
Mobile 13, Ala.

DEAR MR. MCDONALD: With reference to your letter to Senator Millikin of November 4, 1950, regarding mineral entry Oregon 0665, on which the Senator has had correspondence with Mr. M. E. McDonald, of Empire, Colo.:

I have talked again with officials at the Bureau of Land Management who stated that they had completed their review of the Portland manager's decision and had sent their recommendations to the Legal Division for further review before the case goes to the Secretary of the Interior.

The only information I could get from the Bureau was the statement that the regional manager had denied the mineral entry as to those claims which the Forest Service protested but had recommended patenting the other claims. They said that under an order of the Secretary they were not at liberty to report, what the Bureau has recommended prior to clearance through the Secretary's Office because of the chance that any recommendation of the Bureau might be reversed by the Department's lawyers or by the Secretary.

The Bureau officials mentioned that this case has some difficult aspects and that the questions involved are covered by a seven-page proposed decision which they have drawn up and turned over to the Department's lawyers. They have promised to follow it through these final steps and do what they can to expedite the decision, but I was unable to get any commitment as to when it may be released. We will continue our followup on this and let you know when we get a further report.

I note from your letter you had the impression that a copy of the recommendations of Regional Manager Pierce M. Rice was furnished to this office. However, the copy to which Mr. Rice referred was a

carbon copy of his letter of October 17, 1950, to Senator Millikin, the original of which I forwarded to you. The departments follow this practice of enclosing an extra copy of letters to Members of Congress so that one may be sent on to the constituent concerned.

Sincerely yours,

RHODA M. ARNOLD,
Secretary.

HOUSE OF REPRESENTATIVES,
Washington, D. C., April 15, 1953.

Mr. CLARENCE DAVIS,
Solicitor, Department of Interior, Washington, D. C.

DEAR MR. DAVIS: This letter is being written pursuant to the agreement reached with you following the conference with Mr. Charles R. McDonald, Mr. Herbert McDonald, and Mr. Garber of my office relating to the patent application of the Al Sarena Mines, Inc., pending on appeal before the Department. The case is identified as Oregon mineral entry 0665.

As you suggested, the Messrs. McDonald on return to Mobile, Ala., made request to the United States district court for an extension of 60 days from the date of April 6 on which the case had been set down for action. The court saw fit to grant only 30 days, which materially shortens the time during which a possible review on the merits might be made by you or some person of your selection. It is not impossible that the court might grant additional time on proper request by either the Government or the plaintiffs, and if such additional time is desired I am sure the plaintiffs in the case will be glad to cooperate in any way they possibly can.

Enclosed you will find papers which digest the substance of the rather extended file which the Department holds on this case. The following are enclosed:

1. A digest record of proceedings on the patent application.
2. The substance of testimony which would have been given by expert witnesses concerning the Al Sarena Mines, Inc., claims, plus an indication of the grounds for impeaching the testimony of the Forest Service.
3. Data on samples from the claims filed for record.
4. A record of proceedings in contest in Portland, Oreg.
5. A photostat copy with comments on the protest of the Forest Service, showing pages 1 and 4 of the protest.

The record in this case seems to indicate that the file might properly be reviewed in either of two manners: First, on the basis of the record as shown from the time of the filing of the patent application October 1, 1948, until April 6, 1949, when the final certificate of mineral entry was granted. The Forest Service was notified of the filing for patent at the time application was made and was officially notified later by the Department of the Interior but took none of the actions required under regulation within the time specified in such regulations. Second, on the basis of the entire record including that mentioned previously; and beginning with the untimely protest filed by the Forest Service, the subsequent vacation of protest, and the events resulting from the further protest by the Forest Service including the hearing at Portland, Oreg. It would appear proper that the pending appeal might

be granted for the patent issuance wherein the record indicates at any point the full compliance with the requirements of law on the part of the applicants.

The record will show that part of these claims dated from 1898 and that the last claims located were taken up in the year 1935. A gross expenditure of more than $200,000 has been put into the development and the immediate family of the principal owners of the corporation personally put approximately 100 man-years into the developments of the claims. The mines were given a quota for the production of materials during World War II and met this obligation. The deposit is a low-grade deposit with a massive ore body which will require very substantial expenditure for equipment to make it a successful large-scale producer. The delays which have occurred have meant severe losses to the claim owners who have been ready, willing, and able to go ahead with a large-scale commercial operation.

If there are questions which arise in the course of the consideration of the appeal in this case, Mr. Charles McDonald is available on very short notice to come to Washington, D. C., to assist in any way possible to supplement the record if that will aid in reaching an early decision. From material already in my files, I may be able to give information on some questions and will be glad to cooperate otherwise in any way I can to facilitate early administrative action on the appeal.

Your attention is appreciated, and I shall be grateful to be kept informed of any developments.

Sincerely yours,

HARRIS ELLSWORTH.

HOUSE OF REPRESENTATIVES,
Washington, D. C., August 27, 1953.

Mr. CLARENCE DAVIS,
Solicitor, Department of the Interior,
Washington, D. C.

DEAR MR. DAVIS: As you undoubtedly are informed by this time, the applicant in the Al Sarena Mines, Inc., case (Oregon 0665) is proceeding in accordance with arrangements discussed with Congressman Ellsworth on August 4, as a basis for possible settlement of the question at issue, namely, mineralization on the contested claims.

Inasmuch as this arrangement will require possibly a month of actual examining time, this will run beyond the period covered by the present continuance in connection with the pending case before the United States district court at Mobile, Ala.

Since the last continuance was granted on request of the applicant, it is suggested that the Government request the continuance necessary to cover the required period to complete the present steps being taken at the suggestion of the Government and which can form the basis of a final settlement of the issues involved.

Your attention and cooperation in this matter are appreciated.

Sincerely yours,

H. S. GARBER, *Secretary.*

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SOLICITOR,
Washington 25, D. C., January 14, 1954.

Hon. HARRIS ELLSWORTH,
House of Representatives.
(Attention of Mr. H. S. Garber.)

MY DEAR MR. ELLSWORTH: In view of the interest which you have shown in this case, I enclose two copies of the decision of this Department in the case of *United States* v. *Al Sarena Mines, Inc., A–26248.*

Sincerely yours,

CLARENCE A. DAVIS, *Solicitor.*

August 26, 1959

Hollis:

The McDonald brothers (Al Sarena) dropped in this morning. They are thinking of placering Pine Creek below Cornucopia. I told them about the Dredge Law (which they don't think will apply) and suggested that they talk to Fish, Game and Banitary before digging in.

Also gave them the dope on the Gold session next April, which interest them greatly.

r.

McLeod Cat GMS-80

GROUND-WATER RESOURCES

Ground-water resources are largely unstudied (Doug Woodcock, Oregon Water Resources Department, personal communication, 1993). Domestic wells are relatively few and tend to be concentrated along the stream valley floors. Well characteristics have not been studied. Study of the ground water by the U.S. Army Corps of Engineers at the dam sites was largely concentrated on rock permeability for the foundations (Tom Amundson, U.S. Army Corps of Engineers, personal communication, 1993).

Characterization of ground-water resources is based upon surface observations. Higher elevations act as recharge areas. The Rogue River is the regional discharge. Springs, found at many elevations, are seasonal and largely affected by changes in precipitation. Spring productivity is affected by proximity to valley floors, recharge basin size, and rock transmissivity. Springs emanate from rock fractures, permeable paleosols, and rubbly zones between lava flows, and at contacts between relatively impermeable ash-flow tuffs and more permeable lava flows.

MINERAL RESOURCES

Known mineral production from the McLeod quadrangle has consisted exclusively of rock materials (Gray, 1991). Large quantities of stone (andesite of Table Rock) were extracted from Lost Creek Dam quarry (mine site M10, Table 3) to build Lost Creek Dam, whose total volume is 10.8 million cubic yards (U.S. Army Corps of Engineers, 1982). Smaller quantities of dacite from Elk Creek quarry (mine site M3, Table 3) were stockpiled and used in the partial construction of Elk Creek Dam. A small amount of basalt, about 15,000 cubic yards, has been extracted from the Kindschi quarry (mine site M9, Table 3) for road metal.

Several disseminated mercury occurrences are known in the quadrangle (mine sites M1, M6, M8, M11, M12, Table 3). As reported in Gray (1991), prospecting has also occurred for beryllium (mine sites M5, M13, Table 3), although these sites could not be found. Dense foliage and mass wasting tend to obscure and naturally reclaim, small workings making recognition difficult. For example, Rayome (mine site M8, Table 3), a surface prospect, is mostly naturally reclaimed. Two mercury prospects reported in Gray (1991) were not found (mine sites M11, M12, Table 3). One of these, the Rogue River Prospect (mine site M11, Table 3), has sometimes been referred to as the Red Chief.

Both Rayome (mine site M8, Table 3) and the Midnight Prospect (mine site M6, Table 3) lie on a zone of northeasterly-trending shears in bleached and argillized andesite lavas and dacitic tuff. The Midnight Prospect has about 15 m (50 ft) of underground workings consisting of two shallow horizontal adits. Analyses of argillized andesite within the shear zone of the Midnight Prospect (map nos. 25 and 29, Table 2) and an associated jasperoid (map no. 26, Table 2), however, did not yield significant geochemical anomalies for metals.

Mineralization at Alco Creek, a raw prospect, (mine site M1, Table 3) is associated with propylitized pyritic andesite dikes that intrude brecciated and argillized lapilli ash-flow tuff. Two samples from the area were analyzed (map nos. 8 and 9, Table 2); significant anomalies were not detected. The amount of surface disturbance is less than an eighth of an acre.

Tuffs, dikes, and dacite within the caldera complex were sampled because of the occurrence of intense bleaching, seritization, brecciation, and argillization (map nos. 2, 3, 4, 5, 6, 7, 11, and 12, Table 2). A brecciated, hematitically stained dacite hypabyssal intrusive (map no. 11) yielded a slightly anomalous arsenic value (129 ppm). No other samples yielded geochemical anomalies.

The Al Sarena gold and silver mine, 13 km (8 mi) northeast of Burnt Peak, may be hosted within the same silicic complex identified in the northern part of the McLeod quadrangle. The Al Sarena Mine produced precious metals between 1909 and 1918, which were then valued at $24,000. There, disseminated gold and silver are hosted within locally intensely argillized and sericitized dacite stocks and tuffs and are concentrated along westerly-trending shears. Drilling and surface sampling by Fischer-Watt Gold Company in 1991 yielded highly anomalous values of arsenic, mercury, antimony, lead, and zinc, in addition to low-grade gold-silver ore (Bud Hillemeyer, Fischer-Watt Gold Company, personal communication, 1993).

GEOCHEMISTRY

Sampling methods

Rock samples were collected and analyzed for combined major and minor oxides and trace elements (Tables 1 and 2) to provide an indication of their compositions. The samples that were analyzed do not constitute a complete sampling of all the rock types found within the quadrangle.

Where field evidence indicated alteration or mineralization, altered rock samples were collected and analyzed for a particular suite of trace elements (Table 2).

Sample preparation

The rock samples were crushed to minus ¼in. in a Braun chipmunk crusher and then crushed to about minus 10 mesh in a Marcy cone crusher. Both crushers employed manganese-steel crushing media. Each crushed sample was split in a Jones-type splitter to obtain a nominal 250-g subsample for trace-element analysis (TEA) and, where required for whole-rock analysis (WRA), a nominal 100-g subsample. The subsamples were milled to about minus 200 mesh: each trace element subsample in chrome-steel media and each whole-rock subsample in corundum media.

All sample preparation was done in the Oregon Department of Geology and Mineral Industries (DOGAMI) laboratory.

Chemical analysis

Whole-rock analysis

X-ray fluorescence (XRF) analyses were performed by X-ray Assay Laboratories (XRAL) of Don Mills, Ontario, Canada. XRAL used a fused button for its analyses (1.3 g of sample roasted at 950°C for one hour, fused with 5 g of lithium tetraborate, and melt-cast into a button). Loss on ignition (LOI) was determined by the roasting.

Trace-element analysis

Gold—Bondar-Clegg, Ltd., of North Vancouver, British Columbia, Canada, performed analyses for gold. The method employed was fire assay preconcentration of the gold in a 20-g subsample (gold was collected in added silver), acid dissolution of the resulting bead, and direct current plasma (DCP) emission spectrometer finish. The detection limit was 1 ppb.

15-element package—M.B. Associates (MBA; formerly Geochemical Services, Inc.) of North Highlands,

~~31 2E 5~~ ACCOUNT NUMBER 31 2E - 500

OFFICIAL RECORD OF DESCRIPTIO OFFICE OF COUNTY ASSESSOR, JAC

RP 1 21282-4

31 2E 00500 00902

~~45-1~~ 9-2 CODE NUMBER

5 TAX LOT NUMBER	SECTION	TOWNSHIP 31 S	RANGE 2E W.M.	MAP NO. 31 2E	AERIAL PHOTO
	LOT NO.	BLOCK NO.	ADDITION	CITY	

INDENT EACH NEW COURSE TO THIS LINE

LEGAL DESCRIPTION

DEED RECORD YEAR	VOLUME	PAGE	ACRES REMAINING
1949	F.C.	0665	
~~12/14~~ 1956 1-18	435	310-1	454.129 ac
1957	437	99	

Al Sarena Mines, Inc.

Beginning at the Southeast corner of Sec. 19, Twp. 31 South Range 2 East of WM., in JCO. run thence South 75° 57' East 592.25 feet for the point of beginning. thence

North 42° 34' West 1451.84 feet; thence
North 45° 50' East 600 feet; thence
South 42° 34' East 1451.84 feet; thence
South 44° 31' East 1435.10 feet; thence
North 45° 50' East 886.59 feet to the North corner of Oro Real Claim; thence
South 45° 25' East 580.36 feet; thence
North 45° 50' East 2948.41 feet; thence
South 46° 38' East 593.02 feet; thence
South 44° 10' East 600 feet; thence
South 45° 50' West 1244.07 feet to the most northerly corner of the Alabama Claim; thence
South 44° 10' East, 2100 feet to the East corner of Arroyo Verde Claim; thence
South 45° 50' West 1460 feet; thence
North 44° 10' West 300 feet to the East corner of Manganese Claim; thence
South 45° 50' West 1430.93 feet; thence
North 44° 10' West 300 feet to the East corner of A. W. Dahlberg; thence
South 45° 50' West 600 feet to the South corner of A. W. Dahlberg Claim; thence
South 44° 10' East 600 feet to Easterly corner of Delia McKinnon Claim; thence
South 45° 50' West 1200 feet to the South corner of Rainboe Claim; thence
North 44° 10' West 1500 feet; thence
South 45° 50' West 300 feet to most Southerly corner of Henry Applegate Claim; thence
North 44° 10' West 600 feet; thence
North 45° 50' East 300 feet to most Southerly corner of Mark Applegate Claim; thence
North 44° 10' West 600 feet to the East corner of J. W. Merritt Claim; thence
South 45° 50' West 1500 feet; thence
North 46° 38' West 593.02 feet; thence

(over)

312 E 500
ACCOUNT NUMBER

OFFICIAL RECORD OF DESCRIPTIONS OF REAL PROPERTIES

OFFICE OF COUNTY ASSESSOR, JACKSON COUNTY, OREGON

CODE NUMBER

TAX LOT NUMBER	SECTION	TOWNSHIP S	RANGE W.M.	MAP NO.	AERIAL PHOTO
	LOT NO.	BLOCK NO.	ADDITION	CITY	

INDENT EACH NEW COURSE TO THIS LINE

LEGAL DESCRIPTION

DEED RECORD: YEAR | VOLUME | PAGE

ACRES REMAINING

North 45° 50' East 1500 feet; thence
North 45° 25' West 580.36 feet; thence
North 45° 50' East 900 feet to the South corner of Oro Alto Claim; thence
North 44° 31' West 1435.10 feet; thence
North 45° 50' East 600 feet to point of beginning.

(Written for Tax Lotting Purposes Only.)

State Department of Geology and Mineral Industries

702 Woodlark Building
Portland, Oregon

AL SARENA (Buzzard) MINE (gold, silver, lead, zinc)
Unclassified District

Owner:
Al Sarena Mining Company, an Oregon corporation. H. P. McDonald, Sr., president; W. G. McDonald, vice-president; H. P. McDonald, Jr., secretary-treasurer. Dr. H.P. McDonald

Location:
In sec. 29, T.31S., R2E., 18 miles east of Rogue Elk, north of the Crater Lake highway.

Area:
21 or 22 unpatented mining claims are owned by the Company; 9 of these claims form the Buzzard Group.

History:
The following is quoted from Callahgan & Buddington based on field work performed in 1930-1931:

"The Buzzard mine is in northeastern Jackson County, and the 10 claims constituting the property are in secs. 19, 20, and 29, T.31S., R.2E. It is about 47 miles from Medford and 20 miles from the Crater Lake highway at the mouth of Elk Creek. The first 11 miles of the Elk Creek road, which serves the Buzzard area, is surfaced, but the remainder is unimproved, and the last 5 miles is very steep.

"The mine is on a heavily timbered ridge trending nearly north in rugged country near the divide between the drainage systems of the Rogue and Umpqua Rivers, on the headwaters of Elk Creek. The ridge is 4,000 feet in altitude, according to aneroid measurement, and slopes toward the south; the ravine on the east side is about 700 feet below the summit, and that on the west side is about 300 feet below the summit.

"The rocks exposed in the mine workings are volcanic braccias and dikes of rhyolite and andesite, all altered and bleached. The vein appears to be near the center of a large area of altered rocks. Fragmental rocks appear to be dominant both in the vicinity of the mine and along the road to the south, though flows of rhyolite, andesite, and labradorite andesite occur. No dioritic intrusive rocks were found.

"No evidence of folding or tilting was seen in the mine, as no bedding was revealed. Outcrops in the valley of Elk Creek suggest that the region has been only slightly deformed. The strike of the vein on which almost all the work has been done is N. 40° W., and the dip is vertical to 85° E. Most of the dikes trend to the northwest.

"Gold was discovered in Elk Creek below the mine, and the claims were located in 1897 by Peter and Mark Applegate, according to the latter. The Pearl Mining Co. was incorporated in 1898, but the first ore was not shipped until 1909. W. L. Freres, under an option, shipped ore in 1912 and 1913, and the Pearl Mining Co. was active in 1914 and 1915. The mine was leased in 1916 to Paul Wright, who drove tunnel 4 on the east side of the ridge and shipped considerable ore. The total production, 1909-18,

was nearly $24,000 chiefly in gold, but it included some silver and lead.

" According to the owners, the mine workings consist of 3,334 feet of drifts and corsscuts, 1.000 feet of raises and winzes, and 75 feet of open cuts and trenches. About 3,200 feet of drifts and crosscuts (Pl. 22) were accessible, but only a few of the raises and winzes were examined. Levels 1, 2, and 4 reach the vein and expose it for lengths of 430 feet, 160 feet, and 720 feet, respectively. Small stopes were opened on all these levels. The difference in altitude between level 4 and the summit of the ridge is about 500 feet.

"The vein matter consists chiefly of altered rock, gouge seams, very little cherty quartz, and no comb quartz, and contains streaks and lenses of sulphides, chiefly sphalerite, and smaller amounts of pyrite and galena. Chalcopyrite was observed only with the aid of the microscope as blebs in sphalerite (pl. 6,A). Arsenopyrite was found in a small seam on level 1. Sphalerite occurs as black crystals and aggregates ranging in size from a fraction of a millimeter to more than an inch. The occurrence of sulphide veinlets without quartz in altred rock is very different from that of the quartz veins characteristic of the larger districts. The original nature of the gold in the main vein is not known to the writers, but the specimen of dendritic gold shown in plate 3 was obtained, according to the owner, from a small lens or pipe, called level 6, which is 360 feet northeast of the main vein (pl. 22). Wire gold was also reported to have been found in a small pocket here, associated with manganese oxide and with sphalerite and pyrite nearby.

"Apparently the veins shown in plate 22 are the only ones found up to the present time, though it seems possible that so large an area of altered rock might contain similar veins. No large production is anticipated."

Development:

The mine has in excess of half a mile of underground workings. No. 1 tunnel is 850 feet long and contains a drift 120 feet in length, beginning at a point 60 feet from the end of the tunnel. No. 2 tunnel is the main haulage way. It is 1600 feet long and contains crosscuts 400 feet and 500 feet in length respectively. The portla of No. 8 tunnel which crosscuts the main vein is 800 feet northwest of No. 6 tunnel. Five surface pits have been dug along the main vein. The ore is mined by shrinkage stoping. Thirty-five thousand tons of ore is reported to be blocked out.

Geology:

The vein form which production has been obtained strikes N.45° W. and has a vertical dip. Material making up the vein is brecciated and contains narrow gouge seams near one or both walls. The gouge contains abundant sulphides together with quartz. Ore values appear to vary directly according to the width of the seams and the amount of galena, sphalerite, and quartz contained in the gouge. In places where the gouge lies against the walls, sulphides are commonly forzen to the walls. The average width of the vein is 2½ feet but there is considerable variation in the width. In places the galena, sphalerite, quartz, and pyrite are well crystallized. The bein narrows rather abruptly just south of No. 1 stope.

Another vein which may be productive is exposed in the north drift. This vein is composed of a rhyolite breccia, from 3 to 3½ feet wide, together with a persistent narrow gouge seam. Walls of the vein are not as clearly defined as those of the main vein and the accompanying gouge does not contain such a large amount of sulphides. This vein is apparently a fault fissure and contains circulating water.

The outcrop of the ore body is considerably altered. The rhyolite is soft and may be cut easily with a knife. Pyrite has been altered to hematite. On the lower levels the fault zones show alteration but the rhyolite wall rock is relatively unaltered.

Equipment:

Mill equipment consists of a 75-ton ore bin; a 10-inch by 16-inch Universal jaw crusher; 80-ton fine ore bin; Marcy 5-ft. by 4 ft. ball mill; McDonald jig; Dorr duplex classifier; four Kraut rougher flotation cells; one Kraut cleaner cell, and Pan American reagent feeders.

Mine equipment includes an Ingersoll-Rand 280 cu. ft. single-stage compressor; one 300-cu. ft. receiver; one Fairbanks-Morse 120 hp. Diesel e engine; on Fairbanks-Morse 50 hp. semi-Diesel engine; one Langman 32 kw. 220-V. generator; blacksmith shop; timber shed; change room; mine cars; mine rails; and installed air pipe.

The mill is equipped with belt drives except the flotation cells which are motor driven.

Capacity of the mill is 100 tons per day; concentration ratio is 30;1; actual recovery, according to an engineer's report is 87 percent.

General:

Water is taken from Elk Creek and delivered to the mine by means of a ditch half a mile long. Additional water may be developed from Swanson Creek which has a flow ranging from 250-500 gallons per minute. Water in excess of 100 gallons per minute runs out of No. 2 tunnel. Approximately 12,000,000 board feet of timber is estimated to be available on the mining claims. The California-Oregon Power Compan's line is within six miles of the mine.

The area surrounding the Al Sarena mine is drained by Elk Creek and its tributaries. Summits of the nearby rdiges are approximately 2000 feet above the creek and the slopes are about 30°.

Reference:

Callaghan & Buddington, 38;131-132 (quoted)

Informant:

Geo. P. Sopp, reporte dated May 19, 1939

Report by:

R.C.T. May 7, 1940.

# #

STATE DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES
ASSAY LABORATORIES

Baker, Oregon
Grants Pass, Oregon

SAMPLE INFORMATION REQUESTED

The law passed by the Legislature, governing the free assaying and analyzing of samples sent to a State Assay Laboratory, provides that certain information be furnished to the Laboratory regarding samples sent for assays, etc. A copy of the law will be found on the back of this blank. Please read the law carefully. Will you please fill in the information called for in the following blank, as far as possible, and return the same to the nearest State Assay Laboratory, along with your sample. If you have made out a blank, this copy is for your future use. Keep a copy of the information on each sample for your own reference.

Your name in full . Albert A. Lewis . . . . . .

Postoffice address. Grants Pass, Oregon . . . . . .

Are you a citizen of Oregon?. Yes. . Date on which sample is sent. Oct. , 1938

Name (or names) of owners of the property . . . . . .

Name of particular claim and date of location Al Sarena Mine . . .

Location of property or source of sample:

(1) County. . . . . .(2) Mining District . . . . . .

(3) Township . . . . . .(4) Range . . . . .(5) Section . . .

(6) Quarter Section . . . . . .

How far from passable road? . . . . . .

For what do you wish sample tested? . . . . . .

Does your sample represent a new discovery? . . . . . .

On a newly located claim?. . . . . Old? . . . . . .

Has any ore from this claim been milled or shipped?. . . . . .

Width of ore where sample was taken (length of channel cut) . . . . . .

Remarks: 2 samples taken to check results of Assayer at the Mine
The Department would be pleased to have you add to the above, such information as you think would be of interest and value. Use the reverse side of this sheet or a separate sheet. This could best be shown by a pencil sketch, indicating the development on the claim with the widths of vein, expecially the width of ore at the place where this sample was taken.

A sample, to be of value, should be taken in an even channel across the vein from wall to wall. Its position in the workings should be marked and the width measured. Assays of unlocated samples, without widths, are of little value. They create but little interest in the minds of experienced investors and engineers.

(signed) . Albert A. Lewis

TAX ROLL
OF JACKSON COUNTY, OREGON

H

CODE NO.	ACCOUNT NO.
00902	1 21282-4

NAME AND ADDRESS OF OWNER	REMARKS
AL SARENA MINES INC P O BOX 122 TRAIL OR 97541	R/P 312E 00500 00902
000 474.12	ACRES –

19 75-77 TAXES FOR FISCAL YEAR ENDING JUNE 30, 19 77

CODE AREA NUMBER	CODE AREA RATE	TOTAL VALUE AS EQUALIZED BY COUNTY BOARD	TOTAL AD VALOREM TAXES LEVIED	SPECIAL ASSESSMENTS TYPE	SPECIAL ASSESSMENTS AMOUNT	TOTAL TAXES AND ASSESSMENTS
00902	19.23	67,410	1296.29	FIRE PATROL	170.68	1,466.97

PAYMENTS RECEIVED

CODE AREA NO.	DATE	RECEIPT NUMBER	INTEREST	DISCOUNT	CASH RECEIVED	UNPAID BALANCE
9.02	DEC 21'76	16,304	1.45+		581.98-	886.44*
9.02	MAR 3'77	21,863	1.53+		886.40-	1.57*
9.02	MAR 25'77	22,982			1.57-	.00*

RECORD OF FORECLOSURE

LIST NO. _____

DATE OF REDEMPTION _____

JUDGEMENT & DECREE DATE _____

DELINQUENT TAXES

YEAR	AMOUNT	YEAR	AMOUNT

KEY TO TYPES OF SPECIAL ASSESSMENTS

40. FIRE PATROL
41. REFORESTATION
42. GOLD HILL IRRIGATION
43. MEDFORD IRRIGATION
44. TALENT IRRIGATION
45. ASHLAND CITY LIENS
46. LATE FILING PENALTY–PERSONAL PROPERTY
60. ADDITIONAL TAX–NONZONED FARM
61. ADDITIONAL TAX–DESIGNATED FOREST LAND
66. ROGUE RIVER IRRIGATION

Buzzard Mine

Jackson Co Unclassified

STATE DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES

ASSAY REPORT

Office Number AG-1469

Grants Pass, Oregon
Baker, Oregon

December 16, 1940

Sample submitted by Mr. E. K. Nixon

Sample description Fine sulfinde concentrate. Possible that sphalerite contain from 15 to 18% iron.

The assay results given below are made without charge as provided by Chapter 176, Section 10, Oregon Laws 1937, the sender having complied with the provisions thereof.

NOTICE: The assay results given below are from a sample furnished by the above named person. This department had no part in the taking of the sample and assumes no responsibility, other than the accuracy of the assay of the material as furnished it by the sender.

Sample Number	GOLD		SILVER		Lead	Zinc	Ins.	Iron	
	Ounces per ton	Value	Ounces per ton	Value	Percent	Percent Value	Percent	Percent Value	Total Value
A	2.82		15.8		10.1	13.5	9.2	29.4	
B	2.84		15.8						

Market Quotations:

Gold $ per oz.
Silver $ per oz.
$ per oz.
$ per oz.

STATE ASSAY LABORATORY

Assayer

STATE DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES

ASSAY REPORT Office Number -230 & -231

Grants Pass, Oregon
~~Baker, Oregon~~ October 22, 1938

Sample submitted by Albert A. Lewis Grants Pass, Oregon

Sample description No. 1. Coarse reject from #463. No. 2. Fine reject from #463. Both samples of high-grade ore from the Al Sarena Mine.

The assay results given below are made without charge as provided by Chapter 176, Section 10, Oregon Laws 1937, the sender having complied with the provisions thereof.

NOTICE: The assay results given below are from a sample furnished by the above named person. This department had no part in the taking of the sample and assumes no responsibility, other than the accuracy of the assay of the material as furnished it by the sender.

Sample Number	GOLD		SILVER						Total Value
	Ounces per ton	Value	Ounces per ton	Value	Percent	Value	Percent	Value	
1	54.24		43.0						
2	53.22		41.0						

Market Quotations:
Gold $ per oz.
Silver $ per oz.
$ per lb.
$ per lb.

State Assay Laboratory

Assayer

unclassified 314

AL SARENA MINES, INC. (gold, silver)

Oregon corporation; H. P. McDonald, Pres., Trail, Oregon; H. P. McDonald, Jr., Sec.-Treas., Trail, Oregon; capitalization, $80,000.

Property: 10 claims known as the "Buzzard Group."

Location: Secs. 19, 20, and 29, T. 31 S., R. 2 E., on the headwaters of Elk Creek, northeastern from Medford and 20 miles from the Crater Lake Highway at the mouth of Elk Creek.

History: The claims were located in 1897 by Peter and Mark Applegate. Individuals and corporations shipped ore in the amount of about $24,000 chiefly in gold between 1909 and 1918.

Topography: The area is mountainous, lying near the divide between the drainage systems of the Rogue and Umpqua Rivers. Mine workings are on a heavily timbered ridge trending northerly at approximately 4000 feet in elevation, and slopes toward the south. The ravines on the east and west sides are about 700 feet and 300 feet respectively below the summit.

Geology: The vein occurs near the center of an area of altered and bleached volcanic breccias containing dikes and flows of rhyolite and andesite. No dioritic intrusives were found, and evidence of deformation was lacking. The strike of the vein in which about all the work has been done is N. 40 W. with a dip ranging from vertical to 85° E. Vein matter consists of altered rock with streaks and lenses of sulphides, chiefly sphalerite, together with some pyrite and galena. There is a little cherty quartz, no comb quartz. The occurrence of sulphides seams without quartz contrasts with the quartz veins containing sulphides characteristic of the larger districts. Native gold was reported to have been found in a pocket called level to 360 feet NE. of the main vein.

Development: The mine workings are reported to contain 3,334 lineal feet of drifts and crosscuts, 1000 feet of raises and winzes, and 75 feet of open cuts and

AL SARENA MINES, INC. (continued)

and trenches. Levels 1, 2, and 4 explore the vein for 430 feet, 160 feet, and 720 feet, respectively. There are small stopes opened on these levels.

(GET LATE INFORMATION)

Geology and Mineral Resources Map of the McLeod Quadrangle, Jackson County, Oregon

1993

By Frank R. Hladky, Oregon Department of Geology and Mineral Industries

INTRODUCTION

The McLeod 7½-minute quadrangle lies within the Western Cascades subprovince of the Cascade Range. Elevations range from 437 to 1,104 m (1,457 to 3,680 ft). Major geographical features include the Rogue River, Lost Creek Lake, and Elk Creek Dam.

The geology is dominated by volcanic rocks of dacitic to basaltic composition that were erupted, deposited, or intruded episodically during the last 30 million years (Ma) as part of the construction of now deeply eroded volcanoes. Lesser amounts of ancient and modern sand and gravel are distributed at or near the present valley floors. The aggregate thickness of the rock units in the quadrangle exceeds 3,000 m (10,000 ft). Volcanic rocks were deposited on the often sloping flanks of ancient volcanoes. The orientation of faults and dikes is complex, related in part to an upper Oligocene caldera complex; fault displacements are generally small. Tectonic tilting of strata reflects pre-middle Miocene regional downwarping or loading of the crust parallel to the axis of the Cascade Range and loading of the earth's crust around volcanic centers of late Miocene or Pliocene age. Notably, the drainage of the Rogue River was entrenched within the McLeod quadrangle as early as 10 Ma and was also the pathway for an andesite lava flow that caps Upper and Lower Table Rocks near Medford. The Rogue River also channeled a Pleistocene intracanyon basalt flow and mudflows from the catastrophic eruption of Mount Mazama 6,900 years ago.

Economic minerals have been produced in the McLeod quadrangle. Dacite and andesite were used to construct Elk Creek and Lost Creek Dams. Pumice was produced prior to World War II. Mercury and beryllium have been sought but not produced. Although the mineral potential of the caldera-complex rocks remains largely unexplored, north of the quadrangle similar rocks have been found to contain significant anomalies of gold, silver, mercury, lead, and zinc.

