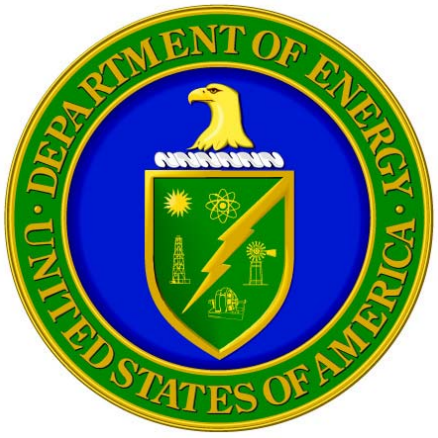
CH Packaging Program Guidance



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Revision 2, December 2004

CH Packaging Program Guidance

Approval on File 12/16/04

Kerry Watson, DOE Date

Office Director, Office of Characterization and Transportation

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RECORD OF REVISION

Revision	Reason for Revision/Change
0	New CH Packaging Program Guidance. This document supercedes DOE/WIPP 93-1001 and must be used in conjunction with DOE/WIPP 02-3184, *CH Packaging Operations Manual*, DOE/WIPP 02-3185, *CH Packaging Maintenance Manual*, and DOE/WIPP 02-3220, *CH Packaging Operations for High Wattage Waste at LANL*
1	Revision - A change summary is below: ● Clarify that C of C is the governing document ● Substitute/update e-addresses for mailing addresses ● Retain review and approval for selected actions at CBFO ● Convert some optional (should) actions to mandatory (shall) ● Change part nomenclature for consistency ● Clarify definitions, documentation requirements, and parts listings ● Correct, update, and/or expand parts lists ● Remove superfluous text ● Modify Fig 5.1 to simplify entries
2	Revision - A change summary is below: ● Provide definition of "clean o-ring" ● Clarify definition of "users" ● Update Table 1.2 for user-supplied consumables ● Update Table 1.3 to include ceramic fiber gasket in bench stock ● Add WP 08-PT.04 as reference for trailer tie-down guidance ● Add new Section 4.2.9 for post-test calibration deviation check guidance ● Modify annual maintenance requirements (Tables 5.3 and 5.4) ● Clarify user requirements regarding spare parts and procedure use

M&O CONTRACTOR TECHNICAL REVIEW ORGANIZATIONS
WASHINGTON TRU SOLUTIONS
CBFO REVIEW ORGANIZATIONS
OFFICE OF CHARACTERIZATION AND TRANSPORTATION
QUALITY ASSURANCE
EDITORIAL

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1.0 INTRODUCTION

1.1 Purpose

The purpose of this document is to provide the technical requirements for preparation for use, operation, inspection, and maintenance of a Transuranic Package Transporter Model II (TRUPACT-II), a HalfPACT shipping package, and directly related components. This document complies with the minimum requirements as specified in the TRUPACT-II Safety Analysis Report for Packaging (SARP), HalfPACT SARP, and U.S. Nuclear Regulatory Commission (NRC) Certificates of Compliance (C of C) 9218 and 9279, respectively. In the event of a conflict between this document and the SARP or C of C, the C of C shall govern. The C of Cs state: "each package must be prepared for shipment and operated in accordance with the procedures described in Chapter 7.0, Operating Procedures, of the application." They further state: "each package must be tested and maintained in accordance with the procedures described in Chapter 8.0, Acceptance Tests and Maintenance Program of the Application." Chapter 9.0 of the SARP charges the Waste Isolation Pilot Plant (WIPP) management and operating (M&O) contractor with assuring packaging is used in accordance with the requirements of the C of C. Because the packaging is NRC-approved, users need to be familiar with Title 10 *Code of Federal Regulations* (CFR) §71.8. Any time a user suspects or has indications that the conditions of approval in the C of C were not met, the Carlsbad Field Office (CBFO) shall be notified immediately. The CBFO will evaluate the issue and notify the NRC if required.

In accordance with 10 CFR Part 71, certificate holders, packaging users, and contractors or subcontractors who use, design, fabricate, test, maintain, or modify the packaging shall post copies of (1) 10 CFR Part 21 regulations, (2) Section 206 of the Energy Reorganization Act of 1974, and (3) NRC Form 3, Notice to Employees. These documents must be posted in a conspicuous location where the activities subject to these regulations are conducted.

