

THE BUNKER HILL COMPANY

BOX 29, KELLOGG, IDAHO 83837 TELEPHONE SU 4-1261 AREA CODE 208

May 26, 1964

Mr. John G. Livingston
Department of Geology
Oregon State University
Corvallis, Oregon

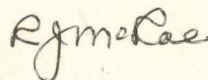
Dear Mr. Livingston:

This will acknowledge your letter of May 23, relative to information as to what was found in our Clatsop Spit drilling. I am not sure our drill logs will be too helpful. Our primary interest was in the recoverable iron units per ton of crude sands.

A copy of our complete report will be on file at the Oregon Bureau of Geology in Portland. It is open to you to read. If after looking over the data, drill logs, etc., you find any of it would be of interest you can make a request to Bunker Hill for permission to copy.

I hope this will be convenient for you. We regret having to give up this project but it did not measure up to our objectives by quite a bit.

Yours truly,



Robert J. McRae
Outside Exploration Engineer

RJM:bw

cc: H. Dole ✓

TABLE OF CONTENTS

<u>SUBJECT</u>	<u>PAGE</u>
GENERAL INTRODUCTION -----	1-2
CONCLUSIONS -----	2
AREA LEASED -----	3
AREA DRILLED -----	3
DRILLING -----	3
SAMPLING -----	4
SAMPLE TESTING -----	4
TEST DATA -----	5
RESULTS OF TESTING -----	5
INDICATED RESERVES AND GRADES -----	5
INITIAL OBJECTIVES -----	5
DISCUSSION OF RESULTS -----	6
GEOLOGIC COMMENTS -----	6
SPECIAL ASSAY RESULTS -----	6
GENERAL COMMENTS ON OTHER AREAS -----	7
DRILL LOGS -----	APPENDIX
TEST DATA -----	"
TEST DATA SUMMARY -----	"
TONNAGE BLOCK SUMMARY -----	"
LAND AND DRILL HOLE LOCATION MAP -----	IN POCKET

DRILLING ON CLATSOP SPIT BY BUNKER HILL COMPANY, KELLOGG, IDAHO

<u>DRILL LINE</u>	<u>HOLE</u>	<u>DEPTH</u>
110	4	80 ft.
110	9	80 ft.
110	12	70 ft.
110	16	50 ft.
140	2	80 ft.
140	6	80 ft.
140	10	80 ft.
140	14	80 ft.
140	18	80 ft.
193	4	80 ft.
193	8	60 ft.
193	12	80 ft.
193	16	40 ft.
193	20	40 ft.
193	24	80 ft.
247	2	80 ft.
247	5	80 ft.
247	8	80 ft.
247	11	86 ft.
247	16	60 ft.
247	20	80 ft.
305	12	50 ft.
305	16	50 ft.
305	20	50 ft.
360	16	50 ft.
370	11	50 ft.
370	15	50 ft.
160	36	30 ft.
160	42	30 ft.
160	50	70 ft.
30	24	40 ft.
30	36	40 ft.
10	26	40 ft.
10	12	60 ft.

2,136 ft.

THE BUNKER HILL COMPANY

Exploration Glatasp Spit Line No. 10 Elev. _____ Date March 18, 1964
Property _____ Hole No. 12 Co-ord _____ Sheet No. 34
Location North of South Jetty Shoe Dia. 3 $\frac{1}{2}$ " Water Lv. _____ Mineral Magnetite
In Charge Young Driller Owens Lab. Man _____

Diameter or Dim.	Depth	Vol. Cu. Ft.	Vol. Cu. Yd.	Sample Weight	Mineral Weight	Min. %	Formation
3 $\frac{1}{2}$ "	0-10'	.550		65			Brown & Gray Sand
							B.S. to 5'. Trace of B.S.
							5'-10'.
	10'-20'	.550		63			Gray Sand, Trace of B.S.
							Trace of Shell.
	20'-30'	.535		62			Gray Sand, Traces of
							Shell, Wood, Clay & B.S.
	30'-40'	.525		64			Gray Sand, Trace of Shell
							Wood & B.S.
	40'-50'	.435		51			Gray Sand, Slight Trace
							of Shell & B.S.
	50'-60'	.200		Not Shipped			Encountered piece of metal
							at about 48'. We were
							unable to dislodge.
							Abandoned hole at 60'.
S	60'	2.795		305			5 Sacks Shipped

Total Depth 60' Mineral % Other Minerals: Assays:

Mineable Depth Mineral %

Mineral Lbs. Per Cu. Yd. Sand

Abbreviations:	Blk. Black	C Coarse	D.W. Decomposed Wood	L. Loose	Sm. Some
	Br. Brown	Cl. Clay	S.W. Solid Wood	M. Much	P. Peat
	B.S. Black Sand	Dk. Dark	Fm. Firm	Mk. Muck	Sh. Shell

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Exploration Clatsop Spit Line No. 10 Elev. _____ Date March 17, 1964
Property County or Federal Hole No. 26 Co-ord _____ Sheet No. 31
Location North of South Jetty Shoe Dia. 3 1/2" Water Lv. _____ Mineral Magnetite
In Charge Young Driller Owens Lab. Man _____

Diameter or Dim.	Depth	Vol. Cu. Ft.	Vol. Cu. Yd.	Sample Weight	Mineral Weight	Min. %	Formation
3 $\frac{1}{8}$ "	0-10'	.550		68			Brown Sand, Good B.S. to 5'
							Trace of B.S. over 5'-10'
							Wood
	10'-20'	.640		73			Brown & Gray Sand
							Trace of B.S. & Shell (very loose)
	20'-30'	.535		62			Gray Sand, Trace of Shell
	30'-40'	.575		69			Gray Sand, Trace of B.S. Trace of Shell
S	40'	2.300		272			4 Sacks Shipped

Total Depth 40' Mineral % Other Minerals: Assays:

Mineable Depth Mineral %.....

Mineral Lbs. Per Cu. Yd. Sand

Abbreviations:	Blk. Black	C Coarse	D.W. Decomposed Wood	L. Loose	Sm. Some
	Br. Brown	Cl. Clay	S.W. Solid Wood	M. Much	P. Peat
	B.S. Black Sand	Dk. Dark	Fm. Firm	Mk. Muck	Sh. Shell

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Exploration Clatsop Spit Line No. 30 Elev. _____ Date March 18, 1964
Property County or Federal Hole No. 24 Co-ord _____ Sheet No. 33
Location North of South Jetty Shoe Dia. 3 $\frac{1}{2}$ " Water Lv. _____ Mineral Magnetite
In Charge Young Driller Owens Lab. Man _____

No.	Diameter or Dim.	Depth	Vol. Cu. Ft.	Vol. Cu. Yd.	Sample Weight	Mineral Weight	Min. %	Formation
	3 $\frac{1}{2}$ "	0-10'	.565		62			Brown & Gray Sand.
								Trace of Shell & Wood
								Sm. B.S. to 5'.
		10'-20'	.600		60			Gray Sand
								Trace of Shell & Wood.
		20'-30'	.525		57			Gray Sand, Trace of Shell
								Trace of B.S.
		30'-40'	.425		55			Gray Sand, Trace of Shell
								Trace of Wood & B.S.
S		40'	2.115		234			4 Sacks Shipped

Total Depth 401 Mineral % Other Minerals: Assays:
 Mineable Depth Mineral %
 Mineral Lbs. Per Cu. Yd. Sand

Abbreviations:	Blk. Black	C Coarse	D.W. Decomposed Wood	L. Loose	Sm. Some
	Br. Brown	Cl. Clay	S.W. Solid Wood	M. Much	P. Peat
	B.S. Black Sand	Dk. Dark	Fm. Firm	Mk. Muck	Sh. Shell

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Exploration Clatsop Spit Line No. 30 Elev. _____ Date March 18, 1964
 Property County or Federal Hole No. 36 Co-ord _____ Sheet No. 32
 Location On Clatsop Spit Shoe Dia. 3 1/2" Water Lv. _____ Mineral Magnetite
 In Charge Young Driller Owens Lab. Man _____

Core	Diameter or Dim.	Depth	Vol. Cu. Ft.	Vol. Cu. Yd.	Sample Weight	Mineral Weight	Min. %	Formation
	3 1/2"	0-10'	.550		64			Brown Sand, Sm. B.S. to 6'
								Sm. Grass Root
		10'-20'	.635		74			Brown & Gray Sand
								Slight Trace of B.S.
		20'-30'	.595		69			Gray Sand, Trace of Shell.
		30'-40'	.435		52			Gray Sand, Sm. Clay
								Sm. Shell & Wood
LS		40'	2.215		259			4 Sacks Shipped

Total Depth 40' Mineral % _____ Other Minerals: _____ Assays: _____

Mineable Depth _____ Mineral % _____

Mineral Lbs. _____ Per Cu. Yd. Sand _____

Abbreviations: Blk. Black C Coarse D.W. Decomposed Wood L. Loose Sm. Some
 Br. Brown Cl. Clay S.W. Solid Wood M. Much P. Peat
 B.S. Black Sand Dk. Dark Fm. Firm Mk. Muck Sh. Shell

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Exploration Clatsop Spit Line No. 140 Elev. _____ Date Feb. 25, 1964
Property State of Oregon Hole No. 2 Co-ord _____ Sheet No. 13
Location W. Side of Jetty Road Shoe Dia. 3 1/2" Water Lv. _____ Mineral Magnetite
In Charge Miles Young Driller Owens Lab. Man _____

Diameter or Dim.	Depth	Vol. Cu. Ft.	Vol. Cu. Yd.	Sample Weight	Mineral Weight	Min. %	Formation
3 1/2"	0-10'	.500		56			Gray & Brown Sand, M.B.S. from 0-6' Trace " 6'-10'
	10'-20'	.450		45			Gray & Brown sand, Sm. B.S.S. XXXX
	20'-30'	.300		31			Gray Sand, Trace B.S.
	30'-40'	.650		66			Gray Sand, Trace shell & B.
	40'-50'	.800		77			" " " " " "
	50'-60'	.575		58			Gray Sand, Sm. shell Tr. B.S.
	60'-70'	.550		60			Gray sand, Silt, shell, D.W.
	70'-80'	.800		89			" " " " " "
LS	80 ft.	4.625		1.82			8 sacks shipped

Total Depth 80 ft. Mineral % Other Minerals: Assays:

Abbreviations:	Blk. Black	C Coarse	D.W. Decomposed Wood	L. Loose	Sm. Some
	Br. Brown	Cl. Clay	S.W. Solid Wood	M. Much	P. Peat
	B.S. Black Sand	Dk. Dark	Fm. Firm	Mk. Muck	Sh. Shell

THE BUNKER HILL COMPANY

Exploration Clatsop Spit Line No. 140 Elev. _____ Date Feb. 26, 1964
 Property State of Oregon Hole No. 6 Co-ord _____ Sheet No. 14
 Location W. of Jetty Road Shoe Dia. 3 1/2" Water Lv. _____ Mineral Magnetite
 In Charge M. Young Driller Owens Lab. Man _____

Diameter or Dim.	Depth	Vol. Cu. Ft.	Vol. Cu. Yd.	Sample Weight	Mineral Weight	Min. %	Formation
3 1/2"	0-10'	.465		56			Brown Sand, Sm.B.S.
	10'-20'	.525		56			Brown & Gray sand, Sm.B.S.
	20'-30'	.360		45			Gray sand, Trace of B.S.
	30'-40'	.525		65			Gray sand Sm.Silt, wood & Shell. Trace of B.S.
	40'-50'	.650		68			Same as #4 above
	50'-60'	.600		70			Gray sand, silt, wood & shell Trace of B.S.
	60'-70'	.600		70			Gray sand, silt, wood & shell
	70'-80'	.600		70			Gray sand, Muck, Silt, Shell
	80 Ft.	1.325		500			8 sacks shipped

Total Depth 80 Ft. Mineral % _____ Other Minerals: _____ Assays: _____

Mineable Depth _____ Mineral % _____

Mineral Lbs. _____ Per Cu. Yd. Sand _____

Abbreviations: Blk. Black C Coarse D.W. Decomposed Wood L. Loose Sm. Some
 Br. Brown Cl. Clay S.W. Solid Wood M. Much P. Peat
 B.S. Black Sand Dk. Dark Fm. Firm Mk. Muck Sh. Shell

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Exploration Clatsop Spit Line No. 110 Elev. 10' on Dune Date March 4, 1964
 Property State of Oregon Hole No. 4 Co-ord _____ Sheet No. 18
 Location West of Jetty Road Shoe Dia. 3 1/2" Water Lv. _____ Mineral Magnetite
 In Charge Young Driller Owens Lab. Man _____

to	Diameter or Dim.	Depth	Vol. Cu. Ft.	Vol. Cu. Yd.	Sample Weight	Mineral Weight	Min. %	Formation
	3 1/2"	0-10'	.400		53			Brown Sand, B.S.
								Sm. Grass & Wood
		10'-20'	.550		64			Brown Sand, B.S. to 15'
								Traces of B.S. 15'to 20'
								ReDrill 5'.
		20'-30'	.475		56			Gray Sand, Trace of B.S.
								Trace of Shell & Clay
		30'-40'	.550		64			Gray Sand, Trace of B.S.
								Sm. D.W. & Shell
		40'-50'	.650		76			Gray Sand, Shell, D.W.
								Trace of B.S.
								Sm. Clay like Silt.
		50'-60'	.600		69			Gray Sand, Shell, D.W.
		60'-70'	.575		59			Gray Sand, Sm. D.W.
								Shell & Clay
		70'-80'	.475		57			Gray Sand, Shell
								D.W. & Clay
LS		80'	1.275		198			8 Sacks shipped

Total Depth 80' plus 5' ReDrill Mineral % _____ Other Minerals: _____ Assays: _____

Mineable Depth _____ Mineral % _____

Mineral Lbs. _____ Per Cu. Yd. Sand _____

Abbreviations:	Blk. Black	C Coarse	D.W. Decomposed Wood	L. Loose	Sm. Some
	Br. Brown	Cl. Clay	S.W. Solid Wood	M. Much	P. Peat
	B.S. Black Sand	Dk. Dark	Fm. Firm	Mk. Muck	Sh. Shell

THE BUNKER HILL COMPANY

Exploration Clatsop Spit Line No. 110 Elev. Date March 5, 1964
 Property State of Oregon Hole No. 9 Co-ord Sheet No. 19
 Location Beside Jetty Road Shoe Dia. 3 1/2" Water Lv. Mineral Magnetite
 In Charge Young Driller Owens Lab. Man

le	Diameter or Dim.	Depth	Vol. Cu. Ft.	Vol. Cu. Yd.	Sample Weight	Mineral Weight	Min. %	Formation
	3 1/2"	0-10'	.365		47			Brown Sand, Black Sand
								Sm. Beach Grass
		10'-20'	.300		40			Brown & Gray Sand
								Trace of B.S.
		20'-30'	.340		42			Gray Sand, Trace of B.S.
								Slight Trace of Shell
		30'-40'	.575		67			Gray Sand, Sm. Shell
								Sm. B.S. Trace of D.W.
		40'-50'	.550		62			Gray Sand, Sm. Shell
		50'-60'	.650		74			Gray Sand, Trace of Shell
		60'-70'	.650		75			Gray Sand, Sm. Shell
								Clay & Wood.
		70'-80'	.475		54			Gray Sand, Sm. Shell
								Wood, Sm. Clay
S		80'						8 Sacks shipped

Total Depth 80' Mineral % Other Minerals: Assays:
 Mineable Depth Mineral %
 Mineral Lbs. Per Cu. Yd. Sand

Abbreviations: Blk. Black C Coarse D.W. Decomposed Wood L. Loose Sm. Some
 Br. Brown Cl. Clay S.W. Solid Wood M. Much P. Peat
 B.S. Black Sand Dk. Dark Fm. Firm Mk. Muck Sh. Shell

THE BUNKER HILL COMPANY

Exploration Clatsop Spit Line No. 110 Elev. _____ Date March 6, 1964
Property State of Oregon Hole No. 12 Co-ord _____ Sheet No. 20
Location East of Jetty Road Shoe Dia. 3 1/4" Water Lv. _____ Mineral Magnetite
In Charge Young Driller Owens Lab. Man _____

No.	Diameter or Dim.	Depth	Vol. Cu. Ft.	Vol. Cu. Yd.	Sample Weight	Mineral Weight	Min. %	Formation
	3 1/2"	0-10'	.500		63			Brown & Gray Sand
								B.S. to 7'. Traces of B.S.
								7' to 10'. Traces of Shell
								8'.
		10'-20'	.430		49			Gray Sand, Trace of Shell
								and B.S. Redrill 10'
		20'-30'	.400		46			Gray Sand, Trace of Shell
								Slight Trace of B.S.
		30'-40'	.600		70			Gray Sand, Trace of Shell
								and Wood.
		40'-50'	.675		79			Gray Sand, Shell
								Trace of Wood & B.S.
		50'-60'	.640		71			Gray Sand, Sm. Shell
								Very slight Trace of B.S.
								Clay, Trace of Wood.
		60'-70'	.475		58			Gray Sand, Trace of Shell
								Wood & Clay
LS		70'	3.720		436			7 Sacks shipped

Abbreviations:	Blk. Black	C Coarse	D.W. Decomposed Wood	L. Loose	Sm. Some
	Br. Brown	Cl. Clay	S.W., Solid Wood	M. Much	P. Peat
	S.S. Black Sand	Dk. Dark	Fm. Firm	Mk. Muck	Sh. Shell

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Exploration Clatsop Spit Line No. 110 Elev. _____ Date March 9, 1904
Property State of Oregon Hole No. 16 Co-ord _____ Sheet No. 21
Location East of Jetty Shoe Dia. 3¹/₂" Water Lv. _____ Mineral Magnetite
In Charge Young Driller Owens Lab. Man _____

No.	Diameter or Dim.	Depth	Vol. Cu. Ft.	Vol. Cu. Yd.	Sample Weight	Mineral Weight	Min. %	Formation
	3 1/8"	0-10'	.425		55			Brown & Gray sand
								B.S. to 5'. Sm. B.S. 5'-1
		10'-20'	.375		45			Gray Sand, Trace of B.S.
		20'-30'	.525		62			Gray Sand, Trace of B.S.
								Shell
		30'-40'	.425		50			Gray Sand, Trace of B.S.
								Sm. D.W. & Shell
		40'-50'	.625		72			Gray Sand, Shell, & D.W.
S		50'	2.375		284			5 Sacks shipped

Abbreviations:	Blk. Black	C Coarse	D.W. Decomposed Wood	L. Loose	Sm. Some
	Br. Brown	Cl. Clay	S.W. Solid Wood	M. Much	P. Peat
	B.S. Black Sand	Dk. Dark	Fm. Firm	Mk. Muck	Sh. Shell

THE BUNKER HILL COMPANY

Exploration Clatsop Spit Line No. 140 Elev. _____ Date Feb. 27, 1964
 Property State of Oregon Hole No. 10 Co-ord _____ Sheet No. 15
 Location East of Jetty Road Shoe Dia. 3 1/2" Water Lv. _____ Mineral Magnetite
 In Charge M. Young Driller Owens Lab. Man _____

Sample No.	Diameter or Dim.	Depth	Vol. Cu. Ft.	Vol. Cu. Yd.	Sample Weight	Mineral Weight	Min. %	Formation
1	3 1/2"	0-10'	.500		59			Gray & Brown sand, Sm.B.S.
2		10'-20'	.400		46			Gray Sand, Sm.B.S. 10' Redrill
3		20'-30'	.475		50			Gray Sand, Trace of B.S. Shell at 25'
4		30'-40'	.750		86			Gray sand, Trace B.S. Sm.D.
5		40'-50'	.630		73			Gray sand, Trace B.S. Sm. Shell & D.W.
6		50'-60'	.650		77			Gray sand, slight trace B.S. Silt, shell & D.W.
7		60'-70'	.750		84			Gray sand, Silt, Shell & D.W.
8		70'-80'	.800		90			Same as above, Trace B.S.
TOTALS		80 ft.	4.955		565			8 sacks shipped

Total Depth 80 ft. plus 10' redrill Mineral % _____ Other Minerals: _____ Assays: _____

Mineable Depth _____ Mineral % _____

Mineral Lbs. _____ Per Cu. Yd. Sand _____

Abbreviations: Blk. Black C Coarse D.W. Decomposed Wood L. Loose Sm. Some
 Br. Brown Cl. Clay S.W. Solid Wood M. Much P. Peat
 B.S. Black Sand Dk. Dark Fm. Firm Mk. Muck Sh. Shell

THE BUNKER HILL COMPANY

Exploration Clatson Spit Line No. 140 Elev. _____ Date March 2, 1964
 Property State of Oregon Hole No. 14 Co-ord _____ Sheet No. 16
 Location East of Jetty Road Shoe Dia. 3 1/2" Water Lv. _____ Mineral Magnitite _____
 In Charge Young Driller Owens Lab. Man _____

Sample No.	Diameter or Dim.	Depth	Vol. Cu. Ft.	Vol. Cu. Yd.	Sample Weight	Mineral Weight	Min. %	Formation
1	3 1/2"	0-10	.500		56			Brown & Gray sand, Sm B.S. from 0-5'. Traces of B.S. from 5'-10'.
2		10'-20'	.450		51			Gray Sand, Trace of B.S. Trace of Shell
3		20'-30'	.625		65			Gray Sand, Shell Slight trace of B.S.
4		30'-40'	.625		70			Gray Sand, Shell, Clay Trace of B.S. Trace of Wood
5		40'-50'	.650		70			Gray Sand, Shell Trace of Wood
6		50'-60'	.550		66			Gray Sand, Shell, Wood Sm. Clay
7		60'-70'	.460		51			Gray Sand, Shell, Wood Clay.
8		70'-80'	.575		64			Gray Sand, Shell Sm Wood, Clay
TOTALS		80'	4.435		493			8 Sacks shipped

Total Depth 80' Mineral % _____ Other Minerals: _____ Assays: _____

Mineable Depth _____ Mineral % _____

Mineral Lbs. _____ Per Cu. Yd. Sand _____

Abbreviations: Blk. Black C Coarse D.W. Decomposed Wood L. Loose Sm. Some
 Br. Brown Cl. Clay S.W. Solid Wood M. Much P. Peat
 B.S. Black Sand Dk. Dark Fm. Firm Mk. Muck Sh. Shell

THE BUNKER HILL COMPANY

Exploration Chatsop Spit Line No. 140 Elev. _____ Date March 3, 1964
Property State of Oregon Hole No. 18 Co-ord _____ Sheet No. 17
Location East of Jetty Road Shoe Dia. 3 1/2" Water Lv. _____ Mineral Magnetite
In Charge Young Driller Owens Lab. Man _____

Sample No.	Diameter or Dim.	Depth	Vol. Cu. Ft.	Vol. Cu. Yd.	Sample Weight	Mineral Weight	Min. %	Formation
1	3 1/2"	0-10'	.500		62			Brown & Gray Sand, Sm B.S. Sm. Beach Grass
2		10'-20'	.300		39			Gray Sand, Sm.B.S. Sm. Shell
3		20'-30'	.575		60			Gray Sand, Trace of B.S. Sm. Shell
4		30'-40'	.650		76			Gray Sand, Clay, Shell Sm. Wood
5		40'-50'	.725		81			Gray Sand, Sm. Shell Trace of Wood
6		50'-60'	.575		64			Mucky Gray Sand, Shell Wood, Clay
7		60'-70'	.525		62			Mucky Gray Sand, Clay Shell, Wood
8		70'-80'	.610		75			Mucky Gray Sand & Clay Shell, Wood.
TOTALS		80'	1.560		519			8 Sacks shipped

Total Depth 80' Mineral % Other Minerals: Assays:

Abbreviations:	Blk. Black	C Coarse	D.W. Decomposed Wood	L. Loose	Sm. Some
	Br. Brown	Cl. Clay	S.W. Solid Wood	M. Much	P. Peat
	B.S. Black Sand	Dk. Dark	Fm. Firm	Mk. Muck	Sh. Shell

THE BUNKER HILL COMPANY

Exploration Clatsop Spit Line No. 160 Elev. _____ Date March 16, 1964
Property State of Oregon Hole No. 50 Co-ord _____ Sheet No. 28
Near _____
Location Swash Lake Bridge Shoe Dia. 3 1/2" Water Lv. _____ Mineral Magnetite
In Charge Young Driller Owens Lab. Man _____

Sample No.	Diameter or Dim.	Depth	Vol. Cu. Ft.	Vol. Cu. Yd.	Sample Weight	Mineral Weight	Min. %	Formation
1	3 $\frac{1}{8}$ "	0-10'	.550		64			Brown & Gray Sand, Sm. D. Sm. B.S. to 3'.
2		10'-20'	.340		39			Gray Sand, Trace of Shell Trace of B.S. & D.W.
3		20'-30'	.265		34			Gray Sand, Trace of D.W. Trace of Shell
4		30'-40'	.475		Not Shipped			Gray Sand, Sm. Shell Trace of B.S. & D.W.
5		40'-50'	.675		"			Gray Sand, Sm. Shell
6		50'-60'	.665		"			Gray Sand, Sm. Shell Sm. D.W.
7		60'-70'	.650		"			Gray Sand, Sm. Shell Sm. D.W. & Clay.
TOTALS			2.970		137			3 Sacks Shipped

Total Depth 70' Mineral % Other Minerals: Assays:

Mineable Depth Mineral %.....

