Development of the ORC Coos Bay mineral sands deposits in Oregon, USA

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Introduction

Geology and resources

Bulk testing

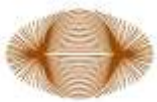
Process flowsheet and engineering

Mining and reclamation

Permitting

Economic impacts

Summary



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Oregon Resources Corporation

- **Oregon Resources Corp is developing the project covering approximately 2,600 acres of terraced mineral sands properties near Coos Bay in southwest Oregon USA.**
- **Late 2007, ORC received approval on two conditional use permits from Coos County.**
  - **One to construct a mineral sands processing plant on property in Coos Bay**
  - **Second to allow a mineral sands operation on designated property located in Coos County.**
- **Industrial Minerals Corporation owns 100% of Oregon Resources Corp (ORC)**
- **Listed on the Australian Stock Exchange in November 2006, Industrial Minerals has been established primarily for the purpose of developing the Southern Oregon Mineral Sands Project.**

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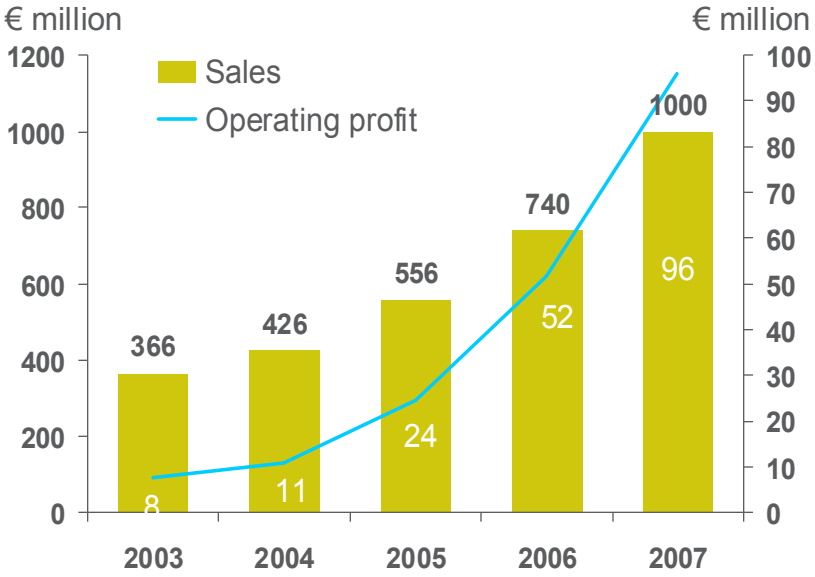
Outotec in brief

- Develops and supplies technologies for mining, metals and related processing industries
- Expertise covers the whole process chain from mine to metal
  - Ex: chromite, ilmenite, iron ore
- More than 2000 employees in 20 countries
- Global operations and presence in all the key markets

Three business divisions:

- **Minerals Processing**
- **Base Metals**
- **Metals Processing**

Sales and operating profit development



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Location: Near the cities of Coos Bay and North Bend in South Western corner of Oregon (USA)

Historic min sands producing region

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Location

Plant Layout in Coos Bay

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Project scope

- Mineral sands mine, concentrator and mineral separation plant to produce annually:
- Chromite 71,000 Tons
- Garnet 27,000 Tons
- Zircon 8,500 Tons
- Magnetite 8,700 Tons

- Outotec supply:
  - Process testwork
  - Flowsheet development
  - Pilot plant operation
  - Engineering
  - Project management
  - Procurement
  - Equipment supply
  - Installation supervision
  - Commissioning
  - Guarantees

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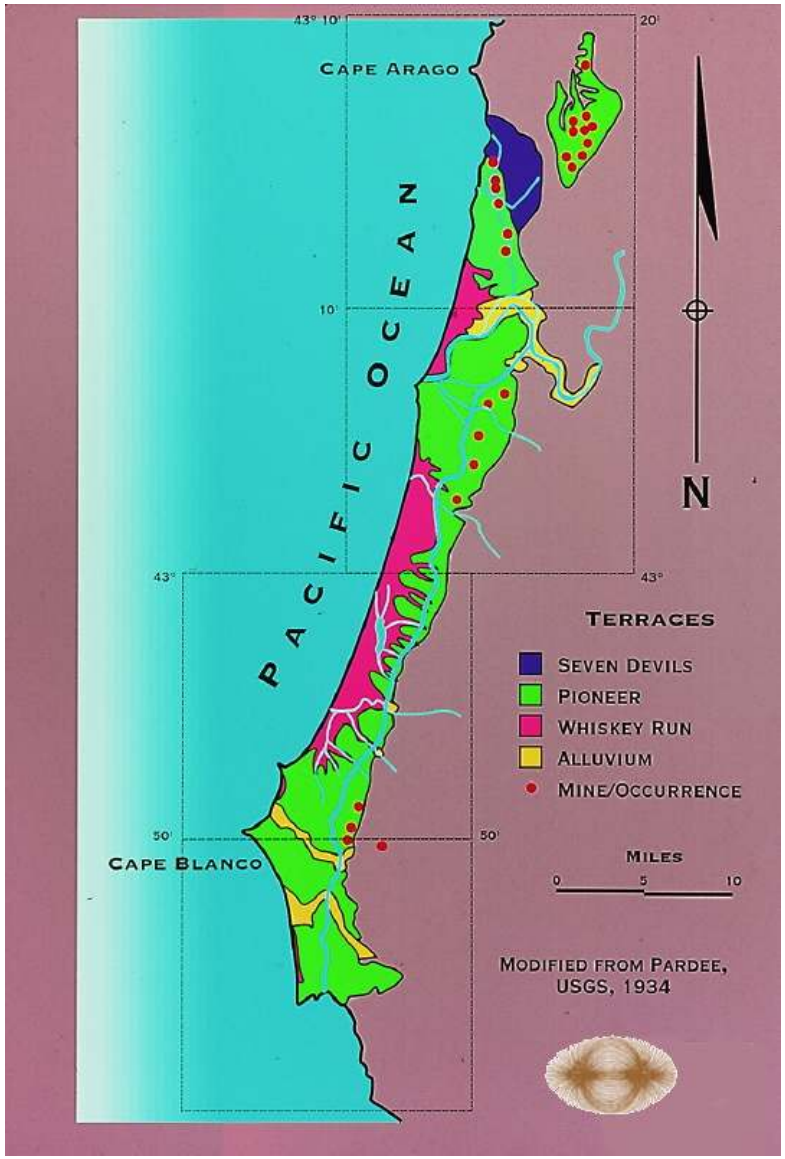
Geology

- The deposits occur along a number of ancient elevated beach terraces that range over a 240 square kilometer coastal plain.
- The Cape Arago District contains 95% of the government drilled mineral sands resources. These resources total 8.1 million metric tonnes of heavy mineral sands which contain approximately 12% chromite (U.S. Bureau of Mines, 1989).



