Appendix A
Safety Evaluation of the Transfer Cask

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Summary

As stated in the ISF Facility Safety Analysis Report (SAR), Peach Bottom casks PB-1 and PB-2 (also known as CA-SF-006 and CA-SF-005, respectively) will be used to transfer spent nuclear fuel (SNF) from Idaho National Laboratory (INL) dry fuel storage facilities to the ISF Facility. The SNF transfer to the ISF Facility occurs solely within the DOE-ID controlled boundaries of INL over a distance of approximately 500 yards and does not involve the use of public roadways.

The analyses presented in this Appendix demonstrate the Peach Bottom transfer cask's ability to provide geometry control, configuration control, and shielding of the SNF for all credible accidents during transfer from the nearby INTEC to the ISF Facility.

This Appendix is organized in the format of Nuclear Regulatory Commission (NRC) Regulatory Guide 3.48, Revision 1, *Standard Format and Content for the Safety Analysis Report for an Independent Spent Fuel Storage Installation or Monitored Retrievable Storage Installation (Dry Storage)*, issued August 1989, and follows closely the main sections and subsections of the ISF Facility SAR.

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1.0 INTRODUCTION AND GENERAL DESCRIPTION OF INSTALLATION

1.1 INTRODUCTION

The ISF Facility to be constructed at the INL is described in the ISF Facility SAR. The purpose of the ISF Facility is to repackage four types of SNF and to store the repackaged SNF until the geological repository is available. The SNF will be transferred to the ISF facility using two existing Peach Bottom casks (PB-1 and PB-2). The purpose of this Appendix is to demonstrate that the Peach Bottom casks meet the requirements of 10 CFR 72 for use as transfer casks. These casks will be used to transfer the four SNF types described below:

a) Peach Bottom high-temperature gas-cooled reactor (HTGR) Core 1

b) Peach Bottom HTGR Core 2

c) Shippingport light-water breeder reactor (LWBR) reflector modules and loose rods

d) Training, Research, Isotope Production, General Atomics (TRIGA) aluminum clad and steel clad fuel

Section 3.1.1 of the ISF Facility SAR provides detailed physical and historical descriptions of the four SNF types. Figures A-1 through A-4 provide a pictorial description of the fuel transfer process.

When the ISF Facility is completed and operational, the SNF identified above will be transferred to it from INTEC using the Peach Bottom casks. The SNF transfer will occur over a distance of approximately 500 yards along INL site roads. No public highways will be affected. Should an off-normal or accident event occur during transfer of a loaded Peach Bottom cask to the ISF Facility, the cask and contents can be returned to the appropriate INTEC facility for unloading and inspection, as appropriate.

The fuel has either been placed, or will be placed, in one of several different fuel type-specific containers prior to being loaded in the Peach Bottom casks. Following receipt of the transfer cask at the ISF Facility, the cask will be up righted, removed from its transportation trailer, and placed in the ISF Facility cask trolley. Using the trolley, the cask will be moved underneath the Fuel Packaging Area (FPA) fuel transfer port, the cask lid removed, and the fuel containers removed. After the fuel is removed, the lid will be replaced and the Peach Bottom cask will then be moved back to the receipt area, placed on the transportation trailer and returned for reuse. This process is described in detail in Chapter 5 of the ISF Facility SAR.

The Peach Bottom casks are used only on the DOE INL site under DOE-ID's transportation and packaging program. They are not licensed under either 10 CFR 72 or 10 CFR 71, although both casks were fabricated under an NRC Certificate of Compliance (USA/6375/B()F) in the 1970's. DOE-ID has developed analyses that have been used to bound the ISF Facility receipt and handling of the DOE-ID Peach Bottom casks. The analyses and documents provided by DOE-ID include:

a) drop scenarios for the PB Casks and fuel containers (Ref A-2 through A-6 and A-8)

b) dose calculations for SNF drop accidents (Ref A-7)

c) shipping configurations for the SNF (Ref. A-9 through A-12)

d) criticality safety evaluations (Ref A-13 and A-14).

This document constitutes Appendix A of the ISF Facility SAR, and each chapter follows the same overall format as the SAR.

1.2 GENERAL DESCRIPTION OF INSTALLATION

1.2.1 Arrangement of Major Structures and Equipment

Details on the ISF Facility are provided in the ISF Facility SAR, Chapter 1. Information specific to the Peach Bottom casks and the transportation trailer is provided below.

Figures A-5 and A-6 depict the PB-2 cask and its subcomponents. Figure A-7 depicts an alternate cask lid that is used by DOE-ID for the Peach Bottom core 1 fuel transfers. Drawings for the PB-1 cask are not available from DOE-ID; however, the two casks have been confirmed to be nearly identical, with the exception of the distance between the top and bottom pairs of trunnions. DOE-ID performed field verification of the PB-1 and PB-2 cask configurations in conjunction with DOE-ID's preparation of the cask safety analyses and the results of these field measurements are provided on Figures A-32 through A-34.

Figures A-8 through A-10 document the DOE-ID design for a liner/overpack insert to be used for the Peach Bottom Core 2 and TRIGA fuels. These fuels are stored at the Irradiated Fuel Storage Facility (IFSF), located within the Idaho Nuclear Technology and Engineering Center (INTEC), in unsealed 18-inch diameter containers. Since the IFSF canister diameter is smaller than the cask inner cavity, an inner liner/overpack is required to center and contain the IFSF canister within the Peach Bottom cask.

Figure A-11 illustrates DOE-ID Trailer No. 71808 and its subcomponents. Trailer No. 71808 is a flatbed-type transporter. This transporter will be used to transfer only the PB-1 cask because of the difference in trunnion locations between the two casks.

Figures A-12 and A-13 illustrate DOE-ID Trailer No. E-71801, a 40-ton low-bed, or lowboy-type, trailer and its subcomponents. This transporter can accommodate either a PB-1 or the PB-2 cask since the location of its front trunnion supports is adjustable to meet the dimensional requirements of either cask.

The Interface Control Diagrams (Figures A-1 through A-4) depict the relationship between the casks and the transporters.

1.3 GENERAL SYSTEMS DESCRIPTION

1.3.1 Storage Systems

Not applicable to the Peach Bottom transfer cask.

1.3.2 Transfer Systems

1.3.2.1 Transfer Cask

The PB-1 and PB-2 casks will be used for onsite transfer of SNF from dry fuel storage facilities at the INTEC to the ISF Facility. These casks provide shielding and protection from potential hazards. The casks were designed for a maximum payload weight of 10,000 pounds. The PB-2 cask and its subcomponents are depicted in Figures A-5 through A-7. The casks were originally designed to provide sufficient shielding to ensure that dose rates resulting from shipping the Peach Bottom fuels were maintained below 10 CFR Part 71 regulatory limits. Four lifting trunnions are provided for handling the casks at the ISF Facility. The upper two trunnions are intended for lifting the casks; the lower two trunnions are used to pivot the casks about the lower cask cradle on the trailers. Additional design details of the casks are provided in Section 4.7 of this Appendix.

1.3.2.2 Transfer Equipment

Two transport vehicles are planned to be used for onsite transfer of the Peach Bottom casks. Trailer No. 71808, a flatbed trailer (Figure A-11), or Trailer No. E-71801 (Figures A-12 and A-13) can be used to transport either PB-1 or PB-2.

The petroleum fuel content of the transporter tractor used to place the trailers in the ISF Cask Receipt Area will be administratively controlled to minimize the consequences of fire. Refer to the ISF Facility SAR, Chapters 4 and 8.

1.3.3 Auxiliary Systems

Not applicable to the Peach Bottom transfer cask.

1.3.4 System Operation

Transfer system operations for the four SNF types are depicted in the Interface Control Diagrams (Figures A-1 through A-4).

1.3.5 Arrangement of Storage Structures

Not applicable to the Peach Bottom transfer cask.

1.4 IDENTIFICATION OF AGENTS AND CONTRACTORS

The DOE-ID site support contractor is responsible to DOE-ID for maintaining the Peach Bottom casks. The support contractor is also responsible for loading the cask with SNF at INTEC, transferring the cask to the ISF Facility, and returning the cask to the INTEC after the fuel has been unloaded.

1.5 MATERIAL INCORPORATED BY REFERENCE

This SAR appendix is self-contained and does not incorporate any topical reports or documents submitted in other applications by reference.

2.0 SITE CHARACTERISTICS

This topic is addressed in the ISF Facility SAR Chapter 2.

3.0 PRINCIPAL DESIGN CRITERIA

3.1 PURPOSE OF INSTALLATION

This topic is addressed in the ISF Facility SAR Section 3.1.

3.2 STRUCTURAL AND MECHANICAL SAFETY CRITERIA

The Transfer Cask is classified Important to Safety (ITS). Structural and mechanical transportation safety criteria are established for geometry control, configuration control, confinement barrier, and shielding of the SNF to ensure criticality safety and radiation protection are maintained. Postulated accidents associated with movement of the transfer cask within the ISF Facility are considered to be of low probability and consequences due to the slow speed of travel, short travel distance, and administrative controls and procedures that will be in place during cask movement. Transfer accidents within the ISF Facility are bounded by the analyses that addresses the transfer from the fuel storage location within INTEC to the ISF Facility. The PB Cask designs, evaluations and procedures are summarized or referenced in the appropriate sections of this Appendix. These summaries or references demonstrate that the PB casks provides geometry control, configuration control, confinement barrier, and shielding of the SNF for all credible accidents within the ISF Facility during transfer from the nearby INTEC facility.

3.3 SAFETY PROTECTION SYSTEMS

3.3.1 General

This topic is addressed in ISF Facility SAR, Chapter 3.

3.3.2 Protection by Multiple Confinement Barriers and Systems

3.3.2.1 Confinement Barriers and Systems

Confinement barriers related to the Peach Bottom cask are discussed below. Additional discussion of ISF confinement boundaries is provided in Chapter 3 of the ISF Facility SAR.

3.3.2.1.1 Existing DOE-ID Transfer Cask

The Transfer Casks serve as the SNF confinement barriers and system from the time the transfer cask arrives at the ISF site boundary until the transfer cask lid is removed and the fuel containers are lifted from the cask into the ISF Facility Fuel Packaging Area (FPA).

The SNF containers are loaded into the Peach Bottom cask at the INTEC for transfer to the ISF Facility. After loading the container in the cask, the cask lid is bolted in place. Within the ISF Facility the confinement barriers provided by the Peach Bottom cask are protected by the following facility design criteria and features:

a) The Transfer Cask is handled with a single-failure-proof crane and lifting device while in the Cask Receipt Area. These components meet the applicable requirements of NUREG-0554 (Ref. A-18), NUREG-0612 (Ref A-19), and ANSI N14.6 (Ref A-20). This crane and its supports have been designed to withstand credible accident loads, including seismic forces. Design criteria associated with the Cask Receipt Area crane are discussed in detail in Chapters 3 and 4 of the ISF Facility SAR.

b) The cask is moved within the ISF Facility using a cask trolley that meets the applicable requirements of NUREG-0554, NUREG-0612, and ANSI N14.6 for the control of heavy loads. This trolley has been designed to restrain the cask and prevent overturning under credible accident conditions, including seismic loads. Design criteria associated with the cask trolley are discussed in detail in Chapters 3 and 4 of the ISF Facility SAR.

c) The structure of the ISF Facility Transfer Tunnel provides protection from credible accident conditions, including seismic events, and tornado winds and missiles. Design criteria associated with ISF Facility reinforced concrete structures are discussed in detail in Chapters 3 and 4 of the ISF Facility SAR.

The direct dose through the composite walls and lids of the Transfer Cask has been considered in the estimate of the overall dose for workers at the ISF Facility. For the cask, worker dose was estimated by a combination of the amount and type of fuel in a given shipment, the internal packaging configuration and self-shielding within the cask, and the time between arrival of the cask at the ISF Facility, unloading of the cask from the heavy haul trailer onto the cask trolley, and placement of the cask trolley inside the Transfer Tunnel. The overall dose associated with ISF Facility operations is discussed in Section 7.4.1 of the SAR. A summary of the occupational doses for ISF Facility fuel handling operations, which includes transfer cask operations, is provided in Table 7.4-2 of the SAR.

Damage caused by postulated accidents and natural phenomena, related to the confinement barrier provided by the Peach Bottom cask are considered to be bounded by the Peach Bottom cask and fuel container drop analyses (Ref A-2 through A-6). A discussion of the credible Transfer Cask accidents is presented in Section 8.2.2 of this Appendix.

Dose calculations have been performed to predict the radiological consequences resulting from a SNF drop accident (Ref A-7). This evaluation used the Radiological Safety Analysis Computer Program, RSAC-6 (Ref A-21), to calculate the dose for each accident scenario. Each of the four fuel types was evaluated and the bounding dose rate at the ISF Facility Controlled Area Boundary (13,700 meters) was associated with the dropping of a PB Cask containing 18 Peach Bottom Core 1 elements.

In the dose evaluations for this bounding analysis, the following were assumed:

a) 25% of the fuel is assumed to have fractured or broken to the point that powder exists in the fuel following the drop event.
b) An airborne release fraction of 0.1% is assumed to have become airborne from the fuel that has broken into powder.
c) The Peach Bottom cask was assumed to further limit the airborne release to 0.1%
d) The accident is assumed to occur outside at ground level
e) Class F meteorological stability class with a 1.04 m/s wind speed is used
f) A breathing rate of 3.33×10^{-4} m^3/s is used
g) The individual at the Controlled Area Boundary remains for the entire plume duration.

The highest calculated dose was 2.19×10^{-5} rem TEDE which remains below the limits defined in 10 CFR 72 (Ref. A-15) for normal, off-normal and accident conditions.

3.3.3 Protection by Equipment and Instrumentation Selection

3.3.3.1 Equipment

Key Transfer cask equipment that provides protection or confinement barriers to the SNF is listed in Table A3.3-1. Principal design criteria are also presented in this table. Additional design criteria and further discussions of subsystems and components are provided in Chapters 4, 5, and 8 of this Appendix. Other key equipment that provides protection of the SNF in the ISF Facility is discussed in the ISF Facility SAR, Section 3.3.

3.3.3.2 Instrumentation

The Peach Bottom casks are each fitted with four quick disconnect fittings. These are located within the Peach Bottom cask trunnions (see Figure A-5). A pressure gauge may be inserted into the disconnect fittings to determine if the cask has become pressurized during transfer.

3.3.4 Nuclear Criticality Safety

Nuclear criticality safety criteria are discussed in Section 3.3.4 of the ISF Facility SAR.

Criticality safety evaluations that have been performed (Reference A-13 and A-14) bound the fuel types and shipping configurations that will be used to transfer the SNF to the ISF Facility. Section 4.7.3.4 of this Appendix provides a summary of the results of these analyses.

3.3.5 Radiological Protection

This topic is addressed in the ISF Facility SAR.

3.3.6 Fire and Explosion Protection

This topic is addressed in the ISF Facility SAR.

3.3.7 Materials Handling and Storage

Not applicable to the Peach Bottom cask.

3.3.8 Industrial and Chemical Safety

Not applicable to the Peach Bottom cask.

3.4 CLASSIFICATION OF STRUCTURES, COMPONENTS, AND SYSTEMS

The Peach Bottom Cask has been determined to be an Important to Safety system using the criteria presented in Chapter 3 of the ISF Facility SAR.

3.5 DECOMMISSIONING CONSIDERATIONS

Decommissioning is addressed in the ISF Facility Proposed Decommissioning Plan (Ref A-17).

4.0 INSTALLATION DESIGN

4.1 SUMMARY DESCRIPTION

A summary of the ISF Facility installation design is addressed in Section 4.1 of the ISF Facility SAR. A description of the Peach Bottom transfer cask is discussed in Section 4.7.1.1.

4.2 STORAGE STRUCTURES

Not applicable to the Peach Bottom transfer cask.

4.3 AUXILIARY SYSTEMS

Not applicable to the Peach Bottom transfer cask.

4.4 DECONTAMINATION SYSTEM

Methods and systems for decontamination of the Peach Bottom casks at the ISF Facility are addressed in the ISF Facility SAR, Section 4.4.

4.5 TRANSFER CASK REPAIR AND MAINTENANCE

The ISF Facility does not have shipping cask repair or cask maintenance facilities. Repair and maintenance of this government furnished equipment will be performed by DOE-ID through its support contractor at separate facilities. Repair and maintenance of the ISF Facility's cask lifting hardware is addressed in the ISF Facility SAR, Section 5.1.3.5.

4.5.1 Routine Inspection

Routine inspection requirements for the Peach Bottom cask will be performed in accordance with DOE-ID’s established inspection and maintenance program. Generic items for routine inspection include:

a) Visually inspect the cask exterior for cracks, dents, gouges, tears, or damaged bearing surfaces. Particular attention is to be paid to the cask trunnions.

b) Visually inspect all threaded parts and bolts for burrs, chafing, distortion, or other damage.

4.6 CATHODIC PROTECTION

Not applicable to the Peach Bottom transfer cask.

4.7 SPENT FUEL HANDLING OPERATION SYSTEMS

4.7.1 Structural Specifications

Details on structural specifications for structures, systems and components (SSC) that interface with the Peach Bottom cask are provided in Chapter 4 of the ISF Facility SAR. The following sections focus on the structural specifications for the Peach Bottom cask.

4.7.1.1 Peach Bottom Casks

The Peach Bottom casks were fabricated and maintained, under Certificate of Compliance (COC) USA/6375/B()F (Ref A-23) for over-the-road shipment of radioactive material in accordance with 10 CFR 71. The COC for these casks expired on September 30, 1979. Figures A-5 and A-6 are the assembly drawings for the PB-2 cask. The PB-1 and PB-2 configurations were field verified in conjunction with preparation of the cask safety analyses and the results of these field measurements are provided on Figures A-32 through A-34.

Analyses has been performed to demonstrate that the PB-1 and PB-2 transfer casks will survive credible handling accidents associated with the transfer of each of the four SNF from the nearby INTEC (Reference A-2 through A-6, A-13 and A-14). These analyses, coupled with the discussion provided in Chapter 8 of this Appendix, demonstrate that the Peach Bottom casks will provide the necessary geometry control, configuration control, confinement barrier, and shielding of the SNF during transfer operations to ensure that radiation protection and criticality safety requirements of the ISF Facility are met.

Section 8.1 of this Appendix describes the off-normal events analyzed, while Section 8.2 describes the credible accident scenarios associated with receipt and handling of the Peach Bottom cask at the ISF Facility.

Codes and Standards

Based on information contained in the original Safety Analysis Report submitted to the NRC in 1970 (Ref. A-16) resulting in the issuance of the COC (Ref A-23), the Peach Bottom casks welding procedures were "essentially those of the American Society of Mechanical Engineers (ASME) Boiler and Pressure (B&PV) Code Section VIII, Unfired Pressure Vessels, 1962 Edition, and Section IX, Welding Qualifications, 1962 Edition."

Materials of Construction - Original Configuration

The following configuration information is from the original safety analysis report (Ref. A-16) submitted to the NRC for licensing of the casks and information contained in the Safety Analysis Report for INL on-site shipments using the Peach Bottom cask (Ref A-26). The original design layout of the PB-1 shipping cask for transporting irradiated Peach Bottom 1 reactor fuel elements is shown in Figure A-5. The cask had a calculated loaded weight of 62,800 pounds when transporting Peach Bottom fuels. When transporting the maximum contents payload of 10,000 pounds, the cask had a calculated loaded weight of 67,100 pounds. It has an outer diameter of 42.5 inches, and an overall length of 191.12 inches, including impact limiters, and a width across the trunnions of 50.0 inches. The cask internal cavity is 26 inches diameter and 159 inches long. Canned fuel elements were positioned within the cavity in fuel element baskets.

The cylindrical cask body was constructed with a 0.25-inch, Type 304 stainless steel cavity liner, a maximum of 6.25 inches of lead, a 1.50-inch mild steel outer shell, and a 0.25-inch Type 304 stainless steel overlay. The cavity liner was seam-welded and polished to a No. 3 finish. It was welded at both ends to offset cones, which formed cavities for the end closures. The lead is 5.25 inches thick from the bottom of the cavity to 24.5 inches above the bottom; it is 6.25 inches thick from 24.5 inches above the bottom to 134.5 inches above the bottom; and it is 5.25 inches thick over the remainder of the length. Since lead shrinks upon solidification, a patented fin arrangement was used to attach the lead to the inside of the outer shell. The fins bridged the gap between the lead and outer shell and enhance the transfer of heat. A venting device for the head cavity prevents a buildup of excessive pressure from either moisture or lead during a fire-temperature excursion. The stepped outer shell was constructed by welding three coaxial, formed and welded, mild steel cylinders. The overlay was welded to the outer shell at the end of each cylinder, and at cutouts around each trunnion. It was spaced from the outer shell by 1/16-inch spot welded spacers on the outer shell, and served as a heat shield to inhibit lead melting during the hypothetical fire-temperature excursion. A pressure relief plug in the overlay shell prevented a buildup of excessive pressure from moisture.

Guide pins provided final alignment of the cover bolt holes with tapped holes in the ends of the cask body. Twelve 1.25-inch diameter ASTM A325, cadmium-plated steel bolts secured each cover. A silicone-rubber O-ring gasket seal was originally used between the cask seat at each end to provide a secondary containment system for the cask contents during shipment.

Heat rejection is accomplished by conduction through the cask walls and radiation and convection from the cylindrical wall of the cask. The cask was designed to operate either wet or dry. For the purpose of SNF transfers to the ISF Facility, all shipments will be dry.

Four 8-inch diameter lifting and pivoting trunnions were welded to the outer shell. Each trunnion is approximately 4.5 inches in length. A 0.5-inch thick Type 304 stainless steel patch plate was welded to the outer shell at each trunnion for added strength, resulting in an effective trunnion length of 4 inches. The trunnions permit raising the cask from the horizontal to the vertical position and vice versa with minimum effort. They also served as a means of attaching the cask to the transport vehicle-mounting cradle. The trunnions are hollow and provided protective housings for the drain valves, flush valve, pressure gauge, pressure-relief valve, and valve exhaust filter. The pressure relief valve was set at the seal test pressure of 100 psig. Pipe plugs were used as seals for the pressure gauge, vent and drain lines. The open end of the trunnion was covered with a 9-inch diameter, 0.5-inch thick plate attached with six fasteners.

The cask was mounted horizontally and handled during transport using all four trunnions in a structural steel cradle that was designed to spread the load. Trunnion sockets on the vehicle-mounting cradle support and secure the cask trunnions. They allowed rotation of the cask from the vertical to the horizontal shipping position. One set of trunnion sockets was adjustable to accommodate changes in the length of the cask due to temperature changes. Pads on the vehicle-mounting cradle provided additional support to the cask when it was in the horizontal position.

An impact limiter was attached to each end with four of the twelve 1.25-inch cover bolts in order to limit the impact load on the fuel canisters during an accidental drop. The impact limiters were constructed by welding a bundle of 2.5-inch nominal diameter by 18 gauge mechanical tubing between 0.25-inch Type 304 stainless steel plates and enclosing the bundle with a 0.0625-inch Type 304 stainless steel shell as shown in Figure A-5. A 4-inch long skirt extended from the impact limiter over the cask for added resistance to radial motion in a corner drop.

The top and bottom lids had 4 inches of lead sandwiched between two 1.50-inch Type 304 stainless steel plates. The upper lid had a removable center plug, which allowed lifting rods to pass through for lifting and supporting fuel bundles/canisters. This feature will not be used at the ISF Facility. The cask lids are tapered to allow easier alignment in the conical recessed cask openings. The lids were secured to each end of the cask with twelve bolts. Eight of the bolts fit into recesses in the cask lid, and the remaining four bolts were used to attach the external impact limiters to the lids but also thread into the cask body. Four other holes were also provided in the lids: two holes located 180 degrees apart, for seating of the cask guide pins in the lids; and two holes located 180 degrees apart for attachment of lifting rings. The lids are handled by a two-point pickup.

Transfer Cask Configuration for SNF Transfers to the ISF Facility

Impact limiters will not be used due to the short transfer distance to the ISF Facility, except possibly in the case of the TRIGA fuel transfers. In addition, O-ring seals will not be used during fuel transfers to the ISF Facility. A drop evaluation addressing the configuration without impact limiters (Reference A-2) has been performed. Additionally, for shipments of Peach Bottom Core 1 fuel canisters, the top lid of the cask will be replaced. The replacement lid will be 6.25-inch thick, constructed of A36 carbon steel (Figure A-7). For the fuel transfers to the ISF Facility, the transfer casks will utilize ASTM A-276, UNS 21800 (Nitronic 60) bolts for the lids. Where impact limiters are not used, four new, shorter bolts may be installed in the cover in place of those that originally held on the impact limiters.

Table A4.7-1 contains nominal design dimensions and weights for the two Peach Bottom casks for both the original and modified configurations. Table A4.7-2 contains information on the cask materials of construction. Table A4.7-3 contains information on the mechanical properties of the cask materials. Field measurements taken of the Peach Bottom casks can be found on Figures A-32 through A-34.

Fabrication and Inspection

Based on information in the original Safety Analysis submitted to the NRC in 1970, the Peach Bottom shipping casks were fabricated and inspected to the following Battelle Memorial Institute (BMI) procedures and specifications:

- Cask Surface Finish Procedure 748-SF-801
- Welding Procedure for Cask Construction Procedure 748-WP-101 ("essentially those of the American Society of Mechanical Engineers (ASME) Boiler and Pressure (B&PV) Code Section VIII, Unfired Pressure Vessels, 1962 Edition, and Section IX, Welding Qualifications, 1962 Edition"). Based upon a review of the original Safety Analysis prepared by BMI, the 10 CFR 71 Certificate of Compliance (Certificate Number 6375) issued by the NRC, and drawings prepared by BMI, a list of requirements from cited Codes and Standards was developed. Compliance or exceptions to these requirements were also demonstrated. This review identified four specific exceptions to the ASME Code. These four exceptions were with respect to the above welding procedure (two material specifications and two electrode specifications that were not listed in the 1962 Edition of ASME). These exceptions, their justifications, and compensatory measures are provided in Table A4.7-4.
- Liquid Penetrant Inspection 748-PT-201
- Hydrostatic Testing Procedure 738-HT-601
- Pouring Procedure for Lead Shielding 748-LP-1001

- Shielding Integrity Testing Procedure 748-GP-401

Features Covered by QA Program

The original construction and fabrication of the Peach Bottom cask was performed in accordance with the construction specifications and procedures described in the original Safety Analysis Report submitted to the NRC for application of a Certificate of Compliance (Ref. A-16). All Quality Assurance activities associated with the Peach Bottom transfer casks, and the SNF to be transferred therein, will be performed under the ISFSI Quality Assurance Program.

4.7.1.2 Inner Containers

The *DOE Standard for Hoisting and Rigging* (Reference A-22) requires that all structural and mechanical "below-the-hook" lifting devices pass a rated load test such that "the rated load capacity shall not be more than 80 percent of the maximum load sustained during the test." Some of the fuel containers do not have a redundant load path provided, nor have they been demonstrated to meet either the double safety factor criteria identified in the guidance of NUREG-0612, (Reference A-19). For those fuel containers that do not meet the double safety factor criteria, the consequences of a drop event have been evaluated. Section 8.2.2.1 of this Appendix describes the credible accident scenarios associated with receipt and handling of the fuel containers.

Because of the different storage locations and dates of transfer, the fuel elements from each source have been packaged differently. A description of each of the inner containers follows.

4.7.1.2.1 Peach Bottom Core 1 Packaging

Peach Bottom Core 1 fuel assemblies, shown in Figure A-14, were placed in sealed aluminum canisters with stainless steel liners (Figure A-15) at the Peach Bottom Nuclear Station after removal from the reactor. Failed Core 1 fuel assemblies were removed from the reactor with a stainless steel assembly removal tool (ART), and both the tool and fuel element were placed in a sealed canister as shown in Figure A-16. The sealed storage canisters were loaded and sealed in a helium atmosphere and then checked for leaks. If leaks were detected, the entire canister and fuel element were then placed in a second aluminum storage canister ("salvage canister," Figure A-16). A typical loaded storage canister weighs about 150 pounds.

The fuel canisters were shipped to the INL in the Peach Bottom cask. Up to eighteen elements at a time were positioned in the cask by means of a basket assembly (see Figures A-17 and A-18). At INTEC, an entire basket assembly loaded with fuel canisters was lowered into a below-grade drywell. A loaded basket weighs a maximum of 5150 pounds. Forty-six basket assemblies are situated in individual drywells. Removal and canning of the Peach Bottom Core 1 fuel resulted in a number of package types (fuel canisters) that were loaded into the baskets.

Support Plate for Corroded Peach Bottom 1 Fuel Baskets - Since being placed in existing storage, visual inspections using remote television cameras indicate that water has entered the interior of the storage area, causing corrosion of the aluminum basket bottoms, sides of the baskets, and the tops of the fuel canisters. Fairly large corrosion deposits have been visually recorded on the bottoms of the handling baskets and fuel canister tops. It is assumed that all storage configurations have corroded to some extent. To structurally reinforce the aluminum baskets for transfer to the ISF Facility, a new support plate will be installed on the bottom of the existing aluminum baskets (new support plate is not required for stainless steel baskets). The support plate prevents fuel cans from dropping through the corroded basket bottoms in the event of failure. The support plate is connected to a rod that extends through the center tube of the basket. Figures A-21 through A-24 illustrate the overall design and details of the support plate and associated hardware. The connection is made using a remote tool to insert the rod through the penetration in the cask top lid, through the center position of the basket, to the new support plate beneath the basket into which it is threaded and torqued. The new rod also has a threaded lifting fixture at the top, to which a lifting rod can be connected for transferring the fuel basket. The basket will continue to be relied upon to provide lateral support for the canned elements. The support plate has a diameter of 25 inches. It is fabricated of 0.75-inch Type 304 stainless steel plate. The support rod is made of 0.625-inch Nitronic 60 and has a length of 153.5 inches.

4.7.1.2.2 Peach Bottom Core 2 Packaging

Peach Bottom Unit 1 Core 2 fuel elements are stored in unsealed steel canisters at the IFSF. The Core 2 SNF was packaged for shipment using canisters of the same type as those used for Core 1. However, instead of placing the fuel into drywells similar to those used for the Core 1 fuel, all the Core 2 fuel was stored in the IFSF. Since the IFSF storage canisters are approximately 11 feet in length and 18 inches in diameter, once the fuel was received at INTEC, the graphite fuel elements were removed from the aluminum canisters and the upper reflector section was cut from the top of each element. The resulting cropped elements were stored up to 12 per IFSF canister (nominal count is 12 per canister), and the canisters were then placed into IFSF dry storage.

There are two designs of IFSF canisters, each 18 inches in diameter and nominally 11 feet long. The canister bodies are 18-inch diameter Schedule 10 pipe. One of these is A53B carbon steel pipe and the other is Type 304L stainless steel Schedule 10S (0.188 in.) pipe. Each of these incorporates a lid with lifting bail although each has a different mechanism for latching the lid.

The carbon steel IFSF canister is shown in Figure A-25. The lid design reduces air exchange and particulate leakage, but does not provide a confinement seal. Figures A-27 and A-28, show the second, thinner-walled stainless steel IFSF canister. Figure A-29 shows a stainless steel canister design in which one and one-half sectioned Core 1 fuel elements will be placed prior to placement in an IFSF canister and transferred to the ISF Facility.

External visual examinations of the IFSF canisters containing the Core 2 fuel have revealed no pertinent exterior corrosion. No internal inspections have been performed. Little or no corrosion is expected since the fuel was received dry from the Peach Bottom HTGR, and has been in dry storage since the time of receipt.

Because the IFSF canisters containing the Core 2 fuel are not sealed and are smaller than the cask cavity, an inner liner and overpack must be provided for the onsite transfers. Figures A-8 through A-10 show the design for this liner and overpack. This liner and overpack is intended for use in conjunction with the Peach Bottom casks when transferring the Core 2 fuel in IFSF canisters.

4.7.1.2.3 Shippingport Fuel Packaging

After irradiation in the Shippingport reactor, the LWBR fuel was shipped to INL. Fuel rods were removed from selected assemblies for examination at the Expended Core Facility (ECF). Following examination, the fuel and pieces were placed in stainless steel storage canisters (Figures A-35, A-36, and A-37). The LWBR storage canisters are constructed of Type 304 stainless steel. The dimensions are 25.5 inches outer diameter by 158 inches outside length. The canister shell is welded to a girth ring, which contains six 1-inch diameter threaded holes for lifting prior to placement of the canister closure head. A crushable pad with a load spreading plate, upon which the LWBR fuel module rests, sits on the bottom plate of the canister. The closure head is secured with twelve 1-inch diameter bolts, and sealed with a metallic O-ring gasket of silver-plated Inconel. Each closure bolt hole is also sealed with a metallic O-ring. All components are constructed of Type 304 stainless steel.

The irradiated reflector modules were loaded into the LWBR storage canisters under water. Before transfer from the ECF to INTEC, all LWBR reflector modules were dried in accordance with approved ECF procedures using a commercial nuclear-type vacuum drying process. No external heating or other condition methods were applied in conjunction with the vacuum process. After dewatering, the canisters were isolated and monitored for increased internal pressure to verify the completeness of water removal. The canisters were then backfilled with neon gas and leak tested. The canisters were then shipped to INTEC for drywell storage. Only the Shippingport reflector modules and a reflector loose rod canister are to be transferred for storage in the ISF Facility.

No external or internal inspections of the LWBR fuel storage canisters have been performed while in storage at INTEC. Therefore, the actual condition of the canisters and fuel is unknown. However, the assumption is that little or no corrosion can occur inside or outside the canisters because of the pre-storage drying process and because they have been in dry storage ever since. The LWBR Zircaloy cladding is robust, similar zircaloy cladding used in most commercial BWR and PWR fuel and has proven resistant to corrosion both in service and in storage. The Shippingport LWBR modules were also placed into stainless steel liners, dried to remove all liquid water, backfilled with neon gas, and sealed. The CPP-749 vaults, in which these liners are stored, are periodically monitored, and no abnormal gases have been detected. However, an actual gas sample from inside the sealed liners has not been taken since the modules were placed in storage. In addition, dry well temperatures and pressures were monitored for a period of time after receipt of the LWBR storage canisters at INTEC. No abnormal indications were observed.

4.7.1.2.4 TRIGA Fuel Packaging

The ISF Facility is designed to store approximately 1600 TRIGA fuel elements. Over half the TRIGA fuel elements that will be transferred to the ISF are currently stored at INL. These fuel elements are currently stored in canisters in the INTEC IFSF (aluminum and stainless steel clad) and in the INTEC-666 underwater storage basin (stainless steel clad only). The TRIGA elements in the underwater storage basin will be placed in dry storage cans and transferred to the IFSF prior to delivery to the ISF Facility.

DOE-ID continues to receive TRIGA fuel from domestic and foreign sources. All TRIGA fuel accepted for storage at the INTEC must meet the DOE's Foreign Research Reactor Fuel Acceptance Criteria (Ref. A-25), which include inspections for structural failures and corrosion. All TRIGA fuel must first be inspected and accepted for storage at INTEC, prior to all planned transfers from INTEC to the ISF Facility.

In order to facilitate TRIGA fuel loading, transfer, and handling, all stainless steel or aluminum clad TRIGA fuel will be packaged in a standard configuration within the Peach Bottom casks for transfer to the ISF Facility. This will consist of the following can/bucket/canister configuration:

Can: Up to five individual TRIGA SNF elements will be placed in a five position standard TRIGA fuel can (Figure A-38). The pintle used to handle the can is the same as the TRIGA fuel element pintle.

Bucket: Six cans, as described above, will be placed in a TRIGA bucket (Figure A-31 and A-31a). The bucket is approximately 31 inches tall and is handled with a locking hook.

IFSF Canister: Three buckets as described above, will be placed in an IFSF Lighter Weight Storage Canister (Figure A-27 and A-28). In order to maintain configuration control with the Lighter Weight Storage Canister, the following canister gap plug will be utilized.

Canister Gap Plug: A Canister Gap Plug (Figure A-39) will be placed on top of the upper bucket to fill the remaining space in the canister to prevent any significant shifting of the buckets, and preclude/mitigate safety issues when the cask is placed horizontally on the transport trailer for delivery to the ISF Facility. The Canister Gap Plug will have the same lifting fixture, bottom plate, and outer diameter as the TRIGA bucket described above. The weight of the gap plug will be kept to the minimum required to provide the necessary structural integrity and maintain the total loaded weight of the canister below 2000 pounds.

Each shipment will contain up to a maximum of 90 standard stainless and/or aluminum clad TRIGA elements.

As stated previously, the IFSF canisters containing the TRIGA fuel are not sealed and are smaller than the cask cavity. An inner liner and overpack must be provided for the onsite transfers. Figures A-8 through A-10 show the design for this liner. This liner is intended for use in conjunction with the Peach Bottom casks when transferring the TRIGA fuel in IFSF canisters.

4.7.2 Installation Layout

This topic is addressed in the ISF Facility SAR.

4.7.3 Individual Unit Descriptions

4.7.3.1 Functions of Fuel Handling Operational Area

Not applicable to the Peach Bottom transfer cask.

4.7.3.2 Components for Fuel Handling Operations

Not applicable to the Peach Bottom transfer cask.

4.7.3.3 Design Bases and Safety Assurance

Details on the design bases and safety assurances for SSCs that interface with the Peach Bottom cask are provided in Chapter 4 of the ISF Facility SAR. The following sections focus on the design bases and safety assurances for the Peach Bottom cask. Analyses presented are based on information that is relevant to the planned packaging and shipment configurations.

4.7.3.3.1 Structural Evaluation of Cask Trunnions in Accordance with NUREG-0612 Criteria

Purpose

The purpose of this evaluation is to determine the design safety factor with respect to ultimate strength of the Peach Bottom Cask trunnions and demonstrate that they meet the guidance of NUREG-0612.

Criteria

NUREG-0612, *Control of Heavy Loads at Nuclear Power Plants* (Ref. A-19), Section 5.1.6(3) Single-Failure-Proof Handling Systems states:

> *Interfacing lift points such as lifting lugs or cask trunnions should also meet one of the following for heavy loads handled in the area where the crane is to be upgraded unless the effects of a drop of the particular load have been evaluated and shown to satisfy the evaluation criteria of Section 5.1:*
>
> *(a) Provide redundancy or duality such that a single lift point failure will not result in uncontrolled lowering of the load; lift points should have a design safety factor with respect to ultimate strength of five (5) times the maximum combined concurrent static and dynamic load taking the single lift point failure.*
>
> *OR*
>
> *(b) A non-redundant or non-dual lift point system should have a design safety factor of ten (10) times the maximum combined concurrent static and dynamic load.*

Peach Bottom Shipping Cask Information

The maximum package weight is conservatively assumed to be 65,000 (57,100 is the total cask weight without impact limiters + 7,900 is the largest payload weight for use at the ISF Facility) pounds. The trunnions have an outside diameter of 8 inches, and an inside diameter of 6 inches. The trunnion load is applied 2.5 inches from the outer shell of the cask.

The material properties are taken from the Westinghouse Safety Analysis Report (Ref. A-26) and are tabulated below:

Material: Type 304 stainless steel							
Components: Cavity Shell, Trunnions and Trunnion Plates, Outer Shell Overlay, End Plugs, Cask End Plates							
Property	**70°F**	**100°F**	**200°F**	**300°F**	**400°F**	**500°F**	**Units**
S ultimate	75	---	66	62.5	59.0	57.5	10^3 psi
S yield	30	---	26	23.5	21.0	19.5	10^3 psi
E	28.3	---	27.8	27.3	26.7		10^6 psi
α mean	8.46	---	8.79	9.00	9.19		10^{-6}/ F
ρ	0.290						lb/in3
υ	0.3						
Where S ultimate = static ultimate strength (minimum), S yield = static yield strength (minimum), E = Young's Modulus of Elasticity, α mean = coefficient of thermal expansion, ρ = density, υ = Poisson's Ratio.							

Evaluation

There are two pairs of trunnions on the Peach Bottom cask. One pair is used with a special lifting device to rotate, lift and move the cask.

The lifting configuration is classified as a non-redundant or non-dual lift point configuration. Hence, the design safety factor of 10 on ultimate strength is applicable.

Static Load on Trunnion

W = 65,000 pounds (total weight of the package)

P_s = Static load to be supported on each trunnion

$$P = 0.5W = 32{,}500\, lb$$

Dynamic Load on Trunnion

Dynamic load takes into account inertia forces and uncertainties in allowing for other influences. To account for dynamic influences a 15% increase in dead weight is assumed. The 15% factor is based on guidance from Crane Manufacturers Association of America (CMAA-70, Specification 70, *Specifications for Top Running Bridge and Gantry Type Multiple Girder Electric Overhead Traveling Cranes* (Reference A-27).

P_D = Dynamic load to be supported on each trunnion

$$P_D = 0.15P_s = 4{,}875\, lb$$

Load on Trunnion

The load on the trunnion is the sum of the static and dynamic load.

P = Trunnion Load

$$P = P_s + P_D = 37{,}375\, lb$$

Geometric Information for Trunnion

D_o = Outside diameter of trunnion = 8 inches

D_I = Inside diameter of trunnion = 6 inches

r_o = Trunnion outer radius = $D_o/2$ = 4 inches

I = Moment of inertia of trunnion

$$I = \frac{\pi\left(D_o^4 - D_i^4\right)}{64} = \frac{\pi\left(8^4 - 6^4\right)}{64} = 137.4\ in^4$$

A = Area of cross-section of trunnion

$$A = \frac{\pi\left(D_o^2 - D_i^2\right)}{4} = \frac{\pi\left(8^2 - 6^2\right)}{4} = 21.99\ in^2$$

L = Distance from P to junction of trunnion and shipping cask = 2.5 inches

M = Moment at junction = P x L = 37,375 lbs x 2.5 inches = 93,438 in-lbs

Maximum bending stress for trunnion

$$\sigma_B = \frac{M\, r_o}{I} = \frac{93{,}438\, in \cdot lb \times 4\, in}{137.4\, in^4} = 2{,}720\ psi$$

Maximum shear stress for trunnion

$$\tau = \frac{P}{A} = \frac{37{,}375\, lb}{21.99\, in^2} = 1{,}700\ psi$$

Maximum principal bending stress

The maximum trunnion principal stress (S_I) is determined by combining shear stress and bending stress as follows:

$$S_I = \frac{\sigma_B}{2} + [(\frac{\sigma_B}{2})^2 + \tau^2)]^{0.5} = 3{,}537\, psi$$

Material properties

The maximum cask surface temperature at 100°F ambient temperature is predicted to be 161°F (with a 3850 Btu/hr internal heat load (Ref. A-26). For conservatism, use material properties of ultimate strength at 200°F.

$$S_u = 66{,}000 \text{ psi}$$

Design Safety Factors

The design safety factor, φ_u (ultimate), for the trunnions is:

$$\varphi_u = S_u/S_I = 18.6 > 10$$

Conclusions

The trunnions of the Peach Bottom shipping cask satisfy the design safety factors defined in NUREG-0612 for a non-redundant or non-dual lift point configuration for a single-failure proof handling system.

4.7.3.3.2 Coatings

The transfer casks, original top and bottom lids, and bolts are uncoated. The exposed surfaces of the transfer casks and original top and bottom lids are stainless steel and do not require any type of coating.

A second top lid, which is used in the transfer of Peach Bottom Core 1 fuel, is constructed from carbon steel and does require the use of a coating. The surface of the carbon steel lid (Figures A-21 and A-22) was prepared by glass beading and was coated with Keeler & Long white epoxy paint No. 3500, which is Kolor-Poxy Self-Priming Surfacing Enamel (Item 40 on Figure A-21). Based on the vendor's website information, the Keeler & Long No. 3500 product is one of a series of products that is classified as a protective coating system for nuclear power plants Service Level II, III, and balance of plant.

With respect to use in the fuel transfer to the ISF Facility, the lid will be exposed to atmospheric environments (air, rain, snow) and may be exposed to a potential temperature range of -30°F to 163°F. The -30°F corresponds to the lowest temperature during which DOE-ID plans to move fuel. The 163°F corresponds to the maximum ambient air temperature expected to occur in the transfer tunnel or fuel packaging area (refer to SAR Chapter 4 Table 4.2-50). The low-decay heat values of the fuels are such that they will not heat the lid up to 163°F.

The ISF Facility fuel transfers are a series of dry transfers versus any type of wet fuel pool transfers. As such, the coatings will be subjected to normal atmospheric environments. The Keeler & Long technical datasheet for the No. 3500 Kolor-Poxy Self-Priming Surfacing Enamel identifies the temperature resistance is 350°F. Hence, the coating is compatible with the range of potential environments.

4.7.3.4 Criticality Evaluation for Spent Fuel Handling Operations

Chapter 4 of the ISF Facility SAR presents criticality evaluations that address handling and storage operations after the Peach Bottom transfer cask has been opened in the Fuel Packaging Area (FPA).

The criticality analyses for the fuels when they are inside a closed Peach Bottom transfer cask are discussed in this Appendix.

Criticality analyses were performed (References A-13 and A-14) to confirm that the transfer configurations for each fuel type will result in a k_{eff} less than 0.95.

- A summary of the bounding criticality evaluations for each of the three fuel types in a Peach Bottom transfer cask is provided in Table A5.1-2.
- No critical configuration was identified for the Shippingport reflector modules or reflector loose rods that would be transferred in the Peach Bottom cask.
- For the Peach Bottom fuel the maximum number of elements in a given transfer cask is 18 (See Sections 4.7.1.2.1 and 4.7.1.2.2 of this Appendix). Since 18 is less than the number of elements identified In Table A5.1-2, no critical configuration is identified.
- For the TRIGA fuel, 90 elements are in a Peach Bottom transfer cask (See Section 4.7.1.2.4 of this Appendix.). The criticality analyses show that a change in the transfer packaging configuration is required in order to exceed a k_{eff} of 0.95.

For the TRIGA fuel, subcritical conditions are maintained by geometry and configuration control. TRIGA fuel geometry and configuration are provided by the 5-position standard TRIGA fuel can (Figure A-38) positioned within the TRIGA Bucket (Figure A-31). Three tiers of TRIGA Buckets are then positioned axially within the Lighter Weight Storage Canister Assembly (Figure A-27). A Gap Plug (Figure A-39) is then placed on top of the third TRIGA Bucket to fill the void in the Lighter Weight Storage Canister Assembly. The criticality analysis performed by DOE-ID (Reference A-13) modeled the stainless steel five-position standard TRIGA fuel can (Figure A-38) with 1.75-in diameter tubes. Credit is taken for the geometry of the five-position standard TRIGA fuel cans. The tubes that make up the cans are assumed to retain the fuel, and to remain centered on a circle of 2.977 in. minimum and 3.368 in. maximum diameter. No credit is taken for the stainless steel material that composes the tube walls of the fuel cans. The cans were modeled in an annulus, with the cans touching. This is closer than the actual configuration of cans in the TRIGA bucket, but is conservative. The aluminum TRIGA bucket is neglected except that the cans are positioned as if the bucket were present. Two separate drop analyses of the TRIGA fuel in the 5-position standard TRIGA fuel can (Reference A-3) have been performed. The first represents a 27-foot vertical drop with a bottom end orientation only. The second represents a 10-foot side drop. The conclusions of the analyses are that the welds joining the end fixtures to the standard aluminum and stainless steel TRIGA elements cannot be shown conclusively to remain intact during the two postulated drops. Regardless of weld performance, the fuel cylinders themselves will be protected by the graphite reflectors; will remain intact; and will remain confined to the individual tubes of the 5-position standard TRIGA fuel can. The 5-position standard TRIGA fuel cans will sustain only minor deformation.

For handling operations within the ISF Facility, the dropping of the Peach Bottom transfer cask is not considered to be a credible event (Refer to Sections 8.1.1.2 and 8.2.1.2 of this Appendix). Since no credible event has been identified that would result in a change to the geometry or configuration of the TRIGA fuel, subcritical conditions are maintained.

5.0 OPERATION SYSTEMS

5.1 OPERATION DESCRIPTION

The procedures in Section 5.1.1 of the ISF Facility SAR address the extent of cask operations within the ISF Facility. Further details regarding loading of the PB-1 and PB-2 casks at the INTEC dry fuel storage facilities have been provided in References A-9 through A-12.

5.1.1 Narrative Description

This topic is addressed in the ISF Facility SAR.

5.1.2 Flowsheets

This topic is addressed in the ISF Facility SAR.

5.1.3 Identification of Subjects for Safety Analysis

5.1.3.1 Criticality Prevention

This section summarizes the principal design features, procedures, and special techniques used to preclude criticality in the PB transfer cask.

An overview of this criticality prevention has been prepared by taking Table 3.3-5, *Control Methods for Prevention of Criticality* from the ISF Facility SAR and identifying principal design features, procedures, and special techniques associated with each control method. This overview is provided in Table A5.1-1, *Summary of Criticality Prevention,* of this Appendix. Control methods that are neither planned procedures nor principal design features have been classified as “special techniques” in this subsection.

