June 25, 2005

06-30-05P02:00 RCVD

"New Acquired information pertaining to The Bethlehem Steel Site Profile"

Mr. Larry J. Elliott, MSPH CIH
National Institute for Occupational Safety & Health
Robert A. Taft Laboratories
4676 Columbia Parkway
Cincinnati, OH 45226-1998

Re:Rolling Procedures

Dear Mr. Larry J. Elliott:

Some alarming information has come to the attention of the members of the Bethlehem Steel Action Group Committee, concerning rolling procedures and Working conditions that we feel should be forwarded to the appropriate individuals:

1) At the Livermore California meeting held 12/14/05 S.C. & A presented Evidence to N.I.O.S.H., including a schematic drawing labeled Bethlehem Steel Site Profile showing a "rolling procedure". This information was accepted by N.I.O.S.H., and never disputed after further review of this material we find that this Not a drawing of the Bar Mill, but that of the Bethlehem Strip Mill! Why is this important?

2) The Bar Mill has a completely different layout and an entirely different purpose. A "Strip Mill" rolls slabs of iron, while a "Bar Mill" rolls rods of iron. Also, we have reason to believe that the Bar Mill at the "Simond Saw Steel Plant", which was used as a model for the Bethlehem Plant, has a completely different size and layout. The rolling process at Bethlehem was inquired, roughly the size of 1 ½ football fields long and between 60-70 ft. wide the Bar Mill was huge. Not taken in account was the massive cooling bed, a large area underneath the rolling mill 10-12 ft. deep 60-70 ft. wide with over 200+ electric motors and miles of wire, and mechanical parts where these hot "uranium" rods were cooled. Cleaning in this area was done with a non-HEPA equipped vacuum cleaners and pressurized air hoses which "blew" the radioactive dust back through an "un-ventilated"area to be re-breathed by the unknowing workers, no air samples were ever recorded. These missed contaminated area samples are "never able" to be replaced or duplicated.

3) At the Mallinckrodt Plant meeting in St. Louis, MO., February of 2005, this same inaccurate information was forwarded to the President's Advisory Board and to N.I.O.S.H. and placed on the formal record. If it wasn't bad enough to a Bethlehem Site profile was done with information using "Strip Mill" data for a "Bar Mill" data, which had (2) entirely different functions and the (2) processes are not related, that we discover all the missed cooling bed data, which is unique to the Bethlehem Steel Site and was never addressed at all for its high potential contribution to radiation exposure. Bethlehem Steel at that time had no parallel in the world (not even close)there are <u>no</u> comparables to this site. Our committee has also uncovered more documents (experimental) types of procedures did exist at the Bethlehem Steel that are not accounted for in our TBD.
   *HW-2484-9 dated June 27, 1952 shows that Bethlehem Steel was also used as an "Experimental Facility" where workers were exposed to additional radioactive materials other than the "normal" rolling and procedures which produced unknown and "un-recorded" effects on the workers. Also, document
   *HW-2234-7 shows abnormal blistering of the "uranium rods" which shows the instability of the materials. Also, there were no contamination surveys ever recorded in this basement area, 28,000 sq. ft. This area was open to a processing procedure handling 1100 degree uranium rods. From which debris, scaling, dust would fall into this area and sometimes burn.

4) These areas and procedures are vital components to perform an accurate dose reconstruction. Since there is no way this exposure can be modeled at Simmonds Saw, it represents exposure for which no records exist and for which there is no demonstrable means to estimate it.

5) We at Bethlehem Steel Action Group want on the "Record" that we find N.I.O.S.H.'s oversight in these numerous cases of total in-accurate, unforgivable and flawed information lead us to total injustice to the effected workers.

As a committee and concerned Americans we are looking forward to receiving a response to these troubling events!

Sincerely,

Edwin A. Walker

Bethlehem Steel Action Group

Affidavits enclosed (2)

AFFIDAVIT

STATE OF NEW YORK)
) SS.
COUNTY OF ERIE)

being duly sworn, deposes and says:

1. I reside at

2. I worked on and around the cooling bed inspector for many years. Twenty (20) years as a cooling bed inspector in excess of 200 hours and later as a metallurgical department supervisor.

