

(COPY)

Los Angeles, California, July 18, 1933.

Dear Col. Johnson:-

Pursuant to contract I submit the following laboratory report, which I certify as correct.

(Signed) Paul Smith.

To

Mr. PAUL SMITH:

As per your request I have compiled from my notebook, data which will indicate the extractable values in samples known as Oregon Red Flats. These are chemical assays and indicate only what can be taken out by your process and not extractable by orthodox methods.

GOLD:

1. Aqua Regia 1 A. T. 1 mg. button, or 1 oz per ton
2. Chlorination 1 A.T. 1 mg. " " 1 " " "
3. Bromine 1 A.T. 1 mg " " 1 " " "
4. Chlorine fire assay 1/10 A.T. 3/4 mg button over, 20% gold or platinum or 1.5 oz per ton.

PLATINUM AND ALLIED METALS.

1. Mort flux platinum sponge 1/3 A.T. 0.43 mg. button, or 1.3 oz per ton.
2. Chlorination tails .2 A.T. platinum sponge .26 mg. button 1.3 oz. per ton
3. Inquarted silver button parted 1 A.T. yellow liquid indicated over .01 mg. of palladium. Trace of Osmium in residue.

SILVER:

1. Sodium Thyo Sulphate 20 gr. 10 mg. button, or 15 oz. pr.ton.

NICKEL:

1. 1.3% NICKEL, acid soluble, both by chemical and electrical precipitations.
2. Insoluble NICKEL has not been determined but indications are another 1% in residue.

At the present market quotations, it is conservative to say, this ore contains twenty dollars in gold, twenty dollars in Platinum and allied metals, twenty dollars in Nickel and six dollars in Silver.

The Mercury has not been satisfactorily determined, but indications are at least four dollars in Mercury.

(SIGNED) Robert Boyer, Chemist,
Metals Reduction Company,
9315 Pico Blvd., Los Angeles, Calif.

September 27, 1932

Mr. Arnold H. Goss,
2455 Penobscot Building,
Detroit, Michigan.

Dear Sir:

As per your instructions I visited the Red Flats Gold Mining Property located in the South Mining District, Curry County, Oregon, during the week of June 5, 1930, at which time a general examination of the property was made.

A second examination was made upon this property during the week of September 3rd, 1932.

This property is unique in that measurable, positive ores are in sight, readily estimated by the methods we have employed to make this determination, which consisted of "fishtail" drilling, shallow shafts and drifts, from which samples for assays were obtained. The results of the tests are embodied in this report.

Our report follows.

Respectfully,

William F. Hayden

WPH:FA

Eureka, California
July 22, 1930

Mr. W. F. Hayden, E. M.
Gold Beach, Oregon

The sample of Ore marked Red Flats contained the following:

Incoluable Residue	21.34%
Iron Oxide	36.45%
Alumina	9.40%
Manganese Dioxide	11.72%
Lime	1.75%
Magnesia	0.50%
Loss on Ignition	14.40%

E. Derwent
An & Met Chem.

Our Metallurgist informs us that in his opinion the silisa content in this ore under regular treatment will probably be greatly reduced.

Eureka, California
August 18, 1930

incl gold price

W. F. Hayden, E. M.
Gold Beach, Oregon

Red Flats.

The samples of Ore Marked 1 to 24 and 25 to 50 were Leached with a solution of Cyanide having a percentage of 0.20 for seven days and the Gold recovered.

Sample 1-24

Heads.	Gold 0.085	\$1.70 per ton of ore.
Cyanide Leach.	Gold 0.0244 Grams	\$1.60 per ton of ore.
Tailings.	Gold Trace	

Twenty Pounds of Ore treated indicating a Gold recovery of ninety-five percent. (95.00%)

Sample 25.-50.

Heads.	Gold 0.11 ozs.	\$2.20 per ton of ore.
Cyanide Leach .	Gold 0.04 Grams	\$2.10 per ton of ore.
Tailings.	Gold 0.003 ozs.	\$0.06 per ton of ore.