EXPLANATION

QUATERNARY DEPOSITS

Qya **Young alluvium (Holocene)**—Gravel, sand, and silt deposited along modern stream channels. Includes high-water gravels along stream channels and an active alluvial fan on the south shore of Lost Creek Lake. Thickness varies; maximum about 8 m (25 ft)

Qpm **Pumice and ash of Mount Mazama (Holocene)**—Very pale-orange, unconsolidated pumiceous pebbles, sand, silt, and mud interpreted as hyperconcentrated flows incident to the eruption of Mount Mazama about 6,900 years ago (Bacon, 1983). Hyperconcentrated flows traveled down the Rogue River as far west as Trail in the adjacent Trail quadrangle and part way up Big Butte Creek. Many deposits are now inundated by Lost Creek Lake. Thickness varies; generally less than 12 m (40 ft)

Qls **Landslide deposits (Holocene and Pleistocene)**—Fragments of bedrock mixed with gravel, sand, silt, or clay and displaced downslope by gravity sliding. Thickness varies; mapped where greater than about 3 m (10 ft)

Qoa **Undifferentiated old alluvium (Holocene and Pleistocene)**—Well-rounded unconsolidated gravel, sand, and silt of Holocene or Pleistocene age; dissected. Generally exposed below terraces but above modern flood plains. Maximum thickness about 6 m (20 ft)

Qb **Basalt (Pleistocene)**—Medium-light-gray to medium-dark-gray, very fine- to medium-grained, locally diktytaxitic, canyon-filling basalt. Randomly oriented, white, plagioclase laths less than 0.5 mm in length resemble oatmeal in texture; sparse pyroxene phenocrysts. Columns up to 30 cm in diameter; flow is vesicular near top; pipe vesicles up to 2 cm (0.8 in.) in diameter and 1 m (3 ft) long. Probably correlates with a series of canyon-filling basalt flows near Prospect, one of which has K-Ar age of 1.25 ± 0.11 Ma (Fiebelkorn and others, 1983). Thins downstream to about 5 m (15 ft) at the Kindschi quarry (mine site M9), NW¼ sec. 34, T. 33 S., R. 1 E., where it disconformably overlies unconsolidated gravel (unit **Qpa**). Maximum thickness 60 m (200 ft)

Qpa **Old alluvium (Pleistocene)**—Well-rounded, unconsolidated gravel, sand, and silt, devoid of significant clay, roots, or organic matter; dissected. Directly overlain by basalt (unit **Qb**). Excavation of the Lost Creek Dam foundation revealed a thickness up to 30 m (100 ft) in the left abutment (U.S. Army Corps of Engineers, 1982). Downstream of dam in SE¼NW¼ sec. 34, T. 33 S., R. 1 E., unit thins to about 6 m (20 ft)

QUATERNARY AND TERTIARY SEDIMENTARY ROCKS

QTtg **Terrace gravel (Pleistocene? and Pliocene?)**—Poorly exposed remnants of well-rounded, unconsolidated gravel, sand, and silt deposited on bench above Rogue River and along Elk Creek above Elk Creek Dam (U.S. Army Corps of Engineers, 1987). Thickness approximately 3 m (10 ft)

TERTIARY (NEOGENE) SEDIMENTARY AND VOLCANIC ROCKS

Tom **Basalt of Olson Mountain (Pliocene? and upper Miocene?)**—Tan- to light-gray-weathering, light- to medium-gray, fine-grained "oatmeal" basalt and andesite. Sparse, fine-grained (less than 1 mm) pyroxene and rare olivine phenocrysts in groundmass composed mostly of fine-grained plagioclase laths (less than 0.5 mm). Some flows consist of olivine basalt with andesine as the normative plagioclase and with a soda:potash ratio greater than 2:1, classifying it as a hawaiite (Bates and Jackson, 1987). Elevated range of P_2O_5 is characteristic of rocks of Olson Mountain (map nos. 27 and 30, Table 1). Overlies andesite of Table Rock exposed at the Lost Creek Dam quarry near Rumley Creek, except in areas where it filled in canyons incised into unit **Ttr**. Unit is a complex of lava flows and minor basaltic tephra that formed a broad, shield volcano, the morphology of which is still largely preserved as Olson Mountain. Stratigraphic position based on Smith and others (1982). Named after Olson Mountain. In areas where humus is sparse, soil is characteristically orange-brown, often several meters thick; regolith characteristically weathers spheroidally. Thickness at least 300 m (1,000 ft)

Ttr **Andesite of Table Rock (upper Miocene)**—Dark-gray to black, olivine-bearing, augite-bearing andesite with distinctive tabular plagioclase (oligoclase) as large as 0.5 by 6 mm. Phenocrysts of equant alkali feldspar (up to 3 mm); augite (up to 1 mm); less than 1 percent iddingsitized olivine (up to 1 mm). Groundmass comprised of andesine and labradorite laths, brown glass, magnetite and hematite. Normative plagioclase composition of An_{32-38} (andesine). Sodic plagioclase, alkali feldspar, pyroxene content, and ratio of alkalis to silica qualify this rock as a trachyandesite (Bates and Jackson, 1987; Cox and others, 1979). TiO_2 content of 1.3 percent and P_2O_5 content of 0.6 percent are distinctive (map nos. 24 and 28, Table 1). Columns in upper middle part of unit are up to 45 cm (17 in.) across, elsewhere typically 15 cm (5.8 in.). Locally vesicular near flow top and bottom and locally at base of colonnade. Base of unit along Highway 62 in NW¼ sec. 35, T. 33 S., R. 1 E., displays what is interpreted to be autoclastic frontal flow breccia up to 8 m (25 ft) thick that has been overridden by the rest of the flow. Prominent exposures at the Lost Creek Dam quarry (mine site M10) near Rumley Creek and Bear Mountain south of Rogue River and in secs. 27, 28, and 29 north of the Rogue River. Flow extends several miles to the southeast along Big Butte Creek and McNeil Creek. Correlates petrographically and chemically (unpublished Oregon Department of Geology and Mineral Industries [DOGAMI] data, 1993) with basalt that caps Upper Table Rock and Lower Table Rock in the Sams Valley area. Unit is overlain by the Olson Mountain complex and originates somewhere east of Prospect from vents that are now covered by younger volcanoes of the High Cascades (Smith and others, 1982). Unit yielded whole-rock K-Ar ages of 6.77 ± 0.2 and 7.1 ± 0.2 Ma (Fiebelkorn and others, 1983) from Bear Mountain in adjacent Trail quadrangle. K-Ar age of 9.6 Ma from a boulder located near the intersection of Modoc and Antioch Roads southeast of Upper Table Rock (Robert Duncan and Clifton Mitchell, Oregon State University, unpublished data, 1991); the sampled boulder originated from Upper Table Rock (Wiley and Smith, 1993). Unit named after Table Rock, a community located at the base of the prominent buttes of Upper and Lower Table Rocks. As this unit is relatively young and impermeable, soil development on it is usually poor on steep slopes but can be extensive on flat surfaces; regolith weathers out into broken, imperfect columns. Maximum thickness 180 m (600 ft)

ANGULAR UNCONFORMITY

Tkc **Andesite of Knighten Creek (lower Miocene)**—Brown-weathering, medium-dark-gray to dark-gray andesite. Phenocrysts of pyroxene (up to 2 mm) and plagioclase (up to 2 mm) in a fine-grained, felsic matrix containing iron oxides. Exposed in the area of Blue Gulch, north of Lost Creek Lake; named for exposures in Knighten Creek in the adjacent Cascade Gorge quadrangle. Flow emanates from near the base of Flounce Rock in adjoining Cascade Gorge quadrangle and has K-Ar age slightly younger than topographically higher rocks that form Flounce Rock. Flow forms the gently undulating surface along the north shore of Lost Creek Lake and overlies tuff of unit **Tyr**. Flow top is rubbly, and regolith development is several meters thick. Pressure ridges, vesicular rubble, inflation mounds, and deflation pits form a hummocky surface morphology that was originally interpreted by Smith and others (1982) to be a large landslide. Recent sliding is prevalent locally in areas of steep topography. Whole-rock K-Ar age of 20.0 ± 0.6 Ma (Fiebelkorn and others, 1983) in adjacent Cascade Gorge quadrangle. Thickness about 30 m (100 ft)

Tfr **Andesite of Flounce Rock (lower Miocene)**—Mostly brown- and gray-weathering andesite flows. K-Ar age of 20.8 ± 0.6 Ma in adjoining Cascade Gorge quadrangle (Fiebelkorn and others, 1983). Named after Flounce Rock, where well-exposed series of flows crop out. Thickness at least 150 m (500 ft)

DISCONFORMITY

TERTIARY (PALEOGENE) VOLCANIC ROCKS

Tyr **Tuff of Yellow Rock (upper Oligocene)**—Mostly very pale-orange and yellow but also green and reddish-brown, thinly laminated, foliated, or massive dacitic crystal vitric tuff. Includes both welded and unwelded lithologies and minor thickly laminated (up to 1 cm [0.4 in.]) fine ash-tuff lacustrine deposits in SW¼NW¼ sec. 8, T. 33 S., R. 1 E.

Near Yellow Rock, whence unit name originates, in NW¼NE¼ sec. 21, T. 33 S., R. 1 E., are exposed impact block sags in thick-bedded and partially welded lithic lapilli ash deposits, andesitic and dacitic lithic blocks (up to 0.5 m), and carbonized tree limbs (up to 1.5 m long); impacted block indicates trajectory from north to south. K-Ar ages on plagioclase of 25.6 ± 0.8, 25.9 ± 0.7, and 25.4 ± 0.8 Ma (Fiebelkorn and others, 1983) from north shore of Lost Creek Lake. From Lost Creek Lake to Burnt Peak, the unit displays compaction foliation. Unit includes multiple flow and cooling units. Soil is usually light tan, depending upon the humus content; generally supports manzanita, oak, and pine in preference to Douglas fir on south-facing slopes. Thickness up to 550 m (1,800 ft)

Totb **Dacitic tuff breccia (upper Oligocene)**—Chaotic collage of light-colored tuffs, tuff breccias, silicic flows, penecontemporaneous dikes, and small intrusions of dacitic composition. Unit is interpreted to consist of intra-caldera facies eruptive and intrusive rocks penecontemporaneous with units **Tlc** and **Tyr**. Mafic dikes intrude across all silicic facies in a variety of orientations. Soil is usually light tan, depending upon the humus content; lithologic and structural complexity of this unit frequently provides a permeable substrate that develops thick soils. Thickness at least 450 m (1,500 ft)

Tm **Andesite of McLeod (upper Oligocene)**—Mostly brown-, tan-, and gray-weathering andesite flows that are usually thick bedded but also platy; also includes amygdaloidal andesite with vesicles up to 1.5 cm in diameter concentrated along flow top in SE¼NE¼ sec. 22, T. 33 S., R. 1 E., and in secs. 8 and 9, T. 34 S., R. 1 E.; undivided coarse-grained andesite dikes; minor andesitic tuff and breccia; and red agglutinate in SE¼NE¼ sec. 15, T. 33 S., R. 1 E. Whole-rock K-Ar age of 25.4 ± 0.8 Ma at community of McLeod in NW¼ sec. 34, T. 33 S., R. 1 E. (Fiebelkorn and others, 1983). Individual lava flows, 3 to 15 m (10 to 50 ft) thick, exposed in the outlet works of Lost Creek Dam at the left abutment, are separated by thin paleosols. Unit is named for community of McLeod. Soil development on this unit can be many meters thick, especially in areas of sliding or low relief; weathering of the regolith often penetrates tens of meters. Thickness about 300 m (1,000 ft)

Tlc **Tuff of Lost Creek Dam (upper Oligocene)**—Pale-green to tan, lapilli-ash, welded, dacitic lithic vitric ash-flow tuff; large green pumice lapilli locally abundant. In SW¼ sec. 23 T. 33 S., R. 1 E., unit contains block-and-ash tuff consisting of blocks of andesite and dacite up to 1.5 m (5 ft) long and chunks of carbonized wood up to 0.4 m (1.3 ft) across in a lapilli and ash matrix that grades upward into fine-ash (co-ignimbrite?) tuff. K-Ar age on plagioclase of 28.6 ± 0.9 Ma in NW¼SE¼ sec. 27, T. 33 S., R. 1 E. (Fiebelkorn and others, 1983). Prominent exposures are found near Lost Creek Dam, after which the unit is named. Soil development and vegetative cover similar to tuff of Yellow Rock. Thickness up to 300 m (1,000 ft)

Toad **Andesite and dacite (upper Oligocene)**—Brown-, tan-, reddish- and medium-gray-weathering, fine- to coarse-grained, usually thick-bedded andesite flows, massive to thick-bedded greenish-gray dacite, and lenses of stratified, poorly sorted, unconsolidated to welded andesitic tuff and tuff breccia (lahar deposits). Includes dacite at Elk Creek quarry, secs. 18 and 19, T. 33 S., R. 1 E. Lava caves in laminated andesite in SW¼ sec. 20, T. 33 S., R. 1 E. Weathering of the regolith often penetrates tens of meters; thick soils developed; slumping occurs in areas of high relief; vegetative cover can be extreme. Thickness at least 370 m (1,200 ft)

Tobr **Tuff breccia**—Dark-reddish-brown- to brown-weathering, dark-greenish-gray tuff breccia. Consists of angular, porphyritic lapilli- and block-size andesite and dacite clasts welded in a fine-grained matrix of andesitic to dacitic composition. Generally massive; however, locally stratified. Probably represents vent-clearing, pyroclastic volcanism associated with the more effusive flows of unit **Toad**. Local dacitic block-and-ash vent facies exposed in SE¼SE¼ sec. 29, T. 33 S., R. 1 E., probably represents a small, parasitic eruptive vent. Maximum thickness about 110 m (360 ft)

Tot **Tuff (upper Oligocene)**—Brown to tan, thickly laminated, coarse-ash to fine-ash, unwelded, lithic andesitic air-fall tuff; unwelded, poorly sorted, stratified lithic tuff breccia and mudstone (lahar deposits); dacitic lithic vitric ash-flow tuff; and local, thin andesite flows and andesite breccia. The excavation at the left abutment of Elk Creek Dam exposes a sequence of thin andesite lava flows and breccia overlain successively by dacitic ash-flow tuff containing carbonized wood and unwelded, stratified andesitic air-fall tuff; beneath the concrete foundation, this sequence is underlain by tuff and lahar deposits of unit **Tot** (Tom Amundson, U.S. Army Corps of Engineers, personal communication, 1993). Welded ash-flow facies diminish, and lahar facies dominate west of Elk Creek. Thickness up to 60 m (200 ft)

Toa **Andesite (upper Oligocene)**—Mostly brown-, tan-, and gray-weathering platy to massive andesite flows; also andesitic tuff and breccia. Whole-rock K-Ar age of 29.0 ± 0.9 Ma given to sample taken east of Rogue-Elk County Park in NE¼ sec. 31, T. 33 S., R. 1 E. (Fiebelkorn and others, 1983). Weathering of the regolith often penetrates tens of meters; thick soils are often developed; slumping occurs in areas of high relief; vegetative cover can be extreme. Thickness in quadrangle at least 100 m (300 ft)

INTRUSIVE ROCKS

Tii **Intermediate intrusive rocks (upper Oligocene and lower Miocene?)**—Tan- and brown-weathering gray and greenish-gray, medium- to coarse-grained pyroxene andesite and less commonly dacite. Morphology most frequently

dikes but also sills, stocks, small laccoliths, or some combination thereof. Includes small laccolith in sec. 30, T. 33 S., R. 1 E. Often smaller intermediate dikes intrude other dikes or small intrusive stocks

Tim **Mafic intrusive rocks (upper Oligocene and lower Miocene?)**—Greenish-gray, fine- to medium-grained basalt dike at west edge of quadrangle along West Branch

Tid **Intrusive dacite (upper Oligocene and lower Miocene?)**—Light-gray, quartz-phyric banded dacite. Banding scale of 5 to 20 cm; spherical quartz phenocrysts up to 5 mm in diameter contain irregular clay-filled tubules (about 0.1 mm in diameter) emanating from a felsic groundmass; tubules represent partial resorption of quartz phenocrysts. Unit interpreted to be shallow hypabyssal intrusions that may have locally breached the surface, producing extrusive domes. This local late-stage resurgent doming was probably penecontemporaneous with eruption of unit **Tyr**

STRUCTURE

The structure of the McLeod quadrangle is reflected in the two cross sections. A west-northwest-trending fabric of dikes and small-displacement faults is evident in cross section A-A′. To the north, the intrusive character of rocks within the quadrangle becomes increasingly evident. The constructional nature of volcanism in the Western Cascades is evident in cross section B-B′. Loading of the earth's crust parallel to the axis of the Cascade Range from the construction of volcanic edifices has imparted a regional eastward tilt. Volcanic centers have superimposed their own localized distortion to the crust.

Faulting and folding of rock units are largely obscured by soil, duff cover, and the products of mass wasting. Observation of tectonic structure is further hampered by the lack of laterally continuous, planar units. Fault displacements are generally small (cross section A-A′) and are largely overwhelmed by the dramatic paleo-relief caused by constructional volcanism in the area (cross section B-B′). Quaternary sliding also hides structural details. During periods of extensive precipitation during the winter of 1993, several debris avalanches several cubic meters in size occurred along Highway 62. The landslides sloughed soil, regolith, and bedrock onto the highway right-of-way. Mass-wasting also occurred in unroaded areas of steep terrain. Evidence of centuries-old mass-wasting is indicated by large boulders (up to 10 m [33 ft] across) and headwall scarps overgrown with mature timber.

Faults have been mapped by any combination of indicators including gouge on the surface, pervasive and penetrative slickensides, unit offset, and the association of linear streams with sporadic exposures of shear zones. Dikes are commonly associated with faults. Some fault zones consist of distributed shear zones where rock shattering is evident across a broad area, e.g., West Branch fault (cross section B-B′). Fault offsets in bedded ash-flow units east of Tatouche Peak indicate vertical displacements on the order of 15 to 20 m (50 to 66 ft). Small-scale faulting (offsets of a few meters) and jointing are much more pervasive in the quadrangle than are indicated on the map, partly for reasons of map scale and partly because such detail is obscured in most places.

Upper Oligocene silicic rocks of a caldera complex, unit Totb, in the northernmost part of the quadrangle are chaotically disposed; intruded by andesite dikes, hypabyssal dacite stocks, and surface-breaching(?) exogenous domes; and peripherally overlain by bedded ash-flow tuffs that appear to emanate from this locus of explosive, silicic activity.

Complex faulting is evident within the silicic caldera-complex rocks. Faults in this area are manifested by linear gouge and breccia, hydrothermal alteration, and minor offsets in overlying tuffs. Emplacement of what are inferred to be resurgent dacite intrusions may have been controlled partly by ring fractures or radially disposed fractures related to caldera formation. Faults associated with the caldera complex are generally poorly exposed. Postcaldera faulting and diking appear to have occurred along preexistent zones of weakness but are also incident to an as yet poorly understood regional, postcaldera stress field.

West Branch fault is a prominent northwest-trending linear feature that locally shows evidence of shearing, including fault gouge and slickensides. The total amount of vertical displacement across the West Branch fault is inferred to be less than 15 m (50 ft) because of the current lack of measurable change in lithofacies across the fault. The shearing that is evident along the fault appears to be distributed among multiple, poorly exposed shear planes. The amount of horizontal displacement across the fault can not be determined.

Small-scale displacements (a few centimeters) occurred along a series of subhorizontal shears in the abutments of Elk Creek Dam immediately following its excavation (Tom Amundson, U.S. Army Corps of Engineers, personal communication, 1992). These shears are found within the mud-rich intervals of lahar deposits. An individual shear zone may span a thickness of up to 50 cm (20 in.) and is identified by its anastomosing network of thin (< 5 mm [0.2 in.]), usually continuous shear planes that define a subhorizontal zone of shearing.

Rock facets are ubiquitous in the quadrangle. Rock facets are shears, joints, or planes of weakness that have developed as the rock crumbles in response to weathering and gravity. Some rock facets that develop the characteristics of gouge may be confused with poorly developed paleosols, faults, or intrusive contacts. Rock facets in the Western Cascades are often more indicative of gravitational and decompressive stresses than of tectonic stresses.

Tilting of the dominantly volcanic strata of the quadrangle reflects the constructional nature of the area's volcanism, loading of the crust around regional volcanic centers of late Miocene age, and pre-middle Miocene regional downwarping of the crust parallel to the axis of Cascade Range. Upper Oligocene to lower Miocene rocks usually dip east, having dips that range from nearly horizontal to about 10° to the east. Local westward perturbations occur, frequently the result of Quaternary slumping. Rocks of late Miocene age at the base of Olson Mountain are depressed eastward as much as 2° as a result of the crustal loading of Olson Mountain. However, lava flows higher on the flanks dip radially from the summit of the mountain. Quaternary and latest Tertiary rocks show no discernible regional tilting.

Determining the average regional tilt of lower Miocene and lower rocks is difficult because (1) the ancient volcanoes had initially sloping flanks, (2) post-eruptive faulting has occurred, and (3) the terrain has weathered, causing

much of the top several meters of bed rock to creep or slump downhill.

Quaternary units are subhorizontally deposited upon incised Tertiary surfaces. Tectonic rotation is not evident. Quaternary units were deposited on surfaces gouged by the Rogue River and its tributaries. The disposition of the andesite of Table Rock indicates that the ancestral Rogue River drainage had its present morphology as long ago as 10 Ma.

GEOLOGIC HISTORY

The classification of igneous rocks in the quadrangle follows that of Streckeisen (1979) where geochemistry exists. Percent SiO_2 is normalized to 100 percent. In addition, normative mineral abundances of quartz, plagioclase, and alkali feldspar, corrected for loss on ignition, are calculated to determine the rock classification. Where geochemistry is absent, rock nomenclature generally follows that of Bates and Jackson (1987).

This report sets forth several new informal names for units. They are as follows: tuff of Lost Creek Dam (unit Tlc), andesite of McLeod (unit Tm), tuff of Yellow Rock (unit Tyr), andesite of Flounce Rock (unit Tfr), andesite of Knighten Creek (unit Tkc), andesite of Table Rock (unit Ttr), and basalt of Olson Mountain (unit Tom). Names were selected from permanent natural or cultural features within Jackson County at or near significant outcrops. Names are from localities recognized by the Branch of Geographic Names, U.S. Geological Survey. None of the new names appear to have been used previously in the geological literature (Ron LeCompte, Geologic Names Committee, U.S. Geological Survey, personal communication, 1993). This map, however, does not attempt to formalize the nomenclature of these units.

Rocks exposed within the McLeod quadrangle provide a glimpse into the geologic history of the Western Cascades of southern Oregon from the late Oligocene to the present. Volcanism has contributed most of the rocks to the quadrangle. During Oligocene time the character of volcanism switched alternately on and off between a dominance of intermediate lava flows and tuffs to a dominance of silicic tuffs and intrusions.

In earliest late Oligocene time, the quadrangle was the site of andesitic shield and stratovolcanoes, as recorded by unit Toa. This lowest unit contains an andesite flow with a K-Ar age of 29.0 ± 0.9 Ma (Fiebelkorn and others, 1983). Above this andesite flow is unit Tot, comprised of poorly exposed lahar deposits, dacite ash-flow tuff, and andesitic tuff interbedded with thin andesite flows and breccia. Where unit Tot is absent, paleosols are found, indicating either nondeposition or erosion of unit Tot prior to the deposition of the dacite and andesite of unit Toad. Unit Toad is a composite of several andesite and dacite flows, locally intruded by dikes and stocks of similar composition, which were erupted from several undiscovered sources. One small vent is indicated by a local tuff breccia in the SE¼SE¼ sec. 29, T. 33 S., R. 1 E. Unit Toad includes andesitic tuff breccia, unit Tobr, containing probable near-to-vent pyroclasts. In the vicinity of West Branch, unit Tobr forms a local and discontinuous horizon. Brief pauses in eruptive activity are common between flows in units Toad and Toa, as indicated by numerous paleosols. Paleosols are often discontinuous or covered.

During part of the late Oligocene, the prevalence of intermediate, generally effusive volcanism was superseded by voluminous explosive silicic volcanism that emanated from a silicic eruptive complex centered north of the quadrangle. This silicic eruptive complex produced voluminous ash-flow tuffs that blanketed the lowland areas of the quadrangle, first about 28.6 Ma and then again about 25 Ma. These eruptions were probably of the caldera-forming type. A broad, geomorphic depression northwest of Burnt Peak, largely modified by erosion, exposes caldera complex (intracaldera) lithofacies. Representative caldera complex lithofacies are exposed in the northernmost part of the quadrangle, between Elk Creek and Burnt Peak, primarily as units Totb and Tid. Units Tlc and Tyr are thought to represent mostly extracaldera facies.

The first of the voluminous, silicic ash-flow tuffs, unit Tlc, filled irregular topography near what is now Lost Creek Dam and Big Butte Creek. The tuff of Lost Creek Dam (unit Tlc) is dated at 28.6 Ma (Fiebelkorn and others, 1983). Composed primarily of lapilli-ash lithic vitric tuff, the unit also locally contains a block-and-ash facies and a fine-ash facies. Although often partially eroded or buried, the unit provides a glimpse into the dynamics of a system that erupted broad, yet valley-confined, welded ash-flow tuff, flanking block-and-ash tuff, and co-ignimbrite ash.

In late Oligocene time, mafic volcanism began again. Andesite volcanoes, represented by the andesite of McLeod (unit Tm), rose up along the flanks of the silicic volcanic complex and buried unit Tlc. One probable source area is indicated by red agglutinate in SE¼NE¼ sec. 15, T. 33 S., R. 1 E. The mountain named Camel Hump in sec. 5, T. 34 S., R. 1 E., is also probably a vent area because of radially disposed lava flows that seem to emanate from that area. Unit Tm is a composite unit composed of multiple flows. Moderate relief existed, and brief pauses in eruptive activity occurred between lava flows, as indicated in the left (south) abutment of Lost Creek Dam, where several paleosols are sandwiched between andesite flows. The morphology of the paleosols and andesite flows indicates moderate relief between successive lava flows. A K-Ar whole-rock age of 25.4 ± 0.8 Ma obtained from an andesite flow at the community of McLeod (Fiebelkorn and others, 1983) provides an age for one of the lava flows that directly overlies unit Tlc. Where unit Tlc is absent, poorly exposed paleosols mark the boundary between unit Tm and older lavas.

Renewed volcanic activity about 25 Ma in the silicic complex produced additional voluminous outpouring of dacitic ash-flow sheets (tuff of Yellow Rock, unit Tyr) and also produced penecontemporaneous late-stage dacite hypabyssal intrusions and possible extrusive domes (unit Tid). Once again, incandescent ash-flow tuffs swept over the caldera walls onto what is now the north shore of Lost Creek Lake. These ash-flow tuffs also filled paleovalleys in the vicinities of Elk Creek, Alco Ridge, and Middle Creek. Part of the ridge between Lost Creek and Elk Creek appears to have been topographically elevated during this period of dacitic outpourings, because ash-flow tuffs ponded around the flanks of the paleohigh (rocks of unit Tm). Hydrothermal alteration is associated with the dacite intrusions. Prominent razorbacks up to 10 m (33 ft) wide of white sericite and pyrite were found within brecciated rocks of the caldera complex.

Renewed andesitic magmatism produced many dikes that intruded both the silicic rocks of the caldera complex and, to a much lesser extent, the ash-flow tuffs. It also produced small stocks such as those at Fawn Butte. Field evidence indicates that the intrusion of andesite dikes was most prevalent from late Oligocene to early Miocene time.

These dikes do not intrude the upper Miocene and Pliocene(?) rocks (e.g., units Ttr and Tom) at Olson Mountain.

About 20 Ma, volcanism shifted eastward and became centered near Cascade Gorge, east of the McLeod quadrangle. From this time until the eruption of Mount Mazama, andesitic and basaltic volcanism dominated the McLeod quadrangle. The eruption of andesite lava flows and cinders built an extensive stratovolcanic pile at Flounce Rock (unit Tfr). One of the slightly younger flows, the andesite of Knighten Creek (unit Tkc), emanated from the base of this complex and inundated some of the tuff deposits (unit Tyr) now exposed along the north shore of Lost Creek Lake.

A long hiatus in volcanism ensued. Then, at about 10 Ma, andesitic volcanism began again, this time centered somewhere in the High Cascades east of Prospect. This volcanism produced a thick, canyon-filling trachyandesite, the andesite of Table Rock (unit Ttr), that flowed down the valley of the ancestral Rogue River to the vicinity of Sams Valley. This flow presently caps Upper and Lower Table Rocks (Wiley and Smith, 1993). In the McLeod quadrangle, the remnants of the Table Rock flow thicken toward the river, and the lowest parts are about 180 m (600 ft) above the modern Rogue River channel.

The capping lava flows at Upper and Lower Table Rocks were originally described in Sams Valley by Wells (1939). The andesite of Table Rock was identified as a pre-Mazama basalt with a source in the High Cascades by Williams (1942). Wells (1956) credited the name "pre-Mazama basalt" to Williams (1942) and subsequently adopted that name. The unit was mapped east of Prospect, along the Rogue River, and in Sams Valley by Smith and others (1982). Discrepancies in K-Ar ages of 6.77, 7.1 (Fiebelkorn and others, 1983), and 9.6 (this paper) Ma have not yet been resolved but are probably the result of analytical procedures because the andesite of Table Rock is petrographically and chemically conspicuous, with a distinctive TiO_2 and P_2O_5 content (map nos. 24 and 28, Table 1) that correlates with the "basalt" at Upper and Lower Table Rocks in Sams Valley (unpublished DOGAMI data, 1993).

Subsequent to the eruption in the High Cascades that produced the andesite of Table Rock, volcanism shifted westward to the vicinity of Olson Mountain, whose summit is southeast of the McLeod quadrangle and south-southwest of Prospect. The rocks at Olson Mountain were first described by Wilkinson and others (1941) as "gray Olsen [*sic*] Peak basalt flows." Smith and others (1982) estimated these rocks to be upper Miocene to Pliocene in age. Primarily effusive in character, the basalt and andesite volcanism at what would become Olson Mountain produced a broad, shield volcano with unusual geochemical affinities. A basalt analyzed from the basalt of Olson Mountain (unit Tom) has geochemical characteristics of hawaiite, and an andesite sample is transitional between hawaiite and trachyandesite of Cox and others (1979) (map nos. 27 and 30, Table 1). The Olson Mountain lavas that were analyzed are distinguished like the andesite of Table Rock by elevated phosphorus (Table 1).

The late Tertiary and early Quaternary geologic history of the quadrangle remains shrouded in uncertainty because of the present lack of age data. An erosional terrace of either Pliocene or Pleistocene age occurs on both sides of the Rogue River, downstream of Lost Creek Dam. Although almost everywhere eroded away, terrace gravel of unit QTtg is found on this surface. At the community of McLeod, the terrace elevation is presently about 510 m (1,700 ft). At Rogue Elk Park, 4 km (2½ mi) downstream, the terrace top surface is about 480 m (1,600 ft). At McLeod, the terrace gravels have been eroded away, the terrace incised into Oligocene rocks, and the resulting canyon partly filled, first with Pleistocene gravel (unit Qpa) and then with basalt (unit Qb). Unit QTtg also includes stranded terrace gravels in the Elk Creek drainage.

During the Pleistocene, the Rogue River continued to cut down through rocks of the Western Cascades and deposit alluvium. At McLeod, Pleistocene alluvium of unit Qp is directly buried by Pleistocene basalt (unit Qb). The gravels are effectively encapsulated in time, pristinely preserved, and devoid of significant clay, roots, or organic matter. These gravels and overlying basalt were subsequently incised prior to the deposition of Holocene Mazama ash.

An eruption in the High Cascades during the Pleistocene produced an extensive basalt lava flow that wound its way down the Rogue River drainage. This diktytaxitic basalt (unit Qb) underlies the bench on which Stewart State Park is located and fills much of the Rogue River canyon near Cascade Gorge. The basalt pinches out near the community of McLeod. This basalt overlies unconsolidated channel gravels (unit Qpa) laid down by the Rogue River during Pleistocene time. This basalt flow originates upstream of Prospect, where it is approximately 140 m (450 ft) thick (Williams, 1942) and may correlate with a basalt flow that has a K-Ar age of 1.25 ± 0.11 Ma and is found near Prospect (Fiebelkorn and others, 1983).

Old, undifferentiated Quaternary alluvium (unit Qoa) includes Pleistocene and Holocene gravels. Remnants of undifferentiated old alluvium (unit Qoa) are exposed in isolated patches below the unit QTtg terrace surface. The unit may be as old as Pleistocene, based upon the approximate terrace level it occupies; however, the unit's stratigraphic position within the Pleistocene is equivocal because unit Qb that overlies similar gravels at McLeod pinches out abruptly downstream of McLeod. Gravel of unit Qpa was being deposited at the time that the High Cascades basalt (unit Qb) made its way to McLeod. The basalt (unit Qb), however, pinches out at McLeod, making the age of some downstream gravels (unit Qoa) uncertain. Patches of gravel are found along the present canyon walls from McLeod to the west edge of the quadrangle. Locally, it appears that unit Qoa grades into Holocene flood gravels (including unit Qya). Overlying Mazama ash (unit Qpm) provides a bounding upper age for unit Qoa.

Landslide deposits are prevalent wherever mountains are formed. The mapped landslide deposits within the quadrangle are the result of landslides that probably have been active during much of the Quaternary and, in addition, generally show evidence of Holocene movement.

An extensive mudflow or hyperconcentrated flow incident with the eruption of Mount Mazama 6,900 years ago (Bacon, 1983) swept down the Rogue River. In its wake, it left unconsolidated pumice deposits (unit Qpm, after Smith and others, 1982). Some of these directly overlie older alluvium (unit Qoa) along Highway 62. From 1930 to 1942, pumice was mined from the Carlton deposit (mine site M4; Gray, 1991) now submerged beneath Lost Creek Lake. Pumice deposits several meters thick are found as far west as Trail.

The incision of the Rogue River into the Western Cascades continues to the present. The Rogue River and its tributaries cut below Pliocene(?) and younger terraces. Young Quaternary alluvium (unit Qya) can be found along modern stream channels.

GROUND-WATER RESOURCES

Ground-water resources are largely unstudied (Doug Woodcock, Oregon Water Resources Department, personal communication, 1993). Domestic wells are relatively few and tend to be concentrated along the stream valley floors. Well characteristics have not been studied. Study of the ground water by the U.S. Army Corps of Engineers at the dam sites was largely concentrated on rock permeability for the foundations (Tom Amundson, U.S. Army Corps of Engineers, personal communication, 1993).

