

For Your INFO

OFFICE MEMORANDUM

TO : Dave Smith, P-5

DATE: January 7, 1974

Thru : J. A. Mohrbacher H-8

FROM : J. L. Warren, H-8

AREA C

SUBJECT : FINAL DISPOSAL OF <sup>235</sup>U CONTAMINATED LAPRE - I STEAM LINE SECTIONS

SYMBOL : H8-WM-91

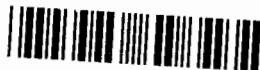
This is in response to our telephone conversation of December 20, 1973, concerning the disposal of LAPRE-I steam line pipe sections. Much of the available information concerning this material is contained in the enclosed Memo, H. M. Busey to D. B. Hall, dated April 24, 1964. Shaft #89 at Area C containing these uranium contaminated pipe sections remains unsealed. We would like to be able to close this shaft as soon as possible, thus covering all radioactive waste at Area C, TA-54

wrong number

The problem here lies in the fact that, according to the above Memo, there could be a maximum of 1085 g of <sup>235</sup>U contained in the 61 pipe sections in this shaft, this value exceeding the 500 g guideline of fissile material allowable in such a shaft. There is no way of knowing exactly how much of the 1085 g is really present. On December 14, 1973, John Enders and myself inspected this shaft. Shaft # 89 is 3 feet in diameter, and must be at least 30 feet deep. Radiation monitoring showed 50 mR/hr at the surface and 500 mR/hr at about 5 feet into the center of the shaft. The nearest pipe sections are about 10-12 feet below ground surface. Only three of the pipe sections could be seen, however, the others already being covered with earth fill.

We were able to remove one of these sections from the shaft, which has since been assayed by Doug Reilly, A-1. His report is enclosed. Because the uranium contamination in these pipes must be very unevenly distributed, the significance of the assay of this one section is questionable.

Presently there could still be up to about 1035 g of <sup>235</sup>U in this shaft. From the standpoint of cost the best course of action is to seal up this shaft as is. Sealing the shaft would entail additional filling to within 3 feet of the surface with soil followed by filling the remainder and capping with cement. However, with the possible <sup>235</sup>U



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AREA C

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TO: Dave Smith, P-5

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content exceeding the stated guideline, we require your assistance in assuring the suitability of this proposed burial operation. Would you please advise on the issue of criticality safety in this proposed action?

JLW/jc

cc: LaMar Johnson, H-8

John Enders, H-8

Enclosures: Memo, H. M. Busey to D.B. Hall dated 4/24/64  
Memo, Doug Reilly and Jack Parker, A-1 to  
John Enders, H-8, dated 12/21/73

100-100000-100

100-100000-100

OFFICE MEMORANDUM

TO : D. B. Hill

DATE: April 21, 1964

FROM : H. M. Busby

P

SUBJECT: DISPOSAL OF LAPRE-I STEAM LINE SECTIONS

SYMBOL: K-2-3959

The total 61 sections of the LAPRE-I steam line have been placed in the contaminated burial dump just south of the Waste Disposal Building (TA-50). This is designated as Area C, and the sections are in hole 6. These are in a vertical position and are so deep in this hole that the top of the cluster is at least 12 feet below ground level. This hole is to be used for these sections only and it will be filled with dirt in about one year.

Please Note

These heavy wall pipe sections are individually wrapped in plastic sheet. They are about 5 feet long and 2.5 inches o.d. schedule 160 pipe, ASTM Spec. A-335 P-12 (1% Cr-1/2% Mo). They contain a ceramic like material which was the corrosion result of the high temperature uranium phosphate in concentrated phosphoric acid solution that leaked into this steam line. The gamma activity of the entire cluster of pipe sections is only about 1 mr on contact.

In the cleanup operation after LAPRE-I all but 1085 grams of U<sup>235</sup> were recovered. This missing quantity of U<sup>235</sup> was removed from inventory October 31, 1956. Some of this missing U<sup>235</sup> is known to be in these pipe sections, but this was ruled to not be worth recovery (Memo by G. R. Champion about Dec. 12, 1960).

As far as is known this completes the disposal of the contaminated parts of LAPRE-I.

PPL

Harold M. Busby

HMB:db

Distribution:

- Jane Hill, AD
- G. R. Champion, ADP-SF
- R. A. Clark, K-5
- D. H. Meyer, H-1
- W. R. Wyckoff, K-5
- H. M. Busby, K-2
- L. E. Nichol, K-2 file 2.0
- R. Wilhelm, L-2
- D. Smith, N-2

Handwritten initials and signatures: G.R. Champion, W.R. Wyckoff, and others.

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## OFFICE MEMORANDUM

TO : John Enders, H-8  
THRU : G. R. Keepin, A-1 *JK*  
FROM : *TDR* Doug Reilly and *JLP* Jack Parker, A-1  
SUBJECT : ANALYSIS OF LAPRE-I STEAM LINE SECTION  
SYMBOL : A-1

DATE: December 21, 1973

As per your memo (Enders to Keepin, 11/28/73), one 5-ft section of LAPRE steam pipe was delivered to A-1 on 12/18/73. The item is a 5-ft section of pipe (2.5" schedule 160) wrapped in a large plastic bag. This bag also contains a modest quantity of dirt dug up with the pipe. Gross gamma levels from the pipe vary from 5 mr/hr to less than 1 mr/hr. The pipe was scanned with a high resolution Ge(Li) detector. The most obvious activities were  $^{235}\text{U}$  (185.7 keV),  $^{137}\text{Cs}$  (662 keV), and a trace of  $^{60}\text{Co}$  (1173, 1332 keV). With a collimated detector the pipe was scanned in 6-in. segments. Ninety-five percent of the material was found in a 15-in. segment at one end of the pipe. Since these pipes were stored in a verticle position (memo Bussey to Hall, 4/24/64), it would appear that the material broke off the walls and collected in the bottom of the pipe. Gamma transmission measurements were made at 177, 198, 265, and 401 keV to correct for attenuation within the pipe. The linear uranium density in the pipe varied from 21 to 0.03 grams per 6-in. segment. The pipe was also scanned for  $^{137}\text{Cs}$  content. The best balues for these quantities are:

$$\begin{aligned}^{235}\text{U} &= 50 \pm 15 \text{ g} \\^{137}\text{Cs} &= 160 \pm 50 \mu\text{Ci}\end{aligned}$$

It is felt that the quoted errors are at the 95% confidence level.

In view of the large  $^{137}\text{Cs}$  content it is unlikely that our portable instrumentation would be able to measure this material. If you wish more information or if you want more sections analyzed, please contact us.

TDR:JLP:jmr

cc: J. A. Mohrbacher, H-8