Additional discussion of the criticality calculations and results can be found in the ISF Facility SAR Chapter 4 (Sections 4.2.3.3.7, 4.7.3.4, Appendix 4A) and Chapter 8.

Technical Criteria Associated with the Control Methods

The technical criteria associated with the control methods for prevention of criticality are summarized below:

No Mixing of Fuel Types. The criticality evaluations assume no mixing of the fuel types in the DOE-ID provided transfer cask (i.e., Peach Bottom, TRIGA, and Shippingport). For purposes of the following criticality discussion, the Peach Bottom Core 1 and Peach Bottom Core 2 fuels will be considered as one type even though their packaging configurations differ.

Number of Fuel Elements. Bounding criticality evaluations were performed for each of the fuel types to identify the minimum number of fuel elements and the spacing among the elements that is required to result in a configuration with k_{eff} greater than 0.95. Both dry and flooded conditions were evaluated in order to address normal, off-normal, and accident conditions. These cases are summarized in Table A5.1-2 of this Appendix. These criticality evaluations were performed (Reference A-13 and A-14) for INL onsite transfer of SNF using Peach Bottom casks.

Mass of Loose Material. The evaluations also considered SNF as loose material. Peach Bottom fuel is considered for this case since the cladding of the Shippingport reflector modules and TRIGA fuel elements would retain any loose material. In the dry condition, 36 crushed Peach Bottom fuel elements were needed to achieve a k_{eff} of 0.902.

Physical Separation of Sets of Fuel Elements. One method of criticality control is to ensure, through engineered physical separation, that fuel elements cannot be physically brought closer together into configurations that result in k_{eff} exceeding 0.95.

Geometric Control Provided by Canister and Packaging Structure. One method of criticality control is to ensure through control of fuel geometry with engineered features of the canister and packaging structures such that fuel elements cannot be physically arranged in configurations that result in k_{eff} exceeding 0.95.

Use of Burnup Credit. Not used.

Use of Burnable or Fixed Neutron Absorbers (Poisons). Not used.

5.1.3.1.1 Fuel in Transfer Cask

The principal design features, procedures, and special techniques that provide limitations on the amount of fissile materials and engineered safety features when the fuel is in the Transfer cask are provided below. Criticality analyses for the fuel configurations while in the Transfer Cask were performed (Reference A-13 and A-14).

No Mixing of Fuel Types

No mixing of fuel types is achieved through the following special techniques and procedures.

Special Technique. The Peach Bottom fuel will be shipped first. The Shippingport reflector modules will be shipped second. The TRIGA fuel will be shipped third. This shipping schedule sequence is the first step to prevent mixing of fuel types.

Procedure. A fuel manifest to be provided with each shipment. This document will be prepared under the ISFSI Quality Assurance Program (Ref A-24). Completion, checking, and approval of this manifest should serve to identify inadvertent mixing of fuel types. The manifest will be reviewed against license requirements and accepted prior to commencement of cask unloading operations.

Procedure. The fuel repackaging is planned as separate campaigns. The FPA is configured differently for each of the fuel types. When the transfer cask is opened, if the packaging is not consistent with the fuel type shown on the manifest, the fuel transfer operation will cease. The transfer cask will be bolted closed and returnedfor reuse..

Number of Fuel Elements

A control on the number of fuel elements in the transfer cask is achieved through the following special technique.

Special Technique. As stated in Section 3.1.1 of the ISF Facility SAR, the Shippingport reflector modules contained no fissile material at beginning of life. Further, as described in the ISF Facility SAR, Chapter 4, Appendix 4A, *Criticality Models,* the amount of enrichment that occurred during reactor operations results in this fuel containing insufficient fissile material to reach a k_{eff} of 0.95 or greater. Hence, there is no limit on the amount of Shippingport Reflector modules in the transfer cask with respect to maintaining subcriticality. The number of Peach Bottom and TRIGA fuel elements that can be placed in a transfer cask are limited by the design of the baskets and fuel containers that are loaded into the transfer cask. The fuel packaging for each fuel type is discussed in Section 4.7.1.2 of this Appendix.

Mass of Loose Fissile Material

Special Techniques. For the different fuel types, the separation of the uranium from the fuel matrix is considered unlikely based on the manufacturing processes associated with the respective fuel matrix. DOE-ID has performed analyses (Ref. A-14) to determine the mass of Peach Bottom Core 1 and Core 2 fuel required to achieve k_{eff} greater than 0.95. These analyses assumed the fuel elements were completely rubblized. Assuming dry conditions greater than 18 elements of Peach Bottom Core 1 fuel and greater than 12 elements of Peach Bottom Core 2 were required to exceed a k_{eff} of 0.95. Since the Peach Bottom Core 1 shipments are limited to 18 elements, and Peach Bottom Core 2 shipments will not exceed 12 elements, no special techniques are required. Shippingport reflectors and TRIGA elements must be intact as part of the acceptance criteria for preparing them for transfer. The cladding of the Shippingport reflectors and TRIGA fuel elements prevent the occurrence of loose fissile material.

Physical Separation of Sets of Fuel Elements by Engineered Features and Geometric Control Provided by DOE-ID Canister and Packaging Configurations

Special Technique. During the Shippingport repackaging campaign, criticality control is maintained by the radionuclide composition of the reflector. Therefore physical separations of sets of reflector elements and geometric control are not required.

Principal Design Features. The canister and packaging configurations for Peach Bottom and TRIGA fuels are required to provide the necessary geometry control and configuration to ensure that criticality safety requirements of the ISF Facility are met. Drop analyses on the Peach Bottom cask (Reference A-2) as well as the Peach Bottom cask containing Peach Bottom and TRIGA fuel containers (References A-3, A-5, and A-6) have been performed. The results of these analyses have shown that the containers provide physical separation of all sets of fuel elements and maintain geometric control. For the Shippingport reflector modules, there is insufficient fissile material for a criticality concern, therefore, no design features are required.

5.1.3.2 Chemical Safety

Not applicable to the Peach Bottom cask.

5.1.3.3 Operation Shutdown Mode

This topic is addressed in the ISF Facility SAR.

5.1.3.4 Instrumentation

The Peach Bottom casks are each fitted with four quick disconnect fittings. These are located within the Peach Bottom cask trunnions (see Figure A-5).

5.1.3.5 Maintenance Techniques

The Peach Bottom cask maintenance is controlled and administered through DOE-ID's support contractor. Routine inspections performed on the Peach Bottom cask are summarized in Section 4.5 of this Appendix.

5.2 FUEL HANDLING SYSTEM

This topic is addressed in the ISF Facility SAR.

5.3 OTHER OPERATING SYSTEMS

Not applicable to the Peach Bottom transfer cask.

5.4 OPERATION SUPPORT SYSTEMS

Not applicable to the Peach Bottom transfer cask.

5.5 CONTROL ROOM AND CONTROL AREAS

Not applicable to the Peach Bottom transfer cask.

5.6 ANALYTICAL SAMPLING

This topic is addressed the ISF Facility SAR.

6.0 SITE-GENERATED WASTE CONFINEMENT AND MANAGEMENT

The transfer of SNF to the ISF Facility in the Peach Bottom-1 and Peach Bottom-2 casks will not create any waste at the ISF Facility beyond those described in Chapter 6 of the ISF Facility SAR.

7.0 RADIATION PROTECTION

7.1 ENSURING THAT OCCUPATIONAL RADIATION EXPOSURES ARE ALARA

This topic is addressed in the ISF Facility SAR.

7.2 RADIATION SOURCES

This topic is addressed in the ISF Facility SAR.

7.3 RADIATION PROTECTION DESIGN FEATURES

7.3.1 Installation Design Features

This topic is addressed in the ISF Facility SAR.

7.3.2 Shielding

The Peach Bottom cask is used to transfer the fuel to the ISF Facility. The cask was originally designed to shield irradiated and unirradiated fuel such that the radiation levels on contact do not exceed 200 mrem/hr. Shielding analysis was performed, as documented in Section 7.3.2 of the ISF Facility SAR, to determine the dose rates for handling TRIGA fuel. The TRIGA source term was selected because it provides the bounding photon flux for all fuel types (see ISF Facility SAR Section 7.3.2). This configuration included the maximum 90 TRIGA elements that transfer in the cask. The results of the shielding analysis show that the expected surface dose rates are well within the Peach Bottom cask design criteria of 200 mrem/hr on contact. The peak combined dose rate at contact will be less than 33 mrem/hr.

7.3.3 Ventilation

Not applicable to the Peach Bottom transfer cask

7.3.4 Area Radiation and Airborne Radioactivity Monitoring Instrumentation

This topic is addressed in the ISF Facility SAR.

7.4 ESTIMATED ONSITE COLLECTIVE DOSE ASSESSMENT

This topic is addressed in the ISF Facility SAR. The calculated dose rates within the ISF Facility for the Peach Bottom cask is 11.2 mrem/hr at 1 foot for the bounding TRIGA fuel.

7.5 HEALTH PHYSICS PROGRAMS

This topic is addressed in the ISF Facility SAR.

7.6 ESTIMATED OFFSITE COLLECTIVE DOSE ASSESSMENT

This topic is addressed in the ISF Facility SAR. The ISF Facility controlled area boundary is 13,700m from the facility; therefore, dose rates at the offsite boundary are considered insignificant for normal transfer activities. Offsite dose calculations resulting from a cask drop accident have been performed that to result in only 0.02 mrem TEDE (Reference A-7).

8.0 ACCIDENT ANALYSES

Credible off-normal events and accidents within the ISF Facility are discussed in the ISF Facility SAR. Supporting analyses have been prepared to address bounding off-normal events and accidents specific to transfer operations associated with the Peach Bottom cask containing SNF. This chapter of the Appendix discusses off-normal and accident conditions involving the cask that could occur within the ISF Facility. The historical Peach Bottom cask safety analysis report (Ref A-16) for packaging and the analyses performed (References A-2 through A-14) have been incorporated into the off-normal and credible cask-handling accidents that could occur at the ISF Facility discussed in the following sections.

8.1 CASK OFF-NORMAL OPERATIONS AT ISF FACILITY

The following off-normal events are postulated and evaluated for the Peach Bottom casks at the ISF Facility. These off-normal scenarios and their respective evaluations have been compared with the analyses (References A-2 through A-14) to confirm that the analyses are bounding for credible and postulated off-normal events at the ISF Facility involving the Peach Bottom cask.

8.1.1 Transfer Cask Events

8.1.1.1 Cask Pressurization

Misventing of a pressurized cask is evaluated in Section 8.1 of the ISF Facility SAR. Additional information on the impact of pressurization on the Peach Bottom casks follows.

Before transfer to the ISF Facility, the transfer cask is loaded under atmospheric conditions. It is unlikely that the transfer cask is capable of retaining an internal pressure since the O-rings will not be installed for fuel transfers to the ISF Facility.

Pressure rise in the transfer cask during movement from the INTEC to the ISF Facility would result primarily from heating of the transfer cask airspace from internal and external heat sources. A breech during transfer of a fuel container could contribute to a limited additional pressure rise from the gas used to backfill the container. However, due to the short transfer distance and container inspection before transfer, failure is not expected. Due to the mass of the transfer cask and the relatively short transportation time, significant pressurization of the transfer cask is not expected under normal conditions.

To determine a bounding off-normal cask pressure, the cask is assumed to be loaded at the off-normal temperature of -40°F at atmospheric pressure. The Safety Analysis Report submitted with the application for a Certificate of Compliance for the Peach Bottom Cask (Reference A-16) performed a thermal evaluation of the cask assuming 130°F ambient air temperature, full solar insolation, and an internal heat load of 14, 250 BTU/hr. Under these conditions, the average internal temperature of the cask was calculated to be approximately 315°F. These conditions are more extreme than will be encountered for the ISF Facility transfers since the internal heat load is approximately an order of magnitude less than that used in the application for a COC, and the off-normal ambient air temperature is only 101°F. Using the ideal gas laws, the internal transfer cask expansion from increasing the temperature from -40°F to 315°F was estimated, to conservatively bound any realistic conditions for this configuration. The internal volume of the transfer cask for this temperature change is conservatively assumed to remain unchanged. Using the ideal gas law:

$$(P_1V_1)/T_1 = (P_2V_2)/T_2\,; \quad \text{or} \qquad P_2 = ((T_2V_1)/(T_1V_2)) \times P_1$$

Where: P_1 = 14.7 psia or 1 atm; $V_1 = V_2$ = Units cancel; T_1 = -40°F or 233°K; T_2 = 315°F or 430.2°K

$$P_2 = (430.2/233) \times 1.0 \text{ atm} = 1.85 \text{ atm or } 12.5 \text{ psig}$$

As discussed above this calculation is very conservative. Even under this very conservative evaluation the pressure increase is significantly less than the 100 psig rating of the cask.

This event involves no change to the fuel or structural integrity configuration. Hence, there is no change in criticality, confinement, or retrievability of the spent nuclear fuel.

8.1.1.2 Cask Drop Less Than Design Allowable Height

This event is evaluated in Section 8.1 of the ISF Facility SAR. Additional information on the impact of a drop on the Peach Bottom casks follows.

Dropping the Transfer Cask during handling is not considered a credible off-normal event. The cask receipt crane and interfacing lifting devices are designed in accordance with the guidance contained in NUREG-0612 (Ref. A-19). The cask receipt crane is designed in accordance with NUREG-0554, *Single-Failure-Proof Cranes for Nuclear Power Plants* (Ref. A-18). The cask lifting yoke that is used to lift the cask from the transporter and loading into the Cask Trolley is designed as specified in ANSI N14.6-1993 (Ref.A-20), with the more conservative design margins specified in NUREG-0612 applied. The Peach Bottom cask trunnions are evaluated in Section 4.7.3.3.1 of this Appendix and are also demonstrated to meet the single failure proof design margins specified in NUREG-0612. Therefore, dropping the transfer cask during hoisting operations is not considered a credible event.

8.1.2 Fuel Packaging Events

8.1.2.1 Attempt to Lower Fuel Container Into Occupied Fuel Station

The postulated cause, detection, and analysis of this event are provided in the ISF Facility SAR. The analysis identified a maximum impact deceleration force that may be applied to the fuel containers, transported in the Peach Bottom cask. The containers were designed specifically for handling and storing these fuels. ISF Facility operations associated with these containers will not introduce any unusual handling hazards, and the containers are expected to maintain integrity and prevent damage to the fuel during these off-normal events.

8.1.3 Fuel Storage Events

Not applicable to the Peach Bottom transfer cask

8.1.4 Waste Handling Events

Not applicable to the Peach Bottom transfer cask.

8.1.5 Other Events

8.1.5.1 Ventilation System Failures

Not applicable to the Peach Bottom transfer cask.

8.1.5.2 Loss of External Power Supply for a Limited Duration

Not applicable to the Peach Bottom transfer cask.

8.1.5.3 Off-Normal Ambient Temperatures

This event is evaluated in Section 8.1 of the ISF Facility SAR. Additional information on the impact of off-normal ambient temperatures on the Peach Bottom casks follows.

The Peach Bottom casks are designed to withstand environmental extremes, including extended off-normal ambient temperatures, without adverse effects to the fuel. The ISF cask-handling operations are bounded by the DOE-ID transportation requirements and evaluations. The thermal analysis presented in *Safety Analysis for the Shipment of Peach Bottom No. 1 Irradiated Fuel Elements in Whitehead & Kales Shipping Cask Model No. PB-1* (Ref. A-16) assumed a cask heat load of 14,250 Btu/hr decay heat plus 3540 Btu/hr insolation. Under normal conditions of transport with ambient air temperature between –40°F and 130°F were assumed for the analysis. To maximize the cask temperature extremes, the cask was assumed to be exposed to direct sunlight when ambient air temperature was 130°F, and shade was assumed when temperature was -40°F. These temperatures bound the off-normal external air temperature range of the ISF Facility (-40°F to 101°F). The calculated maximum temperatures in the Peach Bottom-1 cask were based on the highest ambient temperature (130°F with solar insolation):

hottest fuel canister temperature:	450°F
hottest basket temperature:	375°F
cask outer shell temperature:	240°F
cask outer overlay shell temperature:	200°F

The Peach Bottom-1 cask analysis assumes a cask is loaded with 19 Peach Bottom elements, each with a maximum decay heat of 750 Btu/hr. The maximum total heat load in the cask is then determined by multiplying the number of fuel elements by the maximum per element decay heat rate. The maximum cask heat load from the SNF is 14,250Btu/hr (4176 watts). The Peach Bottom 1 basket structure is fabricated from aluminum tubes and plates.

This can be considered a bounding thermal analysis for the Peach Bottom-1 cask when used to transfer Peach Bottom 1 and 2 fuel, TRIGA aluminum or stainless clad fuel, and Shippingport reflector modules.

The thermal load of the Peach Bottom 1 cask when delivering ISF fuel elements is shown in Table A8.1-1.

The highest incoming heat load in the Peach Bottom 1 cask is 12 Peach Bottom Core 2 elements. At approximately 40 watts, this is two orders of magnitude less than the maximum design heat load for the Peach Bottom-1 cask. Therefore the ISF fuel heat loads will not challenge the thermal and structural performance of the Peach Bottom-1 cask.

8.1.6 Radiological Impact From Off-Normal Operations

This topic is addressed in Section 8.1 and Table 8.1-1 of the ISF Facility SAR.

8.2 ACCIDENTS

The following accidents are postulated and evaluated for the Peach Bottom casks at the ISF Facility. Transfer Cask Events

8.2.1.1 Vehicular Collision With Transporter

Cause of Accident

Collision of a vehicle with a Peach Bottom cask during transfer from the ISF site boundary fence to the Cask Receipt Area is postulated to occur as a result of human error. Impact of the transporter with the ISF Facility structure is addressed in Section 8.2 of the ISF Facility SAR. Impact between the cask transporter and another vehicle is discussed below.

Accident Analysis

As discussed in Chapter 2 of the ISF Facility SAR, the ISF Facility is on a controlled site where vehicle access is restricted. The closest public highway with uncontrolled access is approximately 10 miles from the ISF. Roads closer to the ISF are access controlled. Therefore, collisions with vehicles originating from offsite are not postulated to occur.

Onsite ISF traffic is minimal, and is administratively controlled during spent fuel transfer activities. However, a vehicular collision with the Peach Bottom transfer cask transport vehicle could be postulated. Any postulated accident would occur between the site fence and the facility entrance and would be limited with respect to speed, frequency, and consequences by the short distance and the site control procedures. The potential frequency and consequences would be conservatively bounded by postulated transportation accidents during transit to the ISF site. The Peach Bottom casks were previously licensed for over-the-road highway transport under COC No. USA/6375/B( )F (Ref A-23) and, as such, were demonstrated to withstand postulated transportation accidents. The analyzed configuration included the use of the cask impact limiters. The safe transportation of the Peach Bottom transfer casks without installed impact limiters has been demonstrated in the analyses (Reference A-2).

Radiological Consequences

The PB Cask drop evaluation discussed in Section 3.3.2.1.1 of this Appendix bound the radiological consequences from this postulated event.

8.2.1.2 Transfer Cask Drop Scenarios

8.2.1.2.1 Transfer Cask Drop During Hoisting Operations

This accident is evaluated in Section 8.2 of the ISF Facility SAR. The evaluation of the cask trunnions to NUREG-0612 criterion was presented in Section 4.7.3.3.1 of this Appendix. No additional analysis was performed for this postulated ISF Facility cask drop since the lifting configuration described in the ISF Facility SAR ensures that a drop is not credible, as summarized in Section 8.1.1.2 of this Appendix.

8.2.1.2.2 Transfer Cask Drop Off the Transport Trailer

The transport trailers for the transfer casks (Trailer No. 71801 and 71808) were not classified as important to safety since they do not provide functions associated with confinement, criticality control, heat removal, or protection of the fuel containers. In addition, no credible failure of a transport trailer has been identified that would prevent the transfer cask from performing its important to safety functions during spent fuel transfer to the ISF Facility.

As part of the original safety analysis prepared in support of the original COC (Ref A-16), analyses of a 30-foot drop onto a hard-unyielding surface in end, side, and corner orientations were provided in order to demonstrate the cask's performance in meeting 10 CFR Part 71 acceptance criteria. This analysis included consideration of the dampening effect from impact limiters.

An updated analysis for a Peach Bottom cask drop without impact limiters (Reference A-2). The purpose of the analysis was to evaluate the capability of the cask structure to maintain a confinement barrier for the enclosed contents during the drop scenarios considered. The drop analysis was performed for two different cask configurations. The first configuration is Peach Bottom Cask configured to transfer the Peach Bottom Core 2 fuels, Shippingport reflector modules, and TRIGA fuels. The cask configurations for each of these are shown on Figures A-2 through A-4, respectively. The second Peach Bottom cask configuration is used to transfer the Peach Bottom Core 1 fuel, which is shown on Figure A-1. The worst-case cask loadings were used for each of these configurations. For the first configuration, a Shippingport package weight of 10,000 pounds was assumed. For the second configuration a 3260 pound loaded weight of the basket/canister assembly was used. Three drop scenarios were selected as bounding for the planned operations and shipping configurations. These scenarios are:

a) A 27 foot drop using configuration 1 described above. This analysis was based on installation of the original lead-filled lids retained with eight bolts in each lid.

b) An 8 foot drop using configuration 1 described above. This analysis was based on installation of the original lead-filled lids retained with eight bolts in the top lid and four bolts installed in the bottom lid.

c) An 8 foot drop using configurations 2 described above. This analysis was based on installation of a solid carbon steel top lid with eight bolts installed and the original lead-filled bottom lid with only four bolts installed.

These above analyses were performed based on impact on an unyielding surface. An analysis associated with a 10 foot drop onto a concrete surface was also performed. The results of these analyses concluded that cask confinement barrier capability was maintained.

8.2.1.3 Transfer Cask Tipover

This topic is addressed in the ISF Facility SAR.

8.2.1.4 Cask Trolley Collision Events

This accident is evaluated in Section 8.2 of the ISF Facility SAR. Additional information on the impact of a cask trolley collision on the Peach Bottom cask follows.

The cask trolley is used to move the loaded cask into the ISF Facility's Transfer Tunnel and to return the empty cask to the Cask Receipt Area of the ISF Facility. The cask trolley rides on rails. This limited movement path prevents any credible impacts on the structural members or fixed location components. However, the ISF Facility's inner and outer Transfer Tunnel doors and canister trolley operate on the same track, and therefore are potential impact sites during movement of the cask trolley. Proximity sensors in the Transfer Tunnel provide positional information for control and operational interlock functions and initiation of speed controller functions (deceleration, etc.) to facilitate accurate positioning at each trolley stopping station. Over travel of the trolley is prevented by end-of-travel shunt limit switches hardwired into the drive contactor control circuit. In addition, bumpers at each end minimize impact against the canister trolley, rail-mounted end stops, or inadvertently closed doors. The cask trolley is designed for impacts at velocities up to the maximum operating speed of 10 fpm without damage to the trolley or cask. The cask trolley impact against the rail stops or canister trolley will be minimized by bumpers designed for an average rate of deceleration of 4.7 ft/sec^2 (0.15 g) in accordance with CMAA 70 (Ref. A-27). The resulting stresses on the cask from this deceleration are well within the bounds of a 3-foot side drop previously analyzed in the Safety Analysis for Shipment of LWBR Fuel in the Peach Bottom BP-2 Cask from ECF to ICPP (Ref A-26). That analysis resulted in a "g" loading on the cask of 41.5 g. The analysis demonstrated that the trunnion would partially crush but the cask outer shell would not puncture, the impact would not result in a permanent bend in the shell, and the shell welds would not yield. Thus a 0.15 g force that would result from a Cask Trolley collision event will cause no significant damage to the cask.

8.2.2 Fuel Packaging Events

8.2.2.1 Failure of DOE-ID Fuel Container During Handling

This accident is evaluated in Section 8.2 of the ISF Facility SAR. Additional information on the impact of a fuel container failure follows.

This accident consists of dropping a fuel container from the maximum height of the ISF Facility's fuel handling machine (FHM) into the Peach Bottom cask, or onto the FPA floor. The loaded fuel containers are handled by single-failure-proof lifting devices as described in Section 4.7 of the ISF Facility SAR. The structural integrity of the fuel container attachment points to the suspension system, and capability to support the postulated loads have been analyzed and shown to be acceptable for loading into the Peach Bottom cask and transfer to the ISF Facility.

The consequences of a drop event involving the fuel containers have been analyzed. At the ISF Facility, lifting of these fuel containers only occurs from the Transfer Cask into the FPA or within the FPA. A drop of a fuel container would not create a criticality concern as discussed in Section 4.7.3.4 of this Appendix. The drop could result in damage to the fuel and the fuel container, but the release of radioactive material would occur within the confinement barrier of the FPA, thereby minimizing the release to the environment. Section 8.2.4.5 of the ISF Facility SAR provides a discussion of the Maximum Hypothetical Accident Dose.

8.2.2.2 Drop of ISF Basket During Handling

Not applicable to the Peach Bottom transfer cask.

8.2.2.3 Canister Trolley Movement in Raised Position

Not applicable to the Peach Bottom transfer cask.

8.2.3 Fuel Storage Accidents

Not applicable to the Peach Bottom transfer cask.

8.2.4 Other Postulated Accidents

8.2.4.1 Adiabatic Heatup

Not applicable to the Peach Bottom transfer cask.

8.2.4.2 Loss of Shielding

Postulated events that could impact shielding on the transfer cask include vehicular collision with the transporter, transfer cask drop or tipover, fire and explosion, or tornado missile impact, all of which are covered in subsections of 8.2 of this Appendix.

8.2.4.3 Building Structural Failure onto Structures, Systems, or Components

This accident is evaluated in Section 8.2 of the ISF Facility SAR. Additional information on the impact of building structural failure on the Peach Bottom casks follows.

Failure of the building structures is not considered credible due to natural phenomena or overstressing of lifting mechanisms. However, the truck used for transporting the Peach Bottom casks containing SNF could hit the Cask Receipt Area structure. ISF procedures limit the use and speed of vehicles within the controlled area to minimize the potential for vehicle impact. A cask drop could result from an impact to the structure with sufficient force to cause structure damage. The only scenario with a cask in the elevated position, and with the potential for sufficient vehicle speed (and therefore sufficient impact energy), would occur while loading the empty cask on the truck for return. As there would be no SNF involved, there would be no significant radiological consequences. A transporter impact event involving a loaded cask could only occur while the cask was on the truck and the truck was being moved into the facility. In this event, cask drop would be minimized and the fuel container would be protected by the transfer cask. The scenario would be bounded by the analyzed cask drop accident (Reference A-2). Once unloading of the cask begins, the truck moves slowly and in limited increments within the Cask Receipt Area.

8.2.4.4 Fire and Explosion

This accident is evaluated in Section 8.2 of the ISF Facility SAR. Additional information on the impact of fire and explosion on the Peach Bottom casks follows.

For fire hazard evaluation purposes, the ISF Facility is divided into three fire areas, each of which is divided into multiple fire zones. Fire Area 1, which includes the Transfer Tunnel through which the cask passes, and Fire Zone 1 of Fire Area 3, which includes the Cask Receipt Area, are of primary concern for cask operations. Fire and explosion hazards for the ISF Facility are discussed in depth in Section 8.2.4.4 of the ISF Facility SAR.

The worst-case fire loading in the areas of the ISF Facility where the Peach Bottom cask is handled amounts to less than a 30-minute equivalent fire duration. This is not a safety concern for the Peach Bottom casks, as the original Peach Bottom cask safety analysis (Ref A-16) for the Peach Bottom fuels demonstrated that the cask met the regulatory criteria of 10 CFR 71 for the hypothetical fire accident. After exposure to a 1475°F fire for 30 minutes, the maximum temperature of the lead shielding and inner liner of the cask was 426°F. Since lead melts at 621°F, no lead melt occurs and there is no loss of shielding integrity. Because the maximum fire duration will be less than 30 minutes based on combustible loading, the cask inner liner and fuel temperatures will be less than 426°F.

8.2.5 External Events

8.2.5.1 Loss of External Power for an Extended Interval

Not applicable to the Peach Bottom transfer cask.

8.2.5.2 Earthquake

This topic is addressed in the ISF Facility SAR.

8.2.5.3 Flood

This topic is addressed in the ISF Facility SAR.

8.2.5.4 Extreme Wind

This accident is evaluated in Section 8.2 of the ISF Facility SAR. Additional information on the impact of a tornado on the Peach Bottom casks follows.

The design basis tornado is analyzed in Section 8.2 of the ISF Facility SAR. Two cases defined and analyzed therein involve performance of the Peach Bottom casks to maintain a confinement barrier for the SNF.

Case 1 - Outside Receipt Area

While a Peach Bottom cask is inside the ISF Facility site boundary but outside of the Cask Receipt Area, it is subject to design basis tornado (DBT) winds, missiles and differential pressures. The Peach Bottom cask has been analyzed to survive drops of up to 27 feet without loss of the cask confinement barrier. This analysis is considered to bound the cases of overturning the cask/trailer by the DBT winds and the DBT missile loadings.

Case 2 - Inside Receipt Area, Peach Bottom Cask on Transporter, Unsecured with Impact Limiters Removed

Case 2 assumes a Peach Bottom cask is on the transporter, but is within the Cask Receipt Area with the cask tiedown attachments removed. As in Case 1, the confinement barrier is provided by the cask. DBT loadings were utilized in the design of the Cask Receipt Area structure, therefore, this structure is assumed not to fail and impact the transfer cask during this event. The impact of non-structural members of the Cask Receipt Area (e.g., the sheet metal siding) is bounded by the Spectrum II missiles assumed in the analysis in the ISF

Facility SAR, Chapter 8. Therefore, analyses of the DBT loadings remain limited to the loadings identified in Table 3.2-1 of the ISF Facility SAR. The evaluations discussed above bound this configuration as well.

8.2.5.5 Lightning

This accident is evaluated in Section 8.2 of the ISF Facility SAR. Additional information on the impact of lightning on the Peach Bottom casks follows.

The Peach Bottom casks will be briefly transiting from the ISF Facility gates to the covered Cask Receipt Area. The casks will be resting on rubber-tired transporters during the time that they are outside the facility. The rubber tires will insulate the cask and transporter from ground, thereby preventing a significant surge of electrical current from passing through the cask body in the event of a lightning strike.

8.2.5.6 Accidents at Nearby Sites

This topic is addressed in the ISF Facility SAR.

8.2.5.7 Volcanism – Basaltic Lava Flow

This topic is addressed in the ISF Facility SAR.

8.2.5.8 Aircraft Impact

This topic is addressed in the ISF Facility SAR.

8.3 SITE CHARACTERISTICS AFFECTING SAFETY ANALYSIS

This topic is addressed in the ISF Facility SAR.

9.0 CONDUCT OF OPERATIONS

Conduct of operations at the ISF Facility is addressed in the ISF Facility SAR. Conduct of operations specific to loading of the Peach Bottom casks at fuel storage facilities on the INL site and transfer to the ISF Facility site is under the DOE-ID regulatory jurisdiction. An overview of the operations associated with the fuel transfer process is provided in Figures A-1 through A-4.

10.0 OPERATING CONTROLS AND LIMITS

Operating controls and limits within the ISF Facility are addressed in the ISF Facility SAR.

11.0 QUALITY ASSURANCE

Quality assurance relative to the ISF Facility, and operations therein, is the responsibility of DOE-ID under the ISFSI Quality Assurance Program (Ref A-24). Quality assurance associated with the Peach Bottom transfer casks, and the SNF to be transferred therein, is also the responsibility of DOE-ID. All work performed in support of this contract by DOE-ID and/or its support contractor is being performed under the ISFSI Quality Assurance Program.

With respect to the SNF, a shipping manifest will be provided for each fuel shipment. The manifest will be provided to for review as part of the onsite acceptance of the shipment. This manifest will be prepared by DOE-ID under the established ISFSI Quality Assurance Program (Ref A-24).

12.0 REFERENCES

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A-2. U.S. Department of Energy Idaho Operations, Engineering Design File 3151, *Drop Evaluation of the Peach Bottom Cask Without External Impact Limiters*, Rev 2, March 3, 2003.

A-3. U.S. Department of Energy Idaho Operations, Engineering Design File 2251, *TRIGA Fuel Damage and Tier Mixing in Postulated SNFDPSP Shipment Accidents,* Rev 1, July 3, 2002.

A-4. U.S. Department of Energy Idaho Operations, Engineering Design File 2280, *Analysis of LWBR Storage Liner Drops, Rev 0,* June 12, 2002.

A-5. U.S. Department of Energy Idaho Operations, Engineering Design File 2233, *Drop Evaluation of the Peach Bottom Cask Overpack in the Peach Bottom Cask, Rev 0,* June 5, 2002.

A-6. U.S. Department of Energy Idaho Operations, Engineering Design File 2281, *Peach Bottom Canister in Cask Ten Foot Drop Evaluation Rev 0,* June 12, 2002.

A-7. U.S. Department of Energy Idaho Operations, Engineering Design File 1552, *Dose Calculations for Spent Fuel Drop Accidents, Rev 0,* June 10, 2002.

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A-14. U.S. Department of Energy Idaho Operations, INEEL/EXT-02-00008, *Criticality Safety Evaluation: Peach Bottom Unit 1 Fuel in the Peach Bottom Casks and in the Underground Fuel Storage Facility,* March 2002.

A-15. Title 10, Code of Federal Regulations, Part 72, *Licensing Requirements for Independent Storage of Spent Nuclear Fuel and High-Level Radioactive Waste.*

A-16. *Safety Analysis for the Shipment of Peach Bottom No. 1 Irradiated Fuel Elements in Whitehead & Kales Shipping Cask Model No. PB-1*, January 15, 1970, Battelle Memorial Institute, Columbus, Ohio.

A-17. *Proposed Decommissioning Plan*, ISF-FW-PLN-0027, Docket No. 72-25, Foster Wheeler Environmental Corporation, Richland, Washington

A-18. *Single Failure-Proof Cranes for Nuclear Power Plants,* NUREG-0554, U.S. Nuclear Regulatory Commission, Washington, D.C., May 1979

A-19. *Control of Heavy Loads at Nuclear Power Plants, Resolution of Generic Technical Activity A-36,* NUREG-0612, U.S. Nuclear Regulatory Commission, Washington, D.C., July 1980

A-20. ANSI (1993), *Special Lifting Devices for Shipping Containers Weighing 10,000 Pounds (4500 kg) or More,* ANSI N14.6, American National Standard Institute, Washington, D.C.

A-21. Wenzel, D.R. and B.J. Schrader, April 2001, *The Radiological Safety Analysis Computer Program (RSAC-6) User's Manual*, INEEL/EXT-01-00540.

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Appendix A Tables

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Table A3.3-1
Transfer Cask Key Equipment Selected to Provide Protection to the Spent Nuclear Fuel

Equipment Name	Key Equipment Items	Key Design Criteria
Transfer Cask – Peach Bottom casks PB-1 and PB-2	Cask	10 CFR 71 (January 1970) (per Ref. A-16) 3715 Watt internal heat source term (per Ref. A-16) Welding procedures for cask construction "are essentially those of the ASME Boilers and Pressure Vessel Code Section VIII Unfired Pressure Vessels, 1962 Edition" (per Ref. A-16)
	Trunnions	10 CFR 71.31 (January 1970) (support 3 times the loaded weight) (per Ref. A-16)

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Table A4.7-1
Peach Bottom Cask Dimensions and Weights(1)(2)

Overall length with lids	170 inches
Overall length with impact limiters	191 inches
Cask cavity length	159 inches
Outside diameter	42.6 inches
Cask cavity inside diameter	26 inches
Trunnion span	50 inches
Trunnion spacing (center-to-center)	12 ft-10 inches(2)
Trunnion outside diameter	8 inches
Trunnion length	4 inches
Cask lid thickness	7 inches (original configuration) 6.25 inches (new A36 steel top lid)
Cavity wall inner thickness	0.25 inches
Cask outer wall thickness	1.5 inches
Outer skin (cladding) thickness	0.25 inches
Lead shielding thickness	6.25 inches in central 110-inch section of cask length; 5.25 inches for 24.5-inch length from bottom of cavity at each end 4.0 inches at each end lid (original configuration)
Impact limiter length (ea.)	9 inches
Lid bolt diameter	1.25 inches
Cask body weight	53,110 lb
Cask lid weight (ea.)	1,995 lb (original lead-filled design) ~1,841 lb (new A36 steel top lid)
Total cask weight (empty)	58,260 lb (original with impact limiters) 57,100 lb (original w/o impact limiters) ~56,946 lb (with new A36 steel top lid and w/o impact limiters)

Notes:

(1) Dimensions from Peach Bottom cask design drawings in Figures A-5 through A-7 and from Reference A-16.

(2) PB-1 and PB-2 actual dimensions have been field-verified and are shown on Figures A-32 through A-34).

Table A4.7-2
Peach Bottom Cask Construction Materials

Cask body	Carbon steel, AISI 1025 (original material)
Cask body outer skin	Stainless steel, Type 304 (replacement material)
Inner cavity shell	Stainless steel, Type 304 (original material)
Trunnions	Stainless steel, Type 304 (original material)
Trunnion reinforcing plates	Stainless steel, Type 304 (original material)
Cask Top Lid #1(1)	6.25" thick, carbon steel, Type A36 (INEEL design) (new material)
Cask Top Lid #2(2)	4" lead sandwiched between two plates of 1.5" Type 304 stainless steel (original materials)
Cask Bottom Lid	4" lead sandwiched between two plates of 1.5" Type 304 stainless steel (original materials)
Cask closure lid bolts	ASTM A-276, UNS 21800 (Nitronic 60) (new material)

Notes:

(1) Top Lid #1 to be used only with Peach Bottom Core 1 fuel canisters.

(2) Top Lid #2 to be used for all other fuel transfers.

Table A4.7-3
Transfer Cask Materials Mechanical Properties

Material Property	Unit	Temperature ˚F					
		70	100	200	300	400	500
Cavity shell, Trunnions and Trunnion Plates, End Plugs, Cask End Plates (stainless steel portion of the original ss/lead/ss sandwich lids) (original materials); Outer Shell Overlay (replacement material): Type 304 Stainless Steel							
S_u	10^3 psi	75	--	66	62.5	59.0	57.5
S_y	10^3 psi	30	--	26	23.5	21.0	19.5
E	10^6 psi	28.3	--	27.8	27.3	26.7	26.1
α_m	10^{-6} /°F	8.46	--	8.79	9.00	9.19	9.37
ρ	lb/in^3	0.290					
ν		0.3					
Cask Outer Shell (original material): ASTM A36 (AISI 1025 Carbon Steel used for design properties)							
S_u	10^3 psi	55	--	52.25	--	51.7	--
S_y	10^3 psi	36	--	34.2	--	32.7	--
E	10^6 psi	29.0	--	28.13	--	27.55	--
α_m	10^{-6} /°F	6.3	--	6.3	--	--	--
ρ	lb/in^3	0.283					
ν		0.3					
Top Lid (new material): ASTM A36 Carbon Steel							
S_y	10^3 psi	36					
Lid bolts (new material): ASTM A-276, UNS 21800 (Nitronic 60)							
S_u	10^3 psi	95.0					
S_y	10^3 psi	50.0					
Gamma shielding (original material): Cast Lead							
S_u	10^3 psi	5.0					
S_y	10^3 psi	1.0					
E	10^6 psi	2.0					
ρ	lb/in^3	0.41					

Type 304 Stainless Steel Base Metals & Electrode Materials as Specified in 748-WP-101				
Base Metal (original materials)			Electrode Materials (original materials)	
Type	Material	S_u Ksi	Material	S_u Ksi
(1) Plate	ASTM A-167 TP 304	75.0	ASTM A-298 E-308-15 lime coated	80.0
(2) Pipe	ASTM A-312 TP 304	75.0		
(3) Bars	ASTM A-276 TP 304	75.0	ASTM A-371 GR-308 (TIG Process)	80.0
(4) Plate	ASTM A-240 TP 304	75.0	ASTM A-276-65 E-308-L	80.0
Tungsten electrodes are non-consumable and do not become part of a welded joint.			ASTM B-297 EWTh-2 (tungsten)	N A

Table A4.7-4 **Sheet 1 of 2**
Exceptions to Codes and Standards for the Transfer Casks

Reference Code or Standard Section/Article	Code or Standard Requirement	Exception, Justification & Compensatory Measures
ASME Section VIII 1962 Edition, Subsection A General Requirements UG-5 General.	(a) Material subject to stress due to pressure shall conform to one of the specifications in Section II of the Code and shall be limited to those that are permitted in the applicable Part of Subsection C, except as otherwise permitted in Paragraphs UG-10 and UG-11.	ASTM A-167 is not listed in the 1962 Edition of ASME Section VIII or Section II. ASTM A-167 had a 1963 and 1969 edition. A review of the Chemical Requirements (Table 1) and Mechanical Property Requirements (Table 2) for Type 304 in the 1969 Edition shows that they are the same as for ASTM A-240 TP304 in the 1962 Edition of Section VIII. In addition, the drawings have no specific call out for ASTM A-167. Addendum 4 (dated August 14, 1974) of the Safety Analysis Report provides actual materials stress properties. No further compensatory measures are considered necessary.
ASME Section VIII 1962 Edition, Subsection A General Requirements UG-5 General.	(a) Material subject to stress due to pressure shall conform to one of the specifications in Section II of the Code and shall be limited to those that are permitted in the applicable Part of Subsection C, except as otherwise permitted in Paragraphs UG-10 and UG-11.	ASTM A-276 is not listed in the 1962 Edition of ASME Section VIII or Section II. ASTM A-276 had 1962, 1963, and 1965 editions. This standard is for bar stock shapes. The only call outs for bar stock are on drawings BMI Dwg. Nos. 0029 Rev C, 0031 Rev C, and 0037 Rev A. The bar stock does not function as part of the pressure boundary or a load path. No further compensatory measures are considered necessary.
ASME Section VIII 1962 Edition, Subsection A General Requirements UG-5 General.	(a) Material subject to stress due to pressure shall conform to one of the specifications in Section II of the Code and shall be limited to those that are permitted in the applicable Part of Subsection C, except as otherwise permitted in Paragraphs UG-10 and UG-11.	ASME A-371 GR-308 (TIG Process) is not listed in the 1962 Edition of ASME Section II electrode material. ASME Section II 1962 Edition contains a specification for ASTM A-371. It lists ER-308. It is assumed that the GR-308 is the same as ER-308. No further compensatory measures are considered necessary.

Table A4.7-4 **Sheet 2 of 2**
Exceptions to Codes and Standards for the Transfer Casks

Reference Code or Standard Section/Article	Code or Standard Requirement	Exception, Justification & Compensatory Measures
ASME Section VIII 1962 Edition, Subsection A General Requirements UG-5 General.	(a) Material subject to stress due to pressure shall conform to one of the specifications in Section II of the Code and shall be limited to those that are permitted in the applicable Part of Subsection C, except as otherwise permitted in Paragraphs UG-10 and UG-11.	ASTM A-276-65 E-308-L is not listed in the 1962 Edition of ASME Section II electrode material. As noted above, ASME Section II 1962 Edition does not contain ASTM A-276. However, E-308-L is a standard electrode used with other ASME approved materials. No further compensatory measures are considered necessary.

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Table A5.1-1
Summary of Criticality Prevention for Transfer Cask

Control Methods for Prevention of Criticality1	Fuel in Transfer Cask
Limitation on the amount of Fissile Materials	
No mixing of fuel types	ST - Shipping schedule P - Fuel Shipment Manifest, Separate fuel repackaging campaigns PDF – Configurations of Canisters and Packaging
Number of fuel elements	ST- Shippingport reflector module composition PDF- Configurations of ISF Baskets
Mass of loose fissile material	ST – Fuel manufacturing process
Engineered Safety Features	
Physical separation of sets of fuel elements by engineered features	ST- Shippingport reflector module composition PDF – Canister and packaging structural design
Geometric control provided by	ST- Shippingport reflector module composition PDF – Canister and packaging structural design
Use of burnup credit	Not used
Use of burnable or fixed neutron absorbers (poisons)	Not used

Notes:

ST – Special Technique

P – Procedure

PDF – Principal Design Feature

Table A5.1-2
Bounding Criticality Evaluations

Type of Fuel	Dry as packed			Flooded		
	No. of elements	Optimum Spacing	k_{eff}	No. of elements	Optimum Spacing	k_{eff}
Shippingport Reflector Modules for Type IV and V[a]	Infinite array of pellets	In contact with each other	0.19	Infinite array of rods	1 inch	0.65
TRIGA Fuel Elements in Peach Bottom Cask[b]	65	In contact with each other on single tier of Cask	0.95	40	0.25 cm	0.95
Peach Bottom Core 1 & 2 Fuel Elements in Peach Bottom Cask[c]	37	In contact with each other	0.65	19	In contact with each other	0.94

Notes:
1. The FWENC analysis based for flooded condition bounds the DOE-ID evaluations
2. Bounding case to determine number of TRIGA elements on a single tier to exceed k_{eff} of 0.95
3. Bounding case for loose, bare elements in a tight-diameter packing. Flooded case assumes saturated graphite. (Greater than 37 fuel elements were not considered since the quantity is more than twice the largest existing INL fuel storage container.

Table A8.1-1
Peach Bottom Cask Heat Load

Fuel Type	Quantity in Peach Bottom Cask	Fuel Decay heat	Cask Heat Load
Peach Bottom 1	18 elements	0.053 watts per element	0.954 watts
Peach Bottom 2	12 elements	3.276 watts per element	39.312 watts
TRIGA	90 elements	0.326 watts per element	29.34 watts
Shippingport Reflector Modules IV	1 module	9.809 watts per module	9.809 watts
Shippingport Reflector Modules V	1 module	7.142 watts per module	7.142 watts
Shippingport Reflector Rods	127 rods	0.043 watts per rod	5.461 watts

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Appendix A Figures

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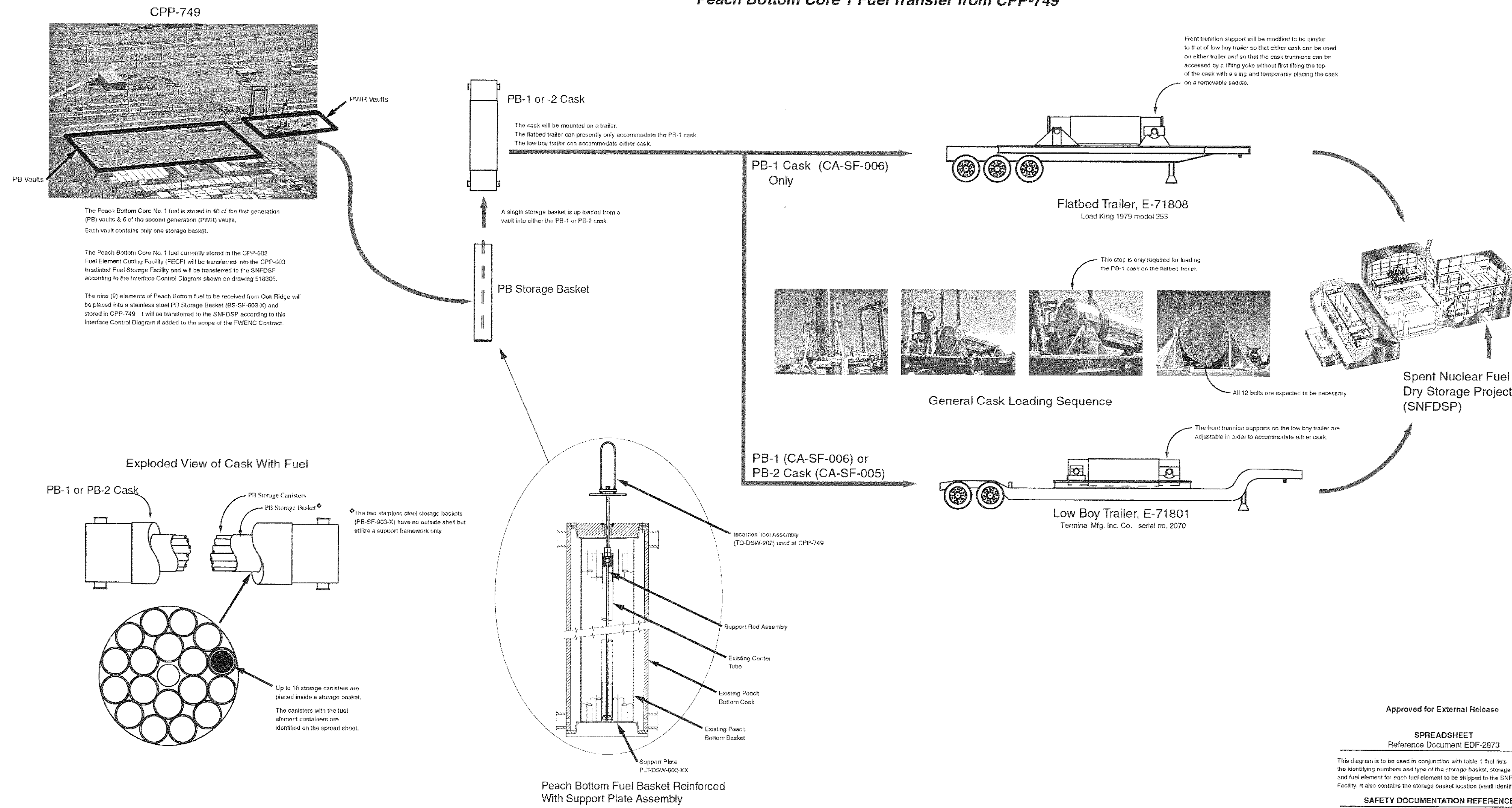
REVISIONS		
REV	DESCRIPTION	EFFECTIVE DATE
1	See DAR 85816	9-28-01
2	See DAR 86575	10-19-01
3	See DAR 91430	5-2-02
4	See DAR 92624	8-20-02

Interface Control Diagram
Peach Bottom Core 1 Fuel Transfer from CPP-749



Peach Bottom Fuel Basket Reinforced With Support Plate Assembly

Stainless Steel PB Storage Basket (BS-SF-903-x) Drawings

Serial No.	Sheet No.	Rev. No.
099054	1	1
099055	1	1
099056	1	1

Aluminum PB Storage Basket Drawings [a, b]

Serial No.	Sheet No.	Rev. No.
500213	1	E
500214	1	E
500215	1	B
500216	1	B
500217	1	A
500218	1	A
500245	1	C
500269	1	A

[a] These drawings are representative but not inclusive of all aluminum basket designs. Drawings of other designs are not available.