Characterization of ground-water resources is based upon surface observations. Higher elevations act as recharge areas. The Rogue River is the regional discharge. Springs, found at many elevations, are seasonal and largely affected by changes in precipitation. Spring productivity is affected by proximity to valley floors, recharge basin size, and rock transmissivity. Springs emanate from rock fractures, permeable paleosols, and rubbly zones between lava flows, and at contacts between relatively impermeable ash-flow tuffs and more permeable lava flows.

MINERAL RESOURCES

Known mineral production from the McLeod quadrangle has consisted exclusively of rock materials (Gray, 1991). Large quantities of stone (andesite of Table Rock) were extracted from Lost Creek Dam quarry (mine site M10, Table 3) to build Lost Creek Dam, whose total volume is 10.8 million cubic yards (U.S. Army Corps of Engineers, 1982). Smaller quantities of dacite from Elk Creek quarry (mine site M3, Table 3) were stockpiled and used in the partial construction of Elk Creek Dam. A small amount of basalt, about 15,000 cubic yards, has been extracted from the Kindschi quarry (mine site M9, Table 3) for road metal.

Several disseminated mercury occurrences are known in the quadrangle (mine sites M1, M6, M8, M11, M12, Table 3). As reported in Gray (1991), prospecting has also occurred for beryllium (mine sites M5, M13, Table 3), although these sites could not be found. Dense foliage and mass wasting tend to obscure and naturally reclaim, small workings making recognition difficult. For example, Rayome (mine site M8, Table 3), a surface prospect, is mostly naturally reclaimed. Two mercury prospects reported in Gray (1991) were not found (mine sites M11, M12, Table 3). One of these, the Rogue River Prospect (mine site M11, Table 3), has sometimes been referred to as the Red Chief.

Both Rayome (mine site M8, Table 3) and the Midnight Prospect (mine site M6, Table 3) lie on a zone of northeasterly-trending shears in bleached and argillized andesite lavas and dacitic tuff. The Midnight Prospect has about 15 m (50 ft) of underground workings consisting of two shallow horizontal adits. Analyses of argillized andesite within the shear zone of the Midnight Prospect (map nos. 25 and 29, Table 2) and an associated jasperoid (map no. 26, Table 2), however, did not yield significant geochemical anomalies for metals.

Mineralization at Alco Creek, a raw prospect, (mine site M1, Table 3) is associated with propylitized pyritic andesite dikes that intrude brecciated and argillized lapilli ash-flow tuff. Two samples from the area were analyzed (map nos. 8 and 9, Table 2); significant anomalies were not detected. The amount of surface disturbance is less than an eighth of an acre.

Tuffs, dikes, and dacite within the caldera complex were sampled because of the occurrence of intense bleaching, seritization, brecciation, and argillization (map nos. 2, 3, 4, 5, 6, 7, 11, and 12, Table 2). A brecciated, hematitically stained dacite hypabyssal intrusive (map no. 11) yielded a slightly anomalous arsenic value (129 ppm). No other samples yielded geochemical anomalies.

The Al Sarena gold and silver mine, 13 km (8 mi) northeast of Burnt Peak, may be hosted within the same silicic complex identified in the northern part of the McLeod quadrangle. The Al Sarena Mine produced precious metals between 1909 and 1918, which were then valued at $24,000. There, disseminated gold and silver are hosted within locally intensely argillized and sericitized dacite stocks and tuffs and are concentrated along westerly-trending shears. Drilling and surface sampling by Fischer-Watt Gold Company in 1991 yielded highly anomalous values of arsenic, mercury, antimony, lead, and zinc, in addition to low-grade gold-silver ore (Bud Hillemeyer, Fischer-Watt Gold Company, personal communication, 1993).

GEOCHEMISTRY

Sampling methods

Rock samples were collected and analyzed for combined major and minor oxides and trace elements (Tables 1 and 2) to provide an indication of their compositions. The samples that were analyzed do not constitute a complete sampling of all the rock types found within the quadrangle.

Where field evidence indicated alteration or mineralization, altered rock samples were collected and analyzed for a particular suite of trace elements (Table 2).

Sample preparation

The rock samples were crushed to minus ¼in. in a Braun chipmunk crusher and then crushed to about minus 10 mesh in a Marcy cone crusher. Both crushers employed manganese-steel crushing media. Each crushed sample was split in a Jones-type splitter to obtain a nominal 250-g subsample for trace-element analysis (TEA) and, where required for whole-rock analysis (WRA), a nominal 100-g subsample. The subsamples were milled to about minus 200 mesh: each trace element subsample in chrome-steel media and each whole-rock subsample in corundum media.

All sample preparation was done in the Oregon Department of Geology and Mineral Industries (DOGAMI) laboratory.

Chemical analysis

Whole-rock analysis

X-ray fluorescence (XRF) analyses were performed by X-ray Assay Laboratories (XRAL) of Don Mills, Ontario, Canada. XRAL used a fused button for its analyses (1.3 g of sample roasted at 950°C for one hour, fused with 5 g of lithium tetraborate, and melt-cast into a button). Loss on ignition (LOI) was determined by the roasting.

Trace-element analysis

Gold—Bondar-Clegg, Ltd., of North Vancouver, British Columbia, Canada, performed analyses for gold. The method employed was fire assay preconcentration of the gold in a 20-g subsample (gold was collected in added silver), acid dissolution of the resulting bead, and direct current plasma (DCP) emission spectrometer finish. The detection limit was 1 ppb.

15-element package—M.B. Associates (MBA; formerly Geochemical Services, Inc.) of North Highlands,

California, performed the analyses for 15 trace elements including gold. The method employed a proprietary acid dissolution and organic extraction of a 15-g subsample. The finish was by induction coupled plasma (ICP) emission spectrometry for the elements other than gold; gold was determined by graphite furnace atomic absorption (GFAA) spectrometry. For gold, the detection limit was 0.5 ppb. MBA considers the digestion to provide total metal contents except for gallium and thallium.

Lithium, barium, chromium, cobalt, copper, iron, manganese, nickel, and zinc—The DOGAMI laboratory performed flame emission analysis for lithium and flame atomic absorption analysis for barium, chromium, cobalt, copper, iron, manganese, nickel, and zinc on some altered rock samples. A 1-g sample was digested with nitric, hydrofluoric, and perchloric acids; taken to incipient dryness; and then redissolved and taken to 100-ml volume with 10-percent nitric acid. The digestion provides total metal content except for barium and possibly chromium.

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ACKNOWLEDGMENTS

The author is grateful to the following people who contributed to this mapping project: Thomas J. Wiley of the Oregon Department of Geology and Mineral Resources (DOGAMI), who provided thought-provoking field discussions and critical reviews; Clayton "Tom" Amundson of the U.S. Army Corps of Engineers, who provided crucial reports and field reviews which helped improve the structure section; Bud Hillemeyer of Fischer-Watt Gold Company and Jim Smith of the U.S. Geological Survey, who provided thoughtful discussions of caldera geology and mineralization; Jerry Capps of the BLM for information on the Table Rock flow in Sams Valley; Doug Woodcock, Oregon Department of Water Resources, who provided information on ground-water resources; Gary Baxter and Chuck Radasch (DOGAMI), who provided the geochemistry; David Haight of the Oregon Department of Fish and Wildlife (ODFW), who kindly lent a boat for a low-water survey of the shoreline of Lost Creek Lake; Charles Kirby (DOGAMI), for his timely assistance during the survey of Lost Creek Lake; and Tom Satterthwaite (ODFW), who provided a guided river boat survey from Lost Creek Dam to Rogue Elk Park. Numerous residents kindly provided access to private lands and directions to outcrops. And thanks to Will Oliver of McLeod for guiding the way to the Midnight Prospect.

REPORT OF MINERAL EXAMINATION

Name and Address of Claimant:	Sadie Lewis 548 Fairmont Street Medford, Oregon
Reason for Examination:	Patent Application 0-011358 received by the Forest Service March 7, 1961, and verified statement 0-010487-A received by the Forest Service January 23, 1961.
Subject:	Validity of Mining Claim.
Land Involved:	1 lode claim shown on mineral survey No. 965 and located in Sec. 29, T. 31 S., R. 2 E., W.M., Rogue River National Forest, Jackson County, Oregon.
Land Status:	The claim is located on National Forest land open to mineral entry. The claim is completely surrounded by patented lode claims shown on mineral survey No. Oregon 879.
Location and Data:	This same ground was originally located by S. E. Geary in 1897 as the Buzzard mining claim. The Riolite claim was relocated November 2, 1932, by M. A. and Sadie Applegate. Sadie Lewis is the widow of M. A. Applegate.
Mining Engineers and date of Examination:	Lloyd E. Holmgren and Milvoy M. Suchy May 2, 1962.
Accompanied by:	John W. Kittenger, claimant's representative, May 2, 1962.

ABSTRACT

The Riolite mining claim is located some 45 miles northeast of Medford, Oregon, by mostly-surfaced road. The terrain is characterized by steep slopes leading to rounded and serrated ridge tops. Some cliffs and spires interrupt the valley slopes. The streams are high gradient and occupy V-shaped valleys. The claim contains a commercial stand of timber composed mostly of Douglas-fir with appreciable amounts of sugar pine, yellow pine, hemlock, and incense cedar.

The areal geology consists of volcanic flows of andesite, rhyolite, and fragmented rocks. There appears to be a central mass of rhyolite breccia some 4,000 feet in diameter upon which the Riolite claim is located. This rhyolite mass has been fractured and pyritized. One main vein is exposed by several extensive workings that originate outside the mining claim. The mineral values appear to be confined mostly to a gouge band which occurs within the vein. Considerable pyritization has occurred in the country rock.

The Riolite claim was worked by Mrs. Sadie Lewis and her husband during the period from 1932 to 1941 and accounted for their entire income during those years. They confined their mining to the gouge band and broke as much wall rock as was necessary to provide working space. The ore was concentrated into a gold-silver-zinc product and sold to the smelters. The total production from the Riolite claim and the surrounding Al Sarena group is reported to be around $30,000 to $40,000. The surrounding Al Sarena group of 23 claims was patented in 1954.

The working which was stated to be the basis of discovery for the Riolite claim originates within the Al Sarena group, and has a total length of some 1,500 feet, 100 feet of which is within the Riolite claim.

The results of the mineral examination made by the mining engineers indicate that practically all of the mineral values are confined to a gouge band that varies in width from about 3 to 6 inches. The values of the samples across the gouge material varies from $3.34 to $33.51 per ton. The highest value was across the full width of the 6 inches of the gouge filling. By expanding this highest value to a mineable width of 30 inches, a value of about $6.35 per ton is obtained which is far below the present-day cost of mining such a deposit. The main stope that occurs within the workings of the Riolite claim was not accessible because of the dangerous condition of the manway leading into it; consequently, what values, if any, remain in this stope are not known.

The lode line of the Riolite claim lies approximately at right angles to the vein which is the basis of discovery for the claim.

It is concluded that a discovery has not been demonstrated within the Riolite lode claim and that the claim is improperly located.

It is recommended that adverse proceedings be directed against the Riolite claim on the charges that (a) a discovery has not been demonstrated within the boundaries of the claim, and (b) the claim is improperly located as to that part lying beyond 300 feet on either side of the discovery vein.

Pertinent Information

The Riolite claim, which is the subject of this report, is completely surrounded by the patented Al Sarena group of claims. Patent application was made for the Al Sarena group in 1948 and, by rather unconventional means, patent to the entire group of 23 claims was obtained in 1954. Al Sarena Mines, Inc., offered to include the Riolite claim in the patent application. Mrs. Sadie Lewis, for personal reasons, declined the offer. It is reasonable to assume that a patent would have been obtained for the Riolite claim at the same time the group went to patent.

Most of the merchantable timber on the Al Sarena group has been logged off. The entire group was sold to a logger in 1959 or 1960. He is presently logging the remaining timber.

It was evident from the examination of the main workings of the Al Sarena group on May 2, 1962, that no work of a mining nature had been done since the claims were patented.

Location and Topography

The claim is reached from Medford, Oregon, by following the Crater Lake highway northeast some 27 miles to the mouth of Elk Creek, then by semi-improved roads some 15 miles, and the balance of the way (some 3 miles) by unimproved Forest roads. The total distance from Medford, Oregon, to the claim is some 45 miles.

The Riolite mining claim is situated across a heavily-timbered ridge which trends about S. 10° W. The area is within the Rogue River watershed. The greatest elevation of the ridge within the claim is some 4,000 to 4,200 feet. Tributaries of Elk Creek flow on each side of the ridge.

The terrain is characterized by steep slopes leading to rounded ridge tops, V-shaped valleys carrying high-gradient streams, and occasional areas of cliffs and spires. The Umpqua divide, which separates the Umpqua drainage from the Rogue River drainage, is located some 3 miles north of the property. The general slope of the terrain in the vicinity of the claim is downward from the Umpqua divide.

Timber and Other Surface Values

The claim contains a commercial stand of timber which is made up predominately of Douglas-fir, with considerable white pine, sugar pine, incense cedar, and hemlock. According to slash reports and other sources, it is calculated that some 6,600,000 board feet of timber was removed from the surrounding 23 Al Sarena claims. This is an average of something under 20,000 board feet of timber per acre removed from these claims. It is believed the Riolite claim contains at least a comparable stand of timber.

Although some recreational values may be present on the claim, they are not high. There is an inestimable value to the ground cover on the claim as a watershed.

History and Production

Bulletin 893 of the United States Geologic Survey, entitled "Metalliferous Mineral Deposits of the Cascade Range in Oregon", gives the following information. The claims in the Buzzard mine area (these included the same ground as the Al Sarena and Riolite claims) were located in 1897 by Peter and Mark Applegate. The Pearl Mining Company was incorporated in 1898, but the first ore was not shipped until 1909. Three operators, the Company and two lessors, produced a total of nearly $24,000.00, chiefly in gold, by 1918.

The bulletin states that, according to the owners, the mine workings consist of 3,334 feet of drifts and crosscuts, 1,000 feet of raises, and 75 feet of open cuts and trenches. Some 3,200 feet of drifts and crosscuts were accessible during the time of the United States Geologic Survey's field examination in 1930 or 1931. The bulletin does not mention any production between 1918 and the time of the field examination of the mine. It is presumed that the mine was dormant during this period.

The patent application filed by Sadie Lewis states that ores were sold from 1932 to 1941. A proof of mineral character submitted by Sadie Lewis states that the ore mined from the Riolite claim was the sole source of income for the Applegate household. Three smelter settlements are attached to the proof of mineral character which show returns of $191.81, $458.99, and what is believed to be $200.00. This last return is badly blurred. The returns are dated 1941, 1937, and 1936 respectively. Mrs. Lewis stated that she believed she and her husband sold about $10,000.00 worth of ore concentrates during the operation of the Riolite claim. She stated that she worked with her husband in the mine, breaking the ore and helping to carry it to a small mill where they made a gold-silver-zinc concentrate. The smelter returns show gold values of about 10 ounces per ton. The smelter penalized them for the zinc present.

Considering the production by Sadie Lewis and her husband and the production noted in Bulletin 893, the total production would be about $34,000.00 This checks quite well with a statement in the Al Sarena patent application that $30,000.00 to $40,000.00 worth of ore had been produced from the Buzzard mine area. The Al Sarena Company produced a minor amount of concentrates of unknown value.

It appears from the records and from the field examination that practically all of the mining activity from 1932 to 1941 was on the Riolite claim.

Areal Geology and Ore Deposits

A general description of the areal geology of the area is set forth in the above-cited Bulletin 893 and also in a publication by the Oregon Department of Geology and Mineral Industries, Oregon Metal Mines Handbook, (Bulletin No. 14(C), volume 2). A more detailed study of the geology was made by Elton Hattan, Mining Engineer for the Bureau of Land Management, and William E. Sandborn, Mining Engineer for the United States Forest Service, during their examination of the claims in the Al Sarena patent

Mrs. Sadie Lewis, who is about 70 years old, was not able to accompany the mining engineers on the examination. She did describe the workings on the Riolite claim in great detail and also instructed the engineers as to what material contained the values which she and her husband had mined prior to 1941. The workings on the grounds were essentially as described by Mrs. Lewis, and the vein material which had been mined was quite obvious. Map No. 2, which is appended, shows a detailed plan of the workings within the Riolite claim and also a section of that portion where stoping had been done. Map No. 2 also contains a tabulation and evaluation of the samples taken during the examination. The main stope into which the manway led from the level was not accessible as the ladder was in bad condition. Also, some timber appeared to be hung up near the top of the manway which was believed to make the manway too dangerous to climb. It appeared that the workings had not been used for many many years since there was an iron oxide sludge approximately knee deep all the way in from the portal. The vein had been stoped almost to the breast as indicated on Map No. 2. The portion into which the manway extends had been stoped probably 40 or 50 feet above the level. The country rock was a rhyolite breccia that was severely pyritized. This contained a band of gouge which, according to Mrs. Sadie Lewis, carried the gold and silver values. Samples were taken of the gouge on the level of the working and also in the stoped area near the breast. The location of these samples are shown on Map No. 2. The entire width of the breast was sampled to ascertain where the precious metal values were concentrated. The assay results for samples 1 through 4 demonstrate that the mineralized portion is the gouge band, as only the sample of gouge (SL-2) carried any mineral values. The highest assay for gold (Sample SL-7) was obtained in the stope as shown on Map No. 2. The width of Sample SL-7 was six inches and was composed of gouge material. The gouge band, in the area where it was examined, has a width of from 3 inches to 6 inches. This material was mined separately by Mrs. Lewis and her husband and then milled into concentrates which were shipped to the Tacoma and Selby smelters. The total indicated value of SL-7 is $33.51. Most of this value is in the precious metals. The width of the sample was the full width of the gouge band of six inches which, expanded to a mining width of 30 inches, has a value of $6.70 per ton. Such a value is far below what can be mined under the present economy. During the 1930's, such values were commonly mined and a satisfactory daily wage could be made. Sample SL-6 was across the total width of three inches of the gouge seam at the level and had a total indicated value of $7.86. The greatest values present in SL-6 were in zinc, with only minor amounts of precious metals present. This value, again expanded to a mineable width, would be less than $1.00 per ton. The sampling results definitely show that the gouge band within the fractured zone contained practically all of the precious and base metal mineralization. Based on these sampling results, it must be assumed that in the vicinity of the stoped area on the Riolite claim all the values are confined to the gouge band

application. Their findings were verified during the examination of the workings leading into the Riolite claim. There appears to be a dome-shaped central mass, roughly 4,000 feet in diameter, which consists of volcanic breccia and rhyolite which has been altered, bleached and pyritized. There appears to be one main vein through this mass upon which most of the workings have been made. This vein strikes approximately N. 40° W. and has a dip from vertical to about 85° to the East. The main mass itself is composed of volcanic breccia and contains dikes of rhyolite and andesite. Fragmented rocks appear to be dominant in the mass and are surrounded by flows of rhyolite, andesite, and labradorite andesite. No dioritic intrusive rocks were noted. The vein material consists chiefly of altered rocks, gouge seams, very little cherty quartz, and no comb quartz, and contains streaks and lenses of sulfide, chiefly sphalerite, and smaller amounts of pyrite and galena. The occurrence of sulfide veinlets without quartz in altered rock is in variance with the quartz vein characteristics of the larger districts of the Cascade Range in Oregon. There is evidence, according to Messrs. Hattan and Sandborn, that at least one, and possibly two, parallel veins exist in the large mass of breccia and rhyolite. The gold values present appear to be associated with the sphalerite and pyrite; however, some wire gold occurring in pockets associated with manganese oxide has been reported. It is reported, and stopes examined in the underground workings show, that the vein width is approximately $2\frac{1}{2}$ to $3\frac{1}{2}$ feet. Mrs. Lewis stated that practically all of the gold values were found in the gouge seams within the structure and that the values were confined to widths of only a few inches.

Discovery and $500.00 Expenditure

Mineral survey plat No. 965 which shows the Riolite claim also shows some 100 feet of Al Sarena No. 2 level as extending into the claim. This is the area worked by Sadie Lewis and her husband. The cost of driving a drift this size in the 1930's was around $10.00 per foot. The expenditure for 100 feet of drift would be $1000.00. In addition, there is a raise and stope within this hundred-foot length which would add to the expenditure for the benefit of this claim. It is believed that the required $500.00 expenditure has been made for the benefit of this claim.

Mrs. Sadie Lewis sent John W. Kittenger along with the mining engineers as her representative. Mr. Kittenger had never been in the workings shown on the mineral survey plat and consequently was of no help during the examination.

The appended copy of sheet 2 of Mineral Survey 879 shows the relation of the Riolite claim to the patented Al Sarena claims and also shows the working leading from the Al Sarena into the Riolite claim. The working traverses some 1,400 feet of Al Sarena ground and extends some 100 feet into the Riolite claim. This working accounted for most of the production from the Al Sarena group and was used until the mine was shut down in 1941.

and that possibly only minor mineral values are present in the adjacent country rock. It is unfortunate that the main stope is not accessible since it is possible that higher values are present in the gouge band in this area.

It should be noted that the strike of the vein is approximately N. 40° W. and that the bearing of the Riolite claim is S. 45° 50' W., placing the vein almost at right angles to the lode line of the claim. Since the workings and the vein on which they are located are the basis of the discovery for this claim, only that portion lying within 300 feet on each side of this vein can properly be included in the location. Therefore, the greater portion of the Riolite claim is improperly located.

Conclusions

The mineral values that have been mined within the Riolite claim by Mrs. Sadie Lewis and her husband are confined to the gouge band lying within a wider fracture zone. The results of the sampling done on the claim by the mining engineers indicate that practically all of the values are confined to the gouge band. The maximum width of the gouge band observed within the claim is six inches. The indicated values of the samples taken on the gouge material varied from $3.34 to a high of $33.51 per ton. The highest sample had a width of six inches which, expanded into a mining width of 30 inches, gives a value of $6.70 per ton. Such a value is far below the present-day cost of mining such a deposit. The main stope within the Riolite claim was not accessible, and consequently it is not known what values, if any, are present.

Based on the width and calibre of mineralization present and the geology of the deposit, it is concluded that a discovery is not present within the Riolite lode claim.

In addition, it is concluded that the claim is improperly located with respect to the discovery vein.

Recommendations

It is recommended that adverse proceedings be directed against the Riolite mining claim on the charges (a) that a discovery has not been demonstrated within the boundary of the claim, and (b) that the portion of the claim extending beyond 300 feet on each side of the discovery vein is improperly located.

Date August 2, 1962

Milvoy M. Suchy

MILVOY M. SUCHY, Mining Engineer

APPROVED:

Jack D. Groom

Acting Assistant Regional Forester

Date August 6, 1962

CRIB MINERAL RESOURCES FILE 12

RECORD IDENTIFICATION
RECORD NO..... M061385
RECORD TYPE..... XIM
COUNTRY/ORGANIZATION. USGS
MAP CODE NO. OF REC..

REPORTER
NAME..... JOHNSON, MAUREEN G.
UPDATED..... 80 12
BY..... FERNS, MARK L.; (BROOKS, HOWARD C.)

NAME AND LOCATION
DEPOSIT NAME..... AL SARENA (BUZZARD)

COUNTRY CODE..... US
COUNTRY NAME: UNITED STATES

STATE CODE..... OR
STATE NAME: OREGON

Undassified Dist

COUNTY..... JACKSON

QUAD SCALE	QUAD NO OR NAME
1: 62500	ABBOTT BUTTE

LATITUDE	LONGITUDE
42-50-43N	122-36-19W

UTM NORTHING	UTM EASTING	UTM ZONE NO
4743500.0	532250.0	+10

TWP..... 31S
RANGE.... 02E
SECTION.. 29
MERIDIAN. WILLAMETTE

LOCATION COMMENTS: SECS. 19, 20

COMMODITY INFORMATION
COMMODITIES PRESENT..... AU AG PB ZN CU AS

PRODUCER(PAST OR PRESENT):
MAJOR PRODUCTS.. AU
MINOR PRODUCTS.. AG PB

OCCURRENCE(S) OR POTENTIAL PRODUCT(S):
POTENTIAL.....
OCCURRENCE..... ZN CU AS

MAIN ORE MINERALS:
FREE GOLD, SPHALERITE

COMMODITY SUBTYPES OR USE CATEGORIES:
0.223 AU:AG

EXPLORATION AND DEVELOPMENT
STATUS OF EXPLOR. OR DEV. 4
YEAR OF DISCOVERY..... 1897
BY WHOM..... PETER APPLEGATE

DESCRIPTION OF DEPOSIT

DEPOSIT TYPES:
VEIN *
FORM/SHAPE OF DEPOSIT: STREAKS & LENSES

SIZE/DIRECTIONAL DATA
MAX WIDTH..... 2.5 FT
STRIKE OF OREBODY.... N45W
DIP OF OREBODY..... 90

DESCRIPTION OF WORKINGS
*UNDERGROUND
DEPTH OF WORKINGS BELOW SURFACE. 500 FT

COMMENTS(DESCRIP. OF WORKINGS):
4200 FT OF WORKINGS IN 8 ADITS

PRODUCTION
YES
SMALL PRODUCTION

ANNUAL PRODUCTION (ORE,COMMOD.,CONC.,OVERBURD.)

	ITEM		ACC	AMOUNT	THOUS.UNITS	YEAR	GRADE,REMARKS
1	ORE	SML		5.604	TONS		
2	AU	SML		.543	OZ		.097 OZ/T
3	AG	SML		2.437	OZ		.435 OZ/T
4	PB	SML		26.040	LB		4.647 LB/T

CUMULATIVE PRODUCTION (ORE,COMMOD.,CONC.,OVERBUR.)

	ITEM		ACC	AMOUNT	THOUS.UNITS	YEAR	GRADE,REMARKS
15	ORE	EST		24.000	DOLLARS	1909-1918	

PRODUCTION YEARS..... 1931-1944

PRODUCTION COMMENTS.... REPORTEDLY 35,000 TONS OF ORE BLOCKED OUT

RESERVES ONLY

ITEM	ACC	AMOUNT	THOUS.UNITS	YEAR	GRADE OR USE
1		35	TONS	1931	MEAS.

GEOLOGY AND MINERALOGY

AGE OF HOST ROCKS..... OLIGO-MIO
HOST ROCK TYPES..... RHYOLITE, ANDESITE

AGE OF MINERALIZATION..... TERTIARY

PERTINENT MINERALOGY..... VERY LITTLE QUARTZ, MANGANESE OXIDES

IMPORTANT ORE CONTROL/LOCUS.. NARROW ENRICHMENTS OCCUR IN FAULT ZONES

LOCAL GEOLOGY
NAMES/AGE OF FORMATIONS,UNITS,OR ROCK TYPES
1) NAME: LITTLE BUTTE VOLCANIC SERIES
AGE: OLIGO-MIO

SIGNIFICANT ALTERATION:
EXTENSIVE ALTERATION WITH DISSEMINATED PYRITE

GENERAL REFERENCES
1) BROOKS, H.C. AND RAMP, L., 1968, GOLD AND SILVER IN OREGON; OOGMI BULL. 61, P.323
2) OREGON METAL MINES HANDBOOK; 1943, OOGMI BULL. 14-C, VOL. 2, SEC. 2, P.195
3) CALLAGHAN, E. AND BUDDINGTON, A.F., 1938, METALLIFEROUS MINERAL DEPOSITS OF THE CASCADE RANGE IN OREGON; USGS BULL. 893

COPY

REPORT ON AL SARENA MINE
Submitted by George P. Sopp

May 19, 1939

Property

The property covered by this report is known as the Al Sarena Mine (previously known as the Buzzard Mine) and was located and worked as a quartz gold-silver mine.

Location

The Al Sarena Mine is located in the Buzzard Mining District, Jackson County, about 18 miles north east of Rogue Elk in the State of Oregon. The claims owned by the Al Sarena Mining Company form a portion of Township 31 S, Range 2 E.

The nearest town of any importance is Medford, Oregon which is reached by 25 miles of oiled highway, 13½ miles of county road, and 5½ miles of Forest Service Road. The highway is kept open throughout the year, the county road is kept open except for short periods during exceptionally severe winters. The Forest Service road is built on a considerable grade and becomes deeply rutted after heavy rain or light snow. During periods of heavy snow this road becomes impassable and generally must be opened by the Al Sarena Mining Company.

Ownership and Titles.

The Al Sarena Mining Company was organized under the laws of Oregon by Dr. H.P.McDonald Sr.; Dr. McDonald is President of the Company, W. G. McDonald is Vice-President, and H. P. McDonald, Jr., is Secretary-Treasurer.

Twenty-one or twenty-two claims are owned by the Al Sarena Mining Company. Nine of these claims form the Buzzard Group and were all purchased, with the exception of the S. Geary Claim, from the Pearl Mining Company. (The Company has an option on a 50% interest in the Sam Geary Claim of the Buzzard Group.)

Of the claims not included in the Buzzard Group, some were located and others were purchased from individuals.

None of the claims are patented.

Facilities

Water Supply---

Mine Water - At least 100 gallons per minute drains through the portal of #2 tunnel and this water could be used for milling purposes.

Elk Creek - The Al Sarena Mine has one of the earliest water rights on Elk Creek. During the spring of the year,

this creek has a flow of approximately 2000 gallons per minute and the flow does not decrease materially throughout the year.

Water from Elk Creek flows to the mill by gravity through a ditch approximately one-half mile long.

Swanson Creek - Approximately 500 gallons of water per minute flows through Swanson Creek in the spring of the year. During the dry season of the year this flow may diminish to 250 gallons per minute.

Timber - By patenting the property, the Al Sarena Mining Company would obtain title to at least 12,000,000 feet of timber, valued at approximately $80,000.00. ?

Cost to much to patent

Power - Power is at present furnished by Diesel Engines but it is only a distance of approximately six miles to the power line. The California-Oregon Power Company has estimated that the cost of the six miles of line would be approximately $17,000.00. Due to increased competition, the Power Company might now install the line at a lower figure that that quoted above. The cost of electric power would not be over 8 mills per kilowatt hour.

Labor - The wage rate in this part of Oregon is comparatively low and labor is not organized. Good relations exist between the Al Sarena Mining Company and the labor employed.

Position	Wage	* Position	Wage
Miners	$4.00	* Crusherman	$3.50
Muckers	3.50	* Diesel Operator	3.50
Blacksmith	4.00	* Millman	4.00

Telephone - The Forest Service telephone line runs within 200 feet of the office and can be used.

Topography

The portal of the #2 Tunnel, main haulageway of the Al Sarena Mine, is located about 700 feet from Elk Creek and at the base of a hill which rises from an assumed elevation of 3400 feet at the portal to 3900 feet over the maine ore stopes, situated about 1200 feet N.W. from the tunnel entrance.

The area surrounding the Al Sarena Mine is drained by Elk Creek and its tributaries. From the mine, Elk Creek flows south west to join the Rogue River at Rogue Elk. Hills rise to a height of generally not more than 2000 feet on either side of Elk Creek, the average slope being considerably greater in the vicinity of the mine than near Rogue Elk. From the U.S. Geological Survey Topographic Map (1886) it may be observed that the mountain on which the Al Sarena Claims are located, rises just north of the mine from an elevation of 3000 feet at Elk Creek to an elevation of 5000 feet in approximately one-half mile --- this slope is considerably greater than the average.

To summarize the topography, this area is one of moderate relief, cut by numerous fairly steep sided conayons and ravines. The hills are steep but not exceptionally high. A few flat topped mountains have been observed.

(Please refer to 200 scale Topographic Map.)

Geology

General.

The predominant rock of the area is volcanic and may be found capping the mountains and forming the canyon floors from the mine to Rogue Elk. A fairly complete study of these flows has been made by the U. S. Geological Survey.

The mine workings are in a fine grained, light colored rock which has not been identified and a darker rock in which may be observed numerous grains of quartz and crystals of sanadine. This latter rock is probably either a rhyolite or a quartz latite.

The two rocks described above cover a roughly circular area about three quarters of a mile in diameter and are completely surrounded by andesite.

The andesite is apparently extrusive and either overlies the rhyolite or has been intruded by the rhyolite. Excavation and further study of the contact would be helpful on this point.

Because there is an extensive zone of andesite breccia at the contact of andesite and rhyolite and because there appear to be fragments of rhyolite in the breccia, it is possible that the andesite is later than and overlies the rhyolite.

Andesite flows on Swanson Creek strike approximately E-W and dip south at an angle of between 30 to 55 degrees.

There is considerable N.W. - S.E. faulting in the rhyolite. These faults are part of a shear zone at least 800 feet wide and are all mineralized to some extent. To date the main vein has been the only productive fault fissure but other parallel faults have shown possibilities.

One strong north-south fault has been noted which is later than and offsets the main vein. This fault, shown on the surface map as the "North Drift Vein", is mineralized and should be further investigated as a possible producer.

--Description of Rhyolite--

Since no microscopic study has been made, this rock cannot be definitely termed a rhyolite.

Macroscopically the rock is aphanitic porhyritic.

The Phenocrysts are quartz and sanadine (Orthoclase). Pyrite is found uniformly disseminated throughout the rock.

--Light Colored Flow Rock--

A microscopic study has not been made of this rock. Macroscopically it is aphanitic porphyritic. The phenocrysts are feldspar and in a very few specimens, scattered grains of quartz were noted.

This rock commonly shows flow banding and on the hill top approximately 800 feet southwest of #5 Tunnel, bands of pure quartz about ¼" wide are found alternating with bands of the flow rock.

--Veins and Mineralization--

Practically the total production of the Al Sarena Mine has been from one vein, The vein has a strike of N 45 degrees west and is practically vertical.

The rock in the main vein is highly brecciated and there are usually one or two gouge layers in the vein. The gouge layers are generally found near one or both walls of the vein. They are from 1/8 inch to 1 inch or more in width and contain abundant sulfides and quartz.

The average width of the vein is about 2½ ft., however there is considerable variation of width. This variation is partially due to the rock cut by the vein.

