

Office Memorandum • UNITED STATES GOVERNMENT

John R. Moore, Director, Contract Division

DATE: April 25, 1958

FROM : John W. Ruch, Director, Feed Materials Division

1/4/58
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John [unclear]

SUBJECT: REQUEST FOR MODIFICATION OF CONTRACT NO. W-7405-ENG-276, HARSHAW CHEMICAL COMPANY

RE: OF:WJM

Reference is made to subject contract, Modification No. 84, Article II-A, Paragraph 6.c., which provides for decontaminating the premises and equipment of Harshaw's Harvard-Denison Plant "C", 1000 Harvard Avenue, Cleveland, Ohio. Reference is also made to the following enclosures:

1. "Radioactive Contamination Survey of Uranium Refinery at Harshaw Chemical Company," by Mr. A. A. Schoen, dated November 21, 1957.
2. Attachment "A" to above survey, "Contamination Survey Measurements."
3. Attachment "B" to above survey, "Plant C Floor Plans."
4. "Estimate of Costs for Final Decontamination of Plant C."

Under the provisions of Modification No. 84, the Contractor is obligated to decontaminate, at his expense, all remaining equipment which has been transferred to the Contractor. The Contractor is also obligated to decontaminate the plant premises used in performing the work under subject contract and the Commission is obligated to reimburse the Contractor for one-half of the actual cost incurred by such decontamination. The Commission's obligation to furnish technical advice and assistance to the Contractor has been accomplished for the most part as reflected by Enclosures 1, 2 and 3. However, a final radiation inspection will be necessary upon completion of the decontamination work.

On April 2, 1958, A. A. Schoen of ORO's Research and Development Division, and W. J. Moore of this division met with Harshaw's Dr. G. R. Fernelius, E. P. Dolesh, and L. P. Barclay to review

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RADIOACTIVE CONTAMINATION SURVEY
OF URANIUM REFINERY AT
Harshaw Chemical Company
1000 Harvard Boulevard
Cleveland, Ohio

OH.4

Survey conducted on November 21, 1957

1. Introduction

This is a report of a contamination survey of the buildings which formerly housed the uranium refinery and associated activities, after all equipment had been removed except for the Rockwell furnace, two denitration pots and some process vessels in the recovery area. Some floor surfaces had already been extensively decontaminated and the walls had been steam cleaned. The purpose of the survey was not specifically to define the residual contamination levels in detail but to locate those areas where residual contamination was of such magnitude that it might represent a potential radiation or contamination control problem which would require that restrictions be imposed on the subsequent use of the building.

The general comments (Item 2) which follow define the conditions of the survey, the basis for evaluation, and offer guidance pertinent to subsequent use or disposition of the building and equipment. The specific recommendations (Item 3) are designed to eliminate potential hazards associated with the presently contemplated use of the building. These recommendations are intended primarily to provide a basis for considering what is necessary to restore the building to a usable condition.

Any questions which require the evaluation of health hazards to personnel and are not covered by this report should be referred to a competent authority on radiation protection for interpretation.

2. General Comments

A. Building

The building walls have been washed so that the residual contamination can generally be regarded as fixed. There were some locations where the wall cleaning was not totally effective and loose contamination was evident. Generally speaking, the residual contamination on the walls is not of sufficient magnitude to constitute a health hazard and can be effectively covered and controlled by the application of a coat of paint wherever this is deemed desirable.

It is not possible to speculate regarding the extent to which existing floor contamination is either loose or fixed, especially since the ground

floor, which bore the higher contamination levels, was littered, dirty, and in some places, wet. It is presumed, however, that some fraction of this floor contamination is not fixed and could be removed by a general floor cleaning and washing.

All sumps and drainage trenches must be presumed to be contaminated. It is understood that decontamination of these sumps and trenches has not been attempted nor is it contemplated. Some of the sumps are partially filled with water and it is quite likely that many of them have held up a quantity of contaminated sludge. This water and sludge must be regarded as contaminated and its disposal must be appropriately controlled.