[b] These aluminum basket were not assigned equipment numbers.

PB Basket Support Plate & Support Rod (PLT-DSW-902) Drawings [c, d]

Serial No.	Sheet No.	Rev. No.
097329	1	1
097329	2	1
097329	3	1
097329	4	1
097329	5	1

[c] The PB Basket Support Plate & Support Rod will not be used with the stainless steel basket.

[d] The PB Basket Support Plate & Support Rod will be inserted into all aluminum PB storage baskets.

PB-1 and PB-2 Cask Drawings [e, f, g, h, i]

Serial No.	Sheet No.	Rev. No.
500212	1	7
500219	1	6
500224	1	5
500226	1	A
500227	1	B
500232	1	B
500233	1	B
500235	1	B
500238	1	2
500240	1	4
500242	1	4
500246	1	0
500247	1	B
500248	1	A
500249	1	B
500250	1	B
500261	1	C
097329 [j]	6	1
509725	1	0
509725	2	0

[e] No drawings have been found that are identified as PB-1 drawings. Both casks were apparently manufactured from the same set of drawings. The critical cask dimensions have been As-Built. Dwg. 509725 documents the findings. Additional As-Building will be performed.

[f] The distance between the trunnions of the PB-1 and PB-2 casks are not identical.

[g] The original carbon steel outside skin of both casks has been removed and replaced with a stainless steel skin. The same dimensions were generally maintained, see note e.

[h] These are assembly drawings. Detail drawings of components are not listed but referred to by the assembly drawings.

[i] Impact limiter drawings were not listed as their use is not contemplated.

[j] New upper lids for PB-1 & PB-2 will be used for all Peach Bottom transfers from CPP-749. Bolts for the new lids are specified on drawing 097329 sheet no. 1. The revised safety analysis to be completed for transporting the casks without impact limiters may require increasing the number of bolts from eight to twelve. Neolube is used to prevent galling. A different bolt material may be specified to minimize the galling potential.

Flatbed Trailer Drawings

Serial No.	Sheet No.	Rev. No.
094563	1	1
094564	1	1
094565	1	1
094566	1	1
094567	1	1

Low Boy Trailer Drawings

Serial No.	Sheet No.	Rev. No.
502764	1	4
502764	2	4
502764	3	4
502765	1	6
502765	2	6
502766 [k]	1	2

[k] The cover bracket shown on this drawing is in place but will not be used.

Approved for External Release

SPREADSHEET
Reference Document EDF-2873

This diagram is to be used in conjunction with table 1 that lists the identifying numbers and type of the storage basket, storage canister, and fuel element for each fuel element to be shipped to the SNFDSP Facility. It also contains the storage basket location (vault identification).

SAFETY DOCUMENTATION REFERENCES

Idaho Nuclear Technology and Engineering Center (INTEC) Plant Safety Document section 4.7 "Underground Fuel Storage", Rev. 3 March 2000. This document provides safety information for the CPP-749 fuel storage vaults. SAR-112 is being prepared to address fuel handling and storage in the underground fuel storage facility. It will replace INTEC Plant Safety document, Section 4.7 when approved.

Idaho Chemical Processing Plant Safety Document section 4.5, Addendum J "Peach Bottom Cask", Rev. 0 March 1994. This document provides safety information for the Peach Bottom casks. SAR-175 is being written to address use of the Peach Bottom cask within INTEC.

NOTE: This diagram assumes transport of the casks from CPP-749 to the SNFDSP Facility at INTEC without the impact limiters on the cask(s). A revision of the SAR for the Peach Bottom Cask will be necessary. TS4.5B1, "Peach Bottom Cask Handling at the ICPP" currently requires installation of the impact limiters for "in-plant" movements of the cask located on a trailer.

AS-BUILT

The drawings and revisions identified represent the latest information in the INEEL document control system.

Figure A-1 Rev. 4

SPECIAL PURPOSE

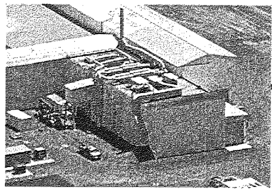
NOT APPLICABLE	INEEL
S. Withers	Interface Control Diagram Peach Bottom Core 1 Fuel Transfer from CPP-749
R. Denney	
K. Taylor (Graphics Arts)	
SPECPURP	E 01MF3 200 0749 47 090 — DWG 518304 REV 4
85816	
9-28-2001	No Scale — INTEC — 1 of 1

01-GA50890-07

REV	DESCRIPTION	EFFECTIVE DATE
1	See DAR 89575	10-19-01
2	See DAR 92206	08-20-02

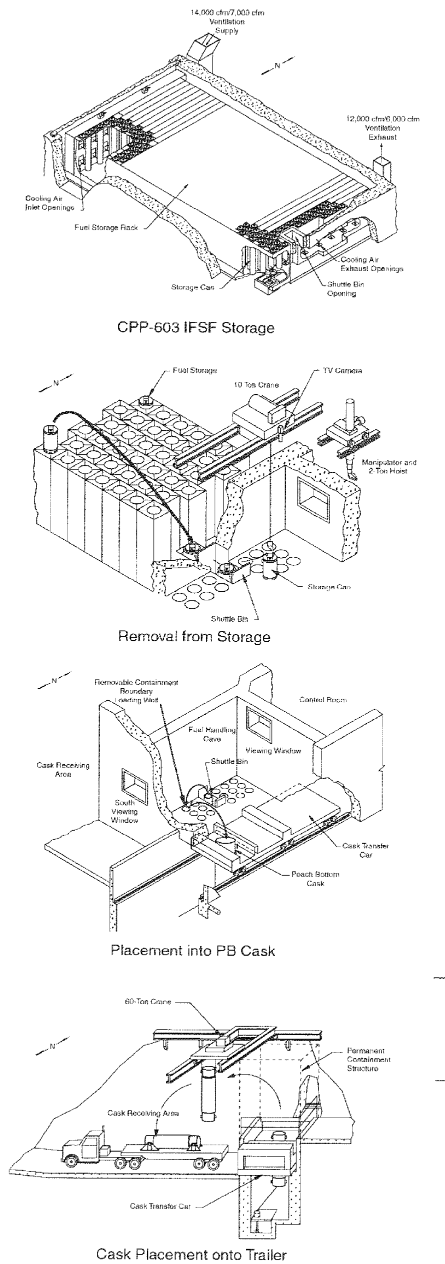
The Peach Bottom Core 2 fuel is stored in storage cans in the IFSF. The Peach Bottom Core 2 fuel to be received from Oak Ridge will be placed into a stainless steel PB Storage Basket (BS-SF-903-X) and stored in CPP-749. It will be transferred to the SNFDSP according to the Interface Control Diagram shown in drawing 518304. (Not yet in FWENC contract.)

The Peach Bottom Core No. 1 fuel currently stored in the CPP-603 Fuel Element Cutting Facility (FECF) will be transferred into the CPP-603 Irradiated Fuel Storage Facility and will be transferred to the SNFDSP according to this Interface Control Diagram

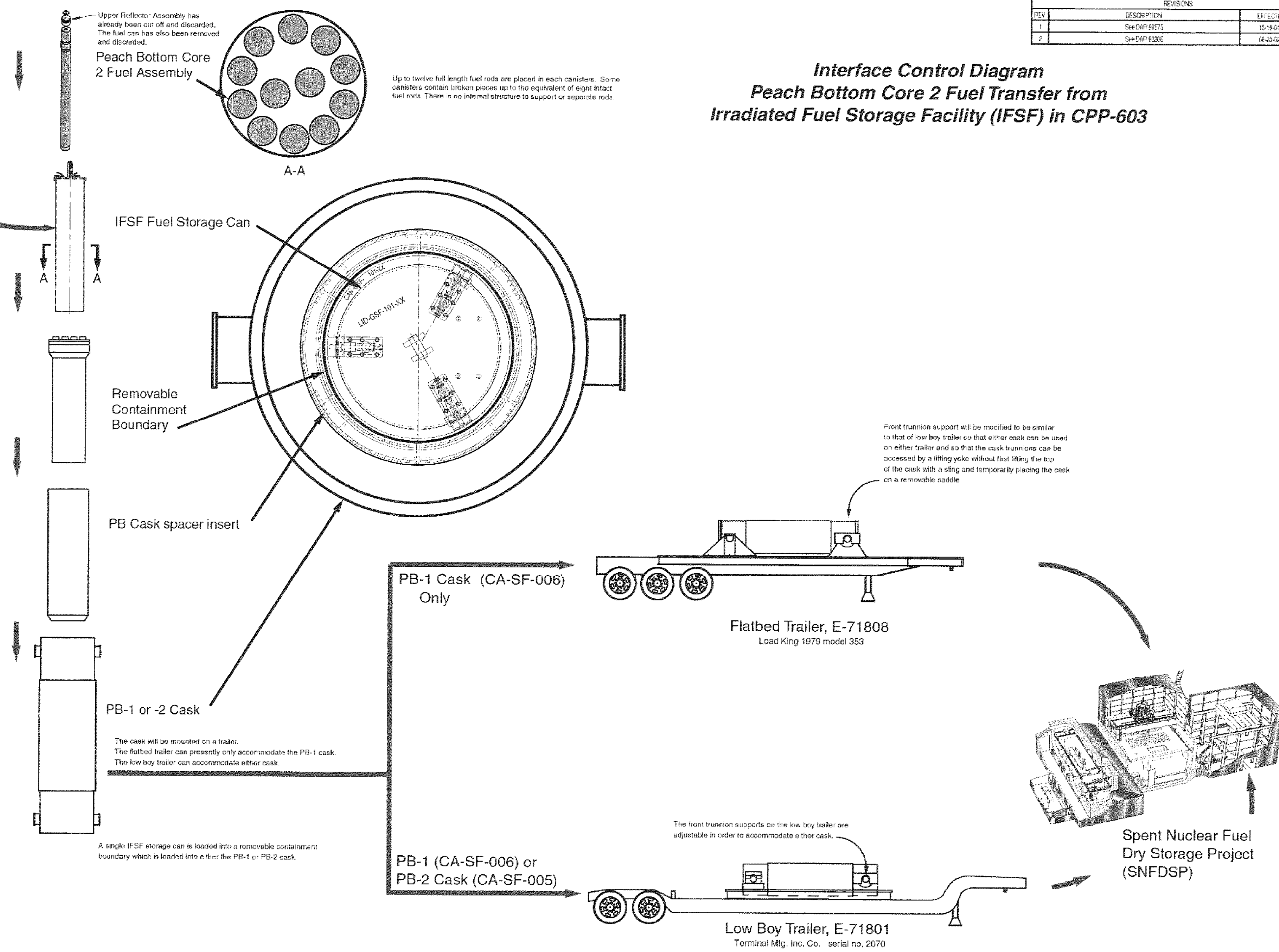


CPP-603

IFSF Storage External View



Interface Control Diagram
Peach Bottom Core 2 Fuel Transfer from Irradiated Fuel Storage Facility (IFSF) in CPP-603



IFSF Fuel Storage Can (CAN GSF-101) Drawings [a]

Serial No.	Sheet No.	Rev. No.
094910	1	1
094911	1	1
094912	1	1

IFSF TRIGA SNF Storage Canister (CAN-GSF-276) Drawings [a, b]

Serial No.	Sheet No.	Rev. No.
453318	1	4
453319	1	B
453321	1	3

[a] Modifications may be necessary based on design of cask inserts and associated safety analyses (See note [g]).

[b] The CAN-GSF-276 Canister will be used for the Core 1 fuel from the FECF.

PB-1 & PB-2 Cask Liner and Overpack

Serial No.	Sheet No.	Rev. No.
519574	1	0
519574	2	0
519575	1	0
519575	2	0
519575	3	0
519575	4	0
519575	5	0
519576	1	0
519576	2	0
519756	3	0
519576	4	0

PB-1 and PB-2 Cask Drawings [c, d, e, f, g]

Serial No.	Sheet No.	Rev. No.
500212	1	7
500219 [g]	1	6
500224	1	5
500226	1	A
500227	1	B
500232	1	B
500233	1	B
500235	1	B
500236	1	2
500240	1	4
500242	1	4
500246	1	C
500247	1	B
500248	1	A
500249	1	B
500250	1	B
500261	1	C
509725	1	C
509725	2	C

[c] No drawings have been found that are identified as PB-1 drawings. Both casks were apparently manufactured from the same set of drawings. The critical cask dimensions have been As-Built. Dwg. 509725 documents the findings. Additional As-Builting will be performed.

[d] The original carbon steel outside skin of both casks has been removed and replaced with a stainless steel skin. The same dimensions were generally maintained. See note c.

[e] These are assembly drawings. Detail drawings of components not listed but referred to by the assembly drawings.

[f] Impact limiter drawings were not listed as their use is not contemplated for PB fuel in IFSF.

[g] The original upper lid for PB-1 & PB-2 shown in this drawing will be used for transfers from IFSF. Bolts for the lids are specified on detail drawing 500204. The specifications for the bolts may be revised based on the results of the safety analysis for transferring the casks in cold weather.

Flatbed Trailer Drawings

Serial No	Sheet No.	Rev. No.
094563	1	1
094564	1	1
094565	1	1
094566	1	1
094567	1	1

Low Boy Trailer Drawings

Serial No.	Sheet No.	Rev. No.
502764	1	4
502764	2	4
502764	3	4
502765	1	6
502765	2	6
502766 [h]	1	2

[h] The cover bracket shown on this drawing is in place but will not be used.

Approved for External Release

SPREADSHEET
Reference Document EDF-2874

This diagram is to be used in conjunction with a table that lists the identifying numbers of the storage canister and fuel element for each fuel element to be shipped to the SNFDSP Facility. It also contains the storage can location (IFSF position identification). For refrence only.

SAFETY DOCUMENTATION REFERENCES

Idaho Nuclear Technology and Engineering Center (INTEC) Plant Safety Document section 4.12, "Irradiated Fuel Storage Facility" Rev. 14, June 2001. This document provides existing safety information for the CPP-603 Irradiated Fuel Storage Facility. SAR-114 has been drafted and delivered to DOE-ID for review. It will replace INTEC Plant Safety Document Sec. 4.12. An addendum will be written to address transfer of PB fuel out of IFSF in the Peach Bottom cask.

Idaho Chemical Processing Plant Safety Document Section 4.5, Addendum J "Peach Bottom Cask", Rev. 0 March 1994. This document provides safety information for the Peach Bottom Casks. SAR-175 is being written to address use of the Peach Bottom Cask within INTEC.

NOTE: This diagram assumes transport of the casks from CPP-603 (IFSF) to the SNFDSP Facility at INTEC without the impact limiters on the cask(s). A revision of the SAR for the Peach Bottom Cask will be necessary. TS4.5B1, "Peach Bottom Cask Handling at the ICPP" currently requires installation of the impact limiters for "in-plant" movements of the cask located on a trailer

AS-BUILT

The drawings and revisions identified represent the latest information in the INEEL document control system

Figure A-2 Rev. 4

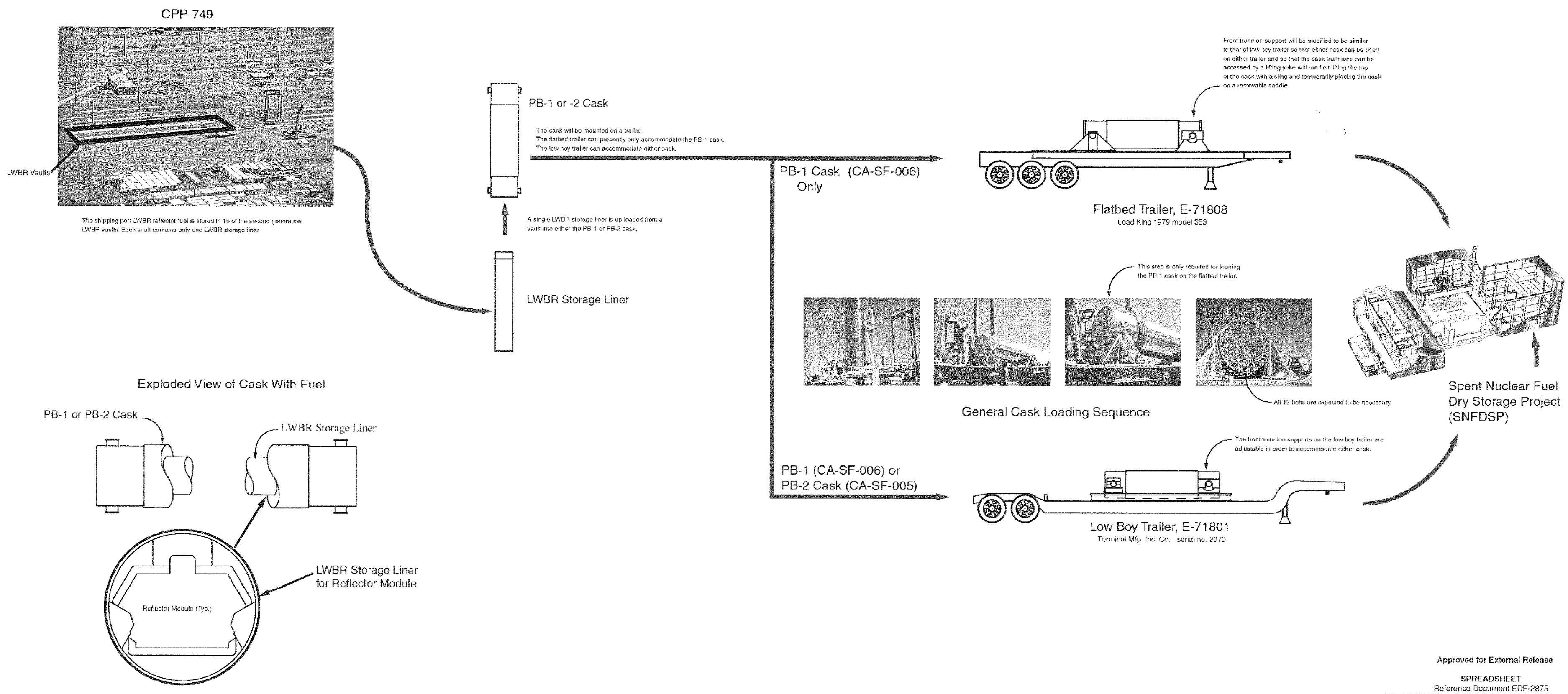
SPECIAL PURPOSE

SUBCONTRACT NO. NOT APPLICABLE	INEEL
REQUESTER S. Withers	Interface Control Diagram
DESIGN R. Denney	Peach Bottom Core 2 Fuel Transfer from
DRAWN K. Taylor (Graphic Arts)	Irradiated Fuel Storage Facility in CPP-603
PROJECT NO.	SIZE E · CAGE CODE 01MF3 · 200 0749 47 090 · DWG 518306 · REV 2
SPEC CODE SPECPURP	
FOR REVIEW/APPROVAL SIGNATURES SEE DAR NO. 85814	SCALE No Scale · INTEC · SHEET 1 of 1
EFFECTIVE DATE 9-28-2001	

01 GA50890 06

REV	DESCRIPTION	EFFECTIVE DATE
1	See DAR [illegible]	[illegible]
2	See DAR [illegible]	[illegible]

Interface Control Diagram
Shippingport Light Water Breeder Reactor
Fuel Transfer from CPP-749



Shippingport LWBR Reflector Fuel Storage Liner Assembly Drawings [a]

Tracking No.	Revision	WEC Dwg. No.
LWBR-DWG-0077	D	1526E76
LWBR-DWG-0079	D	1526E70
LWBR-DWG-0081A	E	1573E77 [b]

[a] Assembly drawings only. Detail drawings are not provided but are referred to by the assembly drawings.

[b] A LWBR Seed Module Storage Liner Assembly without internal structures was used for the loose reflector rods.

PB-1 and PB-2 Cask Drawings [c d e f g]

Serial No.	Sheet No.	Rev. No.
500212	1	7
500219 [h]	1	6
500224	1	5
500226	1	A
500227	1	D
500232	1	B
500233	1	B
500235	1	B
500238	1	2
500240	1	4
500242	1	4
500246	1	D
500247	1	B
500248	1	A
500249	1	B
500250	1	B
500261	1	C
509725	1	D
509725	2	D

[c] No drawings have been found that are identified as PB-1 drawings. Both casks were apparently manufactured from the same set of drawings. The critical cask dimensions have been As-Built. Dwg. 509725 documents the findings. Additional As-Builting will be performed.

[d] The distance between the trunnions of the PB-1 and PB-2 casks are not identical.

[e] The original carbon steel outside skin of both casks has been removed and replaced with a stainless steel skin. The same dimensions were generally maintained, see note c.

[f] These are assembly drawings. Detail drawings of components are not listed, but are referred to by the assembly drawings.

[g] Impact limiter drawings were not listed as their use is not contemplated.

[h] The original upper lid shown on this drawing will be used for LWBR transfers from CPP-749. Bolts for the lids are specified on detail drawing 500204. The specifications for the bolts may be revised based on the results of the safety analysis for transferring the casks without impact limiters.

Flatbed Trailer Drawings

Serial No.	Sheet No.	Rev. No.
094563	1	1
094564	1	1
094565	1	1
094566	1	1
094567	1	1

Low Boy Trailer Drawings

Serial No.	Sheet No.	Rev. No.
502764	1	4
502764	2	4
502764	3	4
502765	1	6
502765	2	6
502766 [i]	1	2

[i] The cover bracket shown on this drawing is in place but will not be used.

Approved for External Release

SPREADSHEET
Reference Document EDF-2875

This diagram is to be used in conjunction with a spreadsheet that lists the identifying numbers and type of the storage liner and module or fuel element for each fuel element to be shipped to the SNFDSP Facility. It also contains the storage liner location (vault identification).

SAFETY DOCUMENTATION REFERENCES

Idaho Nuclear Technology and Engineering Center (INTEC) Plant Safety Document Section 4.7A, "Storage of Unirradiated and Irradiated Light Water Breeder Reactor Fuel in Underground Dry Wells at INTEC", Rev. 2 March 2000. This document provides safety information for the CPP-749 LWBR fuel storage vaults. SAR-112 is being prepared to address fuel handling and storage in the underground fuel storage facility. It will replace INTEC Plant Safety document, Section 4.7 when approved.

Idaho Chemical Processing Plant Safety Document section 4.5, Addendum J "Peach Bottom Cask", Rev. 0 March 1994. This document provides safety information for the Peach Bottom Casks. SAR-175 is being written to address use of the Peach Bottom cask within INTEC.

NOTE: This diagram assumes transport of the casks from CPP-749 to the SNFDSP Facility at INTEC without the impact limiters on the cask(s). A revision to the SAR for the Peach Bottom Cask will be necessary. TS4.5B1, "Peach Bottom Cask Handling at the ICPP" currently requires installation of the impact limiters for "in-plant" movements of the cask located on a trailer.

AS-BUILT

The drawings and revisions identified represent the latest information in the INEEL document control system.

Figure A-3 Rev. 4

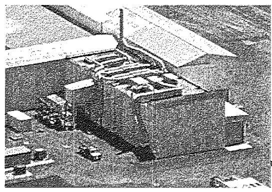
SPECIAL PURPOSE

SUBCONTRACT NO. NOT APPLICABLE	INEEL
PREPARED S. Withers	Interface Control Diagram
CHECKED R. Denney	Shippingport Light Water Breeder Reactor
DRAWN K. Taylor (Graphic Arts)	Fuel Transfer from CPP-749
SPECPURP	SIZE E · CAD FILE 01MF3 · DWG 518305 · REV 2
25813	INTEC · SHEET 1 of 1
9-26-2001	SCALE: No Scale

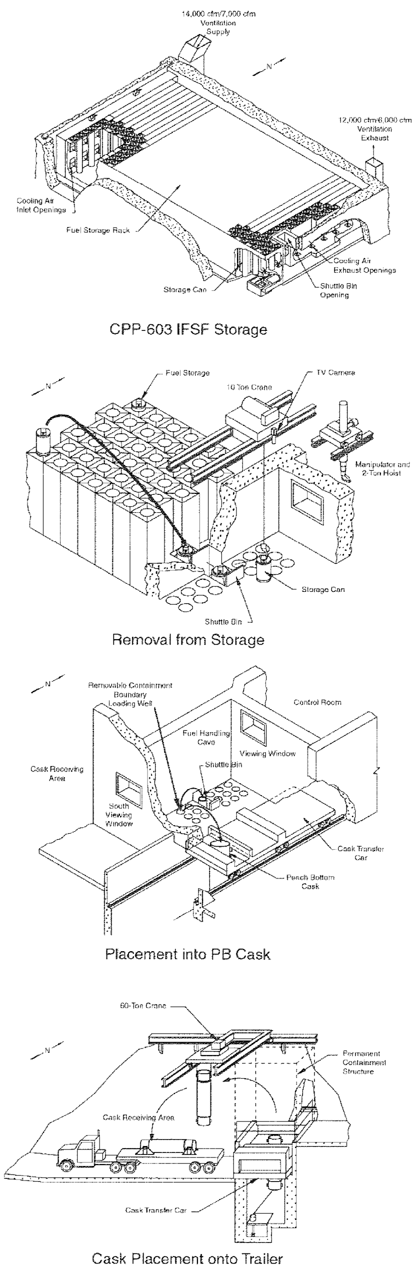
01-GA50680-06

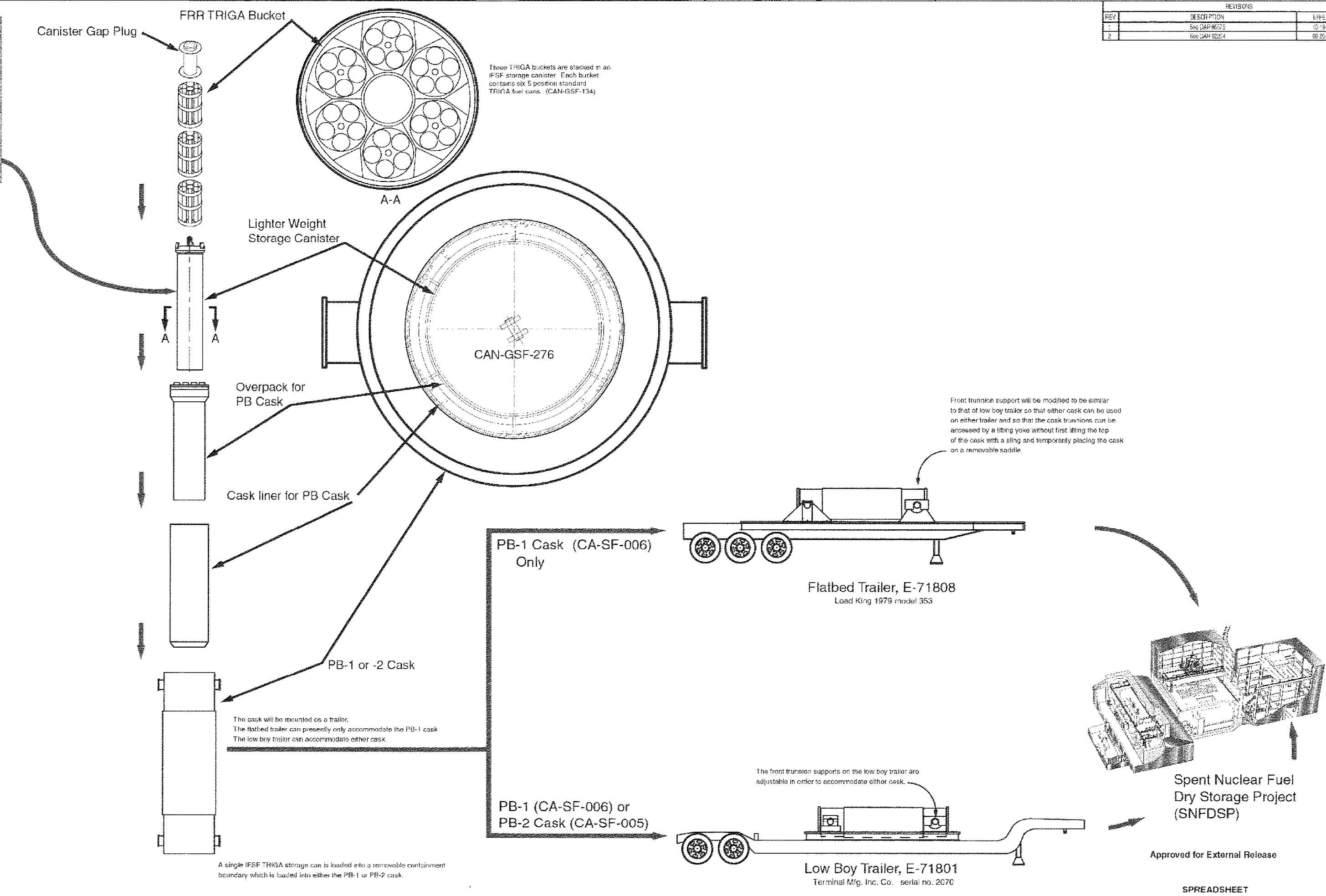
REVISIONS		
REV	DESCRIPTION	EFFECTIVE DATE
1	See DAR 85575	10-19-01
2	See DAR 92204	08-20-02

The TRIGA fuel will all be transferred from the IFSF to the SNFDSP in storage canisters. Some of the TRIGA fuel is currently in the CPP-666 Fuel Storage Area underwater storage pools and will be moved to the IFSF. Some TRIGA fuels still remains to be received from off-site shippers.



CPP-603
IFSF Storage External View





Approved for External Release

Lighter Weight Storage Canister (CAN-GSF-276) Drawings

Serial No.	Sheet No.	Rev. No.
453318	1	5
453319	1	B
453320	1	B
453321	1	3
453321	2	B
453322	1	3
453322	2	B
453323	1	2
453324	1	A

FRR TRIGA Bucket (BU-GSF-BEL) Drawings

Serial No.	Sheet No.	Rev. No.
508724	1	3
508724	2	3

5 Position Standard TRIGA Fuel Can (CAN-GSF-134)

Serial No.	Sheet No.	Rev. No.
516777	1	0
516777	2	0

PB-1 & PB-2 Cask Liner and Overpack

Serial No.	Sheet No.	Rev. No.
519574	1	0
519574	2	0
519575	1	0
519575	2	0
519575	3	0
519575	4	0
519575	5	0
519576	1	0
519576	2	0
519756	3	0
519576	4	0

Canister Gap Plug (PLUG-GSF-76)

Serial No.	Sheet No.	Rev. No.
522272	1	0
522272	2	0

PB-1 and PB-2 Cask Drawings [a, b, c]

Serial No.	Sheet No.	Rev. No.
500212	1	7
500219 [d]	1	6
500224	1	5
500226	1	A
500227	1	B
500232	1	B
500233	1	B
500235	1	B
500238	1	2
500240	1	4
500242	1	4
500246	1	0
500247	1	B
500248	1	A
500249	1	B
500250	1	B
500261	1	C
509725	1	0
509725	2	0

PB-1 and PB-2 Cask Drawings [a, b, c]

Serial No.	Sheet No.	Rev. No.
500251	1	E
500252	1	C
500253	1	C
500254	1	C
500255	1	C
095977	1	1

[a] These are assembly drawings. Detail drawings of components not listed but referred to by the assembly drawings.

[b] No drawings have been found that are identified as PB-1 drawings. Both casks were apparently manufactured from the same set of drawings. The critical cask dimensions have been As-Built. Dwg. 509725 documents the findings. Additional As-Builting will be performed.

[c] The original carbon steel outside skin of both casks has been removed and replaced with a stainless steel skin. The same dimensions were generally maintained, see note b.

[d] The original upper lid for PB-1 & PB-2 shown in this drawing will be used for transfers from IFSF. Bolts for the lids are specified on detail drawing 500204. The specifications for the bolts may be revised based on the results of the safety analysis for transferring the casks in cold weather.

Flatbed Trailer Drawings

Serial No.	Sheet No.	Rev. No.
094563	1	1
094564	1	1
094565	1	1
094566	1	1
094567	1	1

Low Boy Trailer Drawings

Serial No.	Sheet No.	Rev. No.
502764	1	4
502764	2	4
502764	3	4
502765	1	6
502765	2	6
502766 [e]	1	2

[e] The cover bracket shown on this drawing is in place but will not be used.

SPREADSHEET
Reference Document EDF-2876

This diagram is to be used in conjunction with a table in EDF-2876 that lists the identifying numbers for each fuel element now at INTEC that is to be shipped to the SNFDSP Facility. Additional TRIGA fuel elements will be received in the future at INTEC for transfer to the SNFDSP. It also contains the existing storage basket location (for reference only).

SAFETY DOCUMENTATION REFERENCES

Idaho Nuclear Technology and Engineering Center (INTEC) Plant Safety Document Section 4.12, "Irradiated Fuel Storage Facility" Rev. 14, June 2001. INTEC Plant Safety Document Section 4.12 Addendum B," CPP-603 IFSF Fuel Canning Station," Rev. 5, March 1999. INTEC Plant Safety Document Section 4.12, Addendum F, "CPP-603 IFSF Foreign Research Reactor TRIGA Fuel handling and Storage, " Rev. 4, June 2001. These documents provide existing safety information for the CPP-603 Irradiated Fuel Storage Facility. SAR-114 has been drafted and delivered to DOE-ID for review. It will replace INTEC Plant Safety Document Sec. 4.12. An addendum will be written to address transfer of TRIGA fuel out of IFSF.

Idaho Chemical Processing Plant Safety Document section 4.5, Addendum J "Peach Bottom Cask", Rev. 0 March 1994. This document provides safety information for the Peach Bottom Casks. SAR-175 is being written to address use of the Peach Bottom Cask within INTEC.

NOTE: This diagram assumes transport of the casks from CPP-603 (IFSF) to the SNFDSP Facility at INTEC with the impact limiters on the cask(s). TS4.5B1, "Peach Bottom Cask Handling at the ICPP" currently requires installation of the impact limiters for "in-plant" movements of the cask located on a trailer. The impact limiters must be installed and removed while the cask is on the trailer.

AS-BUILT

The drawings and revisions identified represent the latest information in the INEEL document control system.

Figure A-4 Rev. 4

SPECIAL PURPOSE

SUBCONTRACT NO. NOT APPLICABLE	INEEL
REQUESTOR S. Withers	Interface Control Diagram Selected TRIGA Fuel Transfer from Irradiated Fuel Storage Facility in CPP-603
DESIGN R. Denney	
DRAWN K. Taylor (Graphic Arts)	
PROJECT NO.	
SPEC CODE SPECPURP	
FOR REVIEW/APPROVAL SIGNATURES SEE DAR NO. 85815	SIZE E · CAGE CODE 01MF3 · INDEX CODE NUMBER: AREA 200, TYPE 0740, 47, 090 · DWG. 518307 · REV. 2
EFFECTIVE DATE 9-28-2001	SCALE No Scale · INTEC · SHEET 1 of 1

01-GA50890-05

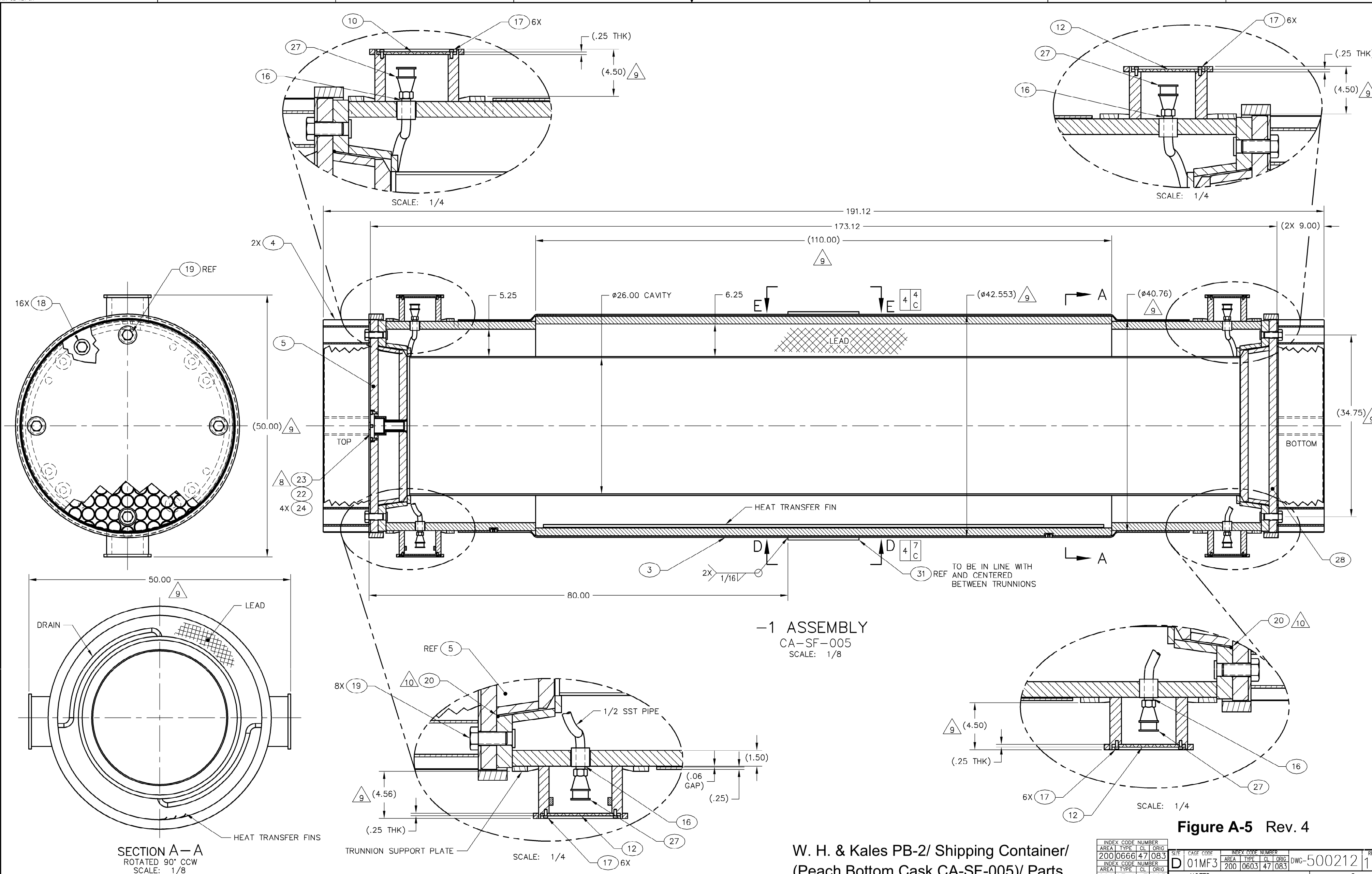


Figure A-5 Rev. 4

W. H. & Kales PB-2/ Shipping Container/ (Peach Bottom Cask CA-SF-005)/ Parts

INDEX CODE NUMBER			
AREA	TYPE	CL	ORIG
200	0666	47	083
200	0749	47	083

SIZE	CAGE CODE	AREA	TYPE	CL	ORIG	DWG	REV
D	01MF3	200	0603	47	083	500212	10

SCALE: NOTED SHEET 2

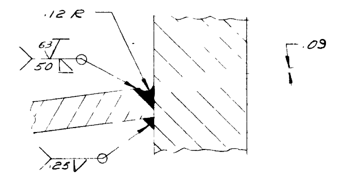
NOTES:

1. DO FINAL MACH. AFTER WELDING.
2. SEE DWG 0001 FOR WELD SPECS.
3. PLUG CAVITY, COVER: ITEM #7 TO BE IN ONE COVER ONLY (TOP).
4. (△) AS-BUILT MEASUREMENT FOR THIS DIMENSION CAN BE FOUND ON DRAWING 509725.
5. (△) MARK PER STD-7006-2A IN 3/8 INCH HIGH CHARACTERS WITH INFORMATION GIVEN IN TABLE. COV-SF-XXX-X IS A UNIQUE NUMBER FOR EACH CASK LID. LOCATE APPROXIMATELY AS NOTED. MARKING SHALL BE FILLED WITH BLACK INK PER STD-7006-12 HAVING A CHLORIDE CONTAIN LESS THAN 50 PPM.

CASK	COVER	UNIQUE NUMBER
CA-SF-005	UPPER	COV-SF-005-1
CA-SF-005	LOWER	COV-SF-005-2
CA-SF-006	UPPER	COV-SF-006-1
CA-SF-006	LOWER	COV-SF-006-2

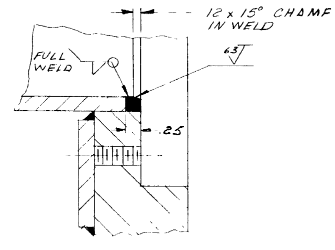
6. THIS IS A SAFETY CATEGORY, SAFETY SIGNIFICANT (SS) ASSEMBLY.

