U. S. NUCLEAR REGULATORY COMMISSION

REGION II

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| Docket No.: | 040-03366 (retired) |
| License No.: | SUC-00628 (retired) |
| Report No.: | SUC-00628/96-01 |
| Former Licensee: | Fostoria Glass Company |
| Location: | Corner of First Street and Fostoria Avenue<br>Moundsville, WV |
| Current Site Owner: | Lancaster Colony Corporation |
| Address: | 37 West Broad Street<br>Columbus, OH 43215 |
| Date: | August 14, 1996 |
| Inspector: | Jay L. Henson, Radiation Specialist |
| Approved by: | John P. Potter, Chief<br>Materials Licensing/Inspection Branch 2<br>Division of Nuclear Materials Safety |

Enclosure 1

# EXECUTIVE SUMMARY

Fostoria Glass Company
NRC Inspection Report No. SUC-00628/96-01

This routine, announced inspection was conducted to evaluate the current radiological status of facilities utilized by the former licensee under their NRC License No. SUC-00628, which was terminated in June, 1969. This included discussions with cognizant State of West Virginia representatives, reviews of documents, and direct observations and radiological surveys of the site where activities associated with the terminated license were performed.

The inspector found that the entire facility, including the building designated as the Batch Plant, where depleted uranium was used and stored, was difficult to survey because of the current facility conditions. However, the inspector did identify areas of fixed contamination in and around the Weigh Room on the second floor, in the southwest corner of the Batch Plant, that exceeded the NRC criteria for release of the facility for unrestricted use. The inspector concluded that a more comprehensive survey of the facility would be required to properly characterize the site and determine if any other areas within the facility were contaminated above the release criteria.

The inspector attempted to determine the location of the "dump" referenced in documents contained in the retired docket file where the former licensee disposed of 328 pounds of depleted uranium. The inspector did not find any physical evidence of a dump at the facility site. The inspector obtained a sample from each of the three ground water monitoring wells at the facility. A preliminary analysis of the samples indicated that the types and amount of radioactive material present in the ground water are from naturally occurring radioactive materials typically present in ground water.

In discussions with employees of the West Virginia Division of Environmental Protection, the inspector determined that it was possible that the "dump" referenced in the retired docket file was the Moundsville municipal dump known as the Angel Flats Dump. The inspector visited the Angel Flats site and found evidence that Fostoria Glass Company had disposed of waste glass at the site, but could not determine if the depleted uranium had been buried at the site.

LIST OF PERSONS CONTACTED

Current Site Owner

*K. Cassidy, Corporate Environmental Manager, Lancaster Colony Corporation

State of West Virginia

#H. Michael Dorsey, Assistant Chief, Office of Waste Management

#James A. Gaston, Environmental Inspector, Office of Waste Management

* Contacted on September 12, 1996, for telephonic exit briefing

# Present during inspection

REPORT DETAILS

01. Terminated Site Background (TI 2800/026)

The NRC has reviewed the records of all formerly licensed sites for licenses that were terminated before 1985 to determine if the sites had been properly decommissioned. As a result of this review, the site described in License No. SUC-00628, Fostoria Glass Company (FGC), Moundsville, West Virginia, was identified as a site which required further investigation to verify that it was properly decommissioned and met the current criteria for release for unrestricted use.

License No. C-04327 was issued on October 2, 1958, for the possession of 850 pounds of uranium (depleted) in uranium compounds for use as a coloring agent in glass products (tableware and artware). Amendment No. 1 to this license was issued on August 25, 1959 and authorized the possession of 1700 pounds of uranium in uranium compounds for use as a coloring agent in the manufacture of ornamental glassware containing not more than 10 percent uranium.

In a letter dated October 18, 1960, the licensee stated that it had discontinued the use of uranium compounds in July, 1960, and that it currently possessed 328 pounds of depleted uranium. The licensee further stated that it was not sure if it would use this material in the future, but wanted to retain the license in the event it may need it. The possession limit was reduced to 328 pounds in an amendment dated October 20, 1960.

