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REPLY TO LTR. NO.
RMAN 77-H REV. 3-76

Atomics International Division
8900 De Soto Avenue
Canoga Park, California 91304
(213) 341-1000



Rockwell
International

222

June 7, 1977

In reply refer to 77AT-4999

Mr. C. D. Jackson
Environment and Safety Division
Energy Research and
Development Administration
San Francisco Operations Office
1333 Broadway
Oakland, California 94612

Dear Mr. Jackson:

Subject: Shipment of SRE Sodium to Hanford

During a recent briefing at ERDA-HQ, Dr. W. Mott asked for further information regarding the plutonium content in the approximately 55,000 pounds of SRE primary sodium to be shipped from Atomics International, Santa Susana, to Hanford for storage.

As you know, W. F. Heine, previous AI Manager for D&D programs, had obtained analytical results and made a safety assessment of the plutonium hazard potential. The following information is quoted from Mr. Heine's correspondence on the subject.

"HEDL Radiometric Analysis of SRE Primary Sodium"

	Specific Activity	Activity Per Drum	Total Activity 158 Drums
Total alpha	$< 2 \times 10^{-7} \mu\text{Ci/gm}$	$< 3.3 \times 10^{-2} \mu\text{Ci}$	$< 5.1 \mu\text{Ci}$
CS-137	$1.8 \times 10^{-3} \mu\text{Ci/gm}$	$2.9 \times 10^2 \mu\text{Ci}$	$4.5 \times 10^4 \mu\text{Ci}$
NA-22	$1.3 \times 10^{-3} \mu\text{Ci/gm}$	$2.1 \times 10^2 \mu\text{Ci}$	$3.3 \times 10^4 \mu\text{Ci}$
Total	$3.1 \times 10^{-3} \mu\text{Ci/gm}$	$5.0 \times 10^2 \mu\text{Ci}$	$7.8 \times 10^4 \mu\text{Ci}$

The limit of detection for the HEDL analysis of alpha activity is 0.4 dpm/gm ($2 \times 10^{-7} \mu\text{Ci/gm}$), so that the concentration of plutonium in the composite sample analyzed was less than the detection limit, and no alpha activity was actually observed in the analysis. (Sampling of the sodium was conducted per RDT Standard F3-40T.)

The magnitude of the hazard associated with the presence of even this conservatively assumed quantity of plutonium in the sodium can be evaluated by making some simple comparisons:

- (1) The overall radioactivity of the sodium is such that, if the entire sodium content of an individual's body (105 gm) were replaced with SRE sodium, and if all the radioactivity were retained in this sodium, there would result the presence in the body of 0.5% of the allowable level of plutonium, 14% of the allowable level of Na-22, and 6% of the allowable level of Cs-137.
- (2) If the entire 55,000 lb of sodium were to burn, 20% of the sodium burned were to become airborne as respirable particles, the radioactive concentration of the evolved smoke were to be identical to the radioactive concentration of the sodium, and if an individual were to remain at a distance of 100 meters downwind from the sodium fire, breathing the smoke during the entire period of fire, the maximum lifetime lung dose commitment received by that individual would be 0.64 mrem for the plutonium, 19 mrem for the Na-22, and 14 mrem for the Cs-137. These numbers may be contrasted with the 90 mrem/yr average annual dose to the lung which is received from the natural radioactivity contained in the air we breathe."

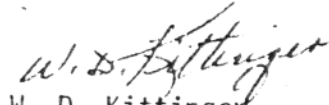
The shipment will be made by "exclusive use" truck in drums meeting the requirements of a DOT-7A, Type A package. The maximum surface reading for penetrating radiation from a drum is 4 mrem/hour. The maximum total radioactivity in a drum is 0.5 mCi. The drums are labeled or stenciled; Flammable Sodium - Dangerous When Wet, USA DOT-7A, Type A, STC, and Yellow II Radioactive Labels are applied. The shipment will be timed and routed to avoid heavy traffic and the Los Angeles Fire Department will be informed of the arrangements.

We believe the information and data fulfill Dr. Mott's interest in the subject. It will be appreciated if you will transmit these data to Dr. Mott. We also spoke with Mr. Roy Garrison, HQ Transportation, who verbally concurred with the precautions for this shipment. We find no further requirements by the NRC pertinent to the shipment.

77AT-4999
June 7, 1977
Page 3

If there are no objections, we plan to make the shipment about June 20, 1977.