3. The following is description of the cooling bed, its size and operation:

The bed was 400' long. It was about 40 to 50 feet wide. It was built above a cellar that was about 8/10 feet deep. The bed had two sides. North and South with a cat walk running down the middle. The motors gear boxes, conduit and drive shafts, that made the bed work were located in the cellar beneath the bed. They were positioned on the top of the concrete columns or piers that varied in height from approximately 4/7 FEET and were about 24/36 inches overall width, some larger. There were many of these columns. 175 to 200 maybe more. From the cat walk you could see into the cellar and observe the motors, and shafts that operate the bed.

When a finished bar of steel left the last 6 finishing stand on the mill it headed to the rolling bed. They were carried there by 8/10 inch DIA. rolls attached to direct drive electric motors spaced about every 36 inches apart. One bar to the north side the next bar diverted to the south side.

The apron would then raise the moving bar above. The drive rolls AND the bar would slide 10 to 15 feet to a stop and get pushed off by pusher arms causing the bar to drop 10 to 12 ~~14~~ inches on a channel where the cooling bed racks would then carry the hot bars to the roller line going to the shears.

This was a good design but problems did occur. Sometimes a drive motor would die of age, lack of lubrication or debris ~~cobalt~~ damage or a roll would get out of balance and start to wobble. The bar passing over these dead or wobbling rolls would scrape the dead rolls and if you looked close you could see the sparks at contact points.

The Mill did not deem this a serious problem and it usually was not repaired till the next down turn and it could go a few weeks before being repaired. There always seemed to be 2 or 3 dead rolls, sometimes many.

The cooling bed racks would periodically get out of alignment causing excessive abrasion and scraping the surface of the bars traveling across the bed.

The Mill rolled both alloy and carbon steels. They both have coatings of scale, some were hard that would chip and flake off and others were light and flaky and would crumble into a blizzard of dust into the cellar below.

Clean up crews with push brooms, shovels and wheelbarrows periodically removed this buildup of metal particles and steel dust but they could not reach the build-up on the top of the motors, boxes and piers and conduit because of the height, limited space and configuration.

This means that particles of metal and scale that were deposited on the first day the Mill rolled in 1947 were still there on the last day it rolled in the late seventies (70's).

It goes without saying that particles of uranium were deposited in these areas in a similar fashion so they were close enough to be deadly and yet far enough away so they could not be removed.

I believe that the mechanical and electrical repair crews, clean up crews, inspectors that worked on the cat walks and others that worked in this [illegible] radioactive environment, what ever the time in months or years, that contributed TO one of many forms of cancer should be compensated.

5. That he has read this Affidavit and swears to the truth of its contents.

STATE OF NEW YORK)
) ss.:
COUNTY OF ERIE)

On this 24th day of June, 2005, before me personally appeared to me personally known and known to me to be the person described in and who executed the within Affidavit and he duly acknowledged to me that he executed same.

DIANE M. HALL
Notary Public, State of New York
Qualified in Erie County
My Commission Expires July 17, 2007

Notary Public

AFFIDAVIT

STATE OF NEW YORK)
) SS.
COUNTY OF ERIE)

being duly sworn, deposes and says:

I reside at

2. I worked at the 10" Bar Mill at Bethlehem Steel Mill in Lackawanna, New York, starting in 1941 through 1983.

3. I am familiar with the complete 10" Rolling Mill procedure and its location, function and layout including its approximate size.

4 The over all length of this cooling bed was approximately 400 feet long and the width was approximately 60 feet. Dividing the cooling bed was a cat walk 30 inches wide, the full length of the bed approximately 400 feet.

After the rods left the rollers, they were pushed on to this bed of rollers. These 1 ½ inch rods varied in length approximately 150 feet to 200 feet long. These cooling bed rollers were off the mill floor about 4 feet. Below this roller bed was an open area to a basement under this complete rolling bed area. As the rods were moving on these rollers, sometimes sliding on these rollers the scaling and dust residue would all fall between the rollers to the pit below. This basement area was about 7 to 8 feet high. This pit area contained 2feet x 3 feet concrete columns that supported the bed above. Also, each roller was driven by an electric motor (direct drive). It also contained miles of electric conduit. There were at least 200 plus motors to run the rollers above. There were also larger motors to run the kick off producer. This area contained hundreds of areas that could not be reached to clean. No vacuum could possibly fit in that pit area.