This document provides the instructions to be followed to operate, maintain, and test the TRUPACT-II and HalfPACT packaging. The intent of these instructions is to standardize operations. All users will follow these instructions or equivalent instructions that assure operations are safe and meet the requirements of the SARPs. Users may achieve this intent by any of the following methods:

- Using these instructions.
- Attaching a site-specific cover page/letter to this document stating that these are the instructions to be used at their location, or
- Preparing their own document using the steps in this document **word-for-word, in sequence**, including notes and cautions. Site-specific information may be included as deemed necessary. The document must then be submitted to Site Documents@wipp.ws for approval. Any revision made subsequent to WIPP approval shall be reviewed and approved by the CBFO prior to implementation. A copy of the approval letter from the CBFO shall be available for audit purposes.

This document is available on the Internet at http://www.wipp.ws/library/t2omi/t2omi.htm. Users are responsible for ensuring that they are using the current revision and change notice.

Users may develop site-specific procedures addressing preoperational activities, quality assurance (QA), hoisting and rigging, and radiation health physics to be used in conjunction with the instructions contained in this document.

Users desiring to recommend changes to this document may submit their recommendations to Site Documents for evaluation. If approved, the change(s) will be incorporated into this document for use by **all** users. On an annual basis, not to exceed thirteen months, maintenance and user site's programs will be audited to the requirements contained in this document and any other applicable requirements document.

1.2 Conventions

The following conventions are used to standardize the language used in this document:

- The words "will," "shall," and "must" denote requirements.
- The word "should" denotes a recommendation.
- The word "may" denotes permission, neither a requirement nor a recommendation.
- The word "check" is used to determine a condition or status.
- The word "verify" is used to confirm a condition.
- Parts shall be identified with the part number and name as listed in the work instructions (WI).
- Standard abbreviations (not symbols) will be written out to express measurements and dimensions. For example, use 10 feet or 10 ft, but not 10'.
- Acronyms and other abbreviations will be identified fully in the first usage in the instructions.
- Cautions and notes, if used, shall precede the pertinent step(s).
- Cautions and notes shall not be used as instruction steps.

1.3 Definitions

- **Annual Maintenance** - Periodic maintenance that is performed at one-year intervals.

- **Bench Stock** - The on-hand supply of packaging components sufficient to cover anticipated needs for one calendar year of operation. Stockage levels are based on historical data of component replacement required to complete a given number of shipments.

- **Carlsbad Field Office** (CBFO) - The U.S. Department of Energy (DOE) office responsible for managing the packaging and transportation activities associated with contact-handled (CH) and remote-handled (RH) transuranic (TRU) materials.

- **Certificate of Compliance** (C of C) - A certificate issued by the NRC, which approves the design of a package for transportation of radioactive material.

- **Certified Waste** - Waste that has been confirmed under a formal program to comply with acceptance criteria under an approved waste certification program.

- **Clean O-Ring** - Absence of free-standing vacuum grease, dirt, debris, or other foreign matter. Vacuum grease embedded in the O-ring is acceptable.

- **Contact-Handled Transuranic (CH TRU) Waste** - Waste with an external radiation dose rate not exceeding 200 millirem/hr at the surface of the waste container. Containers of CH TRU waste may be handled directly, without the need for remote handling or robotic equipment.

- **Five-Year Maintenance** - Periodic maintenance that is performed at five-year intervals.

- **Inspection/Inspect** - Unless otherwise stated in this document, this refers to personnel performing visual examination activities.

- **Leak Check Due Tag** - A tag attached near the outer containment assembly (OCA) vent port. This tag indicates a containment O-ring has been replaced and a maintenance leakage rate test is required prior to the next use of the packaging for radioactive shipment. The reverse side of the tag will be marked in indelible ink indicating which containment O-ring was replaced.

- **Maintenance Leakage Rate Test** - This includes leak tests to confirm that maintenance, repair, or component replacement have not degraded the containment system.

- **Maintenance Record** - A list of maintenance performed that becomes a permanent part of the documentation record.

- **Major Maintenance** - Consists of all repairs requiring welding or machining to correct a deficiency that affects packaging integrity or components. (Note: major repairs and major component replacements are the responsibility of the WIPP M&O contractor). These repairs/replacements will be performed at a Maintenance Facility designated and approved by the WIPP M&O contractor.

- **Minor Maintenance** - Consists of all repairs that can be readily accomplished and require no special tools, supplies, equipment, or highly skilled personnel. Minor repairs would include scratches on the sealing surface. (Note: minor repairs and minor component replacements shall be performed at sites that have the necessary equipment and qualified personnel to perform these tasks.)