Mineral Lbs. Per Cu. Yd. Sand

Abbreviations:

Blk. Black

C

C Coarse

D.W. Decomposed Wood

L. Loose

Sm. Some

Br. Brown
B.S. Black Sand

Cl. Clay
Dk. Dark

S.W. Solid Wood
Fm. Firm

M. Much
Mk. Muck

P.	Peat
Sh.	Shell

THE BUNKER HILL COMPANY

Exploration Clatson Spit Line No. 160 Elev. Date March 16, 1964

Property State of Oregon Hole No. 42 Co-ord. _____ Sheet No. 29

Location South Jetty Road Shoe Dia. 3 $\frac{1}{2}$ " Water Lv. Mineral Magnetite

In Charge Young Driller Owens Lab. Man _____

Sample No.	Diameter or Dim.	Depth	Vol. Cu. Ft.	Vol. Cu. Yd.	Sample Weight	Mineral Weight	Min. %	Formation
1	3 $\frac{1}{8}$ "	0-10'	.565		65			Brown & Gray Sand, Wood
								Shell at 8'. Sm. B.S. to
2		10'-20'	.700		74			Gray Sand, Trace of
								Shell & Wood
3		20'-30'	.200		Not Shipped			Gray Sand, Trace of B.S.
								Sm. Shell & Wood
TOTALS		30'	1.465		139			2 Bags Shipped

Total Depth 30' Mineral % Other Minerals: Assays:

Mineable Depth	Mineral %.....		
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Mineral Lbs. Per Cu. Yd. Sand

Abbreviations:

Blk. Black

C

C Coarse

D.W. Decker

D.W. Decomposed Wood

L.

L. Loose

Spr

Sm. Some

Br. Brown

Cl.

Cl. Clay

S.W. Solid

S.W. Solid Wood

M.

M. Much

P

P. Beat

B.S. Black Sand

Dk.

Dk. Dark

Fm. Firm

Fm. Firm

Mk

Mk. Muck

Sh

Sh. Shell

THE BUNKER HILL COMPANY

Exploration	Clatsop Spit	Line No.	160	Elev.		Date	March 17, 1964
Property	State of Oregon	Hole No.	36	Co-ord		Sheet No.	30
Location	Jetty Road At Rifle Range	Shoe Dia.	3 1/2"	Water Lv.		Mineral	Magnetite
In Charge	Young	Driller	Owens	Lab. Man			

Sample No.	Diameter or Dim.	Depth	Vol. Cu. Ft.	Vol. Cu. Yd.	Sample Weight	Mineral Weight	Min. %	Formation
1	3½"	0-10'	.575					Brown Sand, Sm. B.S. 0-2'. Trace of Shell
2		10'-20'	.550					Brown & Gray Sand, Trace of Shell & B.S.
3		20'-30'	.450					Gray Sand, Trace of B.S.
TOTALS			1.570					3 Sacks Shipped

Total Depth Mineral %..... Other Minerals: Assays:

Mineable Depth Mineral %

Mineral Lbs. Per Cu. Yd. Sand

Abbreviations:

Bik. Black

C Coarse

D.W. Decomposed Wood

L. Loose

Sm. Some

Br. Brown

Cl. Clay

S.W. Solid Wood

M. Much

P. Peat

B.S. Black Sand

Dk. Dark

Em.	Firm
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14
15	15
16	16
17	17
18	18
19	19
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82	82
83	83
84	84
85	85
86	86
87	87
88	88
89	89
90	90
91	91
92	92
93	93
94	94
95	95
96	96
97	97
98	98
99	99
100	100

Mk. Muck

Sh Shell

THE BUNKER HILL COMPANY

Exploration Clatsop Spit, Oregon Line No. 193 Elev. _____ Date Jan. 29, 1964
 Property State of Oregon Hole No. 4 Co-ord _____ Sheet No. 1 of 1
 Location West of Battery Russel Shoe Dia. 3 1/2" Water Lv. _____ Mineral Magnetite
 In Charge Thiessen Driller Owens Lab. Man _____

Sample No.	Diameter or Dim.	Depth	Vol. Cu. Ft.	Vol. Cu. Yd.	Sample Weight	Mineral Weight	Min. %	Formation
1	3.5"	0-10'			Wet=71#			* Sand 0-4', B.S. 4-6', wood 6-10'
2		10-20			Wet=54			Sand, sm. visible black sand
3		20-30			Wet=49			** 25-30 B.S. 20-25, wood and sand, sm.
4		30-40			Wet=63			gray sand, sm. D.W.
5		40-50			Wet=66			Dk. gray sand, sm. shell
6		50-60			Wet=72			Dk. gray sand, sm. muck
7		60-70			Wet=			Gray sand, sm. shell and muck
8		70-80			Wet=			Gray sand, shell and muck
* Note: Struck log at 5 feet, and pipe went off plumb. Pulled back from 10 feet and redrilled 0 to 10 feet.								
** At 25-30 feet wood plugged the pipe and we received a short core.								
		90						
TOTALS		90						

Total Depth _____ Mineral % _____ Other Minerals: _____ Assays: _____
 Mineable Depth _____ Mineral % _____
 Mineral Lbs. _____ Per Cu. Yd. Sand _____

Abbreviations: Blk. Black C Coarse D.W. Decomposed Wood L. Loose Sm. Some
 Br. Brown Cl. Clay S.W. Solid Wood M. Much P. Peat
 B.S. Black Sand Dk. Dark Fm. Firm Mk. Muck Sh. Shell

THE BUNKER HILL COMPANY

Exploration Clatsop Spit, Oregon Line No. 393 Elev. _____ Date Feb. 3, 1964
 Property State of Oregon Hole No. 8 Co-ord _____ Sheet No. 1 of 1
 Location West of Battery Russel Shoe Dia. 3 1/2" Water Lv. _____ Mineral Magnetite
 In Charge Thiessen Driller Owens Lab. Man _____

Sample No.	Diameter or Dim.	Depth	Vol. Cu. Ft.	Vol. Cu. Yd.	Sample Weight	Mineral Weight	Min. %	Formation
1	3.5"	* 0-10'	0.275		Wet=			Sand, sm. beach grass
2		10-20	0.620		Wet= 64#			Sand, sm. visible black sand
3		20-30	0.525		Wet= 65#			Sand, sm. shell, traces B.S.
4		30-40	0.700		Wet= 67#			Gray sand, sm. B.S., sm. sh.
5		40-50	0.625		Wet= 65#			Gray sand, sm. shell
6		** 50-60	A=.800 B=.450		Wet 72# 50#			Gray sand, sm. shell
* 1st hole was drilled to 60' but wood interfered with samples from 0 to 30 feet. The drill was moved 3 feet and another hole was drilled to 30 feet, but wood still prevent proper core control--- from getting a good sample. A third hole was drilled from 0 to 30 feet. Then the most representative sample from each 10 foot sample was used in the above tabulations ** 50-60 feet, samples A and B are one sample; they were bagged separately for convenience in handling.								
TOTALS	7	120 feet of hole was drilled to get 60 feet of representative sample.						

Total Depth _____ Mineral % _____ Other Minerals: _____ Assays: _____

Mineable Depth _____ Mineral % _____

Mineral Lbs. _____ Per Cu. Yd. Sand _____

Abbreviations:

Blk. Black
 Br. Brown
 B.S. Black Sand

C Coarse
 Cl. Clay
 Dk. Dark

D.W. Decomposed Wood
 S.W. Solid Wood
 Fm. Firm

L. Loose
 M. Much
 Mk. Muck

Sm. Some
 P. Peat
 Sh. Shell

THE BUNKER HILL COMPANY

Exploration Clatsop Spit Line No. 193 Elev. _____ Date Feb. 20, 1964
 Property State of Oregon Hole No. 12 Co-ord _____ Sheet No. 9
 Location West of Battery Russe Sho Dia. 3 1/2" Water Lv. _____ Mineral Magnetite
 In Charge M. Young Driller Owens Lab. Man _____

Sample No.	Diameter or Dim.	Depth	Vol. Cu. Ft.	Vol. Cu. Yd.	Sample Weight	Mineral Weight	Min. %	Formation
1	3 1/2"	0-10'	.325		44			Br. sand, Sm. B.S. from 0-10'
2		10'-20'	.375		47			Gray sand, Trace B.S.
3		20'-30'	.175		26			Very loose sand, trace of B.S. shell, D.W. Redrill this 10' section to get more sample of material
4		30'-40'	.500		60			Gray sand, shell, Sm. D.W.
5		40'-50'	.575		65			Gray sand, Trace B.S.
6		50'-60'	.575		70			Gray sand, shell
7		60'-70'	.650		78			Gray sand, slimes from Mk. layers of thin clay, Sm. B.
8		70'-80'	.650		73			Gray sand, MK. or Cl.
		80ft.	3.875		463			8-Bags
TOTALS								

plus 10' for redrill

Total Depth 80ft. Mineral % _____ Other Minerals: _____ Assays: _____

Mineable Depth _____ Mineral % _____

Mineral Lbs. _____ Per Cu. Yd. Sand _____

Abbreviations:	Blk. Black Br. Brown B.S. Black Sand	C Coarse Cl. Clay Dk. Dark	D.W. Decomposed Wood S.W. Solid Wood Fm. Firm	L. Loose M. Much Mk. Muck	Sm. Some P. Peat Sh. Shell
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THE BUNKER HILL COMPANY

Exploration Clatsop Spit Line No. 193 Elev. Date Feb. 21, 1964

Property State of Oregon Hole No. 16 Co-ord _____ Sheet No. 10

Location West of Battery Russ Sho Dia. 3 $\frac{1}{8}$ " Water Lv. ----- Mineral Mag-----

In Charge M. Young Driller Owens Lab. Man _____

Sample No.	Diameter or Dim.	Depth	Vol. Cu. Ft.	Vol. Cu. Yd.	Sample Weight	Mineral Weight	Min. %	Formation
1	3 $\frac{7}{8}$ "	0-10'	.400		50			Br.sand, Sm.B.S. roots
2		10'-20'	.350		45			Br.sand, Sm.B.S.
3		20'-30'	.400		50			Very loose sand, Gray sand, Trace B.S. Redrill this 10' section to get more sample
4		30'-40'	.600		60			Gray sand, Trace of B.S. Sm.shell & Dw.
TOTALS		40ft.	1.750		205			4 Bags

plus 10' redrill

Total Depth 40 ft. Mineral % Other Minerals: Assays:

Mineable Depth Mineral %.....

Mineral Lbs. Per Cu. Yd, Sand

Abbreviations:	Blk. Black	C Coarse	D.W. Decomposed Wood	L. Loose	Sm. Some
	Br. Brown	Cl. Clay	S.W. Solid Wood	M. Much	P. Peat
	B.S. Black Sand	Dk. Dark	Fm. Firm	Mk. Muck	Sh. Shell

THE BUNKER HILL COMPANY

Exploration Clatsop Spit Line No. 193 Elev. _____ Date Feb. 21, 1964
Property State of Oregon Hole No. 20 Co-ord _____ Sheet No. 11
Location West of Bat Russell Shoe Dia. 3 1/2" Water Lv. _____ Mineral Magnetite
In Charge M. Young Driller Owens Lab. Man _____

Sample No.	Diameter or Dim.	Depth	Vol. Cu. Ft.	Vol. Cu. Yd.	Sample Weight	Mineral Weight	Min. %	Formation
1	3 ¹ / _{4"}	0-10'	.330		42			Sand, Sm.B.S. roots
2		10'-20'	.500		68			Gray sand, Sm.B.S.
3		20'-30'	.425		71			Gray sand, Sm.shell 24-28ft Trace B.S.
4		30'-40'	.450		70			
TOTALS		10 ft.			231			4 bags

Total Depth: 40 ft. Mineral % Other Minerals: Assays:

Mineable Depth Mineral %.....

Mineral Lbs. Per Cu. Yd. Sand

Abbreviations:	Blk. Black	C Coarse	D.W. Decomposed Wood	L. Loose	Sm. Some
	Br. Brown	Cl. Clay	S.W. Solid Wood	M. Much	P. Peat
	B.S. Black Sand	Dk. Dark	Fm. Firm	Mk. Muck	Sh. Shell

THE BUNKER HILL COMPANY

Exploration Clatsop Spit Line No. 193 Elev. _____ Date Feb. 24, 1964
 Property State of Oregon Hole No. 24 Co-ord _____ Sheet No. 12
 Location W. Battery Russell Shoe Dia. 3 1/2 Water Lv. _____ Mineral Magnetite
 In Charge M. Young Driller Owens Lab. Man _____

Sample No.	Diameter or Dim.	Depth	Vol. Cu. Ft.	Vol. Cu. Yd.	Sample Weight	Mineral Weight	Min. %	Formation
1	3 1/2"	0-10'	.350		49			Brown Sand, Sm. B.S. Roots
2	3 1/2"	10'-20'	.450		53			Brown & gray sand, Trace B.S.
3		20'-30'	.500		61			Gray sand, Trace B.S. 5' redrill
4		30'-40'	.610		71			Gray sand, Trace B.S. & shell
5		40'-50'	.625		74			" " " " "
6		50'-60'	.750		87			" " " " "
7		60'-70'	.630		76			Gray Sand, Trace B.S. & shell Some clay & silt
8		70'-80'	.800		81			Mucky gray sand & silt shell, Sm. rock chips
TOTALS		80 ft.	4.715		552 lbs.			8 sacks

5 ft. redrill

Total Depth 80 ft. plus Mineral % _____ Other Minerals: _____ Assays: _____

Mineable Depth _____ Mineral % _____

Mineral Lbs. _____ Per Cu. Yd. Sand _____

Abbreviations: Blk. Black C Coarse D.W. Decomposed Wood L. Loose Sm. Some
 Br. Brown Cl. Clay S.W. Solid Wood M. Much P. Peat
 B.S. Black Sand Dk. Dark Fm. Firm Mk. Muck Sh. Shell

THE BUNKER HILL COMPANY

Exploration Clatsop Spit Line No. 247 Elev. _____ Date Feb. 17, 1964
 Property State of Oregon Hole No. 2 Co-ord _____ Sheet No. 6
 Location North of Peter Iredal Shoe Dia. 3 1/2" Water Lv. _____ Mineral Magnitite
parking area, next to dune
 In Charge Miles Young Driller A.C. Owens Lab. Man _____

Sample No.	Diameter or Dim.	Depth	Vol. Cu. Ft.	Vol. Cu. Yd.	Sample Weight	Mineral Weight	Min. %	Formation
1	3 1/2"	0'-10'	.500		66lbs. Wet			Br. sand, Sm. B.S. Sm. wood Hit log at 10' had to move over and redrill 10'
2		10'-20'	.400		51			Brown sand Sm. black sand
3		20'-40'	.350		44			Sand, Sm. B.S.
4		30'-40'	.300		43			Gray sand, Sm. shell, Trace
5		40'-50'	.500		65			Gray sand, Sm. shell (B.S.)
6		50'-60'	.600		73			Gray sand, Sm. shell, Sm. B.S.
7		60'-70'	.900		111			Gray sand, Sm. shell & D.W. 30% Run in.
8		70'-80'	.650		78			Gray sand, high % of shel 75-80'
TOTALS		80 ft.	4.2 cu.ft.		561 lbs. wet			Shipped in 9 bags.

Total Depth 80ft. plus 10' for redrill total ft. 90 Mineral % _____ Other Minerals: _____ Assays: _____

Mineable Depth _____ Mineral % _____

Mineral Lbs. _____ Per Cu. Yd. Sand _____

Abbreviations: Blk. Black C Coarse D.W. Decomposed Wood L. Loose Sm. Some
 Br. Brown Cl. Clay S.W. Solid Wood M. Much P. Peat
 B.S. Black Sand Dk. Dark Fm. Firm Mk. Muck Sh. Shell

THE BUNKER HILL COMPANY

Exploration Glatasp Spit Line No. 247 Elev. _____ Date Feb. 12, 1964
 Property State of Oregon Hole No. 5 Co-ord _____ Sheet No. 5
 Location Peter Iredale Road Shoe Dia. 3 1/4" Water Lv. _____ Mineral Magnetite
 In Charge M. Young Driller Owens Lab. Man _____

Sample No.	Diameter or Dim.	Depth	Vol. Cu. Ft.	Vol. Cu. Yd.	Sample Weight	Mineral Weight	Min. %	Formation
1	3 1/4"	0-10'	.230		3 1/4 lbs.			Sand, Sm. Wood & Roots Sm. B.S.
2		10-20'	.400		57			Sand, Much Black sand
3		20'-30'	.350		45			Sand, Sm. B.S.
4		30'-40'	.400		52			Sand, Sm. Sh. Trace B.S.
5		40'-50'	.550		66			Gray Sand, Sm. Sh. & Wood
6		50'-60'	.650		76			Gray Sand, Sm. Sh. & Wood
7		60'-70'	.675		80			" " " " " "
8		70'-80'	.86		86			Gray Sand, Shell, Sm. Muck
TOTALS					496 lbs.			

Total Depth 80 ft. Mineral % _____ Other Minerals: _____ Assays: _____

Mineable Depth _____ Mineral % _____

Mineral Lbs. _____ Per Cu. Yd. Sand _____

Abbreviations:

Blk. Black C Coarse
 Br. Brown Cl. Clay
 B.S. Black Sand Dk. Dark

D.W. Decomposed Wood
 S.W. Solid Wood
 Fm. Firm

L. Loose
 M. Much
 Mk. Muck

Sm. Some
 P. Peat
 Sh. Shell

THE BUNKER HILL COMPANY

Exploration Clatsop Spit Line No. 247 Elev. _____ Date 2/10/64
Property State of Oregon Hole No. 8 Co-ord _____ Sheet No. 1 of 1
Location Peter Inedale Road Shoe Dia. 3 $\frac{1}{2}$ " Water Lv. 4' Mineral Magnetite
In Charge Thiessen Driller Owens Lab. Man _____

Sample No.	Diameter or Dim.	Depth	Vol. Cu. Ft.	Vol. Cu. Yd.	Sample Weight	Mineral Weight	Min. %	Formation
1	3.5	0-10	.290		Wet 39 lbs			Brown sand, Sm.B.S.2'-5'
2		10-20	.600		Wet 74			10'-16' Heavy B.S. and gray sand
3		20-30	.400		Wet 51			20-27 B.S. Firm 27-30 Gray sand loose
4		30-40	.500		Wet 64			Gray sand.Trace of B.S
5		40-50	.525		Wet 65			Gray sand,Sm.Muck
6		50-60	.575		Wet 75			Gray sand,Trace B.S.Shell
7		60-70	.500		Wet 69			Gray sand,Shell,Sm.Wood
8		70-80	.500		Wet 66			Gray sand,Shell
TOTALS					503 lbs.Wet			

Total Depth 80ft. Mineral % Other Minerals: Assays:

Mineable Depth Mineral %.....

Mineral Lbs. Per Cu. Yd. Sand

Abbreviations:	Blk. Black	C Coarse	D.W. Decomposed Wood	L. Loose	Sm. Some
	Br. Brown	Cl. Clay	S.W. Solid Wood	M. Much	P. Peat
	B.S. Black Sand	Dk. Dark	Fm. Firm	Mk. Muck	Sh. Shell

THE BUNKER HILL COMPANY

Exploration Clatsop Spit, Oregon Line No. 247 Elev. Date 2/6/64

Property State of Oregon Hole No. 11 Co-ord _____ Sheet No. 1 of 1

Location Peter Iredale Road Shoe Dia. 3 1/2" Water Lv. 4' Mineral Magnetite

In Charge Thiessen Driller Owens Lab. Man _____

[illegible]

Total Depth 861 Mineral % Other Minerals: Assays:

Mineable Depth Mineral %

Mineral Lbs. Per Cu. Yd. Sand

Abbreviations:

Blk. Black

C Coarse

D.W. Decomposed Wood

L. Loose

Sm. Some

Br. Brown

Cl. Clay

S.W. Solid Wood

M. Much

P. Peat

B.S. Black Sand

Dk. Dark

Fm. Firm

Mk. Muck

Sh. Shell

THE BUNKER HILL COMPANY

Exploration Clatsop Spit Line No. 247 Elev. Date Feb. 18, 1964
or County
Property State of Oregon- Hole No. 16 Co-ord Sheet No. 7
Location N. of Peter Iredale roShde Dia. 3 1/2" Water Lv. Mineral Magnitite
In Charge Miles Young Driller A. C. Owens Lab. Man

Sample No.	Diameter or Dim.	Depth	Vol. Cu. Ft.	Vol. Cu. Yd.	Sample Weight	Mineral Weight	Min. %	Formation
1	3 $\frac{1}{8}$ "	0-10'	.350		46 lbs.	Wet		Brown sand, Sm. B.S.
2		10'-20'	.450		60			Gray sand Trace B.S. 17-20
3		20'-30'	.550		62			Gray sand, Trace B.S.
4		30'-40'	.650		83			" " " " "
5		40'-50'	.550		70			Gray sand, shell from 44'
6		50'-60'	.575		70			Gray sand, increased amnt-shell
TOTALS		60 ft.	3.125 cu. ft.		391 lbs			Shipped in 6 bags

Total Depth 60 ft. Mineral % Other Minerals: Assays:

Mineable Depth Mineral %

Mineral Lbs. Per Cu. Yd. Sand

Abbreviations:	Blk. Black	C Coarse	D.W. Decomposed Wood	L. Loose	Sm. Some
	Br. Brown	Cl. Clay	S.W. Solid Wood	M. Much	P. Peat
	B.S. Black Sand	Dk. Dark	Fm. Firm	Mk. Muck	Sh. Shell

THE BUNKER HILL COMPANY

Exploration Clatsop Spit, Ore. Line No. 247 Elev. _____ Date Feb. 18, 1964
 Clatsop County
 Property State of Oregon, or. Hole No. 20 Co-ord _____ Sheet No. 8
 Location N. of Peter Iredale Rd Shoe Dia. 3 1/2" Water Lv. _____ Mineral Magnetite
 In Charge Miles Young Driller A.C. Owens Lab. Man _____

Sample No.	Diameter or Dim.	Depth	Vol. Cu. Ft.	Vol. Cu. Yd.	Sample Weight	Mineral Weight	Min. %	Formation
1	3 1/2"	0-10'	.350		46 lb.			sand, grassrts. Sm, B.S.
2		10'-20'	.450		60			sand, Tr ace B.S.
3		20'-30'	.400		49			Gray sand, Trace of B.S. Sm. shell
4		30'-40'	.550		67			Gray sand, shell. D.W.
5		40'-50'	.575		69			" " " " "
6		50'-60'	.650		73			" " " " "
7		60'-70'	.650		76			Gray sand, Sm. shell Sm. wood, coarse sand
8		70'-80'	.700		85			Gray sand, Trace B.S.
TOTALS		80 ft.	4.325 cu. ft.		525 lbs			8 bags shipped

Total Depth 80' Mineral % _____ Other Minerals: _____ Assays: _____

Mineable Depth _____ Mineral % _____

Mineral Lbs. _____ Per Cu. Yd. Sand _____

Abbreviations: Blk. Black C Coarse D.W. Decomposed Wood L. Loose Sm. Some
 Br. Brown Cl. Clay S.W. Solid Wood M. Much P. Peat
 B.S. Black Sand Dk. Dark Fm. Firm Mk. Muck Sh. Shell

THE BUNKER HILL COMPANY

Property State of Oregon Hole No. 12 Co-ord _____ Sheet No. 23

Location One mile South of Peter Iredale Road Shoe Dia. 3 1/2" Water Lv. Mineral Magnetite

In Charge Young Driller Owens Lab. Man _____

Sample No.	Diameter or Dim.	Depth	Vol. Cu. Ft.	Vol. Cu. Yd.	Sample Weight	Mineral Weight	Min. %	Formation
1	3-1"	0-10'	.400		50			Brown Sand, Sm. B.S. Sm. Grass
2		10'-20'	.625		73			Brown & Gray Sand Trace of B.S.
3		20'-30'	.575		68			Gray Sand, Slight trace of B.S. Slight trace of Shell.
4		30'-40'	.565		63			Gray Sand, Trace of Shell
		40'-50'	.600		70			Gray Sand, Sm. Shell
TOTALS			2.765		324			5 Sacks shipped

Total Depth 50' Mineral % Other Minerals: Assays:

Mineral Lbs. Per Cu. Yd. Sand

Abbreviations:

Blk. Black

Br. Brown

B.S. Black Sand

C Coarse

Cl. Clay

Dk. Dark

D.W. Decomposed Wood

S.W. Solid Wood

Em. Firm

L. Locse

M. Much

Mk. Muck

Sm. Some

P. Peat

Sh. Shell

THE BUNKER HILL COMPANY

Exploration Clatsop Spit Line No. 305 Elev. _____ Date March 10, 1964
 Property State of Oregon Hole No. 16 Co-ord _____ Sheet No. 22
 Location One mile South of Peter Iredale Road Shoe Dia. 3 1/2" Water Lv. _____ Mineral Magnetite
 In Charge Young Driller Owens Lab. Man _____

Sample No.	Diameter or Dim.	Depth	Vol. Cu. Ft.	Vol. Cu. Yd.	Sample Weight	Mineral Weight	Min. %	Formation
1	3 1/2"	0-10'	.350		44			Brown & Gray Sand, B.S.
								Sm. Wood & Grass
2		10'-20'	.700		85			Brown & Gray Sand, Heavy
								layer of B.S. from 12'-13'
								Sm. B.S. 13' up to 20'
								Sm. Wood, Shell at 17'
3		20'-30'	.650		76			Trace of B.S. & Shell
								Gray Sand.
4		30'-40'	.625		75			Gray Sand, Trace of Shell
								and B.S.
5		40'-50'	.625		76			Gray Sand, Trace of B.S.
								Shell & Wood.
								Drilled into log at 10'
								on first set up.
								Pulled pipe and moved 4'
								for new setting.
TOTALS		50'	2.950		356			5 Sacks shipped

Plus 10' Redrill for log = 60'.

