

MEMO

TO: Mr. Tom Thompson, U.S.N.R.C.

DATE: October 24, 1988

RE: High radiation in the plants and tailings of Heritage Minerals, Inc. near Lakehurst, New Jersey

Locations: The plant entrance is through 1 mile of dirt road that starts immediately opposite mile marker 41, route 70, New Jersey (See attached diagram).

Operations: The operations are essentially Mineral Separations in a series of operations (Gravity-Electro-Static and Magnetic) to separate Titanium minerals (Ilmenite) and Zircon from an old tailings pile left over from the previous operations of ASARCO on the same location. The separations take place in two separate and adjacent buildings called "Wet Plant" and "Dry Plant".

The minerals are in the form of fine sand particles mixed together with Monazite (Thorium Bearing mineral) and silica sands.

The tailing pile itself contains 130 ppm of the ThO_2 and 55 ppm of U_3O_8 .

In the course of concentration and separation 4 different locations or streams (flows of sands) show the following readings in ppm:

	ThO_2	U_3O_8	Total
1- Spiral Plant Concentrate	407	152	559
2- Titanium plant tailings	500	188	688
3- Tables concentrate	905	300	1265
4- Final Magnetic Product	<u>20791</u>	<u>1120</u>	<u>21911</u>

(The above readings are shown in the "Pilot Tests and Flow Sheet Development" report of the operations.

Notes:

- 1 - Stream #2 (Titanium plant tailings) undergoes further concentration and separation on OPEN wet shaking table handled by bare hands of laborer during the frequent check up and testing for adjustments.

B-13

- 2 - Stream #3 is frequently dumped on the ground and shovelled manually by labor. The whole dumping area is effectively built up of this material and may represent a serious hazard to the operating labor.
- 3 - Stream # is frequently dumped on the floor of the plant (in the course mechanical failures) and shovelled manually by labor.

Under normal operating conditions, this stream is pumped to just North of the plants and dumped together with other tailings on the open ground.

- 4 - The final product (Zircon) which stores in bins prior to shipment (Theoretically should contain about 400 ppm) may well, through the inefficiencies of the operation, contain more than 500 ppm. (Source material limit) and thus deserves sampling and testing as it is transported from these bins by open trucks on public roads (40 miles) to Camden, New Jersey.
- 5 - Perhaps the more serious aspect of the operations is the atmosphere quality of air in the dry mill. The hot sands flow in open machinery, rubbing against each other and creating dust including Monazite that suspends in the air and is breathed by the operators. The plants are provided with exhaust fans (from the time of ASARCO operations) that are rarely, if ever, used. Their use adds to the cost of operation and lowers the ambient operating temperature thus necessitating using more fuel to maintain the optimum operating temperature for separation.
- 6 - A "Whole Body Count" for the operators may well be urgently required in view of the fact that they have been exposed to these conditions on full 3 shift-per day basis for a whole year.
- 7 - I shall call you late next week to add any necessary information or details you may require.

Mile Marker 41

To Camden N.J.

Route 70 N.J.

To Lakehust N.J.