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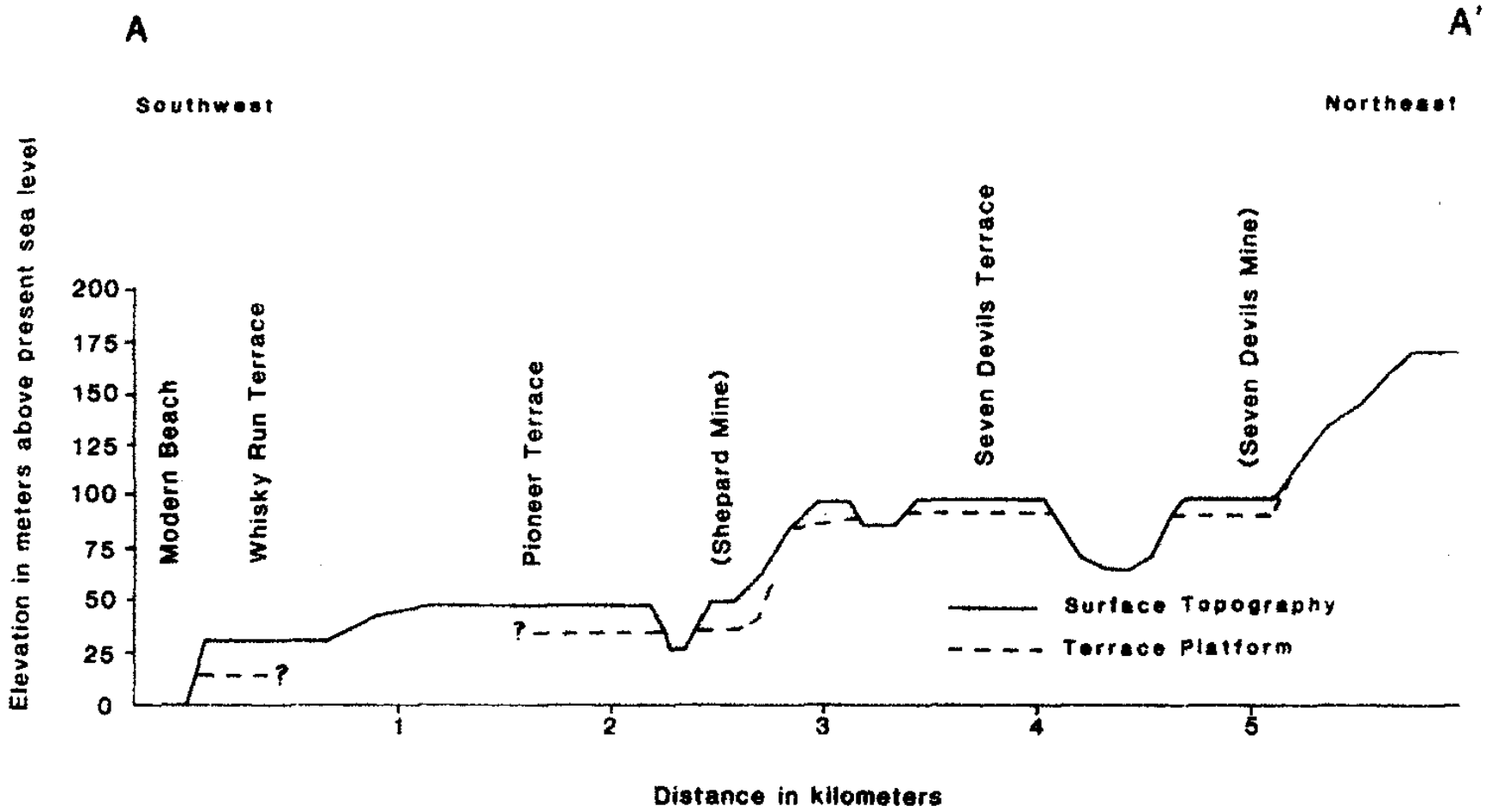
Terrace geometry



Typical heavy mineral content

Mineral	Percent in ground
Chromite	13.9
Garnet	4.7
Ilmenite	1.7
Zircon	1.2
Epidote	20.6
Staurolite	0.7
Leucoxene	0.5
Rutile	0.3
Magnetite	0.2

-At 40% HM, one of the world's highest grade min sands deposits
-Approximately 13% -63 micron slimes

Reserves

	Sand tons	*Chromite* % Grade	*Chromite (tons)*	Zircon % Grade	Zircon *(tons)*	Garnet % Grade	Garnet *(tons)*
Reserves	1,382,000	14.9%	206,332	1.4%	19,046	5.0%	68,497
Measured Resources	4,079,000	7.9%	321,680	3.4%	140,280	4.1%	168,090
Indicated Resources	8,810,000	7.8%	688,136	1.4%	127,661	4.1%	365,417
TOTAL	**14,271,000**		**1,216,148**		**286,987**		**602,004**