Twenty Pounds of Ore treated indicating a Gold recovery of ninety-five point four percent. (95.40%)

E. Derwent
Chem & Met Eng.



United States Department of the Interior

BUREAU OF MINES

P. O. BOX 70
ALBANY, OREGON 97321

December 2, 1983

Mr. Dennis Winn
President
The Red Flats Nickel Corp.
560 Shore Pines Ave.
Coos Bay, OR 97420

Dear Mr. Winn:

In response to your request during your recent visit here, I will briefly describe the results of processing your laterite material with the Bureau devised technology. The material tested was the approximately 4-ton sample removed from your property by the Bureau's Western Field Operations Center personnel. The sample processed contained 1.14 wt pct Ni, 0.06 wt pct Co, and 1.75 wt pct Cr. With preliminary bench-scale tests, 97 wt pct Ni and 71 wt pct Co were extracted. In tests to optimize the roast-leach conditions in the continuous processing circuit, 91 wt pct Ni and 73 wt pct Co were extracted with a feed rate of 11 lb/hr to a single reduction roaster. Two around-the-clock runs were then made with a total feed rate of 22 lb/hr (11 lb/hr to each of two reduction units). A total of 3470 lbs of laterite was processed in the two runs with maximum extractions of 88 wt pct Ni and 58 wt pct Co.

The results of the continuous circuit processing of the laterite will be described in a Bureau of Mines Bulletin scheduled for publication in late 1984. Meanwhile, I have enclosed several reports describing each unit operation of the Bureau processing approach.

Chromite was recovered from the residue generated in the continuous processing circuit by a procedure described in RI 8676 which I have enclosed. In this procedure, about 53 wt pct of the chromium was recovered in a combined concentrate that contained about 23 pct chromium. Higher chromium grades in the concentrate can be obtained with a sacrifice in recovery. Marketable chromium products have been obtained in Bureau research from similar chromite concentrates by smelting (to produce ferrochromium) or chemical processing (to generate sodium chromate). With either of these approaches, about 85 wt pct of chromium was recovered. The economics of the chromite concentration procedure and the production of ferrochromium from the resulting concentrates is the subject of a Bureau RI scheduled for publication in 1984. The chemical processing approach is still being refined in research and will be reported later.

As you know, the results of a pilot-scale (5-tpd) evaluation of our laterite processing approach are available in a contract report. This report "New Procedures For Recovering Nickel and Cobalt From Western Laterites -Economic Feasibility," NTIS report number PB 82-245945, can be obtained from the National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, VA 22161.

Sincerely,



R. E. Siemens
Group Supervisor
Albany Research Center

Enclosure



Sunshine Mining Company

P. O. BOX 1080 PHONE: Area Code 208 783-1211

Kellogg, Idaho
83837

February 2, 1984

Mr. Dennis Winn
560 Shore Pines Avenue
Coos Bay, Oregon 97420

Dear Mr. Winn:

It has taken some time to get an answer as to Sunshine's position on your Red Flat Ni-Co deposit, for this delay, I am sorry. It took considerable evaluation on our part because the property does have good Ni-Co credits and is very intriguing to us.

Sunshine has decided that at this time the property is not for us, for the following reasons:

- The best part of the property is section 30, and it is not available.
- Glut of worldwide reserves overhanging market.
- The available reserve, even if proved, may be too small to justify capital cost of a smelter.
- Long-term, overhanging possibility of mining deep-sea nodules.
- Other companies like Hanna are way ahead of us, and have the competitive edge.

I enjoyed working on this project, and meeting you and Ted. Thank you for considering working with Sunshine Mining Company.

Sincerely yours,

George W. Sintay
Senior Exploration Geologist

To: G. W. Sintay

January 24, 1984

From: G. L. Ojala

Re: RED FLAT NICKEL CORP., CURRY COUNTY, OREGON

George:

This one is intriguing, and I can see that someone might make a lot of money there sometime in the future.

But I don't think it is for Sunshine at this time. Just too many "negatives" that, taken together, add up to a decision to pass this one up:

- Probably somewhat fewer reserves than you show, due primarily to:
 - some local areas within the overall "laterite area" have just sub-commercial material -- thus the reserve areas are probably not continuous (verified to some extent by the U.S.B.M. drilling in the "prime" area -- just 11 of the 22 holes actually hit any "ore."
 - would probably need to subtract (40%?) for the unaltered peridotite boulder content of the laterite?
 - some areas have from five to 70 feet of sub-commercial laterite overburden that would have to be stripped -- and that kind of stripping ratio might preclude including substantial portions of this material with the "ore" reserve?
 - thickness of material of commercial grade in the "fringe areas" that predominate in the "available" property might well be something less than eight feet.
- Coastal (Hanna) already has the "guts" of the deposit, and they are way ahead of us in this entire business.
- The glut of world-wide reserves overhanging the market (numerous, much larger deposits of better grade -- potential for market saturation).
- The "available" holdings have a reserve, even if proved up, of just small to modest size -- probably wouldn't amortize the capital cost of a smelter?
- Energy-intensive smelting process (even if the U.S.B.M. process is used), in a time of very high energy costs (and forecast to go much higher).



