

MONSANTO RESEARCH CORPORATION

MOUND LABORATORY MIAMISBURG, OHIO

U. S. GOVERNMENT CONTRACT NO. AT-33-1-GEN-53

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AREA CODE 519
866-8311

July 5, 1966

MOUND LABORATORY-MONSANTO
CENTRAL FILE NO. 66-7-90

Mr. William T. Crothers
University of California
Lawrence Radiation Laboratory
Post Office Box 808
Livermore, California

Attention: Mr. Frank Beers

Dear Frank:

An analytical report on the fifty-two requested elemental impurities in the fabricated lithium components (BS-041) shipped to you on SANL 311-086, May 25, 1966, is presented. I am also including the ORNL analytical results on the lithium impurities found when the material was originally shipped to Mound in 1964.

Mound's samples were taken from the block of lithium at the time the reactor was loaded. The samples were converted to Li_2SO_4 by the use of deionized water and chemically pure H_2SO_4 and examined spectrographically. Separate samples were converted in silica dishes and in platinum dishes so that uncontaminated values for those elements could be obtained.

There is some indication that the cartridge used in preparation of the deionized water had been contaminated sufficiently to account for the high sodium values. Samples are being rerun and the sodium results will be forwarded as they become available.

- a) The following elements were not detected in one or both samples of Li_2SO_4 . Mound's limits of detection for these elements are given in percentages following the elements:

REVISIONS
1. DETERMINATION (CIRCLE NUMBER)
2. CLASSIFICATION RETAINED
3. CONTAINS NO DOE CLASSIFICATION
4. COORDINATE WITH
5. CLASSIFICATION CANCELLED
6. CLASSIFIED INTO BRACKETED
7. OTHER (SPECIFY)
GROUP 1
Excluded from automatic
downgrading and
declassification

GROUP 1
Excluded from automatic
downgrading and
declassification

SECRET

RESTRICTED DATA
The data on this document are defined
as restricted data under the Atomic Energy
Act of 1954 and its amendments. In any manner to
unauthorized persons is prohibited.

Mr. William T. Crothers

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Pt	< 0.0006	Au	< 0.0002	Ni	< 0.0005	Ti	< 0.001
Sb	< 0.001	Cr	< 0.001	Pd	< 0.0006	W	< 0.002
As	< 0.002	Co	< 0.001	P	< 0.002	V	< 0.0002
B	< 0.005	Ge	< 0.0002	Ru	< 0.005	Zn	< 0.002
Be	< 0.0005	Mo	< 0.0002	Se	< 0.01	Nb	< 0.001
Ca	< 0.001	Mn	< 0.0001	Ta	< 0.002	Ag	< 0.0001
Cd	< 0.001	Hg	< 0.0002	Tl	< 0.002	In	< 0.001

b) Elements found and their quantities in parts per million of lithium are:

Cu	60
Al	10
Si	80
Fe	60
Na	1100
Mg	60
Sn	10

The Oak Ridge analysis is given for the lithium metal shipment to Mound (CYT-SBX 209), July 1, 1964:

Chemical, Isotopic and Spectrographic Analysis of Lithium Metal

<u>Req. No.</u>	<u>161520</u>	<u>161521</u>	<u>161522</u>	<u>161623</u>	<u>161624</u>	<u>161525</u>
Atom % Li ₆	95.39	95.50	95.50	95.52	95.54	95.52
Wt. % Li ₆	94.66	94.79	94.79	94.81	94.84	94.81
G/G Li	.99845	.99867	.99878	.99876	.99861	.99837
<u>ppm</u>						
Heavy Metal	117	125	120	94	97	96
Ag	<1	<1	<1	<1	<1	1
Al	200	<10	25	25	<10	20
B	<20	<20	<20	<20	<20	<20
Ba	<10	<10	<10	<10	<10	<10
Be	<2	<2	<2	<2	<2	<2
C	185	201	102	88	21	183

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Mr. William T. Crothers

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Chemical, Isotopic and Spectrographic Analysis of Lithium Metal
(Continued)

<u>ppm</u>						
Ca	100	125	100	<100	<100	<100
Cd	<6	<6	<6	<6	<6	<6
Cl	9	9	8	8	9	8
Co	<20	<20	<20	<20	<20	<20
Cr	1	<1	<1	2	1	2
Cu	20	15	20	15	15	15
Fe	20	<20	90	40	<20	40
K	<20	20	<20	<20	<20	40
Mg	<20	<20	<20	<20	<20	<20
Mn	1	<1	<1	<1	<1	1
Mo	<4	<4	<4	<4	<4	<4
N	286	157	229	420	671	676
Na	200	350	250	200	200	200
Nb	<100	<100	<100	<100	<100	<100
Ni	<10	<10	<10	<10	<10	<10
Pb	<4	<4	<4	4	<4	<4
Si	200	100	70	35	30	60
Sn	<20	<20	60	<20	<20	<20
Sr	<10	<10	<10	<10	<10	<10
V	<10	<10	<10	<10	<10	<10

If there is any question about these values, do not hesitate to call. The revised sodium figures will be forwarded on completion of the new analysis with a letter describing our current analytical capabilities.

Very truly yours,

Bertram C. Blanke

Bertram C. Blanke

BCB:mn

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