- **Mobile Loading Unit** (MLU) - This consists of trailer-mounted equipment necessary to load/unload packaging at locations where fixed loading/unloading facilities do not exist.

- **Nonconformance Report** (NCR) - A document that identifies and records a nonconforming condition, and the action taken for the disposition of the nonconformance. Disposition of nonconforming items include review, accept, reject, rework, use-as-is, or repair in accordance with approved instructions. All occurrences of NCRs require formal disposition by the WIPP M&O contractor.

- **U.S. Nuclear Regulatory Commission** (NRC) - The federal agency that certifies the design, manufacture, and QA of TRU materials shipment packaging by certifying that all packaging meets the design requirements specified in 10 CFR Part 71.

- **Out-of-Service** - An administrative condition of the packaging that denotes it is not useable for radioactive shipments. When a packaging is determined to be out-of-service, a tag shall be attached to the OCA near the vent port. The tag shall state the out-of-service condition.

- **Owner** - The organization to which the NRC C of C is issued (e.g., for DOE TRUPACT-II and HalfPACT shipping packages).

- **Package** - Package means a Type B packaging together with its radioactive contents.

- **Packaging** - Packaging means the assembly of components necessary to ensure compliance with the packaging requirements of 10 CFR Part 71.

- **Periodic Leakage Rate Test** - This test includes leak tests to verify containment boundary integrity.

- **Periodic Maintenance** - This consists of all maintenance activities performed annually or at other periodic time intervals. Periodic maintenance activities listed in Section 5.0 will normally be performed at a maintenance facility designated and approved by the WIPP M&O contractor.

- **Preshipment Leakage Rate Test** - This test includes all leak tests performed during assembly of a loaded package.

- **Safety Analysis Report for Packaging** (SARP) - The official application to a packaging licensing agency (DOE or NRC) containing a demonstration of packaging effectiveness and ability to achieve the requirements delineated in

10 CFR Part 71. The SARP is the controlling document for all packaging operations and maintenance.

- **Test and Handling (T&H) Equipment** - Equipment required to be on hand to load, unload, and test the packaging.

- **Transuranic Content Codes** (TRUCON) - A uniform system grouping waste forms with similar characteristics for purposes of shipment in the packaging.

- **Transuranic (TRU) Waste** - Waste containing more than 100 nanocuries of alpha-emitting transuranic isotopes per gram of waste, with half-lives greater than 20 years, except for:

  - High-level radioactive waste

  - Waste that the Secretary has determined, with concurrence of the Administrator, does not need the degree of isolation required by the disposal regulations

  - Waste that the NRC has approved for disposal on a case-by-case basis in accordance with 10 CFR Part 61.

- **Transuranic Waste Authorized Methods for Payload Control** (TRAMPAC) - The document that provides acceptable methods of preparation and characterization to qualify TRU waste as a payload for transport in the packaging.

- **Users** - Those organizations, both DOE and commercial, that are authorized by the DOE to use the DOE-owned, NRC-approved packaging to ship or receive waste or organizations that maintain the packaging.

- **Visual Inspection** - An inspection of component attributes, usually performed using a checklist.

- **WIPP** - The Waste Isolation Pilot Plant.

- **Work Instruction** - A form containing detailed steps outlining the requirements for performing maintenance activities.

- **Work Control** - The process by which all scheduled and unscheduled maintenance is initiated, prioritized, performed, and documented.

1.4 Preshipment Requirements

Prior to making the initial shipment of TRU waste, the user must submit CH Packaging Authorized Methods for Payload Control (TRAMPAC), operating and handling procedures, leak test procedures, and associated QA plans to the CBFO site.documents@wipp.ws for review and approval. If needed, additional guidance for

these areas may be obtained by contacting the WIPP M&O contractor. A new user must also perform the following:

- Determine whether a fixed facility or a mobile loading unit will be required. The facility must meet minimum size and height requirements to accommodate loading operations. Minimum electrical power requirements for operation of a crane and other equipment must be considered.

- Obtain the T&H equipment (see Table 1.1).

- Obtain the consumables and bench stock of spare parts (see Table 1.2 and Table 1.3).

- Prepare and approve site procedures (QA, hoisting and rigging, preoperational, and radiation health physics) for use during packaging operations.