JORC compliant

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Bulk testing program

- Sampling of multiple deposits
- Testing
- Assaying

Gravity pilot plant

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Stockpiled ore

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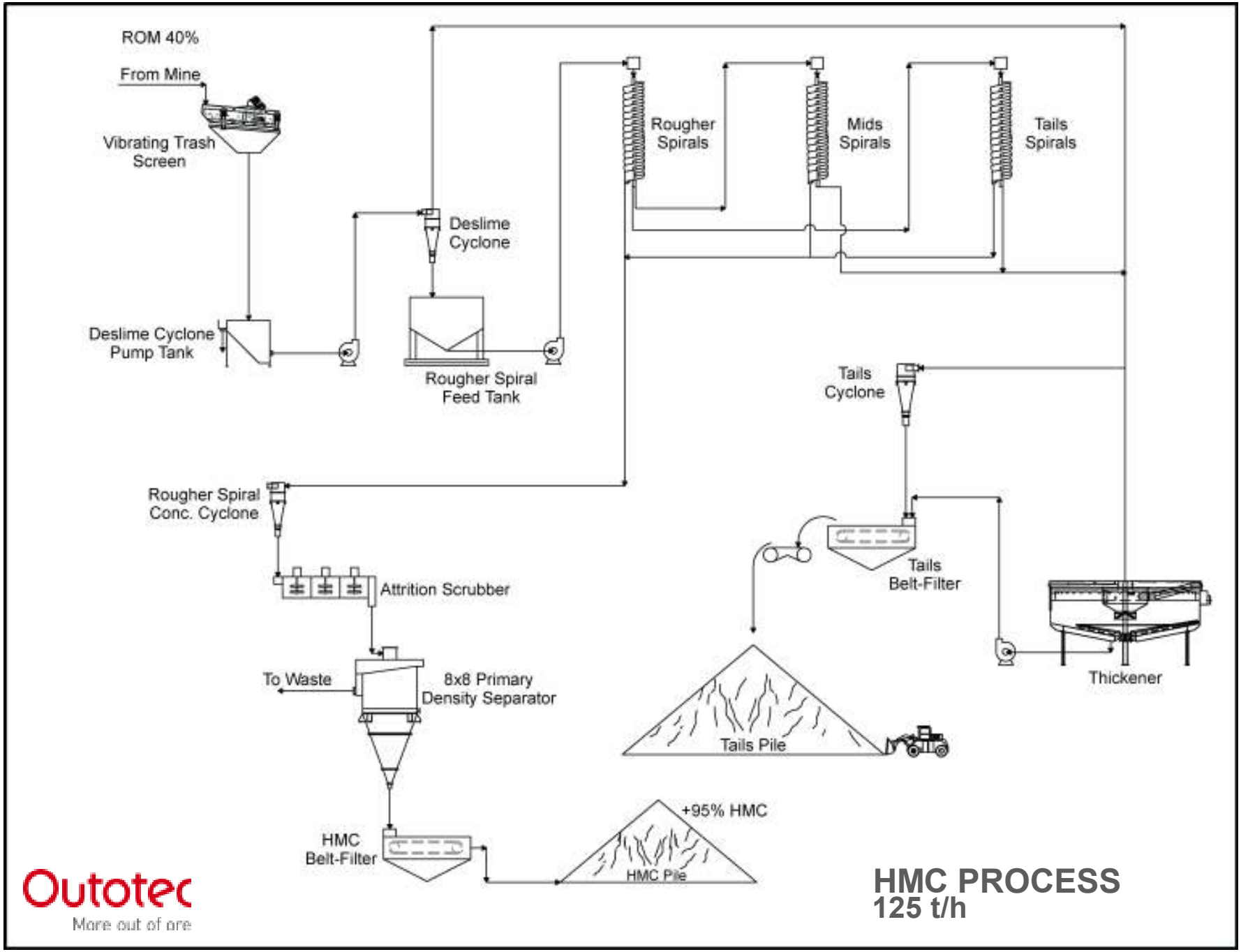
ROM 40%
From Mine
Vibrating Trash Screen
Deslime Cyclone
Deslime Cyclone Pump Tank
Rougher Spiral Feed Tank
Rougher Spirals
Mids Spirals
Tails Spirals
Tails Cyclone
Tails Belt-Filter
Thickener
Tails Pile
Rougher Spiral Conc. Cyclone
Attrition Scrubber
To Waste
8x8 Primary Density Separator
HMC Belt-Filter
+95% HMC
HMC Pile
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HMC PROCESS
125 t/h

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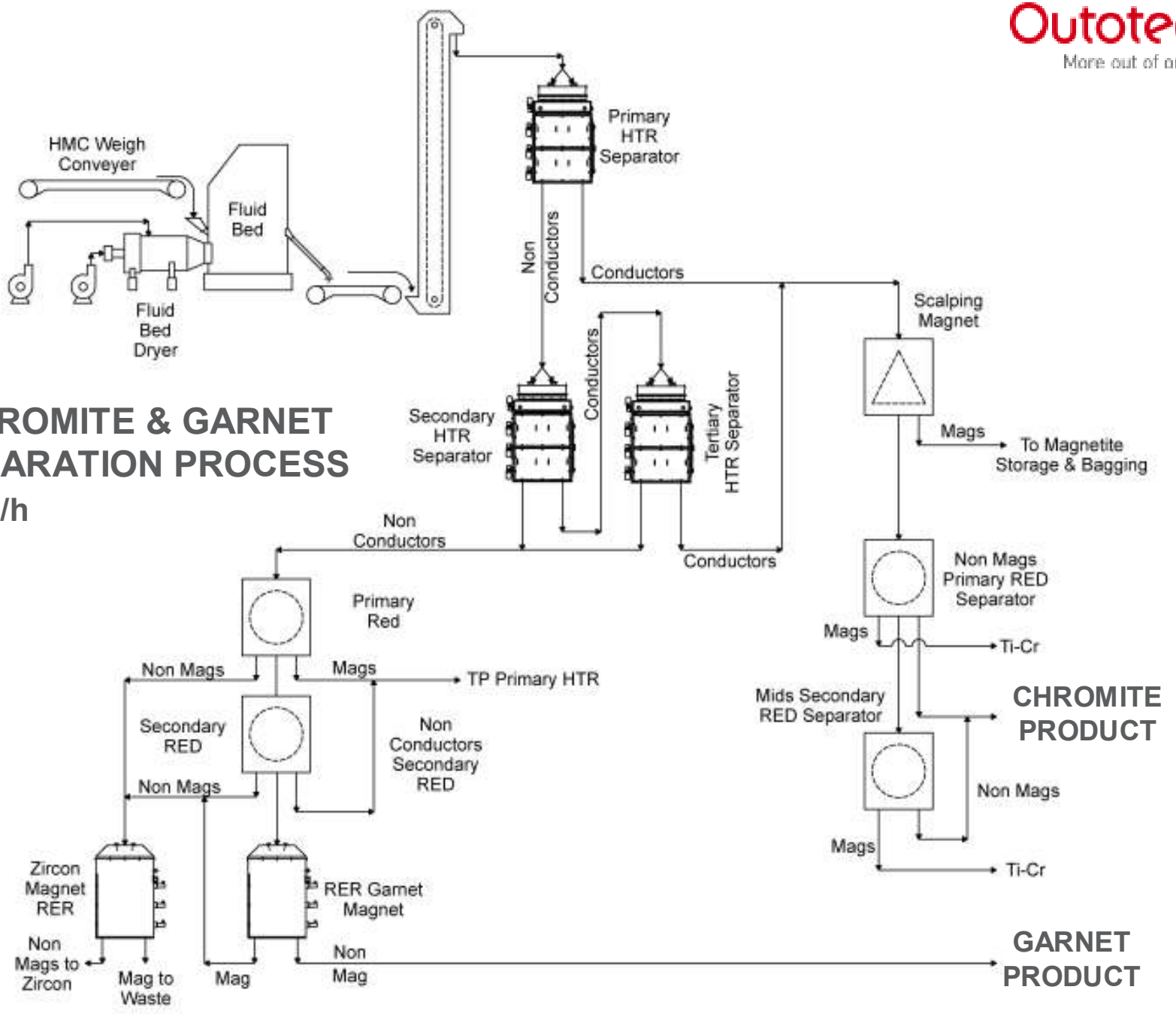
CHROMITE & GARNET SEPARATION PROCESS