Total Depth 50' Mineral % _____ Other Minerals: _____ Assays: _____

Mineable Depth _____ Mineral % _____

Mineral Lbs. _____ Per Cu. Yd. Sand _____

Abbreviations:

Blk. Black
 Br. Brown
 B.S. Black Sand

C. Coarse
 Cl. Clay
 Dk. Dark

D.W. Decomposed Wood
 S.W. Solid Wood
 Fm. Firm

L. Loose
 M. Much
 Mk. Muck

Sm. Some
 P. Peat
 Sh. Shell

THE BUNKER HILL COMPANY

Exploration Clatsop Spit Line No. 305 Elev. _____ Date March 11, 1964
 Property State of Oregon Hole No. 20 Co-ord _____ Sheet No. 24
 Location One mile South of
Peter Iredale Road Shoe Dia. 3 1/2" Water Lv. _____ Mineral Magnetite
 In Charge Young Driller Owens Lab. Man _____

Sample No.	Diameter or Dim.	Depth	Vol. Cu. Ft.	Vol. Cu. Yd.	Sample Weight	Mineral Weight	Min. %	Formation
1	3 1/2"	0-10'	.350		45			Brown Sand, Sm. B.S. Sm. Trace of Wood
2		10'-20'	.360		46			Brown Sand, Trace of B.S.
3		20'-30'	.400		50			Brown & Gray Sand Sm. B.S.
4		30'-40'	.500		65			Gray Sand, Trace of B.S. Clay & Fine Silt.
5		40'-50'	.500		60			Gray Sand, Clay & Fine Si
								Included a check sample by hand auger, taken beside this hole. 0-7 1/2" ---- 2 sacks Weight 166 lbs. 5 sacks drill samples Shipped.
TOTALS		50'	2.110		266			

Total Depth 50' Mineral % _____ Other Minerals: _____ Assays: _____

Mineable Depth _____ Mineral % _____

Mineral Lbs. _____ Per Cu. Yd. Sand _____

Abbreviations: Blk. Black C Coarse D.W. Decomposed Wood L. Loose Sm. Some
 Br. Brown Cl. Clay S.W. Solid Wood M. Much P. Peat
 B.S. Black Sand Dk. Dark Fm. Firm Mk. Muck Sh. Shell

THE BUNKER HILL COMPANY

Exploration Clatsop Spit Line No. 360 Elev. _____ Date March 13, 1964
 Property State of Oregon Hole No. 16 Co-ord _____ Sheet No. 27
400' North of
 Location Deluara Beach Road Shoe Dia. 3 1/2" Water Lv. _____ Mineral Magnetite
 In Charge Young Driller Owens Lab. Man _____

Sample No.	Diameter or Dim.	Depth	Vol. Cu. Ft.	Vol. Cu. Yd.	Sample Weight	Mineral Weight	Min. %	Formation
1	3 1/2"	0-10'	.320		41			Brown Sand, Sm. B.S.
								Sm. Grass Root.
2		10'-20'	.650		81			Brown & Gray Sand
								Trace of B.S.
3		20'-30'	.750		81			Brown & Gray Sand. Trace of
								B.S. Trace of Shell at 27'
4		30'-40'	.650		74			Gray Sand, Sm. Shell.
5		40'-50'	.700		82			Gray Sand, Sm. Shell
								Sm. D.W.
TOTALS		50'	3.070		359			5 sacks

Total Depth 50' Mineral % _____ Other Minerals: _____ Assays: _____

Mineable Depth _____ Mineral % _____

Mineral Lbs. _____ Per Cu. Yd. Sand _____

Abbreviations: Blk. Black C Coarse D.W. Decomposed Wood L. Loose Sm. Some
 Br. Brown Cl. Clay S.W. Solid Wood M. Much P. Peat
 B.S. Black Sand Dk. Dark Fm. Firm Mk. Muck Sh. Shell

THE BUNKER HILL COMPANY

Exploration Clatsop Spit Line No. 370 Elev. _____ Date March 12, 1964
 Property State of Oregon Hole No. 11 Co-ord _____ Sheet No. 26
 Location Deluara Beach Road Shoe Dia. 3 1/2" Water Lv. _____ Mineral Magnetite
 In Charge Young Driller Owens Lab. Man _____

Sample No.	Diameter or Dim.	Depth	Vol. Cu. Ft.	Vol. Cu. Yd.	Sample Weight	Mineral Weight	Min. %	Formation
1	3 1/2"	0-10'	.325		42			Brown Sand, Sm. B.S. Wood.
2		10'-20'	.680		76			Gray Sand, Trace of Shell & B.S.
3		20'-30'	.700		76			Gray & Brown Sand Slight Trace of Shell & B.S.
4		30'-40'	.640		72			Brown & Gray Sand Trace of D.W. & Shell
5		40'-50'	.550		64			Brown & Gray Sand Sm. D.W. Trace of B.S. & Shell.
6				Extra Sample	39			Hand Auger Sample 0-18". .300 cu.ft.
TOTALS		50'	2.895		369			6 feet

Total Depth 50' Mineral % _____ Other Minerals: _____ Assays: _____

Mineable Depth _____ Mineral % _____

Mineral Lbs. _____ Per Cu. Yd. Sand _____

Abbreviations: Blk. Black C Coarse D.W. Decomposed Wood L. Loose Sm. Some
 Br. Brown Cl. Clay S.W. Solid Wood M. Much P. Peat
 B.S. Black Sand Dk. Dark Fm. Firm Mk. Muck Sh. Shell

THE BUNKER HILL COMPANY

Exploration Clatsop Spit Line No. 370 Elev. _____ Date March 12, 1964
 Property State of Oregon Hole No. 15 Co-ord _____ Sheet No. 23 25
 Location Deluara Beach Road Shoe Dia. 3 1/2" Water Lv. _____ Mineral Magnetite
 In Charge Young Driller Owens Lab. Man _____

Sample No.	Diameter or Dim.	Depth	Vol. Cu. Ft.	Vol. Cu. Yd.	Sample Weight	Mineral Weight	Min. %	Formation
1	3 1/2"	2-10'	.300		40			Brown Sand, Sm. B.S. Sm. Wood & Grass
2		10'-20'	.700		79			Gray Sand, Trace of Shell Trace of B.S. Enrichment of B.S. between 17' & 18'.
3		20'-30'	.680		74			Brown & Gray Sand Trace of Shell
4		30'-40'	.600		68			Brown & Sm. Gray Sand, Shell
		40'-50'	.550		65			Brown & Gray Sand, Shell D.W. Trace of B.S.
								First 2' taken by hand auger, instead of drill. 0-2'. 1 sack 65 lbs. Drill sample 5 sacks.
TOTALS		50'	2.830		326			

Total Depth 50' Mineral % _____ Other Minerals: _____ Assays: _____

Mineable Depth _____ Mineral % _____

Mineral Lbs. _____ Per Cu. Yd. Sand _____

Abbreviations:

Blk. Black

C Coarse

D.W. Decomposed Wood

L. Loose

Sm. Some

Br. Brown

Cl. Clay

S.W. Solid Wood

M. Much

P. Peat

B.S. Black Sand

Dk. Dark

Fm. Firm

Mk. Muck

Sh. Shell

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 247
 HOLE NO. 5
 INTERVAL 30-40'

DATE 2/21/64
 OPERATOR R.L.S. F.N.

WET WEIGHT OF TOTAL SAMPLE 48.0 Lbs.

HEAD SAMPLE

NET WET WT. 2,916
 NET DRY WT. 2,341
 % DRY SOLIDS 80.28

GROSS WET WT. 3,350
 GROSS DRY WT. 2,775
 TARE WT. 434

SAMPLE RUN

WET WT. OF FEED SAMPLE 41.5 Lbs

1. X 80.28 % DRY SOLIDS = 33.32 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .68 = 41 sec.
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2940.0

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 75 GRAMS = .165 LB

METALLURGICAL BALANCE

HEAD, (ASSAYED

1. HEAD (CALC.)

2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

(calc)

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
		5.10		
33.22	100.00		5.10	100.00
.17	.51	30.50	.16	3.13
33.15	99.49	4.97	4.94	96.87

REMARKS:

SAMPLE NO. 2

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 247
HOLE NO. 5
INTERVAL 0-10'

DATE 2/21/64
OPERATOR R.L.S. F.N. M.D.

WET WEIGHT OF TOTAL SAMPLE 32.5

HEAD SAMPLE

NET WET WT. 3,570
NET DRY WT. 3,039
% DRY SOLIDS 85.13

GROSS WET WT. 3984.0 Gms
GROSS DRY WT. 3,453
TARE WT. 414 Gms

SAMPLE RUN

WET WT. OF FEED SAMPLE 24.5 #

1. X 85.13 % DRY SOLIDS = 20.86 lbs. (DRY FEED WT.)

DRUM R.P.M. 22.2
FEED TIME IN MINUTES .417
% SOLIDS IN FEED 20.0
G.P.M. OF WATER TO FEED 23.0
G.P.M. OF SLURRY PULP 25.0
FEED RATE, DRY LBS./FT/HR 3001.3

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 338 GRAMS = .745 LBS

METALLURGICAL BALANCE

	Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
HEAD, (ASSAYED			7.10		
1. HEAD (CALC.)	20.860	100.00	42.10	7.10	100.00
2. CONC.	.745	3.57	47.00	1.68	23.66
* Tails (Calc.)	20.115	96.43	5.62	5.42	76.34

* Tail Dry Wt. = 1 - 2

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 247
 HOLE NO. 5
 INTERVAL 20-30'

DATE 2/21/64
 OPERATOR R.L.S. F.N.

WET WEIGHT OF TOTAL SAMPLE 40.5

HEAD SAMPLE

NET WET WT. 3,622
 NET DRY WT. 3,019
 % DRY SOLIDS 83.35

GROSS WET WT. 4.025 Gms.
 GROSS DRY WT. 3,422
 TARE WT. 403

SAMPLE RUN

WET WT. OF FEED SAMPLE 32.5 Lbs.

1. X 83.35 % DRY SOLIDS = 27.08 lbs. (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .62
 % SOLIDS IN FEED 20.0
 G.P.M. OF WATER TO FEED 23.0
 G.P.M. OF SLURRY PULP 25.0
 FEED RATE, DRY LBS./FT/HR 2620.5

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 147 GRAMS = .324 LBS

METALLURGICAL BALANCE

	Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
HEAD, (ASSAYED			4.40		
1. HEAD (CALC.)	27.08	100.00		4.40	100.00
2. CONC.	.32	1.18	43.90	.52	11.81
* Tails (Calc,)	26.76	98.82	3.93	3.88	88.19

* Tail Dry Wt. = 1 - 2

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 247
 HOLE NO. 5
 INTERVAL 10'-20'

DATE 2/22/64
 OPERATOR R. L. Schell

WET WEIGHT OF TOTAL SAMPLE 51.0

HEAD SAMPLE

NET WET WT. 3,869 Gm
 NET DRY WT. 3,131
 % DRY SOLIDS 80.93

GROSS WET WT. 4,307 Gms.
 GROSS DRY WT. 3,569
 TARE WT. 438

SAMPLE RUN

WET WT. OF FEED SAMPLE 42.5 #

1. X 80.93 % DRY SOLIDS = 34.40 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .73
 % SOLIDS IN FEED 20.0
 G.P.M. OF WATER TO FEED 23.0
 G.P.M. OF SLURRY PULP 25.0
 FEED RATE, DRY LBS./FT/HR 2860.2

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 270 GRAMS = .595 LBS

METALLURGICAL BALANCE

	Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
HEAD, (ASSAYED			4.50		
1. HEAD (CALC.)	34.40	100.00		4.50	100.00
2. CONC.	.60	1.74	39.60	.69	15.33
* Tails (Calc.)	33.80	98.26	3.88	3.81	84.67

* Tail Dry Wt. = 1 - 2

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 193
 HOLE NO. 8
 INTERVAL 0-10'

DATE 2/22/64
 OPERATOR R.L. Schell
F. Nolan

WET WEIGHT OF TOTAL SAMPLE 24-3/4

HEAD SAMPLE

NET WET WT. 2,084
 NET DRY WT. 1,689
 % DRY SOLIDS 81.05

GROSS WET WT. 2,500
 GROSS DRY WT. 2,105
 TARE WT. 416.0

SAMPLE RUN

WET WT. OF FEED SAMPLE 20.15

1. X 81.05 % DRY SOLIDS = 16.33 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .312 = 19 sec
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 3140.4

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 233 GRAMS = .514 LB

METALLURGICAL BALANCE

HEAD, (ASSAYED

1. HEAD (CALC.)

2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
		<u>5.50</u>		
<u>16.330</u>	<u>100.00</u>		<u>5.50</u>	<u>100.00</u>
<u>.514</u>	<u>3.15</u>	<u>47.40</u>	<u>1.49</u>	<u>27.09</u>
<u>15.816</u>	<u>96.85</u>	<u>4.14</u>	<u>4.01</u>	<u>72.91</u>

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 247
 HOLE NO. 11
 INTERVAL 0-10'

DATE 2/22/64
 OPERATOR R.L.S.

WET WEIGHT OF TOTAL SAMPLE 39.5 lbs.

HEAD SAMPLE

NET WET WT. 2,104
 NET DRY WT. 1,719
 % DRY SOLIDS 81.70

GROSS WET WT. 2,500
 GROSS DRY WT. 2,115
 TARE WT. 396

SAMPLE RUN

WET WT. OF FEED SAMPLE 35.0

1. X 81.70 % DRY SOLIDS = 28.60 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .57
 % SOLIDS IN FEED 20.0
 G.P.M. OF WATER TO FEED 23.0
 G.P.M. OF SLURRY PULP 25.0
 FEED RATE, DRY LBS./FT/HR 2908.3

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 336 GRAMS = .741 LB.

METALLURGICAL BALANCE

	Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
HEAD, (ASSAYED			5.00		
1. HEAD (CALC.)	28.600	100.00		5.00	100.00
2. CONC.	.741	2.59	43.00	1.11	22.20
* Tails	27.859	97.41	3.99	3.89	77.80

* Tail Dry Wt. = 1 - 2

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 247
 HOLE NO. 5
 INTERVAL 50-60'

DATE 2/24/64
 OPERATOR R. L. Schell
F. Nolan

WET WEIGHT OF TOTAL SAMPLE 74.5 Lbs.

HEAD SAMPLE

NET WET WT. 2,500
 NET DRY WT. 2,015
 % DRY SOLIDS 80.60

GROSS WET WT. 2,948
 GROSS DRY WT. 2,463
 TARE WT. 448

SAMPLE RUN

WET WT. OF FEED SAMPLE 68.5 lbs

1. X 80.60 % DRY SOLIDS = 55.21 lbs. (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES 1.15 = 69 sec.
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23.0
 G.P.M. OF SLURRY PULP 25.0
 FEED RATE, DRY LBS./FT/HR 2880.5

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 135 GRAMS = .298 LBS

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.
 * Tails
 * Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
		4.40		
55.210	100.00		4.40	100.00
.298	.54	37.40	.20	4.55
54.912	99.46	4.22	4.20	95.45

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 247
 HOLE NO. 5
 INTERVAL 40-50'

DATE 2/24/64
 OPERATOR R. L. Schell
F. Nolan

WET WEIGHT OF TOTAL SAMPLE 64.5 #

HEAD SAMPLE

NET WET WT. 2,500
 NET DRY WT. 2,010
 % DRY SOLIDS 80.40

GROSS WET WT. 2,896
 GROSS DRY WT. 2,406
 TARE WT. 396

SAMPLE RUN

WET WT. OF FEED SAMPLE 58.0 Lbs.

1. X 80.40 % DRY SOLIDS = 46.63 lbs. (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .99 = 59 Sec.
 % SOLIDS IN FEED 20.0
 G.P.M. OF WATER TO FEED 23.0
 G.P.M. OF SLURRY PULP 25.0
 FEED RATE, DRY LBS./FT/HR 2826.2

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 104 GRAMS = .229 LBS

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.
 * Tails
 * Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
		4.50		
46.630	100.00		4.50	100.00
.229	.49	37.60	0.18	4.00
46.401	99.51	4.34	4.32	96.00

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 247
 HOLE NO. 5
 INTERVAL 70-80'

DATE 2/24/64
 OPERATOR F. Nolan
R. L. Schell

WET WEIGHT OF TOTAL SAMPLE 84.5 lbs

HEAD SAMPLE

NET WET WT. 2,995 Gm.
 NET DRY WT. 2,454
 % DRY SOLIDS 81.94

GROSS WET WT. 3,411 Gm.
 GROSS DRY WT. 2,870
 TARE WT. 416

SAMPLE RUN

WET WT. OF FEED SAMPLE 73.5 lbs.

1. X 81.94 % DRY SOLIDS = 60.23 lbs. (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES 1.25 = 1':15"
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2891.0

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 126 GRAMS = .278 LBS

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.
 * Tails
 * Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
		4.20		
60.230	100.00		4.20	100.00
.278	.46	39.40	.18	4.29
59.952	99.54	4.04	4.02	95.71

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 247
 HOLE NO. 5
 INTERVAL 60-70'

DATE 2/24/64
 OPERATOR R.L. Schell
F. Nolan

WET WEIGHT OF TOTAL SAMPLE 78.5 lbs.

HEAD SAMPLE

NET WET WT. 4,351
 NET DRY WT. 3,448
 % DRY SOLIDS 79.25

GROSS WET WT. 4,794
 GROSS DRY WT. 3,891
 TARE WT. 443

SAMPLE RUN

WET WT. OF FEED SAMPLE 67 lbs.

1. X 79.25 % DRY SOLIDS = 53.10 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES 1.09 = 65 sec.
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2923.2

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 125 GRAMS = .276 LBS

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.
 * Tails
 * Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
		<u>4.80</u>		
<u>53.100</u>	<u>100.00</u>		<u>4.800</u>	<u>100.00</u>
<u>.276</u>	<u>.52</u>	<u>37.80</u>	<u>.197</u>	<u>4.10</u>
<u>52.824</u>	<u>99.48</u>	<u>4.63</u>	<u>4.603</u>	<u>95.90</u>

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 246 ? = 247
 HOLE NO. 8
 INTERVAL 30-40'

DATE 2/24/64
 OPERATOR R. L. Schell
F. Nolan

WET WEIGHT OF TOTAL SAMPLE 62 lbs.

HEAD SAMPLE

NET WET WT. 4,301
 NET DRY WT. 3,488
 % DRY SOLIDS 81.10

GROSS WET WT. 4,715
 GROSS DRY WT. 3,902
 TARE WT. 414

SAMPLE RUN

WET WT. OF FEED SAMPLE 51

1. X 81.10 % DRY SOLIDS = 41.36 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .89 = 53 sec.
 % SOLIDS IN FEED 20.0
 G.P.M. OF WATER TO FEED 23.0
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2788.5

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 128 GRAMS = .282 LB

METALLURGICAL BALANCE

	Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
HEAD, (ASSAYED			4.60		
1. HEAD (CALC.)	41.360	100.00		4.600	100.00
2. CONC.	.282	.68	35.00	.238	5.17
* Tails	41.078	99.32	4.39	4.362	94.83

* Tail Dry Wt. = 1 - 2

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 193
 HOLE NO. 8
 INTERVAL 50-60'

DATE 2/25/64
 OPERATOR R.L. Schell
F. Nolan

WET WEIGHT OF TOTAL SAMPLE 118.5

HEAD SAMPLE

NET WET WT. 5,847
 NET DRY WT. 4,748
 % DRY SOLIDS 81.20

GROSS WET WT. 6,250
 GROSS DRY WT. 5,151
 TARE WT. 403

SAMPLE RUN

WET WT. OF FEED SAMPLE 109.5

1. X 81.20 % DRY SOLIDS = 88.914 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES 1.82 1:49 sec
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2931.4

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 234 GRAMS = .516 L

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
		4.60		
88.914	100.00		4.60	100.00
.516	.58	36.60	.21	4.57
88.398	99.42	4.42	4.39	95.43

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 193
 HOLE NO. 8
 INTERVAL 30-40'

DATE 2/25/64
 OPERATOR R.L.S

WET WEIGHT OF TOTAL SAMPLE 74

HEAD SAMPLE

NET WET WT. 4,814
 NET DRY WT. 3,927
 % DRY SOLIDS 81.57

GROSS WET WT. 5,230
 GROSS DRY WT. 4,343
 TARE WT. 416

SAMPLE RUN

WET WT. OF FEED SAMPLE 58

1. X 81.57 % DRY SOLIDS = 47.311 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .99 = 59 sec
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2867.46

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 344 GRAMS = .758 LB

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
		4.80		
47.311	100.00		4.80	100.00
.758	1.60	39.20	.63	13.13
46.553	98.40	4.24	4.17	86.87

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 246 ? = 247
 HOLE NO. 8
 INTERVAL 0-10"

DATE 2/25/64
 OPERATOR R. L. Schell

WET WEIGHT OF TOTAL SAMPLE 38

HEAD SAMPLE

NET WET WT. 4,169
 NET DRY WT. 3,385
 % DRY SOLIDS 81.19

GROSS WET WT. 4,611
 GROSS DRY WT. 3,827
 TARE WT. 442

SAMPLE RUN

WET WT. OF FEED SAMPLE 28.5 lbs.

1. X 81.19 % DRY SOLIDS = 23.14 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .47 = 28 sec.
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2954.1

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 252 GRAMS = .556 LB

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
		5.80		
23.140	100.00		5.80	100.00
.556	2.40	45.4	1.09	18.79
22.584	97.60	4.83	4.71	81.21

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 193
 HOLE NO. 8
 INTERVAL 10-20'

DATE 2/25/64
 OPERATOR R.L. Schell

WET WEIGHT OF TOTAL SAMPLE 62

HEAD SAMPLE

NET WET WT. 4,569
 NET DRY WT. 3,738
 % DRY SOLIDS 81.81

GROSS WET WT. 4,983
 GROSS DRY WT. 4,152
 TARE WT. 414

SAMPLE RUN

WET WT. OF FEED SAMPLE 51.5

1. X 81.81 % DRY SOLIDS = 42.132 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .89 53 sec
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2840.4

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 707 GRAMS = 1.559 LB

METALLURGICAL BALANCE

	Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
HEAD, (ASSAYED			6.40		
1. HEAD (CALC.)	42.132	100.00		6.40	100.00
2. CONC.	1.559	3.70	45.80	1.69	26.41
* Tails	40.573	96.30	4.89	4.71	73.59

* Tail Dry Wt. = 1 - 2

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 193
 HOLE NO. 8
 INTERVAL 20-30'

DATE 2/25/64
 OPERATOR R. L. Schell

WET WEIGHT OF TOTAL SAMPLE 64

HEAD SAMPLE

NET WET WT. 3,351
 NET DRY WT. 2,708
 % DRY SOLIDS 80.81

GROSS WET WT. 3,794
 GROSS DRY WT. 3,151
 TARE WT. 443

SAMPLE RUN

WET WT. OF FEED SAMPLE 55

1. X 80.81 % DRY SOLIDS = 44.45 lbs. (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .94 = 56 sec.
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2837.2

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 180 GRAMS = .397 LB

METALLURGICAL BALANCE

	Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
HEAD, (ASSAYED			4.60		
1. HEAD (CALC.)	44.450	100.00		4.60	100.00
2. CONC.	.397	.89	35.20	.31	6.74
* Tails	44.053	99.11	4.33	4.29	93.26

* Tail Dry Wt. = 1 - 2

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 193
 HOLE NO. 8
 INTERVAL 40-50'

DATE 2/26/64
 OPERATOR F. Nolan
R. L. Schell

WET WEIGHT OF TOTAL SAMPLE 64

HEAD SAMPLE

NET WET WT. 3,684
 NET DRY WT. 3,027
 % DRY SOLIDS 82.17

GROSS WET WT. 4,132
 GROSS DRY WT. 3,475
 TARE WT. 448

SAMPLE RUN

WET WT. OF FEED SAMPLE 54

1. X 82.17 % DRY SOLIDS = 44.37 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .94 = 56 sec
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2832.14

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 247 GRAMS = .545 LB

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
		5.00		
44.370	100.00		5.00	100.00
.545	1.23	40.60	.50	10.00
43.825	98.77	4.56	4.50	90.00

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 246 ? = 247
 HOLE NO. 8
 INTERVAL 10-20'

DATE 2/26/64
 OPERATOR R. L. Schell

WET WEIGHT OF TOTAL SAMPLE 71.5 lbs.

HEAD SAMPLE

NET WET WT. 3,570
 NET DRY WT. 2,917
 % DRY SOLIDS 81.71

GROSS WET WT. 4,004
 GROSS DRY WT. 3,351
 TARE WT. 434

SAMPLE RUN

WET WT. OF FEED SAMPLE 63 lbs.

1. X 81.71 % DRY SOLIDS = 51.477 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES 1.04 = 62 Sec.
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2969.9

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 384 GRAMS = .847 LB

METALLURGICAL BALANCE

	Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
HEAD, (ASSAYED			5.20		
1. HEAD (CALC.)	51.477	100.00		5.20	100.00
2. CONC.	.847	1.65	40.20	.66	12.69
* Tails	50.630	98.35	4.62	4.54	87.31

* Tail Dry Wt. = 1 - 2

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 246 ? = 247
 HOLE NO. 8
 INTERVAL 20-30'

DATE 2/26/64
 OPERATOR R. L. Schell

WET WEIGHT OF TOTAL SAMPLE 49.5 lbs.

HEAD SAMPLE

NET WET WT. 3,252
 NET DRY WT. 2,595
 % DRY SOLIDS 79.80

GROSS WET WT. 3,681
 GROSS DRY WT. 3,024
 TARE WT. 429

SAMPLE RUN

WET WT. OF FEED SAMPLE 42 lbs.