- Obtain authorization to use, and complete training to operate the DOE TRANSCOM satellite-based shipment tracking system.

- Complete training and site-specific qualification of personnel to perform packaging operations.

- Successfully complete a certification audit by the CBFO/WIPP contractor to ship TRU waste in CH packaging. Certification will include observation of a loading operation and performance of randomly selected maintenance instructions, to include preparation of associated documentation. (This does not apply to small-quantity sites with shipments loaded by other trained personnel.)

1.5 Packaging Description

The TRUPACT-II and HalfPACT are U.S. Department of Transportation (DOT) Type "B" packagings certified by the NRC. Both are stainless steel and polyurethane foam insulated right circular cylinder shipping containers. They are designed to provide double containment for shipment of CH TRU waste.

A list of authorized payload containers is found in Certificate of Compliance No. 9218 for the TRUPACT-II and Certificate of Compliance No. 9279 for the HalfPACT.

The OCA consists of a lid and body, composed of an inner stainless steel shell which comprises the outer containment vessel (OCV) boundary, about ten inches of thermal and impact absorbing polyurethane foam, and an external stainless steel shell. The lid's internal and external surfaces are domed. The body internal surface bottom is domed and the external surface bottom is flat. Three lifting interfaces are supplied on the lid. Two forklift slots in the body base are used for handling the entire loaded OCA. When the lid is installed on the body, the overall height is about 10 feet and overall diameter is about 8 feet. A tapered sealing flange on the lid mates with a similar sealing flange on the body. The body sealing flange contains two main O-ring seals. A removable brass plug in a seal test port allows testing of the upper main O-ring seal. The lid is secured to the body with a rotating locking ring located on the lid sealing flange. Six fasteners

secure the locking ring from rotating during shipment. A single vent port comprises the only containment penetration into the OCV cavity. A removable brass plug in the vent port allows access to the cavity.

The inner containment vessel (ICV) consists of a stainless steel shell lid and body. Both the lid and body ends are domed to mate with the interior cavity of the OCV. Three lifting sockets in the lid provide the lifting interface for the lid or an empty (contents not installed) lid/body assembly. Aluminum honeycomb spacers inside the lid and body domes provide impact protection to the domes and a flat surface on which the packaging contents are installed. A tapered sealing flange on the lid mates with a similar sealing flange on the body. The body sealing flange contains two main O-ring seals. Both a silicone-debris shield and an O-ring wiper seal are contained on the lid sealing flange to preclude debris ingress into the main O-ring seal area. A removable brass plug in a seal test port allows testing of the upper main O-ring seal. The lid is secured to the body by a rotating locking ring located on the lid sealing flange. Three fasteners secure the locking ring from rotating during shipment. A single vent port comprises the only containment penetration into the ICV cavity. A removable inner brass plug in the vent port allows access to the ICV cavity. A removable outer brass plug in the vent port allows for helium purging of the ICV upper main O-ring seal and the volume between the inner and outer plug for subsequent leakage testing.

1.6 Ancillary Equipment

1.6.1 Seal Test Port and Vent Port Tools

Seal test port and vent port tools are provided by the WIPP M&O contractor as indicated in Table 1.1. Quantities are sufficient for user site requirements with provisions for a limited number of spares. Before use, tools should be inspected for thread and O-ring damage as well as galling of moving parts. Replacement O-rings are as specified on the figures illustrating each tool and are also listed in Table 1.2. Replacements for defective tools are provided by the WIPP M&O contractor CH Packaging Maintenance Engineer on an exchange basis.

Several tools have been designed specifically for the operation and leakage-rate testing of the shipping package. Although the OCV and ICV seal test ports and vent ports are similar in design, the tools are not interchangeable.

The functional description of each tool is as follows:

- OCV seal test port plug installation/removal tool provides for installation and removal of the OCV seal test port plug through the seal test access port in the OCA upper assembly (see Figure 1.5, Part No. 2077-094-A1).

- OCV seal leak check tool is used to check the main O-ring seal for leakage (see Figure 1.6, Part No. 2077-093-A2). Access is through the seal test access port in the OCA upper assembly. This tool is equipped with a quick-connect fitting to interface with the leak-testing equipment.

- ICV/OCV vent port cover removal tool provides for remote removal and installation of the vent port covers (see Figure 1.2, Part No. 2077-092-A1).