Men had to use shovels and brooms to just remove some of the scale and dust. At times they would try to get into areas with a high pressure air hose. This procedure would blow the dust back through the rollers where the heat would then carry the dust back up through the rollers into the mill.

When these drive motors would break down or burn out the different maintenance trades would have to go in this pit area and replace or repair them, this was usually done on a "down shift". There was also a crew that worked in the pit area daily. There were many areas that could not be reached by any means to be cleaned. The rollers above were lubricated with an automatic grease system. They sometimes over greased these rollers and the grease would fall in the pit area on the motors, conduit, columns and floor. There were many fires in this basement area. Hot debris from above would fall on this grease and start fires or motors would burn out and start fires. These fires took place on an occasional basis.

I also witnessed the uranium rods being lifted from the salt and lead bath, read hot and dripping all over the salt bath and on to the floor. This also was not cleaned up.

I never saw anyone check the pit area for any radiation, the times I saw them monitoring, they were not close to the uranium areas where the men were working.

5. That he has read this Affidavit and swears to the truth of its contents.

STATE OF NEW YORK)
) ss.:
COUNTY OF ERIE)

On this 23rd day of June, 2005, before me personally appeared
to me personally known and known to me to be the person described in and who executed the within Affidavit and he duly acknowledged to me that he executed same.

Dianne E Emerling
Notary Public

DIANNE E. EMERLING
Notary Public, State Of New York
Qualified In Erie County
My Commission Expires July 15, 2007

OBJECTIVE

To evaluate the feasibility of accomplishing the alpha-beta transformation by salt bath heat treating uranium rods as a suitable production method. Nine hundred sixty slugs from these rods will be canned by the established alpha process and irradiated for evaluation of pile behavior.

BASIS AND JUSTIFICATION

The uranium to be used in this test was obtained from rods, production rolled at Simonds Saw and Steel Company, and beta heat treated in a salt bath at the Lackawanna Mill, Bethlehem Steel Company. (See Descriptive Details). Macroetching and Metals Comparator tests revealed 100% transformation. Metallographic examination and x-ray orientation studies revealed that the grain size and preferred orientation, respectively, compared very favorably with triple-dip canned uranium. Results of alpha dip canning tests indicated that this uranium cans satisfactorily with a good slug-to-can bond. All 313 Building inspection tests were passed without exception both in the bare slug and canned form.

The advantages of salt bath heat treatment were discussed in HW-22876 and HW-22770. Heat treatment in rod form has two major advantages over heat treatment in slug form.

1. The amount of handling necessary to heat treat rods is considerably less than required to heat treat slugs.

2. The distortion of the slugs caused by beta heat treatment after machining does not occur, since the rods are heat treated prior to machining.

In this test approximately 1,000 slugs will be critically examined before and after irradiation to determine changes in slug dimensions brought about by pile exposure. In a later production test a large number of slugs will be irradiated to obtain a comparison of the rupture rate of this material with the rupture rate of present triple-dip canned, alpha rolled material.

SCHEDULE

Canning - May, June 1952 under MPR #208
Charging - July, August, 1952
Duration - Approximately 9 months
Areas - DR and/or H

COSTS

Cost Code - XXX-222-571
Reactivity - Normal
Elevator Time - Approximately 1/2 hour per tube on each elevator for special pick-up of metal at discharge; Total - 15 hours.
May cause approximately 320 MWD loss in production if charge and discharge operations cannot be performed during minimum shutdown time.
Shutdown Time - Discharge 30 tubes - 15 hours.
Metal Preparation Section - 196 man hours

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[redacted]

DESCRIPTIVE DETAILS

Rods from production rolling at Simonds Saw and Steel Company were heat treated in a salt bath at the Bethlehem Steel Company plant in Lackawanna, New York. The rods were immersed for 6 to 10 minutes in a special carbonate salt bath at 715-745°C and water quenched. Straightening of the rods was done at the mill prior to shipment to Hanford. The heat treatment was observed by Hanford personnel.

The following types of material will be included in the test:

1. Type A

machined Six hundred thirty-eight. 4.010 inch long, 1.356 inch diameter slugs were machined from the beta heat treated rods and will be lead dip canned under MFR #208. These canned slugs will be marked with TT numbers at the time of fabrication.

