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LA.04-1

July 27, 1956

To:

John R. Novak

Radiation Safety - IHS

From:

G. T. Lonergan

Radiation Safety - THS

Subject: Extrusion of Billets, Titus Metals, Inc., Waterloo, Iowa

A group of ANL employees consisting of D. E. Walker and S. Matras (MET), E. Leverenz (SSE), K. C. Duffy (SPM), and G. T. Lonergan (IHS), traveled to Waterloo, Iowa, on June 29 where they accomplished the extrusion of U30g billets into fuel plates for Argonaut.

Prior to beginning the extrusion operation, the floor area around the press, run-out table, stretch straightener, and all accessible portions of the press were surveyed. No activity was detected.

The floor area from the furnace (where the billets were heated) to the press was covered with a layer of vinyl approximately 48" wide and topped with a layer of asbestos approximately 36" wide. When the actual extrusion operation began the covered floor area was designated a toe rubber area.

A one-gallon can half full of water was used to cool the dummy (pusher) block after each extrusion.

The extrusion operation was accomplished in three heats. The attached data sheet indicates the order of extrusion. Billets #36 and #24 in heat #2 were not completely extruded. In both instances the billet was partly extruded leaving the die jammed. The unextruded portion of the billet was removed and placed in a covered container as were all the unextruded portions of the billets and scraps. All tools used in clearing the die were surveyed and found to be free from contamination.

Levels of contamination on the extruded plates ranged from 0 to 12M, the highest readings being obtained on those plates where the aluminum jacketing had ruptured.

After all of the billets containing U30g had been extruded on cleanout block, one Al billet and one Al-Ni billet was extruded. A survey of the Al-Ni extrusion indicated it to be free from contamination.

After the extrusion, stretch straightening, and packaging the plates was completed, another complete survey of the aforementioned floor areas and fixtures was accomplished.

The asbestos on the floor directly in front of the press was contaminated in several spots to levels of lM. All of the asbestos was rolled very carefully inside the vinyl plastic which was underneath it. All the plastic that was used to cover the run-out table, stretch straightener table, cooling table, and other fixtures, was carefully folded and returned to ANL. No external contamination was detected on the packages returned to ANL. None of the toe rubbers used in the operation was found to be contaminated.

The corrugated jaws of the stretch straightener as well as the shears used to cut the butt of the extrusion from the extruded portion were found to be contaminated to levels of 20M. These items were cleaned to no activity detected by the Metallurgy personnel.

The pusher (dummy) block which was too hot thermally to be surveyed at that time was returned to ANL where it was cleaned to no activity detected and returned to Titus Metals, Inc. The three dies that were used were Argonne property and returned to ANL. The die holder and die backer ring were returned to ANL to be cleaned prior to being returned to Titus Metals, Inc. The one-gallon can containing the water used to cool the pusher (dummy) block was also returned to ANL.

Smears were taken on the inside of the extrusion press cylinder. No contamination was detected on these smears with a portable instrument nor in an alpha scaler when so counted upon return to ANL. All accessible areas of the extrusion press were surveyed or smeared and no contamination was detected.

A survey of the shoes of the Titus Metals, Inc., employees who were actively engaged in the operation indicated no detectable contamination. The gloves, coveralls, and work clothes of all persons actively engaged in the operation were bagged and returned to ANL for laundering.

In addition to the floor area and fixtures in the shop where the extrusion was accomplished, the offices, rest rooms, and clothes change areas were surveyed and no contamination was detected.

The floor sweepings and the brooms used to sweep the entire area after completing the operation were surveyed and no contamination was detected on or in either.

The extrusion operation was accomplished in such a manner that no contamination was detected at the Titus Metals, Inc. plant upon completion of the operation. This was possible only through the very careful handling techniques and precautionary measures employed by the Metallurgy and Special Materials personnel.

G. T. Lonergan

GTL:vsd

cc: J. F. Ege, Jr.
H. Wm. Gaut
R. A. Noland
File
Reading File
IHSRF

Order of Extrusions at Titus Metals, Inc., Waterloo, Iowa

Heat Number 1		Heat Number 2		Heat Number 3	
Order #	Billet #	Order #	Billet #	Order #	Billet #
1	3	21	37	40	निर्म
2	9	2 2	33	11	21
3	4	23	36 *	42	43
4	5	24	38	143	46
5	6	25	28	. 44	45
6	13	26	35	145	柱
7	17	27	24 *	46	142
8	8	28	22		
9	12	29	40		
10	16	30	25		
11	20	31	29		
12	10	32	30		
13	1	33	31		
14	2	34	27		
15	18	35	23		
16	15	36	39		
17	?	37	32		
18	14	3 8	26		
19	19	39	34		
20	11	, s e			

*Billet stuck in die and was not completely extruded

After the above was accomplished one cleanout block, one Al billet, and one Al-Ni extrusion was run through the press.