

NOTES AND COMMENTS

REVERE COPPER AND BRASS

DETROIT, MICHIGAN

A preliminary (screening) survey was conducted in several areas of the Revere Copper and Brass Facility, 5851 W. Jefferson Street, Detroit, Michigan. The survey was conducted by the ANL Radiological Survey Group on April 22, 1981.

The Survey Group, consisting of W. Smith, R. Mundis, K. Flynn (all of ANL), and E. Jascewsky (DOE-CH) met on site with J. Evans (Safety Engineer), D. Tratt (Asst. Engineer), ~~M. Veselanak (Methods Department Supervisor)~~ and E. Betancourt (Personnel Manager) to discuss what information was available concerning the operations that transpired at the facility during the Manhattan Engineering District Atomic Energy Commission (MED/AEC) era. ~~Mr. Veselanak~~ indicated that the operations occurred during the late 1940s and early 1950s. Evidently, there were various uranium and uranium alloys extruded in one section of the facility called the Extrusion Area (see Fig. 1). This included one alloy, consisting of a mixture of uranium and thorium, that was called myrnalloy. Other alloys involved were thought to consist of uranium and copper. It was also noted that certain zirconium, tin and other non-radioactive alloys were produced during the MED/AEC era.

Additional history recovered by Aerospace indicated that Revere extruded and shaped some 600 tons of uranium for the Hanford Engineer Works involving a project titled X-10. It was also noted that some of the extruded material was shipped to Baker Brothers (now REMS Inc.) of Toledo, Ohio, for machining.

As described by Mr. Vesalanak, there were three possible areas that could have been involved with the uranium-thorium material.

- 1) an area where the uranium billets were stored; this area is now a physical lab (see Fig. 1)
- 2) an area where the billets were cut using a power back saw (See Fig. 1, D and E)
- 3) the area where the billets extruded into various size tubings (see Extrusion Area).

Surveys were made of the aforementioned areas utilizing the following instruments:

PAC-4G-3, PRM-5-3 with PG-2 detector and a PRM-7.

Results of survey of Area No. 1, Physical Laboratory in Figure 1:

Survey Meter	Glazed Wall Tile	General Floors & Walls	Background of Inst. in Area
PRM-7(A) <i>high?</i> →	15 μ R/h	8-9 μ R/h -	8-9 μ R/h
PRM-5-3	1500-2000 cpm	1000 cpm	1000 cpm
PAC-4G-3	< 50 cpm α 400 cpm $\beta\gamma$ -	< 50 cpm α 250 cpm $\beta\gamma$ -	< 50 cpm α 250 cpm $\beta\gamma$

Results of survey of Area No. 2, D & E in Figure 1 indicated background readings from all three instruments.

Results of survey of Area No. 3, Extrusion Area in Figure 1:

Survey Meter	Spot on Steel Floor	Floor Bricks	Background of Inst. in Area
PRM-7(A)	7 μ R/h (contact)	3-4 μ R/h	3-4 μ R/h
PRM-5-3(B)	3000 cpm —	1500-2000 cpm —	500-1000 cpm
PAC-4G-3(C)	< 50 cpm α 7500 cpm $\beta\gamma$ —	< 50 cpm α 200 cpm $\beta\gamma$	< 50 cpm α 200 cpm $\beta\gamma$

Smears taken from the radioactive anomaly on the steel floor, the glazed tile and the power back saw, indicated background.

Since the furnace and the 2000-ton extrusion press (see Fig. 1, A&B) was in operation during our site visit, surveys could not be made around these areas. However, surveys were made on the 2400-ton extrusion press (see Fig. 1, C). It should be noted that the furnace used to heat the present day billets is not the same furnace utilized in the era when Revere was heating and extruding the uranium and thorium. The extrusion presses and the furnace are not now, and were not in the past, vented by an exhaust system. The aerosols created by these two operations simply migrate, by convection, to the overhead members and the vents in the roof. The high bay area is of steel bridge truss construction.

- A) Calibrated to a standard ^{137}Cs - ^{137}mBa source.
- B) Calibrated to ^{239}Pu X-rays, ^{241}Am gamma (.0595 MeV) and ^{235}U gamma (.1857 MeV) approximately 0.36% efficient to ^{239}Pu X-rays with detector at contact.

- C) Calibrated to ^{239}Pu for alpha and ^{90}Sr - ^{90}Y for beta. Standards are flat plate infinitely thin with the meter adjusted to read an apparent 50% geometry.

Recommendations:

The nature of the work performed in this facility, primarily the heating and extruding of uranium-thorium billets, tend to act as aerosol generators. Since there were no closed exhaust systems available to the furnace or the extrusion presses, it is likely that deposition occurred on the overhead structural members from the aerosols created. It is also known that other areas of this facility were involved in the uranium-thorium operations. Therefore, it is hereby recommended that a complete radiological assessment be conducted of the entire facility.