40 t/h



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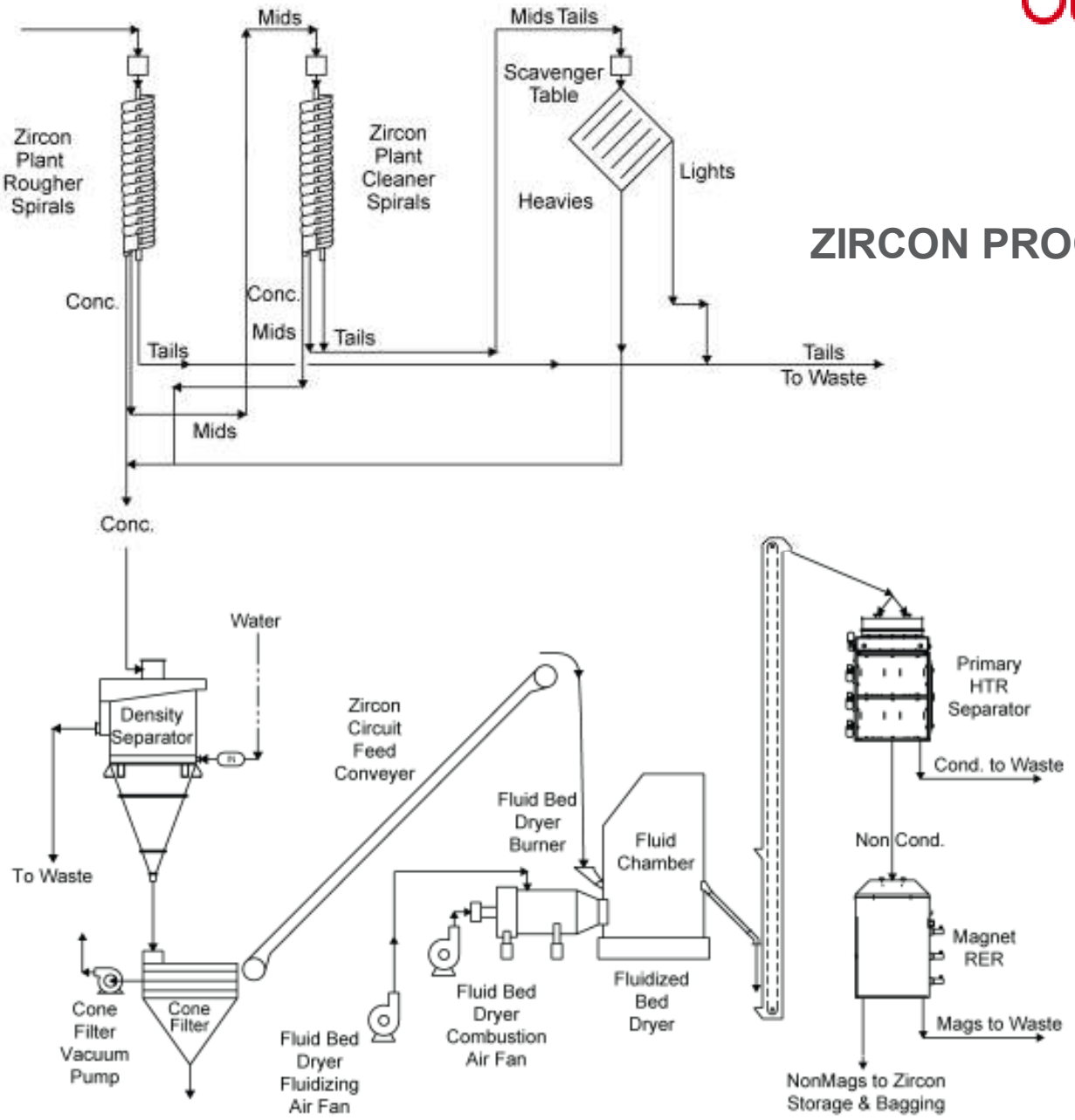
ZIRCON PROCESS



Chromite concentrate

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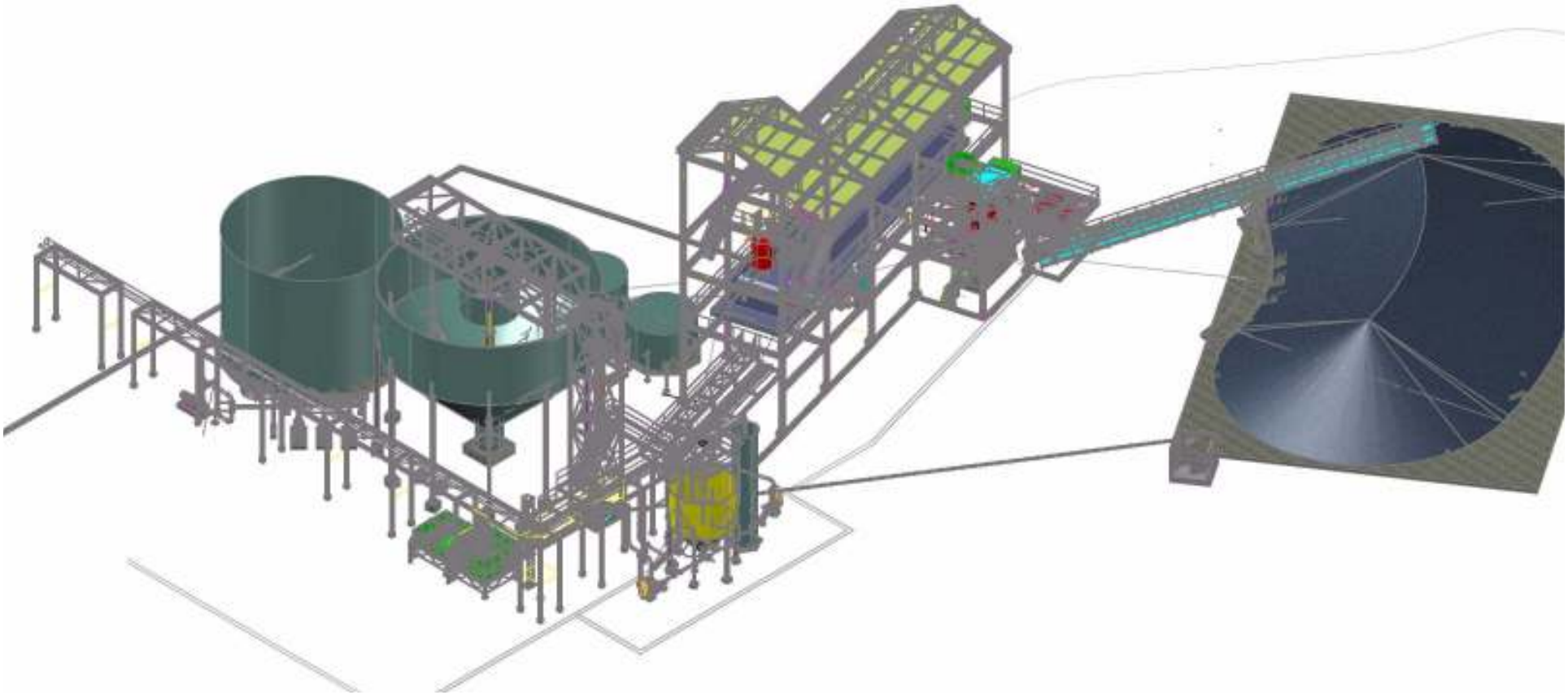
ORC process plant overview



