DEFENSE LOGISTICS AGENCY
DEFENSE NATIONAL STOCKPILE CENTER
8725 JOHN J. KINGMAN ROAD, SUITE 3339
FT. BELVOIR, VIRGINIA 22060-6223

IN REPLY REFER TO

DNSC-M

September 24, 1996

MEMORANDUM FOR DNSC-P

SUBJECT: Summary of DNSC Rare Earth Analyses

Enclosed is a summary of the rare earth analyses performed by Laboratory Testing Inc., Dublin, PA. This information should be made available to prospective bidders for their information.

If you need additional information, please contact B.I. Min of my staff.

GILES E. LEPAGE
Director
Directorate of Strategic
Materials Management

Attachment

Orig - QA
cc - Lois

FAX TRANSMITTAL # of pages 3

To Judi/Clarence/Bill From Allen

Dept/Agency Phone #

Fax # Fax #

SUMMARY OF DNSC RARE EARTH (SODIUM SULFATE) ANALYSES

9/24/96

Percent by Weight (Dry Basis)

Elements		Sample ID HM-1 (Lot-1)	HM-2 (Lot-2)	HM-3 (Lot-4)	HM-4 (Lot-5)	HM-5 (Lot-6)	HM-6 (Lot-7)	HM-7 (Lot-8)	HM-8 (Lot-9)	HM-9 (Lot-10)	HM-10 (Lot-11)	HM-11 (Lot-12)	HM-12 (Lot-13)
Rare Earth Oxide	REO	42.515	44.738	42.920	44.209	44.191	44.358	44.533	44.862	43.761	45.858	45.244	44.291
Lanthanum Oxide	La2O3	9.67	10.10	9.79	9.96	9.99	10.13	10.25	10.35	10.12	10.55	10.31	10.14
Cerium Oxide	CeO2	20.60	21.29	20.34	21.21	21.34	21.06	21.25	21.62	20.82	22.11	21.78	21.52
Praseodymium Oxide	Pr2O3	2.54	3.34	3.15	3.29	3.15	3.40	2.93	3.22	3.20	3.37	3.45	3.21
Neodymium Oxide	Nd2O3	7.70	7.91	7.65	7.70	7.74	7.69	7.97	7.61	7.60	7.79	7.68	7.47
Samarium Oxide	Sm2O3	1.21	1.27	1.23	1.27	1.20	1.27	1.29	1.25	1.23	1.25	1.27	1.20
Europium Oxide	Eu2O3	0.010	0.013	0.013	0.013	0.016	0.014	0.009	0.007	0.005	0.009	0.008	0.009
Gadolinium Oxide	Gd2O3	0.466	0.485	0.450	0.459	0.452	0.480	0.506	0.488	0.473	0.480	0.462	0.460
Terbium Oxide	Tb4O7	0.006	0.010	0.008	0.010	0.008	0.011	0.009	0.010	0.010	0.011	0.011	0.010
Dysprosium Oxide	Dy2O3	0.118	0.123	0.113	0.115	0.114	0.117	0.124	0.119	0.117	0.114	0.108	0.108
Holmium Oxide	Ho2O3	0.011	0.009	0.008	0.009	0.008	0.008	0.008	0.007	0.007	0.006	0.006	0.006
Erbium Oxide	Er2O3	0.023	0.021	0.019	0.020	0.021	0.019	0.019	0.019	0.018	0.016	0.016	0.016
Thulium Oxide	Tm2O3	0.003	0.002	<0.001	0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001
Ytterbium Oxide	Yb2O3	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
Lutetium Oxide	Lu2O3	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Yttrium Oxide	Y2O3	0.154	0.161	0.145	0.148	0.147	0.155	0.164	0.158	0.157	0.148	0.139	0.137
Thorium	Th	0.002	0.002	0.001	0.002	0.002	0.002	0.002	0.001	0.002	0.002	0.001	0.001
Uranium	U	0.009	0.010	0.009	0.011	0.008	0.012	0.011	0.011	0.014	0.003	0.004	0.003
Sulfur Trioxide	SO3	42.46	44.14	45.66	44.49	44.58	44.30	45.38	45.40	44.92	44.80	44.13	44.95
Phosphate	P2O5	0.881	1.03	0.915	0.913	0.943	0.958	0.878	0.810	0.805	0.832	0.845	0.848
Sodium Oxide	Na2O	9.53	9.63	9.27	8.84	8.98	9.12	9.31	9.33	8.97	8.96	9.15	8.87
Silica	SiO2	0.065	0.056	0.057	0.061	0.065	0.064	0.064	0.065	0.066	0.066	0.062	0.068
Strontium Oxide	SrO	0.008	0.004	0.013	0.016	0.005	0.026	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Barium Oxide	BaO	0.006	0.005	0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Calcium Oxide	CaO	1.24	1.23	1.29	1.16	1.17	1.18	1.28	1.22	1.27	1.31	1.30	1.27
Magnesium Oxide	MgO	0.013	0.018	0.002	0.003	0.004	0.006	<0.001	0.012	0.002	<0.001	<0.001	0.008
Alumina	Al2O3	0.292	0.304	0.296	0.295	0.284	0.284	0.293	0.291	0.292	0.303	0.300	0.298
Ferric Oxide	Fe2O3	0.088	0.108	0.097	0.100	0.089	0.100	0.092	0.085	0.080	0.081	0.077	0.077
Free Moisture (Loss on Drying at 105°C)		0.83	0.76	0.07	0.05	0.02	<0.01	0.03	0.22	0.12	<0.01	<0.01	<0.01
Combined Water (Loss on Drying at 200°C after Drying at 105°C)		3.82	3.58	1.28	1.64	2.10	2.02	2.25	2.04	0.94	3.68	1.12	3.49

Sample ID HM: Hammond Depot, IN and Sample ID NH: New Haven Depot, IN.
Analyses listed are the results of recent sampling and are provided for information only.

