

United States Government

Department of Energy

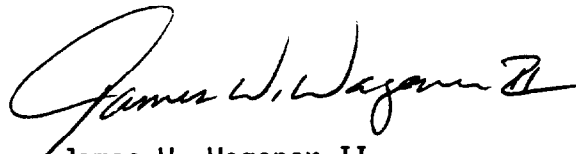
memorandum

DATE: **SEP 25 1989**
REPLY TO
ATTN OF: EM-421 (W. A. Williams, 903-8149)
SUBJECT: Authorization for Remedial Action at the Former Baker Brothers Site in Toledo, Ohio
TO: L. Price, OR

The former Baker Brothers, Inc. site, located at 2551-2555 Harleau Place in Toledo, Ohio, is designated for remedial action under the Formerly Utilized Sites Remedial Action Program (FUSRAP). The owners of the site are currently Romanoff Industries and John Rehkopf. This designation is based on the results of a radiological survey and conclusions from an authority review as noted in the attached Designation Summary. Copies of the radiological survey report and authority determination are provided for information.

The site has been assigned a low priority under FUSRAP protocol. The survey concluded that the property contains residual radioactive contaminants in concentrations that exceed current guidelines. However, the radioactivity is localized and limited in extent, and under present conditions and use, no significant radiation exposures would occur to individuals who access the area. Because of the limited extent of the radiological contamination, cleanup of the site may be accomplished using the expedited removal action.

The effect of this designation on the FUSRAP baseline should be evaluated, documented, and submitted for approval under the baseline change control procedures.



James W. Wagoner II
Director
Division of Off-Site Programs
Office of Eastern Area Programs
Office of Environmental Restoration

Attachments

INTRODUCTION

The Department of Energy (DOE), Office of Environmental Restoration, has reviewed the past activities of the Manhattan Engineer District (MED) at the former Baker Brothers, Incorporated, site in Toledo, Ohio, and has completed a radiological survey of the site (Foley and Floyd, 1992). DOE has determined that the residual radioactive materials inside and outside the buildings exceed current guidelines (USDOE, 1987, 1990) for use without radiological restrictions.

Based on a review of the available historical documentation and the results of the survey, the DOE has concluded that this site shall be designated for remedial action under the Formerly Utilized Sites Remedial Action Program (FUSRAP). The site has been assigned a low priority as the survey results indicate that the residual radioactivity is limited in extent and poses no immediate risk to workers. The remainder of this report summarizes the site information and the designation decision.

BACKGROUND

Site Function

The following discussion is based upon the Authority Review (Williams 1992).

After developmental work to determine the machining characteristics of uranium metal, DuPont (as agent for Manhattan Engineering District) initiated a search for additional machining facilities so that the fabrication of 100 tons of uranium metal slugs for the Clinton Semi-Works could be completed by September 1, 1943. Baker Brothers was one of several selected from a field of over 40 metal fabrication shops contacted that appeared capable of handling the work to satisfy developmental, production, and security requirements. Purchase Order XPG-528 1/2 was placed with Baker Brothers on May 29, 1943, for a portion of the total machining required. However, there are indications that operations under this purchase order did not begin until early June 1943. Another purchase order (XPG-1768 1/2) was apparently placed with Baker Brothers to provide for medical support costs.

According to a University of Chicago Metallurgical Laboratory Health Division report of a visit to the Baker Brothers facility on June 21, 1943, four lathes were being used to machine uranium rods. The report also indicated that operations at the facility were expected to continue for no longer than 6 to 8 weeks. Although documentation describing specific quantities of material handled has not been found, it is apparent that they machined most of the initial 100-ton requirement for Clinton slugs and a part of an additional 30-ton requirement for slugs before completion of the work under these purchase orders in October 1943. However, prior to completion of this work, DuPont placed Purchase Order RPG-800 1/2 with Baker Brothers for approximately 500 hours of machining work in connection with the slug development program for Hanford.