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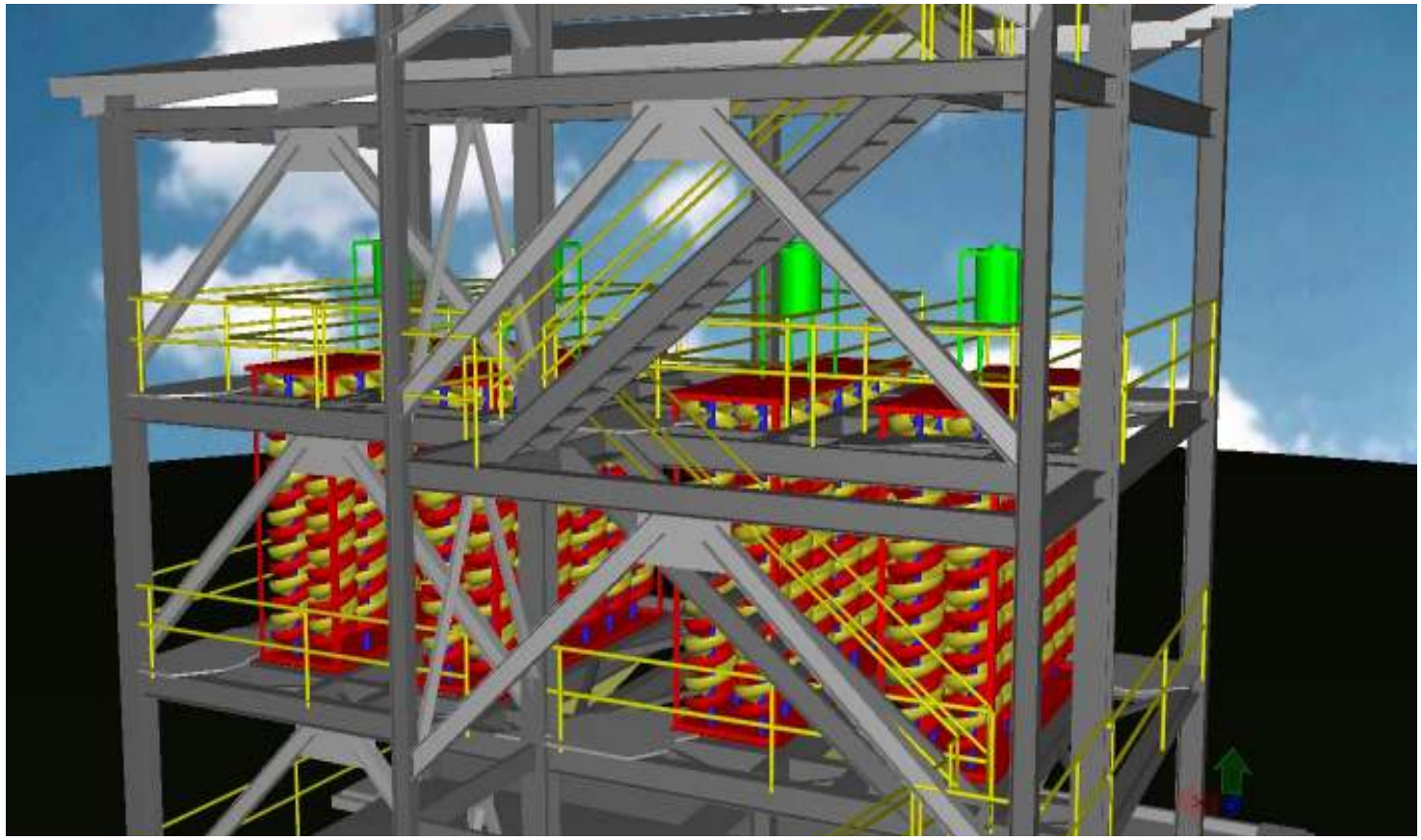
ORC process plant primary concentration



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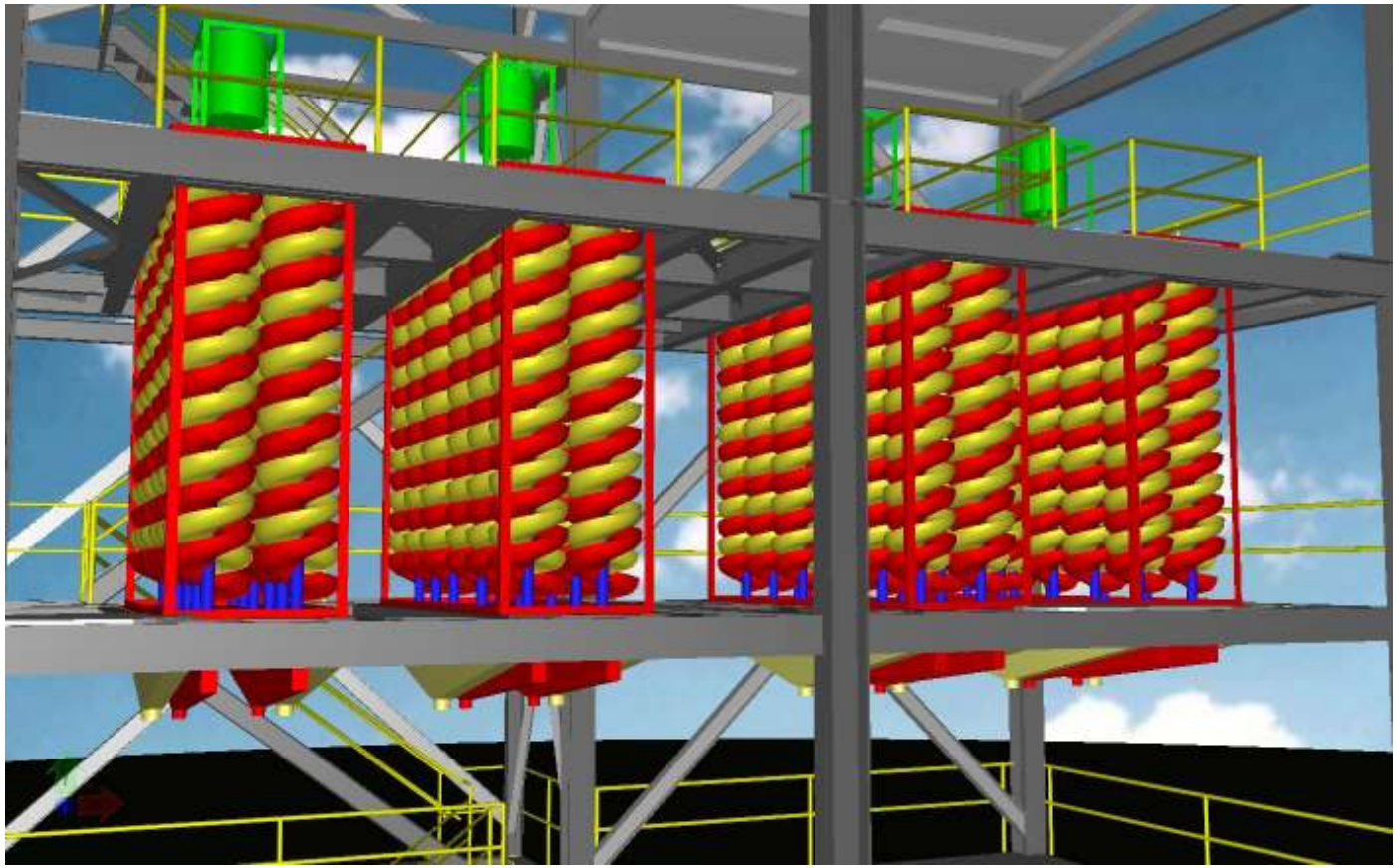
ORC process plant primary concentration