In Tunnel #6, the vein cuts an exceedingly hard, fine grained white rock, which may be either a minor intrusion in rhyolite, a type of flow rock, or a silicified zone in the rhyolite. Where the vein cuts this white rock it becomes very narrow and there is little or no brecciation. The vein becomes an extremely narrow seam of gouge containing abundant sulphides. (This rock may be later than the original fissure.)

No definite conclusions can be drawn concerning the variation in the width of the vein with depth until more of the vein is exposed on the upper workings.

Along the strike, the vein seems to narrow rather abruptly just south of #1 stope, but here again no definite conclusion should be drawn until the vein is developed further in this direction.

As previously stated, the vein is composed of brecciated rhyolite and one or more narrow gouge seams. No vein material was observed under the microscope, however, the following minerals were observed in the gouge; galena, sphalerite (variety-blackjack), quartz, and pyrite. All these minerals may be found in natural crystal form.

Gold and silver have not been observed in the hand specimen but it has been noted that the value of the ore seems to vary directly according to the width of the gouge streak or

streaks and the amount of galena, quartz, and sphalerite in the gouge.

When a gouge streak is found against either wall of the vein, the sulphides are commonly "frozen" to the wall.

Although production has largely been from the vein already described, there is another very prominent vein, best exposed in the north drift, which has been considered as a potential producer.

The north drift vein has a strike of approximately N. 8° W. and appears to be practically vertical. Because this vein intersects and apparently slightly offsets the productive vein, it seems fairly conclusive that it is a fault fissure.

The north drift vein is composed of about 3 to 3½ feet of brecciated rhyolite and a very consistent narrow gouge streak. Its walls are not as definite as the walls of the productive vein and the gouge does not contain such an abundance of sulphides.

Whereas the productive vein stands well with a minimum of timbering, the north drift vein, especially on the gouge streak, is exceedingly weak and drifts driven on it must be well timbered.

The north drift vein serves as a watercourse for a small stream of water and loosening of the material in the vein by the water may be the cause of its weakness.

Samples taken by the writer on this vein did not run high but since it is impossible to obtain good samples because of interfering timber, the possibilities of this vein as a producer have not been completely discarded.

Because of the similarity between the two main veins on the property and since it appears fairly certain that the north drift vein is a fault fissure, there is a possibility that the productive vein is also a fault. The breccia on the productive vein is also a fault. The breccia on the productive vein has not been examined carefully but near the end of the main drift--#2 Tunnel--, a fragment of dark colored rock resembling andesite was found between walls of rhyolite. A fragment of white, fine grained rock, similar to the rock in #6 Tunnel, has also been found in the breccia between walls of rhyolite. These fragments of foreign material would not be uncommon in a fault breccia.

The main vein is a part of a wide shear zone with a north-west south-east trend. Within this zone there are numerous fractures, some of which probably have a small displacement and could be termed faults.

Fissures in the shear zone are generally mineralized and samples taken on these veins assayed sufficiently high to warrant further investigation.

--Relation Between Different Rocks--

As already stated, there is an andesite flow breccia at the contact of rhyolite and andesite. This breccia contains rock fragments that are very smilar to the rhyolite--- this could be better determined by a microscopic study.

The above evidence, which is far from conclusive, influences the writer to believe that the andesite is later than and covers the rhyolite.

The relation between the rhyolite (?) and the light colored flow rock is not completely understood. The contact between these two rocks is probably an intrusive contact, the age relation however is not known although the rhyolite (?) appears in the hand specimen to be much less altered than the light colored flow rock.

The light colored flow rock in places approaches a tuff in appearance.

--Large Breccia Zones--

There is a zone of extensive brecciation in #6 Tunnel, starting about 75 feet from the portal and extending for 100 feet or more in a southeasterly direction. The west cross-cut of #6 Tunnel is driven into this zone and its wall rock is brecciated throughout its length of 50 feet.

Below this zone, there is extensive brecciation in the #2 Tunnel in the #2 south cross cut.

The cause of this brecciation is not yet understood.

--Alteration--

In the near surface workings such as #6 and #5 Tunnels, the effects of alteration are very apparent. The pyrite is largely altered to hematite and the rhyolite (?) itself is soft and porous. Pieces of brecciated rhyolite (?) from the main vein and from the #6 Tunnel breccia zone, have become so altered that they may be easily carved with a knife--feldspar is apparently kaolinized.

Alteration has affected the rock on the lower levels along the fault zones but the rhyolite (?) wall rock (in the hand specimen) is relatively unaltered.

--Classification of Deposit--

From the characteristics of this deposit (as they are known so far) it corresponds to what is termed by Lingren an "Epithermal Deposit" -- undoubtedly of Tertiary age.

This type of deposit is peculiar to Tertiary flow rocks although not confined to them. Such deposits have been studied fairly thoroughly and their characteristics are well known.

1. Waldemar Lindgren, "Mineral Deposits", Chap 24, pps. 444-5).

Tertiary veins are usually irregular, short and relatively shallow. The greater production is generally confined to within 2000 feet of the surface, and two deposits known to the writer, namely; Round Mountain and Manhattan, Nevada, have been productive only for the first 1000 to 1200 feet although it is not definitely proven that ore bodies may not be found at greater depth.

EQUIPMENT

-- Mine--

The Al Sarena Mine is practicaly ready for instant operation. Air has been piped to each stope.

Cars and track are in good shape and ready for use. There is a supply of dynamite, caps and fuse on hand.

There is a blacksmith shop, timber shed, and change room at the portal of #2 Tunnel and a snow shed from the timber shed and blacksmith shop to the mill.

A further supply of picks, shovels drill steel etc. would be required for efficient underground work.

An Ingersoll-Rand NF-1, single stage, compressor provides 280 cu. ft. of air per minute to the mine. This compressor was entirely re-built at the Ashland Iron Works in 1938.

There is a 300 cu. ft. receiver in the mill and a receiver of approximately 125 cu. ft. capacity in the mine.

-- Mill--

Mine ore goes to an ore bin of approximately 75 tons capacity, thence to a Universal Jaw Crusher, force feed, 10"x16" ore crushed to 1½" to 2".

From Jaw Crusher ore goes to 80 ton ore bin and hence to Marcy #54, 5' x 4' Ball Mill. (Mill is four years old but comparatively unused.)

Discharge from Ball Mill passed over E.P. McDonald Jig and hence to Dorr Duplex. 16' x 54" Classifier. (New in 1938)

Undersize from the classifier (minus 65 mesh) to two Wilfley Tables. (1. 6 years old. 2. 2 years old.)

Capacity -- 100 tons, Ratio of concentration -- 30 to 1, Recovery on test runs -- 87%, actual operating recovery-- considerably lower.

--Added equipment not being used--

--Flotation--

The mill is equipped with one battery of four Kraut rougher flotation cells and one Kraut cleaner cell. With the cells are Pan-American reagent feeders both for the collectors and frothers.

The above equipment is practically unused since flotation was unsatisfactory during actual operation.

--Cyanide Leach for Concentrates--

The mill is equipped with a 6 ton cyanide leaching plant made by the National Tank and Pipe Company. This plant was bought new in 1937 and operation was not completely successful.

-- Power --

Power for mill and mine is furnished by a Fairbanks-morse full diesel Engine rated at 120 H.P. Everything in the mill is run by belt drive from line shafts except the flotation cells which are motor driven.

A langman 32 K.W. 220 or 440 volt generator furnishes electric power for lighting and flotation.

The compressor which furnishes air to the mine is belt driven by a Fairbanks-Morse, Type Y, Style V, 50 HP. Semi-Diesel Engine.

--Development--

The Al Sarena Mine has well over a half mile of underground workings. Unfortunately, a large part of these workings are not on the productive vein.

#2 Tunnel is the main haulageway for the mine. The main tunnel is approximately 1600 feet long and about 500 feet of the productive vein is exposed.

There are approximately 400 feet of workings that may be termed cross-cuts in reference to the productive vein. The north drift vein is incompletely developed for a length of 500 feet by these workings.

#4 Tunnel--a crosscut with respect to the productive vein--is approximately 850 feet long. About 60 feet from the end of the main tunnel, a drift is driven northwest 120 feet on the main vein and approximately 240 feet southeast on the main vein.

#6 Tunnel has approximately 400 feet of workings but only about 60 feet of the productive vein is exposed. About 10 feet of the North Drift vein is exposed.

#5 Tunnel has approximately 300 feet of workings but mxix is **not** on the main vein. Approximately 25 feet of the North Drift vein is exposed in this tunnel. By driving the east crosscut of #5 Tunnel, the productive vein should be intersected in approximately 12 feet.

#8 Tunnel is approximately 800 feet northwest of #6 Tunnel and crosscuts the main vein. Pits A, B, C, D, & E are all surface workings along the main vein.

There are numerous smaller workings at the Al Sarena which have not been explored by the writer.

Methods and Costs

Ore has been mined by shrinkage stoping. The method of milling has already been briefly described.

No definite data has been compiled to date regarding previous cost of mining and milling at the Al Sarena Mine.

Sampling

Sampling, as carried on at the Al Sarena Mine since the beginning of February, has been greatly hampered by inaccessible drifts, caved stopes, and weak timbered ground.

Large samples could not be taken without a considerable outlay for equipment.

The productive vein is fairly well developed on the #2 Tunnel level but the vertical difference between the #2 and the #1 Tunnel level is 267 feet.

No sampling on the vein could be done between these two levels (#1 and #2 tunnel levels) and therefore too much reliance should not be placed on the value obtained for this block (No. 2 block) of ore. The number of samples taken on this block is small compared to the size of the block.

Sampling in #1 Tunnel was especially incomplete. Sampling could not be done in the large stope above that level without putting ladders and staging in the stope.

Approximately 240 feet of the drift in #1 Tunnel is inaccessible. Values obtained in previous sampling were used. The writer knows nothing of the method used in taking these previous samples and cannot answer for their accuracy.

The upper or near surface portion of the productive vein is developed only in #6 tunnel. About 60 feet of the #6 Tunnel workings are on the vein.

Valuation of an ore body based on such a small number of samples cannot be considered as extremely accurate especially when these samples are small.

To get a more accurate value for the ore on the vein, it would be necessary to sample stopes and drifts now inaccessible, to do either some surface work or intersect and drift on the vein from #5 Tunnel. Larger samples taken at closer intervals would give greater accuracy.

To complete the above sampling would of course entail considerable expense.

Ore Reserve

From Samples taken on the productive vein at the Al Sarena Mine, the following ore has been blocked or partially blocked out.

(Please refer to longitudinal section for position of blocks).

Ore Reserves -- Ore Blocked Out

Block No.	Tonnage	Value Per Ton.	Total Value of Block
1.	4330 tons	$11.38	$ 49,300.00
2.	15600 "	9.20	143,900.00
3.	1090 "	8.64	9,450.00
4. (Broken ore #1 Stope)	526 "	7.10	3,740.00
(Broken ore #2 & #3 Stopes	1330 "	9.45	12,590.00
Unbroken Ore. a.	1666⅔ "	7.00	11,690.00
b.	375 "	6.41	2,400.00
	24917 tons		$232,600.00

Value on bk. #4 is approximate. It is based on data furnished by the managment.

Probable Ore

Block No	Tonnage	Value per ton	Total value of Block
5	1,675 tons	$12.35 (-or-)	$20,700 (-or-)
6	1,003 "	6.28 (-or-)	6,300 (-or-)

Possible Ore (Too poorly developed to estimate the value per ton.)

Block No	Tonnage	Value per ton
7	8,838 tons	?
8	874 tons	?
	9,712 tons	

Total Gross Value of Ore----------	$232,600.00
	27,000.00
	$259,600.00
Milling losses (accofding to test runs with present equipment) -12%	31,152.00
Mining losses (Estimated) -5%	12,980.00
	44,132.00
Gross Value----------	$259,600.00
Less Mining & Milling Losses	44,132.00
Net Value	215,438.00

Mining and Milling Costs and the Amount of Capital Investment is not known to the writer and, therefore, more complete calculations cannot be made.

The main vein has been uncovered by shallow surface workings for 800' N.W. of the blocked out ore. Since workings are too shallow for accurate sampling little is definitely known concerning the value of the ore in this direction. Further and deeper development on the vein may greatly increase the amount of positive ore.

Sampling on other fissures in the main shear zone has shown possibilities of ore bodies other than on the productive vein.

Previous surface samples taken by other parties in the banded white flow rock have assayed well and further investigation may reveal an appreciable tonnage of ore.

CONCLUSION

This deposit has been classed as an Epithermal--Tertiary vein. Such veins have proven in the past to be relatively shallow (maximum production from within 2000 feet of the surface) and irregular.

There is a zone of very good ore on the main vein, extending upward from the "new stope" (No.5) of #2 Tunnel, through #1 Tunnel near the top of the Air Raise and upwards through the winze in #6 Tunnel . The wall rock on at least one side of this zone shows an unusual amount of brecciation and is apparently capped in #6 Tunnel by a body of hard white rock which has not been identified by the writer.

In #1 Tunnel, the value of the ore in the vein decreases somewhat in a direction north-west from this zone and in #2 Tunnel the value of the ore appears to decrease somewhat in a direction south-east from this zone. Too much importance cannot be attached to these facts at the present time.

In order to develop more ore at the Al Sarena Mine, work should be done on the vein in #8 Tunnel (known as the Storm Tunnel), in trenches "A","B","C", "D", and "E", in #5 Tunnel, and the vein should be more definitely located and developed in the vicinity of the office.

The end of the main drift -- #2 Tunnel -- could not be sampled but since ore was mined here the drift should be cleaned out and driven ahead on the vein.

A relatively small amount of work just south of #1 stope --#2 Tunnel--would be very valuable in order to get a better idea of value and strike of the vein in that direction. The vein could then probably be identified in the main drift.

In #1 Tunnel, near the face of the northwest drift, the vein appears to turn rather abruptly and leave the drift. Samples cut on the vein at this point assayed fairly well and some work should be done in this direction.

More work should be done on the vein in #6 and #5 Tunnels.

A winze sunk at the bottom of the new stope of near the bottom of the air raise in #2 Tunnel is essential for development of ore with depth. No long tunnels should be driven to intersect the vein at depth unless the ore is first definitely proven to continue with depth.

The possibility of ore on other fissures in the main shear zone should be kept in mind and these other fissures should be developed to some extent underground.

The banded white flow rock has yielded some good assays during previous investigations and surface workings are in order followed by churn drilling if the surface trenches show the possibility of an ore body.

--Possible Low Grade--

The possibility of a large low grade ore body at the Al Sarena Mine has long been considered by Dr. H. P. McDonald.

The writer cut some samples in the wall rock that averaged approximately $1.00 per ton and would have been interested in further sampling.

In order to do such sampling accurately and with a minimum cost the writer has tentatively outlined the following program:

I Sampling of country rock not including the banded portion of the white flow rock.

1. Underground workings crosscutting the main shear zone should be first sampled at intervals of 25 feet or thereabouts.

2. All present surface workings should be sampled and a limited number of surface trenches should be dug crosscutting the main shear zone.

3. Sampling outlined above should indicate roughly the value of the country rock. If results are favorable, samples should be cut in the 25 foot intervals between original samples in the underground workings. If results are unfavorable it would be inadvisable to spend more money for sampling.

4. Finally, if close sampling of underground crosscuts showed a large tonnage of ore, further sampling by churn or diamond drills would be in order.

II Sampling of banded white flow rock.

1. There are practically no underground workings driven into this rock. Therefore, a limited number of surface trenches should be dug and sampled across the banding.

2. If results from above sampling are favorable one or two of the surface workings should be deepened and sampled.

3. If values remain with depth, diamond or churn drilling would be the most economical way to further outline the ore body.

(Before each sample is cut, a fresh surface must be obtained. Large samples of uniform width and depth should be taken and assays should be run on two or three assay tons of ore.)

--Volcanic Series--

A vesicular grey flow rock was found at the base of the andesite on the ridge about 1500 feet southwest of Tunnel #5. The same rock was found underlying the andesite about amile north of the mine. This rock is extremely fine grained and has been termed a felsite by the writer. Some specimens are extremely vesicular and contain muscovite and pyrite.

--Widespread Mineralization--

The gold and silver on the main vein is known to be associated with galena, sphalerite, pyrite, and quartz. These minerals however are not confined to any one rock or fracture zone.

Galena, sphalerite, pyrite, and vein quartz are found abundantly in the ~~x~~ Rhyolite (?) and the white flow rock. Galena and pyrite have been observed sparingly in the felsite.

This widespread mineralization suggests the theory that during the final stage of one period of extrusion, solutions ascended from a deep seated magma reservoir to permeate and deposit minerals in every type of rock present except the andesite.

(Signed) George P. Sopp

Fischer-Watt Gold Company, Inc.
340 Freeport Blvd., Suite 3, Sparks, NV 89431 (702) 358-0947 FAX (702) 358-4026

GEOLOGY, ALTERATION AND MINERAL POTENTIAL OF THE AL SARENA PROJECT

Jackson County, Oregon

Ron Parker said OK to release to the public 4-15-97

by

F. L. Hillemeyer
September 20, 1990

Revised: October 1, 1990

Exploration Office 114 Tucker Avenue, Suite 7, Kingman, Arizona 86401 (602) 753-1622 FAX (602) 753-6396

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CONCLUSIONS

1. Fischer-Watt controls by Mining Lease 45 lode mining claims at the Al Sarena Mine, Jackson County, Oregon.

2. The mining lease calls for annual escalating preproduction royalty payments with $10,000 due in November, 1990.

3. A production royalty of 5% NSR plus 10% Net Profits is retained by the lessors.

4. Disseminated Au-Ag-Pb-Zn mineralization is present in rhyodacitic extrusive and hypabyssal intrusive rocks of probable Miocene/Oligocene age. These rocks are exposed within a +3,000' diameter window through post-mineral basalt flows.

5. The rhyodacitic rocks are altered throughout most of the exposed window. These altered rocks contained widespread As, Sb, Hg and Mn anomalies associated with the Au-Ag-Pb-Zn metallization.

6. Disseminated mineralization is supported by previous drilling, rock chip geochemistry and soil sampling. Metallization is associated with intense sericite+kaolinite+quartz+sulphide alteration of the rhyodacitic rocks, with silicification as perhaps the most important alteration feature.

7. Epithermal hydrothermal fluid flow was probably joint and fracture controlled in conjunction with permeability of the various host rocks.

8. One first-order and two second-order targets are recommended for drilling. The minimum target objective is +500,000 ounces of recoverable gold. 5,200' of reverse circulation drilling is recommended to test these targets.

9. The total estimated cost of the Phase I drilling program is $86,200. This amount may be reduced by as much as $10,000 if the drilling is contracted on an hourly basis.

LOCATION AND ACCESS

The Al Sarena prospect is located in the southern Cascade Range in Sections 19, 20, 28, 29 and 30, Township 31 South, Range 2 East, Willamette Meridian. The property is situated approximately 38 miles north-northeast of Medford, Oregon, 16 miles off State Highway 62 (Crater Lake Highway). The property generally ranges in elevation from 3,200 feet to 4,400 feet and is accessible off Highway 62 by paved roads along Elk Creek and graded dirt and gravel roads maintained by the United States Forest Service. The prospect lies between Bitter Lick Creek to the west and Elk Creek to the east, tributaries of the Rogue River, located approximately 12 miles to the south.

LAND STATUS

Fischer-Watt controls by underlying lease 45 lode mining claims (approximately 880 acres) covering the known principal mineralized areas of the Al Sarena prospect (see Plate I). Twenty-one of the claims are patented with the remaining 23 claims being located on federal surface and mineral lands administered by the United States Forest Service. Twenty of the 24 unpatented lode mining claims are currently being staked by Fischer-Watt in the name of the lessors, the Altland Corporation, and are subject by area of influence to the terms of the mineral lease described below. The claims are all located within the Rogue River National Forest in an area of no known withdrawals or Wilderness Study Areas.

The original land package at Al Sarena consisted of 25 patented and unpatented lode mining claims leased from the Altland Corporation by "Lease of Mining Property" dated November 13, 1989 (see Appendix A). The general terms of the lease are set forth below:

1. Production Royalty: FWG shall pay to Altland a 5% Net Smelter Return Royalty plus 10% of the Net Profits.

2. Advanced Royalties: FWG shall pay to Altland $1,000 upon signing plus the following advance royalty payments on each anniversary of the lease:

Year 1: $10,000
Year 2: $20,000
Year 3: $30,000
Year 4: $40,000
Year 5 and for each year thereafter: $50,000

FWG may recover 25% of the advanced royalty payments out of production royalty payments.

3. Work Commitments: The following work commitments (in addition to assessment work) are required to keep the lease in effect:

A. 0-8 Months: No commitments.

B. 0-12 Months: A firm commitment to complete 5,000 feet of reverse-circulation drilling.

C. 13-24 Months: An additional 5,000 feet of drilling.

D. Every 12 Months Thereafter: Expenditures of $100,000 per year on the property until production is realized.

The Altland Corporation has verbally agreed to allow a six-to-eight month extension of the work requirements. This will allow FWG to complete the initial drilling in the spring of 1991. FWG will obtain a written notice of extension from Altland in the near term.

PERMITTING

It is anticipated that any future road building and drilling would be conducted on both USFS land and the patented mining claims. No permits are required by Jackson County for road building or drilling on the patented mining claims. A notice of intent for disturbance of less than five acres or a plan of operation for larger disturbances are required to be filed and approved by the USFS (Rogue River National Forest). Work on the USFS lands will require posting of a reclamation bond. It is recommended that the USFS be kept informed with regards to work on the patented lands. No permits for road building or otherwise have been filed by FWG.

HISTORY

Lode claims were staked at the Al Sarena Mine (previously known as the Buzzard Mine) after Mark and Peter Applegate discovered gold along Elk Creek in 1897. Shortly thereafter, in 1898, the Pearl Mining Co. was organized, with production not realized until 1909. Additional mining and development work continued by Pearl Mining Company and subsequent lessors and ore was shipped between 1912 and 1918. The claims were later purchased by the Al Sarena Mining Company (approximately 1935) with Dr. H.P. McDonald, Sr. as President (father of two of the principals in the Altland Corp., Dr. H. P. McDonald, Jr. and Charles McDonald). Al Sarena Mines patented the claims in 1954.

Total historic development work consists of approximately +4,000' of drifts, crosscuts, raises and winzes. Approximately 2,800' of drift and crosscut are accessible today (partially flooded) on the No. 1 level, which crosscuts to the northeast from the Swanson Creek drainage, and the No. 2 Level, which drifts northwest from the Elk Creek side. Total past gold production is estimated by the author to be on the order of 10,000 to 15,000 ounces. Nearly all of the past production came from a single northwest-striking vein having an average width of about 2.5'. The average grade of the ores produced is not known, but probably averaged +0.25 o.p.t. gold.

More recently, the property was briefly evaluated by Hunt, Ware and Proffett who completed five drill holes to a a maximum depth of 300' and approximately 2,800' of surface trenching in 1981 and 1982.

LITHOLOGIES

Understanding the geology of the Al Serena Mine area is greatly hampered by heavy vegetation and soil cover. In many areas outcrops do not exist and the geology is only partially understood through mapping of float and perhaps subcrop. Outcrops are usually only present along roadcuts and ridge crests. The geologic map of Plate 2 does not attempt to map outcrops, but rather attempts to interpret what rock types might be present beneath the surficial cover. In fact, no Quaternary rocks are shown on the map even though they are widespread.

Field observations combined with detailed thin section analyses (see Appendix B) indicate that, compositionally, really only two general rock types are present in the vicinity of the Al Sarena Mine. For the purpose of this report, these two groups will be divided into a "post-mineral" assemblage, consisting primarily of basalt, and a "pre-mineral" assemblage consisting largely of rhyodacite. The pre-mineral assemblage is exposed within a roughly circular area (measuring approximately 3,500' east-west by 3,000' north-south) centered around the workings of the old Al Sarena Mine (Plate II). The pre-mineral assemblage is possibly Miocene to Oligocene in age and may be related to the Early Western Cascade volcanic episode, which consists primarily of rhyodacitic tuffs and flows, basalts with local clastic interbeds. The post-mineral assemblage may be related to the Early High Cascade volcanic episode, consisting chiefly of mafic lavas and some interbedded rhyolite tuffs. The two assemlages are described in more detail as follows:

Pre-Mineral Assemblage: The pre-mineral assemblage (some of the hypabyssal intrusive rocks included in this assemblage may be syn-mineral) consists entirely of rocks having the general composition of rhyodacite, with some of the rocks probably somewhat more acid or

basic. Originally, much of this assemblage was thought to have been rhyolite, but thin section analysis indicates that all of the rocks within this assemblage are plagioclase dominant. The rhyodacitic rocks exposed in the vicinity of the Al Sarena are almost everywhere altered to some extent. In fact, in the thin section analyses, only a few of the rhyodacitic rocks were fresh enough to give primary mineralogy. In these cases, mineral assemblages consist of plagioclase, quartz, hornblende, glass, +/- biotite and magnetite. Many of the altered rocks, however, appeared to be much more glass rich.

Although the pre-mineral rhyodacitic rocks are generally homogenous in composition, a wide variety of textures are present making the assemblage somewhat complex and reflecting a variety of origins. Much of the assemblage, both on the surface and underground, are undoubtedly tuffs, both vitric and lithic. Most of the hill located at N47,800 and E47,000 (south of drill hole AS-2) consists of lithic-vitric tuff and lithic tuff containing lapilli- to block-size pyroclastic fragments. Most of the tuff units are poorly welded to unwelded, but many are weakly to strongly welded. The other large category within the ryhodacitic composition are vitrophyres, or chilled rocks. These rocks are nearly always porphyritic and are interpreted mostly as hypabyssal intrusives, but some may be slowly cooled effusive units. This category has presented considerable problems during mapping, since distinguishing the hypabyssal intrusive rocks from possible flows and crystal tuffs is difficult due to poor outcrop and alteration overprint. A large body of hypabyssal rhyodacite is exposed in the lowest workings of the Al Sarena Mine (No. 2 Tunnel, see Plate 3), but many of the rocks on the surface above the workings appear to be of the extrusive variety (predominantly lithic tuffs). Hypabyssal rhyodacite occurs along the northerly-trending road just above Elk Creek, east of the No. 2 Tunnel, along the west flank of Al Sarena Hill and as possible dikes west of the No. 1 tunnel in the Swanson Creek drainage area. A large body of vitrophyre occurs in the northern portion of the pre-mineral assemblage and is well exposed in road cuts along the ridge road north of drill hole AS-5. The rocks are variably altered and consist of relatively homogeneous glass matrix with phenocrysts of plagioclase, hornblende, augite and quartz. Rare rounded beta quartz eyes can be found in most outcrops. More work is needed in defining the surface expression of the hypabyssal intrusive units, since they probably play an important role in the mineralizing events at Al Sarena.

Post-Mineral Assemblage: Basaltic rocks of the post-mineral assemblage overlie the altered rhyodacitic rocks. The dark-grey-to-black basalts are usually vesicular and are always fresh and unaltered. Around the Al Sarena Mine the basalts all appear to be effusive, occurring in thick massive flows. Mineralogically, the basalts generally consist of (in decreasing order of abundance) plagioclase, augite, olivene and magnetite. Thin beds of fine-grained-ash-fall rhyolitic tuffs are locally present between the basalt flows.

STRUCTURE

Determination of structural breaks at the Al Sarena is difficult due to extensive soil and regolith cover. However, pronounced jointing appears to be common in the pre-mineral rocks. In both the underground workings and on the surface, near vertical joints and narrow gouge zones have generally bimodal orientations. A pronounced closely-spaced set of northwesterly-striking fractures is present along with a well-developed northeasterly fracture pattern. Low-angle joints and fractures are irregularly developed, but locally strongly overprint and/or intersect the vertical fracture sets. An excellent example of the intersecting fracture sets can be seen in the caved shaft located at N48,500 and E47,200. Conjugate high-angle fracture patterns are seen controlling sulphide mineralization in the roadcut along the ridge near thin section location of ASTS-18 (see Plate I). These fracture patterns may play an important role as structural conduits for the paleo-hydrothermal system at Al Sarena.

Nearly all of the past production at the Al Sarena Mine is associated with a N40°W, essentially vertical gouge zone that is 6" to 48" thick. This gouge zone is parallel to the general trend of numerous high-angle fractures (see No. 2 Tunnel crosscut for example). This narrow structure, which appears to be a poorly-developed normal fault, does not appear to have experienced much offset and consequently, probably represents only one of many structural conduits for the large hydrothermal system at the Al Sarena. The most prominantly developed fault zone seen on the surface is located northeast of drill hole AS-5 and is again northwest-striking and steeply-dipping (northeasterly). It is marked on the surface by a zone of intense silicification and sulphidization. This structure appears to have significant offset and juxtaposes lithic tuffs on the southwest from porphyritic vitrophyres on the northeast. These northwest-trending falut zones along with thousands of joints and fractures in the rhyodacitic rocks is, in the author's view, are the most important structural elements at the Al Sarena Mine (along with permeability of the various rhyodacitic rocks, which appear to be generally gently dipping).

ALTERATION

As mentioned previously, alteration is widespread in the rhyodacitic rocks. The hypogene alteration assemblage is uniformly sericite+kaolinite+quartz+sulphides (pyrite, arsenopyrite, sphalerite and galena). Most of the exposures exhibit at least sericite-+kaolinite+pyrite (trace) alteration. More favorable alteration, generally associated with anomalous gold-silver-lead-zinc mineralization, exhibits weak-to-moderate introduction of grey cherty silica,

strong sericite and kaolinite, plus higher disseminated and vein sulphide content (1-5%), or higher goethite content in the oxidized rocks (see Plate 4 for the generallized distribution of favorably-altered rhyodacitic rocks). The areas of most favorable alteration are located along the northwest zone marked by the trace of the old workings and on the western slope of "Al Sarena Hill" south of drill hole AS-3. Another possible important area consists of streaks of strong alteration occurring within weakly- to moderately-altered rhyodacite along the ridge between AS-5 to the south and the post-mineral basalt flows to the north. The size (+3,000'X+3,000'), intensity and nature of the altered rhyodacitic rocks suggests a very large, epithermal paleo-hydrothermal system is present at the Al Sarena.

MINERALIZATION

Gold-silver-lead-zinc mineralization within the project area appears to have been associated with a large Tertiary epithermal system producing the alteration products in the pre-mineral assemblage as described above. Controls on the system producing the mineralization are probably faults, well-developed fracture and joint patterns, hypabyssal intrusive rocks and primary permeabilities within the rhyodacite tuffs and effusives.

To date, the best indication of the distribution of mineralization available is five approximately 300' deep reverse-circulation drill holes completed by Hunt, Ware and Proffett in 1981 and 1982. The drilling confirmed the presence of disseminated gold-silver-lead-zinc mineralization within the rhyodacitic rocks (see Table 1 for drill hole summaries and Appendix C for assay data base). Two ore-grade intercepts (defined as +20' grading +2.0 ppm gold) were encountered within two of the drill holes. Drill hole AS-3 showed 30' (205'-235') grading 2.15 ppm Au, 56.7 ppm Ag, 1.19% Pb and 0.67% Zn along with sub-ore-grade intercepts (defined as +20' @ +0.40 ppm Au) of 35' (125'- 160') grading 0.82 ppm Au, 12.6% Ag, 0.23% Pb and 1.41% Zn. The remaining and intervening interval in AS-3 showed consistent anomalous Au (0.11-0.33 ppm), Ag, Pb and Zn. Another ore intercept was encountered in drill hole AS-4 showing 30' (25'-55') grading 2.08 ppm Au, 10.3 ppm Ag, 0.2% Pb and 0.02% Zn. AS-4 also had a 25' (130'-155') sub-ore intercept grading 0.60 ppm Au, 3.7 ppm Ag, 0.08% Pb and 0.10% Zn along with a 10' (160'-170') grading 4.07 ppm Au, 23.4 ppm Ag, 0.61% Pb and 0.47% Zn. Intervening and remaining intervals showed consistent anomalous metalization similar to AS-3. Drill hole AS-5 encountered 3 sub-ore intercepts ranging from 25' to 35' with the best grades at 1.33 ppm Au, 5.5 Ag, 0.16% Pb and 1.27% Zn. Again, strong metallization anomalies were present nearly to the bottom of the 265' drill hole. Please see Figure 1 for a cross section through the five holes drilled by Hunt, Ware and Proffett.