- OCV vent port plug removal/pressure relief tool provides for the removal and installation of the OCV vent port plug, and access to the OCV cavity through the vent access port in the OCA lower assembly (see Figure 1.3, Part No. 2077-091-A2). This tool is equipped with a quick-connect fitting to interface with sampling, vacuum, and helium backfill equipment and is used for the following operations:

  - OCV annulus venting and sampling
  - Vacuum pump interface for OCA upper assembly installation and removal
  - Helium backfill during OCV leakage testing
  - Pressure fill during periodic OCV structural pressure-testing and axial play measurements.

- OCV leak detection tool is used to check the OCV vent port plug seal for leakage tests (see Figure 1.4, Part No. 2077-095-A1). Access is through the vent access port in the OCA lower assembly. This tool is equipped with a quick-connect fitting to interface with the leak-testing equipment.

- ICV vent port plug removal/pressure relief tool provides for the removal and installation of the ICV outer vent port plug (see Figure 1.7, Part No. 2077-091-A1), removal and installation of the ICV inner vent port plug, with an adapter (see Figure 1.8, Part No. 2077-091-24), thereby gaining access to the ICV cavity. This tool is equipped with a quick-connect fitting to interface with sampling, vacuum, and helium backfill equipment and is used for the following operations:

  - ICV cavity venting and sampling (with the adapter),
  - Vacuum pump interface for ICV lid installation and removal,
  - Helium backfill during ICV leakage testing, and
  - Pressure fill during periodic ICV structural pressure testing and axial play measurements.

- ICV leak detection tool is used to check the ICV vent port plug seal for leakage (see Figure 1.9, Part No. 2077-095-A2). This tool is equipped with a quick-connect fitting to interface with the leak-testing equipment.

- ICV seal test port plug installation/removal tool provides for installation and removal of the ICV seal test port plug (see Figure 1.10, Part No. 2077-094-A2).

- ICV seal leak check tool is used to check the main O-ring seal for leakage (see Figure 1.11, Part No. 2077-093-A1). This tool is equipped with a quick-connect fitting to interface with the leak-testing equipment.

NOTE: Lock-ring tools are furnished by the WIPP M&O contractor.

1.6.2 Lock-Ring Tools

The locking ring tools (T-handles and extension tools) are designed for rotating the locking ring assemblies to either the locked or unlocked position.

1.6.3 Lower Spacer Removal Sling

The lower spacer removal sling is designed for installation and removal of the lower spacer (Part No. SK-1104).

NOTE: Users are responsible for procurement and maintenance of an adjustable center of gravity lift fixture (ACGLF). Drawings for the Standard Waste Box (SWB), ACGLF, and Ten-drum Overpack (TDOP) adapters are available from the WIPP M&O contractor.

1.6.4 Adjustable Center of Gravity Lift Fixture

The ACGLF is used for loading and unloading payloads when the center of gravity is not on the vertical centerline of the payload. With an adaptor, the ACGLF may be used for loading and unloading SWBs and TDOPs.

The ACGLF is used in conjunction with a 5-ton crane (minimum) and is designed for the following general requirements:

- Maximum rated capacity of the lift fixture is 10,000 lb.
- System power is 115 VAC, 60 Hz, 20 amperes.
- Minimum crane hook height is 20.5 ft.
- Maximum 7.5-ton Crosby hook size interface.
- A 3.6-inch maximum lateral offset in the payload assembly center of gravity may be accommodated.

The ACGLF is designed to handle the weight of the following configurations:

- An OCA lid assembly
- An ICV lid
- An empty ICV assembly

- Fourteen 55-gallon drum payload assemblies , eight 85-gallon drum payload assemblies, six 100-gallon drum payload assemblies, two SWBs, or one TDOP.

The ACGLF is **NOT** designed to lift the weight of the following configurations:

- A loaded CH package or empty CH packaging
- A loaded or empty OCA
- A loaded ICV

1.6.5 Tools, Equipment, and Consumables for CH Packaging Loading

Table 1.1 lists the tools required for packaging operations. Quantities listed are for a fixed facility with a limited number of spares. It is the responsibility of the user to request inventory spares when they reach minimum stocking levels. Specifically designed tools (i.e., leak check, leak detection, and pressure relief) are provided by the WIPP M&O contractor through the CH Packaging Maintenance Engineer.