SUMMARY OF DNSC RARE EARTH (SODIUM SULFATE) ANALYSES

9/24/96

Percent by Weight (Dry Basis)

Elements		Sample ID HM-13 (Lot-14)	HM-14 (Lot-15)	HM-15 (Lot-16)	HM-16 (Lot-102)	HM-17 (Lot-104)	HM-18 (Lot-106)	NH-1 (Lot-1)	NH-2 (lot-2)	NH-3 (Lot-3)	NH-4 (Lot-4)
Rare Earth Oxide	REO	41.712	42.045	42.132	43.066	41.849	43.719	41.988	41.618	42.649	42.739
Lanthanum Oxide	La2O3	8.73	8.65	8.91	9.02	8.94	9.33	9.38	9.25	8.05	8.92
Cerium Oxide	CeO2	19.85	19.78	19.84	19.85	19.27	20.12	20.17	20.55	21.20	21.39
Praseodymium Oxide	Pr2O3	3.22	3.59	3.51	3.79	3.63	3.92	1.72	1.60	1.85	1.68
Neodymium Oxide	Nd2O3	7.84	7.94	7.81	8.34	8.02	8.21	8.31	8.03	9.04	8.50
Samarium Oxide	Sm2O3	1.30	1.31	1.28	1.29	1.24	1.34	1.45	1.29	1.51	1.37
Europium Oxide	Eu2O3	0.007	0.004	0.006	0.009	0.008	0.010	<0.001	<0.001	<0.001	<0.001
Gadolinium Oxide	Gd2O3	0.470	0.474	0.476	0.472	0.459	0.480	0.723	0.681	0.737	0.657
Terbium Oxide	Tb4O7	0.010	0.013	0.012	0.012	0.012	0.014	0.071	0.078	0.101	0.066
Dysprosium Oxide	Dy2O3	0.111	0.111	0.114	0.111	0.107	0.115	0.137	0.120	0.131	0.115
Holmium Oxide	Ho2O3	0.007	0.007	0.006	0.007	0.007	0.007	<0.001	<0.001	<0.001	<0.001
Erbium Oxide	Er2O3	0.015	0.016	0.016	0.015	0.014	0.016	0.005	0.002	0.011	0.006
Thulium Oxide	Tm2O3	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	0.001	<0.001
Ytterbium Oxide	Yb2O3	0.003	0.003	0.003	0.003	0.003	0.003	0.002	0.002	0.002	0.002
Lutetium Oxide	Lu2O3	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Yttrium Oxide	Y2O3	0.148	0.146	0.148	0.146	0.138	0.153	0.018	0.014	0.015	0.014
Thorium	Th	0.002	0.002	0.002	0.001	0.001	0.001	0.009	0.007	0.008	0.010
Uranium	U	0.004	0.005	0.004	0.006	0.004	0.005	<0.001	0.004	<0.001	0.004
Sulfur Trioxide	SO3	45.36	44.94	44.61	44.83	43.97	44.71	46.68	47.04	46.76	47.04
Phosphate	P2O5	0.767	0.773	0.843	0.822	0.833	0.922	0.116	0.027	0.028	0.072
Sodium Oxide	Na2O	9.45	9.71	9.19	8.47	8.55	9.03	10.48	9.23	8.69	9.14
Silica	SiO2	0.025	0.022	0.017	0.017	0.016	0.017	0.255	0.230	0.165	0.105
Strontium Oxide	SrO	<0.001	<0.001	<0.001	0.001	0.012	0.007	0.401	0.389	0.415	0.400
Barium Oxide	BaO	0.007	0.004	0.001	<0.001	<0.001	<0.001	0.004	0.010	0.150	0.010
Calcium Oxide	CaO	1.40	1.40	1.32	1.32	1.35	1.34	0.101	0.104	0.100	0.123
Magnesium Oxide	MgO	0.002	0.003	0.003	0.002	0.003	0.006	0.062	0.058	0.064	0.069
Alumina	Al2O3	0.286	0.289	0.287	0.299	0.303	0.309	0.303	0.289	0.306	0.290
Ferric Oxide	Fe2O3	0.077	0.084	0.074	0.064	0.054	0.060	0.027	0.014	0.015	0.027
Free Moisture (Loss on Drying at 105°C)		0.09	0.14	0.03	0.61	0.56	0.69	0.40	0.41	0.27	0.35
Combined Water (Loss on Drying at 200°C after Drying at 105°C)		1.29	0.96	1.92	4.57	4.92	4.88	0.68	0.65	0.17	0.38

Sample ID HM: Hammond Depot, IN and Sample ID NH: New Haven Depot, IN.
Analyses listed are the results of recent sampling and are provided for information only.

MONITORING RADIATION REPORT

Monitors _____ Date _____

_____ Report No. _____

TIME	LOCATION	OBJECT OR PERSON MONITORED	INSTRUMENT USED	SHIELD Open	SHIELD Closed	DISTANCE	RANGE	READING	DOSE RATE
	Warehouse	Rare Earth, Sodium Sulphate	Eberline E- 120		X	Contact			
	215-2				X	Contact			
	Bays 36, 41, 42 46, 52, 53, 54 and 62				X	Contact			
		Background Radiation 0.03 mr/hr							

COMMENTS:

Maximum reading found.
Condition of storage area is good.
Depot personnel exposure records are maintained and exposure reading are recorded.
Source material license # STC-133 and NRC regulations are posted in depot office.