3 Miles

Company Sign

1 Mile

Warehouse

Wet Mill

Offices

Workshop

gate

Oil Tanks

Dry Mill

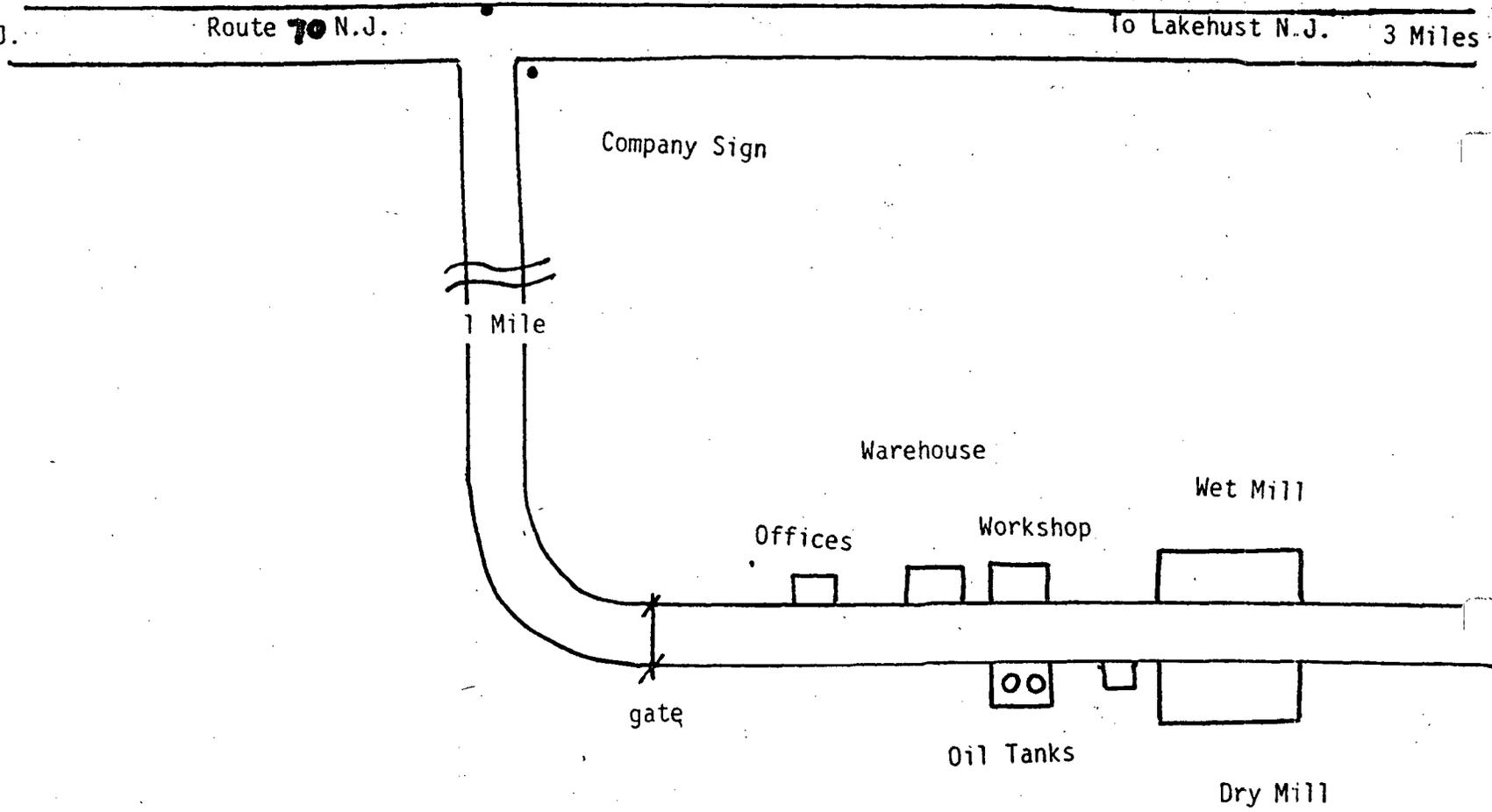


Table 7

U₃O₈ and ThO₂ Distribution in Current Flowsheet

	ThO ₂			U ₃ O ₈	
	Wt %	ppm	Distr %	ppm	Distr %
Feed to spiral plant (calc)	(100.00)	(130)	(100.0)	(55)	(100.0)
Spiral plant tail (calc)	(67.93)	(0.7)	(0.4)	(3)	(4.1)
Scavenger tail	59.8	0.5	0.2	3	3.5
Recleaner scavenger tail -65 mesh	8.13	3	0.2	4	0.6
Spiral plant concentrate	(32.07)	(407)	(99.6)	(152)	(95.9)
TiO ₂ conc (calc)	(6.26)	(55)	(2.8)	(27)	(3.3)
Lower TiO ₂	4.36	52	1.8	25	2.1
70% TiO ₂	1.06	78	0.6	30	0.6
+90% TiO ₂	0.84	55	0.4	30	0.6
TiO ₂ plant tailing (calc)	(25.16)	(500)	(96.6)	(188)	(92.5)
Table conc (calc)	(10.88)	(965)	(85.8)	(300)	(64.1)
Mag	0.46	20791	73.3	1120	10.2
Nonmag (zircon)	10.42	156	12.5	264	53.9
Table mid	7.73	163	9.7	178	27.0
Table tail	6.55	23	1.1	11	1.4
Miscellaneous mids	0.65	NA	-	NA	-

1/ Based on data from Deister Co. Test and Flowsheet D-4 through D-6.