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Designation Summary Baker Brothers, Toledo

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In early 1944, two more purchase orders were accepted by Baker Brothers. The first, XPG-1795 1/2, was for grooving and refacing 15 tons of rejected Clinton slugs; and the second, RPG-4014 1/2, was to conduct 24-hour-per-day operations, along with two other machining contractors, to fabricate 48,000 unbonded Hanford slugs. The former was completed in April 1944, and the latter, initiated in May 1944, was completed by July 1944. Purchase Orders placed with Baker Brothers (RPG-1907 1/2) and a Dr. H. Holmes (RPG-5390 1/2) were apparently to provide for the cost of medical services in connection with the work done in support of the Hanford slug procurement program.

Site Description

The Baker Brothers site is located in Toledo, Ohio, at 2551-2555 Harleau Place, at the intersection with Post Street. At the time of the metal fabrication work at Baker Brothers, the commercial site consisted of several 1920s buildings of brick with saw-tooth roof and concrete floors. It was bounded to the northwest by several railroad tracks; a siding entered the site. One of the buildings was completely refurbished after a fire. (Foley and Floyd 1992)

In 1981, three of the four buildings used by Baker Brothers remained.

Owner History

During the 1940s, Baker Brothers, Inc., owned the site. Eventually the Baker Brothers assets were liquidated and the machinery and equipment sold at auction. (Foley and Floyd 1992)

As of 1990, the original property had been divided and, at the time of the survey, was owned by Romanoff Industries and by Mr. John Rehkopf. The occupants of the Romanoff property included the Doug Beet Company (a motor brokerage) and REMS, Inc., a division of Siemens-Allis. The Doug Beet Company also occupied the Rehkopf property.

Radiological History and Status

The following discussion is based upon the Authority Review (Williams 1992).

Although records are available that indicate several visits or inspections of Baker Brothers' facilities by the medical staff of the Metallurgical Laboratory during the machining operations, no record has been found of the final inspection and cleanup of these facilities when the work described above was completed. (Williams 1992)

In April 1981, a preliminary radiological survey of the site was conducted by DOE and Argonne National Laboratory staffs. At the time, three of the four buildings used by Baker Brothers remained. The results indicated some radioactive contamination in a wooden bin in one building and on the floor and a wall in another building.

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DOE directed that a comprehensive radiological survey be performed of the former Baker Brothers site. In 1989 and 1990, the Oak Ridge National Laboratory conducted a survey of the site - - indoors, outdoors, soil, floors, roofs, and outdoor subsurface. The results revealed several outdoor areas with soil contaminated by radionuclides (primarily uranium-238) in concentrations in excess of DOE guidelines as well as one small area indoors with debris and surface contamination in excess of DOE guidelines (USDOE 1987).

Authority Review

In 1992, the DOE determined that it had the authority to conduct remedial action at the site (USDOE 1986; Williams 1992). This determination of authority under FUSRAP was based upon the following significant factors.

- o Available records indicate that Baker Brothers was likely to have been directly supervised by MED or its prime contractors and that MED staff were directly involved in the arrangements to use the facility.
- o As a part of the operations at the site, there were strict requirements concerning security, accountability, health, and safety. These were controlled by MED or its prime contractors. The MED paid for local medical services to support the project.
- o The uranium machined at the site was furnished by the government.
- o Some residual contamination from the uranium machining is present at the site at levels exceeding DOE guidelines.

An earlier contingent authority determination, dated October 28, 1985, found that, in the event that residual radioactive contamination above DOE guidelines is identified on the sites, DOE had authority to perform remedial action at a group of MED metal fabrication contractor sites, including Baker Brothers. Since this earlier determination, DOE has surveyed the Baker Brothers site and identified areas of residual radioactive contamination above DOE guidelines on the site.

DESIGNATION DETERMINATION

The results of the radiological survey indicate that contamination in excess of DOE guidelines exists in several localized areas inside and outside of the buildings on the site. The survey report noted that, under current use, there is no significant risk to workers or to the general public from the residual contamination at the site.

Designation Summary
Baker Brothers, Toledo

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The DOE has authority to conduct remedial action at the site under FUSRAP. This authority is based on prime contractor and MED use of the site and control of operations. As current use of the site will not result in doses in excess of guidelines, and because potential health risk and spread of contamination are remote, the site is designated as a low priority site.