License No. C-04327 expired on October 31, 1961, while the licensee still possessed source material. The licensee applied for another license, requesting authorization for possession only, and was issued License No. SUC-00628 on July 19, 1962. This license authorized the possession of 328 pounds of uranium for storage only. This storage only license was renewed in July, 1965 and its expiration was extended to July 31, 1969, in a license issued on July 22, 1968.

The licensee requested termination of its license in a letter dated June 19, 1969. In this letter, the licensee stated that it had disposed of all material (328 pounds) by burial as provided in 20.304.

In its original license application, the licensee described the manufacturing process as including weighing out the licensed material in appropriate batch sizes along with other glass components in a well ventilated, hooded area, placing this material in a mixer, then a batch wagon for transfer to the site where it would be placed in a glass pot and melted into glass. The glass was then drawn by hand and formed into glassware. The licensee stated that the glassware would contain from 0.25 to 2.0 percent depleted uranium oxide depending upon the type of color which was produced. All waste product would be remelted for further use or would be buried at the dump. The licensee also stated that it had experience with normal uranium products before 1942 and

based upon this experience, it expected little uranium loss in any of its operations.

On August 27, 1959, an AEC inspector conducted an inspection of the licensee's operations. He noted that the weighing room was located in the west end of the plant building and that the Ransome Dry mixer was located in the basement almost directly below the weighing room. The inspector also noted that the licensee was performing radiation surveys with a CDV-700 survey meter borrowed from the Moundsville High School, and that the records of these surveys showed that no external radiation in excess of 1 mR/hr existed in any of the use and storage areas. The licensee had received 900 pounds of licensed material since October, 1958 and had 225 pounds of licensed material on hand during the inspection. A second inspection was performed in November, 1962, and the inspector noted that no item of noncompliance was found.

The retired docket file contains no information describing a close-out survey by either the licensee or AEC at the time of license termination.

Fostoria Glass Company was purchased by the Lancaster Colony Corporation in 1983, and production at the facility was ceased in 1986. The facility was closed shortly after production ceased and an environmental remediation survey of the facility was completed in 1995. Personnel involved in this survey were apparently unaware of the use of radioactive materials at this site and did not perform any radiological surveys during the environmental survey. Personnel performing the environmental survey did not find any evidence of a burial site at the facility, but did identify lead contamination in some soil. The lead contaminated soil was subsequently removed from the site.

02. Current Site Status (TI 2800/26)

On August 14, 1996, an NRC inspector visited the former Fostoria Glass Company site described in the license application as the location where licensed activities were performed. The site, which is at the corner of Fostoria Avenue and First Street, in Moundsville, West Virginia, is comprised of several manufacturing buildings. The site is surrounded by a chain link fence, but access to the site can be gained through two gates with broken chain locks or through sections of the fence that had been cut and folded back to allow access.

The interiors of the buildings were in a dilapidated condition and strewn with debris. It appeared that thieves had entered the facility on several occasions to steal materials from inside and that homeless individuals had been living in some of the buildings. The building in Area 5 of the site (see enclosure 1) designated as the Batch Plant is where the depleted uranium was stored, weighed, mixed, and placed in a batch wagon for transfer to the site where it would be placed in a glass pot and melted into glass.

The Ransom Batch Mixer is located in the southwest corner of the Batch Plant, on the first floor. The weigh room where the depleted uranium

was stored, weighed, and mixed with the other raw materials is on the second floor. A desk, table, storage cabinet, buckets, and a semi-circular arrangement of metal storage bins used to store the raw materials used to color the glass were located in the weigh room. A long conveyor belt and hopper that dumps into the Ransom Batch Mixer were located outside of the weigh room. The bulk of the raw materials used to produce the glass (1200-1500 pounds) were apparently placed on the conveyor belt from hoppers leading from the third floor of the building and the coloring agents, such as depleted uranium (7-10 pounds), were added as these materials entered the hopper that emptied into the Ransom Batch Mixer. The inspector noted that a homeless person had left a blanket, food and some clothes next to the conveyor belt, near the hopper that empties into the mixer.