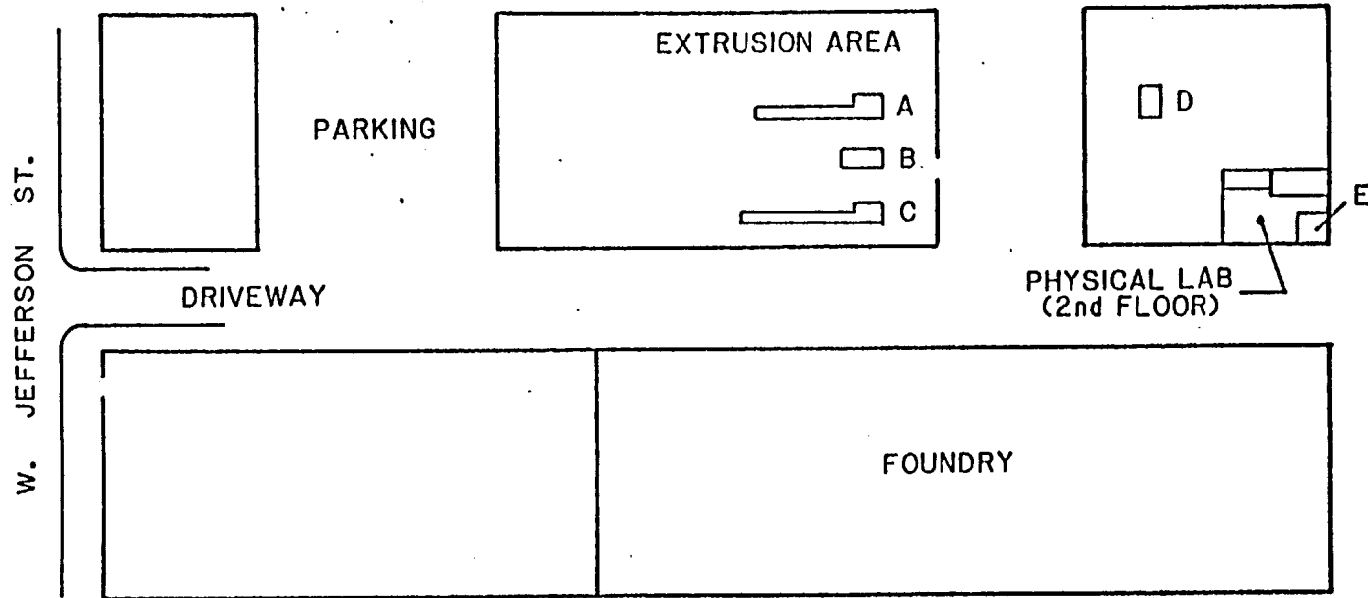
Results of the preliminary survey and investigation reveal no evidence to indicate that an immediate radiological hazard exists at this facility at the time of survey.

Constraints:

Due to the nature of the operations conducted in this facility, i.e., heating and extruding, the surveys will have to be effected when furnace and extrusion presses are shut down and in a cold condition. This will require coordination between the Radiological Survey Group and Revere Copper and Brass management.

Figure 1.
REVERE COPPER & BRASS

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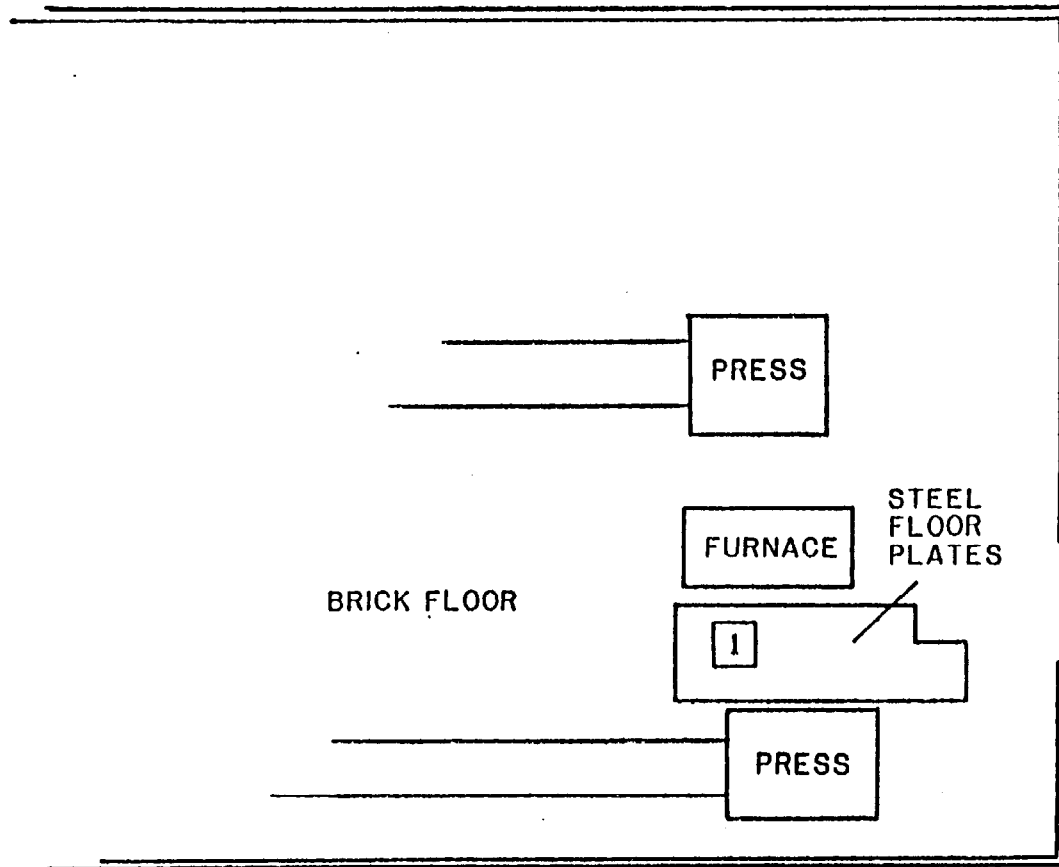


- A 2000 TON PRESS
- B FURNACE
- C 2400 TON PRESS
- D PRESENT LOCATION OF POWER HACKSAW USED TO CUT BILLETS
- E FORMER LOCATION OF POWER HACKSAW USED TO CUT BILLETS



REVERE COPPER & BRASS EXTRUSION AREA

ANL-HP I



1 DIRE ABOVE