2. Type B

Sixty-six, 4.010 inch long, 1.356 inch diameter slugs will be canned and marked with TT numbers at time of fabrication. These slugs are the first, middle, and last slugs from the type "A" rods, and have been marked with this designation at time of fabrication.

3. Type C

One hundred seventy-six, 4-inch, triple-dip canned, alpha-rolled slugs to be used as control pieces. These slugs will be marked 1-6 through 176-6.

4. Type D

Five hundred seventy-eight triple-dip canned, alpha-rolled slugs. These slugs will be marked with standard production data only.

5. Number of slugs

Total: 1408 slugs

6. Charging

Twenty-two hot central zone tubes will be loaded in the following order of charging: standard rear dummy pattern; 64 test pieces including 29 Type A, 3 type B, 8 type C, and 24 type D slugs to be loaded: DA, DB, DA, DA, DA, DA, DA, DA, DA, DA, DA, DA, CA, CA, CA, CB, CA, CA, CA, CA, DA, DA, DA, DA, DA, DA, DA, DA, DA, DA, DB, DA.

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PROCEDURE

Metal Preparation

Nine hundred sixty slugs 4.010 + 0.01 -0.01 inches long and 1.356 + 0.001, -0.002 inches diameter have been machined from the 37 beta heat-treated rods listed below. A slug from both ends and the center of each rod was selected for transformation analysis, by macroetching, and was measured for length, diameter, and warp.

ROD NUMBERS OF RODS USED

3349-3	3368-3	3400-2
3351-3	3369-2	3400-3
3354-1	3371-1	3401-1
3354-2	3371-3	3401-2
3354-3	3372-1	3401-3
3355-2	3372-3	3402-1
3359-1	3373-2	3402-2
3359-2	3373-3	3405-2
3364-1	3398-1	3405-3
3366-1	3398-2	3406-1
3366-2	3398-3	3406-2
3368-1	3399-1	
3368-2	3399-2	

The identity of these slugs was maintained and will be marked on the canned pieces. All of the slugs were marked with the rod number and subjected to the metals comparator test to check for complete metal transformation. They will be canned by the alpha lead dip process, stamped with production test number, and subjected to all 313 inspection tests.

One hundred seventy-six, 4-inch, triple dip slugs will be marked 1-6 through 176-6 and used as control slugs.

Reactor Section

Two tubes will be discharged at each of the following average exposures: 100 MWD/T, 200 MWD/T, 300 MWD/T, 400 MWD/T, 500 MWD/T, the remaining tubes will be discharged at an average exposure of 600 MWD/T. All group A and B slugs will be measured and subjected to visual inspection as soon as possible after discharge. Any abnormal blistering or distortion will be considered sufficient justification to discharge all remaining tubes associated with this test.

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from the [redacted]; however, should show improvement as far as uniformity of rolling practice is concerned. Equipment is being installed at Mallinckrodt of [redacted] heat billet molds; it is believed by some in the AEC-NYOO that much of the poor rod quality is due to billet surface conditions arising from molds which are too cold and in lesser part from pouring the uranium at slightly lower temperatures at Mallinckrodt than at Hanford.

With regard to the poor rod quality observed in Hanford lot number 153 is was reported that originally billet and rods were stored on the ground at the Lake Ontario depot. This practice, which was conducive to some corrosion of the metal, has been discontinued; however, it is not certain that this is the reason for the poor quality observed in this particular lot.

August 27, Bethlehem Steel Company, Lackawanna Plant, Buffalo, New York

The scheduled rolling on this date provided for finish rolling, in a six stand continuous mill, of 23 bars which previously had been reduced from 5" diameter by 42" long billets to 2.54, 1.91, and 1.73 inch diameter rounds at the Allegheny-Ludlum mill at Watervliet, New York. The schedule for the August 27 experimental rolling is summarized in Table I, and confirmatory details are expected to be issued in a report from the New York Operations Office.

This rolling was observed by R. J. Smith, F. G. Stroke, and R. E. L. Stanford the AEC, R. Hobart and R. D. McCrosky of duPont, representatives of Birdsboro Machine and Foundry Company and of the Catalytic Construction Company, and the writer.