TABLE I
Drill-Hole Intercept Summaries
Drilling by Hunt, Ware and Proffett, 1981/1982

DRILL HOLE NO.	FROM	TO	GOLD (ppm)	SILVER (ppm)	LEAD (ppm/%)	ZINC (ppm/%)
AS-1	0	275	<0.02	<6.9	<110	<180
	275	280	0.03	29.0	165	320
	280	300	<0.02	<6.6	<75	<175
AS-2	0	205	<0.11	<7.6	<110	<145
	205	215	0.33	4.7	35	65
	215	300	<0.22	<2.9	<105	<215
AS-3	0	60	0.09	2.3	722	0.29%
	60	65	1.22	3.6	0.11%	55
	65	125	0.11	5.9	0.15%	0.15%
	*125	160	0.82	12.6	0.23%	1.41%
	160	185	0.22	6.6	0.21%	0.41%
	*185	205	0.46	16.1	0.67%	0.54%
	**205	235	2.15	56.7	1.19%	0.67%
	235	300	0.33	8.9	0.21%	0.22%
AS-4	0	25	0.17	3.7	0.15%	66
	**25	55	2.08	10.3	0.20%	0.02%
	55	130	0.15	3.8	930	912
	*130	155	0.60	3.7	0.08%	0.10%
	155	160	0.19	0.9	150	155
	160	170	4.07	23.4	0.61%	0.47%
	170	180	0.32	2.5	570	0.13%
	180	235	0.12	4.6	0.11%	0.15%
	235	240	1.30	13.2	0.34%	0.34%
	240	270	0.09	6.4	0.15%	0.16%
	270	285	0.67	9.0	0.29%	0.24%
	285	300	0.10	5.7	0.17%	0.15%
AS-5	0	15	0.44	1.63	0.17%	68
	15	50	0.10	0.6	701	127
	*50	85	0.72	5.5	0.15%	1.27%
	85	95	0.22	1.7	505	365
	*95	130	1.03	1.9	0.04%	0.06%
	130	145	0.10	<0.3	105	170
	*145	170	0.55	4.4	0.16%	0.24%
	170	255	0.08	1.3	398	475
	255	265	<0.02	<0.3	220	255

*Sub-ore-grade intercept (+20' grading +0.4 ppm Au)
**Ore-grade intercept (+20' grading +2.0 ppm Au)

The second best indication of the distribution of mineralization at the Al Sarena is in the form of surface and underground rock chip sample data (see Appendix D for surface rock chip geochemistry). These data reveal the presence of widespread anomalous gold (see Plates 5 and 6). Underground and surface rock chip samples indicate that disseminated gold mineralization generally varies from 50 to 1,000 ppb and covers an area roughly 2,000 feet long by up to 1,000 feet wide. An example of the true dissemination of anomalous gold is where samples BH-AS-19 through BH-AS-24 define series of 20' discontinuous chip samples over a distance of 500' in the altered and jointed rhyodacite. These samples were consistently anomalous averaging 288 ppb Au, 9.2 ppm Ag, 834 ppm As, 7.4 ppm Sb and 2.15 ppm Hg. The underground rock chip sampling has been quite discouraging (see Plate 5 for the underground geochem and Figure 1 for the position of the mine levels relative to the drill holes). The best zone samples across the mineralized trend in the No. 2 Tunnel averaged only 488 ppb Au over 40' and the south crosscut shows only 50 to 155 ppb Au over 200'. Samples on the wall rocks in the No. 1 Tunnel showed 60' grading 228 ppb Au. Although this is quite discouraging, please keep in mind that these levels test only two elevations and that the results obtained are comparable to the intervening anomalies between ore-grade and sub-ore-grade intercepts in drill holes AS-3, AS-4, and AS-5. A review of the drill intercepts shows higher-grade mineralization at various elevations separated by zones of consistently anomalous gold. These horizontal controls on mineralization might be due to permeability contrasts in the gently-dipping rhyodacites, intrusive contacts and subhorizontal jointing.

Rock chip geochemistry at Al Sarena also indicates hydrothermal deposition of anomalous Ag (max.=113 ppm), Pb (max.=0.78%), Zn (max.=4%), As (max.=4344 ppm), Sb (max.=203 ppm), Hg (max.=21.6 ppm), and Mn (max.=+20,000 ppm) covering generally a much larger area than the Au (see Plates 7, 8, 9 and 10 for the surface Ag, As, Sb and Hg geochemistry). Figure 2 illustrates the degree of correlation of Ag, As, Hg, Pb, Sb and Zn with Au. Sb, Pb and Ag have the strongest positive correlation coefficients of 0.58, 0.45 and 0.37 respectively. The extent and magnitude of these associated elements suggests a large epithermal system with a well developed "plumbing system".

The third indication of the disseminated mineralization available is soil geochemistry. Four north- and northeast-trending soil sample lines with a sample spacing of 100' have been collected at Al Sarena (see Plates 11, 12, 13 and 14). Lines 2, 3 and 4 are particularly instructive as they extend across the soil-covered slopes that have very little or no outcrop. The soils also indicate widespread anomalous Au (50 to 1,190 ppb), Ag (max.=19.6 ppm), As (max.=1165 ppm), Hg (max.=2.7 ppm), Pb (max.=916 ppm), Sb (max.=24.9 ppm) and Zn (max.=740ppm). In the soil samples, Pb, Zn, As and Ag have the strongest positive correlation with Au (see Figure 2). The

+50 ppb gold soil anomaly measures roughly 2,000 feet long by up to 1,000 feet wide and is open on the northwest, southeast and south (Plate 11).

TARGETS

The minimum target object at the Al Sarena is +500,000 ounces of recoverable gold. One first-order and two second-order, multimillion-ton targets are recommended for drill testing at the Al Sarena project (see Target Map: Plate 15). Based on the following criteria, a first-order drilling target (Target 1) measuring +2,000' long by 600' wide is suggested along a zone generally on the northeast side of the past-productive workings.

1. Two ore-grade and 6 sub-ore-grade intercepts were encountered in three reverse circulation drill holes perpendicular to the trend of Target No. 1. The drilling tested a zone 450' wide, if a 100' area of influence is applied to the drill holes. The best drill intercept showed 35' grading 2.15 ppm Au, 56.7 ppm Ag, 0.67% Zn and 1.19% Pb (a current gross value of $49.18 per short ton). The best 5' drill interval (in AS-4) is not considered part of an ore- or sub-ore zone, but grades 6.6 ppm Au, 40.0 ppm Ag and 0.35% Zn. This hole was drilled 180' northeast of the near-vertical structure explored and developed by the underground workings.

2. The holes mentioned above are all vertical. The hydrothermal system at Al Sarena is controlled by a well-developed system of high- as well as low-angle fractures. These holes may have low-graded the true disseminated values. Field evidence suggests that sulphide mineralization is strongly controlled by these vertical joint sets.

3. Inspection of the drill cuttings reveals increasing sub-surface silicification from the southwest to the northeast and is especially strong on the northeast side of the workings.

4. The target is coincident with strong surface rock-chip anomalies of Au, Ag, As, Sb, Hg, Pb and Zn.

5. The target is coincident with a strong +50 ppb Au anomaly with values as high as 1.19 ppm. The average grade within the +2,000' long by up to 1,000' wide anomaly is 282 ppb Au.

6. The target may be coincident with the northerly margin of an intensly altered rhyodacite porphyry intrusion at depth.

A second-order target (Target No. 2) is suggested to lie northerly from Target No. 1 based upon the following criteria:

1. Weakly to strongly altered dacite is exposed along the ridge nearly to the contact with the post-mineral basalts. These rocks contain strongly anomalous Ag, As and Sb with anomalous gold values in more restricted strongly altered zones.

2. In some outcrops along the ridge, sulphide mineralization is seen developed along high-angle fracture patterns.

3. Mineralization in the drill holes is open to the north.

4. The rhyodacite on the ridge appears less porous and permeable and may provide a capping to mineralizing solutions developing stockwork quartz and sulphide veins at depth.

Another second-order target lies along a zone stretching about 1,000' south of AS-3. This target is suggested based upon the following criteria:

1. The widespread presence of a well altered fragmental rhyodacite tuff. These rocks are sericite and quartz altered and often contain up to 5% goethite after sulphides.

2. These rocks locally contain anomalous gold values up to 1.5 ppm (more surface sampling is needed in these anomalous rocks).

3. This target zone is also strongly anomalous in Hg, Ag and As.

4. At the south end of Al Sarena Hill the lithic tuffs become block tuffs and probably represent surge and vent breccias. The coarse fragmental tuffs may represent a series of vents tapping from the hypabyssal intrusive rocks at depth. These porous and permeable lithic to block tuffs are excellent hosts for mineralizing fluids.

PROPOSED PHASE I DRILLING BUDGET

A thirteen-hole, 5,200' drilling program is suggested to test the targets described above (see Plate 15 for preliminary drill-site recommendations). All proposed holes are oriented north or south @ -55° to maximize joint and fracture penetration. Nine of the recommended holes test Target No. 1, while four holes test Targets 2 and 3. The following is an estimated budget for this program:

5,200' RC Drilling @ $8.00 per foot	$ 41,600
Assaying and Shipping	15,600
Road and Site Construction	15,000
Mobilization	1,500
Geological Supervision and Analysis	6,000
Sampler	1,500
Miscellaneous	5,000
TOTAL PHASE I BUDGET	$86,200

The above budget results in an all-inclusive drilling and testing cost of $16.58 per foot. Direct drilling costs may be as much as $10,000 less if the drilling is contracted on an hourly basis.

APPENDIX B

THIN SECTION DESCRIPTIONS

ASTS-2

The original rock was an intermediate porphyry, perhaps a rhyodacite or similar in composition. It appears to have had a glassy base that devitrified under quiescent conditions to a dense, cherty and directionless mass of quartz and feldspars. Embedded in the matrix in random orientation and widely dispersed are small phenocrysts of plagioclase, very rare hornblende, and probably sanidine. Textures of the rock have been modified by intense and pervasive epizonal alteration.

The feldspar phenocrysts are partly or wholly replaced by a scaly paste of sericite. But, in some cases they are represented merely by a void with occasional flakes of sericite at the margins. Some of the pseudomorphs contain irregular pods of kaolinite in their interiors. A similar paste of sericite has replaced hornblende but it is then host to accessory minerals such as leucoxene and zircon. The matrix is a very fine grained mix of quartz and sericite in which quartz appears not to have grown and sericite has replaced the feldspar component completely.

Mineral percentages are estimated as follows: quartz 26%, sericite 67%, goethite 4%, kaolinite 2%, leucoxene ½%, and zircon tr.

ASTS-3

The original rock is believed to have been a tuff of intermediate composition, very similar to the preceding sample, but here clearly a fragmental unit composed of shards and crystal clasts. Crystal clasts include numerous ones of plagioclase but probably there were some sanidines, and a few hornblendes are visible as well. They lie with longer dimensions well oriented to a common bedding plane and are commingled with larger chunks of glass that abound in some layers. Textures of shards are no longer visible in the matrix but they are believed to have comprised it for the most part, ultimately to devitrify to dense, cherty-textured quartz and feldspars. Textures of the rock have been generally blurred by intense epizonal alteration.

Sericite replaces all crystal clasts and former hornblende or other mafites can be distinguished from plagioclase by the presence of traces of accessory leucoxene. The matrix is altered to dense cherty quartz, much of it probably a primary devitrification product, but little sericite is commingled with the quartz. Certain cognate xenoliths have devitrified to coarser grained quartz, or are replaced by coarser grained quartz and sericite, and some of them host clusters of pyrite cubes which are now oxidized to goethite.

Mineral percentages are estimated as follows: quartz 34%, sericite 60%, goethite 5%, leucoxene ½%.

ASTS-5

The original rock was a lithic-vitric tuff, compositionally similar to the two samples preceding and probably quartz/latite or rhyodacite in character. It hosts scattered clasts of plagioclase and other feldspars and mafites which are relatively evenly dispersed in a matrix that is thought to have been glassy debris. The rock is also host to large xenoliths which seem to be compositionally similar but represent a variety of devitrification textures. Included among them are some fine grained vitric tuffs. Textures of the rock have been blurred by very strong epizonal alteration.

The matrix debris is replaced largely by dense, cherty textured quartz flecked with small scales of sericite and clusters of them. Much of the quartz is surely primary but the abundance of silica is now higher than normal for devitrification. Many vitric xenoliths are replaced largely by sericite and sericite has entirely replaced all mafites and feldspars. Mafites can be distinguished by the presence of minor amounts of leucoxene and goethite. Some of the feldspar pseudomorphs host pockets of kaolinite in their interiors and others are only partly replaced by sericite leaving voids in their interiors. The pyrite and other sulfides once associated with the alteration seem to have been lodged in certain xenoliths and mafite sites. They are oxidized entirely to goethite.

Mineral percentages are estimated as: quartz 37%, sericite 55%, goethite 6%, kaolinite 1%, leucoxene 1%.

ASTS-6

The original rock was a vitric-lithic tuff of composition generally similar to the preceding samples and considered to have been an intermediate volcanic. Shards comprise the matrix and their outlines are still preserved. Textures suggest mild or weak welding. Embedded in the matrix are numerous xenoliths, no two quite alike, and representing a range of compositions from intermediate to basic volcanics. There is also a scattering of crystal clasts including plagioclase, sanidine, and hornblende. The rock has been strongly altered in the epizone and textures consequently modified.

Matrix glass devitrified to cryptocrystalline quartz and feldspars but the quartz content seems abnormally high now although it is fine grained and feldspar relicts in the interstices are now replaced by kaolinite. Feldspar clasts are usually replaced by sericite but in some cases allophane is matrix to the sericite scales. A couple of still-fresh sanidine grains were noted, however. Sericite has replaced mafites and is then clouded with goethite and leucoxene. A similar alteration assemblage to that described above has replaced each xenolith, but no two display the same mineralogy or texture. Minor amounts of sulfide associated with the alteration have been oxidized leaving goethite residue.

Minerals percentages are estimated as follows: quartz 52%,

ASTS-6 con't.

sericite 22%, kaolinite 18%, goethite 5%, leucoxene 3%, sanidine ½%.

ASTS-7

The rock is a vitrophyre thought to be approximately quartz latite in composition but texturally distinct from the rocks preceding. The matrix was homogeneous, faintly streaked glass and no evidence of former shards can be detected within it. Phenocrysts are numerous and include plagioclase, sanidine, and probably both biotite and hornblende. They are aligned with longer dimensions parallel to the general fabric. Textures remain fairly clear though the rock has undergone strong epizonal alteration.

Quartz once present as a devitrification product in the matrix has grown as lacy, ragged crystalloblasts of small size. Very fine grained kaolinite and Fe-oxide residue occupy grain boundaries and represent relics of plagioclase microlites that once developed as the glass cooled. Some sanidine clasts remain relatively fresh or only partly altered but in general they and all other phenocrysts are replaced by coarse shreddy sericite and interstitial calcite. Quartz and hematite may also be present, especially in hornblende pseudomorphs. Oxidized pyrite relicts were found and seem to lie along sinuous fractures that cut through the rock and are not defined by any gangue mineralogy.

Percentages of minerals present are estimated as follows: quartz 43%, sericite 17%, sanidine 2%, calcite 10%, kaolinite 21%, hematite 7%, leucoxene tr., and apatite tr.

ASTS-8

The rock is a rhyodacite, a vitric unit similar to the preceding sample but here containing occasional small β quartz phenocrysts. Large plagioclase phenocrysts are numerous and often occur in clusters. There are also small prismatic phenocrystals of hornblende and thin flakes of biotite. All of these minerals show a faint preferred alignment in a matrix of massive glass that devitrified under quiescent conditions to produce disorganized plagioclase microlites with interstitial quartz and minor amounts of orthoclase. The rock otherwise resembles the preceding sample. Textures here remain clear, for epizonal alteration has been mild.

The matrix remains relatively fresh quartz and feldspars much as it was following devitrification. However, occasional tiny flakes of sericite have begun to develop in and replace the plagioclase. The plagioclase phenocrysts are also mostly fresh but they are corroded by pockets of sericite scales and extremely fine grained kaolinite, especially around their margins. Biotite and hornblende are both entirely altered to a

ASTS-8 con't.

mix of sericite, quartz, Fe-oxides, and accessory minerals such as leucoxene.

The original mineralogy of the rock is believed to have been as follows: quartz 28%, orthoclase 5%, plagioclase 60%, biotite 2%, hornblende 5%, sphene tr.

ASTS-9

The original rock was probably a rhyodacite judging by its close similarity to sample #8. Its glassy matrix appears to have devitrified slowly to a directionless quartz-feldspar aggregate. It is host to large phenocrysts of plagioclase in addition to smaller eyes of β quartz and only occasional small grains of biotite and hornblende. Textures of the rock remain fairly clear thought it has experienced strong epizonal alteration.

Quartz originally developed by devitrification in the matrix has grown to coalesce as an aggregate of irregular grains of uniform size. Sericite and kaolinite derived from former feldspars are trapped on the grain boundaries. Plagioclase phenocrysts are replaced chiefly by a paste of very fine grained kaolinite with clusters of shreddy sericite scattered within and seeming to be corroded relicts. Quartz, sericite, and kaolinite together have replaced mafites and the pseudomorphs are generally clouded with earthy goethite and traces of accessory leucoxene.

Estimated mineral percentages are as follows: quartz 63%, sericite 9%, kaolinite 25%, goethite 2%, leucoxene ½%.

ASTS-10

The rock is a vitric tuff of intermediate composition no doubt. It is a mosaic of glassy domains which are fused together by welding and yet generally retain their outlines. Their longer dimensions lie in a common direction but streakiness in the glass base that supports them may wrap around the margins. Phenocrysts within the xenoliths, which all appear to be of similar nature, and tin he matrix are rare and only plagioclase was identified occasionally. Textures of the rock have been considerably modified by intense epizonal alteration.

Glass did not devitrify either within the xenoliths or the matrix and subsequently altered directly to produce a mosaic of ragged, cloudy quartz grains which range from cherty in texture to relatively coarse grained within certain xenoliths. Commonly the quartz is host to clouds of dust-like leucoxene which outline cryptic textures within the glass replaced. Sericite is commingled with the quartz and is especially abundant in certain xenoliths but it is not common in the matrix. Sericite has also replaced occasional feldspar clasts.

ASTS-10 con't.

Fe-oxides that stain the fabric are clearly transported and supergene and no evidence of in situ sulfide associated with the alteration was found.

Mineral percentages are estimated as follows: quartz 52%, sericite 42%, goethite 2%, leucoxene 4%, zircon tr.

ASTS-11

The rock is a dacite, most likely an effusive unit and it bears a close resemblance to rhyodacite porphyries described just above. It is host to numerous phenocrysts of plagioclase of various sizes, some of them gathered into clusters. Hornblende phenocrysts are much smaller and they are joined by tiny prisms scattered in the matrix. β Quartz eyes are rare. The matrix was originally glassy and though the phenocrysts are aligned within it the glass devitrified to randomly oriented plagioclase microlites and interstitial quartz after emplacement was completed. The rock is quite fresh showing only mild alteration which is judged to be deuteric in nature.

Plagioclase is usually perfectly fresh but some crystals show clouding and corrosion along cracks and cleavages by sericite and kaolinite. Hornblende was first entirely altered to deuteric ripidolite with accessory Fe-oxides and leucoxene but subsequently much of the ripidolite has decayed and been replaced by earthy supergene Fe-oxides. The oxides also replace the accessory magnetite present in the rock.

The original mineral percentages in this sample are estimated as: quartz 19%, plagioclase 70%, hornblende 8%, magnetite 3%.

ASTS-13

The rock is a rhyodacite vitrophyre, probably a welded tuff. It is a faintly banded mosaic of glassy domains that are fused together and blend imperceptibly into one another. Within the domains textures of shards are sometimes barely visible. Phenocrysts embedded in the rock include numerous ones of plagioclase plus occasional sanidine grains and rare small eyes of β quartz. Mafites were evidently scarce and included very small crystals of hornblende. Textures have been blurred by strong epizonal alteration.

Glass is devitrified and the quartz produced by this process has grown to produce a ragged mosaic of small, lacy crystalloblasts that are clouded with undigested sericite and small amounts of kaolinite inherited from the former feldspars. Though traces of fresh sanidine remain, most feldspar phenocrysts are replaced by a mixture of coarse, scaly sericite and pockets of very fine grained kaolinite. A similar mix colored with Fe-oxides has replaced mafites. Sphene and mafites are both commonly hosts to tiny crystals of anatase. Pyrite is

ASTS-13 con't.

disseminated as part of the alteration assemblage but was also found in veinlets of quartz and sericite that cut across the fabric. In one part of the rock pyrite is thoroughly leached and oxidized to goethite.

Mineral percentages are estimated as follows: quartz 62%, sericite 22%, kaolinite 9%, pyrite 2%, sanidine ½%, goethite 3%, anatase 1%.

ASTS-14

The rock is an intermediate porphyry similar in texture and mineralogy to sample #2. It may be a shallow hypabyssal or effusive unit. The matrix appears to have been directionless glass devitrified to dense, cherty quartz and feldspars under quiescent conditions. Embedded within it are numerous small phenocrysts of feldspar, mainly plagioclase, plus still smaller grains of hornblende and rare, rounded eyes of β quartz. Textures have been blurred by intense epizonal alteration.

Quartz derived from glass by devitrification in the matrix appears to have changed little, whilst the feldspars intergrown with it are entirely replaced by very fine grained sericite. A scaly paste of sericite has replaced all feldspar and mafite phenocrysts also. Some phenocrysts are vuggy and pockets or voids within them lined by tiny sericite scales. Mafite phenocrysts can be distinguished by the presence of leucoxene and Fe-oxide stain. They also rarely host small pyrite cubes and these have contributed to the Fe-oxides.

Percentages of minerals present are estimated as: quartz 36%, sericite 59%, goethite 4%, leucoxene 1%.

ASTS-15

The rock is an intermediate vitrophyre, perhaps a rhyodacite. No textures were found to suggest that it is a fragmental unit and the matrix appears to have been homogenous glass that devitrified under quiescent conditions producing a cherty and directionless mass of quartz and feldspars. Embedded in the matrix in random orientation are numerous phenocrysts of plagioclase which lie in random orientation and represent a wide range of sizes. They are joined by an occasional small prism of hornblende and tiny corroded eyes of β quartz. Textures remain clear and epizonal alteration has been only moderately strong.

The matrix is still represented by dense, cherty textured quartz but it appears to have grown to some extent. The plagioclase intergrown with it is sometimes fresh but more commonly is represented by dust-like sericite. Plagioclase phenocrysts, likewise, often show fresh but corroded portions, the remainder replaced by a scaly paste of sericite and large pockets of dense, fine grained kaolinite. Hornblende has been

ASTS-15 con't.

replaced by sericite and kaolinite heavily charged with earthy goethite.

Mineral percentages are estimated as follows: quartz 56%, plagioclase 3%, sericite 27%, kaolinite 6%, goethite 7%, leucoxene 1%.

ASTS-16

The rock is a basalt, an effusive unit comprised mainly of slender plagioclase laths that are well aligned to flowage. Flow lines are commonly interrupted and diverted by phenocrysts or by autobrecciation features. Commingled with the plagioclase grains and embedded on their grain boundaries are clusters of small slightly greenish augite grains and accessory magnetite. Olivine (Fo75) occurs as small phenocrysts whose longer dimensions tend to lie with the flow lines and they sometimes are gathered in clusters.

The rock is almost perfectly fresh. Tiny amounts of hydromicas were found developing in plagioclase cleavages and on grain boundaries but such alteration is negligible. Augite is perfectly fresh. Olivine is rimmed with iddingsite but the process of alteration is probably supergene and has just begun.

Percentages of minerals are estimated as follows: plagioclase 49%, olivine 16%, augite 28%, magnetite 5%, apatite 2%.

ASTS-17

The rock is a dacite or rhyodacite, a vitrophyre with a relatively homogeneous glass matrix. The matrix does contain hazy domains of slightly different texture thought to represent cognate xenoliths but they blend imperceptibly into the remainder of the rock. Phenocrysts include numerous ones of plagioclase that are of equant habit and show only the faintest alignment to a common direction. They are joined by much smaller prisms of hornblende and occasional rounded eyes of β quartz. Occasional augite phenocrysts were noted in addition to hornblende. Textures have remained clear and epizonal alteration has been mild.

The glass devitrified to cherty-textured quartz, plagioclase, and minor orthoclase under quiescent conditions and subsequently the quartz has grown slightly in some areas and not in others. Sericite accompanied by large amounts of earthy Fe-oxide has replaced all of the mafite phenocrysts. Plagioclase is quite fresh and remains calcic but it shows minor corrosion along cracks and cleavages by both kaolinite and sericite.

Mineral percentages in the original rock are estimated as follows: quartz 28%, orthoclase 5%, plagioclase 56%, hornblende 7%, augite 2%, magnetite 2%.

ASTS-18

The rock is an intermediate vitrophyre, perhaps rhyodacite or similar originally. It appears to have been a fragmental unit but was thoroughly fused or homogenized during devitrification. A faint banded fabric is still visible but differences between adjoining bands are subtle at best. Phenocrysts are generally aligned to the fabric and include numerous large ones of plagioclase plus smaller prisms of hornblende and very rare rounded eyes of β quartz. Textures have been blurred somewhat by moderate epizonal alteration.

Large portions of some plagioclase phenocrysts are still fresh but most of them are heavily or totally altered to a complex mix of sericite, kaolinite, and calcite which acts as matrix to the micas. Hornblende is totally replaced by a similar mixture and is host to abundant earthy goethite and minor accessory leucoxene. Quartz appears to have grown in the matrix forming hazy crystalloblasts that are clouded with tiny amounts of undigested plagioclase in addition to sericite inherited from it.

Mineral percentages are estimated as follows: quartz 47%, plagioclase 9%, sericite 24%, calcite 8%, kaolinite 5%, goethite 6%, leucoxene 1%.

ASTS-19

The rock is a fragmental vitrophyre, probably a vitric-lithic tuff and it bears some resemblance to sample #10. Large vitric domains, no two quite alike but apparently compositionally similar, lie with longer dimensions crudely aligned to a common banding but they show no sign of flattening or other effects of welding. Textures of shards were not seen in the matrix debris but their presence is suspected. Phenocrysts of plagioclase and mafites, particularly hornblende, dot the matrix and are common to most xenoliths as well. Textures have been blurred by intense epizonal alteration.

The matrix is replaced by cherty-textured quartz with shreds of sericite inherited from feldspar. The feldspar component dusts the grain boundaries. Each xenoliths is similarly replaced but the abundance of sericite is much greater in some of them and the texture of the quartz ranges from coarse and granular to almost cryptocrystalline. Sericite has replaced mafites and plagioclase and in the former event is joined by earthy Fe-oxides. Pockets of kaolinite were found within many plagioclase pseudomorphs.

Estimated mineral percentages are as follows: quartz 62%, kaolinite 4%, sericite 28%, goethite 2%, leucoxene 4%.

ASTS-20

The rock is a vitric tuff judged to be of rhyodacite or similar composition. It consists mainly of shards which are of

ASTS-20 con't.

uniform size and flattened somewhat by modest welding into a faintly streaky or banded fabric. The matrix composition is markedly homogeneous. Crystals clasts are evenly dispersed and lie with longer directions crudely oriented to a common direction. They include fairly numerous β quartz eyes here in addition to plagioclase and small hornblende prisms. Textures remain fairly clear despite strong epizonal alteration.

Matrix glass appears to have partially devitrified and under quiescent conditions. The cherty-textured quartz and plagioclase this process produced is represented now by slightly enlarged but still fine grained quartz crystals with shreddy sericite and kaolinite in the interstices representing the former feldspar component. Plagioclase is replaced by a mixture of fine gained kaolinite hosting sprays and clusters of sericite flakes. Hornblende is similarly altered but it is clouded with leucoxene. Small pyrite grains are disseminated throughout the rock and often lodged in mafite sites.

Mineral percentages are estimated as follows: quartz 61%, sericite 15%, kaolinite 21%, leucoxene 1%, pyrite 2%.

ASTS-21

The rock is a vitric tuff judged to be rhyodacite or quartz latite in composition and it is somewhat different than most of the preceding samples. The matrix is made up of shards which are fused and flattened together with long axes in common and it furthermore shows a gross banding with slightly different domains interfingering on a broader scale. Embedded in the matrix are small phenocrysts of β quartz and feldspars which include both sanidine and plagioclase and small prisms of hornblende and possibly biotite flakes. Textures have been blurred by strong epizonal alteration.

Quartz has grown throughout the matrix but not sufficiently to coalesce. It forms ragged isolated grains separated by a paste of almost amorphous kaolinite which has replaced the feldspar component. Wherever feldspar microlites developed they are more apt to be replaced by sericite instead. Feldspar phenocrysts are variously replaced by fine grained kaolinite or a mixture of quartz and kaolinite. In the latter event they were probably sanidines originally. Mafites are replaced by kaolinite, sericite, and clouded with earthy goethite and accessory leucoxene.

Percentages of minerals present are estimated as follows: quartz 42%, kaolinite 49%, sericite 3%, goethite 5%, and leucoxene 1%.

ASTS-22

The rock is a lithic-vitric tuff, probably rhyodacite or similar in composition. It is an aggregate of large domains

ASTS-22 con't.

all closely alike which appear to lie in near-random orientation. Welding or collapse during lithification has been negligible. All of the domains comprising the rock are similar in that they contain numerous phenocrysts of plagioclase plus smaller ones of hornblende. The similarity amongst the fragments has been further enhanced and textures blurred by intense epizonal alteration.

Glass appears to have devitrified little prior to alteration and then altered directly to hazy and ragged quartz crystalloblasts with considerable amounts of sericite inherited from feldspars packing the interstitial spaces. Only on rare occasion has quartz grown more appreciably and this is along vaguely defined vein-forms that are beginning to develop and cut the fabric. Feldspar phenocrysts are replaced by a dense scaly paste of sericite and pockets of kaolinite within the sericite are rare. Mafites are similarly altered and may also be charged with accessory leucoxene and Fe-oxides. Euhedral pyrite grains are widely and evenly disseminated and are part of the alteration assemblage.

Mineral percentages are estimated as follows: quartz 35%, sericite 58%, kaolinite 1%, pyrite 2%, goethite 2%, leucoxene 2%.

ASTS-23

The rock is a rhyodacite or dacite and is thought to represent a shallow hypabyssal or slowly cooled effusive unit. It is host to numerous phenocrysts of plagioclase, β quartz, and hornblende and the hornblende prisms are notably larger here than in most units. The matrix is homogeneous and consists chiefly of slender plagioclase microlites jumbled in crude flow alignment. Quartz fills the interstitial spaces and mafites appear to have been almost lacking in the matrix. Textures are well preserved and epizonal alteration has been moderate at best.

Quartz has grown slightly throughout the matrix but its percentage is probably not increased much. The plagioclase laths are generally fresh but commonly host small amounts of fine grained sericite. Plagioclase phenocrysts are likewise apt to be quite fresh but they are corroded along cleavages and their margins by fine grained sericite and small amounts of kaolinite. Hornblende has been altered to sericite and is host to earthy Fe-oxides and leucoxene. Fe-oxides also pervade and stain grain boundaries throughout the fabric. Their distribution suggests that they have replaced former calcite which was part of the primary alteration assemblage.

Estimated mineral percentages are as follows: quartz 30%, plagioclase 41%, sericite 16%, goethite 7%, kaolinite 4%, and leucoxene 2%.

ASTS-24

The rock is an intermediate vitrophyre, possibly a shallow hypabyssal, more likely effusive, and it resembles sample #2. The matrix was homogenous and directionless glass which devitrified relatively quickly producing microcrystalline quartz and feldspars. Embedded in the matrix in wholly random orientation are phenocrystals of plagioclase, hornblende, and β quartz. Textures have been preserved although epizonal alteration has been strong.

Quartz remains very fine grained in the matrix just as it was produced by devitrification. The interstitial spaces are packed with delessite inherited from mafite microlites and sericite which is in the process of replacing delessite as well as the former feldspar component. Phenocrysts other than β quartz are all replaced by a mix of coarse, scaly sericite and crystalloblastic calcite. Pyrite is widely disseminated and may be lodged in former mafite sites. Thin braided slip planes cutting the fabric are packed with sericite.

The estimated mineral percentages are as follows: quartz 27%, plagioclase 4%, sericite 30%, calcite 28%, delessite 8%, kaolinite ½%, goethite ½%, apatite ¼%, leucoxene 1%, and pyrite 1%

ASTS-25

The rock is a lithic tuff unlike any others seen previously in the suite and of mixed composition. For that reason mineral percentages will not be given. The majority of larger fragments are somewhat rounded in outline and most of them are andesites or basalts, most likely the latter, consisting of plagioclase and mafites in the interstices, usually pyroxene or turgid glass in which microlites have just begun to develop. In less abundance and as smaller particles are bits of devitrified glass which are of rhyodacite or similar character and these have cherty-textured matrices hosting few phenocrysts. The matrix supporting the fragments appears to be almost homogenous glass and of relatively acid composition for it has devitrified to produce cryptocrystalline orthoclase and minor amounts of quartz. No shard textures could be discerned within the matrix and it is host to clasts and phenocrysts of feldspars and β quartz. Textures of the rock remain fairly clear despite strong epizonal alteration.

The basic rock fragments are the most affected for calcite blots out their glass or pyroxene-dominated matrices whilst plagioclase is wholly sericitized. The smaller rhyodacitic fragments are replaced by cherty-textured quartz with interstitial sericite. The matrix glass seems relatively fresh but for the most part cryptocrystalline quartz appears to have replaced orthoclase. In other domains the orthoclase is unaltered or slightly corroded by kaolinite. Minor amounts of coarse grained pyrite are disseminated in the rock and in its vicinity calcite seems to be supplanted by ankerite.

ASTS-26

The rock is a lithic vitric tuff of mixed composition and hence mineral percentages will not be given. The larger fragments represent a variety of volcanics, many of them dacitic or rhyodacitic rocks but of a wide range of textures, some appearing to be effusive units and some appearing to be chilled hypabyssals. Commonly their matrices are devitrified to quartz and feldspars and they host phenocrysts of plagioclase and hornblende. The matrix is a chaos of ever-smaller fragments, most of them intermediate volcanic particles and feldspar and β quartz clasts derived from such rocks. Ultimately all of the components are cemented by dust-like debris. Textures have been blurred for the rock has undergone strong epizonal alteration.

Devitrified glass and debris in the matrix contains cryptocrystalline or dense cherty quartz but its abundance does not seem to have increased during alteration. The main alteration product which derives from feldspar component of the glass and debris is extremely fine grained paste-like sericite. Larger feldspar clasts may be replaced either by sericite or by kaolinite or more commonly by calcite or ankerite. The larger fragments are altered much as described in the matrix but the texture of the alteration products varies from one fragment to another. Only a minor amount of pyrite is disseminated throughout the rock and is part of the alteration assemblage.

ASTS-27

The rock is a lithic-vitric tuff of mixed composition. The larger fragments in it include andesitic or basaltic rocks, probably andesites, for they are rich in hornblende, in addition to a variety of intermediate volcanics, some of which are clearly vitric tuffs composed mainly of shards. Matrix textures in this rock, however, are obscure for epizonal alteration has been intense.

The matrix has been homogenized by the alteration, converted to a dense cherty quartz aggregate flecked with sericite and small blotches of ankerite or similar carbonate. Coarse and shreddy sericite has replaced all feldspars and xenoliths and matrix alike and it is often joined by cloudy blotches of ankerite. Mafites have been similarly replaced but they also commonly host traces of leucoxene and are the site for pyrite grains which are disseminated as part of the alteration assemblage.