P.O. Box 1080

KELLOGG, IDAHO 83887

- Long-term, overhanging "threat" of deep-sea nodules.
- Real chance of static, or even declining prices for products (especially the cobalt).
- Competitive disadvantage with respect to hardrock/sulfide deposits, such as Blackbird, Idaho.
- Smelter-environmental aspects, and especially in view of EVH previously expressed position in that regard.

All in all, and in spite of a few positive factors, I just can't see us going after this one -- please write Mr. Winn to notify him of that decision.

(Too bad we didn't find more gold and mercury in the area, as initially hoped.)

MEMORANDUM



P. O. Box 1080 KELLOGG, IDAHO 83837

December 13, 1983

To: Gary L. Ojala
From: George W. Sintay
Re: Red Flat Nickel Corporation Claims, Curry County, Oregon

Summary

The Red Flat Nickel Corporation controls 3600 acres of unpatented association placer claims that have 725 acres of nickeliferous iron laterite deposits. These deposits contain auger drill indicated reserves of 7,742,400 tons and geologic inferred potential reserves of 7,258,000 tons of nickel-cobalt ore valued \$52.20 to \$76.40 per ton. The reserves are all surface to near surface material consisting of laterites and saprolites, which contain combined values in nickel and cobalt at 0.75 percent to 1.1 percent.

Mining methods would be shallow open pit type, with hardly any overburden to remove. The laterite and saprolite are soft and no blasting would be needed. All waste and ore removal could be accomplished by mechanical, high production, surface equipment.

Ore beneficiation is accomplished by direct smelting, no system of upgrading by milling has been successful. The U.S. Bureau of Mines in Albany, Oregon has developed recently, new technology that will beneficiate Red Flat ores and recover 90 percent of the nickel and 70 percent of the cobalt at lower power consumption than used in other methods.

There have been no gold or mercury reserves discovered on the property.

Scope of the Report

- The original investigation of the property was to determine its viability as a gold property.
- Three days of field work were performed in general reconnaissance and collecting samples.
- After visiting with the President of Red Flat Nickel Corporation, Dennis Winn, and then doing some research into nickel-cobalt deposits it was determined that an evaluation of this resource of minerals would be appropriate.

- The author is responsible for the report.
- Maps and tables will be used as illustrative and supporting data.

Location and Access

The Red Flat Nickel Corporation contiguous unpatented association placer claims are located in sections 7, 18, 19, 20, 29, 31, 32 T. 37 S.; R. 13 W. and sections 12, 13, 24, T.37 S.; R. 14 W.; W. M., 6 1/2 miles due east of the Pacific Ocean in Curry County, Oregon. The claims are located mainly along a ridge between the Pistol River to the south and east, and Hunter Creek to the north. Two of the claims are bisected by Hunter Creek and two claims are located just north of these claims.

Access to the area is via the Hunter Creek Road, some 14 miles from Gold Beach, Oregon. The first six miles of road, 1 1/2 miles south from Gold Beach to the Hunter Creek turnoff and 4 1/2 miles east up Hunter Creek are paved. The last 8 miles of road on Hunter Creek is a good gravel base road that crosses the property on the north. A new rock base gravel road with several spurs has recently been constructed that bisects much of the property on top of the ridge.

The elevation change on the claims is from a low of 900 feet along Hunter Creek in section 13, T. 37 S., R14 W. to a high of 2816 feet in section 19, T. 27 N., R. 13 W. Steeply incised valleys have been cut down the sides of long north-south trending ridges making a moderately rugged terrain in many areas. Mud and rock slides in past geological time have allowed flats to be formed along some of the steep canyon walls. The tops of the ridges are rounded and topographical features are less extreme.

Most of the claims have scrub conifer timber with thick scrub brush of manzanita, oak, etc. Hardly any of the conifer timber is commercial because growth has been inhibited by the poor nutrients furnished by laterite soils. The brush is so thick in places that it is impossible to walk through.

The climatic conditions are typical coastal with the Pacific Ocean only a few miles to the west, the summers are hot and dry. The rains begin in October and continue through June with 60 - 80 inch average per year.