REFERENCES

Foley, R.D. and L.M. Floyd, 1992: Results of the Radiological Site Survey Report of REMS, Inc., formerly Baker Brothers, Inc., 2551-2555 Harleau Place, Toledo, Ohio (BTO001). ORNL/RASA-90/8, Oak Ridge National Laboratory, Oak Ridge, Tennessee, March.

United States Department of Energy (USDOE), 1986: Formerly Utilized Sites Remedial Action Program, Summary Protocol, Identification - Characterization - Designation - Remedial Action - Certification. Office of Nuclear Energy, January.

USDOE, 1987: U.S. Department of Energy Guidelines for Residual Radioactive Material at Formerly Utilized Sites Remedial Action Program and Remote Surplus Facilities Management Program Sites. Revision 2, Office of Nuclear Energy, March.

USDOE, 1990: Radiation Protection of the Public and the Environment. DOE Order 5400.5. Office of Environment, Safety, and Health, February 8.

Williams, W.A., 1992: Authority Review for the Baker Brothers, Incorporated, in Toledo, Ohio. USDOE, April 9.



ORNL/RASA-90/8

**OAK RIDGE
NATIONAL
LABORATORY**

MARTIN MARIETTA

**RADIOLOGICAL SURVEY OF THE
FORMER BAKER BROTHERS, INC.
SITE, 2551-2555 HARLEAU
PLACE, TOLEDO, OHIO
(BTO001)**

R. D. Foley
L. M. Floyd

**MANAGED BY
MARTIN MARIETTA ENERGY SYSTEMS, INC.
FOR THE UNITED STATES
DEPARTMENT OF ENERGY**

bcc:
Weston

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Williams Reader

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M. White Review: MW 10/1

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**FORMERLY UTILIZED SITES
REMEDIAL ACTION PROGRAM**

**DESIGNATION SUMMARY
FOR BAKER BROTHERS, INCORPORATED
TOLEDO, OHIO**

June 12, 1992

U.S. Department of Energy
Office of Environmental Restoration

**Designation Summary
Baker Brothers, Toledo**

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memorandum

JUN 4 1992

DATE:

REPLY TO
ATTN OF:

EM-421 (W. A. Williams, 903-8149)

SUBJECT:

Authority Determination -- Former Baker Brothers, Inc. Site, Toledo, Ohio

TO:

The File

The attached review documents the basis for determining whether DOE has authority for taking remedial action at the former Baker Brothers, Inc. facility in Toledo, Ohio. under the Formerly Utilized Sites Remedial Action Program (FUSRAP). The facility was used for the shaping of uranium by the Manhattan Engineer District (MED) during the Second World War. The following factors are significant in reaching a decision and are discussed in more detail in the attached authority review:

- o Baker Brothers, Inc. was likely to have been closely controlled by the Manhattan Engineer District directly through the approval of contracts and purchase orders or indirectly through prime contractors;
- o There were significant security requirements in all activities involving uranium during this time period;
- o The uranium residues at the site are clearly the result of the uranium metal machining;
- o The uranium metal was furnished by the government;
- o The MED retained responsibility for health and safety protection and paid for medical services relating to the project;
- o In all likelihood, the contractor had no knowledge of the nature of hazards associated with the handling of uranium metal; and
- o An authority review in 1985 found that DOE had authority for remedial action at this and other metal fabrication sites.

A draft copy of the attached authority review was furnished to the Office of General Counsel, which had no comments.

06/04/92

Authority Review
C.H. Schnoor & Company, Springdale

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After review of the available original records and the authority review, I have determined that the Department of Energy has authority to conduct remedial action at the former Baker Brothers, Inc. facility in Toledo, Ohio.