B. Equipment

In addition to those equipment items which have been surveyed and are known to be contaminated, any items of equipment which are known or assumed to have contained uranium, and are not readily accessible with survey instruments, must be presumed to be contaminated. This might include exhaust ducts, vent lines, vacuum lines, drain lines, process vessels, etc. Several items of contaminated equipment remain in the plant area. The process vessels in the recovery area are of particular interest in this regard. The subsequent use of any of these items should be carefully evaluated and controlled, with the extent of control dependent upon the degree to which contamination is successful and residual contamination fixed. The concern here might or might not be for the potential health hazards that are involved, depending upon the nature and contemplated use of the chemicals processed in these vessels. However, in any event, there would be concern for the introduction of radioactivity into the chemical processed in these vessels from the standpoint of chemical purity. This is particularly true of chemicals which may subsequently be used in the production or processing of photographic film.

The disposal of any contaminated equipment items should be accomplished in accordance with AEC Manual Chapter 5170-1410 and 1411. It may be necessary to regard the Rockwell furnace and the denitration pots as scrap and dispose of them in accordance with the provisions of AEC Manual Chapter 5182, since the residual uranium contamination of inner parts of this equipment appears to be of such magnitude that decontamination to a safe level may not be feasible. These and other items which are similarly contaminated should be handled as contaminated waste.

Any attempts to decontaminate equipment items should be properly controlled and the decontaminating agents should be handled as contaminated waste. Proper ventilation and/or respiratory protection during sand blasting or grinding on contaminated surfaces of the equipment and similar safety practices would be included in proper controls.

C. Contamination Levels

The results of the contamination survey have been furnished to the Contractor. Uranium alpha contamination levels below 2,000 d/m/100 cm² may be regarded as not significant. Surfaces and equipment contaminated at or below this level may, for all practical purposes, be regarded as uncontaminated from the standpoint of health protection.

Fixed alpha contamination levels between 2,000 and 15,000 d/m/100 cm² in this particular case are undesirable but do not constitute a radiation or health hazard.

Alpha contamination levels above 15,000 d/m/100 cm² represent uranium deposits in excess of 10 mgs/100 cm² which is sufficient to produce measurable beta radiation dose rates. Where it is likely that personnel will remain in close proximity to such areas for extended periods, efforts should be made to reduce the residual contamination below this level.

3. Recommendations

First Floor (Sketches showing area number designations referenced below have been furnished to the Contractor)

A. The concrete floor in area 15, the recovery area, is grossly contaminated and the concrete is pitted which prevents further decontamination. This floor should be resurfaced to reduce contamination to acceptable levels.

B. Visible spills on floors, and contaminated floor surfaces which exceed 15,000 d/m/100 cm² in areas 1, 4, 5 and 10 should be re-washed to assure that residual contamination is fixed.

C. The floor under the denitration pots in area 5 appears to be highly contaminated with uranium which has seeped under the walkway platform. This area will require extensive decontamination and probably some additional surface treatment when these pots have been removed.

D. Floors in areas 5 and 11 are littered and some of the litter appears to be contaminated. A general clean-up is required.

E. A thorough floor cleaning is required in the pilot plant areas 2, 3, and 4.

Second Floor

A. The green salt spill in area 21 requires additional decontamination.

B. A lead sink, bench tops and an assortment of used equipments parts are in area 21 (the laboratory) and are obviously contaminated. The lead sink should be discarded, the equipment to be reused should be cleaned and repainted if necessary and the floor in this area should be thoroughly cleaned.

Third Floor

A. The floors on this level require decontamination.

B. There are visible spills on the metal pans that cover holes in the floor. These pans require decontamination and perhaps painting will be necessary.

4. General

The floor in areas 10, 26, 27, and 33 need to be resurfaced to restore them to usable condition either because they are presently broken up or they contain tank wells. There is visible contamination in the tank wells and the floor in area 33 is in a condition which prohibits an adequate survey. If the floors are to be resurfaced, this will adequately control the contamination which remains, otherwise additional decontamination is required.