Very truly yours,



W. D. Kittinger
Program Manager
D&D Programs
Atomics International Division

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WIRE

BE BRIEF - ELIMINATE UNNECESSARY WORDS

TO: Mr. Calvin D. Jackson, Director
Environment and Safety Division
Energy Research & Development Admin
San Francisco Operations Office
1333 Broadway
Oakland, CA 94612

DATE June 14, 1977

1248

AT

WIRE NO.

COPIES TO (EXTERNAL):

The shipment of 158 drums of radioactive SRE sodium will be shipped on June 20, 1977. Shipment is by Tri-State Motor Transport Co. in two exclusive-use closed vans and supported by a radio-equipped escort vehicle. The total cost of the shipment is calculated to be \$3200 which includes \$600 for the escort vehicle. By contracting with a different carrier, a more favorable cost was achieved.

W. D. Kittinger
W. D. Kittinger
Program Manager
D&D Programs

ANDERSON, S. H.	
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McCOURT	
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McDONALD, J. S.	
McKENZIE, D. E.	
MEYERS, G. W.	X
MORGAN	
OLDENKAMP	
PARKINS	
REMLEY	X
ROBERTS, W. J.	
ROHLFS	
SANDERS	
SCHIRM	
TINGER	
TOHER	
WALTER, J. H.	
WEISNER	
WHEELER	
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FORM N 62-X 2 REV 6-74

Atomics International
D/798 Correspondence

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COCHRAN, J.C.

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DE LOS PRADOS

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A. Graves

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J. Page

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J. Harris

UNITED STATES
ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION
WASHINGTON, D.C. 20545

June 17, 1977

RECEIVED

JUN 24 1977

Correspondence Dept.

Mr. W. D. Kittinger
Program Manager
D&D Programs
Atomics International
6900 De Soto Avenue
Canoga Park, CA 91304

Dear Mr. Kittinger:

I would like to express my appreciation for the attention you have given to our desire to have a thorough assessment and all reasonable measures of safety applied to the shipment of sodium from the decommissioning of the SRE.

As you are well aware, the shipment for reuse of this material represents a unique and environmentally practical disposition. We have discussed the shipment with Cal Jackson of SAN, and he has agreed to look into any further measures that might be prudent even though not required by analysis or regulation. Pending the outcome of SAN's review, we have no objection to the shipment proceeding as proposed.

Once again, thank you for your responsiveness in this matter.

Sincerely,

William E. Mott

William E. Mott, Director
Division of Environmental
Control Technology

8956 AT



Rockwell International

Atomics International Division

TELEPHONE CONVERSATION RECORD

DATE: June 27, 1977

TO: Dr. Kluk
COMPANY: ERDA Headquarters
DEPT: Environmental Control
ADDRESS: Technology
PHONE:
DATE:
TIME:

FROM: G. W. Meyers
COMPANY: AI
DEPT: 713
ADDRESS: LA10
PHONE: 2231

SUBJECT: SRE Sodium

I called Dr. Kluk to tell him that the SRE sodium arrived safely at the Rockwell Hanford Operations at 8:42 p.m. on June 23, 1977, and no problems occurred during shipment. He thanked me very much for the information and said they were putting that in their highlights that went to the President's staff on significant accomplishments. I also gave him some background on the ultimate use of the sodium and the potential savings to the program.

While on the phone, we discussed the RMDF leach field. He told me they were surveying all of their facilities and operations to determine if they could come up with some additional funding this year so we could start on the leach field. He said he hoped to have an answer by as early as July 5. I reviewed with him the method which we had outlined in our midyear request, showing that various amounts of money would be needed, depending on the start date. They had currently been trying to obtain the entire \$200,000 this fiscal year, and I assured him that because of the late start we would not need that much funding this fiscal year. I also had a chance to discuss the option of delaying the SRE in order to do the RMDF, and he is now convinced that that is not an acceptable option either to us or to their program because of the effect on manpower, schedule, and budget. Tony appears to be a supporter of the AI programs and is continuing to work the problem areas, and he appreciated the phone call very much. In parallel to this conversation, I also placed a call to Calvin Jackson to inform him of the same information. A separate telephone conversation record will not be made.

jdj/1-1

cc: A. W. Graves
W. D. Kittinger
J. P. Page
M. E. Remley
G. P. Streechon
B. F. Ureda
H. C. Wieseneck