W. Alexander Williams, PhD
Designation and Certification Manager
Division of Off-Site Programs
Office of Eastern Area Programs
Office of Environmental Restoration

Attachment

cc:
S. Miller, GC-11

06/04/92

Authority Review
C.H. Schnoor & Company, Springdale

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Weston

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EM-40 (2)

EM-42 (3)

Williams Reader *WJ*

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**Authority Review for the
Baker Brothers, Incorporated
in Toledo, Ohio**

1. INTRODUCTION

As part of the Formerly Utilized Sites Remedial Action Program (FUSRAP), the U.S. Department of Energy (DOE) has reviewed available information on the Baker Brothers, Incorporated site in Toledo, Ohio. This site is being investigated as a candidate for inclusion in the FUSRAP, which includes certain sites that were previously involved with activities of the Manhattan Engineering District (MED) or U.S. Atomic Energy Commission (AEC), both DOE predecessors. Such sites may require remedial action, if they have residual contamination from those previous activities. This review is conducted to determine whether DOE would have the authority to conduct remedial action at the Baker Brothers site.

The site is located at 2551-2555 Harleau Place at the intersection with Post Street in Toledo, Ohio. Baker Brothers was a metal fabricator involved with machining uranium rods to produce finished slugs (feed material for production reactors) under purchase orders for the MED through I.E. du Pont de Nemours and Company (DuPont), an MED prime contractor. The period of interest is 1943 through 1944.

This review was prepared to finalize a previous finding for authority that was made contingent upon a determination that remedial action is required (Whitman 1985). The determination that remedial action is required is based upon the results of a comprehensive radiological survey of the property conducted by the Oak Ridge National Laboratory (Foley and Floyd 1992).

The remainder of this review consists of the following sections:

2. Operational History
3. Current Conditions
4. Authority Analysis
5. Discussion and Conclusions
6. Copies of References

The information presented in these sections is in summary form. Pertinent references are identified in the text and provided in Section 6 for further use.

2. OPERATIONAL HISTORY

After developmental work to determine the machining characteristics of uranium metal, DuPont initiated a search for additional machining facilities so that the fabrication of 100 tons of slugs for the Clinton Semi-Works could be

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completed by September 1, 1943. Baker Brothers was the only one of approximately 40 metal fabrication shops contacted that appeared capable of handling the work to satisfy developmental, production, and security requirements. Purchase Order XPG-528 1/2 was placed with Baker Brothers on May 29, 1943, for a portion of the total machining required. However, there are indications that operations under this purchase order did not begin until early June 1943. Another purchase order (XPG-1768 1/2) was apparently placed with Baker Brothers to provide for medical support costs (Whitman 1985).

According to a University of Chicago Metallurgical Laboratory Health Division report of a visit to the Baker Brothers facility on June 21, 1943, four lathes were being used to machine uranium rod. The report also indicated that operations at the facility were expected to continue for no longer than 6 to 8 weeks. Although documentation describing specific quantities of material handled has not been found, it is apparent that they machined most of the initial 100-ton requirement for Clinton slugs, and a part of an additional 30-ton requirement for slugs machined to the standard Clinton specification, before completion of the work under these purchase orders in October 1943. However, prior to completion of this work, DuPont placed Purchase Order RPG-800 1/2 with Baker Brothers for approximately 500 hours of machining work in connection with the slug development program for Hanford (Whitman 1985).

In early 1944, two more purchase orders were accepted. The first, XPG-1795 1/2, was for grooving and refacing 15 tons of rejected Clinton slugs; and the second, RPG-4014 1/2, was to conduct 24-hour-per-day operations, along with two other machining contractors, to fabricate 48,000 unbonded Hanford slugs. The former was completed in April 1944, and the latter, initiated in May 1944, was completed by July 1944. Purchase Orders placed with Baker Brothers (RPG-1907 1/2) and a Dr. H. Holmes (RPG-5390 1/2) were apparently to provide for the cost of medical services in connection with the work done in support of the Hanford slug procurement program (Whitman 1985).

By April 1944, the slug procurement program for the Clinton Semi-Works was completed, and by July 1944, facilities had been completed at Hanford to produce their own feed materials. No evidence has been found that would indicate a continuation of Baker Brothers' participation in MED programs beyond July 1944 (Whitman 1985). Although records are available that indicate several visits or inspections of this contractor's facilities by the medical staff of the Metallurgical Laboratory during the machining operations, no record has been found of the final inspection and cleanup of these facilities when the work described above was completed.