s/ Arthur Schoen

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2 63,000 ft

ATTACHMENT A.
CONTAMINATION SURVEY MEASUREMENTS

<u>Location</u>	<u>Alpha Contamination</u> <u>(disintegration/min/100cm²)</u>
<u>1st Floor</u>	
<u>Area 1</u>	
floor (general)	2,000 - 5,000 <i>2.</i>
(visible spill in sample area)	max. 20,000
<i>300 sq. ft.</i>	(15 mrep/hr beta)
(filter press area)	max. 20,000
<i>300 sq. ft.</i>	(15 mrep/hr beta)
walls	<2,000
<u>Areas 2 & 3</u>	
floor	5,000 - 15,000
wall <i>600 sq. ft.</i>	<2,000
<u>Area 4</u>	
floor (general)	15,000 - 20,000
(visible spill) ¹	25,000
walls (general)	(15 mrep/hr beta)
(visible spill on N. wall) ¹	<2,000
	7,000
<u>Area 5</u>	
digester area (east end)	
floor <i>400 sq. ft. to TR. plant</i>	max. 30,000
walls	(max. 15 mrep/hr beta)
denitration pot area floor	max. 25,000
Rockwell furnace area (spotty contamination)	2,000 - 10,000
JG ₃ packaging area floor <i>1200 sq. ft.</i>	2,000 - 10,000
mixer-settler area floor	max. 30,000
(visible spills vicinity of floor drain) ¹	(15 mrep/hr beta)
compressor area floor	<2,000
(visible spill vicinity of sump) ¹	max. 30,000
central vacuum area	2,000 - 5,000
(UF, spill in S. W. corner) ¹	20,000
walls <i>3400 sq. ft.</i>	2,000 - 10,000
mezzanine floor	2,000 - 5,000
walls	2,000 - 5,000
	<2,000
<u>Areas 6, 7, 8, 11, 13 & 14 & offices above Areas 7 & 8</u>	
walls & floors	<2,000
<u>Area 9</u>	
floor (west half) ²	<2,000
walls	<2,000
(visible spill on N. wall) ¹	max. 3,000

	Alpha Contamination (disintegration/min/100cm ²)
tion (cont'd)	
ea 10	
floor (west half except for tank wells) ²	<2,000
tank wells ³ 700 SQ. FT.	max. 30,000 (max. 15 mrep/hr beta)
ea 12	
floor	1,000 - 5,000
walls 600 SQ. FT.	<2,000
(visible spill on west wall) ¹	15,000
visible spill on west face of steel column ¹	12,000
ea 15 - Recovery Area	
floor (grossly contaminated)	max. 150,000 (~120 mrep/hr)
walls 2,500 SQ. FT.	<2,000
nd Floor	
ea 21	
floor (general)	<2,000
green salt (spill in front of reactors)	125,000
green salt load stand area	20,000
walls 3300 SQ. FT.	max. 2,500
ea 22 - Laboratory	
floor	4,000 - 20,000
walls 2000 SQ. FT.	<2,000
lead sink	20,000
eas 23 & 24 (locker rooms)	
floors & walls	<2,000
ea 25	
floor	<2,000
walls (general)	<2,000
(spill on west wall) ¹	6,000 - 8,000
ea 26	
floor (west half) ² 600 SQ. FT.	2,000 - 5,000
(tank wells) ³	30,000 (15 mrep/hr beta)
ea 27	
walls	<2,000
condition of floor did not permit a survey	

This refers to area 33

Location (cont'd)

Alpha Contamination
(disintegration/min/100cm²)

Third Floor

Area 31
floor
walls

1500 sq. ft.

1,000 - 12,000
2,000 - 5,000

Area 32
floor
walls

1,000 - 5,000
<2,000

Area 33
floor
walls

600 sq. ft.

5,000 - 10,000
<2,000

1. These are small areas which are visibly stained as a result of a leak or a spill, and which may or may not have been decontaminated.
2. The east half of the floor in areas 8, 9, 10, 26 & 27 has been resurfaced in connection with the recent installation of rotary kilns and is therefore free of contamination.
3. Tank wells are depressions in the floor which are 3 to 4 feet in diameter and 2" to 6" deep and which formerly accommodated process vessels of some kind.