In addition to the tools, equipment, and consumables listed in Tables 1.1 and 1.2, shipping sites will need payload assembly components such as slip sheets, pallets, reinforcement plates, guide tubes, ratchet straps, bumper pads, and HalfPACT spacers. These components are provided by the WIPP M&O contractor to packaging users on an as-needed basis. Sites are responsible for notifying the WIPP M&O contractor when these items are needed.

Table 1.1 - Equipment for Fixed Loading Facility

Tool	Quantity	Spares	✓
ICV/OCV vent port cover removal tool (2077-092-A1) (Figure 1.2)	1 common hand tool (user-supplied)	0	
OCV vent port plug removal/pressure relief tool (2077-091-A2) (Figure 1.3)	3	1	
OCV leak detection tool (2077-095-A1) (Figure 1.4)	3	1	
OCV seal test port plug installation/removal tool (2077-094-A1) (Figure 1.5)	1 common hand tool (user-supplied)	0	
OCV seal leak check tool (2077-093-A2) (Figure 1.6)	3	1	
ICV vent port plug removal/pressure relief tool and adapter (2077-091-A1 and 2077-091-24) (Figures 1.7 and 1.8).	3	1	
ICV leak detection tool (2077-095-A2) (Figure 1.9)	3	1	
ICV seal test port plug installation/removal tool (2077-094-A2) (Figure 1.10)	1 common hand tool (user-supplied)	0	
ICV seal leak check tool (2077-093-A1) (Figure 1.11)	3	1	
ICV locking handle (2077-156A6)	6	1	
OCV locking handle (2077-156A7)	6	1	
Helium leak detector	1 (user-supplied)	Optional	
Calibrated leak standard	1 (user-supplied)	Optional	
Calibrated barometer	1 (user-supplied)	Optional	
Calibrated ambient temperature measuring device	1 (user-supplied)	Optional	
Tool, locking ring	2 per site	None	
Parts shadow board	1 per loading station	None	
Calibrated crane load cell	1 per crane	1	

Table 1.2 - Recommended User-Supplied Tools, Equipment and Consumables

Item	Application	✓
Compressed-air blow gun	Clean threads, cavities with Argon gas	
12-inch adjustable wrench x 2	Fastening gauges to compressed gases	
3/4-inch deep-well socket, 1/2-inch ratchet drive 16 inches or longer	Loosening tie-downs	
1/4-inch flat tip screwdriver	Hose clamps on leak test equipment and forklift pocket cover screws	
Calibrated Torque wrenches, range 55-65 lb-inch/30-50 lb-ft	Torque components	
Cotter pin removal tool	Removing small O-rings	
Utility knife	Cutting tube for leak testing	
Small flashlight	Inspection of threads and cavities	
1/2, 3/4, 9/16, 7/8, 1, 1-3/16, 1-1/4, 1-3/8, and 1-1/2-inch stainless steel tube brushes	Cleaning threads on plugs and ports	
3/8-inch T-handle Allen wrench x 2, 3/8-inch Allen head socket with 3/8-inch drive	Removing locking ring bolts	
Lint-free rags	Cleaning surfaces as required	
1-inch Allen wrench, 1-inch Allen head socket with 3/8-inch drive	Remove/install plugs	
Spray bottle (1 quart)	Applying alcohol when cleaning surfaces	
Argon	Purge gas	
Nitrogen/compressed air	Lid removal	
Helium (welding grade)	Leak testing	
Vacuum grease	Lubricate O-rings	
Thread-locking compound (Locktite 222)	Threaded surfaces	
Nickel-bearing lubricant	Threaded surfaces	
Alcohol, denatured	Cleaning surfaces	
Stretch wrap, 60-gauge, up to 22-inch	Wrap drum payload	
Emery cloth, 400-600 grit	Smooth surfaces	
Torque paint	Threaded fasteners	
Wooden or nylon tools	O-ring removal	