SAFETY CAT	INEEL DRAWING NO	ITEM	DWG. NO.	SIZE	NO REQ'D	LIST OF MATERIAL — TITLE – DESCRIPTION
	500220	1	0007	D	1	TOP PLATE, COVER
	500221	2	0008	D	1	CONE, COVER
	500222	3	0009	C	1	BOTTOM PLATE, COVER
	200223	4	0010	B	1	PLUG, COVER
SS		5			1	SAFETY PLUG; PATENTED ITEM FURNISHED BY THE EDWARD LEAD CO, COLUMBUS OHIO
		~~6~~	~~0011~~	~~B~~	~~1~~	~~IDENT. PLATE, COVER~~
	200260	7	0051	B	1	PLUG CAVITY, COVER



DETAIL B

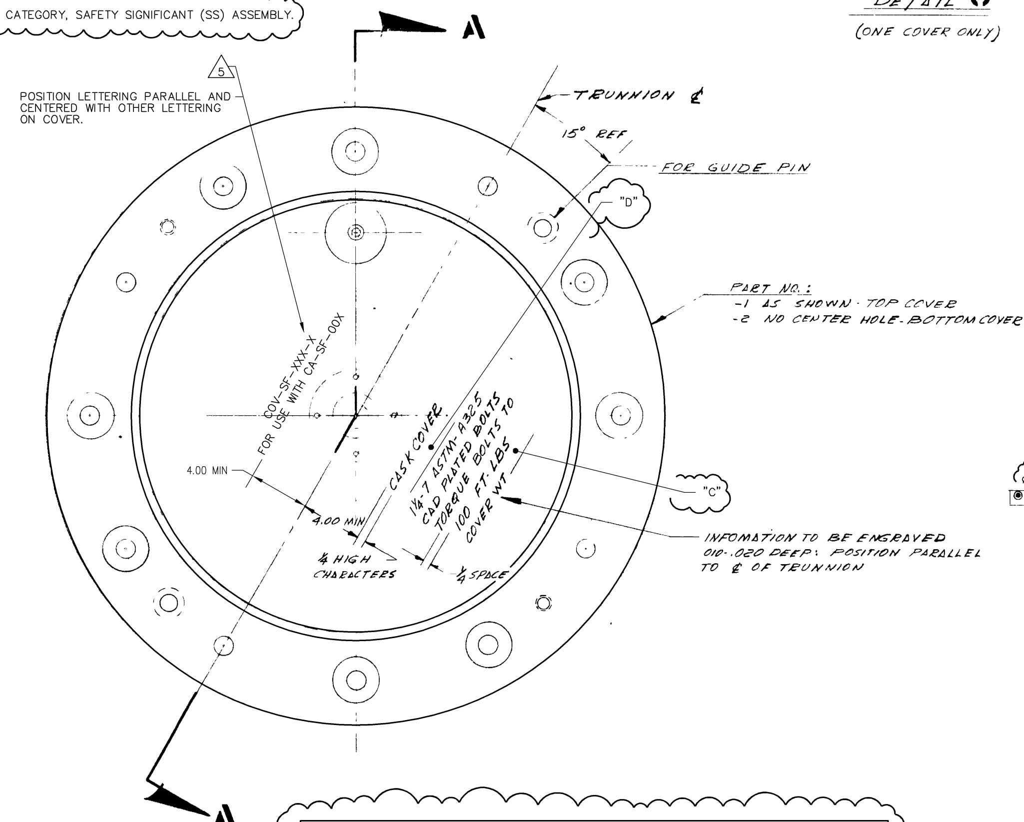
SCALE: FULL

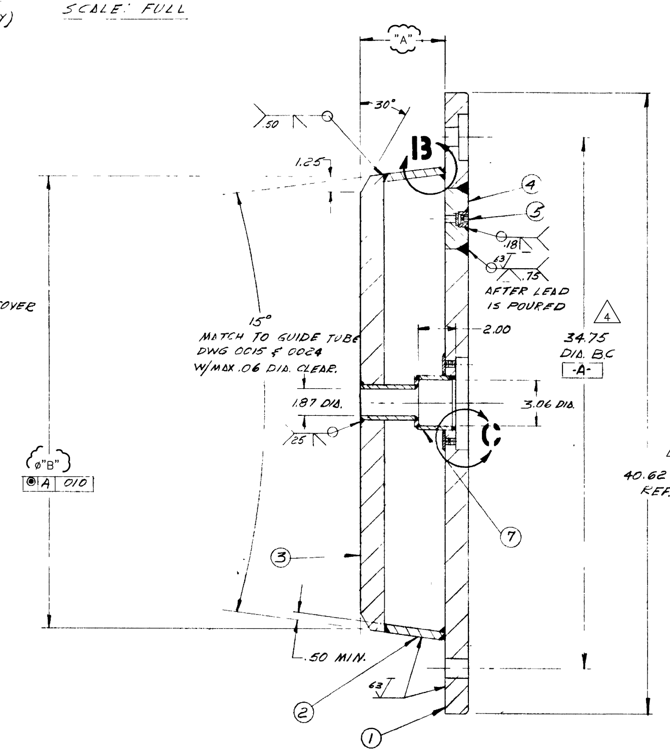


DETAIL C

(ONE COVER ONLY)

SCALE: FULL





SECTION AA

Figure A-6 Rev. 4

TABULATION BLOCK (△4)

DIM	NOMINAL DIM	COV-SF-005-1	COV-SF-005-2	COV-SF-006-1	COV-SF-006-2
"A"	5.50	5.5	5.5	5.5	TO BE DETERMINED
"B"	29.50	29.703	29.730	29.753	TO BE DETERMINED
"C"	–	1900	1901	1841	TO BE DETERMINED
"D"	–	PB-1 (1972)	PB-1 (1972)	PB-1	PB-1

INDEX CODE NUMBER

AREA	DWG TYPE	CL	ORIG	SERIAL
200	0603	47	083	500219
200	0666	47	083	500219
200	0749	47	083	500219

CONTROLLED DOCUMENT CLASS 1

ZONE	REV LET	REVISIONS	BY	DATE
	8	DRAWING TITLE REVISED REVISED NEXT ASSY SEE DAR 96150	DEJ	11/14/02
	7	SEE DAR 93984	DEJ	8/12/02

MAT'L (COMMERCIAL TOLERANCES APPLY) NOTED

TOLERANCE UNLESS OTHERWISE NOTED: FRAC ± –; ANG ± ½°; DEC ± .03

NEXT ASSY 500212; NO REQ'D 2

DRAWN BY CARTER; CHECKED ECL; DATE 2-17-70; DIV. 748 / 667 / 667

SCALE ¼:1; K-G N; ACCT NO 9123-6 PB; DWG NO 0006; D

SF | DSW | FR

BATTELLE MEMORIAL INSTITUTE
505 KING AVE.
COLUMBUS 1, OHIO

TITLE CPP
PEACH BOTTOM CASK COVER ASSEMBLY
COV-SF-005-1, COV-SF-005-2
COV-SF-006-1 & COV-SF-006-2

1RDD*CD7011

File: 500219-8.dwg
Path: Q:\WHEELER
Layout Name: Layout1
Date: 11/04/02 - 4:32 P.M.
ID: KRESV

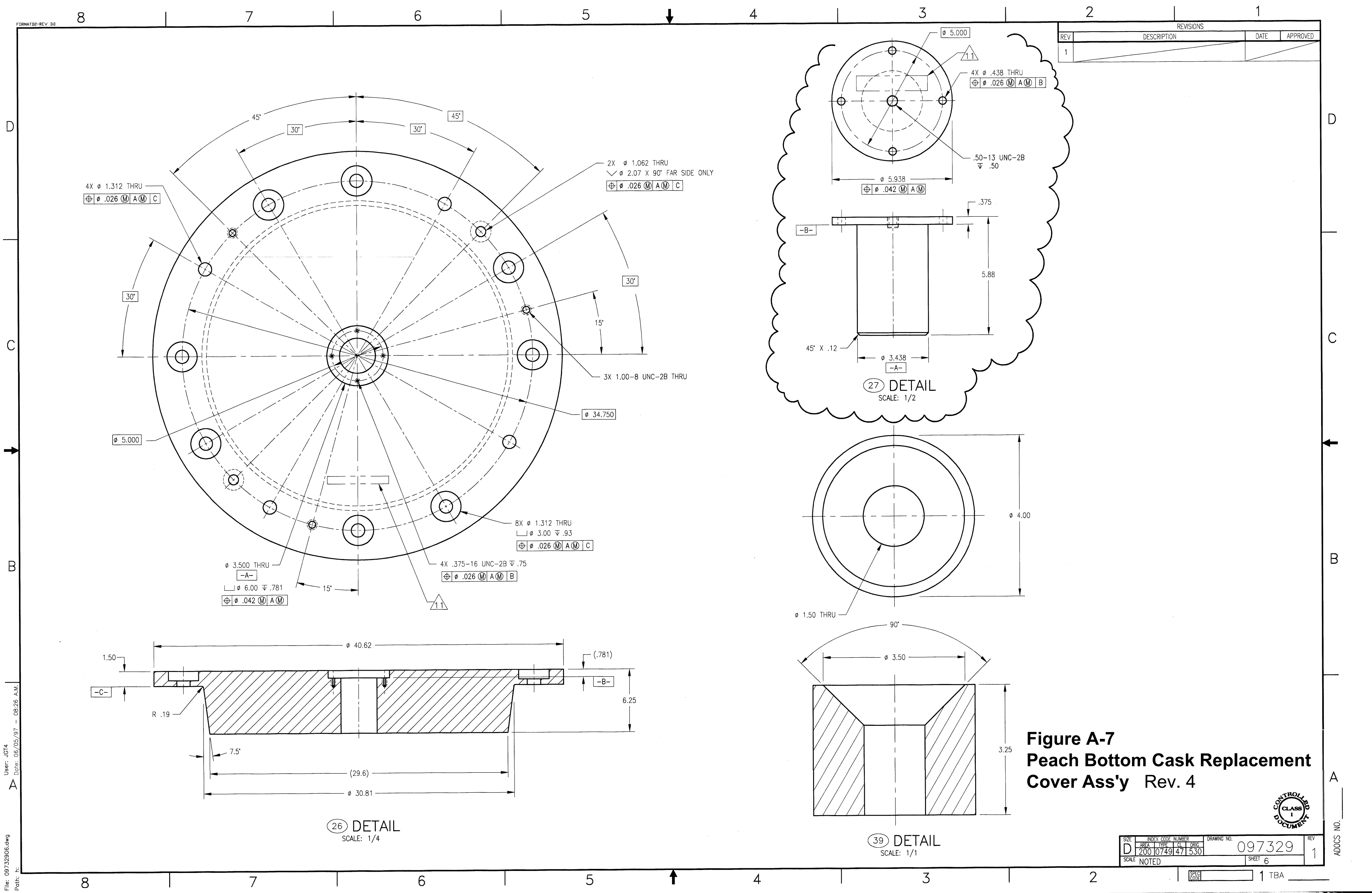
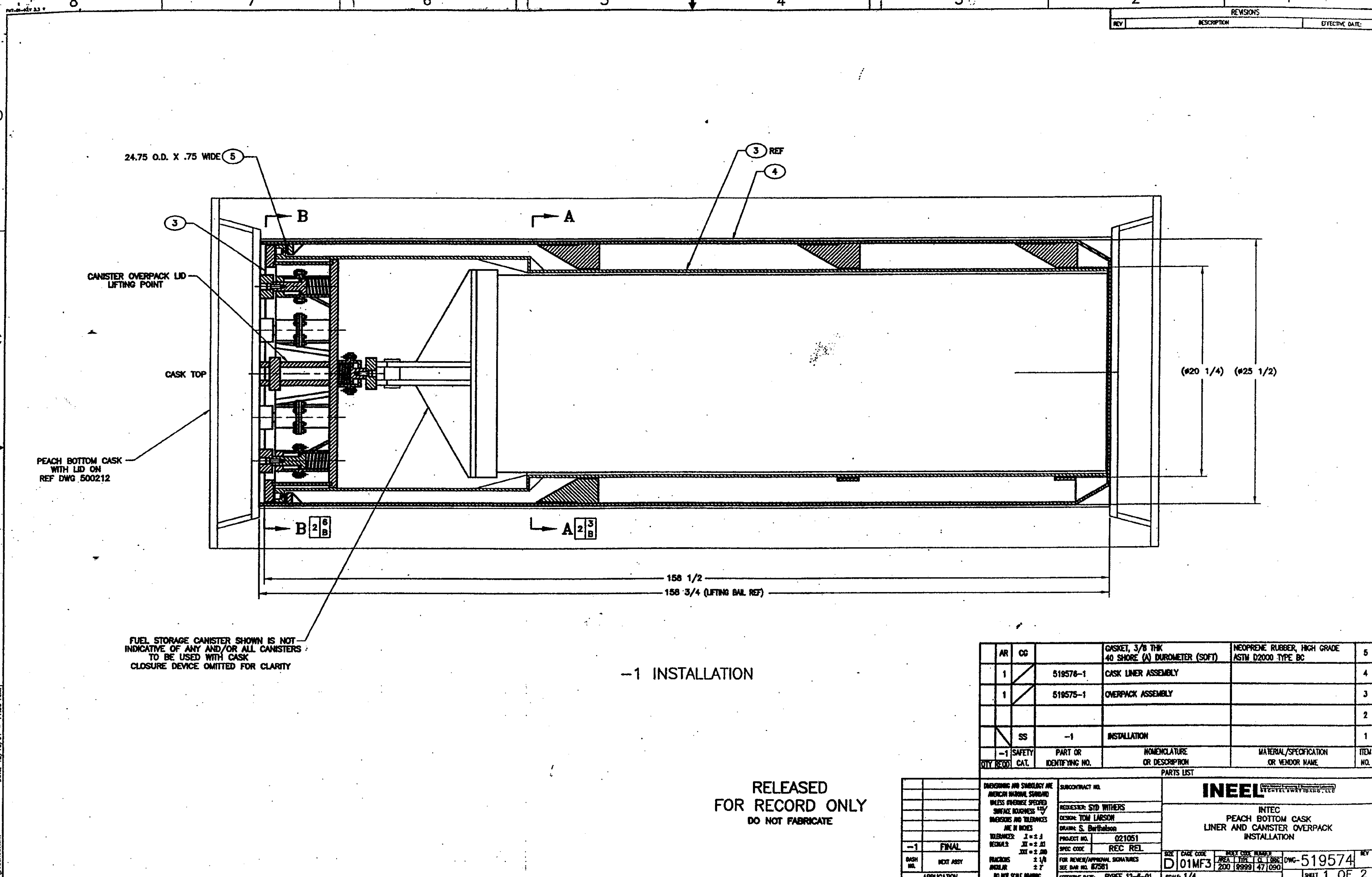


Figure A-7
Peach Bottom Cask Replacement Cover Ass'y Rev. 4



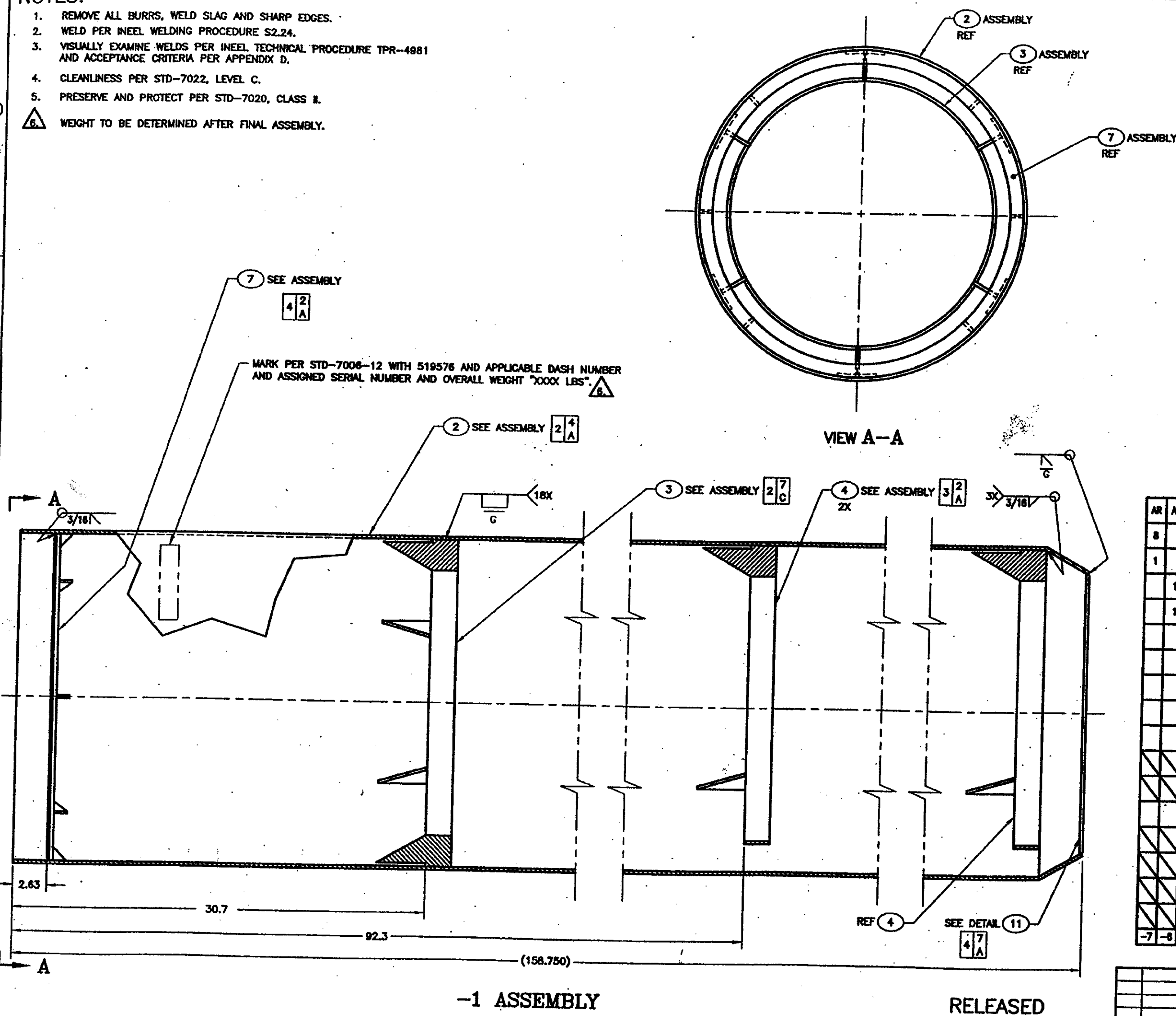
PARTS LIST

QTY REQD	SAFETY CAT.	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL/SPECIFICATION OR VENDOR NAME	ITEM NO.
AR	CG		GASKET, 3/8 THK 40 SHORE (A) DUROMETER (SOFT)	NEOPRENE RUBBER, HIGH GRADE ASTM D2000 TYPE BC	5
1		519576-1	CASK LINER ASSEMBLY		4
1		519575-1	OVERPACK ASSEMBLY		3
					2
	SS	-1	INSTALLATION		1

Figure A-8 Rev. 4

NOTES:

1. REMOVE ALL BURRS, WELD SLAG AND SHARP EDGES.
2. WELD PER INEEL WELDING PROCEDURE S2.24.
3. VISUALLY EXAMINE WELDS PER INEEL TECHNICAL PROCEDURE TPR-4981 AND ACCEPTANCE CRITERIA PER APPENDIX D.
4. CLEANLINESS PER STD-7022, LEVEL C.
5. PRESERVE AND PROTECT PER STD-7020, CLASS II.
6. (triangle) WEIGHT TO BE DETERMINED AFTER FINAL ASSEMBLY.



AR (-7)	AR (-6)	AR (-4)	AR (-3)	AR (-2)	AR (-1)	SAFETY CAT.	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL/SPECIFICATION OR VENDOR NAME	ITEM NO.
AR	AR	AR	AR	AR	AR	LSC		WELD FILLER METAL	ER 308 AWS A5.9	17
8						LSC	-16	GUSSET	PLATE, 1/4 THK 304 SST ASTM A167	16
1						LSC	-15	UPPER RING PLATE	PLATE, 1/2 THK 304 SST ASTM A167	15
	1					LSC	-14	ALLIGNMENT PLATE	PLATE, 1/4 THK 304 SST ASTM A167	14
	1					LSC	-13	RING WELD PLATE	BAR, 2 X 1/4 THK 304 SST ASTM A276	13
		1	1			LSC	-12	RING	BAR, 2 X 1/4 THK 304 SST ASTM A276	12
					1	LSC	-11	LINER BOTTOM	PLATE, 1/4 THK 304 SST ASTM A167	11
				AR		LSC			PLATE, 1/4 THK 304 SST ASTM A167	10
										9
										8
					1	LSC	-7	UPPER RING ASSEMBLY		7
		3	6			LSC	-6	ALLIGNMENT FIN ASSEMBLY		6
										5
					2	LSC	-4	ALLIGNMENT RING ASSEMBLY		4
					1	LSC	-3	LIFTING ALLIGNMENT RING ASSEMBLY		3
					1	LSC	-2	LINER BODY ASSEMBLY		2
						LSC	-1	ASSEMBLY		1

QTY REQD — PARTS LIST

REV	DESCRIPTION	EFFECTIVE DATE

RELEASED FOR RECORD ONLY
DO NOT FABRICATE

DASH NO.	NEXT ASSY
-1	519574

APPLICATION

DIMENSIONING AND SYMBOLOGY ARE AMERICAN NATIONAL STANDARD UNLESS OTHERWISE SPECIFIED. SURFACE ROUGHNESS 125. DIMENSIONS AND TOLERANCES ARE IN INCHES. TOLERANCES: DECIMALS .X = ±.1, .XX = ±.03, .XXX = ±.010; FRACTIONS ±1/16; ANGULAR ±2°. DO NOT SCALE DRAWING

SUBCONTRACT NO.
REQUESTER: SYD WITHERS
DESIGN: TOM LARSON
DRAWN: S. Berthelson
PROJECT NO. 021051
SPEC CODE: REC REL
FOR REVIEW/APPROVAL SIGNATURES SEE BAR NO. 87581
EFFECTIVE DATE: BYBEE 12-6-01

INEEL
INTEC
PEACH BOTTOM CASK
CASK LINER
ASSEMBLY AND DETAILS

SIZE D | CAGE CODE 01MF3 | AREA 200 | TYPE 9999 | D.I. 47 | ORG 090 | DWG- 519576 | REV
SCALE 1/4 | SHEET 1 OF 4

File: 519576.dwg Path: P:\peachbottom
Drawn in Model Space Date: 12/10/01 - 11:34 A.M. ID: OMORGAN

Figure A-9 Rev. 4

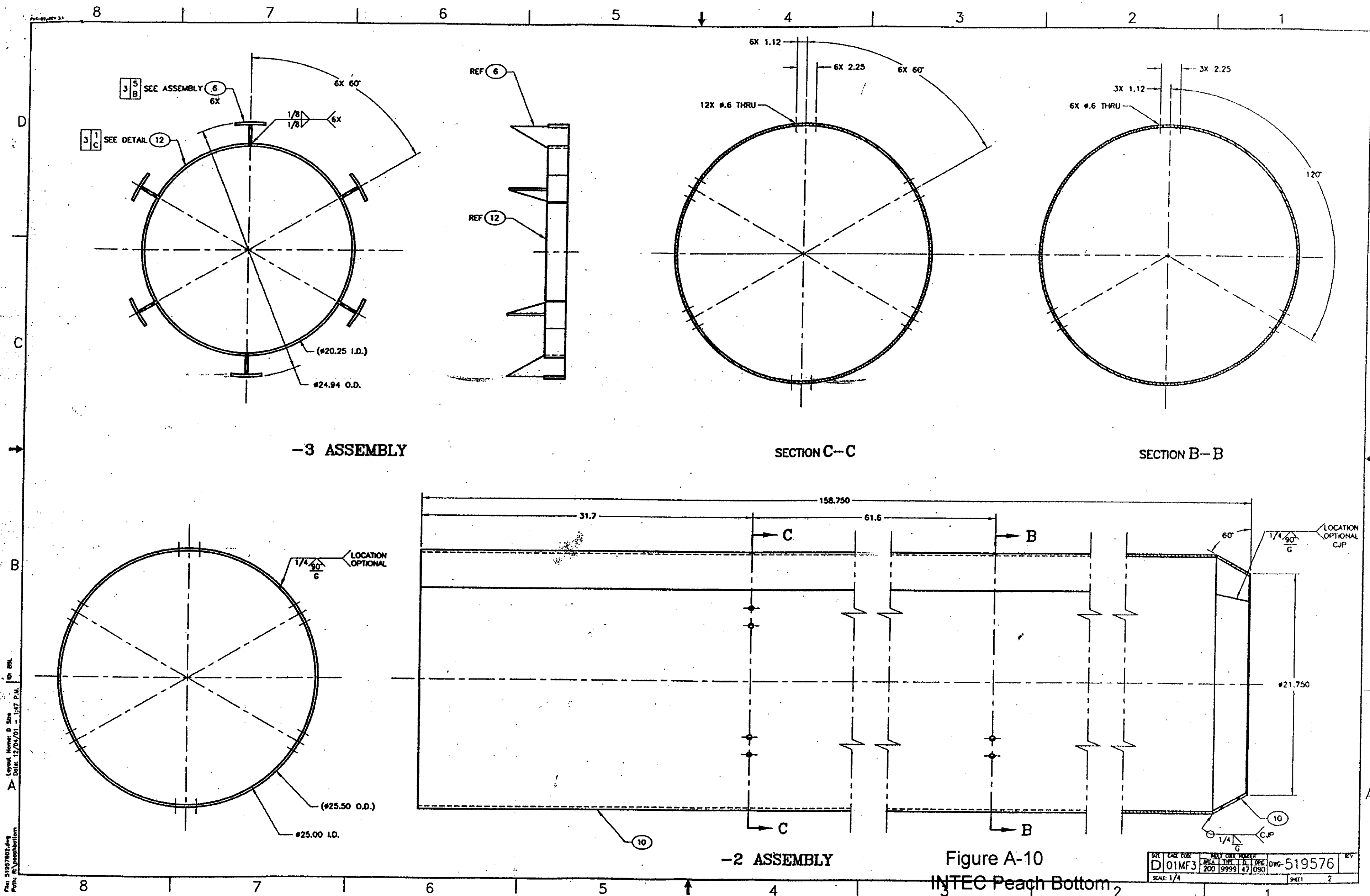
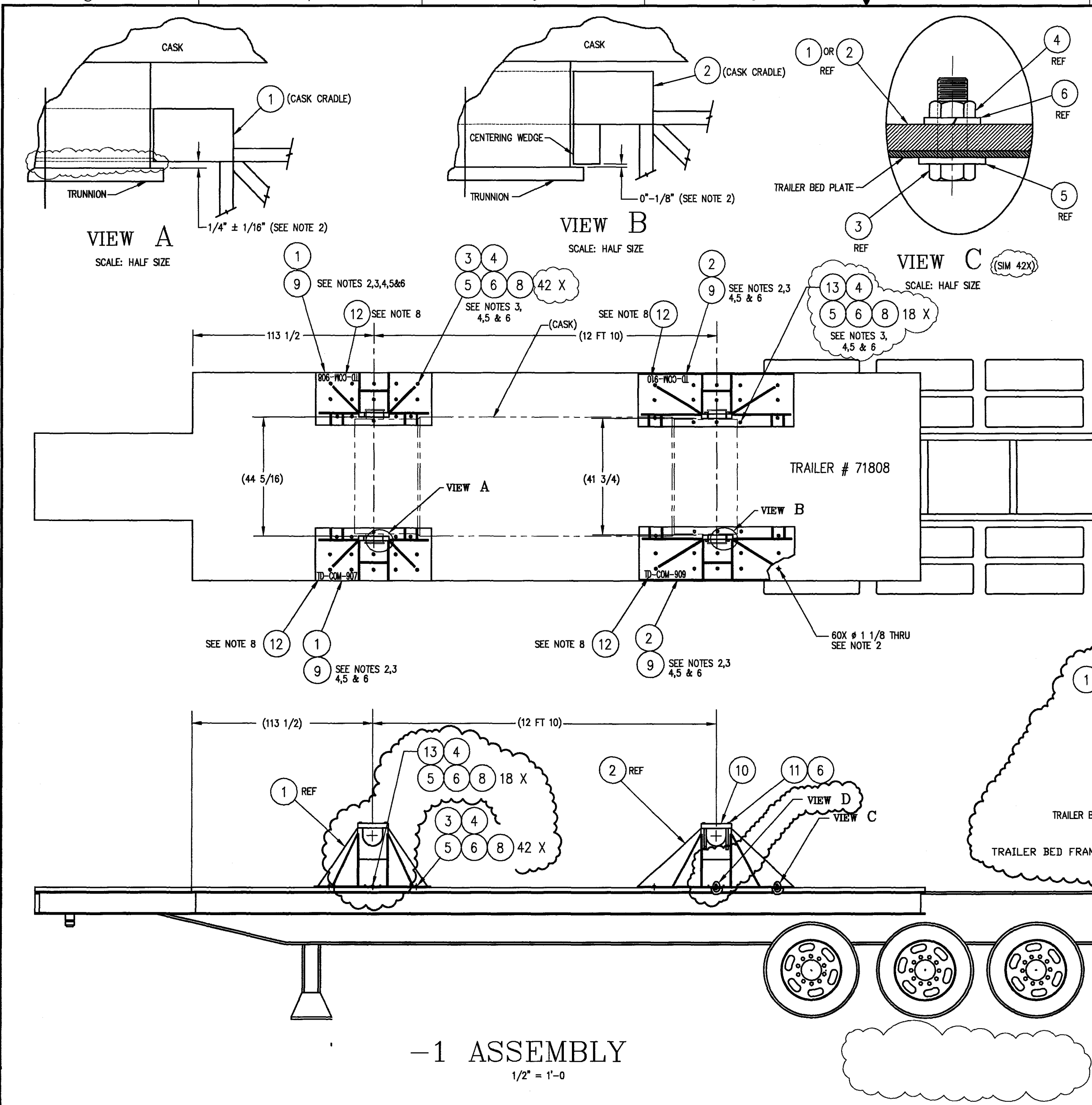
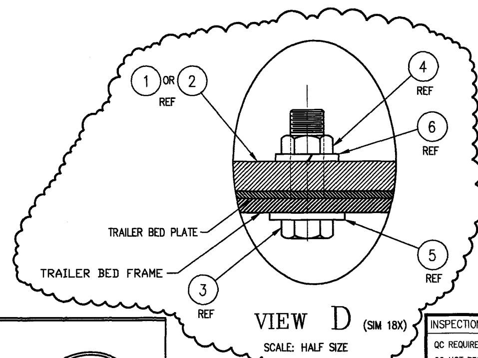
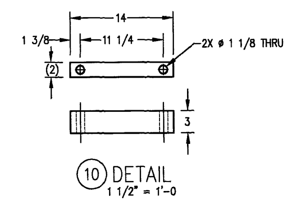


Figure A-10
INTEC Peach Bottom Cask Cask Liner
Assembly and Details
Rev. 4







LIST OF MATERIAL

QTY REQ -3	-2	-1	ITEM NO.	ORDERING INFORMATION	TRACEABILITY CERTIFICATION	NOTE	DRAWING NO. OR PART NO.	MATL	STD	NUMBER	COMP	FOR M
		2	1	-1 ASSEMBLY (FRONT CASK CRADLE)			094564					
		2	2	-1 ASSEMBLY (REAR CASK CRADLE)			094566					
		42	3	MACHINE BOLT, 1"-8 UNC -2A X 4" LONG	7			CS	ASTM	A490 A354	TYPE 1 GR BD	
		60	4	NUT, HEAVY HEX, 1"-8 UNC-2B	7			CS	ASTM	A563 A194	GR DH GR 2H	
		60	5	FLAT WASHER, 1" DIA				CS				
		68	6	LOCK WASHER, 1" DIA.,HELICAL SPRING				CS				
		AR	7	PAINT, KEM TRANSPORT ENAMEL, YELLOW		A/1	FIY 2261					
		AR	8	THREAD LUBRICANT		B	C5-A					
		AR	9	SEALANT		C		SILICONE				
		4	10	HOLD DOWN (2" THK)	7		THIS DWG	CS	ASTM	A 36		PL
		8	11	MACHINE BOLT, 1"-8 UNC -2A X 5" LONG	7			CS	ASTM	A490	GR 8	
		AR	12	PAINT, KEM TRANSPORT ENAMEL, BLACK		A/8	FIY 2261					
		18	13	MACHINE BOLT, 1"-8 UNC-2A X 4 1/2" LONG	7			CS	ASTM	A490 A354	TYPE 1 GR BD	
			14									

A. SHERWIN WILLIAMS CO, FORD TRUCK COLOR CODE G.
B. FEL-PRO INC. OR APPROVED EQUAL.
C. DOW-CORNING CORP PLUS SILICONE OR APPROVED EQUAL.

NOTES:

1. PAINT CRADLES AND PORTION OF TRAILER BED EXPOSED DUE TO EXISTING CRADLE REMOVAL, WITH ITEM 7.
2. (△) PRIOR TO DRILLING NEW HOLES THRU TRAILER, AND FINAL INSTALLATION, INSTALL FRONT AND REAR CRADLES IN POSITION SHOWN ON DRAWING. USING THE CASK LIFTING SLINGS, LOWER THE PEACH BOTTOM CASK ONTO THE CRADLES WHILE MAINTAINING TENSION ON THE SLINGS. SLINGS SHOULD NOT BE DISCONNECTED DURING THIS OPERATION. WHILE THE CASK IS ON THE CRADLES, ADJUST CRADLES AS NECESSARY TO ENSURE THE CENTER LINE OF THE TRUNION IS ON THE CENTER LINE OF THE TRUNNION SUPPORT AS SHOWN IN VIEWS 'A' & 'B'. AFTER PROPER CLEARANCES HAVE BEEN ESTABLISHED, MATCH LOCATE 1 1/8"ø HOLES THRU TRAILER BED USING CASK CRADLES (ITEMS 1 & 2) AS TEMPLATES.
3. INSTALL BOLTS (ITEM 3 OR 13) WITH HEAD UNDER TRAILER, FLAT WASHERS (ITEM 5) SHALL BE ON BOLT HEAD SIDE, AND LOCK WASHERS (ITEM 6) SHALL BE ON NUT SIDE.
4. LUBRICATE ALL BOLT THREADS USING ITEM 8.
5. (△) TORQUE ALL NUTS TO A VALUE OF 950 FT-LBS ±10 FT-LBS, IN INCREMENTS NOT TO EXCEED 100 FT-LBS, USING A CALIBRATED TORQUE WRENCH.
6. SEAL AROUND ALL EDGES BETWEEN CRADLE BASE PLATES (ITEMS 1 & 2) AND TRAILER BED,AND AROUND ALL LOCK WASHERS AND NUTS (ITEMS 4 & 6).
7. (△) THIS IS A TRACEABLE ITEM. MATERIAL SHALL BE TRACEABLE TO THE CERTIFICATION RECORDS. THESE RECORDS SHALL INCLUDE CERTIFIED PHYSICAL TEST REPORTS FOR MATERIAL PER REFERENCED ASTM OR AWS STANDARD.
8. LABEL CRADLES AS SHOWN USING 2 HIGH LETTERS.

NO.	REVISIONS	DRAFTER DATE	CHECKER DATE	DFTG SUPV DATE	SYS ENGR DATE
1	PER DCN 120655-AB2	JGT 5/96	LWS 6-10-96	N/A —	J.DT 6-13-96

CONTROLLED DOCUMENT CLASS I

REF. DRAWINGS
094562 THRU 094567

TOLERANCE (unless otherwise specified)	.X	.XX	.XXX	FRACTIONS
0" - 6"	± .1	± .02	± .005	± 1/64
6" - 18"	± .1	± .03	± .008	± 1/32
OVER 18"	± .1	± .06	± .015	± 1/16
ANGLES	± 1°			

LINEAR DIMENSIONS UP TO AND INCLUDING 120 INCHES ARE EXPRESSED IN INCHES, THOSE GREATER ARE EXPRESSED IN FEET AND INCHES. INCH MARKS ARE OMITTED EXCEPT IN THE CASE OF 1, 6, OR 9 USED ALONE.

INSPECTION REQUIREMENTS
QC REQUIRED
~~QC NOT REQUIRED~~
△ DENOTES Q/C INSP. REQD.

APPROVALS	SIGNATURE	DATE
DRAFTER	/\EW	12-13-91
CHECKER	MEL	1-27-92
DFTG SUPV	GTW	2-5-92
DESIGN ENGR	JDT	2-4-92
SYS ENGR	ABC	2-5-92
ENGR MGR	FGT	2-4-92
PROJ MGR	NA	

SCALE NOTED
DATE ISSUED GTW 2-5-92

Westinghouse Idaho Nuclear Company Inc.
IDAHO CHEMICAL PROCESSING PLANT
IDAHO FALLS, IDAHO

FOR
U.S. DEPARTMENT OF ENERGY
IDAHO OPERATIONS OFFICE
IDAHO FALLS, IDAHO

INSTALLATION
CPP-603
MODIFY CASK CRADLE ON TRAILER #71808
PLAN, ELEVATION & MATL LIST

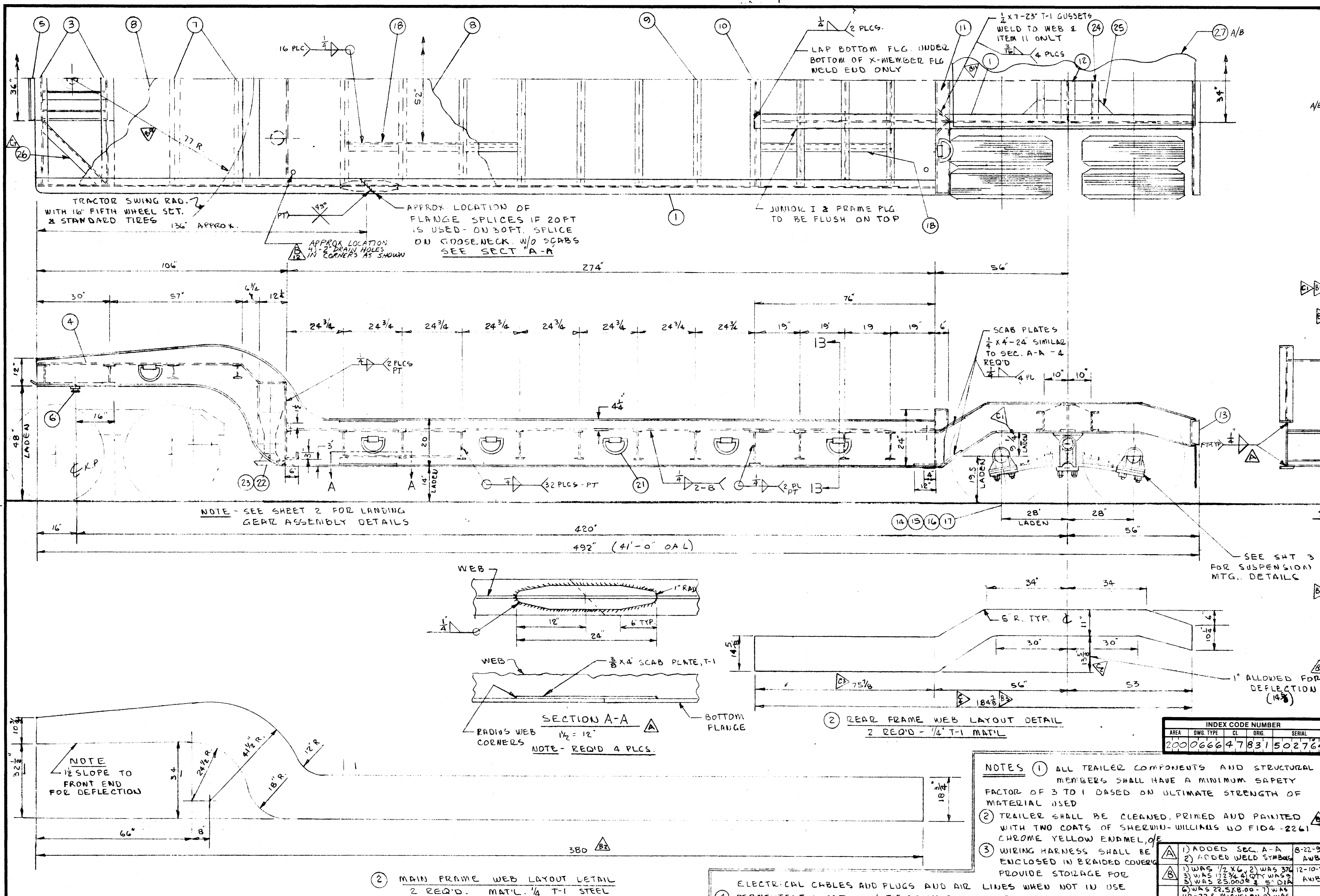
GSF

DWG. SIZE	AREA	DWG TYPE	CL	ORIG.	DRAWING NUMBER	REV.
D	200	0603	47	936	094563	1

JOB NUMBER 120655 TAKEN FROM DRAWING NO. NEW DWG

CAD GENERATED - AUTOCAD

Figure A-11 Rev. 4



ITEM	DESCRIPTION	QTY	MAT'L
31			
30			
29			
28			
27	ALUM DECK PLATE W/ 1/4" SCREWS	A/R	
26	CHANNEL BRACES - 8" [11.5 # X LNG TO SUIT	2	A36
25	PLATE, TRUNNION, 1/2 X 6 X 38 LG	2	A-514 T-1
24	CHANNEL, FAB. 1/4, 3 X 8 X 3, 33 3/4 LG	2	A572 50
23	LANDING GEAR - HYDRAULIC. SEE SHEET 2	2	
22	LANDING GEAR. 50 000 # SEE SHEET 2	1 SET	
21	LASHING D-RINGS. 90.000 # BREAKING STRENGTH	14	STL
20	LIGHTS, 12 VOLT ICC.	T-WAY ATM	LOT
19	MUD FLAPS, REMOVABLE	2	RUB
18	CHANNELS, FAB - 4" X 3" RPLIP X 1/4 X 2" ... BOLTING REINF. LENGTH TO SUIT	12	
17	SUSPENSION - HUTCHINS, SINGLE PT. 30,000 # MIN. H-900-60-US, 9 LF 56" AXLE SPACING, 38" SPR CTRS, MTG. HT. 9 1/2" UNDERSLUNG AXLE & TRUNNION	1	AXLE
16	TIRES, BRIDGESTONE 315-80R-22.5 RADIAL, 8000 # CAP. 12.5 WIDE	8	20 PLY
15	WHEELS - ACCURIDE, 28510 9" WDT 7" OFFSET, 9000 # CAP 10 HOLE	8	
14	AXLES 5 3/4 DIA 30,000 # CAP WITH SPR. BRAKES, 11 1/4 HOLE PAT., 8 3/4 D. 10 HOLE	2	
13	BUMPER, REAR 10" - 15.30 [, 95 1/2 LONG - STRUCTURAL	1	STEEL
12	TRUNNION CROSSMEMBER, FAB 1/2 X 6 FLG'S, 1/4 WEB, 11 HIGH, 33 3/4 LG	1	T-1 A-514
11	BOLSTER, TRANSITION, FAB. 1/4 X 95 1/4 LG WITH 3/8 END CAPS	1	T-1 A-514
10	CROSSMEMBER, REAR FRAME SUPPORT FAB. 1/2 X 4" FLG'S, 1/4 WEB, 15 1/8 HIGH	1	T-1 89 3/4 LG
9	CROSSMEMBER, MAIN DECK. 12" JUNIOR I 89 3/4 LG - 12" X 3"	10	M.S.
8	PLATE, FLOOR, 1/2", FULL WIDTH & LENGTH - GOOSENECK & MAIN DECK	1	A-786
7	CROSSMEMBER, GOOSENECK 6" JUNIOR I 89 3/4 LG	2	M.S.
6	KING PIN, HEAVY DUTY, 2" SAE J700	1	M.S.
5	PLATE, FIFTH WHEEL, 1/2 X 36 X 36	1	A36
4	ANGLES, FAB - 1/4 X 10 X 3" FLG 27 1/4 LG	4	
3	CROSSMEMBERS, FAB, 10" HIGH FLANGES, 1/2 X 5, 1/4 WEB, 89 3/4 LG	2	T-1 A-514
2	WEB, 1/4" MAIN & REAR FRAME	2	T-1 A-514
1	FLANGES, 5/8 X 6, MAIN FRAME; 1/2 X 6, REAR FRAME	2 / 2	T-1 A-514

INDEX CODE NUMBER				
AREA	DWG. TYPE	CL	ORIG.	SERIAL
200	0666	47	831	502764

NOTES

1. ALL TRAILER COMPONENTS AND STRUCTURAL MEMBERS SHALL HAVE A MINIMUM SAFETY FACTOR OF 3 TO 1 BASED ON ULTIMATE STRENGTH OF MATERIAL USED
2. TRAILER SHALL BE CLEANED, PRIMED AND PAINTED WITH TWO COATS OF SHERWIN-WILLIAMS NO F1D4-2261 CHROME YELLOW ENAMEL, O/E
3. WIRING HARNESS SHALL BE ENCLOSED IN BRAIDED COVERING. PROVIDE STORAGE FOR ELECTRICAL CABLES AND PLUGS AND AIR LINES WHEN NOT IN USE
4. PERMANENT LOCATION & TIE DOWN BOLTING OF SKID & CASK TO TRAILER SHALL BE DETERMINED AFTER BOTH UNITS ARE WEIGHED SEPARATELY
5. ALL FRAME FLANGES BURNED FROM PLATE MUST HAVE ALL SHARP CORNERS, NOTCHES, & EDGES GROUND SMOOTH. FILL NOTCHES & GRIND SMOOTH
6. WELDING ROD MATERIAL TO BE LOW ALLOY, LOW HYDROGEN - CONSULT WELDING ENGINEER.
7. AVOID WELDING ACROSS FLANGES OR NEAR EDGES ON MAIN FRAME
8. ALL SURFACES TO BE WELDED SHALL BE CLEAN AND FREE FROM PAINT, OIL, DIRT, SCALE, OXIDES AND FOREIGN MATERIAL FOR MAX. WELD INTEGRITY.
9. MATERIAL USED FOR THE TRAILER CONSTRUCTION SHALL ALLOW FOR ALL AREAS OF THE TRAILER TO FATIGUE AT THE SAME RATE. WHERE IT IS POSSIBLE, ALL MATERIALS WILL BE FROM THE SAME HEAT LOT, AND/OR MATERIAL TENSILE STRENGTHS WILL BE APPROX. EQUAL.

SYM.	REVISION	DATE
A	1) ADDED SEC. A-A 2) ADDED WELD SYMBOLS	8-22-90 AWB
B	1) WAS 1/2 X 6, 2) WAS 3/8, 3) WAS 1/2 3/4, 4) QTY WAS 8, 5) WAS 25,000 # & 5" DIA, 6) WAS 22.5 X 8.00 - 7) WAS 11R-22.5 MICHELIN 8) WAS 50,000 CAP. 5" DIA AXLE, 9) ADDED SWING RADIUS, 10) ADDED NOTE (B), 11) ADD GUSSETS AT ITEM 11, 12) ADDED 4) DRAIN HOLES	12-10-90 AWB
C	1) WAS 3/4, 2) WAS 14 1/4, 3) WAS 76, 4) WAS 18 5, 5) Added NOTE 9, 6) WAS 21 1/2, 7) Added FRONT END BRACING	AWB 2-4-91
A/B	AS BUILT	10/17/91

REV	DESCRIPTION		DATE APPROVED
4	SEE DAR 11531 W.O. 157003	LKS 11-11-97	JPB 11-12-97

40 TON LOW-BED TRAILER FOR TRANSPORTING PEACH BOTTOM CASKS FOR WESTINGHOUSE IDAHO NUCLEAR CO., IDAHO FALLS, ID.

TERMINAL MFG. CO. INC.
707 GILMAN STREET
BERKELEY, CA 94710

SCALE	CUST. REF. DWG.	DRAWING NO.	REV.
1" = 20"		2070-1	4
DRAWN AWB	JOB NO.		
CHKD.	DATE 2-4-91	SHEET 1 OF 3	

DIETERICH POST REORDER NO. 118444

Figure A-12 Rev. 4

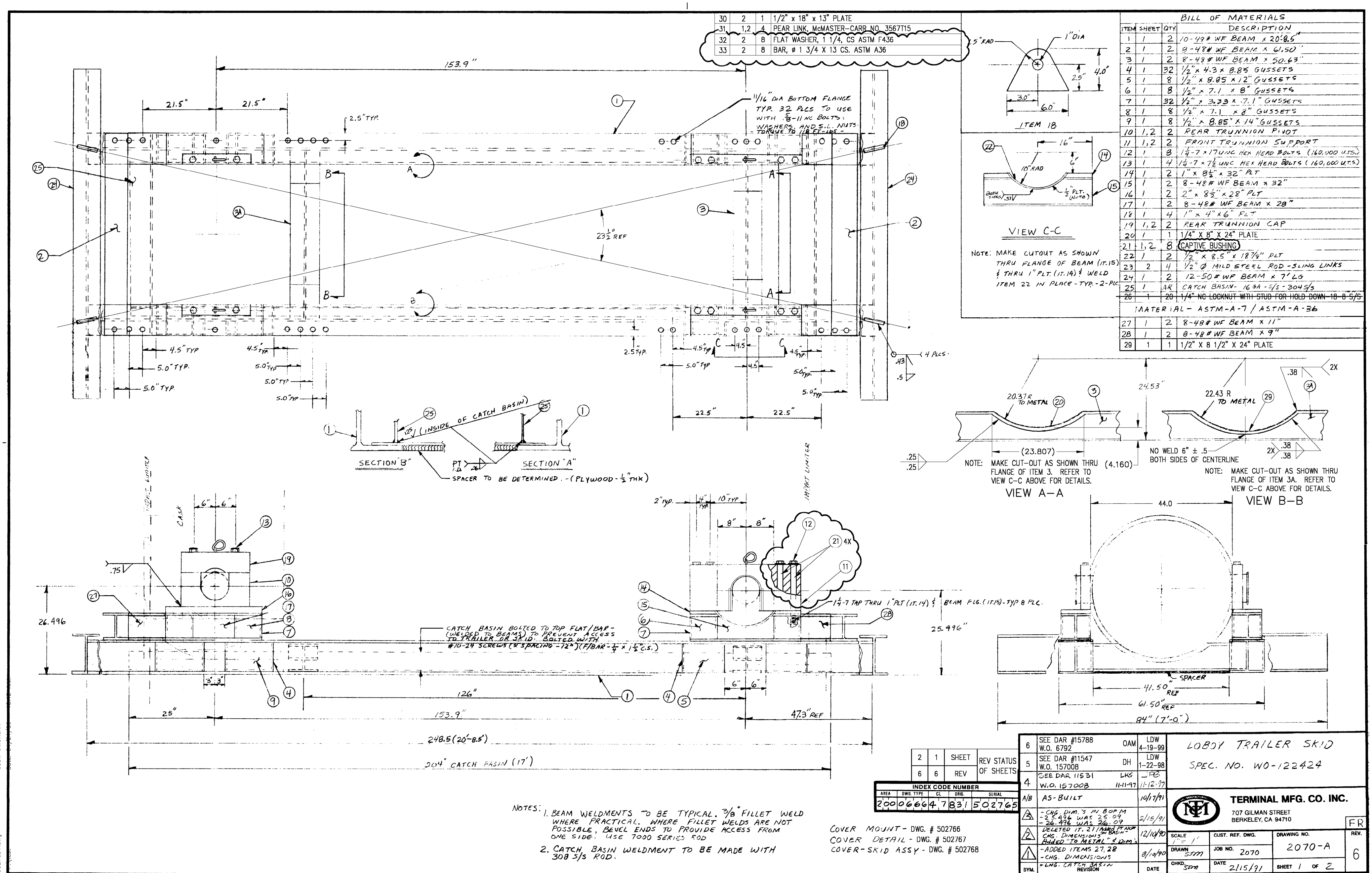
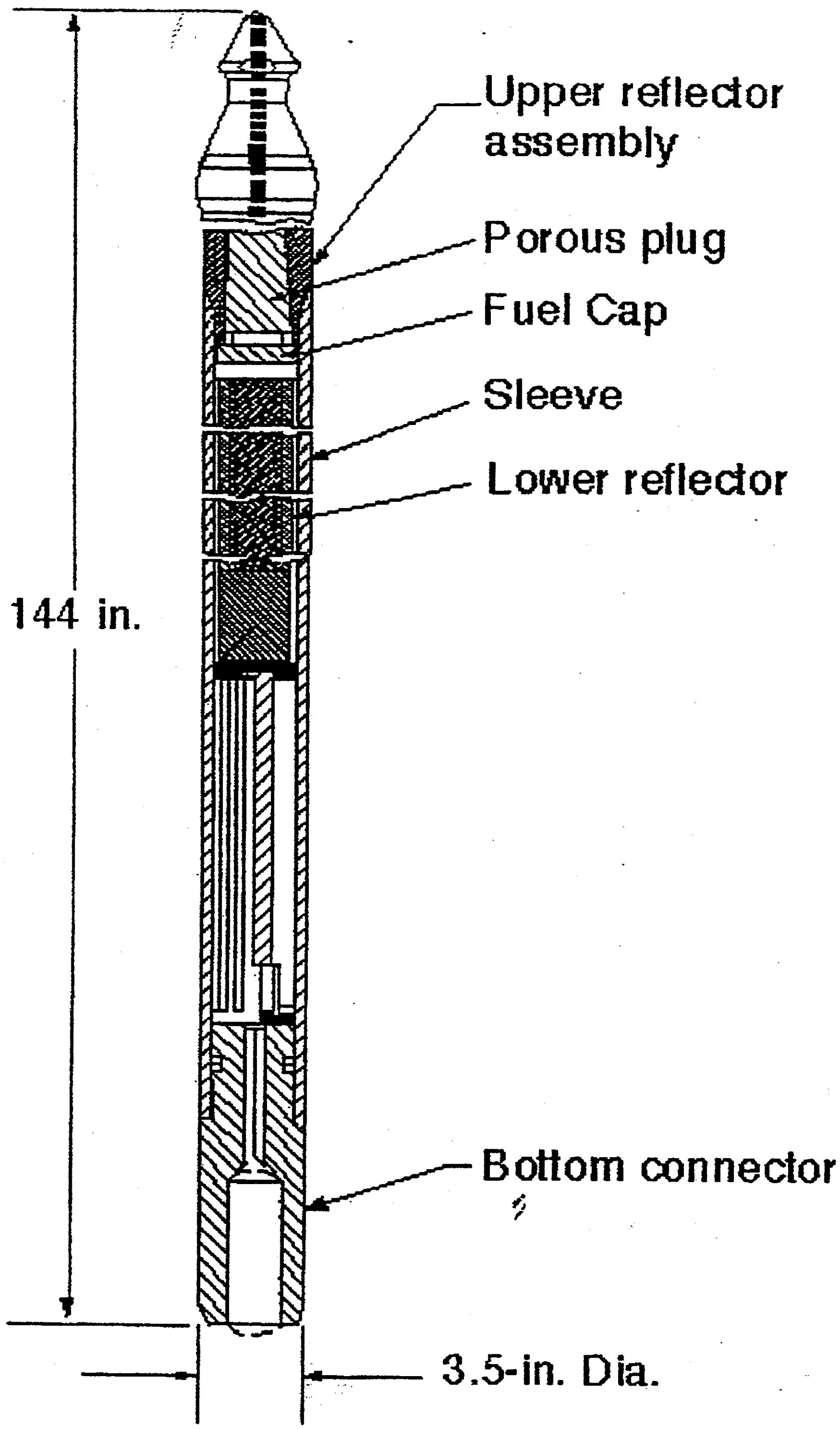
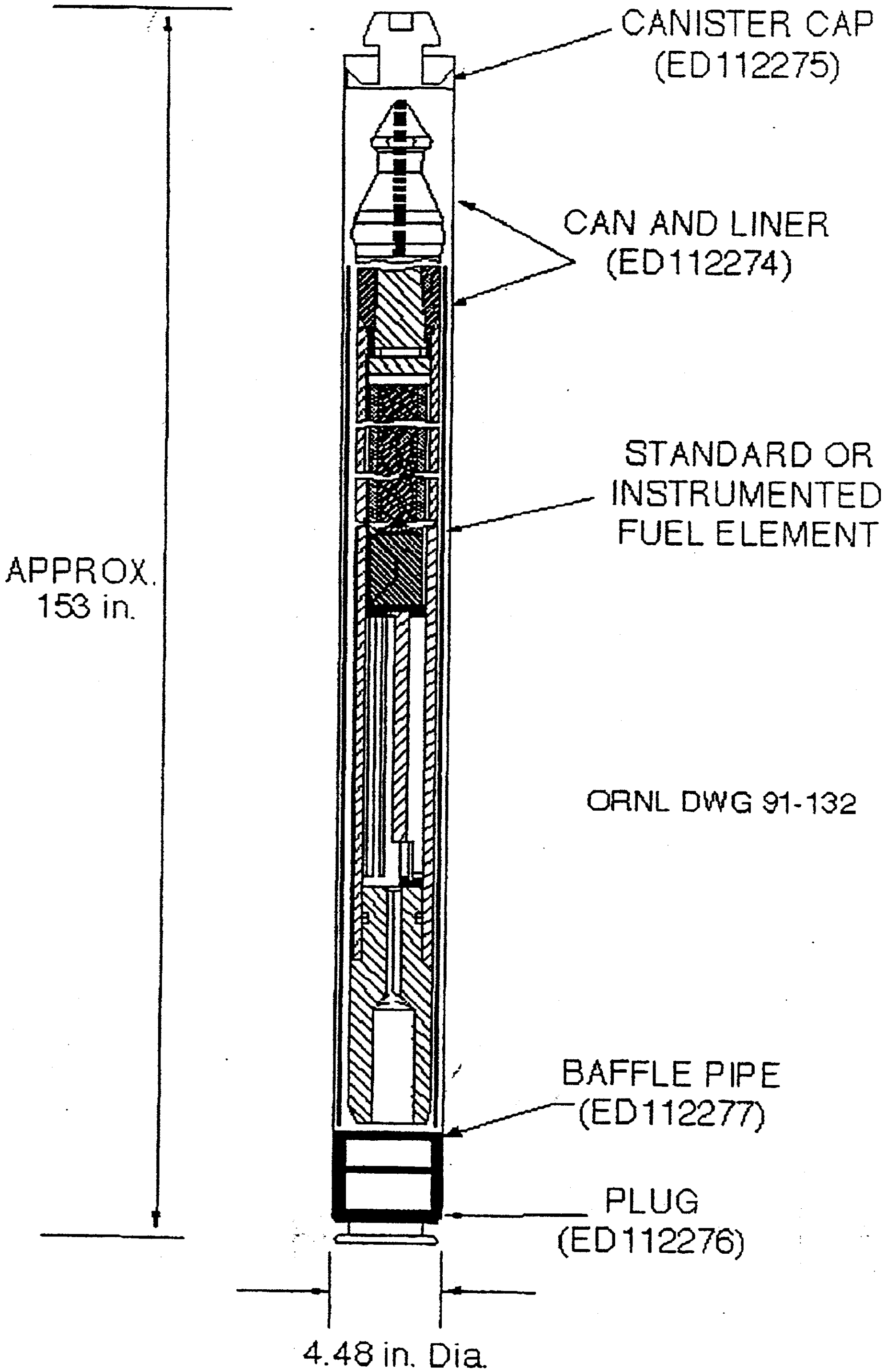