1. X 79.80 % DRY SOLIDS = 37.716 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .73 = 44 sec
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 3100.2

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 252 GRAMS = .556 LB

METALLURGICAL BALANCE

	Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
HEAD, (ASSAYED			5.40		
1. HEAD (CALC.)	37.716	100.00		5.40	100.00
2. CONC.	.556	1.47	42.20	.62	11.48
* Tails	37.160	98.53	4.85	4.78	88.52

* Tail Dry Wt. = 1 - 2

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 246 ? = 247
 HOLE NO. 8
 INTERVAL 40-50'

DATE 2/26/64
 OPERATOR R.L.S.

WET WEIGHT OF TOTAL SAMPLE 63

HEAD SAMPLE

NET WET WT. 2,880
 NET DRY WT. 2,155
 % DRY SOLIDS 74.83

GROSS WET WT. 3,325
 GROSS DRY WT. 2,600
 TARE WT. 445

SAMPLE RUN

WET WT. OF FEED SAMPLE 55

1. X 74.83 % DRY SOLIDS = 41.157 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .94 = 56 sec
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2627.2

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 54 GRAMS = .119 LB

METALLURGICAL BALANCE

	Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
HEAD, (ASSAYED			4.00		
1. HEAD (CALC.)	41.157	100.00		4.000	100.00
2. CONC.	.119	.29	40.20	.117	2.93
* Tails	41.038	99.71	3.89	3.883	97.07

* Tail Dry Wt. = 1 - 2

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 246 ? = 247
 HOLE NO. 8
 INTERVAL 50-60'

DATE 2/26/64
 OPERATOR R.L.S.

WET WEIGHT OF TOTAL SAMPLE 73

HEAD SAMPLE

NET WET WT. 2,784
 NET DRY WT. 2,196
 % DRY SOLIDS 78.88

GROSS WET WT. 3,200
 GROSS DRY WT. 2,612
 TARE WT. 416

SAMPLE RUN

WET WT. OF FEED SAMPLE 67

1. X 78.88 % DRY SOLIDS = 52.850 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES 1.15 :69
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2757.2

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 198 GRAMS = .437 LB

METALLURGICAL BALANCE

	Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
HEAD, (ASSAYED			4.5		
1. HEAD (CALC.)	52.850	100.00		4.50	100.00
2. CONC.	.437	.83	38.60	.32	7.11
* Tails	52.413	99.17	4.21	4.18	92.89

* Tail Dry Wt. = 1 - 2

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 246 ? = 247
 HOLE NO. 8
 INTERVAL 60-70'

DATE 2/26/64
 OPERATOR R.L.S.

WET WEIGHT OF TOTAL SAMPLE 66.5 lbs

HEAD SAMPLE

NET WET WT. 3,667
 NET DRY WT. 3,086
 % DRY SOLIDS 84.16

GROSS WET WT. 3,994
 GROSS DRY WT. 3,413
 TARE WT. 327

SAMPLE RUN

WET WT. OF FEED SAMPLE 57.5

1. X 84.16 % DRY SOLIDS = 48.392 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .99 :59
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2932.9

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 87 GRAMS = .192 LB

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
		4.3		
48.392	100.00		4.30	100.00
.192	.40	38.20	.15	3.49
48.200	99.60	4.17	4.15	96.51

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 246 ? = 247
 HOLE NO. 8
 INTERVAL 70-80'

DATE 2/26/64
 OPERATOR R.S.

WET WEIGHT OF TOTAL SAMPLE 64.5

HEAD SAMPLE

NET WET WT. 3,502
 NET DRY WT. 2,812
 % DRY SOLIDS 80.30

GROSS WET WT. 3,871
 GROSS DRY WT. 3,181
 TARE WT. 369

SAMPLE RUN

WET WT. OF FEED SAMPLE 56

1. X 80.30 % DRY SOLIDS = 44.968 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .94 :56
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2870.4

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 53 GRAMS = .117 LB

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
		<u>3.9</u>		
<u>44.968</u>	<u>100.00</u>		<u>3.900</u>	<u>100.00</u>
<u>.117</u>	<u>.26</u>	<u>37.00</u>	<u>.096</u>	<u>2.46</u>
<u>44.851</u>	<u>99.74</u>	<u>3.81</u>	<u>3.804</u>	<u>97.54</u>

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 193
 HOLE NO. 4
 INTERVAL 0-10'

DATE 2/27/64
 OPERATOR R.L.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 70

HEAD SAMPLE

NET WET WT. 3,507
 NET DRY WT. 2,954
 % DRY SOLIDS 8,423

GROSS WET WT. 3,950
 GROSS DRY WT. 3,397
 TARE WT. 443

SAMPLE RUN

WET WT. OF FEED SAMPLE 61.5

1. X 84.23 % DRY SOLIDS = 51.801 (DRY FEED WT.)

DRUM R.P.M.	<u>22.2</u>
FEED TIME IN MINUTES	<u>1.04 :62</u>
% SOLIDS IN FEED	<u>20</u>
G.P.M. OF WATER TO FEED	<u>23</u>
G.P.M. OF SLURRY PULP	<u>25</u>
FEED RATE, DRY LBS./FT/HR	<u>2988.3</u>

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 686 GRAMS = 1.512 L

METALLURGICAL BALANCE

HEAD, (ASSAYED)
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
		<u>5.3</u>		
<u>50.801</u>	<u>100.00</u>		<u>5.30</u>	<u>100.00</u>
<u>1.512</u>	<u>2.98</u>	<u>44.6</u>	<u>1.32</u>	<u>24.91</u>
<u>48.289</u>	<u>97.02</u>	<u>4.10</u>	<u>3.98</u>	<u>75.09</u>

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 193
 HOLE NO. 4
 INTERVAL 10-20'

DATE 2/27/64
 OPERATOR R.L.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 52

HEAD SAMPLE

NET WET WT. 2,964
 NET DRY WT. 2,395
 % DRY SOLIDS 80.80

GROSS WET WT. 3,360
 GROSS DRY WT. 2,791
 TARE WT. 396

SAMPLE RUN

WET WT. OF FEED SAMPLE 45.5

1. X 80.80 % DRY SOLIDS = 36.764 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .78 :47
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2827.6

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 170 GRAMS = .375 LB

METALLURGICAL BALANCE

HEAD, (ASSAYED

1. HEAD (CALC.)

2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
		5.4		
36.764	100.00		5.40	100.00
.375	1.02	36.2	.37	6.85
36.389	98.98	5.08	5.03	93.15

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 193
 HOLE NO. 4
 INTERVAL 20-30'

DATE 2/27/64
 OPERATOR R.L.S
F.N.

WET WEIGHT OF TOTAL SAMPLE 37.5

HEAD SAMPLE

NET WET WT. 4,364
 NET DRY WT. 3,597
 % DRY SOLIDS 82.42

GROSS WET WT. 4,767
 GROSS DRY WT. 4,000
 TARE WT. 403

SAMPLE RUN

WET WT. OF FEED SAMPLE 27.5

1. X 82.42 % DRY SOLIDS = 22.666 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .47 :28
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR. 2894.1

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 851 GRAMS = 1,876 L

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.
 * Tails
 * Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
		<u>10.4</u>		
<u>22.666</u>	<u>100.00</u>		<u>10.40</u>	<u>100.00</u>
<u>1.876</u>	<u>8.28</u>	<u>48.7</u>	<u>4.03</u>	<u>38.75</u>
<u>20.790</u>	<u>91.72</u>	<u>6.95</u>	<u>6.37</u>	<u>61.25</u>

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 193
 HOLE NO. 4
 INTERVAL 30-40'

DATE 3/4/64
 OPERATOR R.L. Schell
F. Nolan

WET WEIGHT OF TOTAL SAMPLE 62 lbs.

HEAD SAMPLE

NET WET WT. 3,241
 NET DRY WT. 2,614
 % DRY SOLIDS 80.65

GROSS WET WT. 3,684
 GROSS DRY WT. 3,057
 TARE WT. 443

SAMPLE RUN

WET WT. OF FEED SAMPLE 54.5

1. X 80.65 % DRY SOLIDS = 43.954 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .94 :56
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2805.3

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 262 GRAMS = .578 LB

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
<u>43.954</u>	<u>100.00</u>			
<u>.578</u>	<u>1.32</u>			
<u>43.376</u>	<u>98.68</u>			

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 193
 HOLE NO. 4
 INTERVAL 40-50'

DATE 2/27/64
 OPERATOR R.L.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 66.5

HEAD SAMPLE

NET WET WT. 3,596
 NET DRY WT. 2,886
 % DRY SOLIDS 80.26

GROSS WET WT. 4,010
 GROSS DRY WT. 3,300
 TARE WT. 414

SAMPLE RUN

WET WT. OF FEED SAMPLE 57.5

1. X 80.26 % DRY SOLIDS = 46.150 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .94 :56
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2945.8

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 680 GRAMS = 1.499 L

METALLURGICAL BALANCE

HEAD, (ASSAYED

1. HEAD (CALC.)

2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
		<u>5.9</u>		
<u>46.150</u>	<u>100.00</u>		<u>5.90</u>	<u>100.00</u>
<u>1.499</u>	<u>3.25</u>	<u>41.8</u>	<u>1.36</u>	<u>23.05</u>
<u>44.651</u>	<u>96.75</u>	<u>4.69</u>	<u>4.54</u>	<u>76.95</u>

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 193
 HOLE NO. 4
 INTERVAL 50-60'

DATE 2/27/64
 OPERATOR R.L. Schell
F. Nolan

WET WEIGHT OF TOTAL SAMPLE 70

HEAD SAMPLE

NET WET WT. 3,298
 NET DRY WT. 2,647
 % DRY SOLIDS 80.26

GROSS WET WT. 3,736
 GROSS DRY WT. 3,085
 TARE WT. 438

SAMPLE RUN

WET WT. OF FEED SAMPLE 63

1. X 80.26 % DRY SOLIDS = 50.56 (DRY FEED WT.)

DRUM R.P.M.	<u>22.2</u>
FEED TIME IN MINUTES	<u>1.04 :62</u>
% SOLIDS IN FEED	<u>20</u>
G.P.M. OF WATER TO FEED	<u>23</u>
G.P.M. OF SLURRY PULP	<u>25</u>
FEED RATE, DRY LBS./FT/HR	<u>2916.8</u>

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 175 GRAMS = .386 L

METALLURGICAL BALANCE

HEAD, (ASSAYED

1. HEAD (CALC.)

2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt.	%	%	Fe	Fe
Lbs.	Wt.	Total Fe	Units	Dist.
		4.5		
50.560	100.00		4.50	100.00
.386	.76	40.2	.31	6.89
50.174	99.24	4.22	4.19	93.11

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 193
 HOLE NO. 4
 INTERVAL 60-70'

DATE 2/27/64
 OPERATOR R.L.S.
E.N.

WET WEIGHT OF TOTAL SAMPLE 62

HEAD SAMPLE

NET WET WT. 3,408
 NET DRY WT. 2,768
 % DRY SOLIDS 81.22

GROSS WET WT. 3,820
 GROSS DRY WT. 3,180
 TARE WT. 412

SAMPLE RUN

WET WT. OF FEED SAMPLE 51.5

1. X 81.22 % DRY SOLIDS = 41.828 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .89 :53
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2820.2

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 214 GRAMS = .472 LB

METALLURGICAL BALANCE

	Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
HEAD, (ASSAYED			4.1		
1. HEAD (CALC.)	41.828	100.00		4.10	100.00
2. CONC.	.472	1.13	41.0	.46	1.12
* Tails	41.356	98.87	3.68	3.64	98.88

* Tail Dry Wt. = 1 - 2

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 193
 HOLE NO. 4
 INTERVAL 70-80'

DATE 2/28/64
 OPERATOR R.L.S.

WET WEIGHT OF TOTAL SAMPLE 73.5

HEAD SAMPLE

NET WET WT. 4,032
 NET DRY WT. 3,315
 % DRY SOLIDS 82.22

GROSS WET WT. 4,480
 GROSS DRY WT. 3,763
 TARE WT. 448

SAMPLE RUN

WET WT. OF FEED SAMPLE 63.5

1. X 82.22 % DRY SOLIDS = 52.210 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES 1.04 :62
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 3012.0

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 173 GRAMS = .381 LB

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
52.210	100.00			
.381	.73	41.8	.31	
51.829	99.27			

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 247
 HOLE NO. 11
 INTERVAL 10-20'

DATE 2/28/64
 OPERATOR R.L.S.

WET WEIGHT OF TOTAL SAMPLE 65.5 lbs.

HEAD SAMPLE

NET WET WT. 3,565
 NET DRY WT. 2,539
 % DRY SOLIDS 71.22

GROSS WET WT. 3,999
 GROSS DRY WT. 2,973
 TARE WT. 434

SAMPLE RUN

WET WT. OF FEED SAMPLE 57

1. X 71.22 % DRY SOLIDS = 40.595 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .99 :59
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2460.8

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 369 GRAMS = .814 LB.

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
		3.4		
40.595	100.00		3.40	100.00
.814	2.01	42.6	.86	25.29
39.781	97.99	2.59	2.54	74.71

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 247
 HOLE NO. 11
 INTERVAL 20-30'

DATE 2/28/64
 OPERATOR R.L.S.

WET WEIGHT OF TOTAL SAMPLE 75

HEAD SAMPLE

NET WET WT. 3,197
 NET DRY WT. 2,931
 % DRY SOLIDS 91.68

GROSS WET WT. 3,600
 GROSS DRY WT. 3,334
 TARE WT. 403

SAMPLE RUN

WET WT. OF FEED SAMPLE 67

1. X 91.68 % DRY SOLIDS = 61.426 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES 1.15 :69
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 3204.8

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 142 GRAMS = .313 LB.

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
		4.5		
61.426	100.00		4.50	100.00
.313	.51	35.0	.18	4.00
61.113	99.49	4.34	4.32	96.00

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 247
 HOLE NO. 11
 INTERVAL 30-40

DATE 2/28/64
 OPERATOR R.L.S.

WET WEIGHT OF TOTAL SAMPLE 73

HEAD SAMPLE

NET WET WT. 3,538
 NET DRY WT. 2,846
 % DRY SOLIDS 80.44

GROSS WET WT. 3,981
 GROSS DRY WT. 3,289
 TARE WT. 443

SAMPLE RUN

WET WT. OF FEED SAMPLE 64

1. X 80.44 % DRY SOLIDS = 51.482 (DRY FEED WT.)

DRUM R.P.M.	<u>22.2</u>
FEED TIME IN MINUTES	<u>1.09 :65</u>
% SOLIDS IN FEED	<u>20</u>
G.P.M. OF WATER TO FEED	<u>23</u>
G.P.M. OF SLURRY PULP	<u>25</u>
FEED RATE, DRY LBS./FT/HR	<u>2834.0</u>

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 97 GRAMS = .214 LB

METALLURGICAL BALANCE

	Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
HEAD, (ASSAYED					
1. HEAD (CALC.)	<u>51.482</u>	<u>100.00</u>			
2. CONC.	<u>.214</u>	<u>.42</u>	<u>31.1</u>	<u>.13</u>	
* Tails	<u>51.268</u>	<u>99.58</u>			

* Tail Dry Wt. = 1 - 2

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 247
 HOLE NO. 11
 INTERVAL 40-50'

DATE 2/28/64
 OPERATOR R.L.S.

WET WEIGHT OF TOTAL SAMPLE 85.5 lbs

HEAD SAMPLE

NET WET WT. 3,817
 NET DRY WT. 3,091
 % DRY SOLIDS 80.98

GROSS WET WT. 4,213
 GROSS DRY WT. 3,487
 TARE WT. 396

SAMPLE RUN

WET WT. OF FEED SAMPLE 76.5

1. X 80.98 % DRY SOLIDS = 61.950 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES 1.30 1:18
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2859.0

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 212 GRAMS = .467 LB.

METALLURGICAL BALANCE

	Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
HEAD, (ASSAYED					
1. HEAD (CALC.)	61.950	100.00			
2. CONC.	.467	.75	33.8	.25	
* Tails	61.483	99.25			

* Tail Dry Wt. = 1 - 2

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 247
 HOLE NO. 11
 INTERVAL 50-60'

DATE 2/28/64
 OPERATOR R.L.S.

WET WEIGHT OF TOTAL SAMPLE 75

HEAD SAMPLE

NET WET WT. 3,555
 NET DRY WT. 2,872
 % DRY SOLIDS 80.79

GROSS WET WT. 4,000
 GROSS DRY WT. 3,317
 TARE WT. 445

SAMPLE RUN

WET WT. OF FEED SAMPLE 66

1. X 80.79 % DRY SOLIDS = 53.321 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES 1.09 :65
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2935.3

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 126 GRAMS = .278 LB

METALLURGICAL BALANCE

HEAD, (ASSAYED

1. HEAD (CALC.)

2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
<u>53.321</u>	<u>100.00</u>			
<u>.278</u>	<u>.52</u>	<u>35.2</u>	<u>.18</u>	
<u>53.043</u>	<u>99.48</u>			

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 247
 HOLE NO. 11
 INTERVAL 60-70'

DATE 2/29/64
 OPERATOR R.L.S.
F. Nolan

WET WEIGHT OF TOTAL SAMPLE 80

HEAD SAMPLE

NET WET WT. 2,898
 NET DRY WT. 2,376
 % DRY SOLIDS 81.9

GROSS WET WT. 3,327
 GROSS DRY WT. 2,805
 TARE WT. 429

SAMPLE RUN

WET WT. OF FEED SAMPLE 72

1. X 81.9 % DRY SOLIDS = 59.0 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES 1.20 1:12
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2945

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 100 GRAMS = .221 LB.

METALLURGICAL BALANCE

	Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
HEAD, (ASSAYED					
1. HEAD (CALC.)	59.00	100.00			
2. CONC.	.22	.37	33.2	.12	
* Tails	58.78	99.63			

* Tail Dry Wt. = 1 - 2

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 247
 HOLE NO. 11
 INTERVAL 70-80'

DATE 2/29/64
 OPERATOR R.L.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 65

HEAD SAMPLE

NET WET WT. 3,264
 NET DRY WT. 2,667
 % DRY SOLIDS 81.71

GROSS WET WT. 3,712
 GROSS DRY WT. 3,115
 TARE WT. 448

SAMPLE RUN

WET WT. OF FEED SAMPLE 57

1. X 81.71 % DRY SOLIDS = 46.575 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .94 :56
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2973.2

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 57 GRAMS = .126 LBS

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
<u>46.575</u>	<u>100.00</u>			
<u>.126</u>	<u>.27</u>	<u>30.4</u>	<u>.08</u>	
<u>46.449</u>	<u>99.73</u>			

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 247
 HOLE NO. 11
 INTERVAL 80-86'

DATE 2/29/64
 OPERATOR R.L.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 55.5

HEAD SAMPLE

NET WET WT. 4,022
 NET DRY WT. 3,315
 % DRY SOLIDS 82.42

GROSS WET WT. 4,465
 GROSS DRY WT. 3,758
 TARE WT. 443

SAMPLE RUN

WET WT. OF FEED SAMPLE 46

1. X 82.42 % DRY SOLIDS = 37.913 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .78 :47
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2916.0

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 87 GRAMS = .192 LB

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
<u>37.912</u>	<u>100.00</u>			
<u>.192</u>	<u>.51</u>	<u>41.2</u>	<u>.21</u>	
<u>37.721</u>	<u>99.49</u>			

* Tails

* Tail Dry Wt. = 1 - 2

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 247
 HOLE NO. 2
 INTERVAL 0-10'

DATE 2/29/64
 OPERATOR R.L.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 62

HEAD SAMPLE

NET WET WT. 3,702
 NET DRY WT. 3,148
 % DRY SOLIDS 85.04

GROSS WET WT. 4,136
 GROSS DRY WT. 3,582
 TARE WT. 434

SAMPLE RUN

WET WT. OF FEED SAMPLE 54.5

1. X 85.04 % DRY SOLIDS = 46.347 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .94 :56
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2958.5

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 879 GRAMS = 1.938 LBS

METALLURGICAL BALANCE

HEAD, (ASSAYED

1. HEAD (CALC.)

2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
		4.6		
46.347	100.00		4.60	100.00
1.938	4.18	43.4	1.81	39.35
44.409	95.82	2.91	2.79	60.65

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 247
 HOLE NO. 2
 INTERVAL 10-20'

DATE 2/29/64
 OPERATOR R.I.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 49

HEAD SAMPLE

NET WET WT. 4,724
 NET DRY WT. 3,863
 % DRY SOLIDS 81.77

GROSS WET WT. 5,140
 GROSS DRY WT. 4,279
 TARE WT. 416

SAMPLE RUN

WET WT. OF FEED SAMPLE 37

1. X 81.77 % DRY SOLIDS = 30.255 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .63 :38
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2882.0

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 251 GRAMS = .553 LB.

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
		<u>7.7</u>		
<u>30.255</u>	<u>100.00</u>		<u>7.70</u>	<u>100.00</u>
<u>.553</u>	<u>1.83</u>	<u>42.8</u>	<u>.78</u>	<u>10.13</u>
<u>29.702</u>	<u>98.17</u>	<u>7.05</u>	<u>6.92</u>	<u>89.87</u>

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 247
 HOLE NO. 2
 INTERVAL 20-30'

DATE 2/29/64
 OPERATOR R.L.S.
E.N.

WET WEIGHT OF TOTAL SAMPLE 44

HEAD SAMPLE

NET WET WT. 4,196
 NET DRY WT. 3,468
 % DRY SOLIDS 82.65

GROSS WET WT. 4,638
 GROSS DRY WT. 3,910
 TARE WT. 442

SAMPLE RUN

WET WT. OF FEED SAMPLE 33.5

1. X 82.6 % DRY SOLIDS = 27.688 (DRY FEED WT.)

DRUM R.P.M.	<u>22.2</u>
FEED TIME IN MINUTES	<u>.57 :34</u>
% SOLIDS IN FEED	<u>20</u>
G.P.M. OF WATER TO FEED	<u>23</u>
G.P.M. OF SLURRY PULP	<u>25</u>
FEED RATE, DRY LBS./FT/HR	<u>2914.6</u>

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 124 GRAMS = .273 LB

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
<u>27.688</u>	<u>100.00</u>			
<u>.273</u>	<u>.99</u>	<u>35.8</u>	<u>0.35</u>	
<u>27.415</u>	<u>99.01</u>			

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 247
 HOLE NO. 2
 INTERVAL 30-40'

DATE 3/2/64
 OPERATOR R.L.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 40.5

HEAD SAMPLE

NET WET WT. 3,045
 NET DRY WT. 2,363
 % DRY SOLIDS 77.60

GROSS WET WT. 3,488
 GROSS DRY WT. 2,806
 TARE WT. 443

SAMPLE RUN

WET WT. OF FEED SAMPLE 33

1. X 77.60 % DRY SOLIDS = 25.608 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .57 :34
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2695.7

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 205 GRAMS = .452 LBS

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.
 * Tails
 * Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
<u>25.608</u>	<u>100.00</u>			
<u>.452</u>	<u>1.77</u>	<u>45.6</u>	<u>.81</u>	
<u>25.156</u>	<u>98.23</u>			

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 247
 HOLE NO. 2
 INTERVAL 40-50'

DATE 3/2/64
 OPERATOR R.L.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 60.5

HEAD SAMPLE

NET WET WT. 3,687
 NET DRY WT. 2,892
 % DRY SOLIDS 78.44

GROSS WET WT. 4,135
 GROSS DRY WT. 3,340
 TARE WT. 448

SAMPLE RUN

WET WT. OF FEED SAMPLE 51.5

1. X 78.44 % DRY SOLIDS = 40.397 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .89 :53
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2723.8

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 115 GRAMS = .254 LBS.

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
40.397	100.00			
.254	.63	35.6	.22	
40.143	99.37			

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 247
 HOLE NO. 2
 INTERVAL 50-60'

DATE 3/2/64
 OPERATOR R.L.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 75

HEAD SAMPLE

NET WET WT. 3,190
 NET DRY WT. 2,471
 % DRY SOLIDS 77.46

GROSS WET WT. 3,619
 GROSS DRY WT. 2,900
 TARE WT. 429

SAMPLE RUN

WET WT. OF FEED SAMPLE 64

1. X 77.46 % DRY SOLIDS = 49.574 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES 1.09 :65
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2728.8

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 304 GRAMS = .670 LBS.

METALLURGICAL BALANCE

HEAD, (ASSAYED)
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
<u>49.574</u>	<u>100.00</u>			
<u>.670</u>	<u>1.35</u>	<u>42.0</u>	<u>.57</u>	
<u>48.904</u>	<u>98.65</u>			

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 247
 HOLE NO. 2
 INTERVAL 60-70'

DATE 3/2/64
 OPERATOR R.L.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 105

HEAD SAMPLE

NET WET WT. 3,232
 NET DRY WT. 2,542
 % DRY SOLIDS 78.65

GROSS WET WT. 3,628
 GROSS DRY WT. 2,938
 TARE WT. 396

SAMPLE RUN

WET WT. OF FEED SAMPLE 95.5

1. X 78.65 % DRY SOLIDS = 75.111 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES 1.62 1:37
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2782.1

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 136 GRAMS = .300 LBS.

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
<u>75.111</u>	<u>100.00</u>			
<u>.300</u>	<u>.40</u>	<u>33.8</u>	<u>.14</u>	
<u>74.811</u>	<u>99.60</u>			

* Tails

* Tail Dry Wt. = 1 - 2

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 247
 HOLE NO. 2
 INTERVAL 70-80'

DATE 3/2/64
 OPERATOR R.L.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 75

HEAD SAMPLE

NET WET WT. 3,868
 NET DRY WT. 3,100
 % DRY SOLIDS 80.15

GROSS WET WT. 4,313
 GROSS DRY WT. 3,545
 TARE WT. 445

SAMPLE RUN

WET WT. OF FEED SAMPLE 66

1. X 80.15 % DRY SOLIDS = 52.899 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES 1.09 :65
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2912.1

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 78 GRAMS = .172 LBS.