03. Assessment of Radiological Status

a. Inspection Scope (TI 2800/026)

On August 14, 1996, an inspector surveyed the site for residual contamination or other radioactive materials associated with previous licensed activities.

b. Observations and Findings

The inspector, accompanied by two individuals from the West Virginia Division of Environmental Protection, toured the facility to identify the areas where licensed materials were used. The southwest corner of the Batch Plant was identified as the location of the weigh room and batch mixer where depleted uranium was used and stored. The inspector performed radiological surveys in this area (see enclosure 2).

The inspector scanned the floors, corners, cracks, platform and mixer surfaces in the area around the batch mixer on the first floor with an Eberline Model ESP 2 survey meter with a "pancake" probe. These surfaces were covered with dirt, dust and in some cases puddles of water. The inspector also surveyed this area with a Ludlum Model 19 microR meter. The inspector did not detect any levels of radiation above background radiation in this area with either survey meter.

The inspector scanned the surfaces around the conveyor belt, floor, and hopper outside of the north side of the weigh room on the second floor of the Batch Plant and did not detect any levels of radiation above background radiation in these areas. These areas were also covered with dirt and dust. The inspector did note that as he approached the brick wall on the west side of the building, that the dose rate detected with the microR meter increased from the background level of 8-10 microrem/hour to 20 microrem/hour. This was apparently due to the naturally occurring materials contained in the matrix of the brick.

The inspector scanned the surfaces of the floor, walls, furnishings, and storage bins in the weigh room. Papers and other waste materials were strewn about the weigh room. The inspector did detect levels of

radiation above background levels in and around one of the coloring agent storage bins in the weigh room. This bin was marked with the word selenium. Although this bin did not appear to contain any material or residue, the inspector did measure levels of contamination inside the bin ranging from 1.18 $E^5$ to 4.6 $E^5$ disintegrations per minute (dpm) per 100 $cm^2$. The removable contamination measured on smears obtained inside the bin ranged from 65 to 100 dpm/100 $cm^2$ and indicated that the contaminant emitted both alpha and beta particles. The dose rate measured inside the bin was 30 microrem/hour.

The inspector also identified an area of contamination on a platform that is connected to the back of the bins. The contamination was on the platform floor next to the bin that was marked selenium. The inspector measured levels of contamination in this area ranging from 2.29 $E^5$ to 2.96 $E^5$ dpm/100 $cm^2$. The removable contamination measured on a smear taken in this area was 205 dpm/100 $cm^2$ and indicated that the contaminant emitted both alpha and beta particles. The highest dose rate measured in this area was 40 microrem/hour.

The inspector toured the grounds surrounding the facility for any indication of a dump. The inspector did not find any evidence of a dump at the site, but did obtain a sample from each of the three ground water monitoring wells at the site (see enclosure 1). The preliminary results from the analysis of these samples indicated that the levels of radioactive material in the ground water at the site are similar to the background levels routinely present in ground water. The inspector also visited the Angel Flats municipal dump where FGC disposed of waste glass. The inspector found no evidence to indicate that depleted uranium had been buried at the site.

c. Conclusions

Areas of fixed contamination exceeding the release for unrestricted use criteria of 5,000 dpm/100 $cm^2$ average and 15,000 dpm/100 $cm^2$ for depleted uranium were detected. Although the removable contamination results did not identify any areas where it exceeded 1000 dpm/100 $cm^2$, the results did indicate that the contaminant was an alpha and beta emitting radionuclide. A more thorough survey is necessary to better characterize the locations, types and levels of contamination at the site. Additional investigation and assessment is also required regarding the potential health and safety impacts of the 328 pounds of depleted uranium that may have been buried at either the FGC site or the Angel Flats municipal dump.