Figure A-13 Rev. 4



Peach bottom assembly

Figure A-14 Standard Peach Bottom Unit 1 Assembly



Peach Bottom Spent Fuel Storage Canister

Figure A-15 Rev. 4

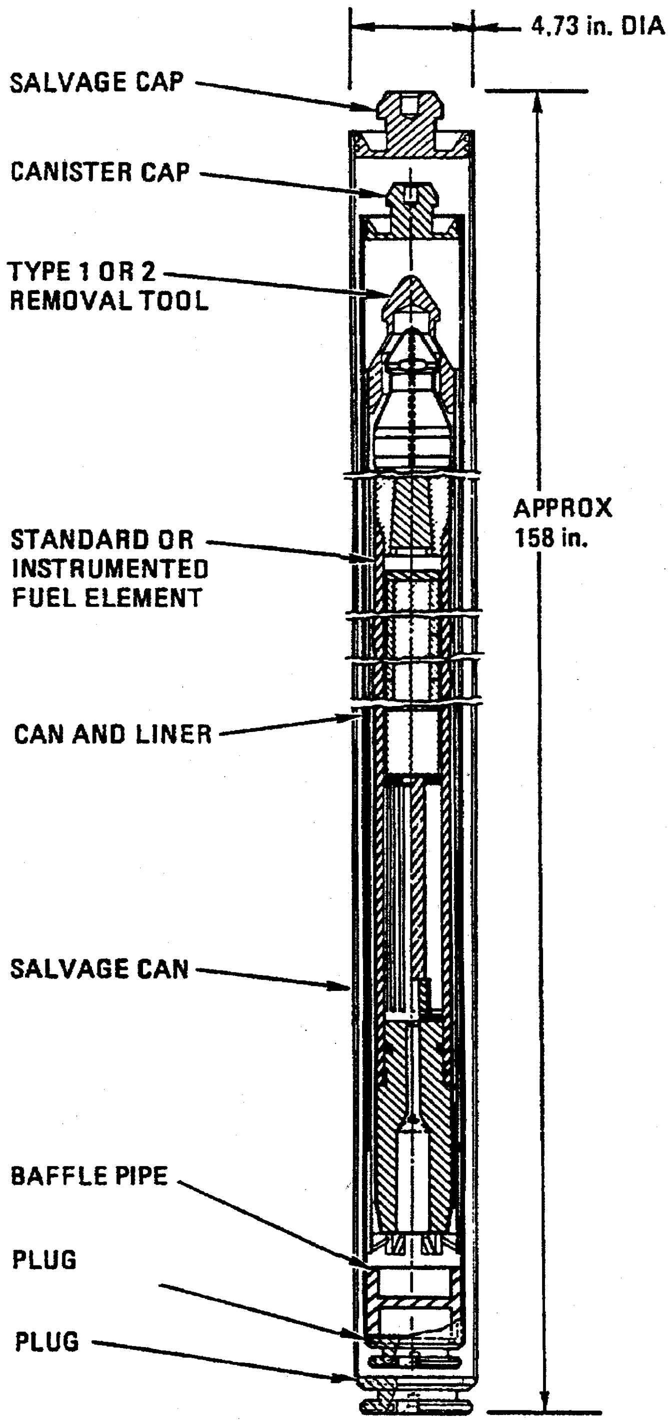
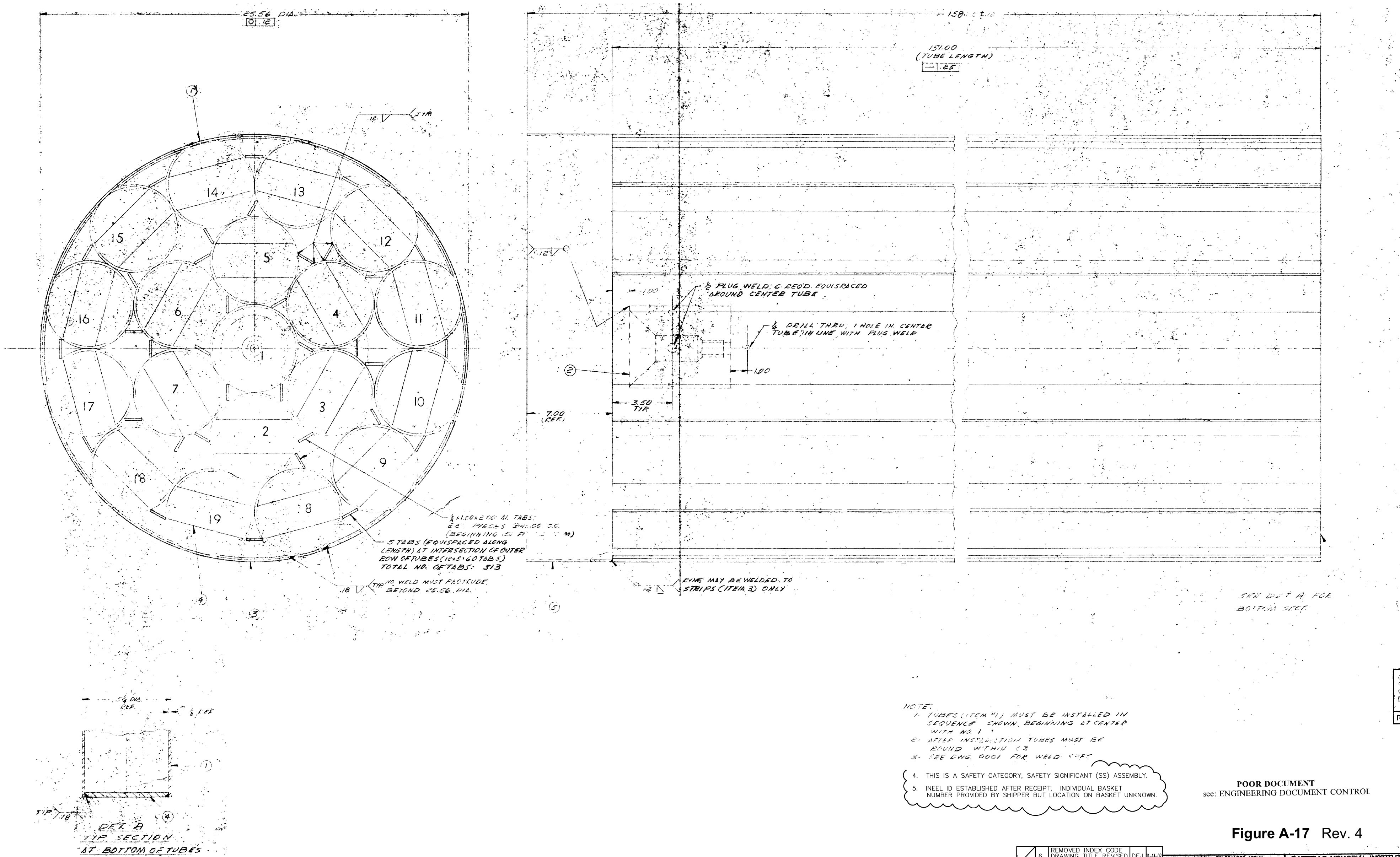


Figure A-16 Aluminum Canister with PB-1 Core 1 Fuel Element with Assembly Removal Tool (with Salvage Can)

SAFETY CAT	INEEL DRAWING NO	ITEM	DWG. NO.	SIZE	NO. REQ'D	TITLE – DESCRIPTION
SS		1	—	–	19	5¼ O.D. x ⅛ WALL TUBE ALUMINUM (6061-T6)
	500215	2	0003	C	1	LIFTING DEVICE, BASKET
	500218	3	0005	C	12	STRIPS, OUTER
	500216	4	0004	B	18	BOTTOM PLATE, BASKET
	500269	5	0048	C	1	RING, BASKET



NOTE:
1- TUBES (ITEM "1") MUST BE INSTALLED IN SEQUENCE SHOWN, BEGINNING AT CENTER WITH NO. 1
2- AFTER INSTALLATION TUBES MUST BE ROUND WITHIN .03
3- SEE DWG. 0001 FOR WELD SPEC.
4. THIS IS A SAFETY CATEGORY, SAFETY SIGNIFICANT (SS) ASSEMBLY.
5. INEEL ID ESTABLISHED AFTER RECEIPT. INDIVIDUAL BASKET NUMBER PROVIDED BY SHIPPER BUT LOCATION ON BASKET UNKNOWN.

POOR DOCUMENT
see: ENGINEERING DOCUMENT CONTROL

Figure A-17 Rev. 4

REV	REVISIONS	BY	DATE
6	REMOVED INDEX CODE DRAWING TITLE REVISED SEE DAR 96150	DEJ	11-14-02
E	REPLACE ITEM 5	GC	
D	DELETE ITEM 6, ADDED LIFT DEVICE	GC	
C	CHGE NOTE FOR AL. TABS	GC	
B	CHANGE ITEM 3 TO 18 BASKET	GC	
A		GC	

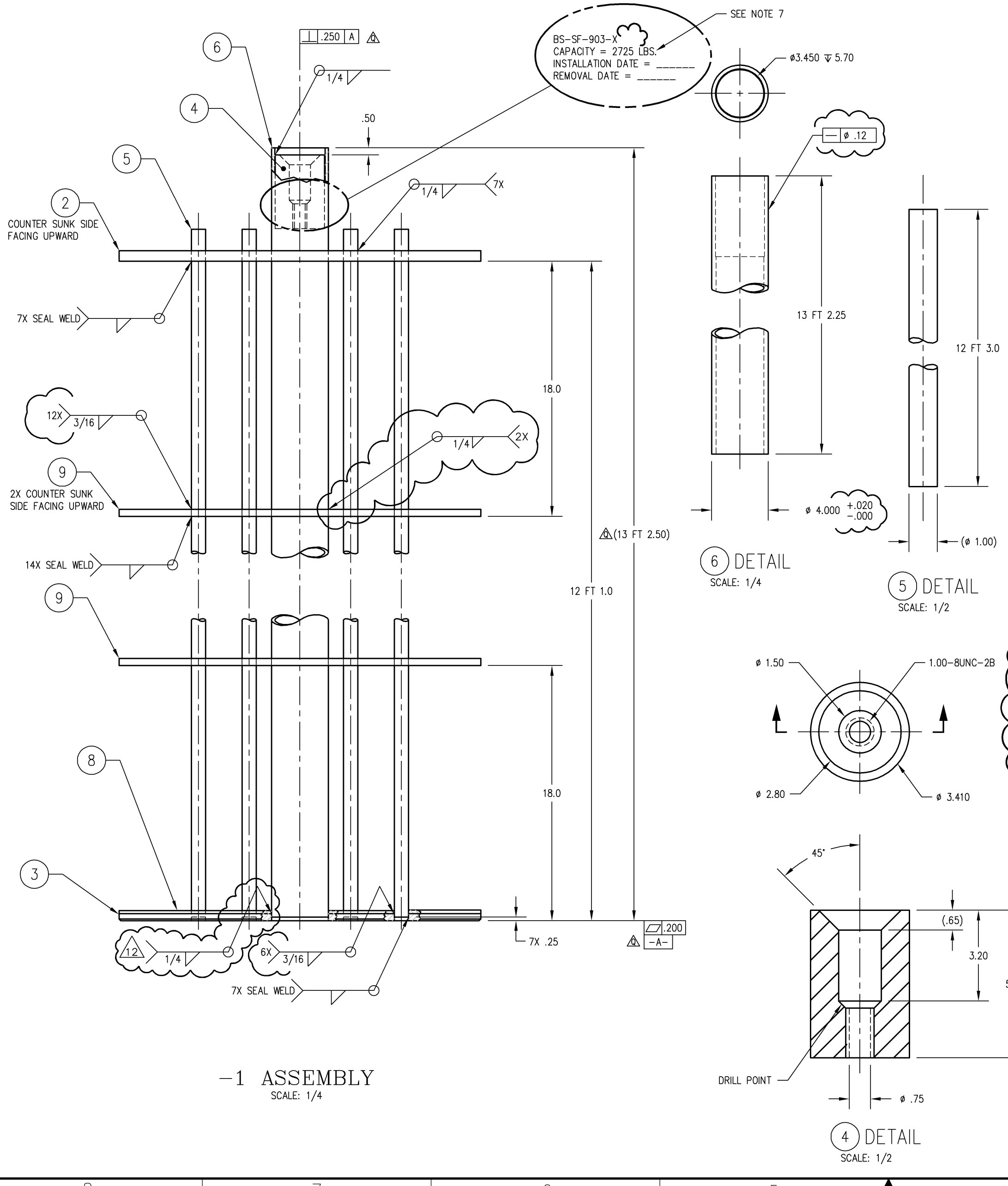
BATTELLE MEMORIAL INSTITUTE
505 KING AVE.
COLUMBUS 1, OHIO

MAT'L: ALUMINUM (6061-T6)

TITLE: CPP-749 PEACH BOTTOM BASKET ASSEMBLY BS-DSW-901

INDEX CODE NUMBER: 200 D749 47 083 500213

DWG NO. 3123-GPB 0002 DSW



LIST OF MATERIAL

QTY REQ -3	-2	-1	ITEM NO.	ORDERING INFORMATION	SAFETY CAT.	NOTE	DRAWING NO. OR PART NO.	MATL	STD	NUMBER	COMP	FORM
			1	−1 ASSEMBLY	SS							
		1	2	TOP RACK PLATE, 3/4" THK.	SS	3	099055	SST	ASTM	A240	304L	PL
		1	3	BOTTOM PLATE, 1/2" THK.	SS	3	099055	SST	ASTM	A240	304L	PL
		1	4	LIFTING PLUG	SS	3		SST	ASTM	A276	304L	BAR
		6	5	RACK GUIDE BAR, ø 1", ROUND BAR (COLD FINISHED)	SS	3		SST	ASTM	A276	304L	BAR
		1	6	LIFTING PIPE, ø 3 1/2", PIPE, SCH. 80	SS	3		SST	ASTM	A312	304L	PIPE
		AR	7	WELD FILLER METAL	SS	4		SST	AWS	A5.9	ER-308L	
		AR	8	HI-DENSITY POLYETHYLENE, .030 THK.	CG		099056					
		2	9	RACK PLATE, 1/2" THK.	SS	3	099056	SST	ASTM	A240	304L	PL

GENERAL NOTES:

1. REMOVED
2. REMOVE ALL BURRS AND SHARP EDGES TO APPROXIMATELY .02 R.
3. (△) THE MATERIAL MUST HAVE ACTUAL CERTIFIED MATERIAL TEST REPORTS (CMTRS) ISSUED BY THE THE MANUFACTURER OR INDEPENDENT TESTING LABORATORY PERFORMING MATERIAL TESTING WHICH CERTIFIES THAT THE MATERIAL HAS BEEN INSPECTED AND TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE SPECIFICATION AND THAT THE RESULTS OF THE CHEMICAL ANALYSIS AND MECHANICAL TESTS MEET THE REQUIREMENTS OF THE SPECIFICATION FOR THE SPECIFIC GRADE. THE MANUFACTURER OR SUPPLIER SHALL MARK THE HEAT NUMBER ON THE MATERIAL AND ON THE CMTRS.
4. (△) THE MATERIAL MUST HAVE ACTUAL CERTIFIED MATERIAL TEST REPORTS (CMTRS) ISSUED BY THE THE MANUFACTURER OR INDEPENDENT TESTING LABORATORY PERFORMING MATERIAL TESTING WHICH CERTIFIES THAT THE MATERIAL HAS BEEN INSPECTED AND TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE SPECIFICATION AND THAT THE RESULTS OF THE CHEMICAL ANALYSES MEET THE REQUIREMENTS OF THE SPECIFICATION FOR THE SPECIFIC GRADE. THE MANUFACTURER OR SUPPLIER SHALL MARK THE HEAT NUMBER ON THE CMTRS AND SHALL FLAG TAG EACH END OF WELD FILLER METAL SHOWING THE AWS CLASSIFICATION AND HEAT NUMBER.
5. ALL WELDING SHALL BE PERFORMED PER INEL WELD PROCEDURE SPECIFICATION S2.24.
6. (△) VISUALLY INSPECT FINAL PASS OF ALL WELDS. ACCEPTANCE CRITERIA SHALL BE:

   NO CRACKS.

   COMPLETE FUSION SHALL EXIST BETWEEN WELD FILLER AND BASE METAL.

   UNDERCUT SHALL NOT EXCEED .01" FOR MATERIAL LESS THAN 3/16". FOR MATERIAL 3/16" AND THICKER, UNDERCUT NOT TO EXCEED 1/32".

   FOR ALL WELDS THE SUM OF VISIBLE POROSITY 1/32" OR GREATER IN DIAMETER SHALL NOT EXCEED 3/8" IN ANY LINEAR INCH OF WELD AND SHALL NOT EXCEED 3/4" IN ANY 12" LENGTH OF WELD.

   ALL CRATERS SHALL BE FILLED TO THE FULL CROSS-SECTION OF THE WELD EXCEPT FOR ENDS FOR FILLET WELDS OUTSIDE THEIR EFFECTIVE LENGTH.

   FILLET WELDS SHALL BE AT LEAST THE SIZE SPECIFIED IN THE WELD SYMBOL.
7. STAMP OR ENGRAVE THE INFORMATION AS SHOWN USING 1/2" HIGH CHARACTERS. "X" IS A UNIQUE NUMBER TO BE SUPPLIED FOR EACH −1 ASSEMBLY BUILT.
8. (△) EACH PEACH BOTTOM STORAGE BASKET (−1 ASSEMBLY) BUILT SHALL BE PROOF TESTED TO 200% CAPACITY (5450 LBS $^{+100\ LBS}_{-00\ LBS}$) AFTER PROOF TEST, ALL WELDS SHALL RECEIVE A VISUAL EXAMINATION IN WHICH THE ACCEPTANCE CRITERIA SHALL BE "NO PERMANENT DEFORMATIONS".
9. (△) AFTER THE PROOF TEST, ALL WELDS SHALL RECEIVE A LIQUID PENETRANT EXAMINATION PER AWS D1.6-1999. ACCEPTANCE CRITERIA SHALL BE:

   NO CRACKS

   NO LINEAR INDICATIONS

   NO LAPS OR SEAMS GREATER THAN 0.25"
10. (△) VERIFY THAT A 150" LONG SIMULATED FUEL CAN CAN BE FULLY INSERTED FREELY, WITH NO INTERFERENCES, INTO EACH HOLE OF EACH −1 ASSEMBLY WHEN THE BASKET IS POSITIONED VERTICALLY ON THE FLOOR. THE SIMULATED FUEL CAN FOR THE SIX 5.040" NOMINAL DIAMETER HOLES SHALL BE CYLINDRICAL AND HAVE A MINIMUM (OUTSIDE) DIAMETER OF 4.875 INCHES. THE SIMULATED FUEL CAN FOR THE TWELVE 4.785" NOMINAL DIAMETER HOLES SHALL BE CYLINDRICAL AND HAVE A MINIMUM (OUTSIDE) DIAMETER OF 4.625 INCHES.
11. DESIGN & OPERATION INFORMATION:
    A. THE CORROSION DESIGN LIFE OF THIS ASSEMBLY IS FORTY (40) YEARS WHICH IS BASED ON A CORROSION RATE OF 0.0001 INCHES PER YEAR FOR STAINLESS STEEL.
    B. THE TOTAL WEIGHT OF THE −1 ASSEMBLY IS APPROXIMATELY 600 LBS.
    C. THIS BASKET IS DESIGNED FOR USE IN THE CA-SFE-005 CASK.
12. (△) VERIFY THAT ROOT OPENING DOES NOT EXCEED 1/16 INCH.
13. WELD GUIDE BARS (ITEM 5) TO PLATES (ITEMS 2, 3, OR 9) BEFORE WELDING PIPE (ITEM 6) TO PLATES.

Figure A-18 Rev. 4

REFERENCE DRAWINGS:

099054 THRU 099056

NO.	REVISIONS	DRAFTER	CHECKER	SYS ENGR
3	AS BUILT AS OF 12/4/02 SEE DAR 97269	WWH 12/4/02	DEJ 2/12/03	

TOLERANCE (unless otherwise specified)	.X	.XX	.XXX	FRACTIONS
0" – 6"	± .1	± .02	± .005	± 1/64
6" – 18"	± .1	± .03	± .008	± 1/32
OVER 18"	± .1	± .06	± .015	± 1/16
ANGLES	± 1°			

LINEAR DIMENSIONS UP TO AND INCLUDING 120 INCHES ARE EXPRESSED IN INCHES, THOSE GREATER ARE EXPRESSED IN FEET AND INCHES. INCH MARKS ARE OMITTED EXCEPT IN THE CASE OF 1, 6, OR 9 USED ALONE.

INSPECTION REQUIREMENTS

QC REQUIRED

~~QC NOT REQUIRED~~

△ DENOTES Q/C INSP. REQD.

APPROVALS	SIGNATURE	DATE
DRAFTER	MJJRO	12-14-94
CHECKER	DKS/UP	3-8-95
DFTG SUPV	NA	–
DESIGN ENGR	CHAMBERS	3-8-95
SYS ENGR	TOLMAN	3-8-95
ENGR MGR	MOORE	3-8-95
PROJ MGR		

SCALE NOTED

DATE ISSUED DKS 3-8-95

Lockheed Idaho Technologies Company

IDAHO CHEMICAL PROCESSING PLANT

FOR: U.S. DEPARTMENT OF ENERGY
IDAHO FIELD OFFICE
IDAHO FALLS, IDAHO

CPP-749
PEACH BOTTOM STORAGE BASKET
BS-SF-903-X
ASSEMBLY, DETAILS, G/N & L/M

SF

DWG. SIZE	AREA	DWG TYPE	CL	ORIG.	DRAWING NUMBER	REV.
D	200	0749	41	530	099054	3

JOB NUMBER 159811 TAKEN FROM DRAWING NO. NEW DWG

CAD GENERATED – AUTOCAD

File: 099054-3.dwg
Path: P:
Drawn in Model Space
Date: 02/10/03 – 2:29 P.M.
ID: WHELESO

Figure A-19

Figure Not Used.

Figure A-20

Figure Not Used.

6	5	4	3	2	1	SHEET	REV STATUS
2	1	1	1	1	3	REV	OF SHEETS

REVISIONS

REV	DESCRIPTION		DATE	APPROVED
1	SEE DAR #7181 WO #169250	JGT	6/25/97	JB
2	SEE DAR 96150	VKJ	11/14/02	DEJ
3	SEE DAR 98114	VKJ	04-03-03	DEJ

NOTES:

1. REMOVE ALL BURRS AND SHARP EDGES.
2. ALL FILLET RADII .03 UNLESS OTHERWISE NOTED.
3. WELD PER INEL WELD PROCEDURE SPECIFICATION S2.24 OR AWS D1.1 USING WELD FILLER METAL ITEM 37 EXCEPT AS NOTED.
4. △ WELD PER INEL WELD PROCEDURE SPECIFICATION S2.24 OR AWS D1.1 USING WELD FILLER METAL ITEM 38.
5. △Q VISUALLY INSPECT ALL WELDS PER AWS D1.1. ACCEPTANCE CRITERIA SHALL BE PER AWS D1.1 FOR "STATICALLY LOADED STRUCTURES".
6. △ COLLAR KEYS CUT THEIR OWN KEYWAY, 2 PLACES–180° APART, INTO EXISTING LIFTING DEVICE AS SUPPORT ROD ASSEMBLY (ITEM 3) IS SCREWED INTO THE SUPPORT PLATE ASSEMBLY (ITEM 4).
7. △Q △ STAMP OR VIBRO–TOOL ETCH "TORQUE TO XXX ± 5 FT LBS USING A CALIBRATED TORQUE WRENCH" IN 1/4" HIGH CHARACTERS WHERE "XXX" IS THE VALUE LISTED BELOW.

"XXX"	SUPPORT ROD ASSEMBLY
85	TD–DSW– 2 THRU 5, & 9
105	TD–DSW– 1, 6 THRU 8, & 10 THRU 46

8. △ AFTER REMOVING INSERTION TOOL ASSEMBLY (ITEM 2), INSTALL PLUG (ITEM 27) AND SECURE WITH CAP SCREWS AND LOCK WASHERS (ITEMS 28 & 29).
9. △Q △ STAMP OR VIBRO–TOOL ETCH "PLT–DSW–902–XX" APPROXIMATELY AS SHOWN IN 1/4" HIGH CHARACTERS. "XX" IS A UNIQUE NUMBER TO BE SUPPLIED FOR EACH COMBINED –3 & –4 ASSEMBLY BUILT.
10. △Q △ STAMP OR VIBRO–TOOL ETCH "TD–DSW–902" APPROXIMATELY AS SHOWN IN 1/4" HIGH CHARACTERS.
11. △Q △ STAMP OR VIBRO–TOOL ETCH "COV–DSW–005 FOR USE WITH CA–SF–006 FOR TRANSPORTING PEACH BOTTOM BASKETS" APPROXIMATELY AS SHOWN IN 3/4" HIGH CHARACTERS.
12. △ GLASS BEAD ITEMS 26 & 27 AND PAINT WITH TWO COATS OF ITEM 40.
13. △ PRIOR TO FABRICATING –3 AND –7 ASSEMBLIES, USE THE FOLLOWING PROCEDURE TO LOCATE ø .193/.187 HOLE FOR ITEM 33 (SPRING PIN) OF –2 ASSEMBLY, SHEET 2. ASSEMBLE ITEM 8 (GAGE TUBE ASSEMBLY) ONTO ITEM 5 (HANDLE ASSEMBLY). FULLY ENGAGE ITEM 5 INTO ITEM 10 (RATCHETING HOUSING). ASSEMBLE ITEM 24 (LOCKING COLLAR) INTO ITEM 39 (CALIBRATION TOOL). BRING ITEM 10 INTO FULL CONTACT WITH ITEM 24 AND ITEM 8 INTO FULL CONTACT WITH ITEM 39. MATCH LOCATE HOLE .314 ABOVE THE BOTTOM OF .219 WIDE SLOT. ASSEMBLE ITEM 9 (INSERTION TOOL CENTERING ASSEMBLY) ONTO ITEM 8 PRIOR TO INSTALLATION OF ITEM 33 (SPRING PIN). ITEMS 10, 24 AND 39 ARE USED FOR GAGING PURPOSES ONLY AND ARE NOT A PERMANENT PART OF –2 ASSEMBLY.
14. △ AFTER HOLE IS DRILLED IN ITEM 5 AS DESCRIBED IN NOTE 13, STAMP OR VIBRO–TOOL ETCH A 3/4 INCH LONG MARK ON ITEM 8 DIRECTLY IN LINE WITH ITEM 33 AS SHOWN.
15. △Q △ STAMP OR VIBRO–TOOL ETCH "FULL ENGAGEMENT MARK" APPROXIMATELY AS SHOWN IN 1/4" HIGH CHARACTERS.
16. △Q △ MANUFACTURER OR SUPPLIER MUST PROVIDE ACTUAL CERTIFIED MATERIAL TEST REPORTS (CMTR's) CERTIFYING THAT THE MATERIAL HAS BEEN INSPECTED AND TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE SPECIFICATION AND THAT THE RESULTS OF THE CHEMICAL ANALYSIS AND MECHANICAL TESTS MEET THE REQUIREMENTS OF THE SPECIFICATION FOR THE SPECIFIC GRADE. THE MANUFACTURER OR SUPPLIER MUST MARK THE HEAT NUMBER ON THE CMTR's AND ON THE MATERIAL.
17. △Q △ MANUFACTURER OR INDEPENDENT TESTING LABORATORY MUST PROVIDE ACTUAL CERTIFIED MATERIAL TEST REPORTS (CMTR's) WHICH CERTIFY THAT THE MATERIAL HAS BEEN INSPECTED AND TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE SPECIFICATION AND THAT THE RESULTS OF THE CHEMICAL ANALYSIS MEET THE REQUIREMENTS OF THE SPECIFICATION FOR THE AWS MATERIAL CLASSIFICATION. THE MANUFACTURER OR SUPPLIER MUST FLAG TAG EACH END OF WELD FILLER METAL SHOWING THE AWS MATERIAL CLASSIFICATION AND HEAT NUMBER, AND THE HEAT NUMBER MUST APPEAR ON THE CMTR's.
18. REMOVED
19. △ AS–BUILT MEASUREMENTS FOR THIS DIMENSION CAN BE FOUND ON DRAWING 509725.

PARTS LIST

	–9	–8	–7	–6	–5	–4	–3	–2	–1	SAFETY CAT.	PART OR IDENTIFYING NO.	DESCRIPTION	MATERIAL/SPECIFICATION	ITEM/FIND
△16							1			SS	–42	UPPER ROD	BAR, ø 5/8 NITRONIC 60 S21800, ASTM A276	42
	1									SS	–41	LIFTING HANDLE	BAR, ø 1/4 304/304L SST, ASTM A276	41
									AR	LSC	3500	PAINT, WHITE EPOXY	KEELOR & LONG	40
								1		LSC	–39	CALIBRATION TOOL	BAR CS, AL OR SST	39
△17							AR			SS		WELD FILLER METAL	ER218 AWS A5.9	38
△17	AR	AR	AR	AR	AR	AR		AR		SS		WELD FILLER METAL	ER308/308L AWS A5.9	37
		1								LSC	–36	GAGE PLATE	SHEET, 11 GA (.120) 304/304L SST, ASTM A240	36
		1								LSC	–35	GAGE PIPE	PIPE, 1 SCH 40 304/304L SST, ASTM A312	35
		1								LSC	–34	GAGE TUBE	BAR 304/304L SST, ASTM A276	34
								1		LSC	92373A255	SPRING PIN 3/16 ø X 1 1/2 LONG	McMASTER–CARR SUPPLY CO CAT NO 101	33
	1									LSC	–32	INSERTION TOOL CENTERING COLLAR	BAR 304/304L SST, ASTM A276	32
△16							1			SS	–31	LOWER ROD	BAR, ø 3/4 NITRONIC 60, S21800, ASTM A276	31
									8		369515	CASK LID BOLT, GROUP 1		30
									4	LSC		LOCK WASHER, 3/8	SST	29
									4	SS		CAP SCREW, HEX HEAD 3/8–16 UNC–2A X 1 LONG	GR B8 304 SST, ASTM A193	28
									1	SS	–27	PLUG	BAR CS, ASTM A36 OR A576	27
△16									1	SS	–26	CASK COVER PLATE	PLATE CS, ASTM A36	26

QTY. REQD. — PARTS LIST

	–9	–8	–7	–6	–5	–4	–3	–2	–1	SAFETY CAT.	PART OR IDENTIFYING NO.	DESCRIPTION	MATERIAL/SPECIFICATION	ITEM/FIND
			2							SS	–25	COLLAR KEY	BAR, COLD DRAWN 304/304L SST, ASTM A276	25
△16			1							SS	–24	LOCKING COLLAR	BAR 304/304L SST, ASTM A276	24
				2						LSC		LOCK WASHER, 5/8	SST	23
				4						LSC		NUT, HEX 5/8–11 UNC–2B	GR 8 304 SST, ASTM A194	22
				1						LSC	–21	ATTACHMENT BAR	BAR, 1 X 2 1/2 304/304L SST, ASTM A276	21
				1						LSC	–20	LIFTING BAIL PLATE	BAR, 1 X 2 1/2 304/304L SST, ASTM A276	20
				1						LSC	–19	PIVOT PIN	BAR, 1 1/2 HEX 304 SST, ASTM A276	19
				1						LSC	–18	LIFTING BAIL	BAR, ø 5/8 304/304L SST, ASTM A276	18
					1					LSC	–17	INSERTION BAR	BAR, ø 1 304/304L SST, ASTM A276	17
					1					LSC	–16	HANDLE	BAR, ø 1 304/304L SST, ASTM A276	16
△16						1				SS	–15	SUPPORT PLATE	PLATE, 3/4 THK 304 SST, ASTM A240	15
△16						1				SS	–14	CENTERING BOSS	BAR 304 SST, ASTM A276	14
							2			LSC	LC–026E–15	COMPRESSION SPRING GROUND ENDS, SST	LEE SPRING CO	13
							2			LSC	92373A145	SPRING PIN 3/32 ø X 5/8 LONG	McMASTER–CARR SUPPLY CO CAT NO 101	12
							2			SS	–11	RATCHETING DOG	BAR 304/304L SST, ASTM A276	11
△16							1			SS	–10	RATCHETING HOUSING	BAR NITRONIC 60, S21800, ASTM A276	10
								1		SS	–9	INSERTION TOOL CENTERING ASSEMBLY		9
								1		LSC	–8	GAGE TUBE ASSEMBLY		8
							1			SS	–7	COLLAR ASSEMBLY		7
								1		LSC	–6	LIFTING BAIL ASSEMBLY		6
								1		LSC	–5	HANDLE ASSEMBLY		5
									1	SS	–4	SUPPORT PLATE ASSEMBLY		4
									1	SS	–3	SUPPORT ROD ASSEMBLY		3
									1	LSC	–2	INSERTION TOOL ASSEMBLY		2
										SS	–1	ASSEMBLY		1

QTY. REQD. — PARTS LIST

Figure A-21 Rev. 4

INSPECTION REQUIREMENTS
QC REQUIRED
~~QC NOT REQUIRED~~
△Q DENOTES Q/C INSP. REQD.

DIMENSIONING AND SYMBOLOGY ARE AMERICAN NATIONAL STANDARD UNLESS OTHERWISE SPECIFIED
SURFACE ROUGHNESS 125
DIMENSIONS AND TOLERANCES ARE IN INCHES
TOLERANCES: DECIMALS: .X = ± .1 .XX = ± .03 .XXX = ± .010
FRACTIONS ± 1/8
ANGULAR ± 2°
DO NOT SCALE DRAWING

NEXT ASSY/REF DWG	FINAL DATE
SYS ENG A.B.C.	DATE 04/15/96
ENG MGR P. A. HOLMES	DATE 04/15/96
DESIGN J. DEATHERAGE	DATE 04/15/96
CHECKED L. D. WILLIS	DATE 04/11/96
DRAWN W. HEILESON	DATE 01/09/96
RELEASE L. D. WILLIS	DATE 04/15/96

Lockheed Idaho Technologies Company

CPP 749

PEACH BOTTOM BASKET SUPPORT PLATE PLT–DSW–902, INSERTION TOOL TD–DSW–902 & CASK COVER COV–DSW–005

DSW

SIZE D — INDEX CODE NUMBER: AREA 200, TYPE 0749, CL 47, ORIG 530 — DRAWING NO. 097329 — REV 3

SCALE NOTED — SHEET 1 OF 6

PROJECT NO. 169250 — SPEC CODE — TBA

ADOCS NO.

FORMAT0-REV 2.0-CPP

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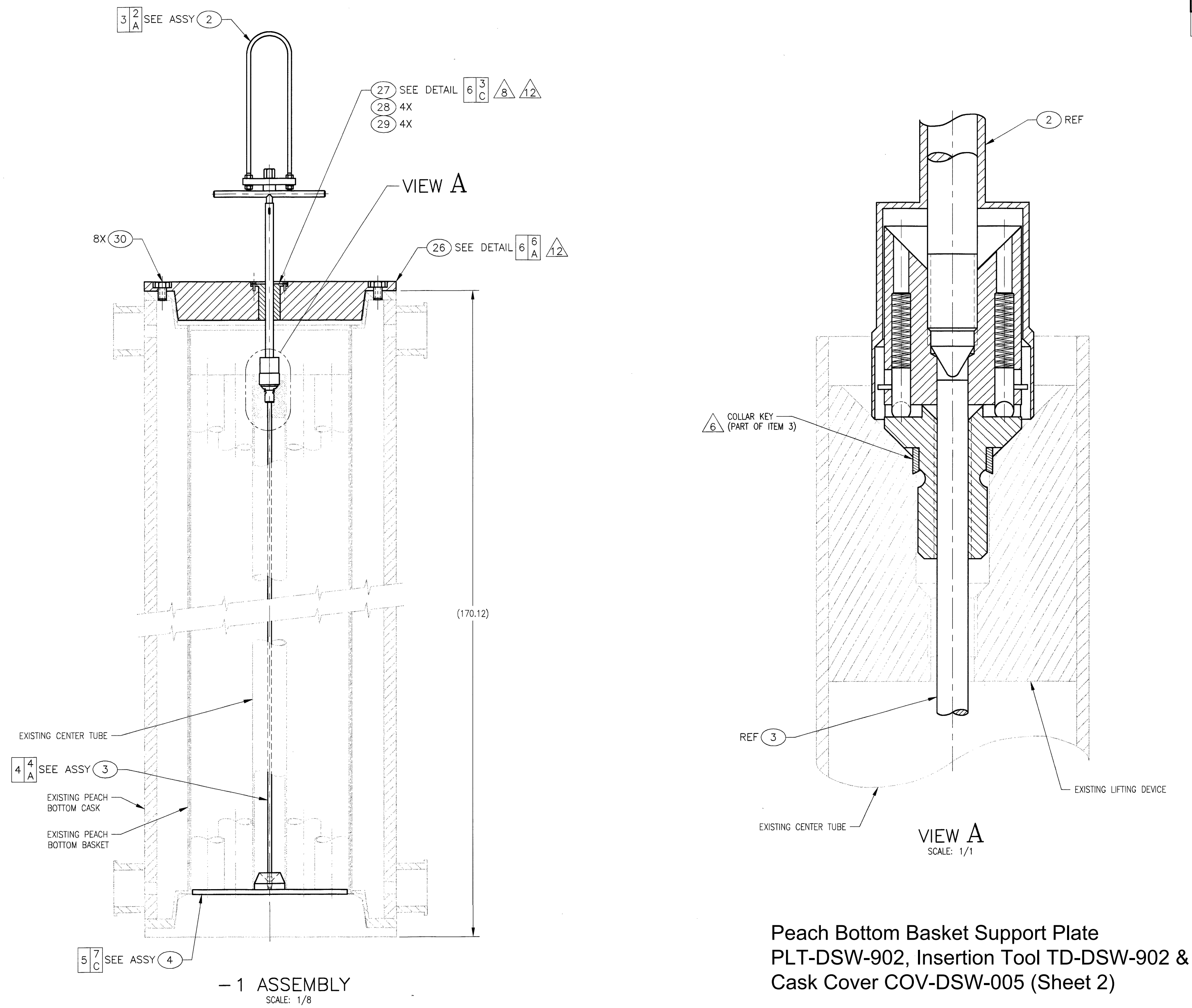
Drawn in Model Space Date: 04/03/03 – 1:46 P.M.
ID: KRESV



Peach Bottom Basket Support Plate
PLT-DSW-902, Insertion Tool TD-DSW-902 &
Cask Cover COV-DSW-005 (Sheet 2)

Figure A-22 Rev. 4

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
1			

SIZE	AREA	TYPE	CL	ORIG	DRAWING NO.	REV
D	200	0749	47	530	097329	1
SCALE NOTED					SHEET 2	

CONTROLLED CLASS I DOCUMENT

1 TBA

ADOCS NO.

File: 09732902.dwg Path: h: User: JGT4 Date: 06/03/97 – 09:34 A.M.