Property

The Red Flat Nickel Corporation holds 3600 acres of contiguous association unpatented placer mining claims in the Siskiyou National Forest, and Bureau of Land Management administrated land. The west boundary of these claims is mostly private property owned by timber companies. One exception to this is the 640 acre claim block sold by Red Flat Nickel Corporation to

Hanna Mining Company about 1967, which consist of the entire section 30, T. 37 N., R. 13 W. In 1980 the west half of the northwest corner of section 31, T. 37 S., R. 13 W. was staked by the owner of Gold Dome Natural Resources Incorporated, 80 acres in all.

There are no facilities available in the area, electricity is seven miles away, supplies 14 miles away at Gold Beach. Water is plentiful in Hunter Creek or the North fork of the Pistol River. There are no structures or equipment available for use on or near the property.

There are 23 unpatented placer association claims, two with 120 acres and twenty-one with 160 acres. Following is a list of these claims by name, acres and location.

<u>Claim Name</u>	<u>Acres</u>	<u>Location</u>
North Side #1	160	N 1/2, N 1/2 sec. 13, T37S, R14W
North Side #2	160	SE 1/4 sec. 12, T37S, R14W
North Side #3	160	SW 1/4 sec. 7, T37S, R13W
Big Springs	120	W 1/2, SE 1/4 & NE 1/4, SE 1/4 sec. 13, T37S, R14W
Red Gold #3	160	NW 1/4, sec. 19, T37S, R13W
Red Gold #4	160	NW 1/4, sec. 19, T37S, R13W
Red Gold #5	160	SW 1/4, sec. 18, T37S, R13W
Red Gold #8	160	SE 1/4, SE 1/4, sec. 13, and E 1/2 NE 1/4 and NE 1/4, SE 1/4, sec. 24, T37S, R14W
Red Gold #9	160	SE 1/4, sec. 19, T37S, R13W
Red Gold #10	160	NW 1/4 sec. 18, T37S, R13W
Red Ridge	160	NE 1/4 sec. 19, T37S. R13W
Brushy Ridge	160	NW 1/4 sec. 20, T37S, R13W
Red "E"	160	SW 1/4 sec. 20, T37S, R13W
North Fork #1	160	NE 1/4, sec. 31, T37S, R13W
North Fork #2	160	SE 1/4, sec. 31, T37S, R13W
North Fork #3	160	NW 1/4 sec. 32, T37S, R13W
Big Basin Assc. #1	160	SE 1/4, SE 1/4 and NE 1/4, SW 1/4

Big Basin Assc. #2 120	sec. 24, T37S, R14W W 1/2, SW 1/4, and NE 1/4, SW 1/4 sec. 24, T37S, R14W
Big Basin Assc. #3 160	W 1/2, SW 1/4, and SE 1/4, NW 1/4 and and SE 1/4, NE 1/4, sec. 24, T37S, R14W
Four claims, 640 names unavailable until further research, but claimed	sec. 29, T37S, R13W

3600

History and Production

Since 1930 to the present date this property has been the basis for exploration for gold, mercury, nickel, cobalt and chromite.

The claims were first staked and prospected for placer gold in the 1930's by Carl Snedberg of Gold Beach, Oregon. Values both in gold and native mercury were found, several small beneficiating plants were built to process the gold and mercury. None were successful and no reported production was ever recorded.

In 1932 William F. Hayden, Engineer from Salt Lake City wrote a positive report on the gold potential of the property. He made two visits to the property, one in 1930 and one in 1932.

J. E. Morrison visited the property in 1937, sampled the laterite and serpentine rock from a three foot shallow hand dug pit, that Carl Snedberg indicated would be a good place to sample. Loose rocks from the pit assayed 0.034 ounce per ton gold, laterite soil assayed no gold, and serpentine rock assayed no gold.

In 1943 John M. Nicol, Consulting Engineer examined the property and wrote a report emphasizing the values in mercury, probably because of the need for mercury during the Second World War. Mr. Nicol was in favor of more test work being carried out and was positive about the property.

After the war, gold was no longer the object of exploration on Red Flats, but the ultra basic, red laterites became the object of investigation for their nickel and cobalt content. Today, the current reason claim owner hold these claims is for values in nickel and cobalt.

In 1945 the U.S. Bureau of Mines personnel explored the area by hand-auger sampling. As follow-up to this they churn-drilled 22 holes in 1952 and 1953. They also bulk tested for beneficiation.

In 1946 and 1947, Libbey and others did reconnaissance mapping and hand-auger sampling.