Mineral percentages are estimated as follows: quartz 43%, sericite 30%, ankerite 22%, pyrite 2%, goethite 3%, leucoxene tr.

ASTS-28

The rock is a vitric tuff of intermediate composition,

ASTS-28 con't.

probably rhyodacite or similar. It has been thoroughly welded and is now a streaky mosaic of braided and contorted glassy domains, all very similar. Cognate xenoliths embedded in the rock are fused into the matrix and blend imperceptibly into it. Outlines of shards may sometimes been seen in the matrix. There are just occasional cognate xenoliths which were devitrified prior to incorporation in the rock. They retain their outlines clearly. Phenocrystals of plagioclase are fairly common whereas hornblende and β quartz are small and rare. The rock has been intensely altered in the epizone.

Devitrification produced segregation bands of relatively coarse quartz and it has continued to grow as cloudy crystalloblasts that occupy these domains. The interstitial areas once occupied mainly by feldspars have been replaced by dense cherty-textured quartz. Cloudy ankerite blotches are most common in those bands where quartz has coarsened. Plagioclase and other phenocrystal remains are generally occupied by fine grained kaolinite but some of them contains sericite in addition. Coarse pyrite is disseminated throughout the rock as part of the alteration assemblage.

Percentages of minerals present are estimated as follows: quartz 52%, ankerite 25%, kaolinite 13%, sericite 8%, pyrite 2%.

ASTS-29

The rock is considered a rhyodacite, possibly hypabyssal but more likely a chilled effusive unit. It is host to large and equant phenocrysts of plagioclase in addition to much smaller and scarcer ones of hornblende. They show a faint preferred orientation in a matrix which appears to have flowed as glass but then devitrified to microlitic plagioclase and quartz under quiescent conditions. Textures remain quite clear although epizonal alteration has been strong.

Hazy quartz crystalloblasts have grown throughout the matrix and have begun to coalesce in some areas. Plagioclase in the interstices is largely altered to orthoclase. Apatite microlites are an unusually abundant feature in the matrix as well. Coarse, shreddy sericite intergrown with cloudy ankerite and pockets of fine scaly kaolinite has replaced all of the phenocrysts. Pyrite is disseminated commonly in the phenocrysts as part of the alteration assemblage. In part of the rock both it and the ankerite are altered to cloudy goethite.

Estimated mineral percentages are as follows: quartz 47%, sericite 18%, kaolinite 22%, ankerite 7%, pyrite 2%, anatase ½%, apatite ½%, goethite 3%.

ASTS-31

The rock is a vitrophyre, a streaky fragmental unit that

ASTS-31 con't.

bears some resemblance to sample #10. It is thought to be of intermediate composition. The matrix consists of shards which are fused into streaky glass and the streakiness winds around cognate xenoliths and phenocrysts, blending the rock into a fairly homogeneous unit. The phenocrysts, both within cognate xenoliths and in the matrix, are relatively few but large and most of them are plagioclase. Microlitic hornblende was noted in the matrix in some places. The rock has been strongly altered in the epizone.

Glass did not devitrify prior to alteration and was directly replaced by a mosaic of ragged quartz grains or cherty-textured quartz. Colloidal hematite clouds the quartz and delineates streaky features within the original glass. A paste of fine grained sericite has replaced plagioclase crystals and mafites are replaced by quartz and sericite; commonly they are also clouded with Fe-oxides and are host to leucoxene. In a few places the grain size of quartz is increased noticeably and it appears to be in the process of migrating through the fabric as incipient vein-forms. This quartz is generally purged of Fe-oxide inclusions.

Mineral percentages are estimated as follows: quartz 70%, kaolinite 3%, sericite 18%, hematite 8%, leucoxene 1%.

ASTS-32

The rock is a vitric tuff, a strongly welded and streaky glass of fairly homogenous composition. It is thought to be in the range quartz latite/rhyodacite in composition. The glass base occasionally shows the outlines of shards but generally they have been fused into oblivion. Cognate xenoliths are occasionally seen but usually blend imperceptibly into the matrix. Phenocrysts are relatively few and small, most of them plagioclase, but sanidine may also have been present. Textures remain fairly clear despite strong epizonal alteration.

The glass did not devitrify prior to alteration and was replaced directly by hazy, cloudy quartz crystalloblasts occluded with colloidal hematite. Quartz appears to be in the process of segregating into interfingering lenses that alternate with areas dominated by feldspar. However, the feldspar has been entirely replaced by very fine grained kaolinite. A mix of paste-like kaolinite and sericite replaces all of the feldspar clasts and mafites. The latter minerals are marked by accessory leucoxene.

Percentages of minerals present are estimated as follows: quartz 57%, kaolinite 24%, sericite 15%, leucoxene 1%, goethite ½%, hematite 2%.

ASTS-33

The rock is a basalt, an effusive unit similar to one described previously but this version is much more chilled. Its matrix is a swarm of tiny, slender plagioclase microlites winding along confused flow lines that wrap around the phenocrysts. Clouding the grain boundaries of the plagioclase microlites are clusters of tiny augite grains associated with minute octahedra of magnetite. An unusual feature of the rock is the presence of relatively large biotite flakes which lie throughout the matrix and grow at various angles to the flow alignment. Augite phenocrysts are very rare and most of the phenocrysts are olivine. They are grains of various sizes, some of them quite large. The rock is absolutely fresh. No alteration whatsoever has occurred.

Mineral percentages are estimated as follows: plagioclase 44%, olivine (Fo85) 6%, augite 35%, magnetite 11%, biotite 4%.

ASTS-34

The rock is a basalt, an effusive unit dominated by slender plagioclase laths in almost slavish flow alignment. Sometimes packets of them are rotated with respect to the matrix, a feature caused by minor autobrecciation during emplacement. This rock is less chilled than the preceding sample and is also somewhat more leucocratic. Grain boundaries of the plagioclase in the matrix are clouded with tiny grains of augite and accessory magnetite. In addition, there are small and angular spaces in which glass residuum has just devitrified to produce minuscule augite and Fe-oxide grains. Olivine is present as small phenocrysts evenly scattered throughout the rock and of various sizes. Phenocrysts of plagioclase and augite are uncommon.

Alteration of the rock is virtually nil, limited to clouding of grain boundaries of some olivine crystals by iddingsite.

Estimated minerals percentages are as follows: plagioclase 49%, olivine (Fo85) 14%, augite 29%, magnetite 8%.

ASTS-35

The rock is a rhyodacite vitrophyre, a fragmental unit that is probably a thoroughly welded tuff. Though the rock is relatively fresh the cryptocrystalline nature of its matrix precludes accurate assignment of mineral percentages in this sample. The rock is a mosaic of interfingering domains, all very similar glasses and some of them show streakiness and devitrification that indicate some degree of flowage or adjustment during the process of welding. These textures are indicated by aligned plagioclase microlites in some areas. Other domains appear to have been quiescent and devitrified to cryptocrystalline quartz and feldspars under quiescent conditions. Occasionally spherulitic structures were noted. Phenocrysts

ASTS-35 con't.

scattered throughout the rock are mainly plagioclase and the crystals are of relatively uniform size. Small amounts of hornblende and accessory magnetite were also noted.

Epizonal alteration has been weak. Quartz produced by devitrification has begun to segregate and migrate along the fabric in some domains whereas in others it remains in situ as hazy crystalloblasts, usually of small size. Some feldspar crystals are entirely leached, the voids lined by a druse of quartz prisms and these probably represent former sanidine grains. Plagioclase, by contrast, is quite fresh showing only minor and spotty corrosion by cryptocrystalline kaolinite.

ASTS-36

The rock is a basalt, an effusive unit dominated by slender, feathery plagioclase microlites matted together in packets that indicate minor autobrecciation during flowage. The direction of these sometimes diverges widely from the general flow direction. Small prisms of augite of about the same size as the plagioclase lie on their grain boundaries and are also aligned to flow. Magnetite grains representing two generations of growth dot grain boundaries in the matrix. An unusual feature is the presence of small amounts of biotite in the matrix. Crystals seem to have grown with no regard to flowage and are evidently late magmatic in age. Phenocrysts in the rock are olivine and they are of various size, usually quite small. Sometimes they occur in clusters but they show no sign of disaggregation during flowage. The rock is absolutely fresh. No alteration whatsoever has occurred.

Mineral percentages are estimated as follows: plagioclase 44%, olivine (Fo80) 10%, augite 34%, magnetite 9%, biotite 3%.

ASTS-37

The rock is a rhyodacite, possibly hypabyssal but more likely effusive. It is host to numerous phenocrysts including large crystals of plagioclase and a few of hornblende plus numerous smaller hornblende and plagioclase grains that are aligned to flowage. Rounded β quartz eyes are uncommon. The matrix appears to have been glass during the process of emplacement and it devitrified under quiescent conditions to produce a cherty-textured quartz/plagioclase matrix in which randomly oriented plagioclase microlites can be observed. Textures have remained clear and epizonal alteration has been mild.

The matrix devitrified to quartz and plagioclase of cherty texture and both minerals remain relatively fresh. However, cloudy ankerite blotches and small scales of sericite are apt

ASTS-37 con't.

to replace the plagioclase in certain places. Plagioclase phenocrysts are also mostly fresh but they show marginal corrosion plus replacement along cracks and cleavages by ankerite and sericite. Cloudy ankerite almost exclusively has replaced hornblende and is associated with minor amounts of leucoxene. Pyrite is evenly disseminated throughout the rock and is part of the alteration assemblage.

Mineral percentages are estimated as follows: quartz 42%, plagioclase 34%, sericite 6%, pyrite 2%, ankerite 16%, leucoxene tr.

ASTS-38

The rock is considered a rhyodacite and is somewhat similar to the preceding sample, only the phenocrysts are much smaller here. They seem to show a faint preferred alignment in a matrix that was originally glassy and appears to have devitrified to cherty quartz-plagioclase under quiescent conditions. Disorganized plagioclase microlites also occur occasionally in the matrix. Textures have remain clear through an episode of mild epizonal alteration.

Some plagioclase phenocrysts are partially fresh but most are severely corroded and replaced by coarse shreddy sericite. Mafites are similarly altered but host small amounts of accessories such as leucoxene and zircon. The matrix plagioclase, by contrast, is relatively fresh and quartz has grown little against its grain boundaries. This growth is considered of late magmatic age. Pyrite is widely disseminated, usually in sericitized phenocrysts.

Percentages of minerals present are estimated as follows: quartz 36%, plagioclase 43%, sericite 18%, pyrite 2%, leucoxene ½%, zircon tr.

ASTS-39

The rock is a basalt, no doubt an effusive unit. It is texturally distinctive from the ones described previously for this samples contains numerous large plagioclase phenocrysts. Their orientation seems random and flow alignment of the matrix around them is highly confused. The matrix consists of slender plagioclase laths of uniform size with fine grained granular pyroxene packed into the interstices. Accessory magnetite is usually lodged within the pyroxene. Olivine occurs sparingly here as phenocrysts of size somewhat smaller than that of plagioclase.

This rock shows weak epizonal alteration. All of the olivine is replaced by a mix of antigorite and goethite with the cleavages and grain boundaries usually outlined by dolomite or ankerite. Ankerite has also begun to corrode augite but such replacement is slight. Plagioclase contrasts with these

ASTS-39 con't.

minerals for it is in perfectly fresh condition.

Original mineral percentages are estimated as follows: plagioclase 49%, olivine 4%, augite 42%, magnetite 5%.

ASTS-40

The original rock is thought to have been a rhyodacite or dacite, a vitric unit that was probably effusive. It shows a faint banding but there is no indication that it has been welded and homogenized as a result. Phenocrysts are well aligned to this structure and are mostly plagioclase but include some prisms of hornblende of various sizes. One β quartz eye was also seen. The matrix appears to have devitrified under quiescent conditions though it hosts occasional oriented plagioclase microlites. Epizonal alteration has been fairly strong.

Matrix glass appears to have devitrified prior to alteration and is now an aggregate of cherty-textured quartz with traces of plagioclase left in the interstices. Most of the plagioclase, however, has been altered to kaolinite. Only traces of fresh plagioclase occur in the phenocrysts as well, but mostly they are replaced by a cryptocrystalline paste of kaolinite with small pockets of sericite embedded in it. Hornblende is mostly blotted out by opaque Fe-oxides but some pseudomorphs contain kaolinite as well.

Mineral percentages are estimated as follows: quartz 68%, kaolinite 20%, plagioclase 5%, goethite 5%, sericite 2%

ASTS-41

The rock is a dacite or rhyodacite similar to many described in this suite and in relatively fresh condition here. It is host to numerous phenocrysts of plagioclase and hornblende, some of the plagioclase crystals being quite large. The matrix appears to have been glassy, devitrifying during emplacement to produce oriented plagioclase microlites in a glass residuum which partially devitrified to quartz and plagioclase. There is still, however, some residual glass which is thought to be relatively potassic in character. Textures remain clear and epizonal alteration has been mild.

Plagioclase phenocrysts are clouded with fine grained sericite but sericitization of matrix crystals has barely begun. Hornblende is altered to chlorite with rims of earthy Fe-oxides and leucoxene and in turn the chlorite has begun to alter to sericite. Quartz in the matrix appears to have been passive and rarely shows growth or a tendency to coalesce into small pods.

The original mineral content of this rock is estimated as follows: quartz 16%, plagioclase 60%, glass 8%, hornblende 12%, magnetite 4%.

ASTS-42

The rock is dacite or less likely rhyodacite and there is little doubt here that it is a hypabyssal unit. The matrix, originally glassy, devitrified slowly to produce a relatively coarse grained and complex intergrowth of quartz and plagioclase. Embedded in the matrix in vague flow alignment are numerous phenocrystals of plagioclase and hornblende. The latter are generally of smaller size though a few large ones were encountered. Evidently flowage ceased before the matrix crystallized. Epizonal alteration in this rock has been weak and may be deuteric only.

Plagioclase is almost perfectly fresh and the merest traces of sericite were found on cleavages and cracks within it. Hornblende was altered almost entirely to deuteric chlorite but traces of fresh hornblende were still found. The chlorite in turn has largely been blotted out by earthy Fe-oxides of probable supergene age. Accessory magnetite has also been oxidized.

The original mineral percentages in this rock are estimated as: quartz 18%, plagioclase 66%, hornblende 13%, biotite 1%, magnetite 1%, apatite ½%.

ASTS-43

The rock is a basalt, no doubt an effusive unit. It is dominated by plagioclase which occurs as laths of very uniform size jumbled in crude and chaotic flow alignment. Autobrecciation features commonly interrupt the flow lines. Very fine grained augite occurs as granular material clustered on plagioclase grain boundaries and is host to the accessory magnetite that is present. Olivine occurs as small phenocrysts, some of them markedly euhedral, and they are evenly dispersed throughout the fabric. Alteration of the rock has been feeble and is probably only due to supergene effects. The only mineral affected is olivine. The margins of crystals are clouded with iddingsite, and other minerals remain quite fresh.

Estimated mineral percentages are estimated as follows: plagioclase 58%, olivine (Fo85) 9%, augite 28%, magnetite 5%.

ASTS-44

The rock is considered a latite, a vitrophyre that appears to have been rapidly but quiescently extruded. It is host to numerous phenocrysts of various sizes, some angular, others nearly euhedral. Virtually all of these are either brown basaltic hornblende phenocrysts or plagioclase. One β quartz eye was noted and may be a xenocryst. The matrix, originally turgid glass, began to devitrify during emplacement and in some places packets of small plagioclase microlites show flow alignment. In other areas they are randomly oriented and in still other places the matrix remained cloudy glass dotted

ASTS-44 con't.

with minute Fe-oxide microlites. Textures of the rock remain clear and epizonal alteration has been feeble.

Some of the hornblende is fresh and the cloudy Fe-oxides rimming it are of late magmatic age and owe to the rapid extrusion. However, some hornblende is corroded by a fine scaly paste of smectite. Smectite has also begun to replace glass that did not devitrify. Plagioclase hosts occasional flecks of sericite and smectite occurs in those crystals that are rich in inclusions of glass and it replaces them selectively.

Original mineral percentages in this rock are estimated as follows: plagioclase 29%, glass 50%, quartz tr., hornblende 18%, magnetite 3%.

ASTS-45

The rock is basalt, no doubt effusive. It is host to large somewhat rounded olivine phenocrystals and a second generation of tiny olivine grains dots the matrix. There it occurs with granular augite and accessory magnetite. These minerals are packed into the interstices of plagioclase microlites that swarm along confused flowage lines. Occasional packets of somewhat coarser plagioclase occur and represent xenoliths created by autobrecciation. The rock is almost absolutely fresh and the only alteration found is corrosion of olivine phenocrysts by iddingsite. The small grains in the matrix are almost totally altered to iddingsite.

Mineral percentages are estimated as: plagioclase 55%, olivine (Fo80) 16%, augite 22%, magnetite 7%.

ASTS-47

The rock is a lithic tuff, a heterogenous unit showing no evidence of welding or of reworking. Owing to its mixed character mineral percentages were not estimated. Lithic fragments so abundant in this sample are of relatively uniform size and they seem to represent mostly vitric and intermediate volcanic rocks such as rhyodacite etc. The matrix of the rock seems to be a paste of ever-finer lithic and crystal debris and no shards were observed within it. Likewise the matrix shows no evidence of banding or streakiness. Phenocrysts common in the matrix and within xenoliths are mainly plagioclase with lesser amounts of hornblende. Epizonal alteration has been strong.

Each fragment is altered to the assemblage quartz and sericite but the proportion of these two minerals and their relative texture varies from one domain to another. Generally the quartz is fine grained and cherty but in some glassy fragments that had devitrified earlier, hazy quartz crystalloblasts have begun to grow pushing sericite into the interstices. Plagioclase is usually altered to sericite but some

ASTS-47 con't.

crystals are leached leaving rectangular voids lined by only a few sericite scales. Hornblende may be sericitized but more commonly is leached, leaving earthy goethite residue.

ASTS-48

The rock is a lithic-vitric tuff of mixed composition and thus determining mineral percentages was not attempted. The fragments within the rock are generally rhyodacites or similar glassy and devitrified units that may host phenocrysts of plagioclase and hornblende. They represent a relatively wide variety of textural detail. The matrix of this rock appears to have been glassy but there is no evidence left as to whether it resulted from fusion of shards or it was in fact a fluidal matrix originally. It is unusual in the abundance of titanium, now leucoxene which is present within it. Phenocrysts and loose crystal clasts in the matrix include plagioclase, hornblende, and occasional small grains of β quartz. Epizonal alteration has been strong.

Each fragment is altered to the assemblage quartz-sericite but the texture and proportion of the minerals varies from one domain to another. In some cases quartz has grown strongly, forming hazy crystalloblasts with little sericite whereas other more felsic fragments are replaced chiefly by a dense, scaly sericite paste. The matrix is replaced by very fine grained sericite admixed with smaller amounts of dense, cherty-textured quartz.

ASTS-50

The rock is a lithic tuff thought to be of intermediate composition such as rhyodacite or similar. The fragments it contains show a modest degree of variation in texture and grain size but seem to be compositionally similar. However, the rock is so heterogeneous that determining mineral percentages was not attempted. Few of the rock fragments host phenocrysts and when they do they are generally small rectangles of plagioclase with minor amounts of hornblende. The matrix appears to be ever-finer lithic debris and there is no evidence that it was glassy at any point. It carries clasts of plagioclase, hornblende, and small chips of β quartz. The rock has been intensely altered in the epizone.

Most of the fragments are silicified, and more intensely than most samples in this suite. The quartz tends to be fine grained and rarely has grown to much extent but sericite derived from feldspars is scarce and largely purged from grain boundaries. However, phenocrysts of plagioclase and hornblende are sericitized entirely and the hornblende pseudomorphs contain small anatase crystals. The matrix is a fine grained paste of sericite intergrown with highly irregular

ASTS-50 con't.

patches of goethite that seem to represent severely leached sulfides associated with the alteration originally.

ASTS-51

The rock is a lithic tuff or breccia similar to the preceding sample and again it is thought to be of intermediate composition in general. Mineral percentages were not attempted owing to the heterogenous character of the sample. Almost all of the fragments present appear to have been rhyodacite or similar material, generally devoid of, or carrying just a few phenocrysts of plagioclase and perhaps hornblende. The nature of the matrix is now uncertain owing to intense epizonal alteration but it is thought to have been very fine lithic and/or vitric debris.

Epizonal alteration has been intense. The larger lithic fragments are silicified, each with its own distinctive texture. But the sericite inherited from feldspars in the fragments has largely been purged and silica accounts for well over 90% of each fragment. By contrast the matrix is a scaly directionless paste of sericite with only minor amounts of quartz in it. Sericite occurs in the fragments only as occasional pseudomorph after plagioclase. Pyrite was scattered throughout the matrix and seems to have been embedded in sericite as a prograde alteration mineral. It has been severely leached leaving little goethite residue which generally stains the surrounding fabric.

APPENDIX C

1981/1982 DRILL HOLE ASSAYS

CHEMICAL & MINERALOGICAL SERVICES • 445 WEST 2700 SOUTH • SALT LAKE CITY, UTAH 84115 • (801) 485-0711

Sample #	Cu ppm	Mo ppm	Pb ppm	Zn ppm	As ppm
3211A	5	4	25	85	1100
3212A	3	3	30	100	1180
3213A	4	3	14	105	830
3214A	5	4	125	190	6400
3215A	6	4	80	210	2200
3216A	4	3	30	120	1950
3217A	4	3	18	115	1600
3218A	4	< 1	20	120	1075
3219A	5	< 1	20	115	1080
3220A	5	2	25	155	1630
3221A	4	4	30	145	1180
3222A	5	< 1	90	120	2500
3223A	5	3	100	155	2750
3224A	5	4	105	150	3380
3225A	5	4	95	170	3730
3226A	8	3	45	110	2780
3227A	5	4	25	100	1070
3228A	8	2	35	85	310
3229A	11	15	70	200	390
3230A	6	12	55	215	370
3231A TD AS-2	5	6	20	110	700
3232A	6	4	14	90	380
3233A ← AS-1 0'-5'	6	5	6	12	450
3234A	5	5	11	12	540
3235A	4	5	50	50	1450

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Sample #	Cu ppm	Mo ppm	Pb ppm	Zn ppm	As ppm
3236A 15-20 AS-1	7	5	25	20	970
3237A	8	5	25	9	520
3238A	8	4	30	8	720
3239A	6	4	25	8	400
3240A	8	5	25	12	450
3241A	5	6	25	8	510
3242A	10	3	19	5	360
3243A	9	3	14	12	390
3244A	6	5	13	10	300
3245A	4	5	14	10	470
3246A	6	4	20	13	550
3247A	5	7	25	10	390
3248A	5	9	20	11	520
3249A	8	6	16	35	170
3250A	7	5	14	60	130
3251A	7	4	15	14	130
3252A AS-1 95'-100'	8	3	11	35	110
3253A	10	4	14	90	90
3254A	9	6	18	85	300
3255A	11	5	11	60	120
3256A	10	3	10	75	110
3257A	7	3	11	50	110
3258A	13	3	15	125	100
3259A	10	5	10	100	120
3260A ——	7	4	10	90	220

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Sample #	Cu ppm	Mo ppm	Pb ppm	Zn ppm	As ppm
3286A	7	2	70	145	390
3287A	5	3	110	180	190
✓3288A	20	2	165	320	620
3289A	8	2	75	115	250
3290A	9	3	20	45	200
3291A	7	2	65	175	250
3292A AS-1 295-300	8	2	75	170	480

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Sample #	Cu ppm	Mo ppm	Pb ppm	Zn ppm	As ppm
3161A	5	3	700	510	730
3162A	4	1	305	315	1600
3163A	8	3	260	205	910
3164A	< 3	3	190	140	1920
3165A 225-230'	3	1	200	250	2330
3166A	7	< 1	320	225	1600
3167A	8	< 1	315	370	800
3168A	17	< 1	320	370	880
3169A	7	2	140	180	510
3170A	7	4	80	80	280
3171A	8	2	160	200	320
3172A 260-265 TD AS-5	11	3	280	310	650
3173A AS-2 0-5'	6	3	15	25	230
3174A	5	4	13	30	340
3175A	7	4	35	35	400
3176A	3	4	18	25	370
3177A	4	3	20	25	650
3178A 25-30'	8	3	20	25	640
3179A	7	4	25	35	800
3180A	9	4	20	40	760
3181A	6	5	30	40	1900
3182A	7	5	25	70	730
3183A 50-55' AS-2	10	5	25	55	400
3184A	7	3	20	55	720
3185A	5	2	15	95	470

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Sample #		Cu ppm	Mo ppm	Pb ppm	Zn ppm	As ppm
3186A	AS-2	4	4	12	65	410
3187A		3	5	11	40	850
3188A	75-80'	6	2	15	70	200
3189A		5	1	14	55	550
3190A		3	3	15	60	800
3191A		3	4	20	105	680
3192A		4	2	14	130	410
3193A	100-105	4	4	14	105	920
3194A		3	3	13	80	860
3195A		3	3	10	40	2100
3196A		3	3	14	18	1590
3197A		5	2	40	15	1950
3198A	Porphyry 125-130	6	1	65	16	3600
3199A		6	2	25	10	2150
3200A		4	6	35	14	2500
3201A		6	2	40	125	3530
3202A		4	3	35	90	2400
3203A	Porphyry 150-155	3	3	110	110	1530
3204A		3	3	100	125	6200
3205A		4	4	40	105	5200
3206A		3	3	35	120	2000
3207A		4	1	40	145	1900
3208A	200-205	3	2	30	55	3700
3209A		7	3	40	105	2630
3210A		5	< 1	35	85	2370

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Sample #	Cu ppm	Mo ppm	Pb ppm	Zn ppm	As ppm
3211A AS-2	5	4	25	85	1100
3212A	3	3	30	100	1180
3213A 200-205	4	3	14	105	830
3214A	5	4	125	190	6400
3215A	6	4	80	210	2200
3216A	4	3	30	120	1950
3217A	4	3	18	115	1600
3218A	4	< 1	20	120	1075
3219A 230-235	5	< 1	20	115	1080
3220A	5	2	25	155	1630
3221A	4	4	30	145	1180
3222A	5	< 1	90	120	2500
3223A	5	3	100	155	2750
3224A	5	4	105	150	3380
3225A	5	4	95	170	3730
3226A	8	3	45	110	2780
3227A	5	4	25	100	1070
3228A	8	2	35	85	310
3229A	11	15	70	200	390
3230A	6	12	55	215	370
3231A TD AS-2	5	6	20	110	700
3232A	6	4	14	90	380
3233A ← AS-1 0'-5'	6	5	6	12	450
3234A	5	5	11	12	540
3235A	4	5	50	50	1450

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ANALYTICAL REPORT FOR:

HUNT, WARE & PROFFETT
J. HUNT
PO BOX 2640
LA JOLLA, CA 92038

Invoice # 14788
Date 7/06/88
Customer #

Sample #	Cu ppm	Mo ppm	Pb ppm	Zn ppm	As ppm
22746	7	2	1370	85	540
22747	3	5	1440	40	730
22748	< 3	1	650	25	550
22749	< 3	1	2930	35	420
22750	13	< 1	1900	45	310
22751	5	< 1	1990	45	230
22752	4	1	1440	835	140
22753	5	< 1	1440	280	300
3001A As-3 0-5'	8	< 1	670	55	930
3002A	6	1	505	75	590
3003A	18	< 1	510	55	520
3004A	7	< 1	615	70	540
3005A	6	1	510	75	700
3006A 25-30	7	1	400	45	670
3007A	8	1	680	55	820
3008A	11	1	1110	45	510
3009A	6	5	1250	55	570
3010A 45-50	5	2	900	60	600

All 4 digit & over analyses for Cu, Pb, Zn, Co, Ni, Cr, Mn were run by assay method.

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Sample #	Cu ppm	Mo ppm	Pb ppm	Zn ppm	As ppm
3011A 50-55 AS-3	12	2	800	50	670
3012A 55	11	2	1045	50	860
3013A 60	10	4	1055	55	2250
3014A 65	15	3	2220	1730	460
3015A	10	3	1450	205	1500
3016A	19	2	3150	3010	240
3017A	15	1	2300	3360	210
3018A	8	2	980	990	320
3019A	5	2	810	780	330
3020A	5	< 1	1000	1100	540
3021A 100-105	4	< 1	620	560	310
3022A	5	2	1100	1150	370
3023A	6	2	1000	1130	260
3024A	6	2	1550	1610	380
3025A	8	3	1350	2700	870
3026A 125-130	9	3	1320	1480	850
3027A	6	3	1045	1160	960
3028A	11	4	1440	1440	1040
3029A	14	3	1410	1100	2150
3030A	10	2	1045	1100	880
3031A	10	2	8040	4750	940
3032A	11	3	1980	2830	1250
3033A	17	3	1780	9550	2000
3034A 165-170	12	3	2000	2660	2250
3035A 190-195 AS-3	11	< 1	3010	3210	2550

$\bar{x}$ = 2454

$\bar{x}$ = 2258

All 4 digit & over analyses for Cu, Pb, Zn, Co, Ni, Cr, Mn were run by assay method.

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Sample #	Cu ppm	Mo ppm	Pb ppm	Zn ppm	As ppm
3036A 175-180 AS-3	14	5	1850	2420	2250
3037A	14	3	1660	2450	2250
3038A	14	3	3300	4180	2500
3039A	19	3	3640	5110	1550
3040A	10	2	2660	8050	600
3041A 200	16	2	4410	4450	900
3042A	50	1	14900	19500	1100
3043A	30	2	12010	9200	720
3044A	65	1	21000	15500	1500
3045A	30	1	14250	11450	600
3046A	20	2	5340	5070	750
3047A	14	< 1	3990	3550	1300
3048A 235	7	1	1610	1730	1350
3049A	6	1	1720.	1980	420
3050A	9	< 1	2100.	2250	260
3051A	8	1	2180.	4210	360
3052A	6	3	2200.	1990	370
3053A	10	1	3880.	3350	330
3054A	6	3	1570.	1620	640
3055A	5	3	1140.	1100	510
3056A	5	1	2150	1800	280
3057A	6	4	2420.	2450	370
3058A	7	3	2080.	2530	2550
3059A	8	2	1750	1940	1750
3060A 295-300 AS-3 CT.D	6	3	2250	2140	2550

11918 6689 5350 ppm / 70' 2102

All 4 digit & over analyses for Cu, Pb, Zn, Co, Ni, Cr, Mn were run by assay method.

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Sample #	Cu ppm	Mo ppm	Pb ppm	Zn ppm	As ppm
3061A 0-5 As-4	5	2	1040	75	740
3062A	4	3	1860	100	1250
3063A	4	3	2340	70	1000
3064A	4	5	1130	45	630
3065A	5	4	1100	40	790
3066A 25-30	3	< 1	2080	80	1500
3067A	10	5	4210	105	4400
3068A	5	4	1100	55	980
3069A	4	3	1040	125	810
3070A	8	4	1500	90	840
3071A 50-55	3	1	1950	880	580
3072A	4	2	1560	1220	1350
3073A	3	< 1	870	610	720
3074A	4	< 1	1680	1380	840
3075A	5	< 1	750	660	310
3076A 75-80	5	1	490	645	670
3077A	< 3	2	470	300	300
3078A	< 3	1	180	160	250
3079A	3	2	210	120	390
3080A	4	1	450	640	370
3081A 100-105	4	2	850	1100	330
3082A	5	1	2210	2850	410
3083A	< 3	< 1	490	610	300
3084A	< 3	3	1440	1350	320
3085A	5	4	860	835	240

All 4 digit & over analyses for Cu, Pb, Zn, Co, Ni, Cr, Mn were run by assay method.

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Sample #		Cu ppm	Mo ppm	Pb ppm	Zn ppm	As ppm
3086A	125-130 AS-4	4	3	1290	1200	380
3087A		5	< 1	340	300	250
3088A		4	3	550	430	340
3089A		< 3	2	890	715	240
3090A		6	2	1830	2150	300
3091A	150-155	4	3	200	145	350
3092A		< 3	1	150	155 1592	370
3093A		4	1	1440	3350	400
3094A		7	4	11150	6140	795
3095A		5	2	910	2150	510
3096A	175-180	3	< 1	230	365	290
3097A		4	2	210	230	370
3098A		3	4	120	235	390
3099A		3	3	250	180	410
3100A		4	2	720	870	580
3101A		3	3	190	450	650
3102A		4	3	700	1200	650
3103A		4	3	430	520	400
3104A		65	2	9980	5550	540
3105A		45	1	1820	2540	230
3106A	225-230 AS-4	35	< 1	1800	2350	240
3107A		55	1	2050	2390	190
3108A		30	2	3430	3410	220
3109A		14	3	1050	1990	390
3110A	245-250'	10	3	4380	3300	610

All 4 digit & over analyses for Cu, Pb, Zn, Co, Ni, Cr, Mn were run by assay method.

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Sample #	Cu ppm	Mo ppm	Pb ppm	Zn ppm	As ppm
3111A 250-255 AS-4	7	3	750	515	450
3112A	6	4	1000	1120	380
3113A	6	2	930	850	260
3114A	5	2	800	1100	160
3115A 20	6	1	2050	1360	290
3116A	6	< 1	3020	3200	570
3117A	4	1	2810	2490	1950
3118A 25	4	< 1	1950	1330	1700
3119A	7	< 1	1990	2040	480
3120A 295-300 AS-4	5	2	1260	1090	1150
3121A 0-5 AS-5	6	1	1850	75	670
3122A 5	10	18	1650	60	790
3123A 10	8	2	1600	70	970
3124A 15	5	< 1	1350	40	860
3125A	3	< 1	960	35	1200
3126A	6	< 1	740	50	870
3127A	4	2	720	140	800
3128A	5	< 1	410	35	250
3129A	4	< 1	380	140	430
3130A	4	2	350	430	1050
3131A 50-55	5	3	750	815	770
3132A	8	2	800	1150	430
3133A	14	3	1260	1540	460
3134A	15	3	1410	1710	460
3135A	13	1	880	12100	350

All 4 digit & over analyses for Cu, Pb, Zn, Co, Ni, Cr, Mn were run by assay method.