FORMATD2-REV 3.0

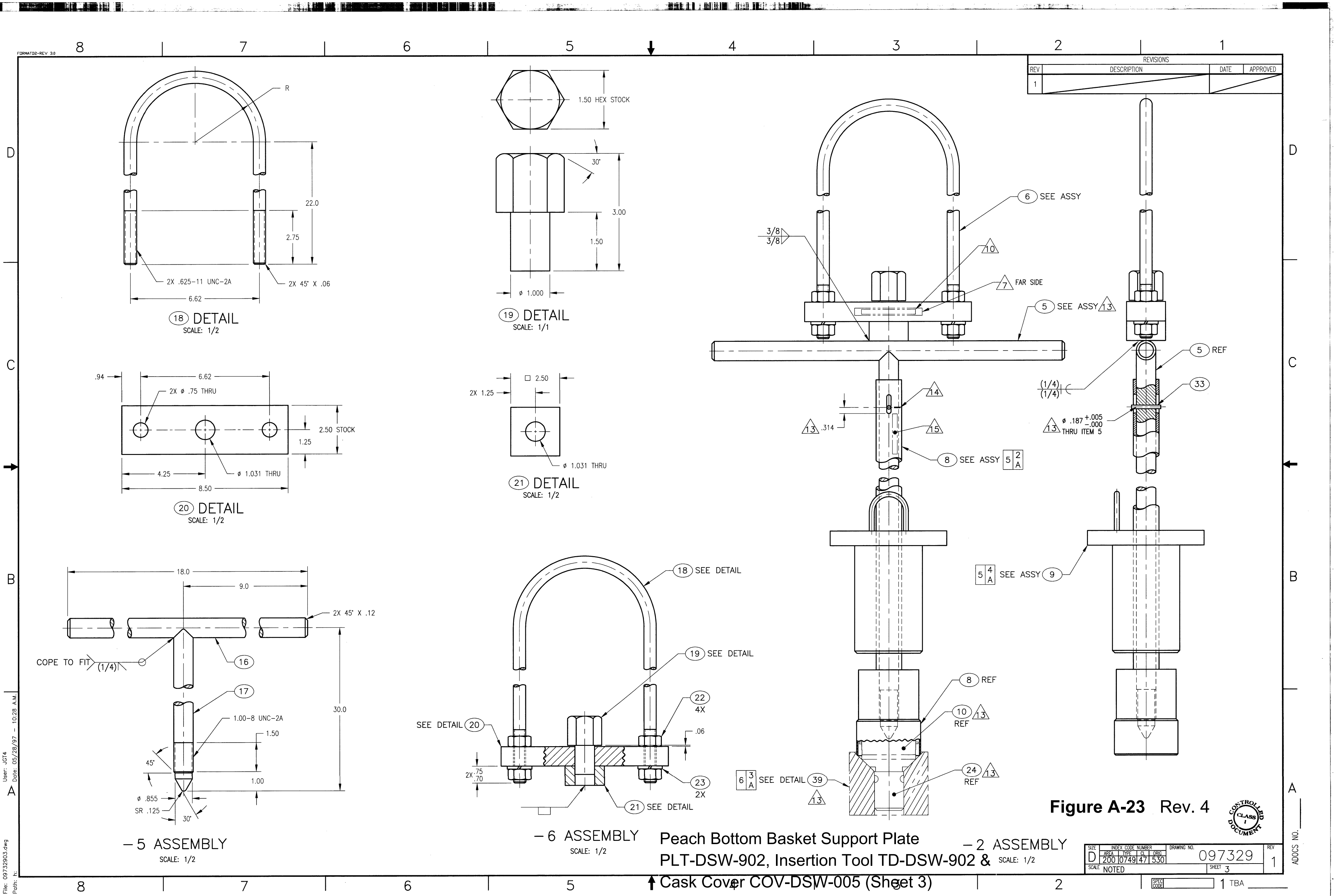
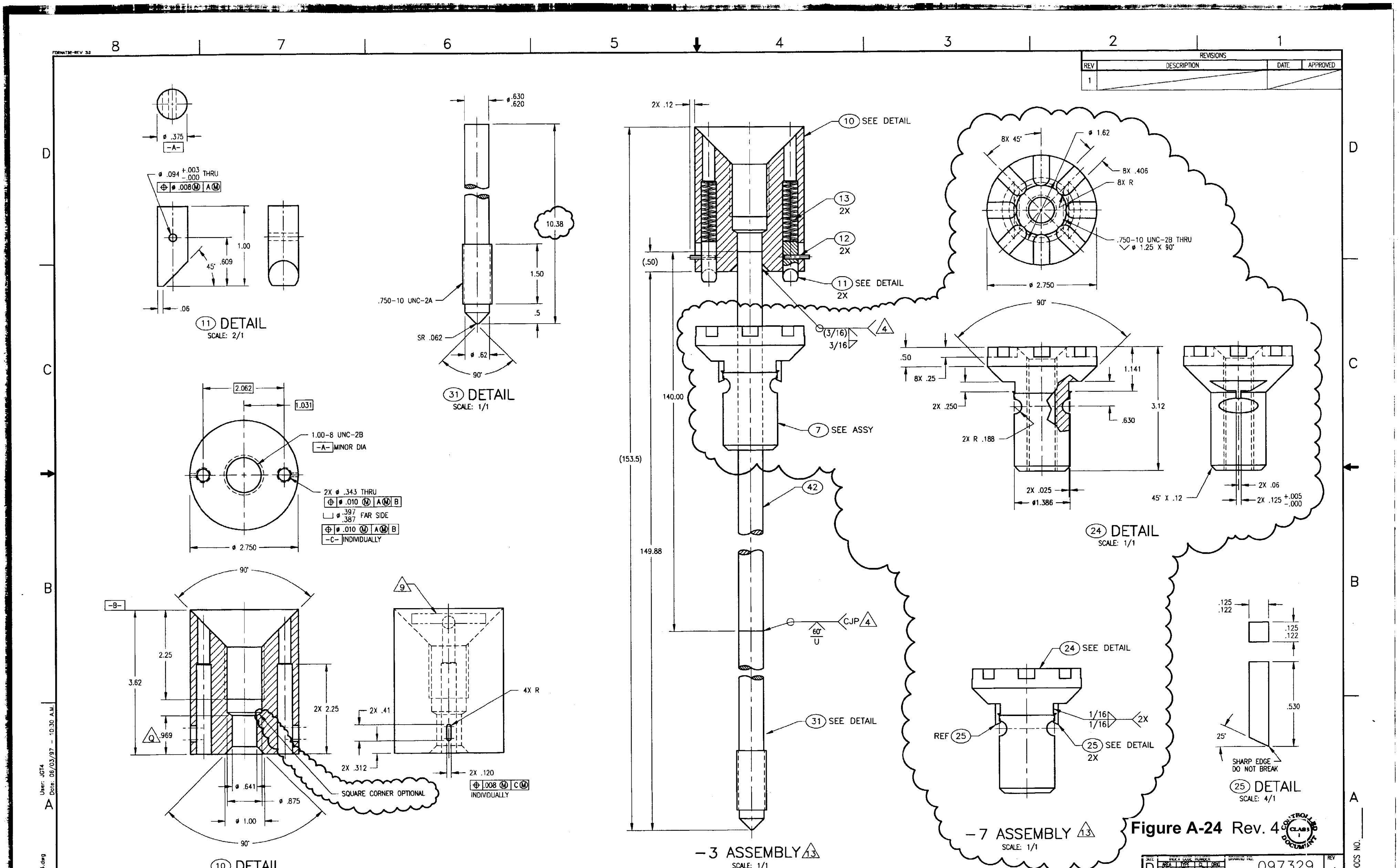
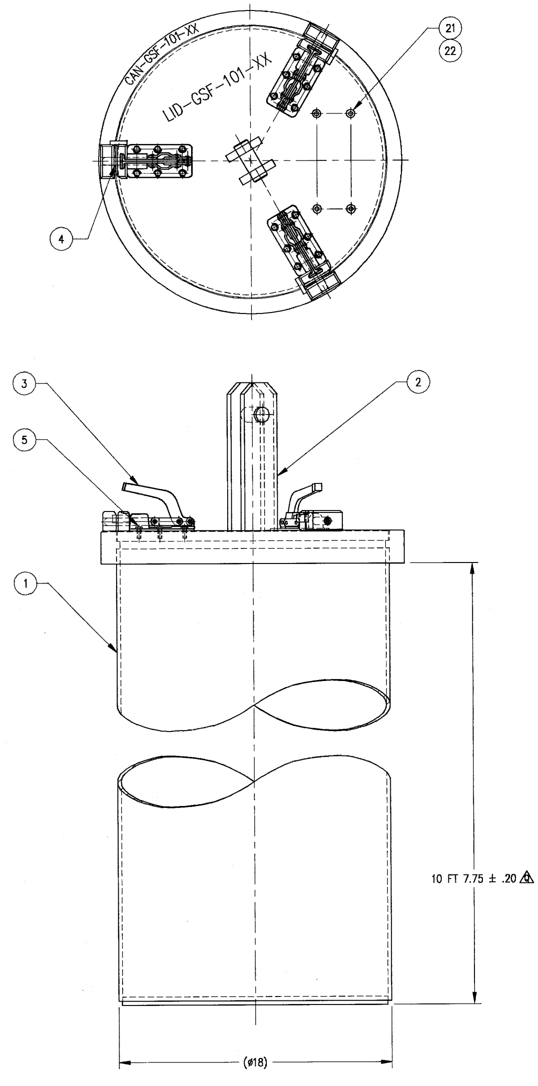


Figure A-23 Rev. 4

Peach Bottom Basket Support Plate PLT-DSW-902, Insertion Tool TD-DSW-902 & Cask Cover COV-DSW-005 (Sheet 3)



Peach Bottom Support Plate PLT-DSW-902, Insertion Tool TD-DSW-902 &
Cask Cover COV-DSW-005 (Sheet 4)



−1 ASSEMBLY
SCALE: 1/4

LIST OF MATERIAL

QTY REQ −8	−7	−6	−5	−4	−3	−2	−1	ITEM NO.	ORDERING INFORMATION	TRACEABILITY / CERTIFICATION	NOTE	DRAWING NO. OR PART NO.	MATL	STD	NUMBER	COMP	FORM
							1	1	−2 SUBASSEMBLY (STORAGE CAN ASSEMBLY)			094911					
							1	2	−3 SUBASSEMBLY (LID & LID LUGS ASSEMBLY)			094911					
							3	3	PLUNGER CLAMP		A	607−10	COML				
							3	4	PLUNGER	1 & 2	A	607−10−1	NITRONIC−60	ASTM	A351	UNS S21800	BAR
							18	5	CAP SCR., 1/4"−20UNC−3A X 1/2" LG., SOC. HEAD				SST.	ASTM	A193	300	
						1		6	PIPE, 18" SCH. 10, SEAMLESS	1 & 2		094911	CS	ASTM	A53 B		
						1		7	−4 SUBASSEMBLY (RING & LUGS ASSEMBLY)			094912					
				1				8	UPPER SUPPORT RING, 2 1/2" THICK	1 & 2	B	094912	CS	ASTM	A36		PLATE
				3				9	RING LUG, 1" THICK	1 & 2		094912	SST	ASTM	A276		BAR
					1			10	−5 SUBASSEMBLY (LIFTING BAIL)			094911					
					3			11	−6 SUBASSEMBLY (LID LUGS)			094911					
					1			12	LID, 3/4" THICK	1 & 2		094911	CS	ASTM	A36		PLATE
			2					13	LIFTING BAIL, SIDE BAR, 1/2" X 2 1/2"	1 & 2		094911	CS	ASTM	A36		BAR
			1					14	LIFTING BAIL, LOAD BAR, 1" ø	1 & 2		094911	CS	ASTM	A36		BAR
		1						15	LID LUG, 3/4" THICK	1 & 2		094911	SST.	ASTM	A276	304	BAR
		1						16	LID LUG STOP, 1/4" X 1/2"			094911	SST.	ASTM	A276	304	BAR
						1		17	BASE PLATE, 1/2" THICK	1 & 2		094911	CS	ASTM	A36		
		AR						18	WELD FILLER METAL	1 & 2			ER308L	AWS	A5.9		
			AR		AR	AR		19	WELD FILLER METAL	1 & 2			ER80S−D2	AWS	A5.28		
				AR	AR			20	WELD FILLER METAL	1 & 2			ER309	AWS	A5.9		
							4	21	SCR.,#10−24UNC−2A X 1/2" LG., SOC. HD CAP				SST.	ASTM	A193	300	
							4	22	WASHER, FLAT, #10				SST.	ASTM	A193	300	

A. DE−STA−CO DIVISION DOVER RESOURCES CO. OR APPROVED EQUAL

B. ALTERNATE MATERIAL: PIPE, 20" SCH 120 OR 140, SEAMLESS, MATERIAL CS, ASTM A53 B

GENERAL NOTES:

⚠ 1. THIS IS A TRACEABLE ITEM. MATERIAL SHALL BE TRACEABLE TO THE CERTIFICATION RECORDS AS CALLED OUT IN NOTE # 2.

⚠ 2. CERTIFICATION RECORDS SHALL INCLUDE CERTIFIED MILL TEST REPORTS INCLUDING RESULTS OF CHEMICAL AND PHYSICAL ANALYSIS FOR MATERIAL PER REFERENCED ASTM STANDARD.

3. MATERIAL FORMS MAY BE SUBSTITUTED IF THOSE SPECIFIED ARE NOT AVAILABLE.

4. ALL MACHINED SURFACES SHALL BE AT LEAST 125 FINISH UNLESS OTHERWISE SPECIFIED.

5. REMOVE ALL BURRS AND SHARP EDGES TO APPROX. R .02.

⚠ 6. WELDING SHALL BE PER AWS D1.1.

⚠ 7. STAMPED LETTERS, .75" HIGH AS SHOWN, WHERE XX IS SERIALIZATION NUMBER.

⚠ 8. WELDS SHALL BE VISUALLY INSPECTED PER AWS D1.1.

⚠ 9. ALL LOAD BEARING WELDS SHALL BE LIQUID PENETRANT INSPECTED PRIOR TO LOAD TEST AND AFTER LOAD TEST. ACCEPTANCE CRITERIA PER AWS D1.1.

⚠ 10. LID FIT UP TEST: WITH ALL PLUNGERS (ITEM 4) RETRACTED, PLACE LID (ITEM 2) ON CAN (ITEM 1) AND ROTATE COUNTER−CLOCKWISE UNTIL THE 3 STOPS (ITEM 16) CONTACT THE STATIONARY LUGS (ITEM 9). EXTEND EACH PLUNGER UNTIL ALL THREE ARE FULLY ENGAGED. THERE SHALL BE NO BINDING, AND A FORCE NO GREATER THAN APPROXIMATELY 5 LBS. ON THE CLAMP HANDLE (ITEM 3) SHALL BE REQUIRED TO FULLY EXTEND OR RETRACT EACH PLUNGER. REPEAT AT 120° INTERVALS.

⚠ 11. 150% LOAD TEST: PLACE 2150^{+100}_{-0} LBS. IN THE CAN (ITEM 1). INSTALL LID (ITEM 2) AND FULLY ENGAGE ALL 3 PLUNGERS (ITEM 4). LIFT CANISTER OFF OF FLOOR USING LIFTING BAIL (ITEM 10) AND HOLD FOR A MINIMUM OF 10 MINUTES. AFTER REMOVAL OF TEST LOAD, CANISTER SHALL SUCCESSFULLY PASS LID FIT UP TEST (NOTE #10), AND NO LOAD BEARING MEMBER SHALL HAVE BEEN DEFORMED BEYOND DRAWING DIMENSIONAL TOLERANCES.

⚠ 12. THE BOTTOM WELD OF THE PIPE, (ITEM 6) AND BASEPLATE, (ITEM 17) SHALL BE LEAK TESTED TO A MINIMUM HYDROSTATIC PRESSURE OF 10 FEET OF WATER (4.3 PSIG). THERE SHALL BE NO OBSERVABLE LEAKAGE AFTER ONE HOUR AT THE TEST PRESSURE.

⚠ 13. ALL SURFACES OF CANISTER SHALL BE CLEANED OF LOOSE MILL SCALE OR OTHER DELETEROUS MATERIAL BY WIRE BRUSHING OR OTHER ACCEPTABLE CLEANING METHODS.

14. APPROXIMATE WEIGHT OF CANISTER = 700 LBS.

REF. DWGS.
094911
094912
154872

CONTROLLED DOCUMENT CLASS I

NO.	REVISIONS	DRAFTER DATE	CHECKER DATE	SYS ENGR DATE
1	REVISED PER DCN #133461−AB2	ASG 06-15-95		

Figure A-25 Rev. 4

TOLERANCE (unless otherwise specified)	.X	.XX	.XXX	FRACTIONS
0" − 6"	± .1	± .02	± .005	± 1/64
6" − 18"	± .1	± .03	± .008	± 1/32
OVER 18"	± .1	± .06	± .015	± 1/16
ANGLES	± 1°			

LINEAR DIMENSIONS UP TO AND INCLUDING 120 INCHES ARE EXPRESSED IN INCHES, THOSE GREATER ARE EXPRESSED IN FEET AND INCHES. INCH MARKS ARE OMITTED EXCEPT IN THE CASE OF 1, 6, OR 9 USED ALONE.

INSPECTION REQUIREMENTS
QC REQUIRED
~~QC NOT REQUIRED~~
⚠ DENOTES Q/C INSP. REQD.

APPROVALS	SIGNATURE	DATE
DRAFTER	K. Spencer	10−02−91
CHECKER	ERICKSON	10−23−91
DFTG SUPV	G.T.WELLER	10−23−91
DESIGN ENGR	J.D.YOUNG	10−23−91
SYS ENGR	D.M.SHELL	10−23−91
ENGR MGR	F.C.TRAXLER	10−23−91
PROJ MGR	NONE	

SCALE AS NOTED
DATE ISSUED GTW 10−23−91

Westinghouse Idaho Nuclear Company Inc.
IDAHO CHEMICAL PROCESSING PLANT
IDAHO FALLS, IDAHO

FOR
U.S. DEPARTMENT OF ENERGY
IDAHO OPERATIONS OFFICE
IDAHO FALLS, IDAHO

CPP−603
IFSF FUEL STORAGE CAN
CAN−GSF−101
ASS'Y., LIST OF MAT'L., & GEN. NOTES GSF

DWG. SIZE	AREA	DWG TYPE	CL	ORIG.	DRAWING NUMBER	REV.
D	200	0603	47	936	094910	1

JOB NUMBER 133461 TAKEN FROM DRAWING NO. NEW DWG.

CAD GENERATED − AUTOCAD

Figure A-26

Figure Not Used.

NOTES

1. REMOVE ALL BURRS AND SHARP EDGES.
2. REMOVED
3. PRESERVE AND PROTECT PER STD-7020, CLASS II.
4. WELD PER INEEL WPS S2.0 OR S6.9 USING ITEM 9, WELD FILLER METAL.
5. (Q) VISUALLY INSPECT FINAL PASS OF ALL WELDS. ACCEPTANCE CRITERIA SHALL BE:

   NO CRACKS.

   COMPLETE FUSION SHALL EXIST BETWEEN WELD FILLER AND BASE METAL.

   UNDERCUT SHALL NOT EXCEED .01" FOR MATERIAL LESS THAN 3/16" FOR MATERIAL 3/16" AND THICKER, UNDERCUT NOT TO EXCEED 1/32".

   FOR ALL WELDS THE SUM OF VISIBLE POROSITY 1/32" OR GREATER IN DIAMETER SHALL NOT EXCEED 3/8" IN ANY LINEAR INCH OF WELD AND SHALL NOT EXCEED 3/4" IN ANY 12" LENGTH OF WELD.

   ALL CRATERS SHALL BE FILLED TO THE FULL CROSS-SECTION OF THE WELD EXCEPT FOR ENDS FOR FILLET WELDS OUTSIDE THEIR EFFECTIVE LENGTH.

   FILLET WELDS SHALL BE AT LEAST THE SIZE SPECIFIED IN THE WELD.

6. MEASURED WEIGHT OF −1 ASSY IS 504.0 LBS. WEIGHED 3/13/97.
7. (Q) MEASURE/INSPECT THIS DIMENSION TO INSURE MINIMUM O.D. OF CANISTER IS GREATER THAN 17.699.
8. (Q) LIQUID PENETRANT INSPECT WELDS AS NOTED. ACCEPTANCE CRITERIA SHALL BE:

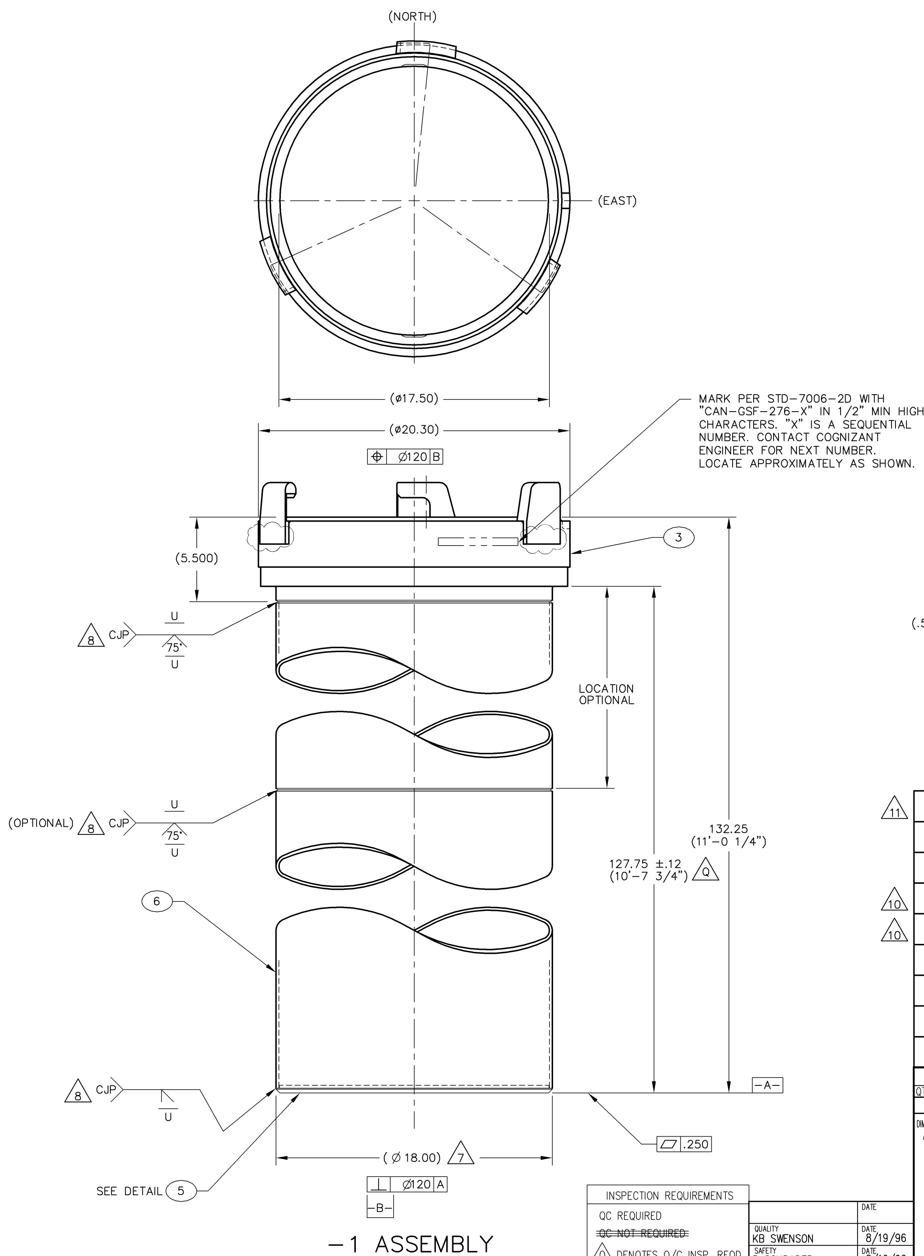
   NO CRACKS.

   THE SUM OF VISIBLE POROSITY 1/32" OR GREATER IN DIAMETER SHALL NOT EXCEED 3/8" IN ANY LINEAR INCH OF WELD AND SHALL NOT EXCEED 3/4" IN ANY 12" LENGTH OF WELD.

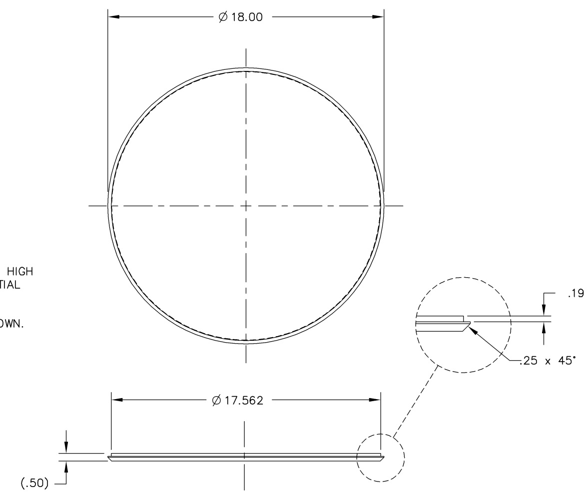
9. REMOVED
10. (Q) MANUFACTURER OR SUPPLIER MUST PROVIDE ACTUAL CERTIFIED MATERIAL TEST REPORTS (CMTR'S) WHICH CERTIFY THAT THE MATERIAL HAS BEEN INSPECTED AND TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE SPECIFICATION AND THAT THE RESULTS OF THE CHEMICAL ANALYSIS AND MECHANICAL TESTS MEET THE REQUIREMENTS OF THE SPECIFICATION FOR THE SPECIFIC GRADE. THE MANUFACTURER OR SUPPLIER MUST MARK THE HEAT NUMBER ON THE CMTR'S AND ON THE MATERIAL.
11. (Q) MANUFACTURER OR INDEPENDENT TESTING LABORATORY MUST PROVIDE ACTUAL CERTIFIED MATERIAL TEST REPORTS (CMTR'S) WHICH CERTIFY THAT THE MATERIAL HAS BEEN INSPECTED AND TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE SPECIFICATION AND THAT THE RESULTS OF THE CHEMICAL ANALYSIS MEET THE REQUIREMENTS OF THE SPECIFICATION FOR THE AWS MATERIAL CLASSIFICATION. THE MANUFACTURER OR SUPPLIER MUST FLAG TAG EACH END OF WELD FILLER METAL SHOWING THE AWS MATERIAL CLASSIFICATION AND HEAT NUMBER, AND THE HEAT NUMBER MUST APPEAR ON THE CMTR'S.
12. (Q) FINAL ASSEMBLY SHALL MEET THE CLEANLINESS REQUIREMENTS OF STD-7022 ACCEPTANCE LEVEL D.

REVISIONS

REV	DESCRIPTION		DATE	APPROVED
5	SEE DAR 85110		10-3-01	DEJ
6	SEE DAR 96093	DEJ	10-23-02	DEJ
7	SEE DAR 96936	DEJ	12/4/02	DEJ



−1 ASSEMBLY



5 DETAIL

Figure A-27 Rev. 4

	QTY. REQD. −1	SAFETY CAT.	PART OR IDENTIFYING NO.		DESCRIPTION/MATERIAL/SPECIFICATION	ITEM/FIND
11	AR	SS		WELD FILLER METAL	ER 308L, AWS A5.9	9
						8
						7
10	AR	SS		CANISTER BODY	PIPE, 18 SCHED 10S (.188 WALL) 304L SST, ASTM A312	6
10	1	SS	−5	CANISTER BOTTOM	PLATE, 1/2 THK 304L SST, ASTM A240	5
						4
	1	SS	453319-1	CANISTER TOP ASSEMBLY		3
						2
		SS	−1	ASSEMBLY		1

PARTS LIST

INSPECTION REQUIREMENTS
QC REQUIRED
~~QC NOT REQUIRED~~
(Q) DENOTES Q/C INSP. REQD.

		DATE
QUALITY	KB SWENSON	8/19/96
SAFETY	B SCHRADER	8/19/96

DIMENSIONING AND SYMBOLOGY ARE AMERICAN NATIONAL STANDARD UNLESS OTHERWISE SPECIFIED SURFACE ROUGHNESS 125 DIMENSIONS AND TOLERANCES ARE IN INCHES
TOLERANCES: DECIMALS: .X = ± .1 .XX = ± .03 .XXX = ± .010
FRACTIONS ± 1/8 ANGULAR ± 2°
DO NOT SCALE DRAWING

		DATE
NEXT ASSY/REF DWG	453328	
NUCLEAR OPS	KAREL KINGREY	8/19/96
PROJECT MANAGER/ENGINEER	BILL HOLMES	8/19/96
DESIGN MANAGER	JF WARREN	8/19/96
DESIGN	PAUL PINSON	8/19/96
CHECKED	DNB FOR J BUSHMAN	8/19/96
DRAWN	J JACKSON	7/11/96
RELEASE	DNB FOR J BUSHMAN	8/19/96

Lockheed Idaho Technologies Company

CPP-603 IFSF
LIGHTER WEIGHT
STORAGE CANISTER ASSEMBLY
CAN-GSF-276-X

GSF

SIZE	AREA	TYPE	CL	ORIG	DRAWING NO.	REV
D	200	0603	47	530	453318	7

SCALE 1/4 & NOTED SHEET 1 OF 1

PROJECT NO. 015704 SPEC CODE

TBA TD1377

ADOCS NO. 169197

NOTES

1. REMOVE ALL BURRS AND SHARP EDGES.
2. (Q) FINAL ASSEMBLY SHALL MEET THE CLEANINESS REQUIREMENTS OF STD-7022 ACCEPTANCE LEVEL D.
3. PRESERVE AND PROTECT PER STD-7020, CLASS II.
4. WELD PER INEEL WPS S2.0 OR S6.9 USING ITEM 18, WELD FILLER METAL.
5. (Q) VISUALLY INSPECT FINAL PASS OF ALL WELDS. ACCEPTANCE CRITERIA SHALL BE:

   NO CRACKS.

   COMPLETE FUSION SHALL EXIST BETWEEN WELD FILLER AND BASE METAL.

   UNDERCUT SHALL NOT EXCEED .01" FOR MATERIAL LESS THAN 3/16" FOR MATERIAL 3/16" AND THICKER, UNDERCUT NOT TO EXCEED 1/32".

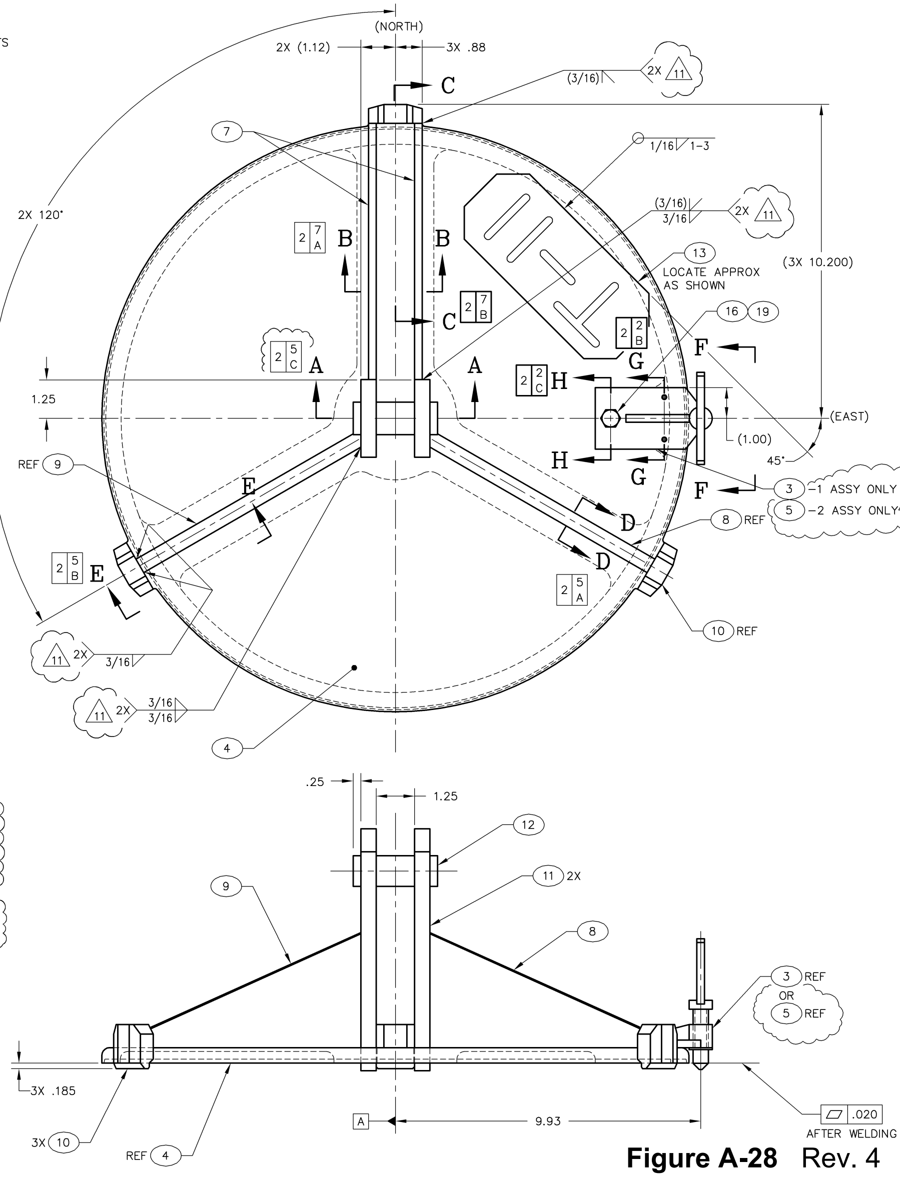
   FOR ALL WELDS THE SUM OF VISIBLE POROSITY 1/32" OR GREATER IN DIAMETER SHALL NOT EXCEED 3/8" IN ANY LINEAR INCH OF WELD AND SHALL NOT EXCEED 3/4" IN ANY 12" LENGTH OF WELD.

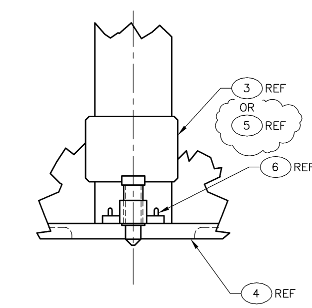
   ALL CRATERS SHALL BE FILLED TO THE FULL CROSS-SECTION OF THE WELD EXCEPT FOR ENDS FOR FILLET WELDS OUTSIDE THEIR EFFECTIVE LENGTH.

   FILLET WELDS SHALL BE AT LEAST THE SIZE SPECIFIED IN THE WELD.
6. FABRICATOR TO VERIFY LOCATIONS OF ITEMS 3 & 10 OR 5 & 10 FOR FIT WITH CANISTER ASSEMBLY 453318-1, BEFORE WELDMENT. SEE NEXT ASSEMBLY DWG 453328.
7. MEASURED WEIGHT OF -1 ASSEMBLY IS 37.0 LBS. WEIGHED 3/13/97.
8. (Q) LIQUID PENETRANT INSPECT WELDS AS NOTED. ACCEPTANCE CRITERIA SHALL BE:

   NO CRACKS.

   THE SUM OF VISIBLE POROSITY 1/32" OR GREATER IN DIAMETER SHALL NOT EXCEED 3/8" IN ANY LINEAR INCH OF WELD AND SHALL NOT EXCEED 3/4" IN ANY 12" LENGTH OF WELD.
9. (Q) MANUFACTURER OR INDEPENDENT TESTING LABORATORY MUST PROVIDE ACTUAL CERTIFIED MATERIAL TEST REPORTS (CMTR'S) WHICH CERTIFY THAT THE MATERIAL HAS BEEN INSPECTED AND TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE SPECIFICATION AND THAT THE RESULTS OF THE CHEMICAL ANALYSIS MEET THE REQUIREMENTS OF THE SPECIFICATION FOR THE AWS MATERIAL CLASSIFICATION. THE MANUFACTURER OR SUPPLIER MUST FLAG TAG EACH END OF WELD FILLER METAL SHOWING THE AWS MATERIAL CLASSIFICATION AND HEAT NUMBER, AND THE HEAT NUMBER MUST APPEAR ON THE CMTR'S.
10. (Q) INSTALL ITEM 3 ON THE -1 ASSY AND ITEM 5 ON THE -2 ASSY USING ITEM 16 ALONG WITH ITEM 19 AND A TORQUE OF 20 FT-LBS.
11. (Q) LOAD TEST EACH NEW LID ON A CANISTER ASSEMBLY (CAN-GSF-276-X) WITH THE TOTAL WEIGHT OF THE CANISTER, LID, AND TEST WEIGHT BEING 2375 TO 2500 LBS. HOLD LOAD FOR 10 MINUTES. VISUALLY INSPECT THE LID AND INDICATED WELDS. ANY LOAD-TEST-CAUSED WELD CRACKS OR PERMANENT DEFORMATION IS CAUSE FOR REJECTION.





VIEW F—F
ROTATED 90° CW

Figure A-28 Rev. 4

−1 ASSEMBLY (SHOWN)
−2 ASSEMBLY 11

REV	DESCRIPTION		DATE	APPROVED
3	SEE DAR 67632		8-23-00	DEJ
4	ADDED INTEC AREA PLANT CODE AND SEE DAR 96093	HS	10-23-02	DEJ
5	SEE DAR 100952	W.H.	6-12-03	DEJ

SHEET	2	1	REV STATUS OF SHEETS
REV	5	5	

PARTS LIST

-2 QTY. REQD	-1	SAFETY CAT.	PART OR IDENTIFYING NO.	DESCRIPTION/MATERIAL/SPECIFICATION		ITEM/FIND
AR	AR	CG	81741	PRO-LOCK	LOCTITE CORP.	19
AR	AR	SS		WELD FILLER METAL	ER308L, AWS A5.9	18
						17
1	1		453324-4	SCREW		16
						15
						14
1	1		453322-10	NAME PLATE		13
1	1		453322-9	LIFTING BAR		12
2	2		453322-8	LIFTING BAIL		11
3	3		453322-7	FOOT		10
1	1		453322-6	GUSSET		9
1	1		453322-5	GUSSET		8
2	2		453322-4	GUSSET		7
2	2		453324-3	LOCATING PIN		6
1			453323-4	TRAVELING LID LOCKING TAB ASSEMBLY		5
1	1		453322-1	COVER PLATE		4
	1		453323-2	LOCKING TAB ASSEMBLY		3
		SS	-2	TRAVELING LID ASSEMBLY		2
		SS	-1	ASSEMBLY		1

INSPECTION REQUIREMENTS		DATE
QC REQUIRED	QUALITY KB SWENSON	8/19/96
~~QC NOT REQUIRED~~	SAFETY B SCHRADER	8/19/96
(Q) DENOTES Q/C INSP. REQD.		

DIMENSIONING AND SYMBOLOGY ARE AMERICAN NATIONAL STANDARD
UNLESS OTHERWISE SPECIFIED SURFACE ROUGHNESS 125
DIMENSIONS AND TOLERANCES ARE IN INCHES
TOLERANCES: DECIMALS: .X = ± .1, .XX = ± .03, .XXX = ± .010
FRACTIONS ± 1/8
ANGULAR ± 2°
DO NOT SCALE DRAWING

		DATE
NEXT ASSY/REF DWG	453328	
NUCLEAR OPS	KAREL KINGREY	8/19/96
PROJECT/MANAGER/ENGINEER	BILL HOLMES	8/19/96
DESIGN MANAGER	JF WARREN	8/19/96
DESIGN	PAUL PINSON	8/19/96
CHECKED	DNB FOR J BUSHMAN	8/19/96
DRAWN	J JACKSON	6/13/96
RELEASE	DNB FOR J BUSHMAN	8/19/96

Lockheed Idaho Technologies Company

CPP-603 IFSF
ROVER FUEL MOVEMENT
STORAGE CANISTER LID
ASSEMBLY

GSF

SIZE D | INDEX CODE NUMBER: AREA 200, TYPE 0603, CL 47, ORIG 530 | DRAWING NO. 453321 | REV 5
SCALE 1/2 | SHEET 1 OF 2

PROJECT NO. 015704 | SPEC CODE | TBA TD1377

ADOCS NO. 169200

File: 453321-5.dwg ID: KRESV Drawn in Model Space Date: 06/05/03 - 3:31 P.M.
Path: Q:

FORMATD-REV 2.0

5	4	3	2	1	SHEET	REV STATUS OF SHEETS
1	1	2	1	5	REV	

REVISIONS

REV	DESCRIPTION		EFFECTIVE DATE:	
4	SEE DAR 87900	DEJ	1/30/02	DEJ
5	SEE DAR 90260	DEJ	4/9/02	DEJ

NOTES:

1. REMOVE ALL BURRS AND SHARP EDGES UNLESS OTHERWISE NOTED.
2. ALL FILLET RADII .03 UNLESS OTHERWISE NOTED.
3. WELD PER INEL WELD PROCEDURE SPECIFICATION S2.24 USING ITEM 17 WELD FILLER METAL EXCEPT AS NOTED.
4. (Q) VISUALLY INSPECT ALL WELDS PER AWS D1.1. ACCEPTANCE CRITERIA SHALL BE PER AWS D1.1 FOR "STATICALLY LOADED CONNECTIONS".
5. WELD PER INEL WELD PROCEDURE SPECIFICATION S2.24 USING ITEM 18 WELD FILLER METAL.
6. (Q) MANUFACTURER OR SUPPLIER MUST PROVIDE ACTUAL CERTIFIED MATERIAL TEST REPORTS (CMTR's) CERTIFYING THAT THE MATERIAL HAS BEEN INSPECTED AND TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE SPECIFICATION AND THAT THE RESULTS OF THE CHEMICAL ANALYSIS AND MECHANICAL TESTS MEET THE REQUIREMENTS OF THE SPECIFICATION FOR THE SPECIFIC GRADE. THE MANUFACTURER OR SUPPLIER MUST MARK THE HEAT NUMBER ON THE CMTR's AND ON THE MATERIAL.
7. (Q) MANUFACTURER OR INDEPENDENT TESTING LABORATORY MUST PROVIDE ACTUAL CERTIFED MATERIAL TEST REPORTS (CMTR's) WHICH CERTIFY THAT THE MATERIAL HAS BEEN INSPECTED AND TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE SPECIFICATION AND THAT THE RESULTS OF THE CHEMICAL ANALYSIS MEET THE REQUIREMENTS OF THE SPECIFICATION FOR THE AWS MATERIAL CLASSIFICATION. THE MANUFACTURER OR SUPPLIER MUST MARK EACH END OF WELD FILLER METAL SHOWING THE AWS MATERIAL CLASSIFICATION AND HEAT NUMBER, AND THE HEAT NUMBER MUST APPEAR ON THE CMTR's.
8. (Q) VIBRA-TOOL ETCH INFORMATION IN 5/16" HIGH CHARACTERS ON LID ASSEMBLY (ITEM 4) AND IN 1/2" HIGH CHARACTERS ON CAN ASSEMBLIES (ITEMS 5, 6, 7 AND 22) LOCATED AS SHOWN. FOR ALL -1 ASSEMBLIES:"CAN-GSF-105-X", "X" BEING A UNIQUE NUMBER SUPPLIED FOR EACH -1 ASSEMBLY BUILT. FOR ALL -2 ASSEMBLIES: "CAN-GSF-106-X" "X" BEING A UNIQUE NUMBER SUPPLIED FOR EACH -2 ASSEMBLY BEING BUILT. FOR ALL -3 ASSEMBLIES: "CAN-GSF-107-X" "X" BEING A UNIQUE NUMBER SUPPLIED FOR EACH -3 ASSEMBLY BEING BUILT. FOR ALL -21 ASSEMBLIES: "CAN-GSF-131-X" "X" BEING A UNIQUE NUMBER SUPPLIED FOR EACH -21 ASSEMBLY BEING BUILT. TRACE ETCH INFORMATION ON WITH A METAL MARKER.
9. (Q) FOR ASSEMBLIES FABRICATED AND/OR LOADED PRIOR TO 3/20/2002, DISREGARD THE ETCHED CAPACITY OF 67 LBS. PER ECF-3150 REV 1, THE MAXIMUM WEIGHT OF THE CAN AND ITS CONTENTS:
   - -1 AND -2 ASSEMBLY 133.5 LBS
   - -3 ASSEMBLY 136.0 LBS

   NEW CANS FABRICATED AFTER 3/20/2002 SHALL BE MARKED PER STD-7006-2D USING 1/4 INCH HIGH CHARACTERS AS FOLLOWS:
   - -1 AND -2 ASSEMBLY "CAN AND CONTENT WEIGHT = 133.5 LBS"
   - -3 ASSEMBLY "CAN AND CONTENT WEIGHT = 136.0 LBS"
   - -21 ASSEMBLY "CAPACITY = 67 LBS"

   MARKING SHALL BE FILLED WITH BLACK INK PER STD-7006-12 WITH A CHLORIDE CONTENT LESS THAN 50 PPM.
10. DESIGN LIFE IS 50 YEARS FROM INSTALLATION.
11. (Q) VERIFY THAT ITEM 4 ENGAGES AND DISENGAGES SMOOTHLY WITH ITEMS 5, 6, 7 OR 22 AS SHOWN IN THE -1, -2, -3 AND -21 ASSEMBLIES.
12. (Q) PROOF TEST THE ENTIRE -1, -2, -3 AND -21 ASSEMBLIES TO 125% OF THE RATED CAPACITY. AFTER THE PROOF TEST, ALL WELDS SHALL RECEIVE A LIQUID PENETRANT (PT) EXAMINIATION. ACCEPTANCE CRITERIA SHALL BE PER AWS D1.1 FOR "STATICALLY LOADED STRUCTURES."
13. THE CANS (CAN-GSF-105, CAN-GSF-106, AND CAN-GSF-107) ARE INTENDED TO BE USED FOR REPACKAGING FUEL IN THE TRA-603 MTR CANAL. THE CAN-GSF-131-X WAS DESIGNED FOR THE FECF REPACKAGING PROJECT, ECF 2344. THE LIFTING BAIL ENGAGES WITH THE "MTR CANAL SHORT HOOK TOOL (096192-2)" AT THE MTR CANAL AND THE "IFSF FUEL CANNING STATION BUCKET LIFTING TOOLS (TD-GSF-963-X)" AT THE CPP-603 IFSF FACILITY. THE RECTANGULAR HOLES AT THE TOP OF THE CANS ENGAGE THE "L TOOL (TD-FS-942)" AT THE CPP-666 FAST FACILITY. THE NOTCHES AT THE BOTTOM OF THE CANS ENGAGE WITH THE "MTR CANAL REPACKAGING PAN (500040-1)" TO PREVENT CAN ROTATION WHEN THE LID ASSEMBLY (ITEM 4) IS INSTALLED.
14. THE LID ASSEMBLY (ITEM 4) SHALL BE INSTALLED HAND TIGHT.
15. (Q) QA SHALL VERIFY MATERIAL (ITEM 19 AND 20) IS 300 SERIES SST (XRAY FLORESCENCE).
16. INSTALLATION NOTE: HOLDING FILTER SCREEN ITEM 20 IN PLACE OVER FILTER RING ITEM 19, SQUEEZE ITEMS 19 AND 20 TO FIT INSIDE CAN, FLUSH WITH CAN BOTTOM. ASSURE THAT GAP IN FILTER RING DOES NOT ALIGN WITH ANY CAN DRAIN HOLES.
17. (Q) QA TO VERIFY THAT LIGHT CAN BE SEEN THROUGH AT LEAST TWO CAN DRAIN HOLES AFTER ITEMS 19 AND 20 ARE INSTALLED.
18. (Q) FINAL ASSEMBLY SHALL MEET THE CLEANLINESS REQUIREMENTS OF STD-7022, ACCEPTANCE LEVEL D.

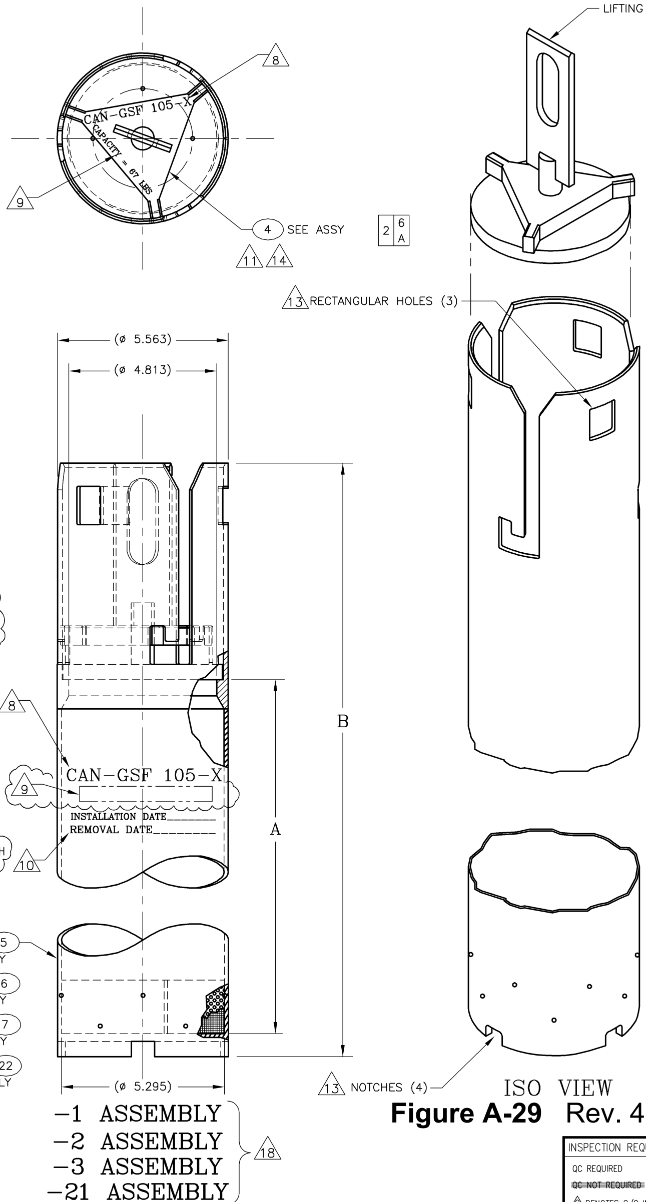


Figure A-29 Rev. 4

ASSEMBLY	CAN NUMBER	DIMENSION "A"	DIMENSION "B"	EMPTY CAN WEIGHT
-1 ASSY	CAN-GSF-105	(44.00)	(51.8)	43 LBS.
-2 ASSY	CAN-GSF-106	(53.00)	(60.8)	49 LBS
-3 ASSY	CAN-GSF-107	(58.50)	(66.3)	52 LBS.
-21 ASSY	CAN-GSF-131	(58.50)	(66.3)	52 LBS.

PARTS LIST

Note	-22	-21	-7	-6	-5	-4	-3	-2	-1	SAFETY CAT.	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL/SPECIFICATION OR VENDOR NAME	ITEM NO.
6	1									SS	-23	LONG CAN TUBE WITHOUT HOLES	PIPE, 5 SCH 10 304 SST, ASTM A312	23
		1								SS	-22	LONG CAN WITHOUT HOLES ASSEMBLY		22
										SS	-21	CAN-GSF-131-X ASSEMBLY		21
15			AR	AR	AR					SS	-20	FILTER, SCREEN	MESH CLOTH, #100, 305SST OPNG. SIZE .0055" WIRE SIZE .0045"	20
15			1	1	1					SS	-19	FILTER, RING	PERFORATED METAL, 18 GA, ø .094 HOLES, 33% OPEN AREA, 304 SST	19
7						AR				SS		WELD FILLER METAL	ER 218 AWS A5.9	18
7	AR		AR	AR	AR	AR				SS		WELD FILLER METAL	ER 308/308L AWS A5.9	17
6	1		1	1	1					SS	-16	CAN TOP	PIPE, 5 SCH 80 304 SST, ASTM A312	16
6	1		1	1	1					SS	-15	CAN BOTTOM	PLATE OR BAR, 3/4 THK. 304 SST, ASTM A240 OR A276	15
6			1							SS	-14	LONG CAN TUBE	PIPE, 5 SCH 10 304 SST, ASTM A312	14
6				1						SS	-13	MID-LENGTH CAN TUBE	PIPE, 5 SCH 10 304 SST, ASTM A312	13
6					1					SS	-12	SHORT CAN TUBE	PIPE, 5 SCH 10 304 SST, ASTM A312	12
6						1				SS	-11	LID	PLATE OR BAR, 1/2 THK. 304 SST, ASTM A240 OR A276	11
6						1				SS	-10	STUD	BAR, S21800 SST, (NITRONIC 60) ASTM A276	10
6						1				SS	-9	BAIL	PLATE OR BAR, 1/4 THK. 304 SST, ASTM A240 OR A276	9
6						1				SS	-8	LOCKNUT	PLATE OR BAR, 5/8 THK. 304 SST, ASTM A240 OR A276	8
							1			SS	-7	LONG CAN ASSEMBLY		7
								1		SS	-6	MID-LENGTH CAN ASSEMBLY		6
									1	SS	-5	SHORT CAN ASSEMBLY		5
		1					1	1	1	SS	-4	LID ASSEMBLY		4
										SS	-3	CAN-GSF-107-X ASSEMBLY		3
										SS	-2	CAN-GSF-106-X ASSEMBLY		2
										SS	-1	CAN-GSF-105-X ASSEMBLY		1

QTY REQD

DASH NO.	NEXT	FINAL	NEXT ASSY
-21	–	–	FINAL
-3	–	–	FINAL
-2	–	–	FINAL
-1	–	–	FINAL

APPLICATION

INSPECTION REQUIREMENTS
QC REQUIRED
~~QC NOT REQUIRED~~
(Q) DENOTES Q/C INSP. REQD.

DIMENSIONING AND SYMBOLOGY ARE AMERICAN NATIONAL STANDARD
UNLESS OTHERWISE SPECIFIED SURFACE ROUGHNESS 125
DIMENSIONS AND TOLERANCES ARE IN INCHES
TOLERANCES: DECIMALS: .X = ± .1, .XX = ± .03, .XXX = ± .010
FRACTIONS ± 1/8
ANGULAR ± 2°
DO NOT SCALE DRAWING

SUBCONTRACT NO.
REQUESTER: P.P. BOSRSIK
DESIGN: D.T. CLARK
DRAWN: O. MORGAN
PROJECT NO. 173224
SPEC CODE
FOR REVIEW/APPROVAL SIGNATURES SEE DAR NO. 6310
EFFECTIVE DATE: 6-11-97 L.D.W.