About 1967, Hanna Mining Company bought 640 acres of association unpatented placer claims from Red Flat Nickel Corporation and prospected them by road building, trenching, drilling, sampling and mapping.

During the same time period, the last twenty years, Fed Flat Nickel Corporation has built many miles of road, dug many trenches, drilled many holes, and consolidated adjacent properties to their current land holdings.

In 1979 the Bureau of mines requested permission to take a 100 ton sample for pilot plant testing or a 5-10 ton sample for their Albany Metallurgical Research Center. A sample was taken at a later date, tested with good results in recovery of nickel and cobalt.

Price and Terms

None discussed.

Geologic Setting

The most recent interpretation of the area is that a relatively thin erosional remnant of ultramafic rocks together with a thin sheet of Colebrooke schist have been thrust over the younger Dothan-Otter Point formation. The ultramafics have partly been altered to serpentinite. Where there are peridotites and serpentinites on fairly flat ground, they are covered with laterite and saprolite, both together 6 to 30 feet deep. On steeper slopes only a thin layer (one foot or less) of laterite soil exists.

Laterite, saprolite and some of the serpentinites are anomalous in nickel, cobalt and chromite. In section 30 where all the claims are owned by Hanna Mining Company, Mr. Dennis Winn indicated to the author that they have blocked out a nickel-cobalt reserve of over 4, 500,000 tons plus one percent Ni-Co combined values.

Ore Reserves

- Gold: None

- Mercury: None

- Nickel-Cobalt: In 1954; 1,225 acres of lateritic soils had been identified in the Red Flat area. 1,100 acres have had some drilling and sampling, the other 125 acres were mapped only from aerial photographs on the north side of Hunter Creek.

October 1983, EMJ prices are used for calculating all the following reserve values at \$3 per pound for nickel and \$10 per pound for cobalt.

Len Ramp in his Miscellaneous Paper 20, Investigation of Nickel in Oregon, assigned a grade of 0.80 percent nickel and 0.15 percent cobalt from sample results of 35 different samples taken mostly by auger sampling over an area of 1,100 acres. From the information of the samples, he estimated 8 foot depth of the laterite and saprolite. Using Len Ramps data and assigning the figure of 1613 tons per acre foot, auger drill indicated reserves are the following:

<u>Acres</u>	<u>Depth</u>	<u>Tons/acre ft.</u>	<u>%Ni</u>	<u>%Co</u>	<u>Tons</u>
1100	8 ft.	1613	0.08	0.15	14,194,000
Ni @ \$3 per pound		16 pounds per ton =	\$48 per ton		
Co @ \$10 per pound		3 pounds per ton =	<u>\$30 per ton</u>		
			\$78 per ton		

The following reserve grade calculations are based on the author's interpretation of sample data in Len Ramps, Miscellaneous Paper 20, Investigations of Nickel in Oregon. Weighted values are as follows: Ni = 0.71%, Co = 0.09%

Ni @ \$3 per pound	14.2 pounds per ton	\$42.60 per ton
Co @ \$10 per pound	1.8 pounds per ton	<u>\$18.00 per ton</u>
		\$60.60 per ton

In 1975, the Red Flat Nickel Corporation submitted three bulk samples to the U.S. Bureau of Mines in Albany, Oregon for testing. These averaged 0.67 percent Ni and 0.06 percent Co.

Ni @ \$3 per pound	13.4 pounds per ton	\$40.20 per ton
Co @ \$10 per pound	1.2 pounds per ton	<u>\$12.00 per ton</u>
		52.20 per ton

In 1952, the Bureau of Mines drilled 22 holes on a grid system using a Star churn drill in section 30. This is the section now owned by Hanna Nickel Corporation. The author used data from all 22 holes in calculations. Where cobalt was not assayed, a factor of 0.10 percent was substituted. All ore zones were calculated over a width of 10 feet or greater. Ni = 0.94%, Co = 0.10% average width 15.5 feet.

Ni @ \$3 per pound	18.8 pounds per ton	\$56.40 per ton
Co @ \$10 per pound	2.0 pounds per ton	<u>\$20.00 per ton</u>
		\$76.40

The deeper drilling in section 30 has indicated that better grade material is often found in the saprolites. The first investigation of Red Flat did most sampling by hand methods and could not penetrate the boulders.

Hanna Nickel Company has drilled many more holes in section 30 and reportedly has blocked out an ore body of 4,500,000 tons averaging better than one percent combined nickel and cobalt.

