

June 15, 1991

**SNO-STR-91-044**

The attached two pages list gamma-spectrometric analyses of materials related to construction of the detector system for the SNO Collaboration. These analyses were performed at the LBL Low Background Facility (LBF), using an NaI(Tl) scintillation crystal gamma-spectrometer. Most of the listed results have been obtained since the time of our last summary (Feb. 1991); however, a few previously reported analyses are included as a convenience for comparing members within a category, for example: aluminum reflector stock, and cable dye pellets.

Comment is in order regarding the aluminum reflector stock. The "Omega" material was the original candidate, submitted in early 1990. The material labelled "Anodized (Germany)" was submitted in early 1991, via Chris Waltham (UBC). Based on our previous experience, we immediately ordered the next two samples from a local producer (Kaiser Aluminum), with expectation of obtaining aluminum with lower thorium content. Both samples from Kaiser show lower Th-content than either of the other two samples. This experience suggests the Kaiser aluminum will contain less thorium than the other candidates, and should be considered for the SNO detector system.

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Gamma-Spectrometric Analyses for SNO Collaboration: NaI(Tl) Results, 6/91

<u>Sample Type and Description</u>	<u>Equiv. U ppm</u> (Ra-226)		<u>Equiv. Th ppm</u> (Th-228)		<u>Potassium %</u> (K-40)		<u>Detector/Run#</u>	
Aluminum (reflectors)								
"Omega" special	ND	.007	.55	.02	ND	.006	NaI	38726
Anodized (Germany)	ND	.007	.34	.02	ND	.001	NaI	39247
Kaiser type 5052	ND	.002	.21	.01	ND	.0003	NaI	39150
Kaiser type 6061	ND	.002	.26	.01	ND	.0003	NaI	39149
Cables								
Signal, Black, Belden M-9067	.057	.004	.170	.015	ND	.002	NaI	39069
Signal, Green, RGU 558/U	.024	.004	.076	.014	ND	.0006	NaI	36516
Signal, No sheath, RG-174	ND	.017	ND	.053	ND	.0025	NaI	38703
High Voltage, Green, RG 58/U	.011	.006	.081	.018	.0034	.0008	NaI	36521
Cable Ties, Nylon (PAN-TV)	.07	.02	ND	.08	ND	.004	NaI	38825
Dye Pellets, green	.97	.12	1.5	.4	ND	.02	NaI	39075
Dye Pellets, red	1.6	.2	ND	.6	ND	.03	NaI	39076
Dye Pellets, blue	.9	.2	2.6	.5	ND	.02	NaI	39077
Dye Pellets, orange	.8	.1	.8	.3	ND	.07	NaI	39078
Dye Pellets, white	ND	.08	ND	.2	ND	.01	NaI	39275
Dye Pellets, yellow	.7	.2	1.1	.7	ND	.03	NaI	39276
Composites								
Carbon/epoxy (Lin, UCSSL)	.32	.04	.46	.13	ND	.006	NaI	39224
Carbon/epoxy (Edberg, CFPA)	.03	.01	.04	.02	ND	.001	NaI	39268
Metals - misc.								
Stainless, type 304 (Ham PMT)	.04	.01	ND	.04	ND	.002	NaI	39180

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<b>Plastics (sheet stock)</b>								
ABS, White, GE-3700	ND	.01	ND	.04	ND	.002	NaI	39195
ABS, Resin pellets, GE-3700	ND	.002	ND	.007	.0063	.0004	NaI	39182
ABS, Black, Monsanto Q-841	ND	.007	ND	.02	ND	.001	NaI	39284
ABS, Black, B-W GSE-3700	ND	.005	ND	.015	.0053	.0007	NaI	39288
Butyl, Black, flexible	.041	.004	.058	.011	.0089	.0005	NaI	39144
EPDM, Black, flexible	.037	.003	.026	.009	.0077	.0004	NaI	39143
Hypalon, Black, flexible	.594	.005	1.56	.02	.036	.001	NaI	39120
Neoprene, Black, flexible	.026	.004	.069	.011	.0089	.0005	NaI	39163
Nitrile, Black, flexible	.288	.005	2.08	.02	.050	.001	NaI	39133
Polypropylene, White, rigid	.025	.005	ND	.02	ND	.001	NaI	39109
Viton, Black, flexible	.046	.004	.120	.012	ND	.0006	NaI	39129
<b>Sealants (silicones)</b>								
Dow-Corning 3110 RTV, White	1.49	.02	.35	.04	.031	.002	NaI	39196
Dow-Corning Catalyst RTV-1	.87	.08	ND	.24	ND	.01	NaI	39236
Dow-Corning Catalyst RTV-F	4.27	.08	1.84	.24	.040	.012	NaI	39249
Dow-Corning Catalyst RTV-S	.34	.06	.58	.20	ND	.01	NaI	39254
GE RTV 615A, white	.023	.008	ND	.03	.023	.008	NaI	39209
GE RTV 615B, catalyst	ND	.08	ND	.3	ND	.012	NaI	39265