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
<u>52.899</u>	<u>100.00</u>			
<u>.172</u>	<u>.33</u>	<u>30.6</u>	<u>.10</u>	
<u>52.727</u>	<u>99.67</u>			

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 193
 HOLE NO. 20
 INTERVAL 0-10

DATE 3/2/64
 OPERATOR R.F.S.

WET WEIGHT OF TOTAL SAMPLE 43.5

HEAD SAMPLE

NET WET WT. 4,722
 NET DRY WT. 3,797
 % DRY SOLIDS 80.41

GROSS WET WT. 5,138
 GROSS DRY WT. 4,213
 TARE WT. 416

SAMPLE RUN

WET WT. OF FEED SAMPLE 32

1. X 80.41 % DRY SOLIDS = 25.731 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .52 :31
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2968.7

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 204 GRAMS = .450 LB

METALLURGICAL BALANCE

HEAD, (ASSAYED

1. HEAD (CALC.)

2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt.	%	%	Fe	Fe
Lbs.	Wt.	Total Fe	Units	Dist.
		4.4		
25.731	100.00		4.40	100.00
.450	1.75	37.6	.66	15.00
25.281	98.25	3.81	3.74	85.00

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 193
 HOLE NO. 20
 INTERVAL 10-20

DATE 3/3/64
 OPERATOR R.F.S
F.N.

WET WEIGHT OF TOTAL SAMPLE 58.5

HEAD SAMPLE

NET WET WT. 3,057
 NET DRY WT. 2,435
 % DRY SOLIDS 79.65

GROSS WET WT. 3,473
 GROSS DRY WT. 2,851
 TARE WT. 416

SAMPLE RUN

WET WT. OF FEED SAMPLE 52

1. X 79.65 % DRY SOLIDS = 41.418 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .89 :53
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2792.5

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 188 GRAMS = .415 LB.

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)

2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
		5.4		
41.418	100.00		5.40	100.00
.415	1.00	39.0	.39	7.22
41.003	99.00	5.06	5.01	92.78

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 193
 HOLE NO. 20
 INTERVAL 20-30

DATE 2/3/64
 OPERATOR R.F.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 49.5

HEAD SAMPLE

NET WET WT. 2,684
 NET DRY WT. 2,105
 % DRY SOLIDS 78.43

GROSS WET WT. 3,126
 GROSS DRY WT. 2,547
 TARE WT. 442

SAMPLE RUN

WET WT. OF FEED SAMPLE 43

1. X 78.43 % DRY SOLIDS = 33.725 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .73 :44
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2772.3

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 120 GRAMS = .265 LB

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
33.725	100.00			
.265	.79	32.2	.25	
33.460	99.21			

* Tails

* Tail Dry Wt. = 1 - 2

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 193
 HOLE NO. 20
 INTERVAL 30-40

DATE 3/3/64
 OPERATOR R.F.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 68.5

HEAD SAMPLE

NET WET WT. 3,891
 NET DRY WT. 3,109
 % DRY SOLIDS 79.90

GROSS WET WT. 4,325
 GROSS DRY WT. 3,543
 TARE WT. 434

SAMPLE RUN

WET WT. OF FEED SAMPLE 60

1. X 79.90 % DRY SOLIDS = 47.940 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .99 :59
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2905.6

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 91 GRAMS = .201 LBS

METALLURGICAL BALANCE

	Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
HEAD, (ASSAYED					
1. HEAD (CALC.)	47.940	100.00			
2. CONC.	.201	.42	34.8	.15	
* Tails	47.739	99.58			

* Tail Dry Wt. = 1 - 2

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 247
 HOLE NO. 20
 INTERVAL 0-10

DATE 3/3/64
 OPERATOR R.F.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 44.5

HEAD SAMPLE

NET WET WT. 3,523
 NET DRY WT. 2,826
 % DRY SOLIDS 80.22

GROSS WET WT. 3,968
 GROSS DRY WT. 3,271
 TARE WT. 445

SAMPLE RUN

WET WT. OF FEED SAMPLE 36.5

1. X 80.22 % DRY SOLIDS = 29.280 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .63 :38
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2788.6

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 287 GRAMS = .633 LBS.

METALLURGICAL BALANCE

	Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
HEAD, (ASSAYED			5.9		
1. HEAD (CALC.)	29.280	100.00	5.9	5.90	100.00
2. CONC.	.633	2.16	41.8	.90	15.25
* Tails	28.647	97.84	5.11	5.00	84.75

* Tail Dry Wt. = 1 - 2

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 247
 HOLE NO. 20
 INTERVAL 10-20

DATE 3/3/64
 OPERATOR R.F.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 58.5

HEAD SAMPLE

NET WET WT. 3,519
 NET DRY WT. 2,864
 % DRY SOLIDS 81.39

GROSS WET WT. 3,915
 GROSS DRY WT. 3,260
 TARE WT. 396

SAMPLE RUN

WET WT. OF FEED SAMPLE 50

1. X 81.39 % DRY SOLIDS = 40.695 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .83 :50
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2942.2

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 182 GRAMS = .401 LB.

METALLURGICAL BALANCE

HEAD, (ASSAYED)
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt.	%	%	Fe	Fe
Lbs.	Wt.	Total Fe	Units	Dist.
		5.0		
40.695	100.00		5.00	100.00
.401	.99	41.6	.41	8.20
40.294	99.01	4.64	4.59	91.80

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 247
 HOLE NO. 20
 INTERVAL 20-30

DATE 3/3/64
 OPERATOR R.L.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 48.5

HEAD SAMPLE

NET WET WT. 3,215
 NET DRY WT. 2,529
 % DRY SOLIDS 78.66

GROSS WET WT. 3,644
 GROSS DRY WT. 2,958
 TARE WT. 429

SAMPLE RUN

WET WT. OF FEED SAMPLE 41

1. X 78.66 % DRY SOLIDS = 32.251 (DRY FEED WT.)

DRUM R.P.M.	<u>22.2</u>	
FEED TIME IN MINUTES	<u>.68</u>	:41
% SOLIDS IN FEED	<u>20</u>	
G.P.M. OF WATER TO FEED	<u>23</u>	
G.P.M. OF SLURRY PULP	<u>25</u>	
FEED RATE, DRY LBS./FT/HR	<u>2845.7</u>	

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 83 GRAMS = .183 LB

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
32.251	100.00			
.183	.57	36.4	.21	
32.068	99.43			

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 247
 HOLE NO. 20
 INTERVAL 30-40

DATE 3/4/64
 OPERATOR R. LS
F. N.

WET WEIGHT OF TOTAL SAMPLE 65.5

HEAD SAMPLE

NET WET WT. 3,500
 NET DRY WT. 2,741
 % DRY SOLIDS 78.31

GROSS WET WT. 3,948
 GROSS DRY WT. 3,189
 TARE WT. 448

SAMPLE RUN

WET WT. OF FEED SAMPLE 57

1. X 78.31 % DRY SOLIDS = 44.637 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .94 :56
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2849.4

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 135 GRAMS = .298 LBS.

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
<u>44.637</u>	<u>100.00</u>			
<u>.298</u>	<u>.67</u>	<u>48.2</u>	<u>.32</u>	
<u>44.339</u>	<u>99.33</u>			

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 247
 HOLE NO. 20
 INTERVAL 40-50

DATE 3/4/64
 OPERATOR R.L.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 66.5

HEAD SAMPLE

NET WET WT. 3,096
 NET DRY WT. 2,356
 % DRY SOLIDS 76.10

GROSS WET WT. 3,492
 GROSS DRY WT. 2,752
 TARE WT. 396

SAMPLE RUN

WET WT. OF FEED SAMPLE 60

1. X 76.10 % DRY SOLIDS = 45.660 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .99 :59
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2767.5

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 78 GRAMS = .172 LBS.

METALLURGICAL BALANCE

	Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
HEAD, (ASSAYED					
1. HEAD (CALC.)	45.660	100.00			
2. CONC.	.172	.38	40.6	.15	
* Tails	45.488	99.62			

* Tail Dry Wt. = 1 - 2

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 193
 HOLE NO. 12
 INTERVAL 0 - 10'

DATE 3/4/64
 OPERATOR R. L. S.
F. N.

WET WEIGHT OF TOTAL SAMPLE 44

HEAD SAMPLE

NET WET WT. 3555
 NET DRY WT. 2937
 % DRY SOLIDS 82.62

GROSS WET WT. 4,000
 GROSS DRY WT. 3,382
 TARE WT. 445

SAMPLE RUN

WET WT. OF FEED SAMPLE 35.5

1. X 82.62 % DRY SOLIDS = 29.330 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .63 :38
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2793.4

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 427 GRAMS = .941 LBS.

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.
 * Tails
 * Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.	% TiO ₂
		<u>7.3</u>			
<u>29.330</u>	<u>100.00</u>		<u>7.30</u>	<u>100.00</u>	
<u>.941</u>	<u>3.21</u>	<u>49.4</u>	<u>1.59</u>	<u>21.78</u>	<u>12.2</u>
<u>28.389</u>	<u>96.79</u>	<u>5.90</u>	<u>5.71</u>	<u>78.22</u>	

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 193
 HOLE NO. 12
 INTERVAL 10 - 20'

DATE 3/4/64
 OPERATOR R.L.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 44.5

HEAD SAMPLE

NET WET WT. 3,764
 NET DRY WT. 3,100
 % DRY SOLIDS 82.36

GROSS WET WT. 4,180
 GROSS DRY WT. 3,516
 TARE WT. 416

SAMPLE RUN

WET WT. OF FEED SAMPLE 36

1. X 82.36 % DRY SOLIDS = 29.650 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .63 :38
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2823.9

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 168 GRAMS = .371 LBS

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.
 * Tails
 * Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.	% TiO ₂
		5.0			
29.650	100.00		5.00	100.00	
.371	1.25	44.2	.55	11.00	10.2
29.279	98.75	4.51	4.45	89.00	

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 193
 HOLE NO. 12
 INTERVAL 20 - 30'

DATE 3/4/64
 OPERATOR F. Nolan

WET WEIGHT OF TOTAL SAMPLE 22

HEAD SAMPLE

NET WET WT. 2220
 NET DRY WT. 1810
 % DRY SOLIDS 81.53

GROSS WET WT. 2589
 GROSS DRY WT. 2179
 TARE WT. 369

SAMPLE RUN

WET WT. OF FEED SAMPLE 17.5

1. X 81.53 % DRY SOLIDS = 14.268 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .31 :19
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2762.0

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 76 GRAMS = .168 LBS

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails
 * Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.	% TiO ₂
14.268	100.00				
.168	1.18	40.6	.48		8.7
14.100	98.82				

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 193
 HOLE NO. 12
 INTERVAL 30-40

DATE 3/5/64
 OPERATOR F.N.
R.L.S.

WET WEIGHT OF TOTAL SAMPLE 58

HEAD SAMPLE

NET WET WT. 3771
 NET DRY WT. 2989
 % DRY SOLIDS 79.26

GROSS WET WT. 4187
 GROSS DRY WT. 3405
 TARE WT. 416

SAMPLE RUN

WET WT. OF FEED SAMPLE 50

1. X 79.26 % DRY SOLIDS = 39.630 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .83 :53
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2864.9

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 118 GRAMS = .260 LBS

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
39.630	100.00			
.260	.66	39.8	.26	
39.370	99.34			

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 193
 HOLE NO. 12
 INTERVAL 40 - 50'

DATE 3/5/64
 OPERATOR R.LS.
F.N.

WET WEIGHT OF TOTAL SAMPLE 65

HEAD SAMPLE

NET WET WT. 3539
 NET DRY WT. 2924
 % DRY SOLIDS 82.62

GROSS WET WT. 3984
 GROSS DRY WT. 3369
 TARE WT. 445

SAMPLE RUN

WET WT. OF FEED SAMPLE 56

1. X 82.62 % DRY SOLIDS = 46.267 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .94 :56
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2953.4

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 151 GRAMS = .333 LBS.

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
46.267	100.00			
.333	.72	37.4	.27	
45.934	99.28			

* Tails
 * Tail Dry Wt. = 1 - 2

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 140
 HOLE NO. 2
 INTERVAL 0 - 10'

DATE 3/5/64
 OPERATOR R.L.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 55

HEAD SAMPLE

NET WET WT. 3389
 NET DRY WT. 3033
 % DRY SOLIDS 89.50

GROSS WET WT. 3823
 GROSS DRY WT. 3467
 TARE WT. 434

SAMPLE RUN

WET WT. OF FEED SAMPLE 47

1. X 89.50 % DRY SOLIDS = 42.065 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .78:47
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 3236.0

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 1031 GRAMS = 2.273 LBS

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.
 * Tails
 * Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.	% TiO ₂
		<u>7.3</u>			
<u>42.065</u>	<u>100.00</u>		<u>7.30</u>	<u>100.00</u>	
<u>2.273</u>	<u>5.40</u>	<u>50.6</u>	<u>2.73</u>	<u>37.40</u>	<u>12.4</u>
<u>39.792</u>	<u>94.60</u>	<u>4.83</u>	<u>4.57</u>	<u>62.60</u>	

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 140
 HOLE NO. 2
 INTERVAL 10 - 20'

DATE 3/5/64
 OPERATOR R.L.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 45

HEAD SAMPLE

NET WET WT. 3365
 NET DRY WT. 3110
 % DRY SOLIDS 92.42

GROSS WET WT. 3794
 GROSS DRY WT. 3539
 TARE WT. 429

SAMPLE RUN

WET WT. OF FEED SAMPLE 37

1. $\times$ 92.42 % DRY SOLIDS = 34.195 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .63 :38
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 3257.2

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 224 GRAMS = .494 LBS

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.
 * Tails
 * Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.	% TiO ₂
		5.0			
34.195	100.00		5.00	100.00	
.494	1.45	46.8	.68	13.60	10.2
33.701	98.55	4.38	4.32	86.40	

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 140
 HOLE NO. 2
 INTERVAL 20 - 30'

DATE 3/5/64
 OPERATOR R.L.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 30.5

HEAD SAMPLE

NET WET WT. 2629
 NET DRY WT. 2419
 % DRY SOLIDS 92.01

GROSS WET WT. 3071
 GROSS DRY WT. 2861
 TARE WT. 442

SAMPLE RUN

WET WT. OF FEED SAMPLE 24.5

1. X 92.01 % DRY SOLIDS = 22.540 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .42 "25
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 3220.1

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 94 GRAMS = .207 LB.

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.
 * Tails
 * Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.	% TiO ₂
22.540	100.00				
.207	.92	39.8	.37		9.3
22.333	99.08				

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 140
 HOLE NO. 2
 INTERVAL 30 - 40'

DATE 3/5/64
 OPERATOR R.L.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 65.5

HEAD SAMPLE

NET WET WT. 2660
 NET DRY WT. 2467
 % DRY SOLIDS 92.74

GROSS WET WT. 3108
 GROSS DRY WT. 2915
 TARE WT. 448

SAMPLE RUN

WET WT. OF FEED SAMPLE 60

1. X 92.74 % DRY SOLIDS = 55.644 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .99 :59
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR. 3372.3

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 285 GRAMS = .628 LBS.

METALLURGICAL BALANCE

HEAD, (ASSAYED

1. HEAD (CALC.)

2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt.	%	%	Fe	Fe
Lbs.	Wt.	Total Fe	Units	Dist.
55.644	100.00			
.628	1.13	39.8	.45	
55.016	98.87			

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 140
 HOLE NO. 2
 INTERVAL 40 - 50'

DATE 3/6/64
 OPERATOR R.L.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 76.5

HEAD SAMPLE

NET WET WT. 3116
 NET DRY WT. 2897
 % DRY SOLIDS 92.97

GROSS WET WT. 3512
 GROSS DRY WT. 3293
 TARE WT. 396

SAMPLE RUN

WET WT. OF FEED SAMPLE 67.5

1. X 92.97 % DRY SOLIDS = 62.755 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES 1.15 : 69
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 3274.2

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 150 GRAMS = .331 LB.

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
62.755	100.00			
.331	.53	29.2	.16	
62.424	99.47			

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 140
 HOLE NO. 6
 INTERVAL 0 - 10'

DATE 3/6/64
 OPERATOR R.L.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 55

HEAD SAMPLE

NET WET WT. 4143
 NET DRY WT. 3526
 % DRY SOLIDS 85.11

GROSS WET WT. 4572
 GROSS DRY WT. 3955
 TARE WT. 429

SAMPLE RUN

WET WT. OF FEED SAMPLE 45.5

1. X 85.11 % DRY SOLIDS = 38.725 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .78:47
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2979.1

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 806 GRAMS = 1.777 LBS.

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
		<u>7.4</u>		
<u>38.725</u>	<u>100.00</u>		<u>7.40</u>	<u>100.00</u>
<u>1.777</u>	<u>4.59</u>	<u>48.2</u>	<u>2.21</u>	<u>29.87</u>
<u>36.948</u>	<u>95.41</u>	<u>5.44</u>	<u>5.19</u>	<u>70.13</u>

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 140
 HOLE NO. 6
 INTERVAL 10 - 20'

DATE 3/6/64
 OPERATOR R.L.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 56

HEAD SAMPLE

NET WET WT. 3589
 NET DRY WT. 3225
 % DRY SOLIDS 89.86

GROSS WET WT. 4032
 GROSS DRY WT. 3668
 TARE WT. 443

SAMPLE RUN

WET WT. OF FEED SAMPLE 48

1. X 89.86 % DRY SOLIDS = 43.133 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .83 :50
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 3117.9

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 270 GRAMS = .595 LB

METALLURGICAL BALANCE

HEAD, (ASSAYED)
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
		4.3		
43.133	100.00		4.30	100.00
.595	1.38	40.2	.56	13.02
42.538	98.62	3.79	3.74	86.98

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 140
 HOLE NO. 6
 INTERVAL 20 - 30'

DATE 3/6/64
 OPERATOR R.L.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 44.5

HEAD SAMPLE

NET WET WT. 3293
 NET DRY WT. 2626
 % DRY SOLIDS 79.74

GROSS WET WT. 3727
 GROSS DRY WT. 3060
 TARE WT. 434

SAMPLE RUN

WET WT. OF FEED SAMPLE 36

1. X 79.74 % DRY SOLIDS = 28.706 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .63 :38
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2734.3

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 106 GRAMS = .234 LB.

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
28.706	100.00			
.234	.82	37.6	.31	
28.472	99.18			

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 140
 HOLE NO. 6
 INTERVAL 30 - 40'

DATE 3/6/64
 OPERATOR R.L.S.

WET WEIGHT OF TOTAL SAMPLE 63

HEAD SAMPLE

NET WET WT. 3604
 NET DRY WT. 2956
 % DRY SOLIDS 82.02

GROSS WET WT. 4017
 GROSS DRY WT. 3369
 TARE WT. 413

SAMPLE RUN

WET WT. OF FEED SAMPLE 53.5

1. $\times$ 82.02 % DRY SOLIDS = 43.881 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .89 :53
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2958.4

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 170 GRAMS = .375 LBS

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
43.881	100.00			
.375	.86	35.0	.30	
43.506	99.14			

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 140
 HOLE NO. 6
 INTERVAL 40 - 50'

DATE 3/6/64
 OPERATOR R.L.S.

WET WEIGHT OF TOTAL SAMPLE 76.5

HEAD SAMPLE

NET WET WT. 3958
 NET DRY WT. 3543
 % DRY SOLIDS 89.51

GROSS WET WT. 4400
 GROSS DRY WT. 3985
 TARE WT. 442

SAMPLE RUN

WET WT. OF FEED SAMPLE 58.5

1. X 89.51 % DRY SOLIDS = 61.314 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES 1.15 :69
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 3198.5

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 145 GRAMS = .320 LBS.

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
61.314	100.00			
.320	.52	35.6	.19	
60.994	99.48			

* Tails

* Tail Dry Wt. = 1 - 2

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 140
 HOLE NO. 10
 INTERVAL 0 - 10'

DATE 3/6/64
 OPERATOR R.L.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 59.5

HEAD SAMPLE

NET WET WT. 4387
 NET DRY WT. 3566
 % DRY SOLIDS 81.29

GROSS WET WT. 4835
 GROSS DRY WT. 4014
 TARE WT. 448

SAMPLE RUN

WET WT. OF FEED SAMPLE 49

1. X 81.29 % DRY SOLIDS = 39.832 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .83 :50
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2879.3

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 249 GRAMS = .549 LBS

METALLURGICAL BALANCE

HEAD, (ASSAYED

1. HEAD (CALC.)

2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
		<u>5.7</u>		
39.832	100.00		5.70	100.00
.549	1.38	41.8	.58	10.18
39.283	98.62	5.19	5.12	89.82

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 140
 HOLE NO. 10
 INTERVAL 10 - 20'

DATE 3/7/64
 OPERATOR R.L.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 45.5

HEAD SAMPLE

NET WET WT. 3516
 NET DRY WT. 3041
 % DRY SOLIDS 86.49

GROSS WET WT. 3961
 GROSS DRY WT. 3486
 TARE WT. 445

SAMPLE RUN

WET WT. OF FEED SAMPLE 37

1. X 86.49 % DRY SOLIDS = 32.001 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .63 :38
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 3047.7

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 231 GRAMS = .509 LBS

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
		4.4		
32.001	100.00		4.40	100.00
.509	1.59	40.6	.65	14.77
31.492	98.41	3.81	3.75	85.23

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 140
 HOLE NO. 10
 INTERVAL 20 - 30'

DATE 3/7/64
 OPERATOR R.L.S.
E.N.

WET WEIGHT OF TOTAL SAMPLE 49.5

HEAD SAMPLE

NET WET WT. 3862
 NET DRY WT. 3083
 % DRY SOLIDS 79.83

GROSS WET WT. 4258
 GROSS DRY WT. 3479
 TARE WT. 396

SAMPLE RUN

WET WT. OF FEED SAMPLE 41

1. X 79.83 % DRY SOLIDS = 32.730 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .68 :41
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2888.1

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 117 GRAMS = .258 LB

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
32.730	100.00			
.258	.79	35.2	.28	
32.472	99.21			

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 140
 HOLE NO. 10
 INTERVAL 30 - 40'

DATE 3/7/64
 OPERATOR R.L.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 86

HEAD SAMPLE

NET WET WT. 4457
 NET DRY WT. 3465
 % DRY SOLIDS 77.74

GROSS WET WT. 4886
 GROSS DRY WT. 3894
 TARE WT. 429

SAMPLE RUN

WET WT. OF FEED SAMPLE 71

1. X 77.74 % DRY SOLIDS = 55.195 (DRY FEED WT.)

DRUM R.P.M.	<u>22.2</u>	
FEED TIME IN MINUTES	<u>1.20</u>	: <u>1.12</u>
% SOLIDS IN FEED	<u>20</u>	
G.P.M. OF WATER TO FEED	<u>23</u>	
G.P.M. OF SLURRY PULP	<u>25</u>	
FEED RATE, DRY LBS./FT/HR	<u>2760.0</u>	

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 283 GRAMS = .624 LB.

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
<u>55.195</u>	<u>100.00</u>			
<u>.624</u>	<u>1.13</u>	<u>35.6</u>	<u>.40</u>	
<u>54.571</u>	<u>98.87</u>			

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 140
 HOLE NO. 10
 INTERVAL 40 - 50'

DATE 3/7/64
 OPERATOR R.L.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 73.5

HEAD SAMPLE

NET WET WT. 4865
 NET DRY WT. 3849
 % DRY SOLIDS 79.12

GROSS WET WT. 5307
 GROSS DRY WT. 4291
 TARE WT. 442

SAMPLE RUN

WET WT. OF FEED SAMPLE 62

1. X 79.12 % DRY SOLIDS = 49.054 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES 1.04 :62
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2829.7

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 127 GRAMS = .280 LB

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
49.054	100.00			
.280	.57	33.0	.19	
48.774	99.43			

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 193
 HOLE NO. 16
 INTERVAL 0 - 10'

DATE 3/7/64
 OPERATOR R.L.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 49

HEAD SAMPLE

NET WET WT. 4787
 NET DRY WT. 3819
 % DRY SOLIDS 79.78

GROSS WET WT. 5200
 GROSS DRY WT. 4232
 TARE WT. 413

SAMPLE RUN

WET WT. OF FEED SAMPLE 38

1. X 79.78 % DRY SOLIDS = 30.316 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .63 :38
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2887.7

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 206 GRAMS = .454 LB.