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Sample #	Cu ppm	Mo ppm	Pb ppm	Zn ppm	As ppm
3136A 75-80 AS-5	15	< 1	1820	24200	510
3137A	40	< 1	3350	47500	500
3138A 85	6	3	870	550	770
3139A 90	8	3	140	180	725
3140A 95	10	4	500	2020 5872	770
3141A 100-105	7	5	210	400	1150
3142A	6	4	270	285	370
3143A	3	4	290	180	640
3144A	8	4	1200	890	1100
3145A	18	2	170	240	1500
3146A 125-130	3	4	90	180	580
3147A	3	3	115	195	800
3148A	5	4	100	165	655
3149A	3	3	100	150	850
3150A 145-150	< 3	5	75	160	880
3151A 150-155	60	< 1	2350	3140	280
3152A	60	< 1	2320	4050 ✓	310
3153A	25	1	690	1100	360
3154A	70	< 1	2360	3350	2550
3155A 170-175	5	2	190	400	2000
3156A 175-180	9	< 1	600	1100	1730
3157A	5	2	245	345	1180
3158A	7	2	475	610	680
3159A	6	1	350	425	550
3160A	35	< 1	1680	2080	410

All 4 digit & over analyses for Cu, Pb, Zn, Co, Ni, Cr, Mn were run by assay method.

CHEMICAL & MINERALOGICAL SERVICES • 445 WEST 2700 SOUTH • SALT LAKE CITY, UTAH 84115 • (801) 485-0711

Sample #	Cu ppm	Mo ppm	Pb ppm	Zn ppm	As ppm
3161A	5	3	700	510	730
3162A	4	1	305	315	1600
3163A	3	3	260	205	910
3164A	< 3	3	190	140	1920
3165A 225-230'	3	1	200	250	2330
3166A 230	7	< 1	320	225	1600
3167A	8	< 1	315	370	800
3168A	17	< 1	320	370	880
3169A	7	2	140	180	510
3170A	7	4	80	80	280
3171A 255	8	2	160	200	320
3172A 260-265 TD AS-5	11	3	280	310	650
3173A	6	3	15	25	230
3174A	5	4	13	30	340
3175A	7	4	35	35	400
3176A	3	4	18	25	370
3177A	4	3	20	25	650
3178A	8	3	20	25	660
3179A	7	4	25	35	800
3180A	9	4	20	40	760
3181A	6	5	30	40	1900
3182A	7	5	25	70	730
3183A	10	5	25	55	400
3184A	7	3	20	55	720
3185A	5	2	15	95	470

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Sample #	Ag ppm	Au ppm
22746	3.7	.20
22747	3.7	.42
22748	3.9	.15
22749	2.9	.05
22750	2.6	.09
22751	3.3	.06
22752	4.3	.07
22753	4.6	.09
31101	20.5	.45
31102	2.0	.35
31103	4.5	1.44
31104	22.7	9.80*
31105	1.9	.52
31106	.8	.23

*Please have checked by fire assay.

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Sample #	As ppm	Au ppm
3220	1.2	< .02
3221	1.2	< .02
3222	1.8	.03
3223	2.2	.03
3224	2.8	.05
3225	2.7	.22
3226	1.4	.15
3227	1.1	.06
3228	.9	< .02
3229	2.9	< .02
3230	1.3	< .02
3231 215-300 AS-2	.9	< .02
3232	1.0	< .02
3233 0-5 AS-1	.6	< .02
3234	.6	< .02
3235	.8	< .02
3236	.6	< .02
3237	1.0	< .02
3238	.9	< .02
3239	.7	< .02
3240	.8	< .02
3241	1.1	< .02
3242	2.1	< .02
3243 50-55	3.6	< .02
3244A	1.9	< .02

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Sample #		Ag ppm	Au ppm
3270	AS-1	5.6	< .02
3271		6.9	< .02
3272		6.7	< .02
3273		2.0	< .02
3274		3.5	< .02
3275		4.0	< .02
3276		3.3	< .02
3277		5.0	< .02
3278		3.9	< .02
3279		4.0	< .02
3280		3.4	< .02
3281		3.5	< .02
3282		3.8	< .02
3283		2.8	< .02
3284		2.5	< .02
3285		4.4	< .02
3286		5.3	< .02
3287		4.0	< .02
3288	275-280	29.0	.03
3289	280	6.6	< .02
3290	285	3.2	< .02
3291	290	4.0	< .02
3292	295-300 AS-1	4.3	< .02

CHEMICAL & MINERALOGICAL SERVICES • 445 WEST 2700 SOUTH • SALT LAKE CITY, UTAH 84115 • (801) 485-071

Sample #		Cu ppm	Mo ppm	Pb ppm	Zn ppm	As ppm
3261A		10	4	11	85	160
3262A		9	5	15	70	280
3263A		8	5	11	70	140
3264A		9	4	4	70	170
3265A		10	3	4	85	205
3266A		7	3	25	70	180
3267A		8	2	35	95	210
3268A		10	1	25	40	135
3269A		8	1	20	45	360
3270A		7	< 1	35	40	360
3271A		8	1	25	35	590
3272A		6	2	35	55	470
3273A	AS-1 200-205	12	2	25	85	420
3274A		8	2	60	160	390
3275A		8	3	90	180	370
3276A		9	3	50	65	250
3277A		8	1	50	75	420
3278A		7	1	45	65	240
3279A		8	3	65	135	420
3280A		8	1	80	135	440
3281A		7	1	55	65	230
3282A		8	2	40	100	170
3283A		8	2	45	105	200
3284A		6	3	50	120	500
3285A		8	3	90	230	590

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Sample #		Ag ppm	Au ppm
3245	AS-1	1.7	< .02
3246		1.7	< .02
3247		2.2	< .02
3248		2.2	< .02
3249		3.2	< .02
3250		3.9	< .02
3251		4.0	< .02
3252		3.6	< .02
3253	100-105	3.2	< .02
3254		2.5	< .02
3255		2.5	< .02
3256		3.1	< .02
3257		4.8	< .02
3258		3.6	< .02
3259		2.3	< .02
3260		2.2	< .02
3261		2.4	< .02
3262		1.8	< .02
3263	150-155	2.5	< .02
3264		1.4	< .02
3265		1.3	< .02
3266		1.8	< .02
3267		2.8	< .02
3268		4.2	< .02
3269A	____	4.7	< .02

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Sample #	Ag ppm	Au ppm
3170	< .3	.03
3171	< .3	< .02
3172 260-265 AS-5	.6	< .02
3173 0-5 AS-2	< .3	< .02
3174	.8	< .02
3175	.4	< .02
3176	1.2	< .02
3177	.4	< .02
3178	1.0	< .02
3179	1.3	< .02
3180	.3	< .02
3181	< .3	< .02
3182	< .3	< .02
3183 50-55 - AS2	.4	< .02
3184	< .3	< .02
3185	< .3	< .02
3186	< .3	< .02
3187	< .3	< .02
3188	.3	< .02
3189	< .3	< .02
3190	< .3	< .02
3191	< .3	< .02
3192	< .3	< .02
3193 100-105	< .3	< .02
3194A	< .3	< .02

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Sample #	Ag ppm	Au ppm
3195 AS-2	.8	< .02
3196	1.8	< .02
3197	2.6	< .02
3198	7.6	< .02
3199	2.3	< .02
3200	1.4	< .02
3201	1.3	.03
3202	1.7	< .02
3203 150-155	1.3	< .02
3204	1.4	< .02
3205	1.7	< .02
3206	1.0	< .02
3207	1.3	.11
3208	.8	< .02
3209	1.0	< .02
3210A	.7	< .02
3211	.7	< .02
3212	.8	< .02
3213 ~~AS-2~~ 200-205	1.0	< .02
3214	5.9	.48
3215	3.5	.17
3216	1.1	.04
3217	1.0	.03
3218	.8	< .02
3219A 230-235	1.0	< .02

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Sample #	Ag ppm	Au ppm
3220	1.2	< .02
3221	1.2	< .02
3222	1.8	.03
3223 250-255	2.2	.03
3224	2.8	.05
3225	2.7	.22
3226	1.4	.15
3227	1.1	.06
3228 275-280	.9	< .02
3229	2.9	< .02
3230	1.3	< .02
3231 AS-2	.9	< .02
3232 295-300	1.0	< .02
3233 0-5 AS-1	.6	< .02
3234	.6	< .02
3235	.8	< .02
3236	.6	< .02
3237	1.0	< .02
3238	.9	< .02
3239	.7	< .02
3240	.8	< .02
3241	1.1	< .02
3242	2.1	< .02
3243	3.6	< .02
3244A	1.9	< .02

CHEMICAL & MINERALOGICAL SERVICES • 445 WEST 2700 SOUTH • SALT LAKE CITY, UTAH 84115 • (801) 485-0711

ANALYTICAL REPORT FOR:

HUNT, WARE & PROFFETT
J. HUNT
P. O. BOX 2640
LA JOLLA, CA 92038

Invoice # 14629
Date 6/11/82
Customer #

Sample #	Ag ppm	Au ppm
3001A AS-3 0-5	11.5	.11
3002	.6	.05
3003	< .3	.08
3004	< .3	.13
3005	.6	.10
3006 25-30	.9	.06
3007	.6	.05
3008	2.6	.04
3009	5.2	.09
3010	2.3	.04
3011 50-55	1.8	.08
3012 55-60	1.8	.20
3013 60-65	3.6	1.22
3014	8.8	.09
3015	6.2	.17
3016 75-80	11.1	.09
3017	8.6	.07
3018	3.7	.09
3019	2.8	.10

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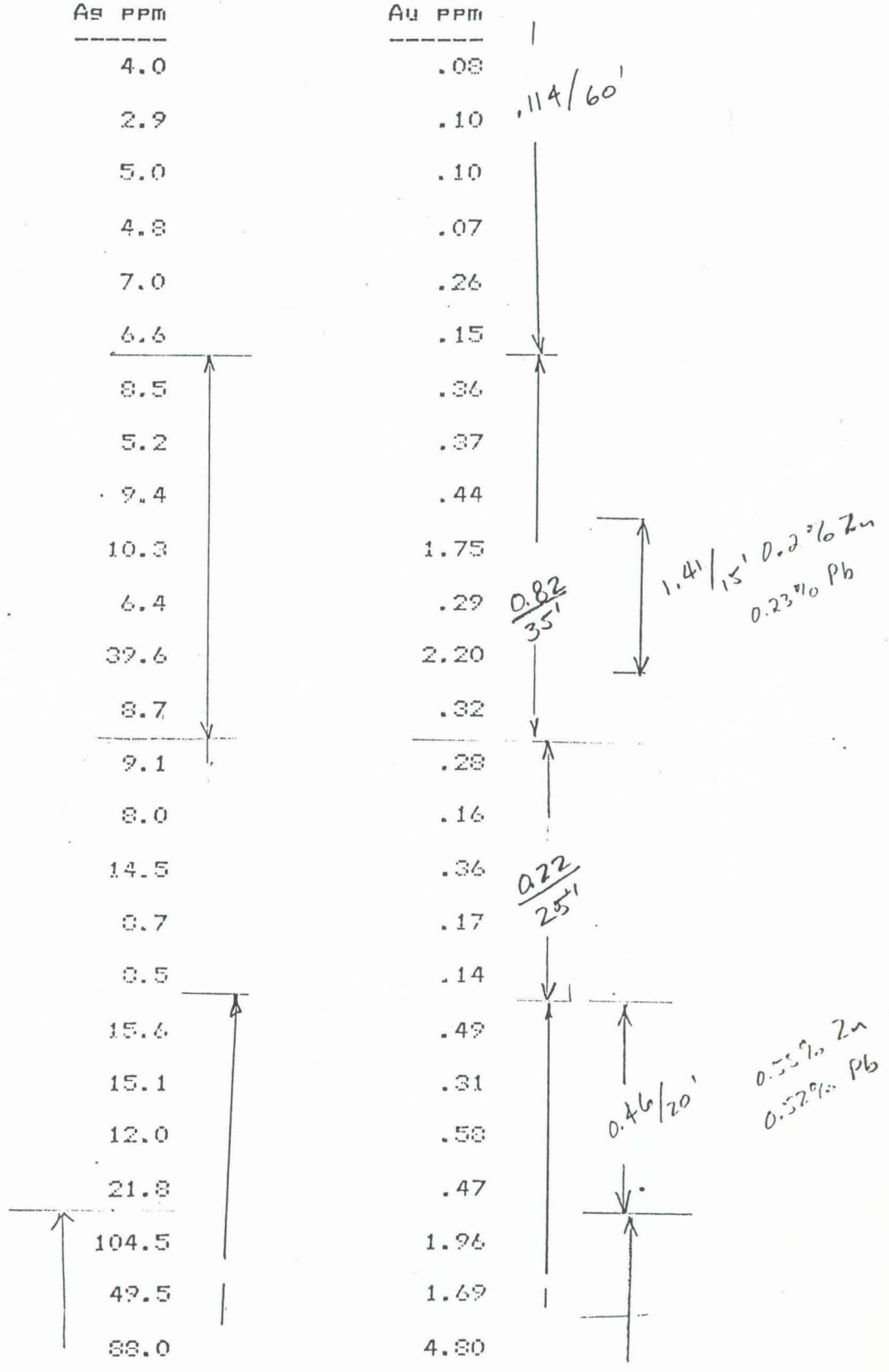
Sample #		Ag ppm	Au ppm
3020A	As-3 95-100'	4.0	.08
3021	100-105	2.9	.10
3022	105-110	5.0	.10
3023	110-115	4.8	.07
3024	115-120	7.0	.26
3025	120-125	6.6	.15
3026	125-130	8.5	.36
3027		5.2	.37
3028		9.4	.44
3029		10.3	1.75
3030		6.4	.29
3031		39.6	2.20
3032		8.7	.32
3033	160-165	9.1	.28
3034		8.0	.16
3035		14.5	.36
3036		8.7	.17
3037	180-185	8.5	.14
3038		15.6	.49
3039		15.1	.31
3040		12.0	.58
3041	200-205	21.8	.47
3042		104.5	1.96
3043		49.5	1.69
3044		88.0	4.80



CHEMICAL & MINERALOGICAL SERVICES • 445 WEST 2700 SOUTH • SALT LAKE CITY, UTAH 84115 • (801) 485-071

Sample #		Ag PPM	Au PPM
3045A	(AS-3)	50.6	1.67
3046	225-230'	25.8	1.26
3047	230-235	21.6	1.25
3048		8.1	.29
3049		8.0	.25
3050		10.1	.31
3051	250-255'	11.0	.32
3052		8.5	.18
3053		14.8	.29
3054		6.4	.22
3055		5.4	.36
3056		9.0	.26
3057		10.1	1.10
3058		8.9	.31
3059		7.3	.21
3060	TD AS-3 = 300' (295'-300')	8.5	.24
3061	AS-4 0-5'	1.6	.10
3062		3.2	.17
3063		3.3	.25
3064		4.6	.16
3065	20-25	5.9	.15
3066	~~AS-4~~ 25-30'	8.5	3.10
3067		23.6	2.35
3068		12.3	2.30
3069		7.2	2.75

56.7/30'

31.55/70'

.92 oz.

(.032) .54% Zn

1.11/70

30' @ 2.15 Pb
1.19% Zn
0.67% Zn

0.33/65'

.17/25'

CHEMICAL & MINERALOGICAL SERVICES • 445 WEST 2700 SOUTH • SALT LAKE CITY, UTAH 84115 • (801) 485-0711

Sample #	Ag ppm	Au ppm
3070A	5.4	.44
3071 50-55 AS-9	5.0	1.55
3072	5.2	.20
3073	3.6	.13
3074	5.9	.15
3075	3.4	.20
3076	2.0	.17
3077	1.4	.22
3078	.7	.08
3079	.7	.11
3080	1.5	.06
3081 100-105	3.5	.09
3082	9.3	.11
3083	3.1	.14
3084	5.9	.30
3085	5.0	.07
3086 125-130	5.3	.20
3087	1.6	.96
3088	2.6	.20
3089	4.1	.26
3090	7.9	.61
3091 150-155	1.0	.96
3092	.9	.19
3093 160-165	6.8	1.53
3094A 165-170	40.0	6.60

10.33/30' 2.08 (.061 o.pt.)/30' 0.02% Zn 0.20% Pb .148/75' 0.60/25' .19/5' 10' @ 4.07 6.99 3.7 0.08% Zn 0.08% Zn 0.47% Zn 0.61% Pb

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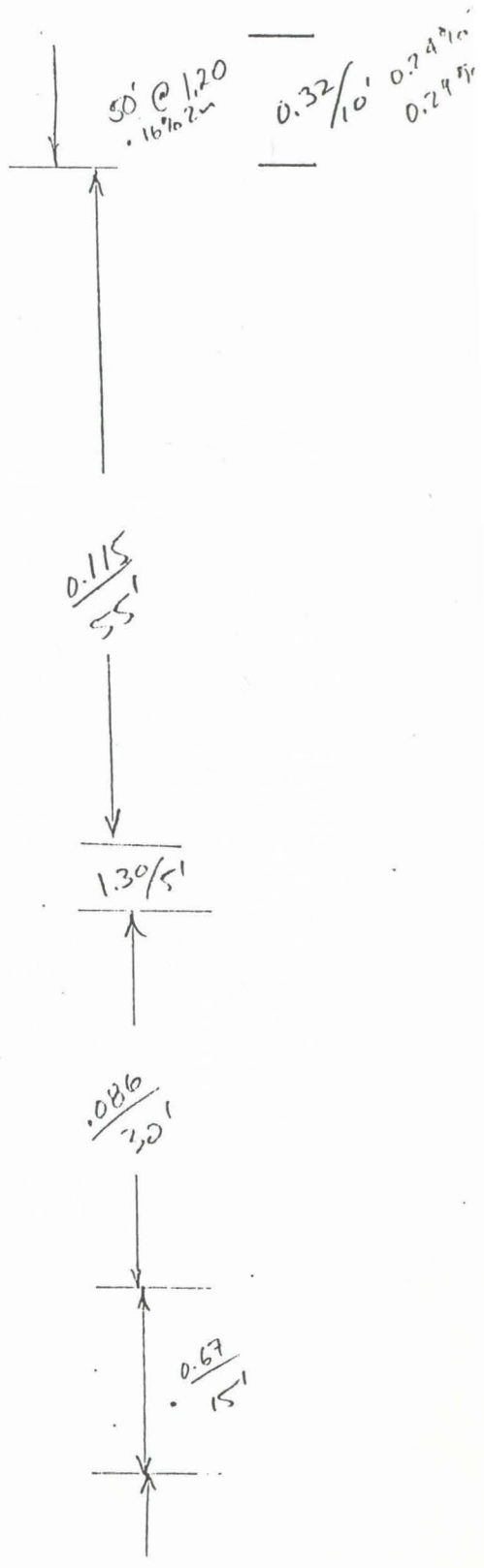
Sample #		Ag ppm	Au ppm
3095	AS-4	4.0	.37
3096	175-180	1.0	.27
3097		1.2	.07
3098		.7	.15
3099		2.4	.20
3100		2.8	.16
3101	200-205	1.1	.12
3102		2.8	.09
3103		1.7	.09
3104		15.2	.12
3105		7.8	.11
3106	225-230	7.6	.09
3107		7.1	.07
3108		13.2	1.30
3109		4.6	.06
3110		15.3	.09
3111	250-255	4.2	.07
3112		2.9	.04
3113		2.6	.21
3114		2.3	.05
3115	270-275	5.5	.90
3116	275-280	12.0	.12
3117	280-285	9.6	1.00
3118		6.1	.16
3119A		6.0	.10



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Sample #			Ag ppm	Au ppm
3120	295-300	AS-4 (TD)	4.6	.04
3121	0-5	AS-5	3.1	.48
3122	5		1.1	.32
3123	10		.7	.52
3124	15		.4	.14
3125			< .3	.05
3126	25-30		.3	.06
3127			.3	.34
3128			< .3	< .02
3129			2.3	.04
3130			1.0	.05
3131	50-55		2.6	.49
3132			3.0	.25
3133			5.2	1.15
3134			5.5	1.32
3135			3.2	.59
3136	75-80		6.5	.88
3137			12.6	.36
3138			3.1	.23
3139			.3	.20
3140			4.1	3.31
3141	100-105		.8	.61
3142			.5	.82
3143			1.8	.65
3144A			4.9	.96

0.10/15'
0.44/15'
0.10/35'
5.5/35'
0.72/35' 1.27% Zn 0.15% Pb
0.215/10'
0.06% Zn 0.04% Pb
1.91/35'
1.03/35'

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Sample #		Ag ppm	Au ppm
3145	AS-5	1.0	.49
3146	125-130	.3	.36
3147		< .3	.13
3148		< .3	.06
3149		< .3	.12
3150	145-150	.3	1.35
3151	150-155	< .3	.06
3152	155-160	9.1	.50
3153	160-165	2.4	.11
3154	165-170	9.9	.73
3155		.4	.06
3156	175-180	1.9	.22
3157		.6	.06
3158		1.5	.05
3159		1.0	.09
3160		5.6	.19
3161	200-205	2.1	.10
3162		.7	.09
3163		.6	.02
3164		.4	.04
3165		.4	.05
3166	225-250	.5	.15
3167		.7/13	.09
3168		.9	.05
3169A		< .3	.04

4.38 / 25'

0.55 / 25'

0.24% Zn
0.16% Pb

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Sample #	Ag ppm	Au ppm
3170	< .3	.03
3171	< .3	< .02
3172 260-265 AS-5	.6	< .02
3173 0-5 AS-2	< .3	< .02
3174	.8	< .02
3175	.4	< .02
3176	1.2	< .02
3177	.4	< .02
3178	1.0	< .02
3179	1.3	< .02
80	.3	< .02
3181	< .3	< .02
3182	< .3	< .02
3183 50-55 - AS2	.4	< .02
3184	< .3	< .02
3185	< .3	< .02
3186	< .3	< .02
3187	< .3	< .02
3188	.3	< .02
3189	< .3	< .02
3190	< .3	< .02
3191	< .3	< .02
3192	< .3	< .02
93	< .3	< .02
3194A	< .3	< .02

APPENDIX D

SURFACE AND UNDERGROUND ROCK CHIP ANALYSES

BARRINGER LABORATORIES INC.

15000 W. 6TH AVE., SUITE 300
GOLDEN, COLORADO 80401
PHONE: (303) 277-1687

1455 DEMING WAY, SUITE 15
SPARKS, NEVADA 89431
PHONE: (702) 358-1158

30-Jul-88

Bud Hillemeyer
Fischer-Watt Gold Inc.
114 Tucker Avenue
Suite 7
Kingman, AZ, 86401
Authority: Bud Hillemeyer
Project :

Purchase order : GED-788-K1

FINAL report: job number 881991R

Abbreviations:

Analyses:

Ag	: Silver
As	: Arsenic
Au	: Gold
Hg	: Mercury
Sb	: Antimony

Methods:

AA	: Atomic Absorption
FA	: Fire Assay
HYG	: Hydride Generation

Units:

ppm	: Parts per Million
ppb	: Parts per Billion

Quality control:

*=Interference	<=less than
>=greater than	D=not Detected
I=Insufficient sample	M=Missing
N=Not analyzed	P=questionable Precision
T=Trace	

Signed: .....

Vernon K. Peterson
Laboratory Manager

Al Screng

BARRINGER LABORATORIES INC.

15000 W. 6TH AVE., SUITE 300
GOLDEN, COLORADO 80401
PHONE: (303) 277-1687

1455 DEMING WAY, SUITE 15
SPARKS, NEVADA 89431
PHONE: (702) 358-1158

30-Jul-88

Bud Hillemeyer
Fischer-Watt Gold Inc.
114 Tucker Avenue
Suite 7
Kingman, AZ, 86401
Authority: Bud Hillemeyer
Project :

Page: 1
Copy: 3 of 3
Set : 1

Purchase order : GED-788-K1

FINAL report: job number 881991R

Type	Sample	Ag AA ppm	As AA ppm	Au FA ppb	Hg HYG ppb	Sb AA ppm
Rock	BH-AS 1	9	1850	146	2300	20
	BH-AS 2	15.2	7100	375	3220	42
	BH-AS 3	2.2	230	70	1700	4
	BH-AS 4	8.5	3500	133	6830	35
	BH-AS 5	0.5	64	23	2000	3
	BH-AS 6	1.7	920	145	3740	3
	BH-AS 7	1.2	306	94	2350	2
	BH-AS 8	3.2	470	134	4570	1
	BH-AS 9	1.9	221	103	3260	2
	BH-AS 10	5	211	72	4300	3
	BH-AS 11	5	359	93	2830	4
	BH-AS 12	10.5	288	115	3520	11
	BH-AS 13	6.1	460	234	4570	4
	BH-AS 14	9.9	2470	188	4700	12
	BH-AS 15	15.6	7900	2055	4130	16
	BH-AS 16	3.4	1670	320	4220	8
	BH-AS 17	2.5	1980	402	7220	9
	BH-AS 18	20.7	930	1233	6520	14
	BH-AS 19	10.5	480	357	3130	5
	BH-AS 20	6.8	1090	231	2090	4
	BH-AS 21	18.2	1230	642	4910	13
	BH-AS 22	2.3	272	232	1430	3
	BH-AS 23	6.5	670	192	1170	3
	BH-AS 24	13.4	255	211	770	11
	BH-AS 25	0.3	73	118	1370	< 1
	BH-AS 26	3.5	1080	433	930	5
	BH-AS 27	1.4	880	656	2200	5
	BH-AS 28	16.1	1610	1507	4960	10
	BH-AS 29	4.3	1110	179	2780	11
	BH-AS 30	4.7	760	211	2780	4

AU Sereng

BARRINGER LABORATORIES INC.

15000 W. 6TH AVE., SUITE 300
GOLDEN, COLORADO 80401
PHONE: (303) 277-1687

1455 DEMING WAY, SUITE 15
SPARKS, NEVADA 89431
PHONE: (702) 358-1158

30-Jul-88

Bud Hillemeyer
Fischer-Watt Gold Inc.
114 Tucker Avenue
Suite 7
Kingman, AZ, 86401
Authority: Bud Hillemeyer
Project :

Purchase order : GED-788-K1

FINAL report: job number 881991R

Type	Sample	Ag AA ppm	As AA ppm	Au FA ppb	Hg HYG ppb	Sb AA ppm
Rock	BH-AS 31	11.8	820	720	5870	58
	BH-AS 32	1.2	910	147	1570	4
	BH-AS 33	6.8	1750	202	2170	33
	BH-AS 34	2.3	610	475	1200	6
	BH-AS 35	1	1060	479	590	3
	BH-AS 36	5.2	1820	74	430	12
	BH-AS 37	2.4	1080	54	280	2
	BH-AS 38	7.2	287	133	430	7

TITLE [illegible]-07-[illegible] 11:[illegible] 1 V[illegible] 416 AL PEN# NE [illegible]/13

Sample ID	Au 30g	Ag	As	Mo	Sb	Tl	Hg	Cu	Mn	Pb	[illegible]
Det Limit	5	0.5	5	1	5	1	20	1	1	1	1
A006701	6	0.7	114	3	2.1	1	>5000	20	40	3	13
A006702	5	0.4	256	7	7	1	>5000	26	160	3	10
A006703	315	23.9	>2000	4	147	0.4	2900	27	13000	1081	2200
A006704	304	38.0	>2000	4	173	0.6	4500	19	5200	1380	1300
A006705	230	9.9	>2000	4	79	0.2	1900	30	8800	398	1220
A006706	36	2.5	1979	5	9	0.7	4250	4	550	33	40
A006707	9	1.0	392	5	6	1	400	5	305	22	36
A006708	6	1.9	609	6	14	1	515	10	30	22	22
A006709	264	6.8	923	0.4	13	3	3800	3	40	1434	326
A006710	8	0.7	58	3	7	0.3	1100	3	30	49	16
A006711	11	1.3	93	2	17	0.2	1450	15	2300	16	158
A006712	1.6	0.7	100	4	10	2	340	3	500	14	11
A006713	3.9	0.5	152	5	13	0.8	170	3	320	12	8
A006714	5	0.8	194	4	12	2	160	4	320	8	8
A006715	5	3.2	143	2	1.9	2	120	5	300	9	10
A006716	7	14.0	161	5	6	1	80	3	200	21	11
A006717	5	1.1	122	4	8	1	1100	3	70	7	5
A006718	2.5	3.1	239	4	12	1	90	3	300	14	12
A006719	5	1.6	387	0.4	16	3	250	4	290	15	6
A006720	4.1	1.3	662	3	10	1	140	3	545	30	6
A006721	5	1.2	235	2	11	0.4	950	4	500	38	10
A006722	37	6.4	>2000	3	30	0.7	1150	8	1100	148	11
A006723	36	7.3	>2000	2	42	2	1250	11	810	227	12
A006724	121	8.7	>2000	5	15	1	1550	5	950	93	28
A006725	19	1.3	1271	2	6	2	2400	5	1100	46	19
A006726	32	2.1	1402	3	7	0.6	750	5	800	56	5
A006727	80	0.2	733	1	10	0.4	450	5	320	130	13
A006728	7527	24.7	>2000	3	203	0.3	>5000	110	820	2790	120
A006729	119	5.5	1934	1	20	2	700	5	980	3630	80
A006730	98	23.2	>2000	3	6	1	180	4	14400	242	248
A006731	181	25.2	1598	3	5	2	120	5	13600	411	375
A006732	42	22.0	1454	3	2.1	0.5	35	8	18400	145	400
A006733	38	20.3	1490	3	12	0.3	200	15	17600	269	860
A006734	112	32.9	>2000	1	29	1	125	5	>20000	243	660
A006735	25	11.3	1567	3	22	0.3	120	4	17400	50	170
A006736	17	1.9	236	4	10	0.1	70	4	7000	8	120
A006737	19	1.6	44	4	10	0.4	30	5	6800	8	160
A006738	10	2.6	292	2	15	0.4	25	5	13400	11	140
A006739	18	2.4	>2000	2	18	NA	850	8	695	221	25
A006740	24	1.5	334	2	3.3	NA	2900	12	5430	47	163
A006741	74	4.0	414	0.4	9	NA	1600	4	41	703	84
A006742	255	8.6	864	2	3.7	NA	3750	9	103	870	254
A006743	232	7.7	>2000	1	7	NA	1500	11	1097	213	86
A006744	42	1.8	1337	1	1.0	NA	850	8	446	69	10
A006745	2.6	6.5	514	0.0	0.6	NA	3850	8	588	66	19
A006746	17	3.9	1516	1	4.2	NA	1250	10	547	238	38
A006747	38	10.8	738	0.1	3.1	NA	370	10	459	93	14

AD06[illegible]	6	1.7	391	1	1.2	NA	3350	6	[illegible]	29	41
AD0[illegible]	0.2	0.8	511	2	0.1	NA	2800	7	167	30	20
AD06750	2.3	1.4	490	0.1	11	NA	650	18	1474	19	181
AD06751	0.8	2.5	407	0.7	0.1	NA	1200	11	1147	16	118
AD06752	3.6	1.3	96	0.4	7	NA	2850	28	1874	11	91
AD06753	2.3	1.1	27	1	2.6	NA	2800	4	566	8	19
AD06754	2.8	0.0	61	1	2.4	NA	430	6	839	12	37
AD06755	3.9	0.5	41	2	1.9	NA	650	12	2558	14	88
AD06756	1.1	0.2	12	0.2	3.2	NA	700	3	294	11	17
AD06757	0.8	0.6	27	1	3.3	NA	240	21	1332	12	37
AD06758	2.9	0.1	52	0.4	4.0	NA	280	8	548	10	36
AD06759	2.4	0.4	1.6	0.6	0.1	NA	40	6	551	9	43
AD06760	0.9	0.2	3.5	0.8	3.2	NA	75	7	1241	10	69
AD06761	555	27.9	>2000	3	26	NA	>5000	15	154	2452	66
AD06762	384	8.8	>2000	2	6	NA	4700	10	184	1177	38
AD06763	108	5.3	535	0.1	6	NA	4250	7	2127	1015	57
AD06764	385	28.3	>2000	0.8	10	NA	1450	17	>20000	711	187
AD06765	200	1.5	>2000	1	1.0	NA	1500	4	88	147	36
AD06766	685	26.2	1606	0.8	24	NA	>5000	15	3635	1250	93
AD06767	98	11.4	1936	0.4	13	NA	2400	28	3310	403	174
AD06768	1111	41.3	>2000	1	156	NA	4250	44	3970	2781	240
AD06769	75	16.3	1115	0.5	2.2	NA	1450	39	>20000	309	664
AD06770	122	29.7	1689	0.8	7	NA	2750	20	>20000	464	285
AD06771	1457	1.4	>2000	2	8	NA	>5000	6	245	76	5
AD06772	76	4.8	>2000	0.1	10	NA	2100	22	168	72	56
AD06773	11	8.4	310	0.0	2.2	NA	180	1	180	50	5
AD06774	80	0.3	441	0.5	2.7	NA	1800	3	29	99	8
AD06775	17	1.1	532	1	1.9	NA	1250	6	417	29	28
AD06776	5	0.6	409	2	2.0	NA	1050	5	58	37	0.4
AD06777	120	18.1	>2000	2	40	NA	>5000	22	305	241	59
AD06778	0.4	2.4	144	0.8	1.6	NA	2250	7	177	30	3
AD06779	80	0.3	129	0.1	6	NA	850	9	75	13	54
AD06780	42	0.8	210	0.1	1.9	NA	1000	8	44	35	18
AD06781	15	0.9	43	0.5	0.8	NA	1100	17	100	8	9
AD06782	4.2	0.8	87	1	6	NA	1750	61	1140	12	110
AD06783	165	4.4	638	0.6	6	NA	1500	1	27	546	57
AD06784	3.8	0.0	50	0.5	2.1	NA	750	7	222	11	38
AD06785	7	0.3	64	0.0	0.1	NA	550	6	123	9	20
AD06786	240	9.6	1020	2	11	NA	2150	5	56	1411	233
AD06787	188	17.8	>2000	2	124	NA	>5000	11	1907	157	154
AD06788	8	2.0	109	0.8	2.0	NA	1500	24	2140	11	57
AD06789	8	2.2	167	3	6	NA	1450	20	2949	24	83
AD06790	17	2.7	380	0.5	11	NA	4500	14	1949	143	199
AD06791	42	8.0	341	2	1.5	NA	2800	38	2456	321	98
AD06792	1375	112.8	>2000	2	53	NA	>5000	141	5129	7870	18815
AD06793	1188	25.9	>2000	2	24	NA	5000	38	6052	4750	6247
AD06794	101	8.3	1187	2	6	NA	2450	20	7614	243	463
AD06795	98	1.8	1646	0.4	9	NA	>5000	58	5353	39	121
AD06796	81	5.6	575	1	0.2	NA	2550	8	5111	628	484
AD06797	634	10.9	>2000	0.6	11	NA	3300	14	9836	1481	1532
AD06798	57	5.4	190	0.6	4.1	NA	400	6	1622	840	584
AD06799	38	2.8	335	1	1.7	NA	190	5	4154	253	239
AD06800	23	1.3	506	0.4	3.9	NA	130	4	6071	15	779
	Au	Ag	As	Mo	Sb	Tl	Hg	Cu	Mn	Pb	Zn
AD06801	127	2.3	166	0.5	4.2	NA	145	4	4304	202	908
AD06802	115	3.5	91	0.7	2.0	NA	500	10	15091	379	1112
AD06803	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

ondar-Clegg, Inc.
25 Spice Island Dr.
Building 1, Unit A
parks, Nevada 89431
02 (359-9330)

BONDAR-CLEGG

A DIVISION OF INCHCAPE INSPECTION & TESTING SERVICES

Geochemical Lab Report

REPORT: R89-118467.1 est PPM Au

DATE PRINTED: 28-DEC-89
PROJECT: 112 PAGE 1

SAMPLE NUMBER	ELEMENT UNITS	Au PPM	Au/Wt. G	AVE
R2 174981	.285	0.351	30.16	.318
R2 174982	.892	0.235	30.05	.609
R2 174983	.867	0.642	30.12	.755
R2 174984	.908	0.406	30.06	.657
R2 174985	.240	0.347	30.18	.294
R2 174986	.101	0.092	30.14	.097
R2 174987	<.048	0.048	30.13	.048
R2 174988	<.046	0.034	30.01	.041
R2 174989	<.048	0.056	30.20	.056
R2 174990	.05	0.119	30.07	.085
R2 174991	<.048	0.043	30.14	.043
R2 174992	.700	1.031	30.07	.866
R2 174993	.227	0.082	30.17	.155
R2 174994	.096	0.115	30.00	.106
R2 174995	.105	0.094	30.16	.100
R2 174996	<.048	0.102	30.19	.100
R2 175116	.056	0.058	30.22	.057
75117	.627	1.370	30.06	.799
R2 175118	.086	0.079	30.26	.083
R2 175119	<.05	0.155	30.13	103
R2 175120	.226	0.357	30.14	.292
R2 175121	.309	0.146	30.12	.223
R2 175122	.104	0.122	30.00	.113
R2 175123	.055	0.056	30.02	.056
R2 175124	.082	0.530	30.11	.306
R2 175125	.193	0.556	30.02	.375
R2 175126	.143	0.120	30.04	.132

GEOCHEMICAL ANALYSIS REPORT

GEOCHEMICAL SERVICES INC.