## EXIT MEETING SUMMARY

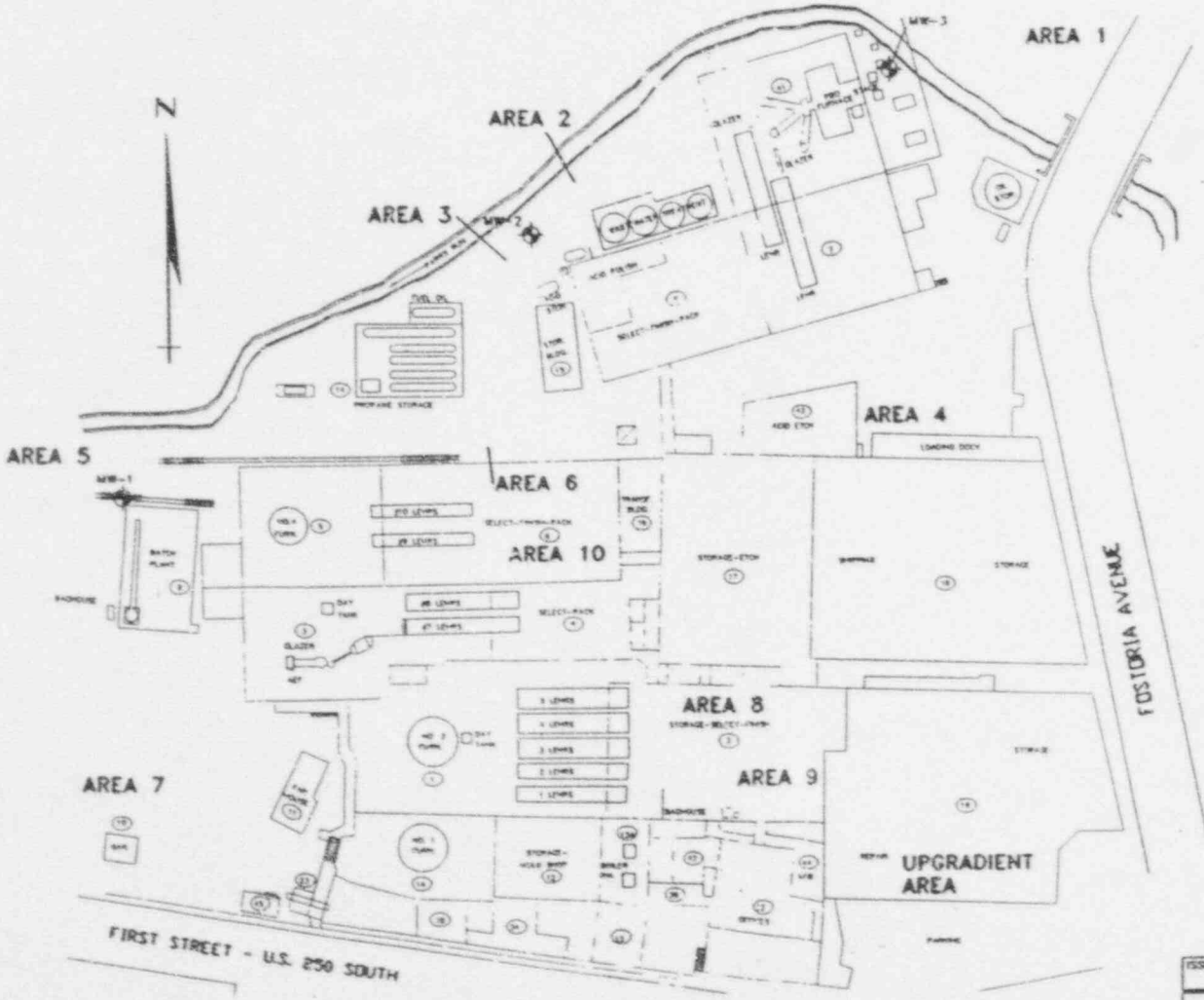
The inspector discussed the inspection results with Mr. Ken Cassidy, a representative of the current site owner in a telephonic conversation on September 12, 1996. The inspector informed Mr. Cassidy that areas of contamination exceeding the current release criteria were discovered in the facility. The inspector discussed the NRC's terminated sites program and

indicated that a more comprehensive survey was needed to adequately characterize the extent of contamination that may be present at the site. The inspector also informed Mr. Cassidy that the NRC may require additional information regarding the burial of the depleted uranium at either the FGC site or the Angel Flats dump site. The inspector stated he would provide a copy of the documents contained in the retired docket file as well as information on the current criteria for release of the site for unrestricted use and decommissioning surveys. Mr. Cassidy stated that he would review the inspection report when received and discuss with his management and legal staff to determine what actions Lancaster Colony Corporation would take regarding the site.