Using the Geologic Map of Red flat and vicinity with the property lines superimposed the distribution of nickel bearing laterite appears to be approximately the following south of Hunter Creek.

- Private property 150 acres Section 13, 25, 26, T37S, R14W
- Hanna Nickel Co. 350 acres Section 30, T37S, R13W - Forest Service
- Red Flat Nickel Corporation 300 acres Section 13, 24, T37S, R14W - BLM
300 acres Section 18, 19, 29, 32, T37S, R13W - Forest Service

At 1613 tons per acre foot and in 8 foot depth, the following auger drill indicated reserves would be distributed.

- Private Property 1,935,600 Tons
- Hanna Nickel Co. 4,510,400 Tons
- Red Flat Nickel Corp. 7,742,400 Tons

Using the same tons per acre foot but extending the width to 15.5 feet as is the average reserve calculated in section 30, total auger drill indicated reserves and geologic possible reserves would be distributed as follows.

- Private property 3,750,225 Tons
- Hana Nickel Co. 8,750,525 Tons
- Red Flat Nickel Corp. 15,000,900 Tons

The low calculated value derived from the Bureau of Mines test on bulk samples sent to them by Red Flat Nickel Corporation in 1975 is \$52.20 per ton. Using this figure, the value of reserves of Red Flat Nickel Corporation are the following.

- Auger drill indicated reserves 7,742,400 tons @ \$52.20 = \$404,153,280
- Geologic inferred reserves 7,258,500 tons @ \$52.20 = \$378,893,700
- 15,000,900 tons \$783,046,980

Exploration Possibilities

Within the property boundaries south of Hunter Creek of the Red Flat Nickel Corporation, the ore reserves may be extended in two ways. The first would be to find new laterite and saprolite zones within the ultramafic complex that have not been discovered. The second would be to find higher grade saprolite ore below the existing laterite and saprolite reserves already known.

Finding new laterite-saprolite zones within the property boundary will add limited ore reserves because those zones left will be much smaller than those already delineated. Extending known laterite-saprolite zones downward could significantly double the reserves as well as increase the grade. To justify predicting doubling reserves and increasing grade, the author refers to the drill indicated reserves blocked out by deeper drilling the Bureau of Mines did in 1952 in section 30. The author's calculations indicated a width of 15.5 feet and a grade of 0.94 percent nickel, 0.10 percent cobalt. The value per ton at this grade is \$76.40, much higher than \$52.20 used for reserve calculations.

North of Hunter Creek and within the property boundaries, is a laterite zone 125 acres in area that geologically is similar to the other zones near Red Flat. This area has not been explored in any way and has not been included in any reserve calculations.

Areas outside of the property boundaries, other than the private property in section 13, 25, 26, T37S, R14W and Hanna Nickel Co. claims in section 30, T37S, R13W, are available for exploration north of Hunter Creek as the ultramafic rocks extend northward several miles beyond the north boundary of the property. The area northward topographic relief, is rugged and steep and does not lend itself to thick accumulations of laterite above the ultramafics. Some new areas will be discovered and could supplement a reserve but they probably would be small compared to that already delineated near Red Flat.

No detailed exploration program will be set forth at this time but would be presented if Sunshine Mining Company does take an acquisition posture. Any exploration program on the property should delineate those laterite-saprolite areas already known by mapping, drilling and sampling to have reserve information on grade, tonnage and engineering geology for future exploitation. New laterite-saprolite areas should be looked for through a thorough surface mapping program covering the entire property. Laterite-saprolite zones outside of the property boundaries need to be explored for using general reconnaissance methods. Land and claim holders of adjacent properties will eventually need to be contacted to begin negotiations for acquisition if Sunshine acquires the Red Flat Nickel Corporation property.

Operating Methods and Conditions

Positive Aspects:

- Adequate water supply is available for mining and smelting from two sources, Hunter Creek and the Pistol River.
- The coastal climate is conducive to year around work.
- Labor is available at Gold beach and other small coastal towns.
- Road conditions to the property are good paved and gravel base all-weather roads.
- Because of poor growth of vegetation on laterite soils, the environmental impact will be negated.
- Adequate supplies available at Gold Beach for most needs.
- Mining will be open pit with most of the ore exposed at the surface or within a few feet of the surface.
- The Bureau of Mines has been doing considerable research on beneficiation of low grade nickeliferous iron laterites. This research has devised technology to increase recovery of nickel and cobalt at less expense. (See letter written to Mr Winn from Mr. R. E. Siemens, December 2, 1983, included with this report).