As indicated above, Baker Brothers was one of several commercial metal fabrication firms that participated in the MED slug procurement program under purchase orders and subcontracts with the University of Chicago (Metallurgical Laboratory) and DuPont. The following summary of conditions that prevailed during the period is significant to a basic understanding of the manner in which this procurement program was conducted (Whitman 1985).

- a. Metal fabrication and other services were procured through subcontracts and/or purchase orders initiated by the University of Chicago and DuPont and approved by a government contracting officer. In most instances,

information on the services purchased reflected on purchase orders and subcontracts was limited, probably to prevent classification of the document. In at least one instance, uranium metal was identified only as "special metal" and in other instances as metal rods or tubes.

- b. Equipment and facilities used were contractor owned and operated. And, in most instances, contractual arrangements were for the use of manpower and equipment to perform work specified under the direction and control of the MED or its agent.
- c. During the initial phase of the program in the early 1940's, contractors or site operators had little or no knowledge of the materials processed or the potential hazards associated with the handling or working with the radioactive materials. The MED was responsible for identification of the hazards, monitoring the work place and health of workers in the contractor's plants, and making specific recommendations for measures to protect the workers against the hazards of handling radioactive materials.
- d. Radioactive material furnished the contractors or site operators were government owned. Both finished product and scrap (residue) remained the property of the government. Accountability was such that every effort was made to balance the amount of metal delivered to the contractors with the finished product and the scrap recovered.

At the time of the metal fabrication work at Baker Brothers, the commercial site consisted of several 1920s buildings of brick with saw-tooth roof and concrete floors. It was bounded to the northwest by several railroad tracks; a siding entered the site. Eventually the Baker Brothers assets were liquidated and the machinery and equipment sold at auction. One of the buildings was completely refurbished after a fire (Foley and Floyd 1992).

As of 1990, the original property had been divided and at the time of the survey, was owned by Romanoff Industries and by Mr. John Rehkopf. The occupants of the Romanoff property included Doug Beet Company (a motor brokerage) and REMS, Inc., a division of Siemens-Allis. The occupant of the Rehkopf property was, also, Doug Beet Company (Foley and Floyd 1992).

3. CURRENT CONDITIONS

In April 1981, a preliminary radiological survey of the site was conducted by DOE and Argonne National Laboratory staffs (ANL 1984). At the time, three of the four buildings used by Baker Brothers remained. The results indicated some radioactive contamination in a wooden bin in one building and on the floor and wall in another building.

DOE directed that a comprehensive radiological survey be performed of the former Baker Brothers site. In 1989 and 1990, the Oak Ridge National Laboratory conducted a survey of the site - indoors, outdoors, soil, floors, roofs, and outdoor subsurface (Foley and Floyd 1992). The results revealed

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several outdoor areas with soil contaminated with radionuclides (primarily uranium-238) in excess of DOE guidelines as well as one small area indoors with debris and surface contamination in excess of DOE guidelines (U.S. Department of Energy Guidelines for Residual Radioactive Material at Formerly Utilized Sites Remedial Action Program and Remote Surplus Facilities Management Program Sites. Revision 2, March 1987).

4.0 AUTHORITY ANALYSIS

The authority determination is made according to the FUSRAP protocol by considering the answers to five questions based on available records. The answers to these questions from a review of available information, including the results of the radiation surveys are provided below.

4.1 Was the site/operation owned by a DOE predecessor or did a DOE predecessor have significant control over the operations or site?

No. A DOE predecessor never owned the site. Although information pertaining to operations at the site during the time metal fabrication services were performed for the MED is limited, it is likely that the MED and/or its agents exercised significant control over the operations, including the handling and control of the uranium metal during the fabrication process.

4.2 Was a DOE predecessor agency responsible for maintaining or ensuring the environmental integrity of the site (i.e., was it responsible for clean up)?