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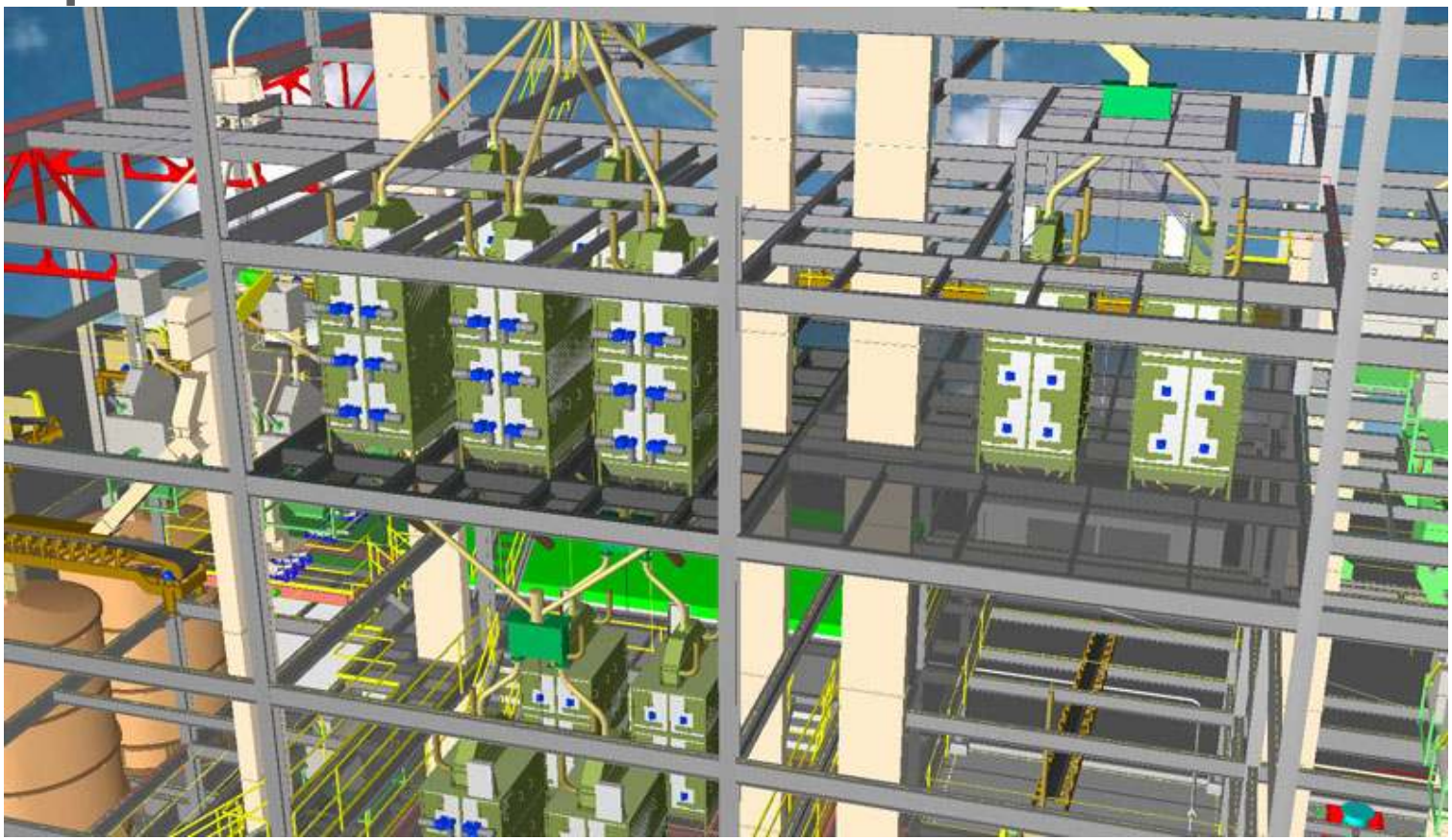
ORC process plant mineral separation



Product grades

Chromite

- Size:
  - 98% is 212x106 µm
  - D50 ~ 140 µm
- Cr_2O_3 +44.6
- TiO_2 0.83
- SiO_2 0.55
- Al_2O_3 15.01
- Fe_2O_3 19.91

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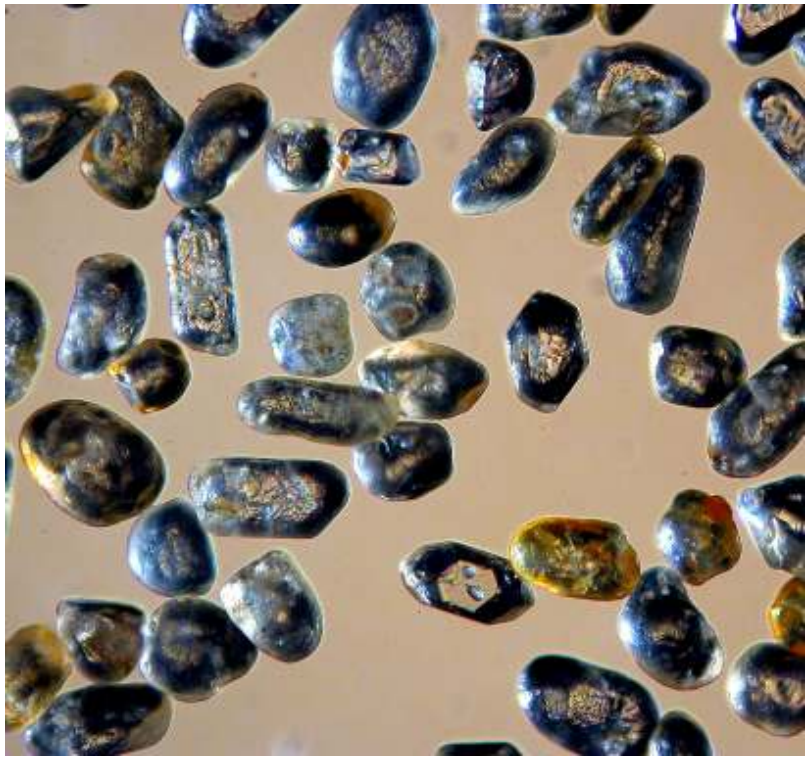
Product grades