Before rolling, all the rods were machined, and ground if necessary, to remove scabs, folds, and other discontinuities in the bars. The surfaces of the bars were oxidized in a muffle furnace at 900°F for 20 minutes to reduce the attack of the molten baths upon the metal; however, the surfaces thus produced were not sufficiently protective to prevent wetting of some spots by the molten lead. During air cooling, about 100 lbs. of oxide fell to the floor and blisters about 1/10 inch high appeared at the points where the rods rested upon the rails. Some wrinkles were also observed adjacent to the blisters. Observed variation in the rod diameter after oxidizing the surfaces fell in the range .036 - .096 inches.

The observed rolling conditions for the samples obtained for Hanford are summarized in Table II. These samples were selected to represent the extreme temperature conditions encountered in both the lead and the salt preheated bars. In general it was observed that the salt adhered to the bars better than the lead. The lesser surface exposed by the salt preheated bars apparently reduces surface oxidation thus permitting higher mill speeds without overheating of the work. Details of the pass schedules which prove most satisfactory will be made available by the NYOO.

The lead ends of the bars were unmachined, and this created some problems in getting rods to enter the first roll stand. The rods were driven into the rods with a sledge hammer; consequently, some of the butt ends were mushroomed and had to be driven through the entering guides. Small fishtails were observed at the lead and butt end of all rods. All rods were air cooled.

Samples from these rods (Table II) have been received at Hanford for studies of surface quality, micro-structure, and orientation. The quality of those rods will be compared with that of rods recently rolled for Hanford at Simonds.

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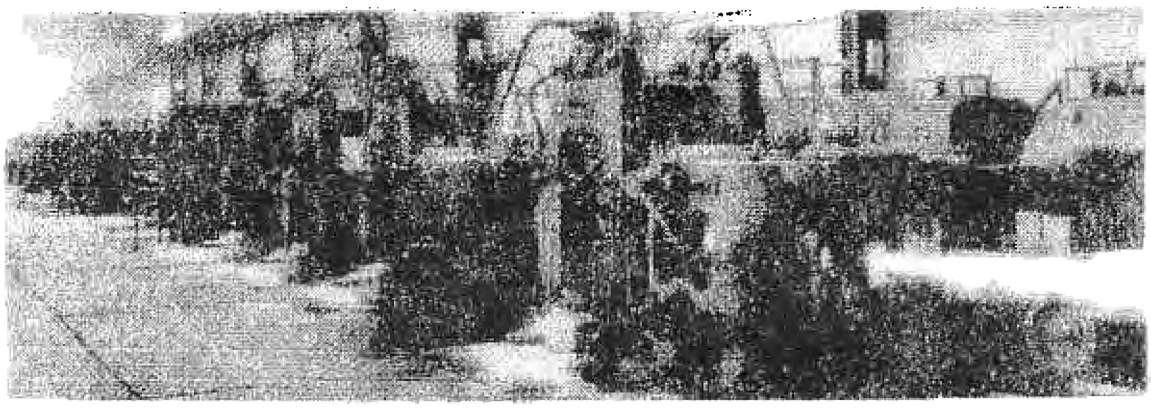
Steel Bars and Billets for a Host of Uses

Carbon and alloy steel bars are among the major products of the Lackawanna Plant, and the output from the bar mills runs in to many thousands of tons every month.
Bars are rolled on modern, high-speed continuous mills, which use billets as their raw material. The billets, rolled from steel bloom on billet mills, have had all surface imperfections removed, and are re-heated in furnaces prior to rolling on the bar mills. A certain tonnage of billets is also sold directly to customers.

The largest single use for steel bars rolled at Lackawanna is in making automotive products, such as crankshafts, axles hinges connecting rods, spark plugs, and numerous others. A substantial tonnage is used for rolling concrete reinforcing bars for use in the nation s highways. The so-called merchant bar sections such as rounds, squares, hexagons and flats are used by manufacturers in a host of different products. Some preformed sections are also rolled

The 10-inch bar mill (below) is one of the fastest and most up-to-date mills in the country



BELOW

Left Surface defects in billets are removed prior to further processing

Right: Representative automotive parts made from bars rolled on the various bar mills at Lackawanna Plant