LOCKHEED MARTIN

MTR CANAL FUEL REPACKAGING CAN CAN-GSF-105-X, CAN-GSF-106-X, CAN-GSF-107-X AND CAN-GSF-131-X ASSEMBLIES

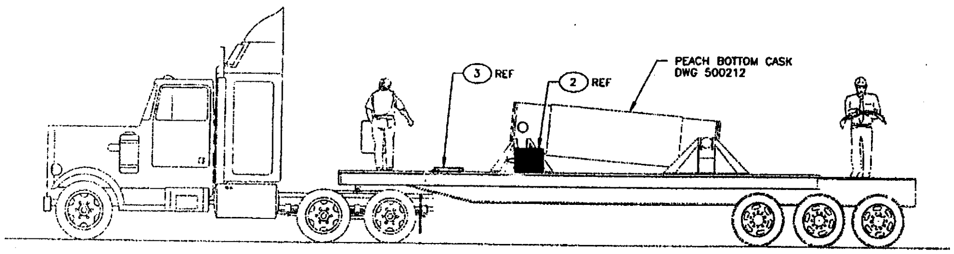
SIZE D | CAGE CODE 01MF3 | INDEX CODE NUMBER: AREA 200, TYPE 0603, CL 47, ORIG 530 | DWG- 500600 | REV 5
SCALE: 1/2 | GSF | SHEET 1 OF 5

1 DAR #10855

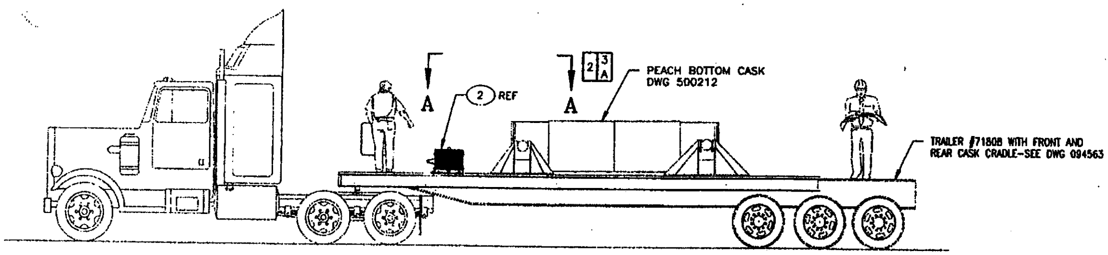
ADOCS NO.

NOTES:

1. -2 ASSEMBLY (SADDLE ASSEMBLY) SHALL BE LAYERED IN THE FOLLOWING MANNER: THE FIRST 4 LAYERS ARE TO BE MADE AS A UNIT OF 4 THICKNESSES OF ITEM 5 (3/4 THICK PLYWOOD) SECURED USING ITEM 17 (CONSTRUCTION ADHESIVE) BETWEEN EACH LAYER AND FASTENED TOGETHER USING ITEM 10 (SCREW). INSTALL THE SCREWS FROM LAYER #1 INTO LAYERS #2 THRU #4 IN A MATRIX APPROXIMATELY 6.0 X 6.0 AS SHOWN IN THE RIGHT SIDE VIEW OF -2 ASSEMBLY. ADD LAYER #5 OF PLYWOOD, FOLLOWING THE MATRIX PATTERN DESIGNATED BY THE LETTER "A" AS SHOWN IN THE LEFT SIDE VIEW OF -2 ASSEMBLY. EACH SUCCESIVE LAYER SHALL BE ATTACHED FOLLOWING ALTERNATELY AN "A" OR "B" PATTERN MATRIX. POSITION EACH MATRIX PATTERN SUCH THAT THE SCREW LENGTH DOES NOT INTERFERE WITH SCREWS OF THE MATRIX PATTERN BELOW. SCREWS ARE NOT TO PENETRATE INTO THE ENVELOPE OF THE 20.3 RADIUS.
2. ITEM 17 IS TO BE PLACED BETWEEN ALL ITEMS 5 PER MANUFACTURERS INSTRUCTIONS.
3. WELD PER INEL WELD PROCEDURE SPECIFICATION C2.11 USING ITEM 20 (WELD FILLER METAL).
4. PAINT -2 ASSEMBLY WITH ONE COAT ITEM 21 (PRIMER) AND TWO COATS ITEM 22 (PAINT).
5. GLASS BEAD AND PAINT ASSEMBLY WITH ONE COAT ITEM 21 (PRIMER) AND TWO COATS ITEM 22 (PAINT).
6. (Q) VISUALLY INSPECT ALL WELDS PER AWS D1.1. ACCEPTANCE CRITERIA SHALL BE PER AWS D1.1 FOR "STATICALLY LOADED STRUCTURES".
7. (Q) STENCIL "SADL-DSW-900" AND "WEIGHT 250 LBS" IN 1/2" HIGH CHARACTERS APPROXIMATELY WHERE SHOWN USING ITEM 23 (STENCIL INK).
8. MATCH DRILL #.56 THRU TRAILER DECK PLATE USING ITEM 3 AS A TEMPLATE.
9. SEAL AROUND ALL EDGES BETWEEN ITEM 3 AND TRAILER BED AND AROUND ALL ITEMS 12 & 13 (LOCK WASHER AND NUT).
10. INSTALL ITEM 11 (BOLT) WITH HEAD UNDER TRAILER. ITEM 13 (LOCK WASHER) SHALL BE ON NUT SIDE. TORQUE ITEM 12 (NUT) TO 49±2 FT/LBS.
11. INSTALL ITEM 14 (BOLT) WITH HEAD TOWARD INSIDE OF ITEM 3. ITEM 28 (FLAT WASHER) AND ITEM 15 (LOCK WASHER) SHALL BE ON NUT SIDE. TORQUE ITEM 8 (NUT) TO 170±4 FT/LBS.
12. FASTEN -2 ASSY (SADDLE ASSEMBLY) TO TRAILER BED WITH ITEM 18 (TIE DOWN) WHILE NOT IN USE.
13. CUT ITEM 7 (ALL THREAD) FLUSH WITH ITEMS 12 (NUTS).
14. ITEM 16 IS SOLD IN PAIRS. QTY REQUIRED FOR -2 ASSEMBLY IS 4. QUANTITY ORDERED WILL BE 2 PAIR.



-1 INSTALLATION
SADDLE USED TO SUPPORT CASK



-1 INSTALLATION
SADDLE IN STOWED POSITION

REV	DESCRIPTION		EFFECTIVE DATE:
1	SEE DAR 8162 W.O. 12746	VK	8-18-97 JPB

2	1	SHEET
1	1	REV

REV STATUS OF SHEETS

-4	-3	-2	-1	QUAL LEVEL	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL SPECIFICATION	ITEM NO.
			2	-		WASHER, FLAT, 3/4		28
			4	-	91478A636	BOLT, LAG, 3/8 X 3 LG. CS, ZINC PLATED	McMASTER-CARR CO. CAT. NO. 102	27
AR				-			PIPE 1 SCH 40, BLACK FINISH ASTM A53	26
2				-	-25	HANDLE BRACKET	PLATE, 1/4 THK. CS ASTM A36	25
			AR	-	RTV108	SEALANT, SILICONE	GENERAL ELECTRIC CO.	24
		AR		-	20859	STENCIL INK	MARSH CO.	23
AR	AR	AR		-	P-1-0445	PAINT, YELLOW ENAMEL POLYSILICONE	KEELER & LONG INC.	22
AR	AR	AR		-	6040	PRIMER, TRI-POLAR	KEELER & LONG INC.	21
AR	AR			-		WELD FILLER METAL	AWS A5.28 ER80S-D2	20
								19
			1	-	91W0755-030	TIE DOWN	KINEDYNE CORP.	18
		AR		-	PL400	CONSTRUCTION ADHESIVE	CONTINENTAL BRANDS CO.	17
		(14)		-	1964	HANDLE, W/SCREWS	HAGER HINGE CO.	16
			2	-		WASHER, LOCK, 3/4	CS	15
			2	-		BOLT, HEX, 3/4-10 UNC-2A X 1 1/2 LG	CS ASTM A449	14
			6	-		WASHER, LOCK, 1/2	CS	13
		8	6	-		NUT, HEX, 1/2-13 UNC-2B	CS ASTM A563 GR A,B,O	12
			6	-		BOLT, HEX, 1/2-13 UNC-2A X 1 1/4 LG	CS ASTM A449	11
		AR		-	90095A132	SCREW, #8 X 2 1/2 LG GALVANIZED STEEL, COARSE	McMASTER-CARR CO. CAT. NO. 102	10
		8		-		WASHER, FLAT, 1/2	CS	9
			2	-		NUT, HEX 3/4-10 UNC-2B	CS ASTM A563 GR A,B,O	8
		4		-	98841A033	ALL THREAD, CS, ZINC PLATED 1/2-13 UNC-2A X 36 LG	McMASTER-CARR CO. CAT. NO. 102	7
	AR			-			ANGLE, 3 X 3 X 1/4 CS ASTM A36	6
		AR		-			PLYWOOD, 3/4 THICK CDX OR ACX	5
			1	-	-4	HANDLE ASSEMBLY		4
			1	-	-3	SADDLE FRAME ASSEMBLY		3
			1	-	-2	SADDLE ASSEMBLY		2
				-	-1	INSTALLATION		1

QTY REQD — PARTS LIST

CONTROLLED DOCUMENT CLASS 1

INSPECTION REQUIREMENTS
QC REQUIRED
Q DENOTES Q/C INSP. REQD.

-1	-	-	FINAL
DASH NO.	NEXT	FINAL	NEXT ASSY
	QTY REQD		

APPLICATION

DIMENSIONING AND SYMBOLOGY ARE AMERICAN NATIONAL STANDARD UNLESS OTHERWISE SPECIFIED SURFACE ROUGHNESS 125/ DIMENSIONS AND TOLERANCES ARE IN INCHES TOLERANCES: .X = ± .1 DECIMALS: .XX = ± .03 .XXX = ± .010 FRACTIONS ± 1/8 ANGULAR ± 2° DO NOT SCALE DRAWING

SUBCONTRACT NO.
REQUESTER: DK HONG
DESIGN: JW DEATHERAGE
DRAWN: LT RICKER
PROJECT NO. 12746
SPEC CODE
FOR REVIEW/APPROVAL SIGNATURES SEE DAR NO. 6693
EFFECTIVE DATE: 6-5-97 LDW

LOCKHEED MARTIN

PEACH BOTTOM CASK SADDLE (SADL-DSW-900) INSTALLATION

SIZE D | CAGE CODE 01MF3 | BOLT CODE NUMBER 200 0666 47 530 | DWG- 098785 | REV 1
SCALE: 1/4"=1'-0" | FR | SHEET 1 OF 2
DAR 8162

ADOCS NO.

Figure A-30 Rev. 4

FMT-01-REV 2

NOTES:
1. REMOVE ALL BURRS AND SHARP EDGES.
2. ALL MACHINED FILLET RADII .03 MAXIMUM UNLESS OTHERWISE NOTED.
3. WELD PER INEL WELD PROCEDURE SPECIFICATION A2.0 USING WELD FILLER METAL, ITEM 10.
4. (Q) VISUALLY INSPECT FINAL PASS OF ALL WELDS. ACCEPTANCE CRITERIA SHALL BE:
   NO CRACKS.
   COMPLETE FUSION SHALL EXIST BETWEEN WELD FILLER AND BASE METAL.
   UNDERCUT SHALL NOT EXCEED .01" FOR MATERIAL LESS THAN 3/16". FOR MATERIAL 3/16" AND THICKER, UNDERCUT NOT TO EXCEED 1/32".
   FOR ALL WELDS THE SUM OF VISIBLE POROSITY 1/32" OR GREATER IN DIAMETER SHALL NOT EXCEED 3/8" IN ANY LINEAR INCH OF WELD AND SHALL NOT EXCEED 3/4" IN ANY 12" LENGTH OF WELD.
   ALL CRATERS SHALL BE FILLED TO THE FULL CROSS-SECTION OF THE WELD EXCEPT FOR ENDS FOR FILLET WELDS OUTSIDE THEIR EFFECTIVE LENGTH.
   FILLET WELDS SHALL BE AT LEAST THE SIZE SPECIFIED IN THE WELD SYMBOL.
5. (Q) MATERIAL MUST HAVE ACTUAL CERTIFIED MATERIAL TEST REPORTS (CMTR's) ISSUED BY THE MANUFACTURER OR INDEPENDENT TESTING LABORATORY PERFORMING MATERIAL TESTING WHICH CERTIFIES THAT THE MATERIAL HAS BEEN INSPECTED AND TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE SPECIFICATION AND THAT THE RESULTS OF THE CHEMICAL ANALYSES AND MECHANICAL TESTS MEET THE REQUIREMENTS OF THE SPECIFICATION FOR THE SPECIFIC GRADE. MANUFACTURER OR SUPPLIER SHALL MARK THE HEAT NUMBER ON THE CMTR's AND ON THE MATERIAL.
6. (Q) MATERIAL MUST HAVE ACTUAL CERTIFIED MATERIAL TEST REPORTS (CMTR's) ISSUED BY THE MANUFACTURER OR INDEPENDENT TESTING LABORATORY PERFORMING MATERIAL TESTING WHICH CERTIFIES THAT THE MATERIAL HAS BEEN INSPECTED AND TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE SPECIFICATION AND THAT THE REQUIREMENTS OF THE SPECIFICATION FOR THE AWS MATERIAL CLASSIFICATION. MANUFACTURER OR SUPPLIER SHALL MARK EACH END OF CUT LENGTHS OF WELD FILLER METAL (OR MARK THE END OF THE SPOOLED WIRE) SHOWING THE AWS MATERIAL CLASSIFICATION AND HEAT NUMBER, AND THE HEAT NUMBER MUST APPEAR ON THE CMTR's.
7. (Q) MARK PER STD-7006-3D2 WITH "BU-GSF-BEL-XX" (-1 ASSY), "BU-GSF-914-XX" (-13 ASSY) OR "BU-GSF-915-XX" (-14 ASSY) WHERE "XX" IS A UNIQUE NUMBER TO BE SUPPLIED FOR EACH ASSEMBLY BUILT. UNIQUE NUMBERING TO BEGIN WITH NUMBER 1. MARKING SHALL BE FILLED WITH BLACK INK PER STD-7006-12. MARK TWO PLACES IN 1" HIGH CHARACTERS 180° APART ON CURB RING (ITEM 9) AND MARK ONE PLACE IN 3/8" HIGH CHARACTERS ON MARKER TAB (ITEM 11).
8. (Q) MARK PER STD-7006-3D2 WITH "WEIGHT: 51 LBS (-1 ASSY), 53 LBS (-13 ASSY), 77 LBS (-14 ASSY) RATED CAPACITY: 520 LBS" IN 1/2" HIGH CHARACTERS, MARKING SHALL BE FILLED WITH BLACK INK PER STD-7006-12.
9. (Q) LOAD TEST EACH -1, -13 AND -14 ASSEMBLY TO 125% + 0% -5% OF RATED CAPACITY (520 LBS). -1, -13 AND -14 ASSEMBLY TO BE SUSPENDED BY LIFTING LUG WITH TEST LOAD APPLIED AS SIX EQUAL WEIGHTS PLACED IN THE SIX CAN POSITIONS. ACCEPTANCE CRITERIA ARE NO LOAD CAUSED CRACKS OR PERMANENT DEFORMATION.
10. (Q) VERIFY THAT OUTSIDE DIAMETER OF ITEMS 5, 19 AND 20 IS GREATER THAN 5 INCHES AS AN ENGINEERED SAFETY FEATURE.
11. (Q) FIT TEST ALL CAN OPENINGS USING A CYLINDRICAL ø 5.120 +.010 -.000 X 47.0 LONG GO-NO-GO GAUGE.
12. (Q) MARK PER STD-7006-3D2 WITH THE NUMERAL "1" IN A 3/8" HIGH CHARACTER AND AN ARROW AS SHOWN. MARKING SHALL BE FILLED WITH BLACK INK PER STD-7006-12.
13. (Q) FINAL ASSEMBLY SHALL MEET THE CLEANLINESS REQUIREMENTS OF STD-7022. ACCEPTANCE LEVEL D.
14. UP TO 1/16" OF MATERIAL MAY BE REMOVED FROM THE NOMINAL OUTSIDE DIAMETER OF ITEMS 5, 19 AND 20 AS SHOWN TO ENSURE ROUNDNESS OF COUNTERBORE.

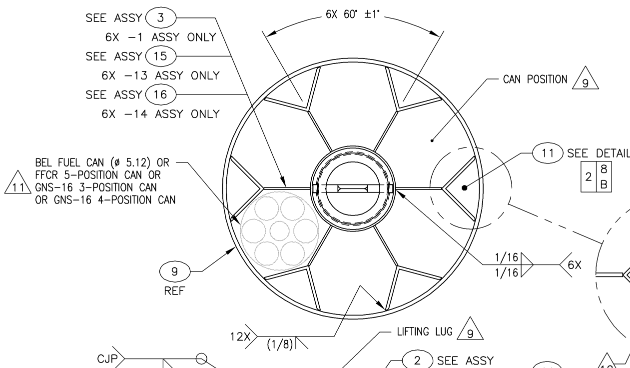
BUCKET AND SPACER (DWG 513082) USAGE

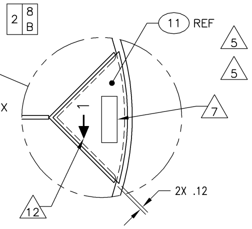
BUCKET	FUEL CAN	REQ'D SPACER
BU-GSF-BEL-XX	BEL-A2, BEL-B2	NONE
BU-GSF-914-XX	GNS-16	NONE
BU-GSF-915-XX	FFCR 5-POSITION DWG 514586	NONE
BU-GSF-915-XX	BOWED TRIGA 3-POSITION DWG 513057	SPA-GSF-12 DWG 513082
BU-GSF-915-XX	GNS-16	SPA-GSF-13 DWG 513082

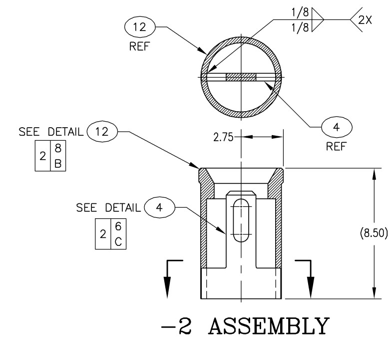
SHEET	2	1
REV	5	5

REV STATUS OF SHEETS

REV	DESCRIPTION		EFFECTIVE DATE:
5	SEE DAR 96538	HS	







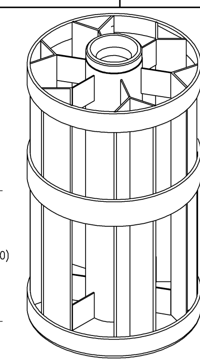
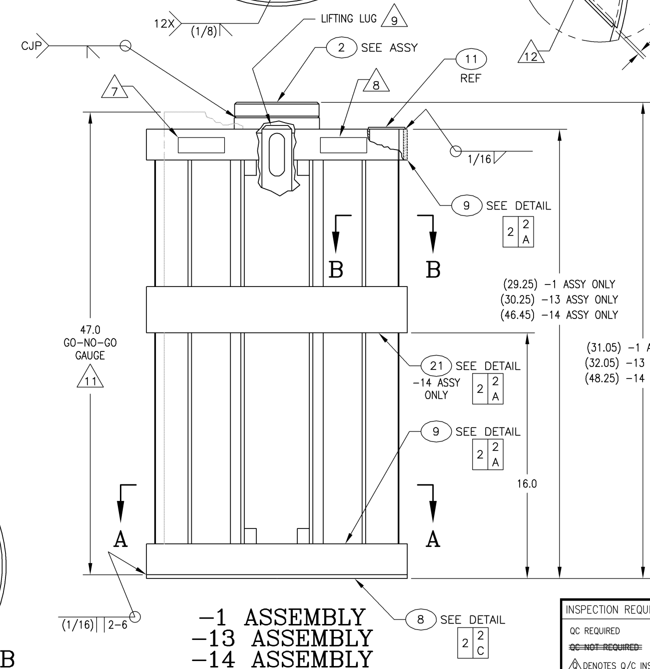
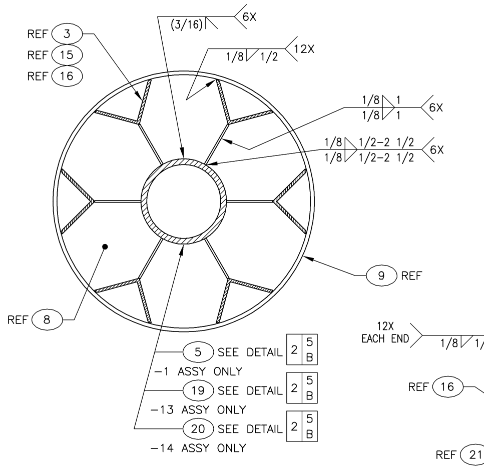
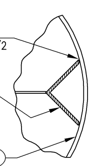


Figure A-31 Sheet 1 of 2 Rev. 4





SECTION A–A



SECTION B–B

-16	-15	-14	-13	-3	-2	-1	SAFETY CAT.	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL/SPECIFICATION OR VENDOR NAME	ITEM NO.
		1					LSC	-21	INTERMEDIATE RING	PLATE OR BAR, 1/4 THK AL 6061-T651 OR T6511 ASTM B209 OR B221	21
		1					SS	-20	SUPPORT PIPE	PIPE, 5 SCHED 80 AL 6061-T6 ASTM B241	20
			1				SS	-19	SUPPORT PIPE	PIPE, 5 SCHED 80 AL 6061-T6 ASTM B241	19
1							LSC	-18	GUIDE ANGLE	ANGLE, 3 X 3 X 3/16 AL 6061-T6 ASTM B308	18
	1						LSC	-17	GUIDE ANGLE	ANGLE, 3 X 3 X 3/16 AL 6061-T6 ASTM B308	17
		6					LSC	-16	GUIDE ANGLE ASSEMBLY		16
			6				LSC	-15	GUIDE ANGLE ASSEMBLY		15
							SS	-14	BU-GSF-915 ASSEMBLY		14
							SS	-13	BU-GSF-914 ASSEMBLY		13
					1		SS	-12	GUIDE TUBE	TUBING AL 6061-T6511 ASTM B221	12
		1	1			1	LSC	-11	MARKER TAB	SHEET/BAR, 1/8 THK AL 6061-T6/T6511 ASTM B209/B221	11
AR	AR	AR	AR	AR	AR	AR	SS		WELD FILLER METAL	ER4043, AWS A 5.10	10
		2	2			2	LSC	-9	CURB RING	PLATE/BAR, 1/4 THK AL 6061-T651/T6511 ASTM B209/B221	9
		1	1			1	SS	-8	BOTTOM PLATE	PLATE, 1/4 THK AL 6061-T651 ASTM B209	8
2	2			2			LSC	-7	ANGLE SPACER	SHEET/BAR, 1/8 THK AL 6061-T6/T6511 ASTM B209/B221	7
				1			LSC	-6	GUIDE ANGLE	ANGLE, 3 X 3 X 3/16 AL 6061-T6 ASTM B308	6
						1	SS	-5	SUPPORT PIPE	PIPE, 5 SCHED 80 AL 6061-T6 ASTM B241	5
					1		SS	-4	LIFTING LUG	PLATE, 1/2 THK AL 6061-T651 ASTM B209	4
						6	LSC	-3	GUIDE ANGLE ASSEMBLY		3
		1	1			1	SS	-2	GUIDE TUBE ASSEMBLY		2
							SS	-1	BU-GSF-BEL ASSEMBLY		1

QTY REQD — PARTS LIST

INSPECTION REQUIREMENTS
QC REQUIRED
~~QC NOT REQUIRED~~
(Q) DENOTES Q/C INSP. REQD.

-1	–	–	FINAL
DASH NO.	NEXT	FINAL	NEXT ASSY
	QTY REQD		

APPLICATION

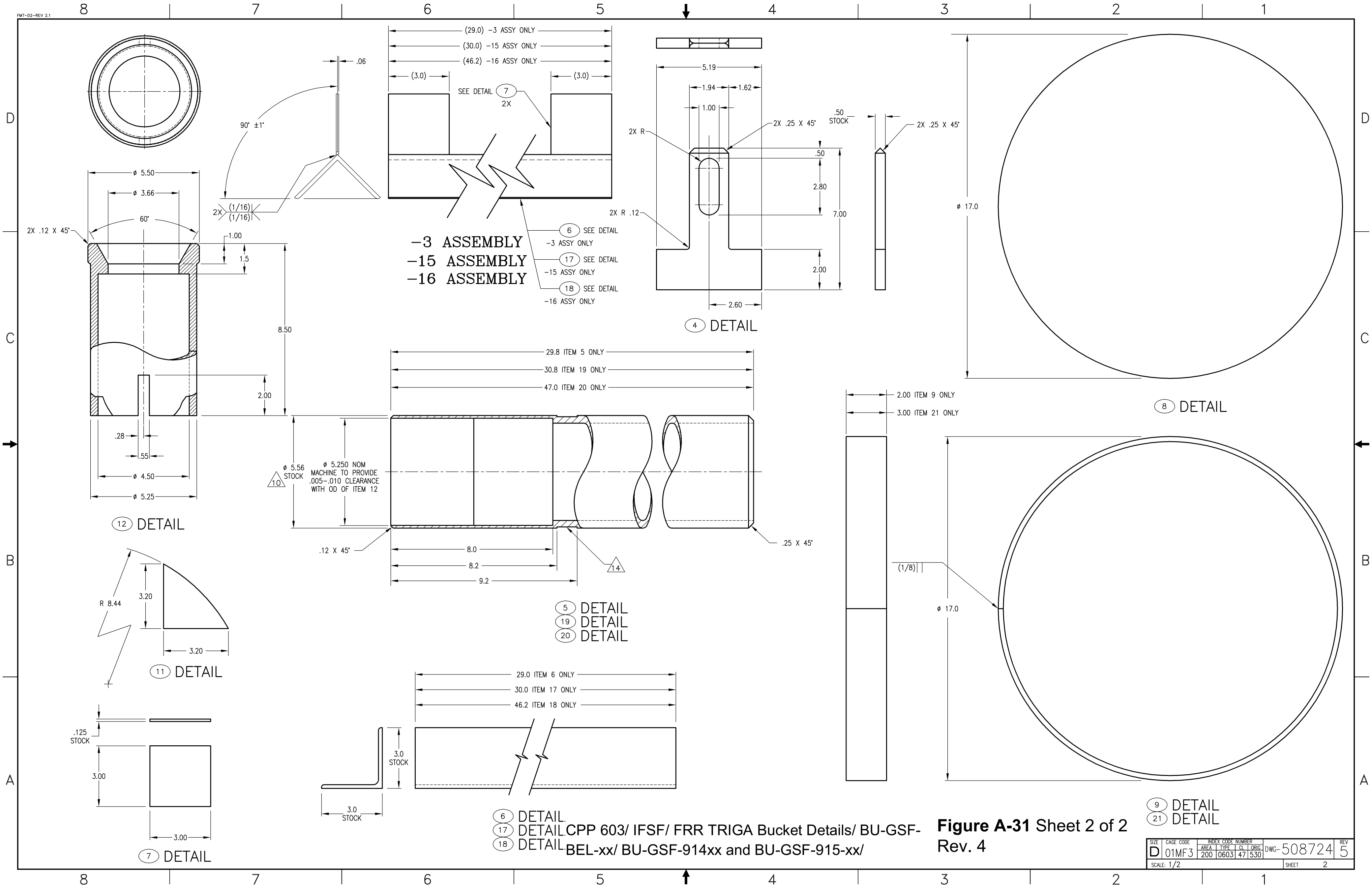
DIMENSIONING AND SYMBOLOGY ARE AMERICAN NATIONAL STANDARD UNLESS OTHERWISE SPECIFIED SURFACE ROUGHNESS 125
DIMENSIONS AND TOLERANCES ARE IN INCHES
TOLERANCES: DECIMALS: .X = ± .1 .XX = ± .03 .XXX = ± .010
FRACTIONS ± 1/8
ANGULAR ± 2°
DO NOT SCALE DRAWING

SUBCONTRACT NO.
REQUESTER: E.C. WOOSTENHULME
DESIGN: JIM DEATHERAGE
DRAWN: O. MORGAN
PROJECT NO. ECF 1721
SPEC CODE
FOR REVIEW/APPROVAL SIGNATURES SEE DAR NO. 17288
EFFECTIVE DATE: 4-7-99 LDW

LOCKHEED MARTIN

CPP 603
IFSF
TRIGA BUCKET DETAILS
BU-GSF-BEL-XX
BU-GSF-914-XX AND BU-GSF-915-XX

SIZE D | CAGE CODE 01MF3 | INDEX CODE NUMBER AREA 200 TYPE 0603 CL 47 ORIG 530 | DWG- 508724 | REV 5
SCALE: 1/4 | GSF | SHEET 1 OF 2



CPP 603/ IFSF/ FRR TRIGA Bucket Details/ BU-GSF-BEL-xx/ BU-GSF-914xx and BU-GSF-915-xx/

Figure A-31 Sheet 2 of 2 Rev. 4

NOTES:

△1 MEASUREMENT ALSO INCLUDES GUIDE TUBE WELDMENTS, TOP & BOTTOM AS SHOWN ON (DWG. 500224, 500228, & 500235) (ASSUMED AS 1½ PLATE).

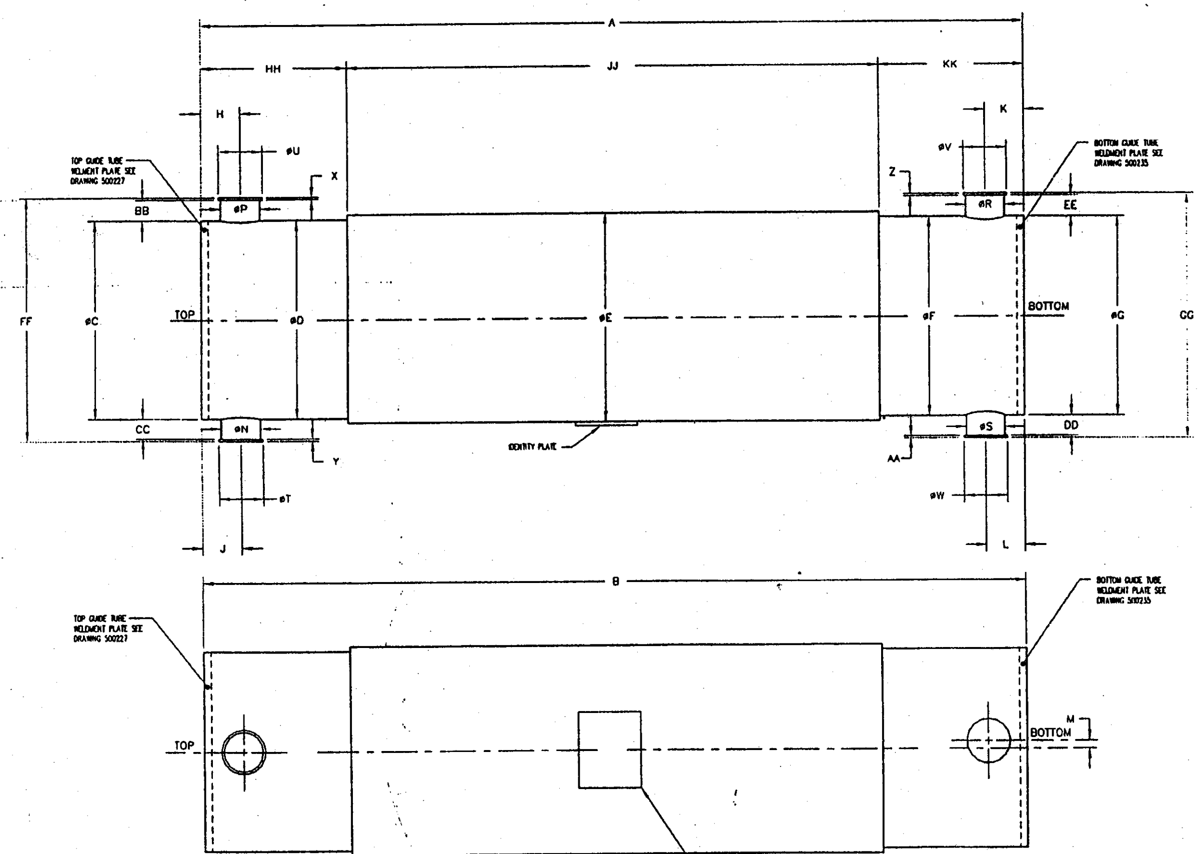
△2 DIAMETER MEASUREMENTS WERE TAKEN AROUND THE CASK CIRCUMFERENCE AND DIVIDED BY PI TO GET DECIMAL VALUE.

△3 MEASUREMENT IS APPROXIMATE, BECAUSE THE ½" PLATE OF THE SHELL HAS BEEN REPLACED AND THE NEW JOINTS ARE CURVED.

△4 ORIGINAL DRAWING TOLERANCES ARE AS FOLLOWS: FRACTIONS ± - DEGREES ± ½° DECIMALS ± .03 TO .06.

△5 SEE DRAWING 097329 SHEET 6 FOR DIMENSIONS OF CARBON STEEL COVER.

6. THIS DRAWING USED IN CONJUNCTION WITH:
500212 - SHIPPING CONTAINER
500219 - COVER ASSEMBLY
500220 - TOP PLATE COVER
500224 - CASK WELDMENT
500238 - OUTER SHELL WELDMENT
500239 - OUTER SHELL TOP
500240 - TRUNNION TOP
500241 - OUTER SHELL BOTTOM
500242 - TRUNNION BOTTOM
500243 - OUTER SHELL CENTER



AS-BUILT MEASUREMENTS

DIM	ORIGINAL DRAWING DIMENSIONS △4	CASK PB-1 CA-SF-006	CASK PB-2 CA-SF-005	MEASURMENT DESCRIPTION	MEASUREMENT LOCATION
A	170.12	169 3/4	169 5/8	CASK LENGTH (DWG. 500224)	90° CLOCKWISE FROM NAME PLATE TRUNNIONS
B	170.12	169 3/4	N/A	CASK LENGTH (DWG. 500224)	90° COUNTER CLOCKWISE FROM NAME PLATE TRUNNIONS
C	40.00	40.64	40.69	CASK DIAMETER (DWG. 500238) △2	ABOVE UPPER TRUNNIONS (MISS TRUNNION SUPPORT PL.)
D	40.62	40.56	40.76	CASK DIAMETER (DWG. 500239) △2	ONE FOOT BELOW UPPER TRUNNIONS (MISS TRUNNION SUPPORT PL.)
E	42.62	42.75	42.83	CASK DIAMETER (DWG. 500238) △2	CENTER OF CASK
F	40.62	40.56	40.76	CASK DIAMETER (DWG. 500241) △2	ONE FOOT ABOVE LOWER TRUNNIONS
G	40.62	40.56	40.60	CASK DIAMETER (DWG. 500241) △2	BELOW LOWER TRUNNIONS (MISS TRUNNION SUPPORT PL.)
H	6.5	8 △1	8 △1	TOP TO UPPER TRUNNION CENTERLINE (DWG 500238)	ABOVE NAME PLATE UPPER TRUNNION
J	6.5	8 △1	8 △1	TOP TO UPPER TRUNNION CENTERLINE (DWG 500238)	ABOVE NAME PLATE UPPER TRUNNION (OPPOSITE NAME PLATE)
K	6.5	8 △1	8 △1	BOTTOM TO LOWER TRUNNION CENTERLINE (DWG 500238)	BELOW NAME PLATE LOWER TRUNNION
L	6.5	8 △1	8 △1	BOTTOM TO LOWER TRUNNION CENTERLINE (DWG 500238)	BELOW NAME PLATE LOWER TRUNNION (OPPOSITE NAME PLATE)
M	1.5	1	1.5	LOWER TRUNNION OFFSET ON CASK CENTERLINE (DWG. 500238)	LOWER TRUNNIONS
N	8	7 15/16	7 7/8	UPPER TRUNNION DIAMETER (DWG 500240)	UPPER TRUNNION ABOVE NAME PLATE
P	8	7 15/16	8	UPPER TRUNNION DIAMETER (DWG 500240)	UPPER TRUNNION OPPOSITE NAME PLATE
R	8	7 15/16	8	LOWER TRUNNION DIAMETER (DWG 500242)	LOWER TRUNNION BELOW NAME PLATE
S	8	7 15/16	8	LOWER TRUNNION DIAMETER (DWG 500242)	LOWER TRUNNION OPPOSITE NAME PLATE
T	9	8 15/16	8 7/8	UPPER TRUNNION FLANGE DIAMETER (DWG 500240)	UPPER TRUNNION ABOVE NAME PLATE
U	9	8 15/16	9	UPPER TRUNNION FLANGE DIAMETER (DWG 500240)	UPPER TRUNNION OPPOSITE NAME PLATE
V	9	8 15/16	9	LOWER TRUNNION FLANGE DIAMETER (DWG 500242)	LOWER TRUNNION BELOW NAME PLATE
W	9	8 15/16	9	LOWER TRUNNION FLANGE DIAMETER (DWG 500242)	LOWER TRUNNION OPPOSITE NAME PLATE
X	.5	.5	.5	UPPER TRUNNION FLANGE THICKNESS (DWG 500240)	UPPER TRUNNION ABOVE NAME PLATE
Y	.5	.5	.5	UPPER TRUNNION FLANGE THICKNESS (DWG 500240)	UPPER TRUNNION OPPOSITE NAME PLATE
Z	.5	.5	.5	LOWER TRUNNION FLANGE THICKNESS (DWG 500242)	LOWER TRUNNION BELOW NAME PLATE
AA	.5	.5	.5	LOWER TRUNNION FLANGE THICKNESS (DWG 500242)	LOWER TRUNNION OPPOSITE NAME PLATE
BB	4	4 3/8	4	UPPER TRUNNION FLANGE INNER EDGE DISTANCE FROM CASK (DWG 500212)	UPPER TRUNNION ABOVE NAME PLATE
CC	4	4 5/16	4	UPPER TRUNNION FLANGE INNER EDGE DISTANCE FROM CASK (DWG 500212)	UPPER TRUNNION OPPOSITE NAME PLATE
DD	4	4 3/8	4 1/8	LOWER TRUNNION FLANGE INNER EDGE DISTANCE FROM CASK (DWG 500212)	LOWER TRUNNION BELOW NAME PLATE
EE	4	4 7/8	4	LOWER TRUNNION FLANGE INNER EDGE DISTANCE FROM CASK (DWG 500212)	LOWER TRUNNION OPPOSITE NAME PLATE
FF	50	50	50	UPPER TRUNNIONS OUTER EDGE DISTANCE (DWG 500212)	UPPER TRUNNIONS
GG	50	49 3/8	50	LOWER TRUNNIONS OUTER EDGE DISTANCE (DWG 500212)	LOWER TRUNNIONS
HH	28.56	30 3/16	30 1/8	UPPER SHELL LENGTH (DWG 500239) △3	TOP SECTION OF CASK
JJ	110.00	109 1/8	109 1/4	CENTER SHELL LENGTH (DWG 500243) △1	CENTER SECTION OF CASK
KK	28.56	30 3/16	30 1/8	LOWER SHELL LENGTH (DWG 500241) △3	BOTTOM SECTION OF CASK

Figure A-32 Rev. 4

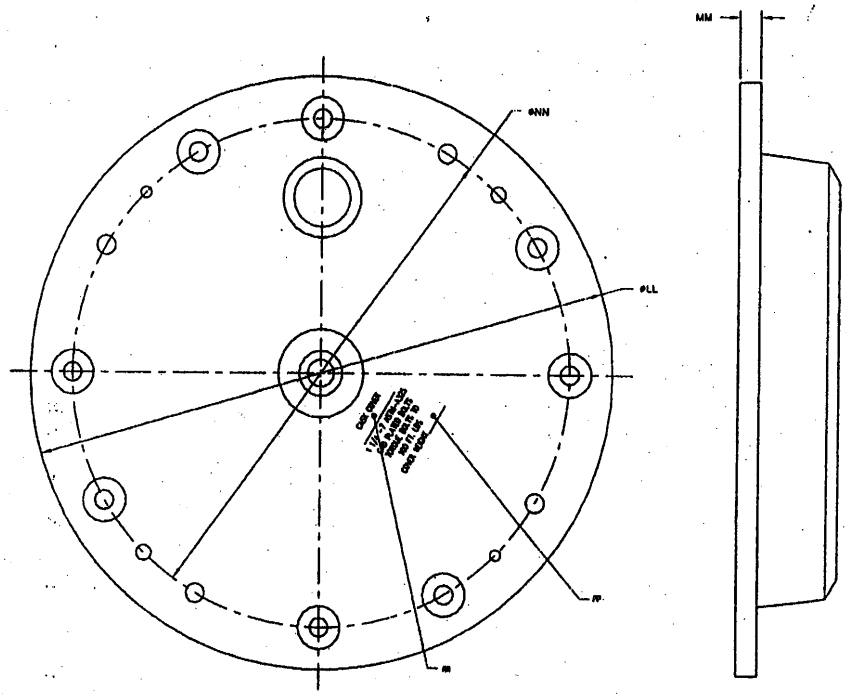
DIMENSIONING AND SYMBOLOGY ARE AMERICAN NATIONAL STANDARD UNLESS OTHERWISE SPECIFIED SURFACE ROUGHNESS 125/ DIMENSIONS AND TOLERANCES ARE IN INCHES
TOLERANCES: .X ± .1 DECIMALS .XX ± .01 .XXX ± .010 FRACTIONS ± 1/8 ANGULAR ± 2° DO NOT SCALE DRAWING

SUBCONTRACT NO.
REQUESTER: SYD WITHERS
DRAWN: O. MORGAN
FOR REVIEW/APPROVAL SIGNATURES SEE BAR NO. 88556
EFFECTIVE DATE: 2/5/2002

INEEL
CPP-666
AS-BUILT DIMENSIONS
PEACH BOTTOM CASK PB-1 (CA-SF-006)
& CASK PB-2 (CA-SF-005)
& PEACH BOTTOM CASK COVERS

SIZE D | CAGE CODE 01MF3 | 200 0666 47 090 | DWG-509725 | SHEET 1 OF 2
SCALE: NONE

Layout Name: Sheet 1 Date: 07/05/02 - 08:32 A.M. ID: OMORGAN
509725.dwg P:\peachbottom



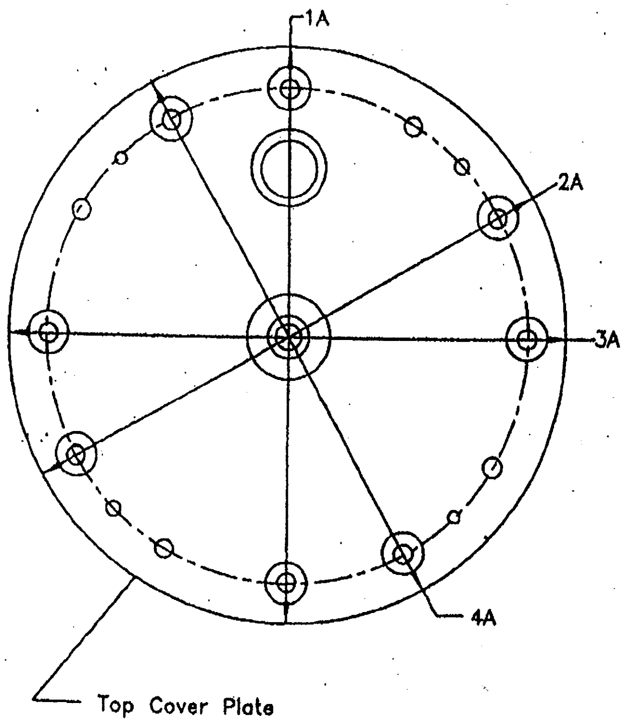
AS-BUILT MEASUREMENTS

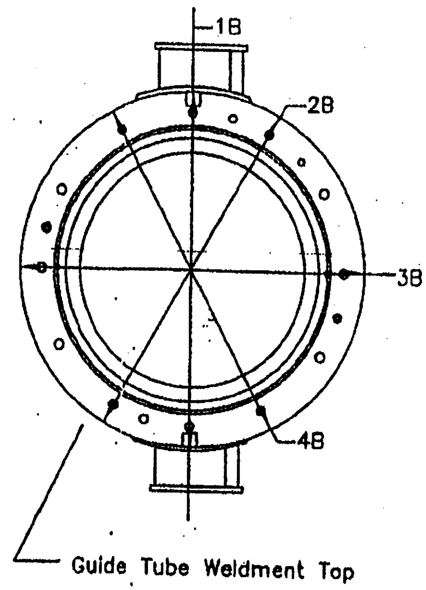
DIM	ORIGINAL DRAWING DIMENSIONS	PB-1 CA-SF-006 BOTTOM COVER	PB-1 CA-SF-006 TOP COVER	PB-1 CA-SF-006 TOP COVER (CS)	PB-2 CA-SF-005 BOTTOM COVER	PB-2 CA-SF-005 TOP COVER	MEASUREMENT DESCRIPTION	MEASUREMENT LOCATION
LL	40.62	40 9/16	40 9/16	40 9/16	40 1/2	40 9/16	COVER DIAMETER (DWG. 500219)	ACROSS CENTER OF TOP PLATE
MM	1.5	1.312	1.25	1.5	1.5	1.5	COVER TOP PLATE THICKNESS (DWG. 500220)	EDGE OF TOP PLATE OF CASK COVER
NN	34.75	34 3/4	34 3/4	34 3/4	34 3/4	34 3/4	BOLT CIRCLE DIAMETER (DWG. 500219 & 500220)	ACROSS CENTER OF TOP COVER FROM BOLT HOLE CENTERS
PP	-	N/A	1841	N/A	1901	1900	COVER WEIGHT	STAMPED ON TOP OF COVER
RR	-	N/A	PB-1	N/A	PB-1 (1972)	PB-1 (1972)	CASK COVER IDENTIFICATION	STAMPED ON TOP OF COVER

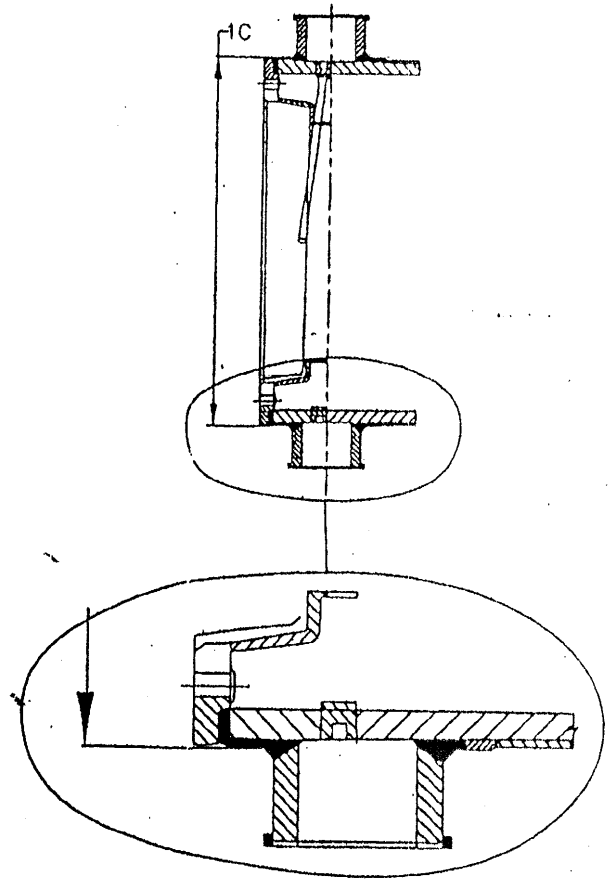
CPP-666 As-Built Dimensions Peach Bottom Cask PB-1 (CA-SF-006) & Cask PB-2 (CA-SF-005) & Peach Bottom Cask Covers (Sheet 2)