JOB #: ANR-DS6350

SAMPLE ID	#	Ag ppm	As ppm	Au ppm	Cu ppm	Hg ppm	Mo ppm	Pb ppm	Sb ppm	Tl ppm	Zn ppm	Bi ppm	Cd ppm	Ga ppm	Se ppm	Te ppm
T74981	1	8.95	802.	.285	9.50	2.59	1.74	1510	11.1	<.495	1077	<.243	3.23	<.495	<.99	<.495
T74982	2	9.90	1319	.892	9.72	1.98	1.25	1609	11.2	.567	1413	<.239	5.14	<.479	<.958	<.479
T74983	3	17.8	439.	.867	12.7	2.46	1.95	3081	21.4	<.477	2205	<.239	8.27	<.477	<.954	<.477
T74984	4	19.2	375.	.908	19.7	2.42	1.80	3808	21.9	<.49	2961	<.245	12.1	<.49	<.98	<.49
T74985	5	8.76	1174	.240	8.70	4.27	2.63	1760	10.8	<.475	1618	<.238	6.94	<.475	<.951	<.475
T74986	6	5.01	2303	.101	4.16	.945	1.96	801.	9.52	.717	1020	<.236	3.66	.486	<.945	<.473
T74987	7	.542	476.	<.048	7.19	1.55	1.20	82.8	3.30	<.476	107.	<.238	1.49	.646	<.952	<.476
T74988	8	.776	332.	<.046	6.34	1.56	1.24	54.5	2.54	.542	101.	<.231	.264	.754	<.925	<.461
T74989	9	1.01	350.	<.040	6.85	1.34	1.93	65.8	3.10	<.483	141.	<.241	.387	.547	<.965	<.483
T74990	10	6.06	172.	.05	40.4	2.31	.815	879.	9.05	<.459	1405	<.229	4.96	.740	<.917	<.459
T74991	11	2.34	180.	<.048	26.4	1.66	.737	233.	6.98	.526	321.	<.239	1.16	.594	<.954	<.477
T74992	12	5.47	434.	.700	55.0	3.39	1.95	9.94	124.	1.13	41.4	.242	<.096	<.482	< 962	<.482
T74993	13	5.05	340.	.227	10.1	2.09	1.06	793.	6.13	<.48	775.	<.24	2.80	<.48	<.96	<.48
T74994	14	5.98	432.	.096	5.95	1.40	2.59	916.	8.56	<.458	1300	<.229	6.55	.484	<.916	<.458
T74995	15	6.63	291.	.105	5.29	5.06	2.73	1111	10.3	.692	1899	<.24	4.02	.652	<.962	<.481
T74996	16	3.50	313.	<.043	7.15	2.64	1.65	518.	6.60	.925	375.	<.242	1.41	.681	<.969	<.484
T74116	17	4.54	191.	.056	7.83	1.76	2.45	769.	5.37	.693	876.	<.23	3.28	.562	<.919	<.46
T74117	18	27.6	397.	.627	17.8	3.62	2.11	1957	90.1	.842	1615	<.232	6.78	<.465	<.929	<.465
T75118	19	.051	310.	.026	37.3	.876	4.11	5.71	66.5	1.08	16.9	<.249	.140	<.497	<.994	<.497
T75119	20	1.38	975.	<.05	16.1	5.08	1.97	186.	4.76	.664	241.	.606	.634	.693	<.998	<.499
T75120	21	2.73	3470	.226	7.36	6.70	2.51	432.	10.5	.811	332.	1.84	1.07	<.491	<.982	<.491
T75121	22	3.46	945.	.389	9.73	3.40	2.01	405.	5.46	.756	553.	.337	1.60	.513	<.984	<.492
T75122	23	2.35	879.	.104	7.15	2.70	1.46	430.	5.72	.727	572.	<.229	1.75	.559	<.914	<.457
T75123	24	2.94	798.	.055	7.73	2.02	1.69	502.	5.70	<.486	900.	<.243	1.94	.767	<.973	<.486
T75124	25	5.91	443.	.082	18.5	1.20	1.91	1483	6.97	< 492	522.	<.246	1.79	<.492	<.984	<.492
T75125	26	8.27	1203	.193	7.55	.776	2.00	1995	9.35	.520	950.	<.233	4.06	<.466	<.933	<.466
T75126	27	11.5	601.	.143	3.97	.926	1.72	2527	15.3	.687	424.	<.245	1.59	<.489	<.978	<.489

Hl S ena

GSI GEOCHEMICAL SERVICES INC.

GEOCHEMICAL ANALYSIS REPORT

SOIL

TO: Mr. Bud Hillemeyer
Fischer-Watt Gold Co. Inc.
114 Tucker Ave, Suite 7
Kingman, AZ 86401 tel:602/753-1622

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Job Number: FIB-0R8050
Analysis Code: GXP15+
Digest: 15 gram
Total number of samples: 76

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This report has been reviewed and approved by:

Nancy G. Gonzalez for
Mary Leitch, Quality Assurance Manager

Date: 8-13-90

3805 Atherton Road • Rocklin, California 95677 • 916/624-6000 1/800/827-4GSI FAX: 916/624-8986
1498 Kleppe Lane • Sparks, Nevada 89431 • 702/359-6600 FAX: 702/359-6605

GSI
GEOCHEMICAL SERVICES INC.

GEOCHEMICAL ANALYSIS REPORT

JOB #: FIB-OR8050

SAMPLE ID	#	Ag ppm	As ppm	Au ppm	Cu ppm	Hg ppm	Mo ppm	Pb ppm	Sb ppm	Tl ppm	Zn ppm	Bi ppm	Cd ppm	Ga ppm	Se ppm	Te ppm
AS3 - 1 N	1	1.23	674.	.655	5.18	1.05	1.46	585.	5.01	<.493	27.9	<.246	<.099	3.32	<.986	<.493
AS3 - 2 N	2	1.90	344.	.585	8.08	.380	1.51	284.	2.57	<.484	33.5	<.242	<.097	3.90	<.969	<.484
AS3 - 3 N	3	3.48	160.	.776	5.00	.208	3.77	406.	1.46	<.485	61.0	<.243	.268	2.45	<.971	<.485
AS3 - 4 N	4	6.02	288.	.086	5.61	<.098	1.49	237.	2.68	<.489	84.6	<.245	.305	2.71	<.978	<.489
AS3 - 5 N	5	9.01	492.	.137	7.60	<.099	1.17	135.	3.39	<.496	71.6	<.248	.278	3.52	<.993	<.496
AS3 - 6 N	6	5.02	415.	.068	5.58	<.099	1.11	84.7	10.4	<.493	60.9	<.246	<.099	4.32	<.986	<.493
AS3 - 7 N	7	17.3	1165	.136	9.19	.191	1.28	113.	9.25	<.499	124.	<.25	.240	2.99	<.999	<.499
AS3 - 8 N	8	6.58	472.	<.049	8.05	<.098	1.04	49.6	8.63	<.492	79.0	<.246	.144	3.23	<.984	<.492
AS3 - 9 N	9	1.37	109.	<.05	9.92	.131	1.50	9.28	11.3	<.498	52.3	<.249	<.1	3.91	<.996	<.498
AS3 - 10 N	10	1.40	111.	<.049	5.56	.159	1.15	9.83	5.97	<.494	30.2	<.247	<.099	1.91	<.987	<.494
AS3 - 11 N	11	.538	60.9	<.049	3.89	.129	1.26	5.34	7.95	<.493	51.4	.253	<.099	2.00	<.987	<.493
AS3 - 12 N	12	.544	74.4	<.049	4.65	.281	2.13	5.35	24.9	.539	39.0	<.246	<.098	2.18	<.984	<.492
AS3 - 13 N	13	.574	73.1	<.048	5.86	.154	1.10	14.2	10.8	<.485	70.1	<.242	<.097	2.18	<.97	<.485
AS3 - 14 N	14	1.46	50.0	<.05	5.40	.141	.887	11.6	22.3	.919	53.9	.279	<.099	3.11	<.992	<.496
AS3 - 15 N	15	.311	13.3	<.049	6.94	.127	1.20	5.50	1.74	.676	53.5	.279	<.099	2.80	<.986	<.493
AS3 - 16 N	16	.253	4.46	<.049	4.26	.161	.680	4.76	1.25	.663	32.6	.265	<.098	2.79	<.984	<.492
AS3 - 1 W	17	1.79	376.	.053	7.34	.717	.939	206.	2.29	.686	22.2	<.245	<.098	2.32	<.98	<.49
AS3 - 2 W	18	2.02	636.	.161	6.21	1.68	1.38	40.3	3.55	1.12	22.3	.361	<.099	2.04	<.991	<.495
AS3 - 3 W	19	1.43	363.	.054	10.6	2.69	.682	120.	2.39	1.47	33.7	.325	.106	2.96	<.984	<.492
LS - 1	20	.249	14.8	<.049	9.60	.272	.933	9.84	1.68	.686	66.6	.375	.154	5.85	<.976	<.488
LS - 2	21	.205	6.24	<.049	4.35	.311	1.06	4.87	2.78	.526	47.9	.297	<.099	3.69	<.987	<.494
LS - 3	22	.470	99.5	<.05	5.43	.244	1.80	8.91	7.43	1.24	49.0	.552	<.099	3.22	<.993	<.497
LS - 4	23	.208	11.5	<.049	12.9	.178	.840	8.51	1.30	.694	83.5	.439	.190	5.40	<.984	<.492
LS - 5	24	2.77	149.	<.049	5.76	.184	1.15	7.59	11.9	.907	42.3	.499	<.099	2.07	<.988	<.494
LS - 7	25	2.03	187.	<.049	5.82	.175	.837	20.5	9.37	1.30	29.9	.339	<.098	2.09	<.983	<.491
L2 - 8	26	3.85	185.	<.05	6.69	.117	.899	107.	6.08	.836	27.4	.401	<.1	2.39	<.995	<.498
L2 - 9	27	.872	130.	<.049	4.07	<.099	.477	57.3	2.27	<.494	20.2	<.247	<.099	1.76	<.989	<.494
L2 - 10	28	2.36	177.	<.05	6.21	<.099	1.06	85.5	2.48	<.496	41.0	<.248	.123	3.90	<.991	<.496
L2 - 11	29	6.82	324.	<.049	7.32	<.098	1.48	504.	3.50	.556	58.1	.271	.166	3.36	<.975	<.488
L2 - 12	30	2.85	376.	<.049	4.05	.229	1.71	436.	3.45	.681	28.8	.293	<.098	2.99	<.981	<.491

3805 Atherton Road • Rocklin, California 95677 • 916/624-6000 1/800/827-4GSI FAX: 916/624-8986
1498 Kleppe Lane • Sparks, Nevada 89431 • 702/359-6600 FAX: 702/359-6605

GEOCHEMICAL SERVICES INC.

GEOCHEMICAL ANALYSIS REPORT

JOB #: FIB-OR8050

SAMPLE ID	#	Ag ppm	As ppm	Au ppm	Cu ppm	Hg ppm	Mo ppm	Pb ppm	Sb ppm	Tl ppm	Zn ppm	Bi ppm	Cd ppm	Ga ppm	Se ppm	Te ppm
L2 - 13	31	5.70	513.	.159	10.8	.399	1.81	645.	5.15	.637	51.7	.291	.210	3.99	<.973	<.487
L2 - 14	32	3.66	314.	.08	10.0	.295	1.15	367.	3.75	.866	141.	<.248	.591	3.75	<.992	<.496
L2 - 15	33	1.85	235.	.729	8.71	.574	.682	303.	2.32	.951	115.	.305	.620	2.89	<.994	<.497
L2 - 16	34	1.68	398.	.053	10.5	.926	.831	57.1	1.88	1.00	45.3	.301	<.099	4.34	<.993	<.496
L2 - 17	35	.960	392.	<.049	8.33	1.03	.708	48.5	2.94	.633	27.0	<.244	<.098	3.52	<.977	<.488
L3 - 1	36	.117	4.63	<.049	6.70	.289	.749	5.43	1.35	<.486	43.9	<.243	<.097	4.87	<.973	<.486
L3 - 2	37	.533	5.01	<.049	7.45	.534	1.00	7.43	1.71	.533	44.2	<.245	<.098	4.78	<.98	<.49
L3 - 3	38	.193	4.53	<.049	7.91	<.098	1.20	7.34	.315	<.491	54.7	<.246	<.098	5.27	<.983	<.491
L3 - 4	39	.171	16.1	<.049	6.21	<.098	.897	7.67	2.21	<.492	49.0	<.246	<.098	3.05	<.984	<.492
L3 - 5	40	.354	22.4	<.049	5.36	<.098	.762	5.52	1.54	.543	48.7	<.244	<.098	2.85	<.977	<.488
L3 - 6	41	.205	13.8	<.049	7.73	<.099	.857	7.13	.876	<.494	60.9	<.247	<.099	4.47	<.987	<.494
L3 - 7	42	.317	28.0	<.049	9.81	<.099	.757	6.60	1.62	<.494	63.8	.459	.106	3.16	<.989	<.494
L3 - 8	43	.256	35.7	<.049	9.14	<.097	.878	5.39	1.72	.614	43.2	.328	<.097	2.37	<.972	<.486
L3 - 9	44	1.06	32.0	<.049	7.56	.157	.730	10.7	1.01	.707	34.6	<.245	<.098	2.06	<.979	<.49
L3 - 10	45	2.19	294.	<.049	15.6	.252	2.93	20.7	6.84	<.486	71.6	.296	.137	2.87	<.973	<.486
L3 - 11	46	12.7	155.	<.049	16.2	.219	.990	95.8	14.7	.755	143.	<.243	.143	3.43	<.97	<.485
L3 - 12	47	5.38	201.	<.049	17.2	.543	1.00	22.2	3.85	.591	84.4	.251	.128	4.49	<.982	<.491
L3 - 13	48	1.55	243.	<.049	20.1	.420	1.72	24.2	6.40	<.494	80.7	<.247	<.099	5.07	<.988	<.494
L3 - 14	49	1.81	242.	<.05	29.2	.410	1.28	37.4	5.48	.560	76.8	<.248	.229	9.26	<.991	<.495
L3 - 15	50	7.23	546.	.077	25.7	1.53	1.58	141.	5.04	.836	551.	<.247	1.09	5.72	<.989	<.494
L3 - 16	51	2.01	372.	.096	38.6	.457	1.19	107.	5.62	.839	119.	.372	.246	8.56	<.992	<.496
L3 - 17	52	1.47	275.	<.05	36.1	.275	1.64	45.2	6.66	<.495	70.7	<.248	.158	10.0	1.11	<.495
L3 - 19	53	.396	27.9	<.049	41.4	.114	1.08	17.8	1.95	<.49	71.4	<.245	.139	11.5	<.979	<.49
L3 - 20	54	.286	25.4	<.049	31.5	.116	1.84	19.3	2.18	<.489	88.9	<.244	.245	10.9	<.978	<.489
L3 - 21	55	.390	15.1	.111	20.3	.258	1.15	13.7	2.24	<.488	50.6	<.244	<.098	7.69	<.977	<.488
L3 - 22	56	.481	11.8	<.05	19.0	.453	1.34	22.7	2.16	<.498	60.9	<.249	.168	6.54	<.997	<.498
L3 - 23	57	.687	12.8	<.049	20.7	.199	1.17	27.2	2.22	<.488	85.2	<.244	.177	6.86	<.975	<.488
L3 - 24	58	.333	10.9	<.049	11.5	.301	1.23	56.5	3.18	<.494	82.0	<.247	.100	4.46	<.988	<.494
L3 - 25	59	.397	16.7	<.05	39.3	.643	.496	21.9	1.86	<.495	76.6	<.248	.137	10.7	<.991	<.495
L3 - 26	60	.461	17.2	<.05	27.7	.176	.717	24.2	2.09	<.499	75.4	<.25	.100	9.30	<.999	<.499

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GEOCHEMICAL SERVICES INC.

GEOCHEMICAL ANALYSIS REPORT

JOB #: FIB-0S8050

SAMPLE ID	#	Ag ppm	As ppm	Au ppm	Cu ppm	Hg ppm	Mo ppm	Pb ppm	Sb ppm	Tl ppm	Zn ppm	Bi ppm	Cd ppm	Ga ppm	Se ppm	Te ppm
AS 90 1	1	6.70	200.	<.05	21.8	2.26	2.55	1414	13.2	<.498	2531	<.249	10.4	<.498	<.997	<.498
AS 90 2	2	.316	1652	<.049	9.57	2.25	28.8	37.5	14.5	<.494	44.2	<.247	<.099	1.40	<.989	<.494
AS 90 3	3	.343	1486	<.049	7.28	<.098	2.23	17.3	8.77	<.49	22.4	<.245	<.098	1.53	<.98	<.49
AS 90 4	4	.016	10.2	<.05	3.47	.229	.984	5.96	11.5	<.495	24.4	<.248	<.099	4.88	<.99	<.495
AS 90 5	5	.347	71.5	<.05	30.3	21.6	.926	6.52	7.85	<.498	35.4	<.249	<.1	5.03	<.995	<.498
AS 90 6	6	.310	39.0	<.049	3.94	.305	1.82	15.4	3.71	<.491	206.	<.245	<.098	.759	<.982	<.491
AS 90 7	7	.603	348.	<.049	32.9	.795	1.29	4.32	12.7	<.49	34.6	<.245	<.098	.837	<.98	<.49
AS 90 8	8	.673	255.	<.049	9.29	2.31	3.16	15.4	20.2	.622	28.9	<.246	<.098	.502	<.983	<.491
AS 90 9	9	.096	54.9	<.049	14.8	.905	7.46	23.5	9.17	<.49	69.2	<.245	<.098	.717	<.98	<.49
AS 90 10	10	2.66	666.	.05	7.23	2.88	3.40	396.	9.36	.527	641.	<.247	1.48	.645	<.988	<.494
AS 90 11	11	1.07	654.	<.049	12.4	2.73	2.85	158.	8.13	<.492	399.	<.246	.678	.712	<.984	<.492
AS 90 12	12	6.34	478.	.072	13.8	1.99	2.12	948.	61.1	<.491	1443	<.245	4.75	<.491	<.981	<.491
AS 90 13	13	2.49	256.	<.05	5.38	1.63	2.15	336.	39.7	<.497	300.	<.249	.745	.562	<.995	<.497
AS 90 14	14	6.34	611.	.076	14.4	1.45	1.79	1024	10.6	<.493	1324	<.247	4.57	<.493	<.986	<.493
AS 90 15	15	7.57	715.	.137	24.5	2.76	2.69	1051	21.3	<.497	1570	<.249	6.14	<.497	<.994	<.497
AS 90 16	16	8.12	524.	.104	18.6	3.90	4.29	1558	17.7	<.492	1369	<.246	5.44	<.492	<.984	<.492
AS 90 17	17	5.25	440.	.06	20.0	4.28	3.03	849.	21.9	<.489	970.	<.244	3.54	<.489	<.977	<.489
AS 90 18	18	4.43	292.	.08	17.7	2.21	4.81	898.	17.8	<.498	1087	<.249	4.15	<.498	<.996	<.498
AS 90 19	19	9.57	998.	.180	6.11	2.38	2.17	1764	16.1	<.494	1678	<.247	6.45	<.494	<.987	<.494
AS 90 20	20	.274	336.	<.05	3.48	.744	3.45	30.1	10.9	<.5	78.4	<.25	.230	<.5	<1.	<.5
AS 90 21	21	.036	8.60	<.049	4.34	<.097	1.87	9.61	1.56	<.486	52.3	<.243	.100	1.82	<.973	<.486
AS 90 22	22	.169	222.	<.049	2.87	.449	3.14	6.89	31.7	<.488	23.8	<.244	<.098	.501	<.977	<.488
AS 90 23	23	.018	7.71	<.049	2.69	<.098	1.68	4.83	1.81	<.491	59.0	<.246	<.098	5.74	<.982	<.491
AS 90 24	24	.02	3.90	<.05	3.58	<.099	2.82	3.76	3.33	<.497	63.6	<.249	<.099	1.18	<.994	<.497
AS 90 25	25	.101	101.	<.049	2.75	<.097	2.12	10.8	4.05	<.487	44.2	<.244	<.097	1.18	<.974	<.487
AS 90 26	26	1.46	531.	<.049	7.03	<.099	3.03	11.2	28.2	<.495	29.5	<.247	<.099	.786	<.989	<.495
AS 90 27	27	1.45	331.	<.049	8.24	<.098	2.85	34.8	10.7	<.488	187.	<.244	.187	.857	<.977	<.488
AS 90 28	28	4.77	911.	<.049	4.28	6.11	5.00	42.6	27.7	1.50	26.9	<.244	<.098	.536	<.977	<.489
AS 90 29	29	.979	1328	<.049	14.2	8.98	3.18	16.3	14.0	.859	63.7	<.245	<.098	.709	<.98	<.49
AS 90 30	30	.914	238.	<.049	8.74	4.92	4.11	11.4	5.73	<.485	54.7	<.243	<.097	<.485	<.97	<.485

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GEOCHEMICAL SERVICES INC.

GEOCHEMICAL ANALYSIS REPORT

JOB #: FIB-0S8050

SAMPLE ID	#	Ag ppm	As ppm	Au ppm	Cu ppm	Hg ppm	Mo ppm	Pb ppm	Sb ppm	Tl ppm	Zn ppm	Bi ppm	Cd ppm	Ga ppm	Se ppm	Te ppm
AS 90 31	31	.379	138.	<.049	4.70	.278	1.59	6.92	4.25	<.486	74.9	<.243	<.097	<.486	<.973	<.486
AS 90 32	32	.334	130.	<.05	5.05	.675	1.69	7.99	6.45	<.498	77.4	<.249	<.1	.535	<.996	<.498
AS 90 33	33	<.015	13.0	<.049	5.79	1.59	1.00	5.85	16.8	<.486	44.2	<.243	<.097	2.41	<.973	<.486
AS 90 34	34	.171	48.6	<.05	5.32	<.099	2.92	11.7	1.84	<.495	23.4	<.248	.112	.687	<.99	<.495
AS 90 35	35	.363	99.0	<.049	11.8	.219	1.72	59.8	4.81	<.489	295.	<.244	1.25	2.42	<.978	<.489
AS 90 36	36	20.7	586.	.646	13.0	1.83	2.90	78.4	26.4	<.497	317.	<.248	1.00	1.20	<.993	<.497
AS 90 37	37	3.03	1443	<.049	11.4	.711	2.16	70.6	18.4	<.491	120.	<.246	.503	.842	<.983	<.491

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GEOCHEMICAL SERVICES INC.

GEOCHEMICAL ANALYSIS REPORT

MR. BUD MILLEMETER FISCHER-WATT GOLD JOB #FIB-0R8050

UNIVARIATE STATISTICS N= 76

	VARIABLE	MEAN	STD DEV	VAR	MINIMUM	MAXIMUM
1	Ag	3.222592	4.219841	.178071D+02	.117000	19.600000
2	As	249.657500	271.509307	.7371730+05	4.460000	1165.000000
3	Au	.105171	.215358	.4637890-01	.000000	1.190000
4	Cu	15.778553	17.578769	.3090130+03	3.890000	100.000000
5	Hg	.398592	.511751	.2618890+00	.000000	2.690000
6	Mo	1.278211	.674578	.4550550+00	.121000	3.770000
7	Pb	134.511974	197.425576	.3897690+05	4.760000	916.000000
8	Sb	5.421316	5.166817	.2669600+02	.315000	24.900000
9	Tl	.406184	.383200	.1468420+00	.000000	1.470000
10	Zn	104.746053	125.765810	.1581700+05	20.200001	740.000000
11	Bi	.174237	.137009	.1877160-01	.000000	.552000
12	Cd	.310829	.500993	.2509940+00	.032000	2.460000
13	Ga	4.751579	3.256333	.1060370+02	1.760000	19.700001
14	Se	.251974	.300842	.9050570-01	.000000	1.220000
15	Te	.237303	.110103	.1212270-01	.000000	.454000

CORRELATION MATRIX

	Ag	As	Au	Cu	Hg	Mo	Pb	Sb	Tl	Zn	Bi	Cd	Ga	Se	Te
Ag	1.0000														
As	.7627	1.0000													
Au	.4477	.4818	1.0000												
Cu	-.0909	-.1356	-.1016	1.0000											
Hg	.2296	.4503	.3561	-.0535	1.0000										
Mo	.3455	.2974	.2239	-.1898	.0124	1.0000									
Pb	.5832	.6324	.7393	-.1089	.4100	.2877	1.0000								
Sb	.4566	.3287	.0410	-.1643	-.0661	.4134	.0879	1.0000							
Tl	-.1132	.0142	-.0833	-.2398	.3814	-.1747	-.0138	.0230	1.0000						
Zn	.6601	.5075	.4683	.1364	.4668	.2334	.5551	.2090	-.0972	1.0000					
Bi	-.1228	-.1096	-.0102	-.1002	.1398	-.0964	-.0437	-.0455	.7176	-.0860	1.0000				
Cd	.6567	.5442	.5504	.0888	.5101	.2620	.7004	.1864	-.0774	.9135	-.0921	1.0000			
Ga	-.1261	-.1525	-.1241	.7524	-.0561	-.1489	-.1369	-.1884	-.2990	.1120	-.0995	.0621	1.0000		
Se	.4678	.4053	.3765	.1390	.1123	.4057	.4986	.2581	-.4084	.5399	-.2552	.5567	.2341	1.0000	
Te	.0688	.0560	.0616	-.0211	.0092	-.1178	.2058	.1371	.0471	.0409	.0729	.0543	-.0515	.0269	1.0000

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GEOCHEMICAL SERVICES INC.

GEOCHEMICAL ANALYSIS REPORT

MR. BUD MILLEMEYER FISCHER-WATT GOLD JOB #FIB-0S8050 + OTHER

UNIVARIATE STATISTICS N= 167

VARIABLE	MEAN	STD DEV	VAR	MINIMUM	MAXIMUM
1 Ag	6.502814	11.577336	.1340350+03	.000000	112.800003
2 As	777.993665	794.311485	.6309310+06	.432000	4344.000000
3 Au	.173994	.625489	.3912360+00	.000000	7.527000
4 Hg	1.603301	2.317066	.5368800+01	.000000	21.600000
5 Pb	513.061078	980.259591	.9609090+06	3.000000	7870.000000
6 Sb	16.532575	30.284169	.9171310+03	.100000	203.000000
7 Zn	495.280240	1559.562338	.2432230+07	.400000	18315.000000

CORRELATION MATRIX

	Ag	As	Au	Hg	Pb	Sb	Zn
Ag	1.0000						
As	.4261	1.0000					
Au	.3660	.2831	1.0000				
Hg	.1808	.1690	.1799	1.0000			
Pb	.7437	.2823	.4455	.1468	1.0000		
Sb	.4533	.4270	.5766	.1945	.3285	1.0000	
Zn	.7630	.1612	.2060	.1099	.7821	.1687	1.0000

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GEOCHEMICAL SERVICES INC.

GEOCHEMICAL ANALYSIS REPORT

JOB #: FIB-OR8050

SAMPLE ID	#	Ag ppm	As ppm	Au ppm	Cu ppm	Hg ppm	Mo ppm	Pb ppm	Sb ppm	Tl ppm	Zn ppm	Bi ppm	Cd ppm	Ga ppm	Se ppm	Te ppm
L3 - 27	61	.121	7.57	<.049	6.33	<.098	.309	6.52	2.42	<.488	41.3	<.244	<.098	2.12	<.977	<.488
L3 - 28	62	.237	10.5	<.049	100.	<.098	.558	15.5	2.25	<.489	84.3	<.244	.179	3.16	<.977	<.489
L3 - 29	63	.887	62.6	<.049	25.2	<.097	2.41	39.2	2.85	<.487	41.5	<.244	.160	5.02	<.974	<.487
L3 - 30	64	.253	9.23	<.049	84.9	<.097	.201	14.6	.879	<.486	114.	<.243	.302	19.7	<.972	<.486
L3 - 31	65	.218	9.90	<.05	83.4	<.099	.121	12.0	1.04	<.496	101.	<.248	.155	17.9	<.992	<.496
L4 - 1	66	3.19	413.	.061	18.3	.835	1.45	361.	2.67	1.19	165.	<.244	.794	5.57	<.975	<.487
L4 - 2	67	5.17	600.	.081	22.7	2.04	1.60	384.	5.02	.603	251.	<.246	1.78	7.01	<.983	<.491
L4 - 3	68	7.62	452.	.576	15.4	.984	1.33	782.	7.46	<.499	431.	<.25	2.03	3.25	<.999	<.499
L4 - 4	69	5.97	589.	.092	8.21	.981	.877	330.	4.90	<.485	217.	<.242	.942	1.94	<.97	<.485
L4 - 5	70	19.6	1087	1.19	18.6	1.25	1.26	916.	10.3	<.49	454.	.344	2.08	3.95	1.22	<.49
L4 - 6	71	14.8	378.	.549	17.7	1.73	2.13	520.	6.11	<.493	740.	<.246	2.46	5.48	<.986	<.493
L4 - 7	72	6.97	1017	.406	12.6	.782	1.59	290.	9.99	<.491	373.	<.245	.792	5.66	<.982	<.491
L4 - 8	73	9.96	876.	.082	18.7	.208	2.10	354.	11.9	<.494	353.	<.247	1.47	4.74	1.06	<.494
L4 - 9	74	12.6	665.	.097	13.3	<.098	2.29	193.	20.1	<.491	184.	<.246	.724	6.24	<.983	<.491
L4 - 10	75	6.98	349.	<.049	14.0	<.098	3.71	115.	13.8	<.492	117.	<.246	.583	4.33	<.984	<.492
L4 - 11	76	10.6	427.	<.049	16.4	<.099	2.86	133.	19.4	<.495	184.	<.247	.499	4.97	<.989	<.495

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Ax : Arena

GEOCHEMICAL SERVICES INC.

GEOCHEMICAL ANALYSIS REPORT

TO: Mr. Bud Hillemeyer
Fischer-Watt Gold Co. Inc.
114 Tucker Ave, Suite 7
Kingman, AZ 86401 tel:602/753-1622

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Job Number: FIB-0S8050
Analysis Code: GXP15+
Digest: 15 gram
Total number of samples: 37

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This report has been reviewed and approved by:

Date: 8/14/90

Mary Leitch, Quality Assurance Manager

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