Negative Aspects:

- Electrical Power seven miles distant.
- Rainy season may hamper mining because the nature of laterite and serpentinite make for very gooey working conditions on the ground.
- Ore needs direct smelting. A smelter will have to be built or ship the ore to a smelter. Reserves may be too small to build a smelter and to low grade to pay transport for shipping.

Recommendations

If Sunshine Mining Company has a desire to get a foothold in strategic metals, here is an opportunity to acquire a substantial land holdings with moderate reserves of low grade nickel-cobalt ore. If Sunshine is interested, an economic study should be made involving exploration, mining, beneficiation and marketing. A current study of the U. S. Bureau of Mines beneficiation method should be made to substantiate viability of this method for Red Flat, nickeliferous ore.

Recapitulation

No gold or mercury reserves were discovered on the property.

Red Flat Nickel Corporation does have an auger drill indicated reserve of 7,742,400 tons and geologic inferred potential reserve of 7,158,500 tons approximately one percent combined nickel-cobalt ore. There is a potential of discovering new nickel-cobalt reserves on the property and north of the property.

At todays values these reserves of nickel and cobalt are valued at \$52.20 to \$76.40 per ton. These reserves can be beneficiated using the U. S. Bureau of Mines, recently developed, techniques at ninety percent nickel recovery and seventy percent cobalt recovery, at a lower power consumption rate than previous methods.

If Sunshine Mining Company wanted a position in strategic minerals, this is one with good potential for low grade reserves in nickel and cobalt.



United States Department of the Interior

BUREAU OF MINES

P. O. BOX 70
ALBANY, OREGON 97321

December 2, 1983

Mr. Dennis Winn
President
The Red Flats Nickel Corp.
560 Shore Pines Ave.
Coos Bay, OR 97420

Dear Mr. Winn:

In response to your request during your recent visit here, I will briefly describe the results of processing your laterite material with the Bureau devised technology. The material tested was the approximately 4-ton sample removed from your property by the Bureau's Western Field Operations Center personnel. The sample processed contained 1.14 wt pct Ni, 0.06 wt pct Co, and 1.75 wt pct Cr. With preliminary bench-scale tests, 97 wt pct Ni and 71 wt pct Co were extracted. In tests to optimize the roast-leach conditions in the continuous processing circuit, 91 wt pct Ni and 73 wt pct Co were extracted with a feed rate of 11 lb/hr to a single reduction roaster. Two around-the-clock runs were then made with a total feed rate of 22 lb/hr (11 lb/hr to each of two reduction units). A total of 3470 lbs of laterite was processed in the two runs with maximum extractions of 88 wt pct Ni and 58 wt pct Co.

The results of the continuous circuit processing of the laterite will be described in a Bureau of Mines Bulletin scheduled for publication in late 1984. Meanwhile, I have enclosed several reports describing each unit operation of the Bureau processing approach.

Chromite was recovered from the residue generated in the continuous processing circuit by a procedure described in RI 8676 which I have enclosed. In this procedure, about 53 wt pct of the chromium was recovered in a combined concentrate that contained about 23 pct chromium. Higher chromium grades in the concentrate can be obtained with a sacrifice in recovery. Marketable chromium products have been obtained in Bureau research from similar chromite concentrates by smelting (to produce ferrochromium) or chemical processing (to generate sodium chromate). With either of these approaches, about 85 wt pct of chromium was recovered. The economics of the chromite concentration procedure and the production of ferrochromium from the resulting concentrates is the subject of a Bureau RI scheduled for publication in 1984. The chemical processing approach is still being refined in research and will be reported later.

As you know, the results of a pilot-scale (5-tpd) evaluation of our laterite processing approach are available in a contract report. This report "New Procedures For Recovering Nickel and Cobalt From Western Laterites -Economic Feasibility," NTIS report number PB 82-245945, can be obtained from the National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, VA 22161.

Sincerely,

A handwritten signature in cursive script, appearing to read "R. E. Siemens".

R. E. Siemens
Group Supervisor
Albany Research Center

Enclosure

June 15, 1979

Mr. Dennis Winn, President
Red Flat Nickel Corporation
560 Shore Pines Avenue
Coos Bay, Oregon 97420

Dear Mr. Winn:

In conversations with Robert Weldin you indicated that Red Flat Nickel Corporation will permit us to conduct on-site testing at your Red Flat nickel laterite deposit.