Zircon*

- Size:
  - 100% is 212x75 µm
  - D50 ~ 125 µm
- ZrO_2+HfO_2 66.03
- TiO_2 0.50
- Al_2O_3 0.40
- Fe_2O_3 0.08

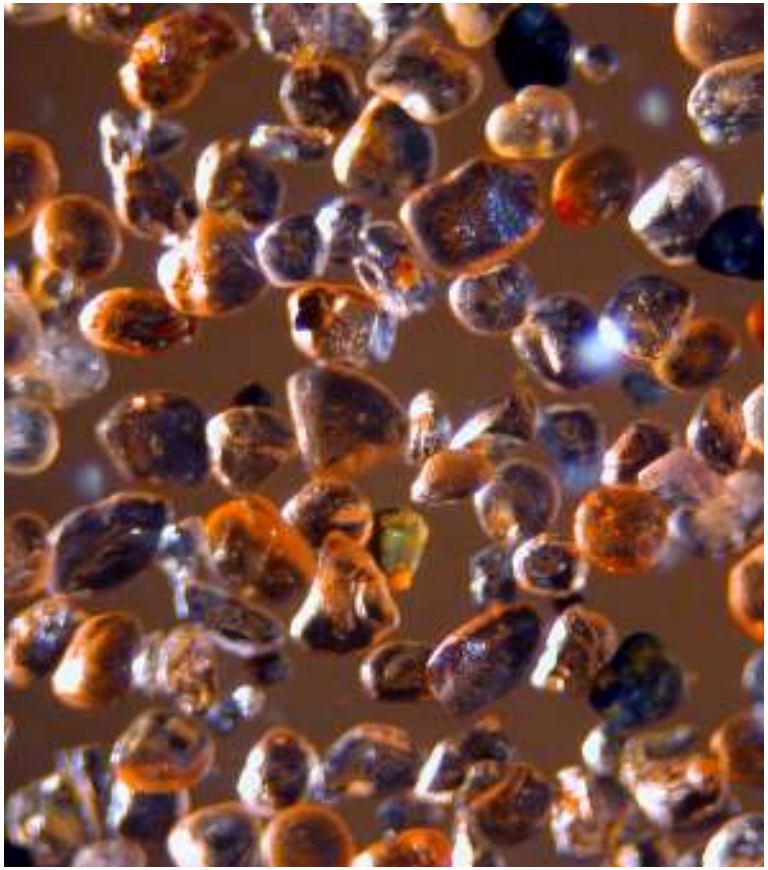
*(not acid scrubbed)



Product grades

Garnet

- Garnet mineral 99%
- Performs well as water jet



Production

700,000 tons sand mined per annum

(flexible plant designed to be able to handle anywhere from 0.5-1.2 M tons/ annum of feed depending on orebody)

Annual production:

- Chromite 71,000 Tons
- Garnet 27,000 Tons
- Zircon 8,500 Tons
- Magnetite 8,700 Tons
- Other product potential: mixed chromite/ilmenite product

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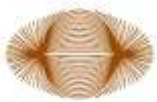

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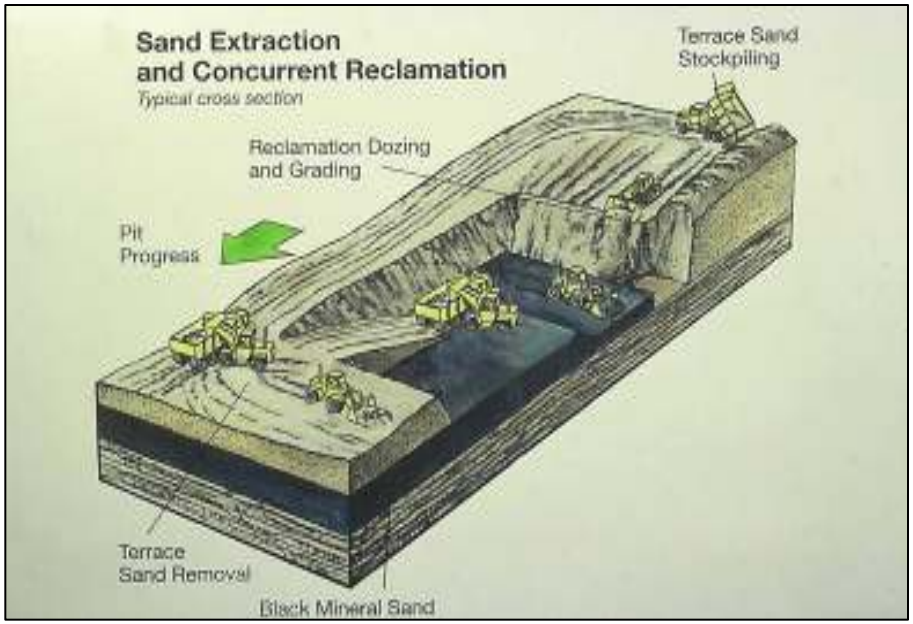
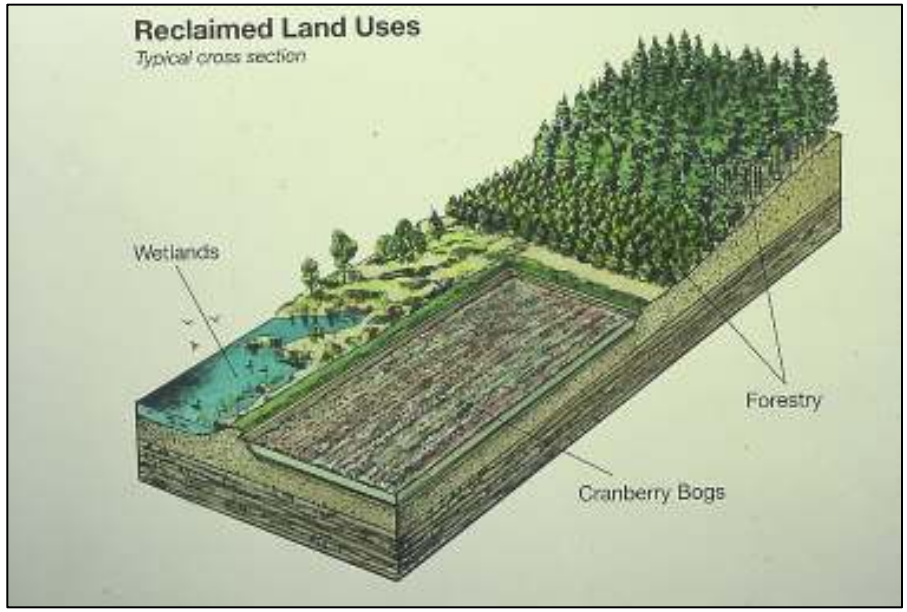
Mining