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
		5.0		
30.316	100.00		5.00	100.00
.454	1.50	42.6	.64	12.80
29.862	98.50	4.43	4.36	87.20

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 193
 HOLE NO. 16
 INTERVAL 10 - 20'

DATE 3/7/64
 OPERATOR R.L.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 40

HEAD SAMPLE

NET WET WT. 4071
 NET DRY WT. 3382
 % DRY SOLIDS 83.08

GROSS WET WT. 4514
 GROSS DRY WT. 3825
 TARE WT. 443

SAMPLE RUN

WET WT. OF FEED SAMPLE 31

1. X 83.08 % DRY SOLIDS = 25.755 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .52 :31
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2972.2

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 121 GRAMS = .267 LBS

METALLURGICAL BALANCE

HEAD, (ASSAYED

1. HEAD (CALC.)

2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt.	%	%	Fe	Fe
Lbs.	Wt.	Total Fe	Units	Dist.
		4.8		
25.755	100.00		4.80	100.00
.267	1.04	36.0	.37	7.71
25.488	98.96	4.48	4.43	92.29

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 193
 HOLE NO. 16
 INTERVAL 20 - 30'

DATE 3/7/64
 OPERATOR R.L.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 46.5

HEAD SAMPLE

NET WET WT. 4355
 NET DRY WT. 3590
 % DRY SOLIDS 82.43

GROSS WET WT. 4789
 GROSS DRY WT. 4024
 TARE WT. 434

SAMPLE RUN

WET WT. OF FEED SAMPLE 37

1. X 82.43 % DRY SOLIDS = 30.499 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .63 :38
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2904.8

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 148 GRAMS = .326 LBS

METALLURGICAL BALANCE

HEAD, (ASSAYED

1. HEAD (CALC.)

2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt.	%	%	Fe	Fe
Lbs.	Wt.	Total Fe	Units	Dist.
30.499	100.00			
.326	1.07	31.6	.34	
30.173	98.93			

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 193
 HOLE NO. 16
 INTERVAL 30 - 40'

DATE 3/9/64
 OPERATOR R.L.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 69

HEAD SAMPLE

NET WET WT. 3969
 NET DRY WT. 3301
 % DRY SOLIDS 83.17

GROSS WET WT. 4417
 GROSS DRY WT. 3749
 TARE WT. 448

SAMPLE RUN

WET WT. OF FEED SAMPLE 59.5

1. X 83.17 % DRY SOLIDS = 49.486 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .99 :59
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2999.6

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 159 GRAMS = .351 LBS

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.
 * Tails
 * Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
49.486	100.00			
.351	.71	35.2	.25	
49.135	99.29			

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 193
 HOLE NO. 24
 INTERVAL 0 - 10'

DATE 3/9/64
 OPERATOR R.L.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 48

HEAD SAMPLE

NET WET WT. 4332
 NET DRY WT. 3535
 % DRY SOLIDS 81.60

GROSS WET WT. 4745
 GROSS DRY WT. 3948
 TARE WT. 413

SAMPLE RUN

WET WT. OF FEED SAMPLE 38

1. X 81.60 % DRY SOLIDS = 31.008 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .63 :38
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2953.4

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 312 GRAMS = .688 LB.

METALLURGICAL BALANCE

HEAD, (ASSAYED)
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt.	%	%	Fe	Fe
Lbs.	Wt.	Total Fe	Units	Dist.
		5.4		
31.008	100.00		5.40	100.00
.688	2.22	43.8	.97	17.96
30.320	97.78	4.53	4.43	82.04

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 193
 HOLE NO. 24
 INTERVAL 10 - 20

DATE 3/9/64
 OPERATOR R.LS.
F.N.

WET WEIGHT OF TOTAL SAMPLE 51.5

HEAD SAMPLE

NET WET WT. 3695
 NET DRY WT. 3009
 % DRY SOLIDS 81.43

GROSS WET WT. 4129
 GROSS DRY WT. 3443
 TARE WT. 434

SAMPLE RUN

WET WT. OF FEED SAMPLE 43

1. X 81.43 % DRY SOLIDS = 35.015 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .73 :44
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2878.3

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 139 GRAMS = .306 LB

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
		3.6		
35.015	100.00		3.60	100.00
.306	.87	42.6	.37	10.28
34.709	99.13	3.26	3.23	89.72

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 193
 HOLE NO. 24
 INTERVAL 20 - 30'

DATE 3/9/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 60

HEAD SAMPLE

NET WET WT. 3764
 NET DRY WT. 3081
 % DRY SOLIDS 81.85

GROSS WET WT. 4209
 GROSS DRY WT. 3526
 TARE WT. 445

SAMPLE RUN

WET WT. OF FEED SAMPLE 51

1. X 81.85 % DRY SOLIDS = 41.744 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .89 :53
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2814.1

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 125 GRAMS = .276 LBS.

METALLURGICAL BALANCE

HEAD, (ASSAYED)
 1. HEAD (CALC.)
 2. CONC.

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
41.744	100.00			
.276	.66	34.6	.23	
41.468	99.34			

* Tails
 * Tail Dry Wt. = 1 - 2

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 193
 HOLE NO. 24
 INTERVAL 30 - 40'

DATE 3/9/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 68.5

HEAD SAMPLE

NET WET WT. 4499
 NET DRY WT. 3581
 % DRY SOLIDS 79.60

GROSS WET WT. 4941
 GROSS DRY WT. 4023
 TARE WT. 442

SAMPLE RUN

WET WT. OF FEED SAMPLE 58.5

1. X 79.60 % DRY SOLIDS = 46.566 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .99 :59
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2822.6

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 112 GRAMS = .247 LBS

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails
 * Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
46.566	100.00			
.247	.53	36.6	.19	
46.319	99.47			

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 193
 HOLE NO. 24
 INTERVAL 40 - 50'

DATE 3/9/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 73.5

HEAD SAMPLE

NET WET WT. 3142
 NET DRY WT. 2548
 % DRY SOLIDS 81.09

GROSS WET WT. 3571
 GROSS DRY WT. 2977
 TARE WT. 429

SAMPLE RUN

WET WT. OF FEED SAMPLE 67

1. X 81.09 % DRY SOLIDS = 54.330 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES 1.15 :69
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2834.4

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 126 GRAMS = .278 LBS

METALLURGICAL BALANCE

HEAD, (ASSAYED

1. HEAD (CALC.)

2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt.	%	%	Fe	Fe
Lbs.	Wt.	Total Fe	Units	Dist.
54.330	100.00			
.278	.51	34.6	.18	
54.052	99.49			

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 247
 HOLE NO. 16
 INTERVAL 0 - 10'

DATE 3/9/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 44.5

HEAD SAMPLE

NET WET WT. 3980
 NET DRY WT. 3226
 % DRY SOLIDS 81.06

GROSS WET WT. 4423
 GROSS DRY WT. 3669
 TARE WT. 443

SAMPLE RUN

WET WT. OF FEED SAMPLE 34.5

1. X 81.06 % DRY SOLIDS = 27.966 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .57 :34
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2944.1

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 371 GRAMS = .818 LBS

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.
 * Tails
 * Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.	% TiO ₂
		5.8			
27.966	100.00		5.80	100.00	
.818	2.93	45.8	1.34	23.10	13.0
27.148	97.07	4.60	4.46	76.90	

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 247
 HOLE NO. 16
 INTERVAL 10 - 20'

DATE 3/10/64
 OPERATOR F. Nolan

WET WEIGHT OF TOTAL SAMPLE 56

HEAD SAMPLE

NET WET WT. 3678
 NET DRY WT. 2977
 % DRY SOLIDS 80.94

GROSS WET WT. 4074
 GROSS DRY WT. 3373
 TARE WT. 396

SAMPLE RUN

WET WT. OF FEED SAMPLE 47.5

1. X 80.94 % DRY SOLIDS = 38.447 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .78 :47
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2957.6

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 113 GRAMS = .249 LBS.

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.	% TiO ₂
		3.8			
38.447	100.00		3.80	100.00	
.249	.65	35.8	.23	6.05	9.5
38.198	99.35	3.59	3.57	93.95	
		32.			

REMARKS:

SAMPLE NO. 88

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 247
 HOLE NO. 16
 INTERVAL 20 - 30'

DATE 3/10/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 61.5HEAD SAMPLE

NET WET WT. 4556
 NET DRY WT. 3650
 % DRY SOLIDS 80.11

GROSS WET WT. 4969
 GROSS DRY WT. 4063
 TARE WT. 413

SAMPLE RUNWET WT. OF FEED SAMPLE 511. X 80.11 % DRY SOLIDS = 40.856 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .89 :53
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2754.8

MAGNETIC CONCENTRATE2. NET DRY WT. OF MAGNETIC CONCENTRATE 87 GRAMS = .192 LBSMETALLURGICAL BALANCE

HEAD, (ASSAYED)

1. HEAD (CALC.)

2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.	% TiO ₂
40.856	100.00				
.192	.47	34.0	.16		6.3
40.664	99.53				

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 247
 HOLE NO. 16
 INTERVAL 30 - 40'

DATE 3/10/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 82

HEAD SAMPLE

NET WET WT. 4016
 NET DRY WT. 3210
 % DRY SOLIDS 79.93

GROSS WET WT. 4450
 GROSS DRY WT. 3644
 TARE WT. 434

SAMPLE RUN

WET WT. OF FEED SAMPLE 70.5

1. X 79.93 % DRY SOLIDS = 56.351 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES 1.20 : 1:12
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2817.5

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 152 GRAMS = .335 LB.

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
56.351	100.00			
.335	.59	36.6	.22	
56.016	99.41			

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 247
 HOLE NO. 16
 INTERVAL 40 - 50'

DATE 3/10/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 66.5

HEAD SAMPLE

NET WET WT. 4526
 NET DRY WT. 3542
 % DRY SOLIDS 78.26

GROSS WET WT. 4969
 GROSS DRY WT. 3985
 TARE WT. 443

SAMPLE RUN

WET WT. OF FEED SAMPLE 56

1. X 78.26 % DRY SOLIDS = 43.826 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .94 : 56
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2797.7

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 77 GRAMS = .170 LBS

METALLURGICAL BALANCE

HEAD, (ASSAYED

1. HEAD (CALC.)

2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
43.826	100.00			
.170	.39	30.8	.12	
43.656	99.61			

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 247
 HOLE NO. 16
 INTERVAL 50 - 60'

DATE 3/10/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 65.5

HEAD SAMPLE

NET WET WT. 4407
 NET DRY WT. 3368
 % DRY SOLIDS 76.42

GROSS WET WT. 4836
 GROSS DRY WT. 3797
 TARE WT. 429

SAMPLE RUN

WET WT. OF FEED SAMPLE 55

1. X 76.42 % DRY SOLIDS = 42.031 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .94 :56
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2682.8

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 43 GRAMS = .095 LBS.

METALLURGICAL BALANCE

HEAD, (ASSAYED

1. HEAD (CALC.)

2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt.	%	%	Fe	Fe
Lbs.	Wt.	Total Fe	Units	Dist.
42.031	100.00			
.095	.23	30.0	.07	
41.936	99.77			

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 110
 HOLE NO. 4
 INTERVAL 0 - 10'

DATE 3/10/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 52

HEAD SAMPLE

NET WET WT. 4009
 NET DRY WT. 3348
 % DRY SOLIDS 83.51

GROSS WET WT. 4457
 GROSS DRY WT. 3796
 TARE WT. 448

SAMPLE RUN

WET WT. OF FEED SAMPLE 42.5

1. X 83.51 % DRY SOLIDS = 35.492 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .73 :44
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2916.9

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 1379 GRAMS = 3.040 LBS

METALLURGICAL BALANCE

HEAD, (ASSAYED

1. HEAD (CALC.)

2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
		10.7		
35.492	100.00		10.70	100.00
3.040	8.57	48.0	4.11	38.41
32.452	91.43	7.21	6.59	61.59

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 110
 HOLE NO. 4
 INTERVAL 10 - 20'

DATE 3/10/64
 OPERATOR F.N.

WET WEIGHT OF TOTAL SAMPLE 62.5

HEAD SAMPLE

NET WET WT. 4825
 NET DRY WT. 3858
 % DRY SOLIDS 79.96

GROSS WET WT. 5267
 GROSS DRY WT. 4300
 TARE WT. 442

SAMPLE RUN

WET WT. OF FEED SAMPLE 52

1. X 79.96 % DRY SOLIDS = 41.579 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .89 :53
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2803.3

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 266 GRAMS = .586 LBS.

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
		4.5		
41.579	100.00		4.50	100.00
.586	1.41	41.0	.58	12.89
40.993	98.59	3.98	3.92	87.11

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 110
 HOLE NO. 4
 INTERVAL 20 - 30'

DATE 3/11/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 56

HEAD SAMPLE

NET WET WT. 3693
 NET DRY WT. 3041
 % DRY SOLIDS 82.34

GROSS WET WT. 4135
 GROSS DRY WT. 3483
 TARE WT. 442

SAMPLE RUN

WET WT. OF FEED SAMPLE 46

1. X 82.34 % DRY SOLIDS = 37.876 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .78 :47
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2913.7

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 223 GRAMS = .492 LBS

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
<u>37.876</u>	<u>100.00</u>			
<u>.492</u>	<u>1.30</u>	<u>34.4</u>	<u>.45</u>	
<u>37.384</u>	<u>98.70</u>			

* Tails

* Tail Dry Wt. = 1 - 2

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 110
 HOLE NO. 4
 INTERVAL 30 - 40'

DATE 3/11/64
 OPERATOR R.S. F.N.

WET WEIGHT OF TOTAL SAMPLE 62

HEAD SAMPLE

NET WET WT. 3403
 NET DRY WT. 2735
 % DRY SOLIDS 80.37

GROSS WET WT. 3851
 GROSS DRY WT. 3183
 TARE WT. 448

SAMPLE RUN

WET WT. OF FEED SAMPLE 55

1. X 80.37 % DRY SOLIDS = 44.204 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .94 :56
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2821.3

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 184 GRAMS = .406 LBS

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.
 * Tails
 * Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
44.204	100.00			
.406	.92	38.4	.38	
43.798	99.08			

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 110
 HOLE NO. 4
 INTERVAL 40 - 50'

DATE 3/11/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 75

HEAD SAMPLE

NET WET WT. 4918
 NET DRY WT. 3875
 % DRY SOLIDS 78.79

GROSS WET WT. 5363
 GROSS DRY WT. 4320
 TARE WT. 445

SAMPLE RUN

WET WT. OF FEED SAMPLE 64

1. X 78.79 % DRY SOLIDS = 50.426 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES 1.09 :65
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2776.2

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 441 GRAMS = .972 LBS

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
<u>50.426</u>	<u>100.00</u>			
<u>.972</u>	<u>1.93</u>	<u>40.2</u>	<u>.78</u>	
<u>49.454</u>	<u>98.07</u>			

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 140
 HOLE NO. 14
 INTERVAL 0 - 10'

DATE 3/11/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 57

HEAD SAMPLE

NET WET WT. 4875
 NET DRY WT. 4064
 % DRY SOLIDS 83.36

GROSS WET WT. 5271
 GROSS DRY WT. 4460
 TARE WT. 396

SAMPLE RUN

WET WT. OF FEED SAMPLE 46

1. X 83.36 % DRY SOLIDS = 38.346 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .78 :47
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2949.9

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 293 GRAMS = .646 LB.

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
		4.1		
38.346	100.00		4.10	100.00
.646	1.69	35.7	.60	14.63
37.700	98.31	3.56	3.50	85.37

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 140
 HOLE NO. 14
 INTERVAL 10 - 20'

DATE 3/11/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 51.5

HEAD SAMPLE

NET WET WT. 3571
 NET DRY WT. 3038
 % DRY SOLIDS 85.07

GROSS WET WT. 4000
 GROSS DRY WT. 3467
 TARE WT. 429

SAMPLE RUN

WET WT. OF FEED SAMPLE 43

1. X 85.07 % DRY SOLIDS = 36.580 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .73 :44
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 3006.5

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 204 GRAMS = .450 LBS

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.
 * Tails
 * Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
		5.2		
36.58	100.00		5.20	100.00
.45	1.23	34.1	.42	8.08
36.13	98.77	4.84	4.78	91.92

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 140
 HOLE NO. 14
 INTERVAL 20 - 30'

DATE 3/11/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 64.5

HEAD SAMPLE

NET WET WT. 4071
 NET DRY WT. 3601
 % DRY SOLIDS 88.45

GROSS WET WT. 4484
 GROSS DRY WT. 4014
 TARE WT. 413

SAMPLE RUN

WET WT. OF FEED SAMPLE 55

1. X 88.45 % DRY SOLIDS = 48.648 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .94 :56
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 3105.3

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 163 GRAMS = .359 LBS

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.
 * Tails
 * Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
48.648	100.00			
.359	.74	30.4	.22	
48.289	99.26			

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 140
 HOLE NO. 14
 INTERVAL 30 - 40'

DATE 3/11/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 71.5

HEAD SAMPLE

NET WET WT. 4399
 NET DRY WT. 3666
 % DRY SOLIDS 83.34

GROSS WET WT. 4833
 GROSS DRY WT. 4100
 TARE WT. 434

SAMPLE RUN

WET WT. OF FEED SAMPLE 59

1. X 83.34 % DRY SOLIDS = 49.17 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .99 : 59
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2980.2

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 204 GRAMS = .450 LBS

METALLURGICAL BALANCE

HEAD, (ASSAYED

1. HEAD (CALC.)

2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
<u>49.17</u>	<u>100.00</u>			
<u>.45</u>	<u>.92</u>	<u>30.6</u>	<u>.28</u>	
<u>48.62</u>	<u>99.08</u>			

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 140
 HOLE NO. 14
 INTERVAL 40 - 50'

DATE 3/12/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 70

HEAD SAMPLE

NET WET WT. 4483
 NET DRY WT. 3783
 % DRY SOLIDS 84.39

GROSS WET WT. 4926
 GROSS DRY WT. 4226
 TARE WT. 443

SAMPLE RUN

WET WT. OF FEED SAMPLE 60

1. X 84.39 % DRY SOLIDS = 50.634 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .99 :59
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 3068.7

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 79 GRAMS = .174 LBS.

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
50.634	100.00			
.174	.34	27.9	.10	
50.460	99.66			

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 140
 HOLE NO. 18
 INTERVAL 0 - 10'

DATE 3/12/64
 OPERATOR RS.
F.N.

WET WEIGHT OF TOTAL SAMPLE 61

HEAD SAMPLE

NET WET WT. 3225
 NET DRY WT. 2671
 % DRY SOLIDS 82.82

GROSS WET WT. 3621
 GROSS DRY WT. 3067
 TARE WT. 396

SAMPLE RUN

WET WT. OF FEED SAMPLE 47

1. X 82.82 % DRY SOLIDS = 38.925 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .78 :47
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2994.5

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 352 GRAMS = .776 LBS

METALLURGICAL BALANCE

HEAD, (ASSAYED

1. HEAD (CALC.)

2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
		4.5		
38.925	100.00		4.50	100.00
.776	1.99	37.1	.74	16.44
38.149	98.01	3.84	3.76	83.56

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 140
 HOLE NO. 18
 INTERVAL 10-20'

DATE 3/12/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 89.5

HEAD SAMPLE

NET WET WT. 3621
 NET DRY WT. 2940
 % DRY SOLIDS 81.19

GROSS WET WT. 4050
 GROSS DRY WT. 3369
 TARE WT. 429

SAMPLE RUN

WET WT. OF FEED SAMPLE 31

1. X 81.19 % DRY SOLIDS = 25.169 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .52 :31
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2904.1

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 150 GRAMS = .331 LBS

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
		<u>4.2</u>		
25.169	100.00		4.20	100.00
.331	1.32	35.7	.47	11.19
24.838	98.68	3.78	3.73	88.81

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 140
 HOLE NO. 18
 INTERVAL 20-30'

DATE 3/12/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 59.5

HEAD SAMPLE

NET WET WT. 4425
 NET DRY WT. 3508
 % DRY SOLIDS 79.28

GROSS WET WT. 4867
 GROSS DRY WT. 3950
 TARE WT. 442

SAMPLE RUN

WET WT. OF FEED SAMPLE 50

1. X 79.28 % DRY SOLIDS = 39.64 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .83 :50
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2865.6

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 127 GRAMS = .280 LBS.

METALLURGICAL BALANCE

HEAD, (ASSAYED

1. HEAD (CALC.)

2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt.	%	%	Fe	Fe
Lbs.	Wt.	Total Fe	Units	Dist.
39.64	100.00			
.28	.71	28.3	.20	
39.36	99.29			

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 140
 HOLE NO. 18
 INTERVAL 30-40'

DATE 3/12/64
 OPERATOR R.S
F.N.

WET WEIGHT OF TOTAL SAMPLE 70

HEAD SAMPLE

NET WET WT. 4559
 NET DRY WT. 3649
 % DRY SOLIDS 80.04

GROSS WET WT. 5007
 GROSS DRY WT. 4097
 TARE WT. 448

SAMPLE RUN

WET WT. OF FEED SAMPLE 58

1. $\times$ 80.04 % DRY SOLIDS = 46.423 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .99 :59
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2813.5

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 259 GRAMS = .571 LBS

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
46.423	100.00			
.571	1.23	28.6	.35	
45.852	98.77			

* Tails
 * Tail Dry Wt. = 1 - 2

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 140
 HOLE NO. 18
 INTERVAL 40-50'

DATE 3/13/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 74.5

HEAD SAMPLE

NET WET WT. 3815
 NET DRY WT. 3105
 % DRY SOLIDS 81.39

GROSS WET WT. 4249
 GROSS DRY WT. 3539
 TARE WT. 434

SAMPLE RUN

WET WT. OF FEED SAMPLE 66

1. X 81.39 % DRY SOLIDS = 53.717 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES 1.09 :65
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2957.3

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 188 GRAMS = .415 LB

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
53.717	100.00			
.415	.77	29.1	.22	
53.302	99.23			

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 110
 HOLE NO. 9
 INTERVAL 0 - 10'

DATE 3/13/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 47.5

HEAD SAMPLE

NET WET WT. 4657
 NET DRY WT. 3850
 % DRY SOLIDS 82.67

GROSS WET WT. 5086
 GROSS DRY WT. 4279
 TARE WT. 429

SAMPLE RUN

WET WT. OF FEED SAMPLE 37

1. X 82.67 % DRY SOLIDS = 30.588 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .63 :38
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2913.4

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 1038 GRAMS = 2.288 LB

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.	% TiO ₂
		8.4			
30.588	100.00		8.40	100.00	
2.288	7.48	43.9	3.28	39.05	12.7
28.300	92.52	5.53	5.12	60.95	

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 110
 HOLE NO. 9
 INTERVAL 10 - 20'

DATE 3/13/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 41

HEAD SAMPLE

NET WET WT. 3793
 NET DRY WT. 3045
 % DRY SOLIDS 80.28

GROSS WET WT. 4189
 GROSS DRY WT. 3441
 TARE WT. 396

SAMPLE RUN

WET WT. OF FEED SAMPLE 32

1. X 80.28 % DRY SOLIDS = 25.690 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .52 :31
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2694.1

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 122 GRAMS = .269 LB

METALLURGICAL BALANCE

HEAD, (ASSAYED)
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.	% TiO ₂
		4.1			
25.690	100.00		4.10	100.00	
.269	1.05	33.3	.35	8.54	12.6
25.421	98.95	3.79	3.75	91.46	

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 110
 HOLE NO. 9
 INTERVAL 20-30'

DATE 3/13/64
 OPERATOR F.N.

WET WEIGHT OF TOTAL SAMPLE 41.5

HEAD SAMPLE

NET WET WT. 3536
 NET DRY WT. 2789
 % DRY SOLIDS 78.87

GROSS WET WT. 3984
 GROSS DRY WT. 3237
 TARE WT. 448

SAMPLE RUN

WET WT. OF FEED SAMPLE 34

1. X 78.87 % DRY SOLIDS = 26.816 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .57 :34
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2823.1

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 66 GRAMS = .146 LB

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.	% TiO ₂
26.816	100.00				
.146	.54	30.8	.17		13.4
26.670	99.46				

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 110
 HOLE NO. 9
 INTERVAL 30-40'

DATE 3/13/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 68.5

HEAD SAMPLE

NET WET WT. 4127
 NET DRY WT. 3330
 % DRY SOLIDS 80.69

GROSS WET WT. 4569
 GROSS DRY WT. 3772
 TARE WT. 442

SAMPLE RUN

WET WT. OF FEED SAMPLE 57

1. X 80.69 % DRY SOLIDS = 45.993 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .94 :56
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2935.5

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 274 GRAMS = .604 LBS

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.	% TiO ₂
45.993	100.00				
.604	1.31	39.3	.52		11.4
45.389	98.69				

* Tails
 * Tail Dry Wt. = 1 - 2

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 110
 HOLE NO. 9
 INTERVAL 40-50'

DATE 3/13/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 63

HEAD SAMPLE

NET WET WT. 4134
 NET DRY WT. 3325
 % DRY SOLIDS 80.43

GROSS WET WT. 4577
 GROSS DRY WT. 3268
 TARE WT. 443

SAMPLE RUN

WET WT. OF FEED SAMPLE 53

1. X 80.43 % DRY SOLIDS = 42.628 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .89 :53
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2874.1

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 123 GRAMS = .271 LBS

METALLURGICAL BALANCE

HEAD, (ASSAYED

1. HEAD (CALC.)

2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt.	%	%	Fe	Fe
Lbs.	Wt.	Total Fe	Units	Dist.
42.628	100.00			
.271	.64	32.4	.21	
42.357	99.36			

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 110
 HOLE NO. 16
 INTERVAL 0 - 10'

DATE 3/13/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 51.5

HEAD SAMPLE

NET WET WT. 4144
 NET DRY WT. 3364
 % DRY SOLIDS 81.18

GROSS WET WT. 4589
 GROSS DRY WT. 3809
 TARE WT. 445

SAMPLE RUN

WET WT. OF FEED SAMPLE 45.5

1. X 81.18 % DRY SOLIDS = 36.937 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .78 :47
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2841.4

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 544 GRAMS = 1.199 LB

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
		5.9		
36.937	100.00		5.90	100.00
1.199	3.25	41.5	1.35	22.88
35.738	96.75	4.70	4.55	77.12

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 110
 HOLE NO. 16
 INTERVAL 10-20'

DATE 3/16/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 43

HEAD SAMPLE

NET WET WT. 4112
 NET DRY WT. 3356
 % DRY SOLIDS 81.61

GROSS WET WT. 4508
 GROSS DRY WT. 3752
 TARE WT. 396

SAMPLE RUN

WET WT. OF FEED SAMPLE 34

1. X 81.61 % DRY SOLIDS = 27.747 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .57 :34
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2921.0

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 159 GRAMS = .351 LB

METALLURGICAL BALANCE

HEAD, (ASSAYED

1. HEAD (CALC.)

2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
		4.2		
27.747	100.00		4.20	100.00
.351	1.27	34.1	.43	10.24
27.396	98.73	3.82	3.77	89.76

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 110
 HOLE NO. 16
 INTERVAL 20-30'

DATE 3/16/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 60.5

HEAD SAMPLE

NET WET WT. 4485
 NET DRY WT. 3674
 % DRY SOLIDS 81.92

GROSS WET WT. 4930
 GROSS DRY WT. 4119
 TARE WT. 445

SAMPLE RUN

WET WT. OF FEED SAMPLE 51

1. X 81.92 % DRY SOLIDS = 49.971 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .89 :53
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 3369.0

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 171 GRAMS = .377 LBS.