## TEMPORARY INSTRUCTIONS USED

TI 2800/026: Followup Inspection of Formerly-Licensed Sites Identified As Potentially Contaminated

Report
Encl 1




## LEGEND

MW-1 ◆ MONITORING WELLS

NOTE:

1. DRAWING ORIENTATION, SCALE, SAMPLE LOCATIONS AND BORING LOCATIONS SHOWN HERE ARE APPROXIMATE.

| REV # | DATE | DESCRIPTION | APPD |
|---|---|---|---|
| | | | |

ISSUE DATE:

DATE

8500 BROCKTREE ROAD
SUITE 300
WEXFORD, PA. 15090

McLaren Hart
ENVIRONMENTAL ENGINEERING CORPORATION

| | |
|---|---|
| DRAWN: LMK | DATE: 12/30/95 |
| CHKD: | DATE: |
| APPD: | DATE: |
| SCALE: | 1" = 80'-0" |

FOSTORIA GLASS
MOUNDSVILLE, W. VA.

REMEDIAL ACTION PLAN
FOSTORIA GLASS
MOUNDSVILLE, MARSHALL COUNTY, W. VA.

MONITORING WELL LOCATIONS MAP

DRAWING NUMBER
FIGURE 1

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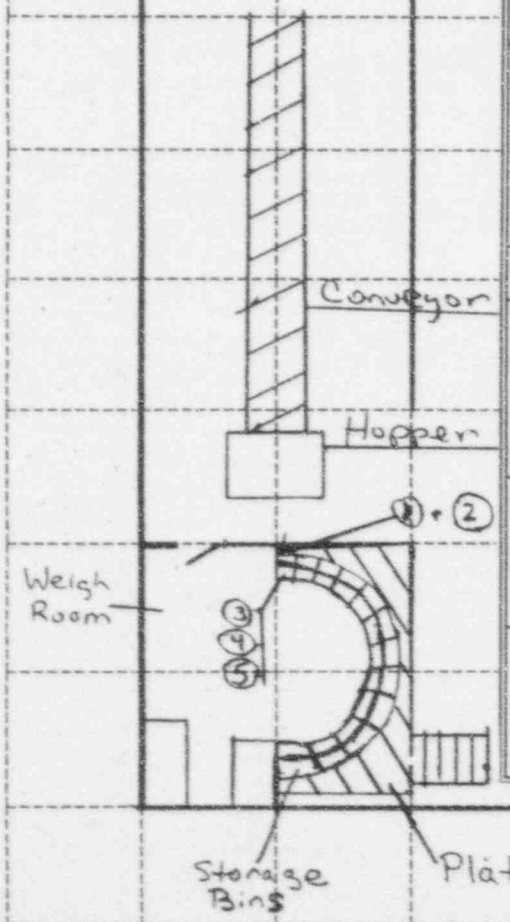
Report Encl 2

Batch Plant, 2nd Floor




| Survey Point | Location | Fixed Measurement dpm/100 $cm^2$ | Removable Measurement dpm/100 $cm^2$ | Dose Rate (above background) microrem/hr |
|---|---|---|---|---|
| 1 | Platform floor, outside weigh room, in corner next to rear of bin marked selenium | 2.96 $E^5$ | 205 | 30 |
| 2 | Near point 1 | 2.29 $E^5$ | N/A | 20 |
| 3 | Inside, bottom, at rear of bin marked selenium in weigh room | 1.18 $E^5$ | 78 | 20 |
| 4 | Inside bottom, at center of bin marked selenium in weigh room | 4.05 $E^5$ | 65 | 30 |
| 5 | Inside bottom, at front of bin marked selenium in weigh room | 4.60$E^5$ | 100 | 30 |

Report Encl 2