Figure A-33 Rev. 4

D 01MF3 200 0666 47 090 DWG-509725
SCALE: NONE SHEET 2







Note: All As-Built Dimensions Shall Be Within ± 1/32 Inches

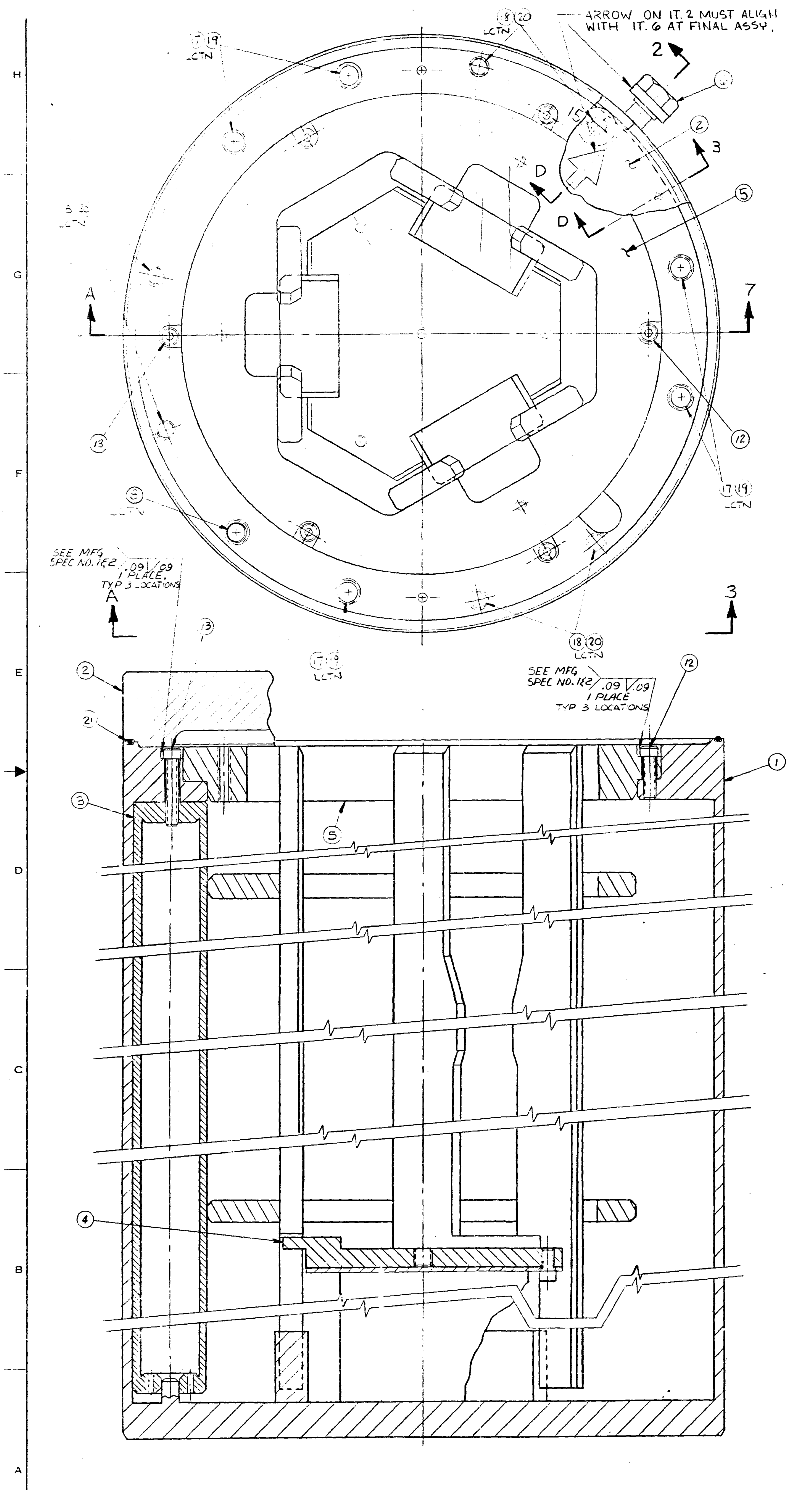
DIM	ORIGINAL DRAWING DIMENSIONS	PB-1 TOP COVER CA-SF-006	PB-1 TOP COVER CA-SF-008(CS)	PB-2 TOP COVER CA-SF-005
1A	40.62	40.617	40.625	40.614
2A	40.62	40.617	40.625	40.615
3A	40.62	40.616	40.616	40.614
4A	40.62	40.615	40.625	40.615

DIM	ORIGINAL DRAWING DIMENSIONS	PB-1 CASK	PB-2 CASK
1B	40.62	40.612	40.690
2B	40.62	40.625	40.610
3B	40.62	40.633	40.667
4B	40.62	40.629	40.590

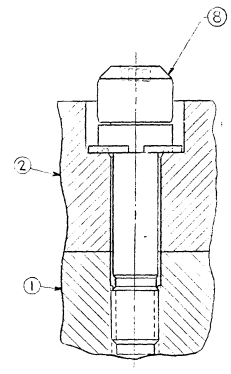
DIM	ORIGINAL DRAWING DIMENSIONS	PB-1 Cask	PB-2 Cask
1C	41.	40.754	40.920

Figure A-34 Rev. 4

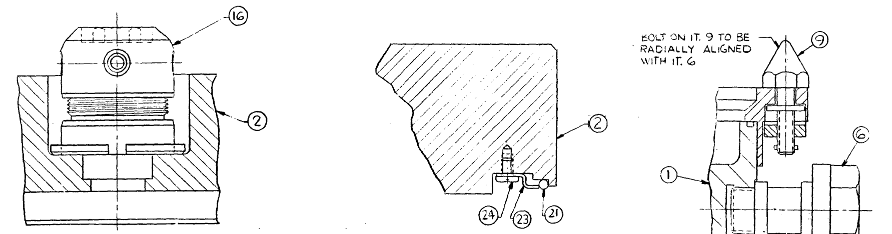
As-Built Dimensions Top Cover Plate Peach Bottom



SECTION A-7 (G-8)



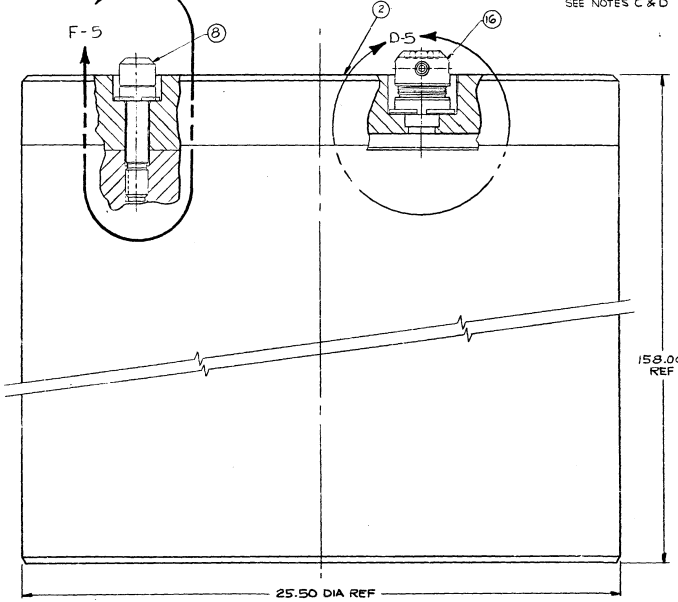
DETAIL F-5 (D-4)
ENLARGED



DETAIL D-5 (D-3) ENLARGED
FINAL HEAD CLOSURE

SECTION D-3 (G-6)
ENLARGED

SECTION D-2 (H-6)
ENLARGED
SEE NOTES C & D



VIEW A-3 (E-8)

LIST OF MATERIAL

NOTE	ITEM NO.	ORDERING INFORMATION	NO REQ GR 1	GR 2	GR 3	MATL	STD	NUMBER	COMP	FORM	FINISH COND	UNIT WT LB
	1	LINER BODY ASSY GR. 1 DWG 1573E72	1	1								
D	2	HEAD ASSY GR. 1 DWG 1582E160	~~1~~	1								
	3	SPACER GR. 1 DWG 1917F19	3	3								
	4	CRUSH PLATE ASSY GR 1 DWG 2265F52	1	1								
	5	RUNNER ASSY GR. 1 DWG 1573E70	1	1								
	6	GUIDE IT. 1 DWG 1526E30	1	1								
~~A/B~~	~~7~~	~~CAP SCR~~ [illegible]	~~3~~	~~3~~		~~CRES~~	~~AISI~~		~~18-8~~			
H/L	8	DRAIN FITTING GR 1 DWG 2260F08	~~1~~	1								
C/D	9	GUARD RING ASSY GR. 1 DWG 1917F73	1	~~1~~								
	~~10~~	~~PLUG IT. 3 DWG 1526E30~~	~~2~~	~~2~~								
	~~11~~	~~RING ASSY GR 1 DWG~~ [illegible]	~~1~~	~~1~~								
A/B	12	CAP SCR .500-13UNC-2A×3A×2.00LG HX SOC HD	3	3		CRES	AISI		18-8			
A/B	13	CAP SCR .500-13UNC-2A×3A×3.00 LG HX SOC HD	3	3		CRES	AISI		18-8			
~~C/D~~	~~14~~	~~GASKET IT. 1 DWG 1917F71~~	~~1~~	~~1~~								
~~E~~	~~15~~	~~NICKEL GASKET CAT NO. NI-16-~~ [illegible]	~~1~~	~~1~~								
J/L	16	VENT FITTING GR 1 DWG 2260F07	~~1~~	1								
H	17	FASTENER IT 4 DWG 1917F71	~~5~~	5								
K	18	FASTENER IT. 3 DWG 1917F71	~~6~~	6								
G	19	O-RING DWG U200183	~~5~~	5								
G	20	O-RING DWG U200184	~~6~~	6								
G	21	O-RING DWG U270075	~~1~~	1								
~~F~~	~~22~~	~~O-RING CAT NO. 35-129~~	~~1~~			[illegible]	[illegible]	~~D2000~~				
	23	CLIP IT. 12 DWG. 7391C84		6								
M	24	.250-20UNC-2A×.38LG SLOTTED PAN HEAD		6		CRES	AISI		18-8			

A - ALLEN MFG CO., HARTFORD, CT. OR APPROVED EQUAL
B - TIGHTENING TORQUE = 850 IN LB +0, -50 IN LB ALL LOCATIONS
C - GUARD RING TO BE INSTALLED BY MANUFACTURER AFTER LINER BODY ASSY INSP
D - GUARD RING TO BE REMOVED PRIOR TO INSTALLING THE HEAD ASSY FOR FINAL CLOSURE
~~E - CAJON CO., CLEVELAND, OHIO OR APPROVED EQUAL~~
GR. 1 : SEED MODULE STORAGE LINER PRIOR TO FINAL CLOSURE
GR. 2 : SEED MODULE STORAGE LINER AFTER FINAL CLOSURE

~~F - FEDERAL MOGUL, DETROIT, MI OR APPROVED EQUAL~~
G - FLUORO-CARBON COMPONENTS, COLUMBIA, S.C.
H - TIGHTENING TORQUE = 425 FT. LB. ±10 FT-LB
J - TIGHTENING TORQUE OF BODY 200 FT LB. ±8 FT. LB.
K - TIGHTENING TORQUE = 225 FT. LB. ±10 FT. LB.
L - TIGHTENING TORQUE OF CAP 55 FT. LB. +5, -0 FT. LB.
M - TIGHTEN HAND TIGHT

REVISIONS

REV	ZONE	DESCRIPTION
A		[illegible]
B		[illegible]
C		[illegible]
D	L/M	IT. 2 WAS GR 1 DWG 1526E32; IT. 8 WAS GR 3 DWG 1526E30; IT. 14 CANCELLED; ITS. 15 & 16 WERE 2 REQD IN GRS 1 & 2; ITS 17 THRU 22 ADDED
	F-3	NOTE C WAS "GUARD RING & GASKET"; NOTE D WAS "GUARD RING & GASKET -- CLOSURE WELDING FOR GR. 1"
	C-5	WELD REMOVED
	B-7	10.00 REF FOR IT. 11 REMOVED
	F-5	FOR WATER CIRCULATION & REMOVAL OPS" REMOVED FROM DET F-5 TITLE PICTURES UPDATED TO REFLECT DETAIL REVISIONS
	F-3	NOTES F & G ADDED DFTM Sibley 1-24-82 CHKR [illegible] MATL [illegible] MFG [illegible] ENGR [illegible] QC [illegible] E SUPV [illegible] D. SUPV [illegible]
E	L/M	NO.S REQD FOR ITS 2 & 21 WAS 1 IN GR1; IT. 3 WAS GR2 DWG 1917F19; IT.S 7, 11, 15, 22 DELETED; IT. 8 WAS DWG. 1917F71; NO REQD FOR IT. 9 WAS 1 IN GR 2; IT. 16 WAS DWG. 1526E30; NO.S REQD FOR IT.S 17 & 19 WAS 5 IN GR1, 6 IN GR 2; NO.S REQD FOR IT.S 18 & 20 WAS 6 IN GR 1; IT.S 23 & 24 ADDED; NOTE H/L ADDED TO IT. 8, C/D ADDED TO IT. 9, J/L ADDED TO IT. 16, H ADDED TO IT. 17, K ADDED TO IT. 18
	F-3	NOTE E DELETED; NOTE GR 1 WAS "SEED MODULE"; NOTE GR 2 WAS "SAME AS GR1 EXCEPT AS NOTED IT. 6 REPLACED WITH IT.S 17 & 19." NOTE F DELETED; NOTES H THRU M ADDED DETAIL F-5, SECTION D-2 UPDATED; DETAIL D-5 WAS D-4, UPDATED; SECTION D-3 ADDED.
	F-8	IT. 8 WAS 17, 9 OR 8, 22 DFTM KLOTZ 7/8/86 CHKR [illegible] MATL [illegible] MFG [illegible] ENGR [illegible] Q.C. [illegible] E. SUPV [illegible] D. SUPV [illegible]

- LWBR DWG-0081 A -

NO	OPERATION	SPEC NO	REMARKS
2	VISUAL INSPECT	LWBR TYPE 2 T-SPEC 35	ACCEPTANCE PER T-SPEC 35
1	WELD	ASME-BPVC SECTION IX	WELDER & WELD PROCEDURE SHALL BE QUALIFIED TO ASME-BPVC SECT IX. WELD PROCEDURE AND PROCEDURE QUALIFICATION DATA SHALL BE SUBMITTED FOR APPROVAL

MANUFACTURING SPECIFICATIONS

UNLESS OTHERWISE SPECIFIED ALL TOLERANCES AND MANUFACTURING PRACTICES SPECIFIED ON 296E600 (CODE IDENT NO. 04241) APPLY TO THIS DRAWING.

Figure A-35 Rev. 4

CLASSIFICATION NONE CLASSIFIER [illegible] DATE [illegible]

THE GOVERNMENT MAY DUPLICATE, USE, AND DISCLOSE THIS DRAWING FOR ANY PURPOSE

ECF LWBR
STORAGE LINER
SEED MODULE
ASSY

Westinghouse ELECTRIC CORPORATION
BETTIS ATOMIC POWER LABORATORY
WEST MIFFLIN, PA, USA

SCALE NTS | WEIGHT ~ | CODE IDENT NO. 94259 | SIZE E | 1573E77

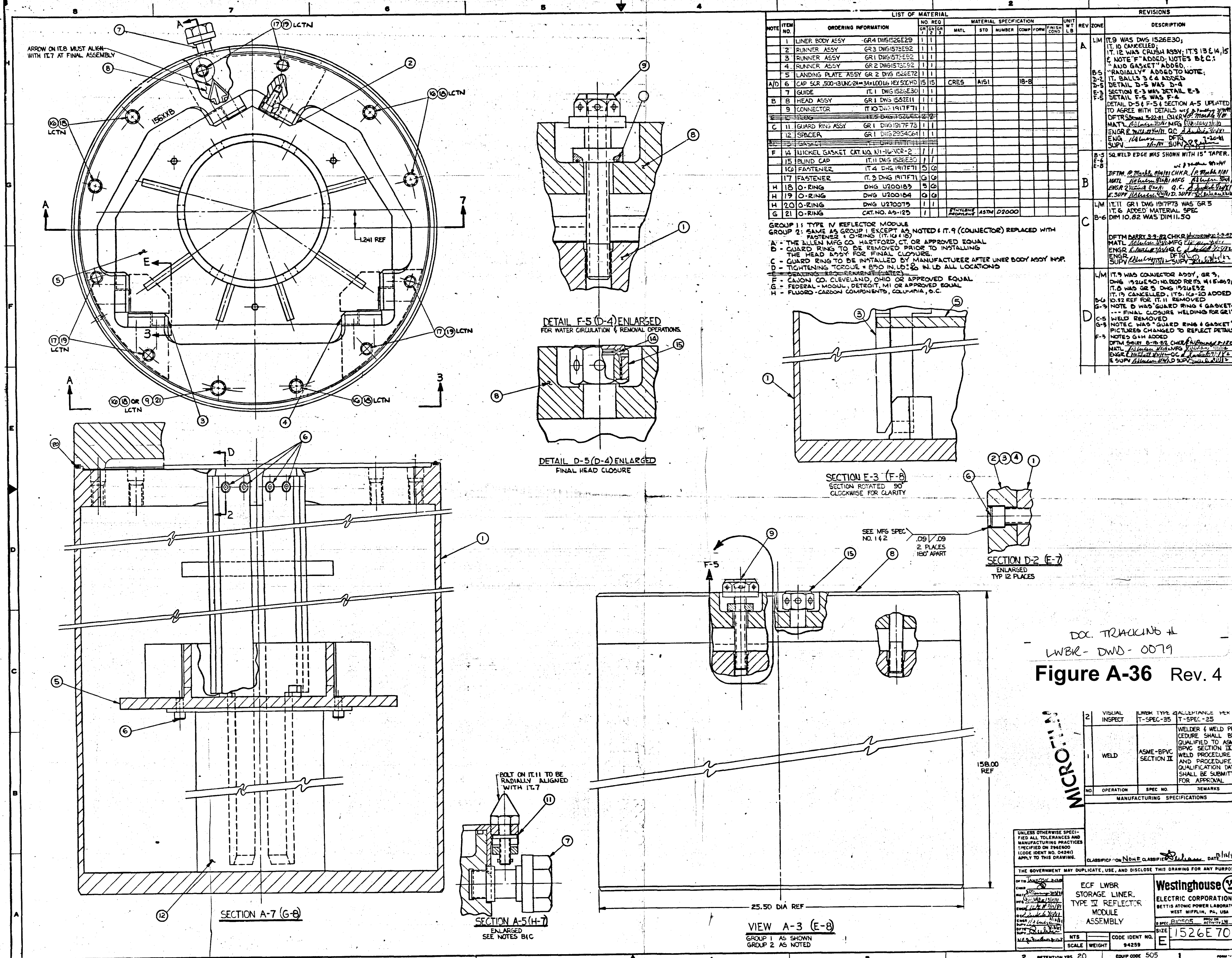
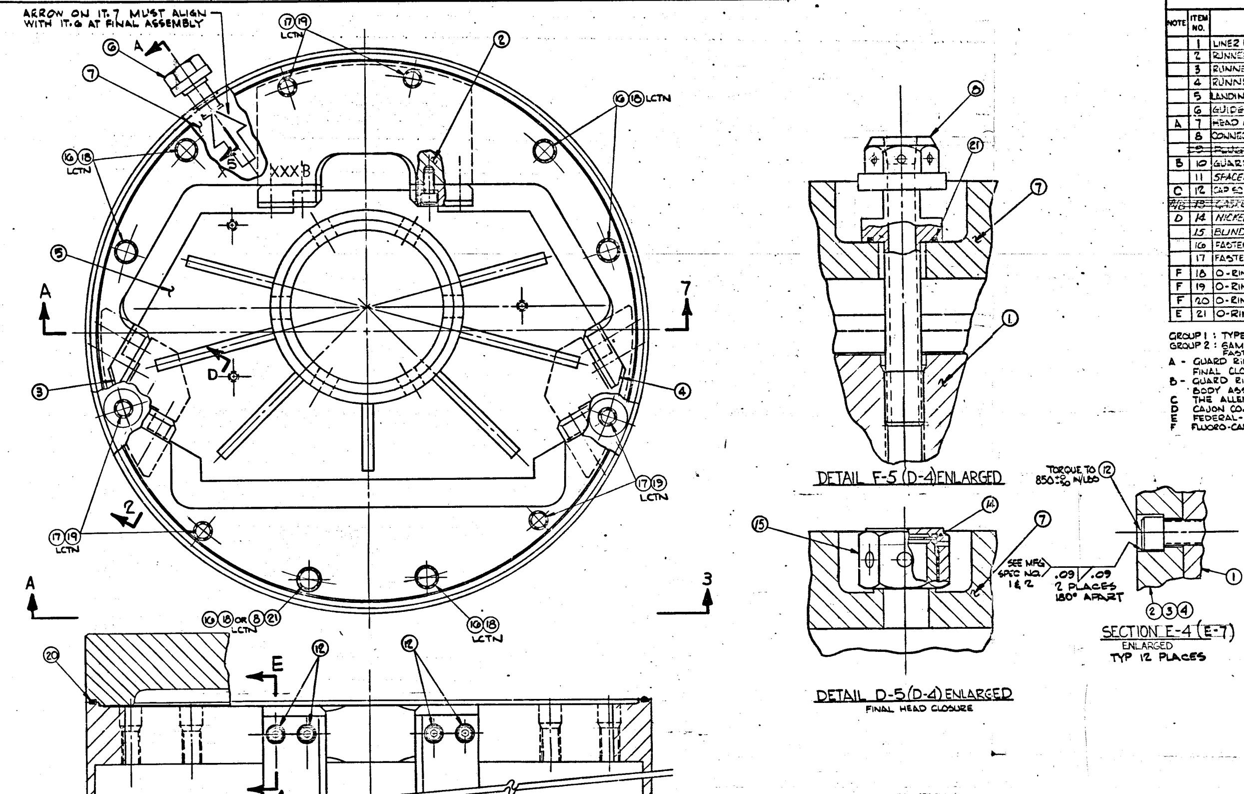
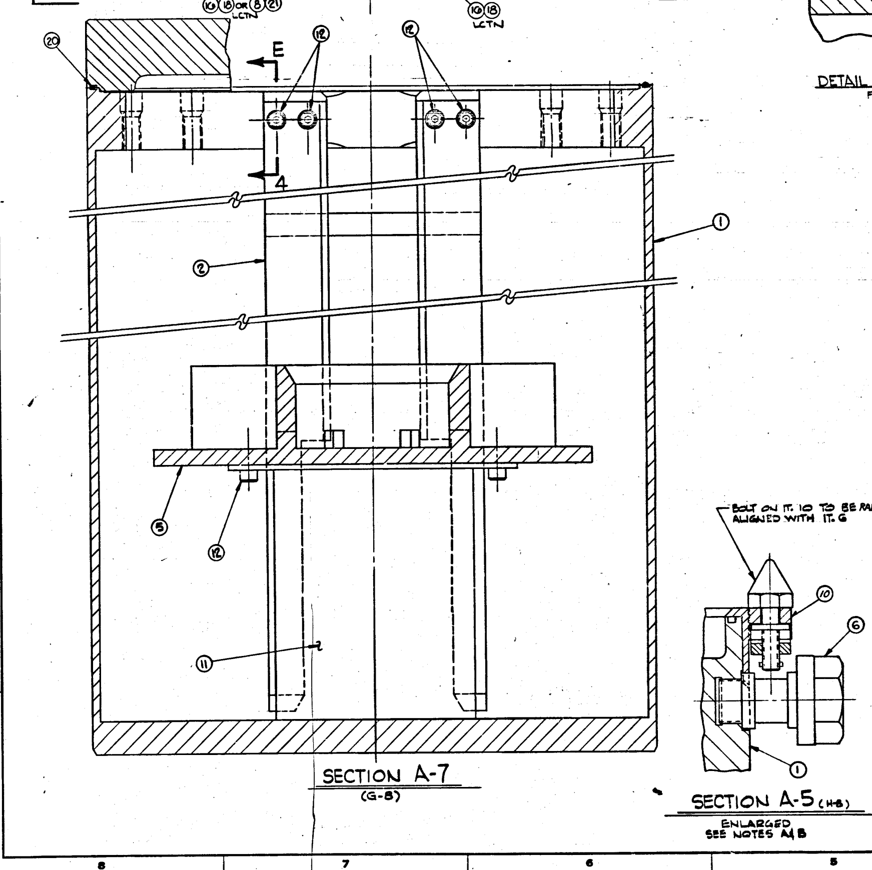
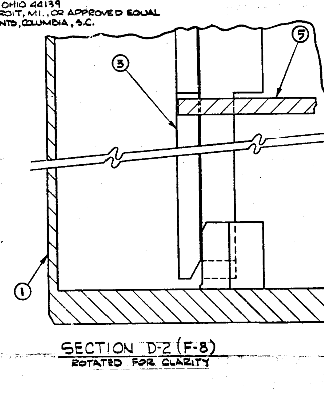
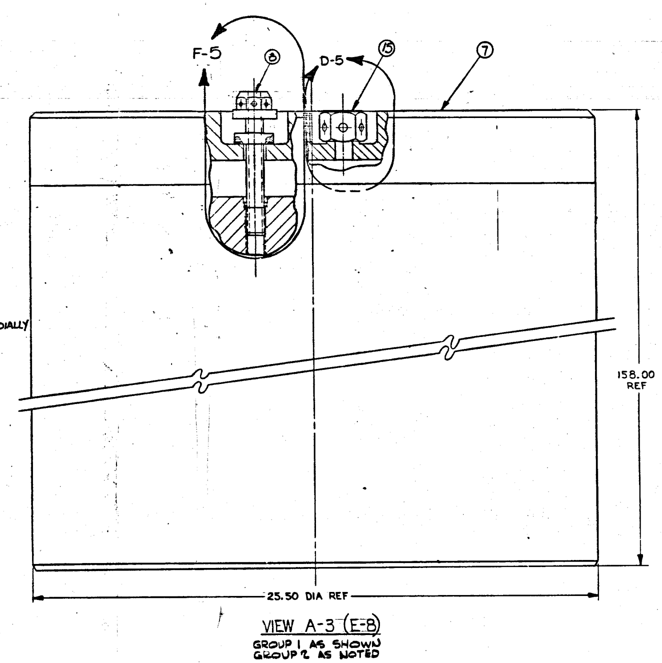


Figure A-36 Rev. 4









LIST OF MATERIAL

NOTE	ITEM NO.	ORDERING INFORMATION	NO. REQ GR 1	GR 2	GR 3	MATL	STD	NUMBER	COMP	FORM	FINISH COND	UNIT WT LB
	1	LINER BODY ASSY GR-5 DWG 1526E29	1	1								
	2	RUNNER ASSY GR-1 DWG 1574C02	1	1								
	3	RUNNER ASSY GR-2 DWG 1574C02	1	1								
	4	RUNNER ASSY GR-3 DWG 1574C02	1	1								
	5	LANDING R ASSY GR-1 DWG 1526E37	1	1								
	6	GUIDE IT. 1 DWG 1526E32	1	1								
A	7	HEAD ASSY GR-1 DWG 1582212	1	1								
	8	CONNECTOR IT.10 DWG 1917F71	1									
	~~9~~	~~PLUG IT.9 DWG~~	~~2~~	~~2~~								
B	10	GUARD RING ASSY GR-1 DWG 1917F73	1	1								
	11	SPACER GR-2 DWG 2954C64	1	1								
C	12	CAP SCR .500-13UNC-2A×3A×1.00 LG	15	15		CRES	A151		18-8			
~~4/8~~	~~13~~	~~GASKET IT.1 DWG~~										
D	14	NICKEL GASKET CAT. NO. NI-16-VCR-2	1	1								
	15	BLIND CAP IT.11 DWG 1526E30	1	1								
	16	FASTENER IT.4 DWG 1917F71	5	6								
	17	FASTENER IT.3 DWG 1917F71	6	6								
F	18	O-RING DWG U200183	5	6								
F	19	O-RING DWG U200184	6	6								
F	20	O-RING DWG U270075	1	1								
E	21	O-RING CAT. NO. AS-125	1			ETHYLENE PROPYLENE	ASTM	D2000				

GROUP 1 : TYPE V REFLECTOR MODULE
GROUP 2 : SAME AS GROUP 1 EXCEPT AS NOTED & IT. 8 (CONNECTOR) REPLACED WITH FASTENER & O-RING (IT. 16 & 18)
A - GUARD RING TO BE REMOVED PRIOR TO INSTALLING THE HEAD ASSY FOR FINAL CLOSURE
B - GUARD RING TO BE INSTALLED BY MANUFACTURER AFTER LINER BODY ASSY INSPECTIONS
C THE ALLEN MFG. CO. HARTFORD, CT. OR APPROVED EQUAL
D CAJON CO. CLEVELAND, OHIO 44139
E FEDERAL-MOGUL, DETROIT, MI., OR APPROVED EQUAL
F FLUORO-CARBON COMPONENTS, COLUMBIA, S.C.

REVISIONS

REV	ZONE	DESCRIPTION
A	4M	IT.8 WAS GR.2 DWG 1526E30, IT.9 CANCELLED, IT.11 WAS CRUSH BLOCK GR1 DWG 2954C64, IT.10 WAS GR.6, IT.13, 14, 15 & NOTE D ADDED, NOTE A WAS GUARD RING TO BE REMOVED..., NOTE B WAS GUARD RING TO BE INSTALLED.
	B-5	WORD "RADIALLY" ADDED TO NOTE.
	D-5	DETAIL D-5 WAS D-4.
	F-5	DETAIL F-5 WAS F-4. DETAIL D-5, F-5 & SECTION A-5 UPDATED TO AGREE WITH DETAILS. DFTM REARICK 5-22-81 CHKR 7/81 MATL 7/1/81 MFG 7/1/81 ENGR 6/26/81 Q.C. 7/1/81 ENGR SUPV 7/1/81 DFTG SUPV 7-20-81
B	B-5 E-6 E-8	SQ. WELD EDGE WAS SHOWN WITH 15° TAPER. DFTM 8/13/81 CHKR 8/81 MATL 8/26/81 MFG 8/26/81 ENGR 8/21/81 Q.C. 8/28/81 E. SUPV 8/26/81 D. SUPV 8/27/81
C	B-6	DIM 10.82 REF WAS 11.50 REF DFTM G. HUNT 3-11-82 CHKR 3-12-82 MATL 3/23/82 MFG 3/24/82 ENGR 3/24/82 Q.C. ENG SUPV 3/23/82 DFTG SUPV 3/29/82
D	4M	IT. 7 WAS GR 6 DWG 1526F32, IT. 8 WAS CONNECTOR ASSY GR 3 DWG 1526E70; IT 13 CANCELLED; ITS. 16 THRU 20 ADDED, IT. 14 & 15 WAS 2 REQ IN EACH GR.
	G-3	NOTE A WAS "GUARD RING & GASKET --- FINAL CLOSURE WELDING TO GR 1". NOTE B WAS "GUARD RING & GASKET" ETC.
	F-5	"FOR WATER CIRCULATION & REMOVAL OPS" REMOVED FR. DET F-5 TITLE
	C-5	WELD REMOVED
	G-6	10.82 REF FOR IT. 11 REMOVED
	E-6	6 .75 HOLES ADDED TO PICTURE PICS CHANGED TO REFLECT DETAILS
	F-3	NOTES E & F ADDED DFTM SIBLEY 9-14-82 CHKR R.W. Downey 9-1-82 MATL 9/1/82 MFG 9/1/82 ENGR 9/1/82 Q.C. 9/1/82 E SUPV 9/1/82 D. SUPV 9/1/82

Figure A-37 Rev. 4

DOC. TRACKING #
LWBR- DWD-0077

NO.	OPERATION	SPEC NO.	REMARKS
2	VISUAL INSPECT	LWBR TYPE 2 T-SPEC 35	ACCEPTANCE PER T-SPEC-35
1	WELD	ASME-BPVC SECTION IX	WELDER & WELD PROCEDURE SHALL BE QUALIFIED TO ASME-BPVC SECTION IX. WELD PROCEDURE AND PROCEDURE QUALIFICATION DATA SHALL BE SUBMITTED FOR APPROVAL

MANUFACTURING SPECIFICATIONS

UNLESS OTHERWISE SPECIFIED ALL TOLERANCES AND MANUFACTURING PRACTICES SPECIFIED ON 296E600 (CODE IDENT NO. 04241) APPLY TO THIS DRAWING.

CLASSIFICATION NONE CLASSIFIER DATE 7/24/81

THE GOVERNMENT MAY DUPLICATE, USE, AND DISCLOSE THIS DRAWING FOR ANY PURPOSE

ECF LWBR STORAGE LINER TYPE V REFL MDL ASSEMBLY

Westinghouse ELECTRIC CORPORATION
BETTIS ATOMIC POWER LABORATORY
WEST MIFFLIN, PA. USA

SIZE E | CODE IDENT NO. 94259 | 1526E76
SCALE NTS | WEIGHT
RETENTION YRS 20 | EQUIP CODE 505

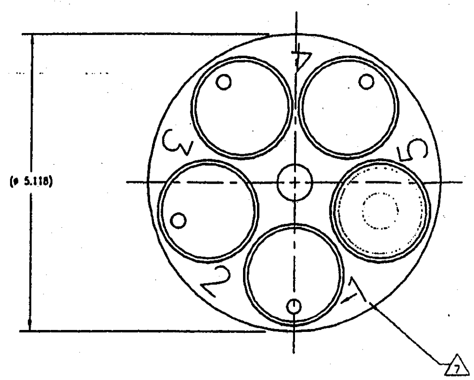
MICROFILMED

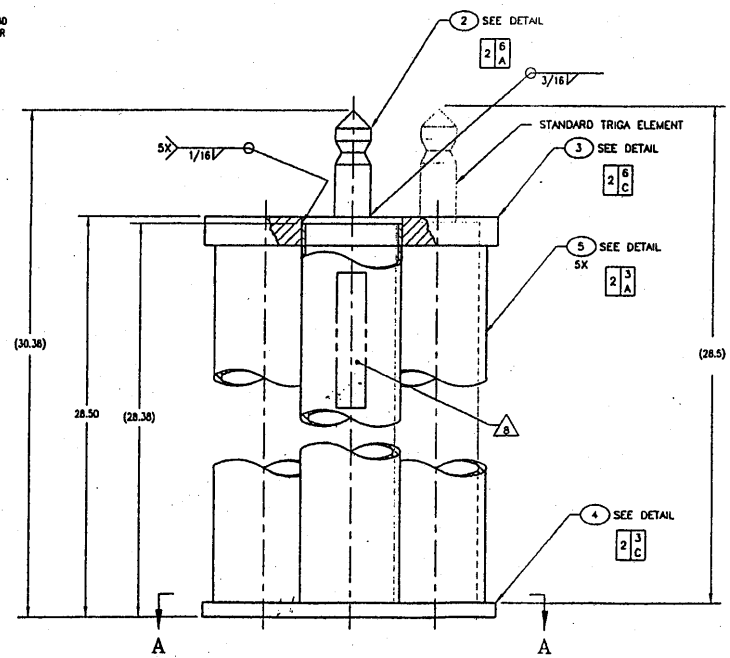
Lifetime Record 7/3/88
Retention Material + 1 yr.

30

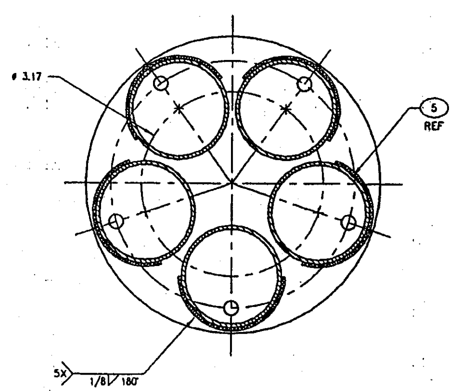
NOTES:

1. REMOVE ALL BURRS AND SHARP EDGES.
2. ALL MACHINED FILLET RADII .03 MAXIMUM UNLESS OTHERWISE NOTED.
3. WELD PER INEEL WELDING PROCEDURE SPECIFICATION S2.24 USING WELD FILLER METAL ITEM 6.
4. (Q) VISUALLY INSPECT ALL WELDS PER AWS D1.6-1999 ACCEPTANCE CRITERIA SHALL BE PER AWS D1.6-1999 FOR "STATICALLY LOADED CONNECTIONS".
5. (Q) MATERIAL MUST HAVE ACTUAL CERTIFIED MATERIAL TEST REPORTS (CMTR's) ISSUED BY THE MANUFACTURER OR INDEPENDENT TESTING LABORATORY PERFORMING MATERIAL TESTING WHICH CERTIFIES THAT THE MATERIAL HAS BEEN INSPECTED AND TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE SPECIFICATION AND THAT THE RESULTS OF THE CHEMICAL ANALYSES AND MECHANICAL TESTS MEET THE REQUIREMENTS OF THE SPECIFICATION FOR THE SPECIFIC GRADE. MANUFACTURER OR SUPPLIER SHALL MARK THE HEAT NUMBER ON THE CMTR's AND ON THE MATERIAL.
6. (Q) MATERIAL MUST HAVE ACTUAL CERTIFIED MATERIAL TEST REPORTS (CMTR's) ISSUED BY THE MANUFACTURER OR INDEPENDENT TESTING LABORATORY PERFORMING MATERIAL TESTING WHICH CERTIFIES THAT THE MATERIAL HAS BEEN INSPECTED AND TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE SPECIFICATION AND THAT THE RESULTS OF THE CHEMICAL ANALYSES MEET THE REQUIREMENTS OF THE SPECIFICATION FOR THE AWS MATERIAL CLASSIFICATION. MANUFACTURER OR SUPPLIER SHALL MARK EACH END OF CUT LENGTHS OF WELD FILLER METAL (OR MARK THE END OF THE SPOOLED WIRE) SHOWING THE AWS MATERIAL CLASSIFICATION AND HEAT NUMBER, AND THE HEAT NUMBER MUST APPEAR ON THE CMTR's.
7. (Q) NUMBER INDIVIDUAL STORAGE POSITIONS AS SHOWN PER STD-7006-2A OR STD-7006-2D OR STD-7006-30 IN 1/2 INCH HIGH CHARACTERS. ADD ARROW AS SHOWN FOR STORAGE POSITION #1 TO INDICATE WHICH POSITION APPLIES. MARKING SHALL BE FILLED WITH BLACK INK PER STD-7006-12 HAVING A CHLORIDE CONTENT LESS THAN 50 PPM.
8. (Q) MARK TUBES IN POSITIONS 1 THRU 5 PER STD-7006-2A OR STD-7006-2D OR STD-7006-30 IN 1/2 INCH HIGH CHARACTERS WITH "CAN-GSF-134-XX", WHERE "XX" IS A UNIQUE NUMBER TO BE SUPPLIED FOR EACH ASSEMBLY BUILT. NUMBERING TO BEGIN WITH 1. (ALL TUBES OF EACH ASSEMBLY ARE TO HAVE THE SAME UNIQUE NUMBER). ADDITIONALLY MARK ONLY TUBE IN POSITION 1 WITH "RATED CAPACITY: 80 LBS" AND "WEIGHT: 17 LBS". LOCATE MARKING APPROXIMATELY WHERE SHOWN ON ALL FIVE TUBES. MARKING SHALL BE FILLED WITH BLACK INK PER STD-7006-12 HAVING A CHLORIDE CONTENT LESS THAN 50 PPM.
9. (Q) LOAD TEST -1 ASSEMBLY USING A 95 TO 100 LB TEST LOAD IN ACCORDANCE WITH DOE-STD-1090-2001. -1 ASSEMBLY TO BE SUSPENDED BY LIFTING PINTLE USING PINTLE TOOL, TD-GSF-967 (DRAWING 514591) WITH TEST LOAD APPLIED AS FIVE EQUAL WEIGHTS PLACED IN THE FIVE STORAGE POSITIONS. VISUALLY INSPECT AFTER LOAD TEST PER DOE-STD-1090-2001. ACCEPTANCE CRITERIA SHALL BE PER DOE-STD-1090-2001.
10. HOLES TO BE .000 - .005 LARGER THAN MEASURED DIAMETER OF MATING PART (ITEM 5).
11. (Q) FINAL ASSEMBLY SHALL MEET THE CLEANLINESS REQUIREMENTS OF STD-7022, LEVEL D.

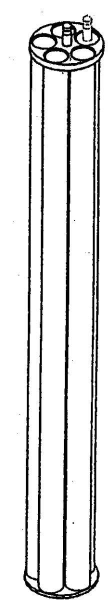




-1 ASSEMBLY (9)
SCALE: 1/1



SECTION A—A
SCALE: 1/1



ISOMETRIC VIEW

Figure A-38 Rev. 4

Figure A-38

QTY REQD	SAFETY CAT.	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL/SPECIFICATION OR VENDOR NAME	ITEM NO.
					7
AR	SS		WELD FILLER METAL	ER308 OR 308L AWS A5.9	6
5	SS	-5	TUBE	TUBE, Ø1 3/4 X .065 WALL, WELDED OR SEAMLESS 304 OR 304L SST, ASTM A249 OR A269	5
1	SS	-4	BOTTOM PLATE	PLATE OR BAR 1/4 THK 304 OR 304L SST, ASTM A240 OR A276	4
1	SS	-3	TOP PLATE	PLATE OR BAR 1/2 THK 304 OR 304L SST, ASTM A240 OR A276	3
1	SS	-2	LIFTING PINTLE	BAR 304 OR 304L SST, ASTM A276	2
	SS	-1	ASSEMBLY		1
-1					

PARTS LIST

SHEET	2	1
REV	-	-

REV STATUS OF SHEETS

REVISIONS: REV | DESCRIPTION | EFFECTIVE DATE

INSPECTION REQUIREMENTS
QC REQUIRED
(Q) DENOTES Q/C INSP. REQD.

-1	FINAL
DASH NO.	NEXT ASSY
APPLICATION	

DIMENSIONING AND SYMBOLOGY ARE AMERICAN NATIONAL STANDARD. UNLESS OTHERWISE SPECIFIED SURFACE TOLERANCES 125/ DIMENSIONS AND TOLERANCES ARE IN INCHES. TOLERANCES: .X = ±.1; DECIMALS: .XX = ±.03, .XXX = ±.010; FRACTIONS ±1/16; ANGULAR ±1°. DO NOT SCALE DRAWING

SUBCONTRACT NO.
REQUESTOR: K. A. ROBB
DESIGN: JIM DEATHERAGE
DRAWN: O. MORGAN/W.HEILESON
PROJECT NO. ECF 2537
SPEC CODE
FOR REVIEW/APPROVAL SIGNATURES SEE DAR NO. 89979
EFFECTIVE DATE: 07/03/02 K.L.S.

INEEL

CPP-603 IFSF
5 POSITION STANDARD TRIGA FUEL CAN
ASSEMBLY AND DETAILS
CAN-GSF-134-XX

SIZE D | CAGE CODE 01MF3 | BUILT CODE NUMBER 200 0603 47 090 | DWG- 516777 | REV
SCALE: NOTED | GSF | SHEET 1 OF 2

A. WHEELER Layout Name: Sheet 1 Date: 07/03/02 - 12:57 P.M.

NOTES:

1. REMOVE ALL BURRS AND SHARP EDGES.
2. ALL MACHINED FILLET RADII .03 MAXIMUM UNLESS OTHERWISE NOTED.
3. WELD PER INEEL WELDING PROCEDURE SPECIFICATION 52.24 OR 56.13 USING WELD FILLER METAL, ITEM 9.
4. (Q) VISUALLY INSPECT FINAL PASS OF ALL WELDS PER AWS D1.6-1999. ACCEPTANCE CRITERIA SHALL BE PER AWS D1.6-1999 FOR "STATICALLY LOADED CONNECTIONS".
5. (Q) MARK PER STD-7006-2A OR STD-7006-2D OR STD-7006-3D IN 3/4" HIGH CHARACTERS WITH INFORMATION AS SHOWN. "XX" IS A UNIQUE NUMBER TO BE SUPPLIED FOR EACH -1 ASSEMBLY BUILT. LOCATE APPROXIMATELY WHERE SHOWN. MARKING SHALL BE FILLED WITH BLACK INK PER STD-7006-12 HAVING A CHLORIDE CONTENT LESS THAN 50 PPM.
6. (Q) FINAL ASSEMBLY SHALL MEET CLEANLINESS REQUIREMENTS OF STD-7022, LEVEL D.
7. -1 ASSEMBLY TO BE PLACED ON TOP OF A STACK OF THREE BU-GSF-BEL BUCKETS IN THE CAN-GSF-276 CANISTER.
8. (Q) MATERIAL MUST HAVE ACTUAL CERTIFIED MATERIAL TEST REPORTS (CMTR's) ISSUED BY THE MANUFACTURER OR INDEPENDENT TESTING LABORATORY PERFORMING MATERIAL TESTING WHICH CERTIFIES THAT THE MATERIAL HAS BEEN INSPECTED AND TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE SPECIFICATION AND THAT THE RESULTS OF THE CHEMICAL ANALYSES AND MECHANICAL TESTS MEET THE REQUIREMENTS OF THE SPECIFICATION FOR THE SPECIFIC GRADE. MANUFACTURER OR SUPPLIER SHALL MARK THE HEAT NUMBER ON THE CMTR's AND ON THE MATERIAL.
9. (Q) MATERIAL MUST HAVE ACTUAL CERTIFIED MATERIAL TEST REPORTS (CMTR's) ISSUED BY THE MANUFACTURER OR INDEPENDENT TESTING LABORATORY PERFORMING MATERIAL TESTING WHICH CERTIFIES THAT THE MATERIAL HAS BEEN INSPECTED AND TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE SPECIFICATION AND THAT THE RESULTS OF THE CHEMICAL ANALYSES MEET THE REQUIREMENTS OF THE SPECIFICATION FOR THE AWS MATERIAL CLASSIFICATION. MANUFACTURER OR SUPPLIER SHALL MARK EACH END OF CUT LENGTHS OF WELD FILLER METAL (OR MARK THE END OF THE SPOOLED WIRE) SHOWING THE AWS MATERIAL CLASSIFICATION AND HEAT NUMBER. THE HEAT NUMBER MUST APPEAR ON THE CMTR's.
10. STORAGE OF THE FINAL ASSEMBLY, IF NECESSARY, SHALL MEET THE REQUIREMENTS OF STD-7020, CLASS II.

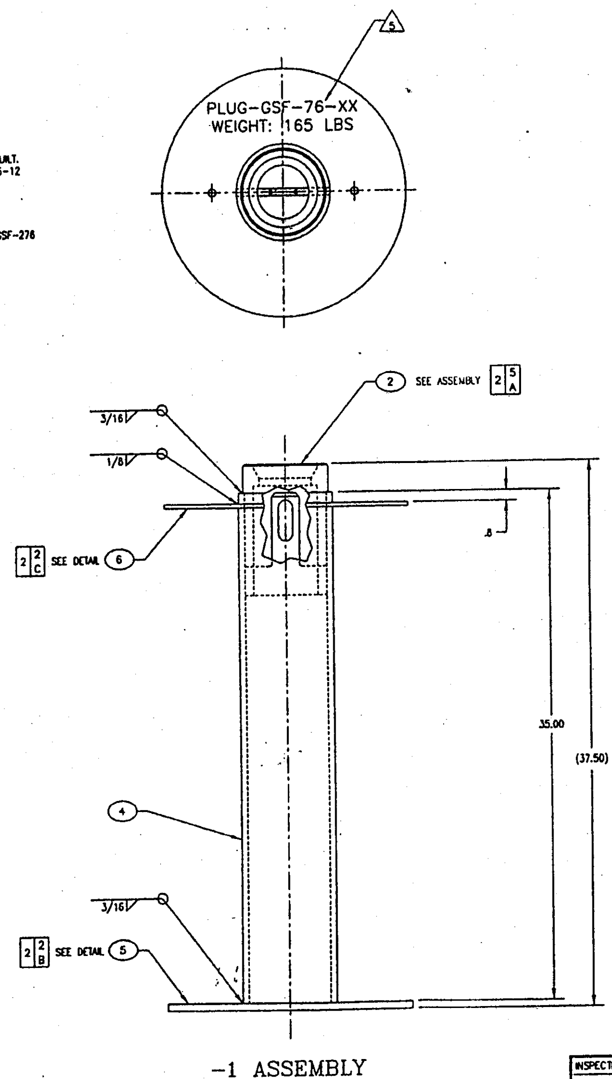


Figure A-39 Rev. 4

QTY REQD -2	QTY REQD -1	SAFETY CAT.	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL/SPECIFICATION OR VENDOR NAME	ITEM NO.
AR	AR	SS		WELD FILLER METAL	ER308 OR 308L AWS A5.9	9
1		SS	-8	LIFTING LUG	PLATE, 1/2 THICK 304 OR 304L SST ASTM A240	8
1		SS	-7	GUIDE TUBE	BAR OR TUBING 304 OR 304L SST ASTM A276 OR A249 OR A269	7
	1	SS	-6	TOP PLATE	PLATE, 1/4 THICK 304 OR 304L SST ASTM A240	6
	1	SS	-5	BOTTOM PLATE	PLATE, 1/2 THICK 304 OR 304L SST ASTM A240	5
	1	SS	-4	BODY	PIPE, 6 SCHED 80S 304 OR 304L SST ASTM A312	4
						3
	1	SS	-2	GUIDE TUBE ASSEMBLY		2
		SS	-1	ASSEMBLY		1

PARTS LIST

INSPECTION REQUIREMENTS		
QC REQUIRED	-1	FINAL
	DASH NO.	NEXT ASSY
(Q) DENOTES Q/C INSP. REQD.	APPLICATION	

REQUESTER:	
DESIGN:	J. W. DEATHERAGE
DRAWN:	H. SPENCER
PROJECT NO.	ECF-6600
SPEC CODE	
FOR REVIEW/APPROVAL SIGNATURES SEE DAR NO.	92057
EFFECTIVE DATE:	6/17/02 DEJ

INEEL

CPP-603 IFSF
GAP PLUG FOR CAN-GSF-276 CANISTER WITH THREE BU-GSF-BEL BUCKETS
PLUG-GSF-76-XX
ASSEMBLY

SIZE D | DWG-522272 | SCALE: 1/4 | GSF SHEET 1 OF 2