METALLURGICAL BALANCE

HEAD, (ASSAYED)
 1. HEAD (CALC.)
 2. CONC.

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
49.971	100.00			
.377	.75	28.8	.22	
49.594	99.25			

* Tails
 * Tail Dry Wt. = 1 - 2

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 110
 HOLE NO. 16
 INTERVAL 30 - 40'

DATE 3/16/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 48.5

HEAD SAMPLE

NET WET WT. 4417
 NET DRY WT. 3544
 % DRY SOLIDS 80.24

GROSS WET WT. 4846
 GROSS DRY WT. 3973
 TARE WT. 429

SAMPLE RUN

WET WT. OF FEED SAMPLE 38

1. X 80.24 % DRY SOLIDS = 30.491 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .63 :38
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2903.9

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 170 GRAMS = .375 LBS

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.
 * Tails
 * Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
30.491	100.00			
.375	1.23	35.7	.44	
30.116	98.77			

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 110
 HOLE NO. 16
 INTERVAL 40 -50'

DATE 3/16/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 71.5

HEAD SAMPLE

NET WET WT. 5021
 NET DRY WT. 4008
 % DRY SOLIDS 79.82

GROSS WET WT. 5434
 GROSS DRY WT. 4421
 TARE WT. 413

SAMPLE RUN

WET WT. OF FEED SAMPLE 63

1. X 79.82 % DRY SOLIDS = 50.287 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES 1.04 :62
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2901.23

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 124 GRAMS = .273 LB

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt.	%	%	Fe	Fe
Lbs.	Wt.	Total Fe	Units	Dist.
50.287	100.00			
.273	.54	26.1	.14	
50.014	99.46			

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 305
 HOLE NO. 12
 INTERVAL 0 - 10'

DATE 3/16/64
 OPERATOR R.S.
E.N.

WET WEIGHT OF TOTAL SAMPLE 48

HEAD SAMPLE

NET WET WT. 4829
 NET DRY WT. 3856
 % DRY SOLIDS 79.85

GROSS WET WT. 5272
 GROSS DRY WT. 4299
 TARE WT. 443

SAMPLE RUN

WET WT. OF FEED SAMPLE 37.5

1. X 79.85 % DRY SOLIDS = 29.944 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .63 :38
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2851.5

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 292 GRAMS = .644 LB

METALLURGICAL BALANCE

HEAD, (ASSAYED

1. HEAD (CALC.)

2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
		4.8		
29.944	100.00		4.80	100.00
.644	2.15	38.8	.83	17.29
29.300	97.85	4.06	3.97	82.71

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 305
 HOLE NO. 12
 INTERVAL 10-20'

DATE 3/16/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 71.5

HEAD SAMPLE

NET WET WT. 4402
 NET DRY WT. 3517
 % DRY SOLIDS 79.90

GROSS WET WT. 4836
 GROSS DRY WT. 3951
 TARE WT. 434

SAMPLE RUN

WET WT. OF FEED SAMPLE 63

1. X 79.90 % DRY SOLIDS = 50.337 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES 1.09 :65
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2771.2

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 169 GRAMS = .373 LB

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
		3.9		
50.337	100.00		3.90	100.00
.373	.74	32.8	.24	6.15
49.964	99.26	3.69	3.66	93.85

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 305
 HOLE NO. 12
 INTERVAL 20-30'

DATE 3/16/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 66

HEAD SAMPLE

NET WET WT. 4623
 NET DRY WT. 3658
 % DRY SOLIDS 79.13

GROSS WET WT. 5065
 GROSS DRY WT. 4100
 TARE WT. 442

SAMPLE RUN

WET WT. OF FEED SAMPLE 56

1. X 79.13 % DRY SOLIDS = 44.313 (DRY FEED WT.)

DRUM R.P.M. 20.2
 FEED TIME IN MINUTES .94 :56
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2828.3

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 77 GRAMS = .170 LBS.

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
44.313	100.00			
.170	.38	26.6	.10	
44.143	99.62			

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 305
 HOLE NO. 12
 INTERVAL 30-40'

DATE 3/17/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 62.5

HEAD SAMPLE

NET WET WT. 4652
 NET DRY WT. 3635
 % DRY SOLIDS 78.14

GROSS WET WT. 5100
 GROSS DRY WT. 4083
 TARE WT. 448

SAMPLE RUN

WET WT. OF FEED SAMPLE 51

1. X 78.14 % DRY SOLIDS = 39.851 (DRY FEED WT.)

DRUM R.P.M.	<u>22.2</u>	
FEED TIME IN MINUTES	<u>.89</u>	<u>:53</u>
% SOLIDS IN FEED	<u>20</u>	
G.P.M. OF WATER TO FEED	<u>23</u>	
G.P.M. OF SLURRY PULP	<u>25</u>	
FEED RATE, DRY LBS./FT/HR	<u>2686.7</u>	

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 86 GRAMS = .190

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
39.851	100.00			
.190	.48	29.0	.14	
.661	99.52			

* Tails

* Tail Dry Wt. = 1 - 2

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 305
 HOLE NO. 12
 INTERVAL 40-50'

DATE 3/17/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 68

HEAD SAMPLE

NET WET WT. 4611
 NET DRY WT. 3649
 % DRY SOLIDS 79.14

GROSS WET WT. 5007
 GROSS DRY WT. 4045
 TARE WT. 396

SAMPLE RUN

WET WT. OF FEED SAMPLE 58

1. X 79.14 % DRY SOLIDS = 45.901 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .99 :59
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2782.0

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 103 GRAMS = .227 LBS.

METALLURGICAL BALANCE

HEAD, (ASSAYED

1. HEAD (CALC.)

2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt.	%	%	Fe	Fe
Lbs.	Wt.	Total Fe	Units	Dist.
45.901	100.00			
.227	.50	29.0	.15	
45.674	99.50			

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 305
 HOLE NO. 16
 INTERVAL 0-10'

DATE 3/17/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 42.5

HEAD SAMPLE

NET WET WT. 4100
 NET DRY WT. 3295
 % DRY SOLIDS 80.37

GROSS WET WT. 4543
 GROSS DRY WT. 3738
 TARE WT. 443

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 305

DATE 3/17/64

WET WT. OF FEED SAMPLE 42.5 % DRY SOLIDS 80.37 (DRY FEED WT.) 34.35

2. NET DRY WT. OF MAGNETIC CONCENTRATE 1200 GRAMS = 2.646 LBS.

HEAD, (ASSAYED)

1. HEAD (CALC.)

2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt.	%	%	Fe	Fe	% TiO ₂
Lbs.	Wt.	Total Fe	Units	Dist.	
		6.5			
58.969	100.00		6.50	100.00	
2.646	4.49	43.1	1.94	29.85	11.7
56.323	95.51	4.77	4.56	70.15	

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 305
 HOLE NO. 16
 INTERVAL 10-20'

DATE 3/17/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 84.5

HEAD SAMPLE

NET WET WT. 4696
 NET DRY WT. 4014
 % DRY SOLIDS 80.78

GROSS WET WT. 5411
 GROSS DRY WT. 4456
 TARE WT. 442

SAMPLE RUN

WET WT. OF FEED SAMPLE 73

1. X 80.78 % DRY SOLIDS = 58.969 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES 1.25 :1:15
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2830.6

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 1200 GRAMS = 2.646 LBS.

METALLURGICAL BALANCE

	Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.	% TiO ₂
HEAD, (ASSAYED			6.5			
1. HEAD (CALC.)	58.969	100.00		6.50	100.00	
2. CONC.	2.646	4.49	43.1	1.94	29.85	11.7
* Tails	56.323	95.51	4.77	4.56	70.15	

* Tail Dry Wt. = 1 - 2

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 305
 HOLE NO. 16
 INTERVAL 20-30'

DATE 3/17/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 74.5

HEAD SAMPLE

NET WET WT. 4626
 NET DRY WT. 3597
 % DRY SOLIDS 77.76

GROSS WET WT. 5055
 GROSS DRY WT. 4026
 TARE WT. 429

SAMPLE RUN

WET WT. OF FEED SAMPLE 63.5

1. X 77.76 % DRY SOLIDS = 49.378 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES 1.04 :62
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2848.7

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 231 GRAMS = .509 LBS

METALLURGICAL BALANCE

	Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.	% TiO ₂
HEAD, (ASSAYED						
1. HEAD (CALC.)	49.378	100.00				
2. CONC.	.509	1.03	33.5	.35		9.2
* Tails	48.869	98.97				

* Tail Dry Wt. = 1 - 2

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 305
 HOLE NO. 16
 INTERVAL 30-40'

DATE 3/17/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 73

HEAD SAMPLE

NET WET WT. 5187
 NET DRY WT. 4077
 % DRY SOLIDS 78.60

GROSS WET WT. 5632
 GROSS DRY WT. 4522
 TARE WT. 445

SAMPLE RUN

WET WT. OF FEED SAMPLE 61

1. X 78.60 % DRY SOLIDS = 47.946 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES 1.04 :62
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2766.2

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 118 GRAMS = .260 LBS.

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

Dry Wt.	%	%	Fe	Fe
Lbs.	Wt.	Total Fe	Units	Dist.
47.946	100.00			
.260	.54	30.6	.17	
47.686	99.46			

* Tails

* Tail Dry Wt. = 1 - 2

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 305
 HOLE NO. 16
 INTERVAL 40-50'

DATE 3/17/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 73

HEAD SAMPLE

NET WET WT. 4432
 NET DRY WT. 3483
 % DRY SOLIDS 78.59

GROSS WET WT. 4845
 GROSS DRY WT. 3896
 TARE WT. 413

SAMPLE RUN

WET WT. OF FEED SAMPLE 64

1. X 78.59 % DRY SOLIDS = 50.298 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES 1.09 :65
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2769.0

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 130 GRAMS = .287 LBS

METALLURGICAL BALANCE

HEAD, (ASSAYED

1. HEAD (CALC.)

2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt.	%	%	Fe	Fe
Lbs.	Wt.	Total Fe	Units	Dist.
50.298	100.00			
.287	.57	33.9	.19	
50.011	99.43			

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 370
 HOLE NO. 15
 INTERVAL 2-10

DATE 3/18/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 38

HEAD SAMPLE

NET WET WT. 3757
 NET DRY WT. 3094
 % DRY SOLIDS 8235

GROSS WET WT. 4200
 GROSS DRY WT. 3537
 TARE WT. 443

SAMPLE RUN

WET WT. OF FEED SAMPLE 27.5

1. X 82.35 % DRY SOLIDS = 22.646 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .47 :28
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2891.5

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 117 GRAMS = .258 LBS

METALLURGICAL BALANCE

HEAD, (ASSAYED

1. HEAD (CALC.)

2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt.	%	%	Fe	Fe
Lbs.	Wt.	Total Fe	Units	Dist.
		4.3		
22.646	100.00		4.30	100.00
.258	1.14	35.9	.41	9.54
22.388	98.86	3.94	3.89	90.46

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 370
 HOLE NO. 15
 INTERVAL 10-20

DATE 3/18/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 78.5

HEAD SAMPLE

NET WET WT. 4150
 NET DRY WT. 3466
 % DRY SOLIDS 83.52

GROSS WET WT. 4584
 GROSS DRY WT. 3900
 TARE WT. 434

SAMPLE RUN

WET WT. OF FEED SAMPLE 68

1. X 83.521 % DRY SOLIDS = 56.794 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES 1.15 :69
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2962.7

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 310 GRAMS = .683 LB.

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
		5.0		
56.794	100.0		5.00	100.00
.683	1.2	27.7	.33	6.60
56.111	98.8	4.73	4.67	93.40

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 370
 HOLE NO. 15
 INTERVAL 20-30'

DATE 3/18/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 72

HEAD SAMPLE

NET WET WT. _____
 NET DRY WT. _____
 % DRY SOLIDS 81.0

GROSS WET WT. 5029
 GROSS DRY WT. _____
 TARE WT. 413

Average % solids of other footages
 on hole 15

SAMPLE RUN

WET WT. OF FEED SAMPLE 63

1. X 81.0 % DRY SOLIDS = 51.03 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES 1.04 :67
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2943.9

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 121 GRAMS = .267 LB.

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
51.030	100.00			
.267	.52	24.1	.13	
50.763	99.48			

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 370
 HOLE NO. 15
 INTERVAL 30-40'

DATE 3/18/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 67

HEAD SAMPLE

NET WET WT. 4955
 NET DRY WT. 3827
 % DRY SOLIDS 77.24

GROSS WET WT. 5400
 GROSS DRY WT. 4272
 TARE WT. 445

SAMPLE RUN

WET WT. OF FEED SAMPLE 55.5

1. X 77.24 % DRY SOLIDS = 42.868 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .94 :56
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR. 2736.4

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 80 GRAMS = .176 LBS.

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
42.868	100.00			
.176	.41	28.8	.12	
42.692	99.59			

* Tails
 * Tail Dry Wt. = 1 - 2

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 305
 HOLE NO. 20
 INTERVAL 0-10

DATE 3/18/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 44

HEAD SAMPLE

NET WET WT. 4510
 NET DRY WT. 3622
 % DRY SOLIDS 80.31

GROSS WET WT. 4906
 GROSS DRY WT. 4018
 TARE WT. 396

SAMPLE RUN

WET WT. OF FEED SAMPLE 33.5

1. X 80.31 % DRY SOLIDS = 26.904 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .57 :34
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2831.5

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 162 GRAMS = .357 LB

METALLURGICAL BALANCE

	Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
HEAD, (ASSAYED			4.0		
1. HEAD (CALC.)	26.904	100.00		4.00	100.00
2. CONC.	.357	1.33	35.5	.47	11.75
* Tails	26.547	98.67	3.58	3.53	88.25

* Tail Dry Wt. = 1 - 2

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 305
 HOLE NO. 20
 INTERVAL 10-20'

DATE 3/19/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 45.5

HEAD SAMPLE

NET WET WT. 3817
 NET DRY WT. 3117
 % DRY SOLIDS 81.66

GROSS WET WT. 4265
 GROSS DRY WT. 3565
 TARE WT. 448

SAMPLE RUN

WET WT. OF FEED SAMPLE 36

1. X 81.66 % DRY SOLIDS = 29.398 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .63 :38
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2800.1

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 140 GRAMS = .309 L

METALLURGICAL BALANCE

	Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
HEAD, (ASSAYED			3.8		
1. HEAD (CALC.)	29.398	100.00		3.80	100.00
2. CONC.	.309	1.05	34.6	.36	9.47
* Tails	29.089	98.95	3.47	3.44	90.53

* Tail Dry Wt. = 1 - 2

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 305
 HOLE NO. 20
 INTERVAL 20-30'

DATE 3/19/64
 OPERATOR R.S.
E.N.

WET WEIGHT OF TOTAL SAMPLE 49.5

HEAD SAMPLE

NET WET WT. 4459
 NET DRY WT. 3573
 % DRY SOLIDS 80.13

GROSS WET WT. 4893
 GROSS DRY WT. 4007
 TARE WT. 434

SAMPLE RUN

WET WT. OF FEED SAMPLE 39

1. X 80.13 % DRY SOLIDS = 31.251 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .68 :41
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2757.5

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 116 GRAMS = .256 LB

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails
 * Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
31.251	100.00			
.256	.82	39.5	.32	
30.995	99.18			

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 305
 HOLE NO. 20
 INTERVAL 30-40

DATE 3/19/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 62

HEAD SAMPLE

NET WET WT. 4210
 NET DRY WT. 3419
 % DRY SOLIDS 81.21

GROSS WET WT. 4639
 GROSS DRY WT. 3848
 TARE WT. 429

SAMPLE RUN

WET WT. OF FEED SAMPLE 52.5

1. X 81.21 % DRY SOLIDS = 42.635 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .89 :53
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2874.8

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 125 GRAMS = .276 LB

METALLURGICAL BALANCE

HEAD, (ASSAYED)
 1. HEAD (CALC.)
 2. CONC.
 * Tails
 * Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
42.635	100.00			
.276	.65	3.15	.20	
42.359	99.35			

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 360
 HOLE NO. 16
 INTERVAL 0-10'

DATE 3/19/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 39

HEAD SAMPLE

NET WET WT. 4309
 NET DRY WT. 3522
 % DRY SOLIDS 81.74

GROSS WET WT. 4700
 GROSS DRY WT. 3913
 TARE WT. 396

SAMPLE RUN

WET WT. OF FEED SAMPLE 29

1. X 81.74 % DRY SOLIDS = 23.705 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .47 :28
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 3026.8

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 154 GRAMS = .340 LBS

METALLURGICAL BALANCE

	Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.	% TiO ₂
HEAD, (ASSAYED			4.6			
1. HEAD (CALC.)	23.705	100.00		4.60	100.00	
2. CONC.	.340	1.43	32.8	.47	10.22	8.3
* Tails	23.365	98.75	4.19	4.13	89.78	

* Tail Dry Wt. = 1 - 2

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 360
 HOLE NO. 16
 INTERVAL 10-20'

DATE 3/19/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 78

HEAD SAMPLE

NET WET WT. 5086
 NET DRY WT. 4114
 % DRY SOLIDS 80.89

GROSS WET WT. 5529
 GROSS DRY WT. 4557
 TARE WT. 443

SAMPLE RUN

WET WT. OF FEED SAMPLE 67

1. X 80.89 % DRY SOLIDS = 54.196 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES 1.15 :69
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2827.6

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 391 GRAMS = .862 LBS

METALLURGICAL BALANCE

	Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.	% TiO ₂
HEAD, (ASSAYED			4.4			
1. HEAD (CALC.)	54.196	100.00		4.40	100.00	
2. CONC.	.862	1.59	33.3	.53	12.05	9.8
* Tails	53.334	98.41	3.93	3.87	87.95	

* Tail Dry Wt. = 1 - 2

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 360
 HOLE NO. 16
 INTERVAL 20-30'

DATE 3/20/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 79.5

HEAD SAMPLE

NET WET WT. 4912
 NET DRY WT. 3941
 % DRY SOLIDS 80.23

GROSS WET WT. 5354
 GROSS DRY WT. 4383
 TARE WT. 442

SAMPLE RUN

WET WT. OF FEED SAMPLE 68.5

1. X 80.23 % DRY SOLIDS = 54.958 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES 1.15 :69
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2867.3

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 139 GRAMS = .306 LBS

METALLURGICAL BALANCE

	Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.	% TiO ₂
HEAD, (ASSAYED						
1. HEAD (CALC.)	54.958	100.00				
2. CONC.	.306	.56	27.9	.16		5.3
* Tails	54.652	99.44				

* Tail Dry Wt. = 1 - 2

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 360
 HOLE NO. 16
 INTERVAL 30-40'

DATE 3/20/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 72.5

HEAD SAMPLE

NET WET WT. 4491
 NET DRY WT. 3565
 % DRY SOLIDS 79.38

GROSS WET WT. 4934
 GROSS DRY WT. 4008
 TARE WT. 443

SAMPLE RUN

WET WT. OF FEED SAMPLE 62.5

1. X 79.38 % DRY SOLIDS = 49.613 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES 1.04 :62
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2862.0

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 171 GRAMS = .377 LBS.

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails
 * Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
49.613	100.00			
.377	.76	35.0	.27	
49.236	99.24			

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 370
 HOLE NO. 11
 INTERVAL 0-10'

DATE 3/20/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 40.5

HEAD SAMPLE

NET WET WT. 4159
 NET DRY WT. 3395
 % DRY SOLIDS 81.63

GROSS WET WT. 4607
 GROSS DRY WT. 3843
 TARE WT. 448

SAMPLE RUN

WET WT. OF FEED SAMPLE 31

1. X 81.63 % DRY SOLIDS = 25.305 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .52 : 31
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2920.3

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 108 GRAMS = .238 LB

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
		4.5		
25.305	100.00		4.50	100.00
.238	.94	34.8	.33	7.33
25.067	99.06	4.21	4.17	92.67

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 370
 HOLE NO. 11
 INTERVAL 10-20'

DATE 3/20/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 75.5

HEAD SAMPLE

NET WET WT. 4594
 NET DRY WT. 3798
 % DRY SOLIDS 82.67

GROSS WET WT. 5039
 GROSS DRY WT. 4243
 TARE WT. 445

SAMPLE RUN

WET WT. OF FEED SAMPLE 65

1. X 82.67 % DRY SOLIDS = 53.736 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES 1.09 :65
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2958.4

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 120 GRAMS = .265 LB.

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
		3.4		
53.736	100.00			
.265	.49	28.6	.14	
53.471	99.51			

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 370
 HOLE NO. 11
 INTERVAL 20-30'

DATE 3/21/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 74.5

HEAD SAMPLE

NET WET WT. 4400
 NET DRY WT. 3637
 % DRY SOLIDS 82.66

GROSS WET WT. 4813
 GROSS DRY WT. 4050
 TARE WT. 413

SAMPLE RUN

WET WT. OF FEED SAMPLE 64.5

1. X 82.66 % DRY SOLIDS = 53.316 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES 1.09 :65
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2935.3

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 139 GRAMS = .306 LB.

METALLURGICAL BALANCE

	Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
HEAD, (ASSAYED					
1. HEAD (CALC.)	53.316	100.00			
2. CONC.	.306	.57	25.2	.14	
* Tails	53.010	99.43			

* Tail Dry Wt. = 1 - 2

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 370
 HOLE NO. 11
 INTERVAL 30-40'

DATE 3/21/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 70

HEAD SAMPLE

NET WET WT. 4675
 NET DRY WT. 3669
 % DRY SOLIDS 78.48

GROSS WET WT. 5117
 GROSS DRY WT. 4111
 TARE WT. 442

SAMPLE RUN

WET WT. OF FEED SAMPLE 60.5

1. $\times$ 78.48 % DRY SOLIDS = 47.480 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES 1.04 :62
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2739.1

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 63 GRAMS = .139 LB

METALLURGICAL BALANCE

	Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
HEAD, (ASSAYED					
1. HEAD (CALC.)	47.480	100.00			
2. CONC.	.139	.29	24.3	.07	
* Tails	47.341	99.71			

* Tail Dry Wt. = 1 - 2

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 110
 HOLE NO. 12
 INTERVAL 0-10'

DATE 3/23/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 62

HEAD SAMPLE

NET WET WT. 4814
 NET DRY WT. 3980
 % DRY SOLIDS 82.68

GROSS WET WT. 5259
 GROSS DRY WT. 4425
 TARE WT. 445

SAMPLE RUN

WET WT. OF FEED SAMPLE 52

1. X 82.68 % DRY SOLIDS = 42.994 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .89 :53
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2898.4

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 1073 GRAMS = 2.366 LB

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
		6.7		
42.994	100.00		6.70	100.00
2.366	5.50	41.3	2.27	33.88
40.628	94.50	4.69	4.43	66.12

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 110
 HOLE NO. 12
 INTERVAL 10-20'

DATE 3/23/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 49.5

HEAD SAMPLE

NET WET WT. 4040
 NET DRY WT. 3290
 % DRY SOLIDS 81.44

GROSS WET WT. 4483
 GROSS DRY WT. 3733
 TARE WT. 443

SAMPLE RUN

WET WT. OF FEED SAMPLE 40

1. X 81.44 % DRY SOLIDS = 32.576 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .68 :41
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2874.9

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 189 GRAMS = .417 LB

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
		3.5		
32.576	100.00		3.50	100.00
.417	1.28	34.4	.44	12.57
32.159	98.72	3.10	3.06	87.43

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 110
 HOLE NO. 12
 INTERVAL 20-30'

DATE 3/23/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 46

HEAD SAMPLE

NET WET WT. 4146
 NET DRY WT. 3354
 % DRY SOLIDS 80.90

GROSS WET WT. 4542
 GROSS DRY WT. 3750
 TARE WT. 396

SAMPLE RUN

WET WT. OF FEED SAMPLE 36

1. X 80.90 % DRY SOLIDS = 29.124 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .63 :38
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2773.4

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 106 GRAMS = .234 LB.

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
29.124	100.00			
.234	.80	36.6	.29	
28.890	99.20			

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 110
 HOLE NO. 12
 INTERVAL 30-40'

DATE 3/23/64
 OPERATOR R.S.

