APR 23 1999

DNSC-MQ

MEMORANDUM FOR DNSC-L, DNSC-O, DNSC-P, DNSC-R, DNSC-ME

SUBJECT: Baddeleyite Ore
New Haven, IN

In 1996 samples of ore from piles 111 and 111-A (Contaminated) were analyzed to support the sales program. The attached summary indicates the material in both piles to contain significantly less ZrO_2 than noted in current inventory records. In our opinion the "Contaminated" pile contains so little ZrO_2 (< 4.0%) that we question the salability of this ore.

Utilizing the 1996 analysis, a thorium and uranium content was calculated (attached). Calculations confirm that both piles contain sufficient quantities of these elements to be licensable source material under NRC rules, however they do not meet the DoT definition of greater than 0.002 microcuries per gram specific activity (49 CFR 173.403) for radioactive materials.

In view of the above, we recommend the Master Inventory File be updated with the information contained in the attachment and that DNSC-P and DNSC-R determine whether or not Pile 111-A can be sold.

/S/ Peter O.I.M. Porton

PETER O.I.M. PORTON
Chief, Quality Assurance &
Technical Services Division

Attachment

cc: Off. file - DNSC-MQ(ab), DNSC-MONH, DNSC-MQBR, DNSC-MQNH
DNSC-MQ:MPECULLAN:mjp: 767-7620:4/23/99

ANALYSES OF DNSC ZIRCONIUM ORE - BADDELEYITE

2/20/96

Percent by Weight (Dry Basis)

Sample ID	Depot	Minnimum ZrO2 (%)	HfO2 (%)	SiO2 (%)	TiO2 (%)	Fe2O3 (%)	Al2O3 (%)	CaO (%)	MgO (%)	Y2O3 (%)	P2O5 (%)	CuO (%)	ThO2 (%)	U3O8 (%)	CrO3 (%)	V2O5 (%)
1	New Haven, IN	58.4	0.54	18.7	1.20	4.77	4.74	0.52	0.83	0.14	0.27	0.019	0.080	0.24	0.42	0.084
2	New Haven, IN	58.0	0.55	12.6	1.09	4.34	4.21	0.66	0.65	0.17	0.25	0.010	0.082	0.25	0.17	0.082
3	New Haven, IN	57.6	0.60	17.5	1.45	3.66	4.16	0.57	0.96	0.15	0.32	0.011	0.093	0.25	0.29	0.093
4	New Haven, IN	61.2	0.63	19.1	1.27	3.83	4.20	0.32	0.45	0.32	0.019	0.089	0.24	0.19	0.093	0.15
5	New Haven, IN	58.9	0.64	18.7	1.19	3.65	3.74	0.69	1.31	0.19	0.32	0.008	0.096	0.29	0.37	0.095
6	New Haven, IN	53.4	0.54	19.6	1.16	3.96	4.14	1.73	0.99	0.15	0.25	0.006	0.088	0.34	0.33	0.075
7	New Haven, IN	54.8	0.54	18.0	1.29	4.03	4.34	2.63	1.33	0.15	0.27	0.006	0.11	0.33	0.10	0.087
8	New Haven, IN	54.6	0.54	19.7	1.28	4.20	4.84	2.52	1.31	0.14	0.25	0.006	0.10	0.27	0.15	0.11
9	New Haven, IN	42.9	0.47	20.3	1.11	4.94	5.80	5.97	2.57	0.13	0.27	0.019	0.10	0.17	0.33	0.093
10	New Haven, IN	46.1	0.53	20.8	1.21	5.24	5.72	4.03	1.74	0.15	0.27	0.021	0.094	0.18	1.17	0.079
11	New Haven, IN	43.9	0.42	16.6	1.06	4.48	3.98	3.99	1.58	0.12	0.23	0.010	0.088	0.20	0.19	0.066
12	New Haven, IN	54.9	0.58	22.0	1.05	4.56	3.20	1.89	0.46	0.11	0.24	0.008	0.083	0.21	0.052	0.068
13	New Haven, IN	48.8	0.54	23.0	1.09	5.46	4.14	3.06	0.81	0.085	0.34	0.008	0.086	0.25	0.044	0.070
Pile111	Average:	53.4	0.55	18.9	1.19	4.39	4.40	2.20	1.15	0.15	0.25	0.017	0.103	0.24	0.285	0.089
14	New Haven, IN	0.68	0.020	20.4	0.22	2.96	3.22	27.0	8.94	0.008	0.062	0.019	0.11	<0.005	0.021	0.012
15	New Haven, IN	6.58	0.071	25.7	0.47	7.89	6.81	16.6	1.97	0.010	0.078	0.016	0.074	<0.005	0.029	0.020
111-A	Average:	3.63	0.046	23.1	0.35	5.43	5.02	21.8	5.46	0.009	0.070	0.018	0.092	<0.005	0.025	0.016

Pile 111-A is a contaminated pile.

Baddeleyite Ore Piles
New Haven, IN

Pile	ThO_2 1996 Analysis	U_3O_8 1996 Analysis	Th Calculated	U Calculated
111	0.103%	0.240%	0.091%	0.204%
111-A	0.092%	<0.005%	0.081%	<0.004%

Pile	Weight lbs	Th Content	U Content	Ci Th	Ci U	Ci Total	µCi Th	µCi U	µCi Total	µCi per gm
111	31,981,187	0.091%	0.204%	1.4389	~~9.8545~~	~~11.2934~~	1,438,892	~~9,854,504~~	~~11,293,396~~	~~0.0008~~
111-A	2,783,521	0.081%	<0.004%	0.1115	~~<0.0168~~	~~0.1283~~	111,474	~~<16,818~~	~~<128,291~~	~~<0.0001~~

Void per
Calculation of
Isotopic Abundance
on JP.