Table 1.2 - Recommended User-Supplied Tools, Equipment and Consumables

Item	Application	✓
O-rings (National, Buna-N, #AS-568-914, #AS-568-912, #AS-568-916, and #AS-568-015, and Parker, Buna-N, #3-905, 10 ea. suggested)	Leak/Seal Check/Detection Tools	
Keensert installation tools (PN TD-420L and PN TD-813L)	Locking ring bolt insert thread repair	
Rubber gloves	Cleaning	
Load-stabilizing jack (McMaster-Carr #8817T21 or equivalent)	Stabilize freestanding trailers	
Tamper seal (American Casting and Manufacturing Corp., 51 Commercial Street, Plainview, NY 11803, 516-349-7010)	Seal package for shipment	
Standard Waste Boxes, Ten-Drum Overpacks, and pipe components may be procured through the WIPP Centralized Procurement Program. Pipe components must meet the requirements of the 10 CFR Part 71 QA program. Vendor qualifications should be reviewed prior to placing orders.	Payloads	
Drum bumpers (3M Bumper Protective Product, resilient rollstock, item number SJ5816, black, 1-1/16 in. thick 70 Durometer with R-30 adhesive) Supplier: RS Hughes, 3700 B Singer Blvd., Albuquerque, NM 87109.	Drum payloads	
Tools, equipment, and spare parts are listed in WP 08-PT.01, Standard Waste Box Handling and Operation Manual; and WP 08-PT.02, Ten-Drum Overpack Handling and Operation Manual. These documents are available on the Internet at http://www.wipp.ws/library/caolib.htm.	SWB/TDOP Payloads	