WET WEIGHT OF TOTAL SAMPLE 69.5

HEAD SAMPLE

NET WET WT. 3923
 NET DRY WT. 3252
 % DRY SOLIDS 82.90

GROSS WET WT. 4357
 GROSS DRY WT. 3686
 TARE WT. 434

SAMPLE RUN

WET WT. OF FEED SAMPLE 63

1. X 82.90 % DRY SOLIDS = 52.227 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES 1.04 :62
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 3013.1

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 254 GRAMS = .560 LB

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
52.227	100.00			
.560	1.07	38.0	.41	
51.667	98.93			

* Tails

* Tail Dry Wt. = 1 - 2

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 160
 HOLE NO. 50
 INTERVAL 0-10'

DATE 3/23/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 63

HEAD SAMPLE

NET WET WT. 4559
 NET DRY WT. 3603
 % DRY SOLIDS 79.03

GROSS WET WT. 4988
 GROSS DRY WT. 4032
 TARE WT. 429

SAMPLE RUN

WET WT. OF FEED SAMPLE 52

1. X 79.03 % DRY SOLIDS = 41.096 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .89 :53
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2771.0

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 140 GRAMS = .309 LBS

METALLURGICAL BALANCE

	Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
HEAD, (ASSAYED			3.6		
1. HEAD (CALC.)	41.096	100.00		3.60	100.00
2. CONC.	.309	.75	34.6	.26	7.22
* Tails	40.787	99.25	3.37	3.34	92.78

* Tail Dry Wt. = 1 - 2

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 160
 HOLE NO. 50
 INTERVAL 10-20'

DATE 3/23/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 38

HEAD SAMPLE

NET WET WT. 3559
 NET DRY WT. 2899
 % DRY SOLIDS 81.46

GROSS WET WT. 4007
 GROSS DRY WT. 3347
 TARE WT. 448

SAMPLE RUN

WET WT. OF FEED SAMPLE 30

1. X 81.46 % DRY SOLIDS = 24.438 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .52 :31
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2819.9

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 125 GRAMS = .276 LBS.

METALLURGICAL BALANCE

HEAD, (ASSAYED

1. HEAD (CALC.)

2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt.	%	%	Fe	Fe
Lbs.	Wt.	Total Fe	Units	Dist.
		3.5		
24.438	100.00		3.50	100.00
.276	1.13	32.1	.36	10.29
24.162	98.87	3.17	3.14	89.71

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 160
 HOLE NO. 50
 INTERVAL 20-30'

DATE 3/24/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 32

HEAD SAMPLE

NET WET WT. 3878
 NET DRY WT. 3108
 % DRY SOLIDS 80.14

GROSS WET WT. 4291
 GROSS DRY WT. 3521
 TARE WT. 413

SAMPLE RUN

WET WT. OF FEED SAMPLE 23

1. X 80.14 % DRY SOLIDS = 18.432 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .36 :22
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 3071.7

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 115 GRAMS = .254 LB

METALLURGICAL BALANCE

HEAD, (ASSAYED)
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
18.432	100.00			
.254	1.38	34.6	.48	
18.178	98.62			

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 160
 HOLE NO. 42
 INTERVAL 0-10

DATE 3/24/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 63.5

HEAD SAMPLE

NET WET WT. 3929
 NET DRY WT. 3268
 % DRY SOLIDS 83.18

GROSS WET WT. 4325
 GROSS DRY WT. 3664
 TARE WT. 396

SAMPLE RUN

WET WT. OF FEED SAMPLE 55

1. X 83.18 % DRY SOLIDS = 45.749 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .94 :56
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2920.2

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 289 GRAMS = .637 LBS.

METALLURGICAL BALANCE

HEAD, (ASSAYED

1. HEAD (CALC.)

2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt.	%	%	Fe	Fe
Lbs.	Wt.	Total Fe	Units	Dist.
		4.7		
45.749	100.00		4.70	100.00
.637	1.39	37.9	.53	11.28
45.112	98.61	4.23	4.17	88.72

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 160
 HOLE NO. 42
 INTERVAL 10-20'

DATE 3/24/64
 OPERATOR r.s.
F.N.

WET WEIGHT OF TOTAL SAMPLE 74

HEAD SAMPLE

NET WET WT. 3937
 NET DRY WT. 3298
 % DRY SOLIDS 83.77

GROSS WET WT. 4350
 GROSS DRY WT. 3711
 TARE WT. 413

SAMPLE RUN

WET WT. OF FEED SAMPLE 65

1. X 83.77 % DRY SOLIDS = 54.451 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES 1.09 :65
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2997.5

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 196 GRAMS = .432 LBS.

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
		4.1		
54.451	100.00		4.10	100.00
.432	.79	29.2	.23	5.60
54.019	99.21	3.90	3.87	94.40

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 160
 HOLE NO. 36
 INTERVAL 0-10'

DATE 3/26/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 59

HEAD SAMPLE

NET WET WT. 4347
 NET DRY WT. 3907
 % DRY SOLIDS 89.88

GROSS WET WT. 4760
 GROSS DRY WT. 4320
 TARE WT. 413

SAMPLE RUN

WET WT. OF FEED SAMPLE 49

1. X 89.88 % DRY SOLIDS = 44.041 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .83 :50
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 3183.7

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 84 GRAMS = .185 LBS.

METALLURGICAL BALANCE

HEAD, (ASSAYED

1. HEAD (CALC.)

2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt.	%	%	Fe	Fe
Lbs.	Wt.	Total Fe	Units	Dist.
		4.3		
44.041	100.00		4.30	100.00
.185	.42	29.0	.12	2.79
43.856	99.58	4.20	4.18	97.21

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 160
 HOLE NO. 36
 INTERVAL 10-20

DATE 3/25/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 56.5

HEAD SAMPLE

NET WET WT. 4279
 NET DRY WT. 3830
 % DRY SOLIDS 89.51

GROSS WET WT. 4722
 GROSS DRY WT. 4273
 TARE WT. 443

SAMPLE RUN

WET WT. OF FEED SAMPLE 47

1. X 89.51 % DRY SOLIDS = 42.070 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .78 :47
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 3236.0

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 185 GRAMS = .408 LBS

METALLURGICAL BALANCE

HEAD, (ASSAYED)
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
		3.6		
42.070	100.00		3.60	100.00
.408	.97	33.9	.33	9.17
41.662	99.03	3.30	3.27	90.83

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 160
 HOLE NO. 36
 INTERVAL 20-30'

DATE 3/25/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 48

HEAD SAMPLE

NET WET WT. 4344
 NET DRY WT. 3818
 % DRY SOLIDS 87.89

GROSS WET WT. 4740
 GROSS DRY WT. 4214
 TARE WT. 396

SAMPLE RUN

WET WT. OF FEED SAMPLE 38.5

1. X 87.89 % DRY SOLIDS = 33.838 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .63 :38
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR. 3222.9

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 294 GRAMS = .648 LBS

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
33.838	100.00			
.648	1.92	35.9	.69	
33.190	98.08			

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 30
 HOLE NO. 24
 INTERVAL 0-10

DATE 3/25/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 59

HEAD SAMPLE

NET WET WT. 4183
 NET DRY WT. 3699
 % DRY SOLIDS 88.43

GROSS WET WT. 4617
 GROSS DRY WT. 4133
 TARE WT. 434

SAMPLE RUN

WET WT. OF FEED SAMPLE 50

1. X 88.43 % DRY SOLIDS = 44.215 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .83 :50
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 3196.7

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 187 GRAMS = .412 LB

METALLURGICAL BALANCE

HEAD, (ASSAYED

1. HEAD (CALC.)

2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
		3.9		
44.215	100.00		3.90	100.00
.412	.93	31.0	.29	7.44
43.803	99.07	3.64	3.61	92.56

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 30
 HOLE NO. 24
 INTERVAL 10-20'

DATE 3/25/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 59.5

HEAD SAMPLE

NET WET WT. 4509
 NET DRY WT. 4041
 % DRY SOLIDS 89.62

GROSS WET WT. 4954
 GROSS DRY WT. 4486
 TARE WT. 445

SAMPLE RUN

WET WT. OF FEED SAMPLE 50

1. X 89.62 % DRY SOLIDS = 44.810 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .83 :50
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 3239.3

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 191 GRAMS = .421 LBS.

METALLURGICAL BALANCE

HEAD, (ASSAYED

1. HEAD (CALC.)

2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt.	%	%	Fe	Fe
Lbs.	Wt.	Total Fe	Units	Dist.
		4.0		
44.810	100.00		4.00	100.00
.421	.94	31.2	.29	7.25
44.389	99.06	3.75	3.71	92.75

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 30
 HOLE NO. 24
 INTERVAL 20-30'

DATE 3/26/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 55

HEAD SAMPLE

NET WET WT. 4488
 NET DRY WT. 3790
 % DRY SOLIDS 84.45

GROSS WET WT. 4930
 GROSS DRY WT. 4232
 TARE WT. 442

SAMPLE RUN

WET WT. OF FEED SAMPLE 45

1. X 84.45 % DRY SOLIDS = 38.003 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .78 :47
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2923.0

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 164 GRAMS = .362 LB.

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
38.003	100.00			
.362	.95	33.8	.32	
37.641	99.05			

* Tails
 * Tail Dry Wt. = 1 - 2

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 30
 HOLE NO. 24
 INTERVAL 30-40'

DATE 3/26/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 53.5

HEAD SAMPLE

NET WET WT. 4224
 NET DRY WT. 3413
 % DRY SOLIDS 80.80

GROSS WET WT. 4669
 GROSS DRY WT. 3858
 TARE WT. 445

SAMPLE RUN

WET WT. OF FEED SAMPLE 44

1. X 80.80 % DRY SOLIDS = 35.552 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .73 :44
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2921.9

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 141 GRAMS = .311 LB.

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
35.552	100.00			
.311	.87	32.4	.28	
35.241	99.13			

* Tails

* Tail Dry Wt. = 1 - 2

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 10
 HOLE NO. 26
 INTERVAL 0-10

DATE 3/26/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 66.5

HEAD SAMPLE

NET WET WT. 4967
 NET DRY WT. 4004
 % DRY SOLIDS 80.61

GROSS WET WT. 5363
 GROSS DRY WT. 4400
 TARE WT. 396

SAMPLE RUN

WET WT. OF FEED SAMPLE 55

1. X 80.61 % DRY SOLIDS = 44.336 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .94 :56
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2830.2

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 651 GRAMS = 1.435 LBS

METALLURGICAL BALANCE

HEAD, (ASSAYED

1. HEAD (CALC.)

2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt.	%	%	Fe	Fe	%
Lbs.	Wt.	Total Fe	Units	Dist.	TiO ₂
		4.8			
44.336	100.00		4.80	100.00	
1.435	3.24	38.7	1.25	26.04	10.0
42.901	96.76	3.67	3.55	73.96	

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 10
 HOLE NO. 26
 INTERVAL 10-20'

DATE 3/26/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 72.5

HEAD SAMPLE

NET WET WT. 4428
 NET DRY WT. 3633
 % DRY SOLIDS 82.05

GROSS WET WT. 4862
 GROSS DRY WT. 4067
 TARE WT. 434

SAMPLE RUN

WET WT. OF FEED SAMPLE 63.5

1. X 82.05 % DRY SOLIDS = 52.102 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES 1.04 : 62
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 3005.7

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 211 GRAMS = .465 LB

METALLURGICAL BALANCE

	Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.	% TiO ₂
HEAD, (ASSAYED			3.8			
1. HEAD (CALC.)	52.102	100.00		3.80	100.00	
2. CONC.	.465	.89	30.1	.27	7.11	7.1
* Tails	51.637	99.11	3.56	3.53	92.89	

* Tail Dry Wt. = 1 - 2

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 10
 HOLE NO. 26
 INTERVAL 20-30'

DATE 3/26/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 60.5

HEAD SAMPLE

NET WET WT. 4795
 NET DRY WT. 3813
 % DRY SOLIDS 79.52

GROSS WET WT. 5238
 GROSS DRY WT. 4256
 TARE WT. 443

SAMPLE RUN

WET WT. OF FEED SAMPLE 50

1. X 79.52 % DRY SOLIDS = 39.760 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .83 :50
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2874.3

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 111 GRAMS = .245 LB

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.	% TiO ₂
39.760	100.00				
.245	.62	34.6	.21		9.8
39.515	99.38				

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 10
 HOLE NO. 26
 INTERVAL 30-40'

DATE 3/26/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 66

HEAD SAMPLE

NET WET WT. 4851
 NET DRY WT. 3804
 % DRY SOLIDS 78.42

GROSS WET WT. 5299
 GROSS DRY WT. 4252
 TARE WT. 448

SAMPLE RUN

WET WT. OF FEED SAMPLE 56

1. X 78.42 % DRY SOLIDS = 43.915 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .94 :56
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2803.4

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 182 GRAMS = .401 LBS.

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
43.915	100.00			
.401	.91	30.1	.27	
43.514	99.19			

* Tails

* Tail Dry Wt. = 1 - 2

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 10
 HOLE NO. 12
 INTERVAL 0-10'

DATE 3/26/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 64

HEAD SAMPLE

NET WET WT. 4411
 NET DRY WT. 3599
 % DRY SOLIDS 81.59

GROSS WET WT. 4824
 GROSS DRY WT. 4012
 TARE WT. 413

SAMPLE RUN

WET WT. OF FEED SAMPLE 53.5

1. X 81.59 % DRY SOLIDS = 43.651 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .89 :53
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2942.9

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 462 GRAMS = 1.019 LBS.

METALLURGICAL BALANCE

HEAD, (ASSAYED

1. HEAD (CALC.)

2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
		4.8		
43.651	100.00		4.80	100.00
1.019	2.33	37.6	.88	18.33
42.632	97.67	4.01	3.92	81.67

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 10
 HOLE NO. 12
 INTERVAL 10-20'

DATE 3/27/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 61

HEAD SAMPLE

NET WET WT. 4199
 NET DRY WT. 3419
 % DRY SOLIDS 81.42

GROSS WET WT. 4612
 GROSS DRY WT. 3832
 TARE WT. 413

SAMPLE RUN

WET WT. OF FEED SAMPLE 51.5

1. X 81.42 % DRY SOLIDS = 41.931 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .89 :53
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2826.9

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 147 GRAMS = .324 LBS.

METALLURGICAL BALANCE

HEAD, (ASSAYED

1. HEAD (CALC.)

2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
		<u>3.6</u>		
41.931	100.00		3.60	100.00
.324	.77	34.7	.27	7.50
41.607	99.23	3.36	3.33	92.50

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 10
 HOLE NO. 12
 INTERVAL 20-30

DATE 3/27/64
 OPERATOR R.S.
F. N.

WET WEIGHT OF TOTAL SAMPLE 61

HEAD SAMPLE

NET WET WT. 4374
 NET DRY WT. 3668
 % DRY SOLIDS 83.86

GROSS WET WT. 4770
 GROSS DRY WT. 4064
 TARE WT. 396

SAMPLE RUN

WET WT. OF FEED SAMPLE 50

1. X 83.86 % DRY SOLIDS = 41.930 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .83 :50
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 3031.1

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 196 GRAMS = .432 LB

METALLURGICAL BALANCE

HEAD, (ASSAYED)
 1. HEAD (CALC.)
 2. CONC.

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
41.930	100.00			
.432	1.03	32.6	.34	
41.498	98.97			

* Tails

* Tail Dry Wt. = 1 - 2

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 10
 HOLE NO. 12
 INTERVAL 30-40'

DATE 3/27/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 61.5

HEAD SAMPLE

NET WET WT. 4087
 NET DRY WT. 3314
 % DRY SOLIDS 81.09

GROSS WET WT. 4522
 GROSS DRY WT. 3749
 TARE WT. 435

SAMPLE RUN

WET WT. OF FEED SAMPLE 52

1. X 81.09 % DRY SOLIDS = 42.167 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .89 :53
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2843.1

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 166 GRAMS = .366 LBS.

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
42.167	100.00			
.366	.87	31.5	.27	
41.801	99.13			

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 30
 HOLE NO. 36
 INTERVAL 0-10'

DATE 3/27/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 63

HEAD SAMPLE

NET WET WT. 4098
 NET DRY WT. 3414
 % DRY SOLIDS 83.31

GROSS WET WT. 4527
 GROSS DRY WT. 3843
 TARE WT. 429

SAMPLE RUN

WET WT. OF FEED SAMPLE 53

1. X 83.31 % DRY SOLIDS = 44.154 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .89 : .53
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2976.6

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 307 GRAMS = .677 LBS.

METALLURGICAL BALANCE

HEAD, (ASSAYED

1. HEAD (CALC.)

2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
		4.0		
44.154	100.00		4.00	100.00
.677	1.53	32.6	.50	12.50
43.477	98.47	3.55	3.50	87.50

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 30
 HOLE NO. 36
 INTERVAL 10-20

DATE 3/27/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 72.5

HEAD SAMPLE

NET WET WT. 4401
 NET DRY WT. 3678
 % DRY SOLIDS 83.57

GROSS WET WT. 4849
 GROSS DRY WT. 4126
 TARE WT. 448

SAMPLE RUN

WET WT. OF FEED SAMPLE 62

1. X 83.57 % DRY SOLIDS = 51.813 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES 1.04 :62
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2988.9

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 122 GRAMS = .269 LBS

METALLURGICAL BALANCE

HEAD, (ASSAYED

1. HEAD (CALC.)

2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
		3.4		
51.813	100.00		3.40	100.00
.269	.52	25.7	.13	3.82
51.544	99.48	3.28	3.27	96.18

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 30
 HOLE NO. 36
 INTERVAL 20-30

DATE 3/27/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 62

HEAD SAMPLE

NET WET WT. 4218
 NET DRY WT. 2808
 % DRY SOLIDS 66.57

GROSS WET WT. 4660
 GROSS DRY WT. 3750
 TARE WT. 442

SAMPLE RUN

WET WT. OF FEED SAMPLE 57

1. X 66.57 % DRY SOLIDS = 37.945 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .99 :59
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2300.1

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 134 GRAMS = .295 LBS

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
37.945	100.00			
.295	.78	28.8	.22	
37.650	99.22			

* Tails

* Tail Dry Wt. = 1 - 2

REMARKS:

ORE NO. 519 (WET MAGNETIC COBBING OF COLUMBIA RIVER BEACH SANDS)

LINE NO. 30
 HOLE NO. 36
 INTERVAL 30-40'

DATE 3/27/64
 OPERATOR R.S.
F.N.

WET WEIGHT OF TOTAL SAMPLE 50

HEAD SAMPLE

NET WET WT. 4447
 NET DRY WT. 3487
 % DRY SOLIDS 78.41

GROSS WET WT. 4892
 GROSS DRY WT. 3932
 TARE WT. 445

SAMPLE RUN

WET WT. OF FEED SAMPLE 40

1. X 78.41 % DRY SOLIDS = 31.364 (DRY FEED WT.)

DRUM R.P.M. 22.2
 FEED TIME IN MINUTES .68 :41
 % SOLIDS IN FEED 20
 G.P.M. OF WATER TO FEED 23
 G.P.M. OF SLURRY PULP 25
 FEED RATE, DRY LBS./FT/HR 2767.2

MAGNETIC CONCENTRATE

2. NET DRY WT. OF MAGNETIC CONCENTRATE 150 GRAMS = .331 LB.

METALLURGICAL BALANCE

HEAD, (ASSAYED
 1. HEAD (CALC.)
 2. CONC.

* Tails

* Tail Dry Wt. = 1 - 2

Dry Wt. Lbs.	% Wt.	% Total Fe	Fe Units	Fe Dist.
31.364	100.00			
.331	1.05	30.8	.33	
31.033	98.94			

REMARKS:

TEST DATA

SHEET 1

*IRON UNITS RECOVERED PER TON SANDS FROM HOLES ON

LINES 110S - 140S - 160S

FORM P-556-2 (GREEN) P-556-B2 (BUFF) Post-File SYSTEMS CELINA, OHIO - DALLAS - LOS ANGELES LITHO IN U.S.A.

LINE No	INTERVAL FEET	(1) HOLE 4	(2) HOLE 9	(3) HOLE 12	(4) HOLE 16	(5)	(6) AVERAGE
		LINE 110S					
1	0 - 10	4.11	3.28	2.27	1.35		2.75
2	10 - 20	0.53	0.35	0.44	0.43		0.45
3	20 - 30	0.45	0.17	0.29	0.22		0.28
4	30 - 40	0.38	0.52	0.41	0.44		0.44
5	40 - 50	0.78	0.21		0.14		0.38
6							
7							
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99							
100							

IRON UNIT =
20 POUNDS

1

2

3

4

5

6

TEST DATA

SHEET 2

* IRON UNITS RECOVERED PER TON SANDS FROM HOLES ON
LINES 193S - 247S - 305S

FORM P-556-2 (GREEN) P-556-82 (BUFF) Post-rite SYSTEMS CELINA, OHIO - DALLAS - LOS ANGELES LITHO IN U.S.A.

LINE No	INTERVAL FEET	(1)	(2)	(3)	(4)	(5)	(6)
		HOLE 4	HOLE 8	HOLE 12	HOLE 16	HOLE 20	HOLE 24
1	0 - 10	1.32	1.49	1.59	0.64	0.66	0.97
2	10 - 20	0.37	1.69	0.55	0.37	0.39	0.37
3	20 - 30	4.03	0.31	0.48	0.34	0.25	0.23
4	30 - 40	—	0.63	0.26	0.25	0.15	0.19
5	40 - 50	1.36	0.50	0.27			0.18
6	50 - 60	0.31	0.21				
7	60 - 70	0.46					
8	70 - 80	0.31					
9							
10							
11							
12							
13							
14			LINE	247S			
15	INTERVAL FEET	HOLE 2	HOLE 5	HOLE 8	HOLE 11	HOLE 16	HOLE 20
16	0 - 10	1.81	1.68	1.09	1.11	1.34	0.94
17	10 - 20	0.78	0.69	0.66	0.86	0.23	0.41
18	20 - 30	0.35	0.52	0.62	0.18	0.16	0.21
19	30 - 40	0.81	0.16	0.23	0.13	0.22	0.32
20	40 - 50	0.22	0.18	0.12	0.25	0.12	0.15
21	50 - 60	0.57	0.20	0.32	0.18	0.07	
22	60 - 70	0.14	0.19	0.15	0.12		
23	70 - 80	0.17	0.18	0.09	0.08		
24							
25							
26							
27							
28							
29			LINE	305S			
30	INTERVAL FEET	HOLE 12	HOLE 16	HOLE 20			
31	0 - 10	0.83	0.68	0.47			
32	10 - 20	0.24	1.94	0.36			
33	20 - 30	0.10	0.35	0.32			
34	30 - 40	0.14	0.17	0.20			
35	40 - 50	0.15	0.19				
36							
37							
38							
39	Iron Unit =						
40	20 POUNDS						
		1	2	3	4	5	6

AVERAGE

0.66

0.84

0.28

0.17

0.17

SPECTROGRAPHIC ANALYSIS

DATE 25 1 Br 64

PLATE NO 032564 BHC

	Description	Li	Na	K	Mg	Ca	Sr	Ba	Be	Al	Ca	B	Si	Mn	Fe
1	Clotsep Test Heads Composite	0	0	0	P	P	0	0	0	P	0	0	MjC	tr	MjC
2	" " (Non-Mag)	0	0	0	P	P	0	0	0	P	0	0	MjC	tr	MjC
3	" Magnetic Conc.	0	0	0	P	P	0	0	0	P	0	0	P	tr	MjC
4															
5	For: R McRae														
6															
7															

	Co	Ni	Au	Hg	Ag	Cu	In	Cd	Zn	Tl	Pb	Bi	P	As	Sb	Ge	Sn	Te	Ti	Zr	V	Cr	Mo	W
1	0	trx	0	0	tr	trx	0	0	tr	0	tr	0	0	0	0	0	0	0	tr	0	tr	trX	0	0
2	0	tr	0	0	tr	tr	0	0	tr	0	tr	0	0	0	0	0	0	0	tr	0	tr	tr	0	0
3	0	tr	0	0	tr	tr	0	0	trx	0	trx	0	P	0	0	0	0	0	P	0	tr	trx	str	fr
4																								
5																								
6																								
7																								

	Ce	Cb	Ta	U	Pd	Os	Ir	Pt	Th	Radioactivity U ₃ O ₈ Equivalent	Key to Symbols
1	0	0	0	0	0	0	0	0	0		O = Not Detected
2	0	0	0	0	0	0	0	0	0		fr = faint Trace
3	0	0	0	0	0	0	0	0	0		tr = Trace
4											P = Present
5											MjC = Major Constituent
6											X or XX = Increasing Amounts
7											(Used in Comparison of Samples with similar Composition)

SUMMARY TONNAGE BLOCKS AND RECOVERABLE IRON

SHEET 1

FORM P-556-2 (GREEN) P-556-B2 (BUFF) Post-File SYSTEMS CELINA, OHIO - DALLAS - LOS ANGELES LITHO IN U.S.A.

LINE No						
	(1)	(2)	(3)	(4)	(5)	(6)
	BLOCKS FROM PLAN MAP	SQ. FEET AREA	TONS SAND	RECOVERED UNITS IRON PER TON		
1	<u>A</u>	15,090,000				
2	0-10' DEEP		7545000	0.73		
3	10-20' "		7545000	0.24		
4	20-30' "		7545000	0.27		
5	TOTAL		22,635,000	0.413		
6						
7						
8	<u>B-B'</u>	5460,000				
9	0-10 DEEP		2,730,000	2.75		
10	10-20' "		2,730,000	0.45		
11	20-30' "		2,730,000	0.28		
12	TOTAL		8,190,000	1.16		
13						
14						
15	<u>C-C'</u>	8,640,000				
16	0-10' DEEP		4320000	1.37		
17	10'-20' "		4320000	0.56		
18	20'-30' "		4320000	0.28		
19	TOTAL		12,960,000	0.736		
20						
21						
22	<u>D-D'</u>	11,000,000				
23	0-10' DEEP		5500000	1.11		
24	10-20' "		5500000	0.62		
25	20-30' "		5500000	0.97		
26	TOTAL		16,500,000	0.90		
27						
28						
29	<u>E-E'</u>	10,150,000				
30	0-10' DEEP		5075000	1.32		
31	10-20' "		5075000	0.60		
32	20-30' "		5075000	0.34		
33	TOTAL		15,225,000	0.753		
34						
35						
36	<u>F-F'</u>	10,350,000				
37	0-10' DEEP		5,175,000	0.66		
38	10-20' "		5,175,000	0.84		
39	20-30' "		5,175,000	0.28		
40	TOTAL		15,525,000	0.593		

1

2

3

4

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6