We plan to excavate less than 1,000 tons of lateritic soil and rock; nearly all of which will be returned to the trench after "on-site testing" such as weighing and screening. Depending on the availability of metallurgical testing facilities, we may want to ship a 100 ton bulk sample to UOP for pilot plant testing, or ship a much smaller bulk sample (5-10 tons) to the Bureau of Mines Albany Metallurgical Research Center.

The topsoil, that part that supports plant growth, will be stockpiled, mixed with mulched vegetation from the site, and replaced. We also plan to revegetate the disturbed area. A copy of our work plan is enclosed.

Also enclosed are "Permission to Perform Mineral Examination" forms. Please sign and return one copy to this office.

Proposed work at Red Flat is planned for late July or early August, but circumstances could arise which would alter or even cancel the program.

We appreciate your cooperation. Thank you.

Sincerely,

R. N. Appling, Jr., Chief
Western Field Operations Center

Enclosures

RDWeldin:az

cc: SPWimpfen
RCKirby
GAKingston
HOPoppleton
LATwater
✓SO df

P-7312

Gold Beach, Oregon
June 25, 1948

Mr. F. W. Libbey
State Department of Geology
702 Woodlark Building
Portland, Oregon

Dear Sir:

Am shipping you via parcel post a sample of ore found on my property adjacent to the Bad Lands, Sec. 18, T.37 S., Range 13, that I believe carries nickel and cobalt in the sulphide form, according to my simple tests.

This ore is found in nodules ranging from walnut size to large boulders laying in the altered serpentine and seems to be a very large body. If this is true it greatly changes the nickel picture in this area.

Would also appreciate a gold test as on one of my tests it showed a fair amount of gold.

Thanking you for your many kindnesses and hoping to see you down this way soon, I remain

Very truly yours,

/s/ H. F. Hedderly

Au, Ag, Ni, Co (spec.)

Gold Beach -
Ore -

Feb. 12 - '47 -

to
W.D. Savory -
Associated Geologist -
Department of Geology -
Portland - Ore -

Dear Sir -

Yours of Dec. 2 - '46 received - Am sorry
not to have been able to answer sooner
as I have been ill -

I am hereby sending you the recorded
claim notices - Nos. from 1 to 8 - which
should give you the information you
were asking for - The elevation of the
property is 2400 feet - The entrance apex
is 2800 feet by aneroid -

Hoping this will serve your purpose -
I remain sincerely yours -

Paul Snudberg -

P.S.
I would appreciate a copy of your report or
information how I could obtain it.
S.S.

STATE DEPARTMENT OF GEOLOGY AND
MINERAL INDUSTRIES

702 WOODLARK BUILDING
PORTLAND, OREGON

February 14, 1947

Mr. Carl Smedberg
Gold Beach
Oregon

Dear Mr. Smedberg:

Thank you very much for your recent letter and the information it contains. It gives us information which we need. We are sorry to learn that you have been ill and hope that you will be better soon.

We have made a considerable number of chemical analyses of the Red Flat laterite. This analytical work has necessarily been slow because our routine analyses require much of our chemist's time. We hope to be able to furnish you soon with the analytical results we have obtained, a sketch map of the Red Flat area showing the location of the holes we drilled and drawings (profiles) giving the composition of the laterite from top to bottom in each of the holes. Also in the report we shall have a short discussion of the geology of the area and the origin of the laterite.

Sincerely yours,

Wallace D. Lowry
Associate Geologist

WDL:ff

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STATE DEPARTMENT OF GEOLOGY AND
MINERAL INDUSTRIES

702 WOODLARK BUILDING
PORTLAND, OREGON

June 10, 1941

STATE ASSAY LABORATORIES

400 E. I ST., GRANTS PASS

RAY C. TREASHER
FIELD GEOLOGIST

ALBERT A. LEWIS
ASSAYER

2102 COURT ST., BAKER

HUGH K. LANCASTER
FIELD ENGINEER

LESLIE C. RICHARDS
ASSAYER

Mr. Al Lewis
State Assay Laboratory
Grants Pass, Oregon

Dear Al:

Enclosed herewith are data just received from Mr. E. R. Marshall in Gold Beach stating their method of getting the values they claim from samples which I left at the laboratory the other day. Suggest you follow their procedure and see what the answer is.

Sincerely,

Director

EKN:ac
cc E.R.Marshall