No records addressing environmental integrity have been located. However, as with other metal fabrication sites during the era, DOE predecessors appear to have been responsible for health and safety during the fabrication process.

4.3 Is the waste or radioactive material on the site the result of DOE predecessor related operations?

Yes. No information has been discovered that would indicate the presence of radioactive material on the site except for the uranium metal that was processed for the MED.

4.4 Is the site in need of further clean up and was the site left in non-acceptable condition as a result of DOE predecessor related activities?

Yes. The radioactive contaminant found on the site is uranium-238, both indoors and outdoors. It is present in concentrations exceeding the site-specific guidelines developed for other sites containing similar contaminants for use without radiological restrictions. The radioactive contamination found on the site is most likely the result of metal fabrication services performed on uranium metal for the MED in 1943 and 1944.

4.5 Did the present owner accept responsibility for the site with knowledge of its contaminated condition and that additional remedial measures are necessary before the site is acceptable for use without radiological restrictions?

There is no indication that the present owner was aware of the radioactive contamination on the site prior to its discovery by DOE.

5. DISCUSSION AND CONCLUSIONS

Surveys of the former Baker Brothers site indicate uranium contamination attributed to machining of uranium for the MED.

Based upon the results of the surveys, interviews with the current site owner, and information contained in a previous authority review that addressed metal fabrication services performed under purchase order or subcontract with MED or its agent by a number of commercial firms during the period, there is sufficient evidence to indicate authority for remedial action at the former Baker Brothers site under the Atomic Energy Act through FUSRAP.

6. COPIES OF REFERENCES

The following is the list of references that are provided in this section.

- a. Argonne National Laboratory, 1984: Notes and Comments, REMS, Inc. (Formerly Baker Brothers, Toledo, Ohio). August 20.
- b. Cloke, H.M., 1943: Visit to Baker Brothers Company, Toledo, Ohio, subcontractor for the DuPont Company. Corps of Engineers memorandum to file regarding security measures. June 7.
- c. Cooper, C.M., 1944: Analyses of Sludge in Lubricating Oil from Baker Brothers. Metallurgical Laboratory memo to Kircher. February 25.
- d. Dunn, R.T., 1943: Transfer of Solid Scrap. Record of shipping signed by DuPont and U.S. Government representative.
- e. Foley, R.D. and L.M. Floyd, 1992: Results of the Radiological Site Survey Report of REMS, Inc., formerly Baker Brothers, Inc., 2551-2555 Harleau Place, Toledo, Ohio (BT0001). ORNL/RASA-90/8, Oak Ridge National Laboratory, Oak Ridge, Tennessee. March, 1992.
- f. Greninger, A.B., 1943. Metallurgical Laboratory letter to Daniels, DuPont, regarding the shipment of 1009.5 pounds of metal from Baker Brothers. December 28.
- g. Greninger, A.B., 1944. Metallurgical Laboratory letter to Collins, Clinton Laboratory, regarding shipment of 500 feet of bar stock to Baker Brothers. January 11.

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Baker Brothers, Toledo

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- h. Kircher, C.E., 1944: Analysis of Sludge in Lubricating Oil from Baker Brothers. Metallurgical Laboratory memo to Cooper. April 12.
- i. Morse, R.D., 1944. Corps of Engineers letter to Shinn and Todd, Revere Copper and Brass, regarding close out of the Clinton machining work at Baker Brothers. August 1.
- j. Muller, P.M., 1944: Scrap Metal Available for Recasting from 27 January to 27 April 1944. January 28.
- k. Nickson, J.J., 1943. Metallurgical Laboratory letter to Daniels, DuPont, regarding health and safety conditions related to machining operations at Baker Brothers. June 29.
- l. Vierzba, E.A., 1981: Contract Report: Baker Brothers, Inc., Toledo, Ohio. Aerospace letter to Mott, DOE. January 20.
- m. Whitman, A., 1985. DOE letter to A. Wallo, Aerospace, regarding authority decision for a number of sites (including Baker Brothers). Attached authority recommendation from C. Young to A. Whitman, Authority Review - Metal Fabrication Contractor Sites, September 1985. October 28.

06/04/92