Conventional dry mining techniques will be used. 25-30 km distance to plant

Reclaimed land use will be back to forestry land or cranberry bogs





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Mining methods and equipment

- Stripping: CATD8, D9 Dozers and 330 excavator
- Mining:D8 Dozer pushing down grade/dip to a 980 Loader
- 980 Loader: feeding a dry screening plant which conveys to stacker
- 980 Loader: loading over the road trucks (24-30 ton capacity)
- Reclamation: D8 & D9 Dozer

Reclamation

- Most deposits are within one-half mile of all-weather paved roads and are accessible by all-weather gravel roads
- The targeted lands for resource expansion are largely undeveloped timberlands and can, after mining, be reclaimed to forest lands or alternate use.

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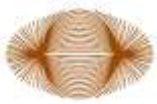

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Permitting

- MSHA ID (Mine Safety and Health Administration)
- ACDP (Air Containment Discharge Permit)
- NPDES (National Pollutant Discharge Elimination System Permit)
- JPA (Joint Permit Application - Impacts to Wetlands)
- CUP (Coos County Conditional Use Permit)
- MOP (Mine Operating Permit)
- Radioactive Waste Exemption
- Coos County Building Permits
- DOGAMI (Exploration Permits)

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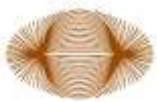

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Economic impacts: External

- 75 Full-time employees
- US$3.5M Annual payroll
- US$4M Annual expenses for goods and services
- US$45M Capital expenditure
- 113,000 Tons of finished product shipped yearly by: Water, rail and truck
- Economic impact multiplier = 2.0

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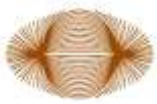

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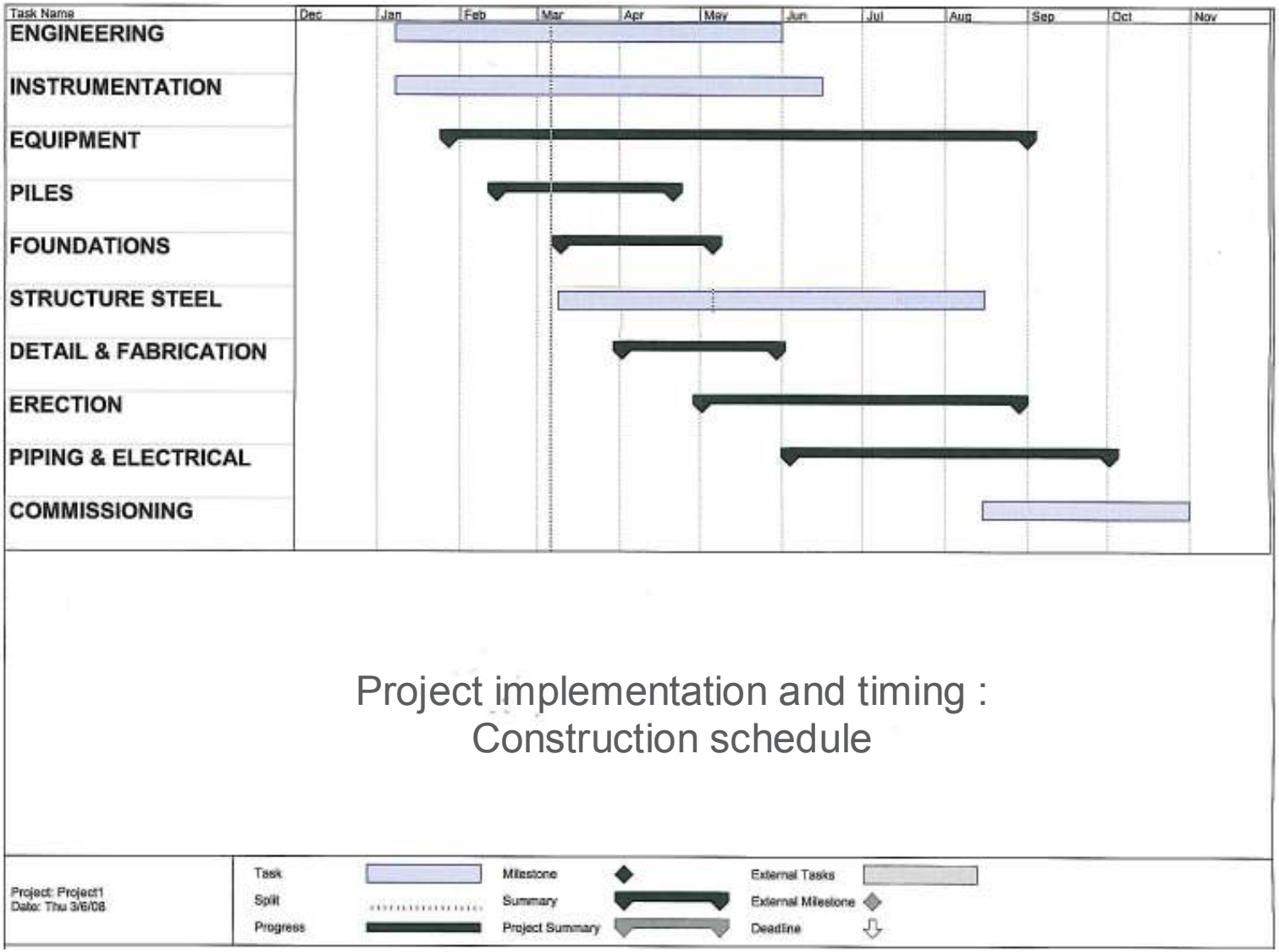

Project implementation and timing : Construction schedule

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Summary

- Production in Q4 2008
- Capital Cost of $45 M
- Annual production of
  - Chromite 71,000 Tons
  - Garnet 27,000 Tons
  - Zircon 8,500 Tons
- Exploration programs underway to increase resources to 20-25 years production in the next 2-3 years
- Excellent potential to increase production with market demand

ORC production Q4 2008

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