IN

ATTACHMENT B

PLANT C
FIRST FLOOR PLAN
SCALE - 40' = 1"
ELEV. 0'-0"

8 ABOVE



Previously surveyed and released

SKETCH C-020040

N

ATTACHMENT B²

VOXSO



Resurfaced - Survey not required

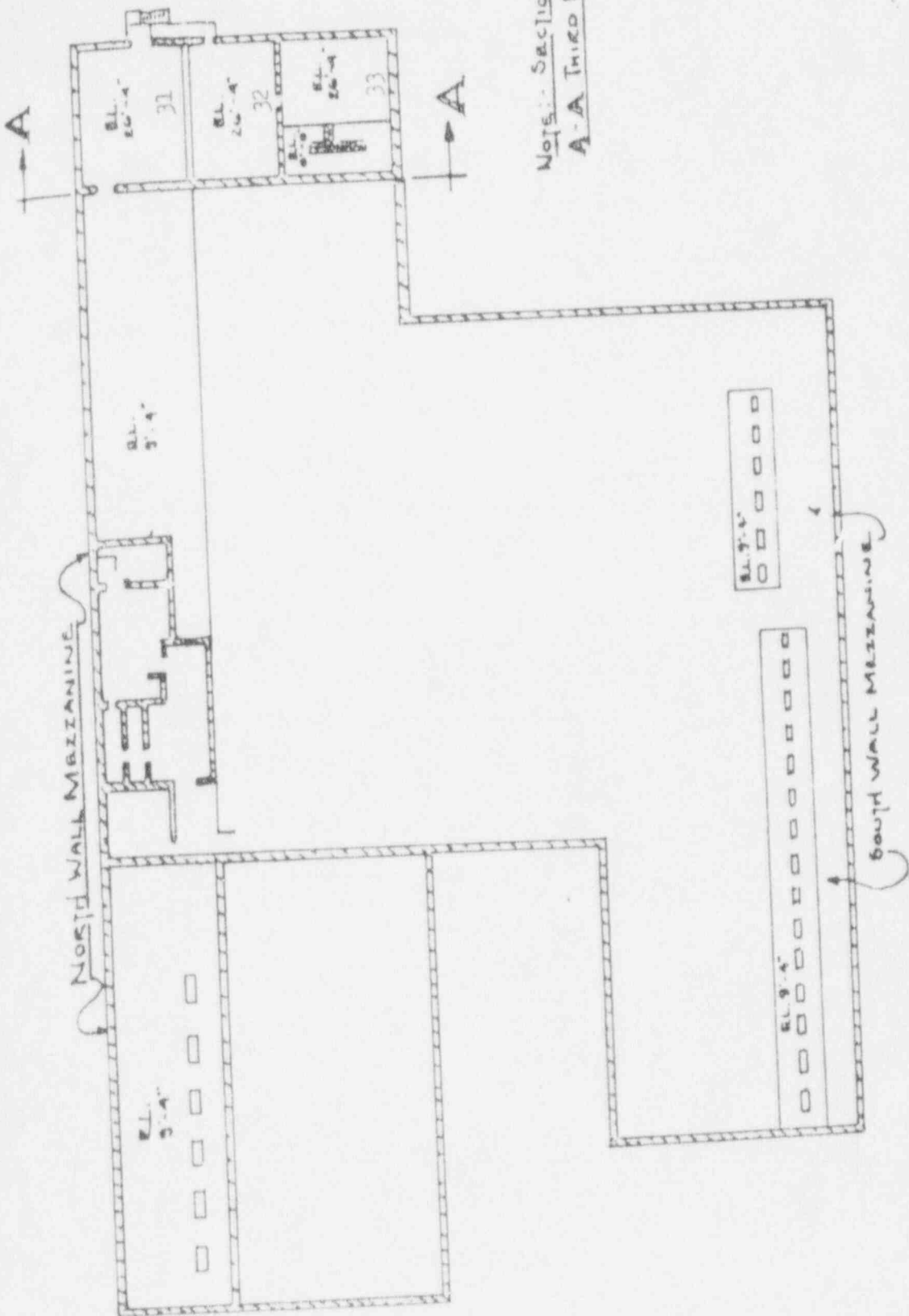
PLANIC
SECOND FLOOR PLAN
SCALE - 4" = 1'

SKETCH C-0208492

N

ATTACHMENT

Notes: SECTION EAST of B
A-A THIRD FLOOR PLANS



NORTH & SOUTH WALL MEZZANINES & THIRD FLOOR PLAN

SCALE: 1/4" = 1'-0"

SKETCH C-020849C