Figure 1.1 - CH Packaging

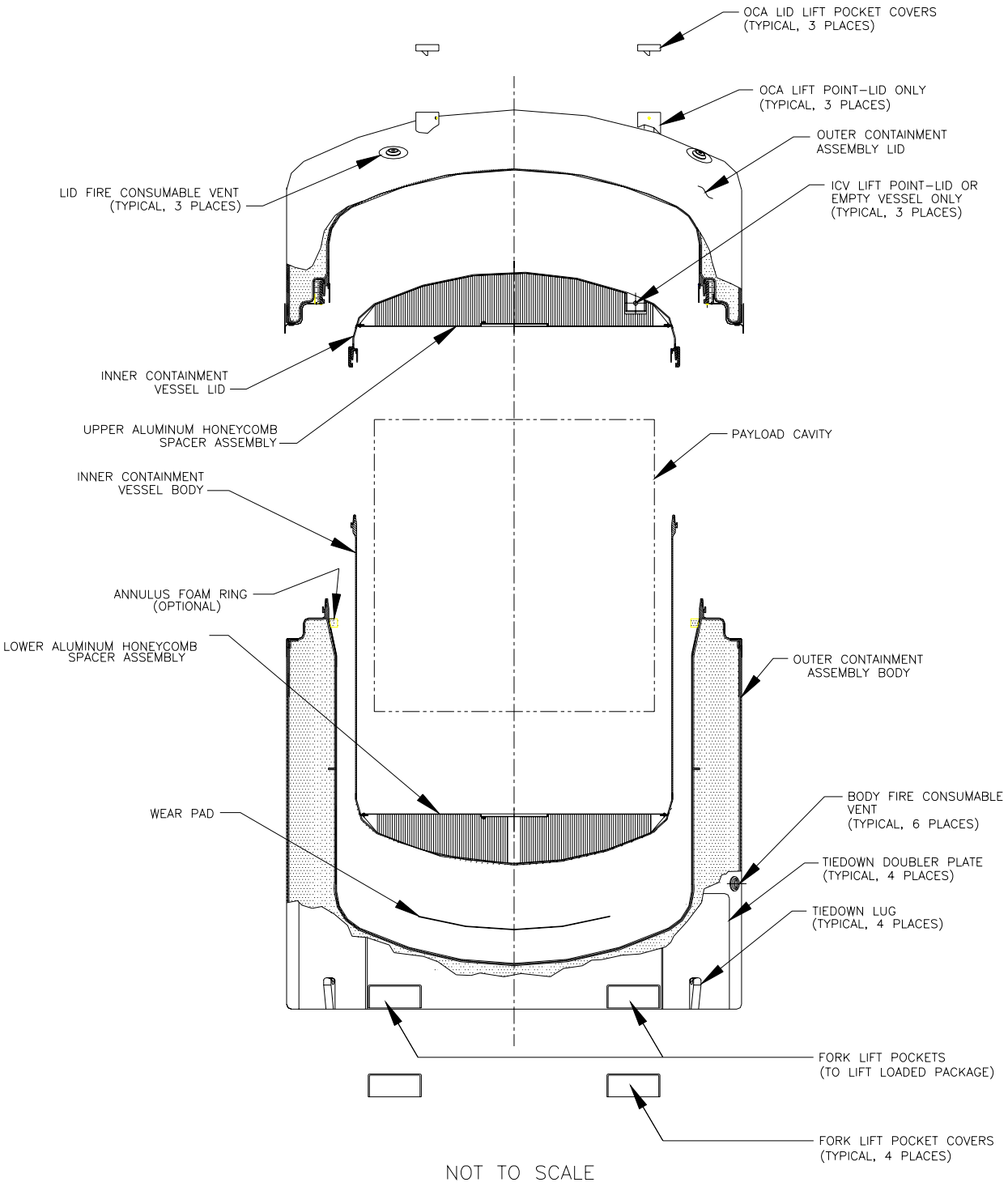
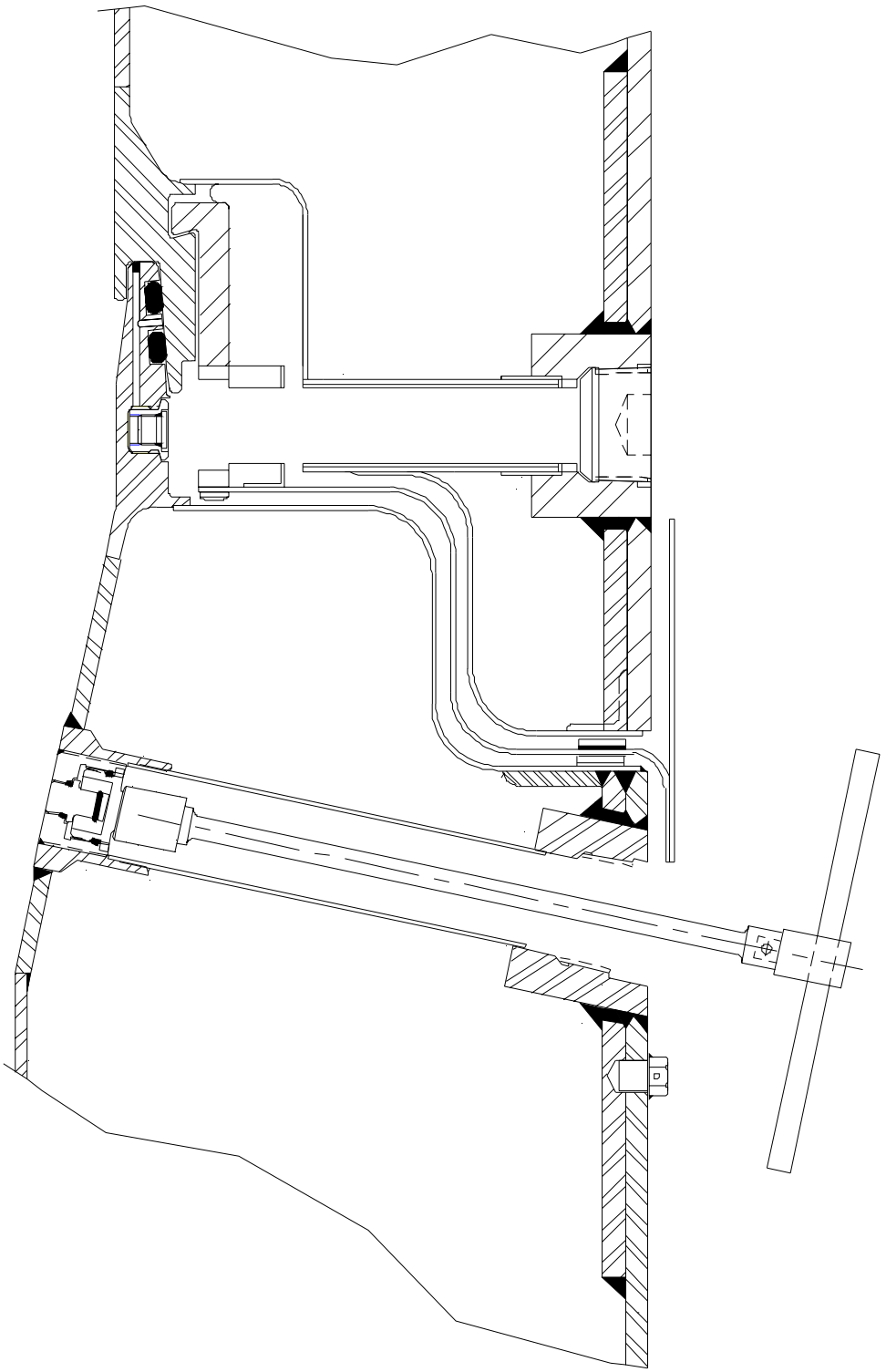
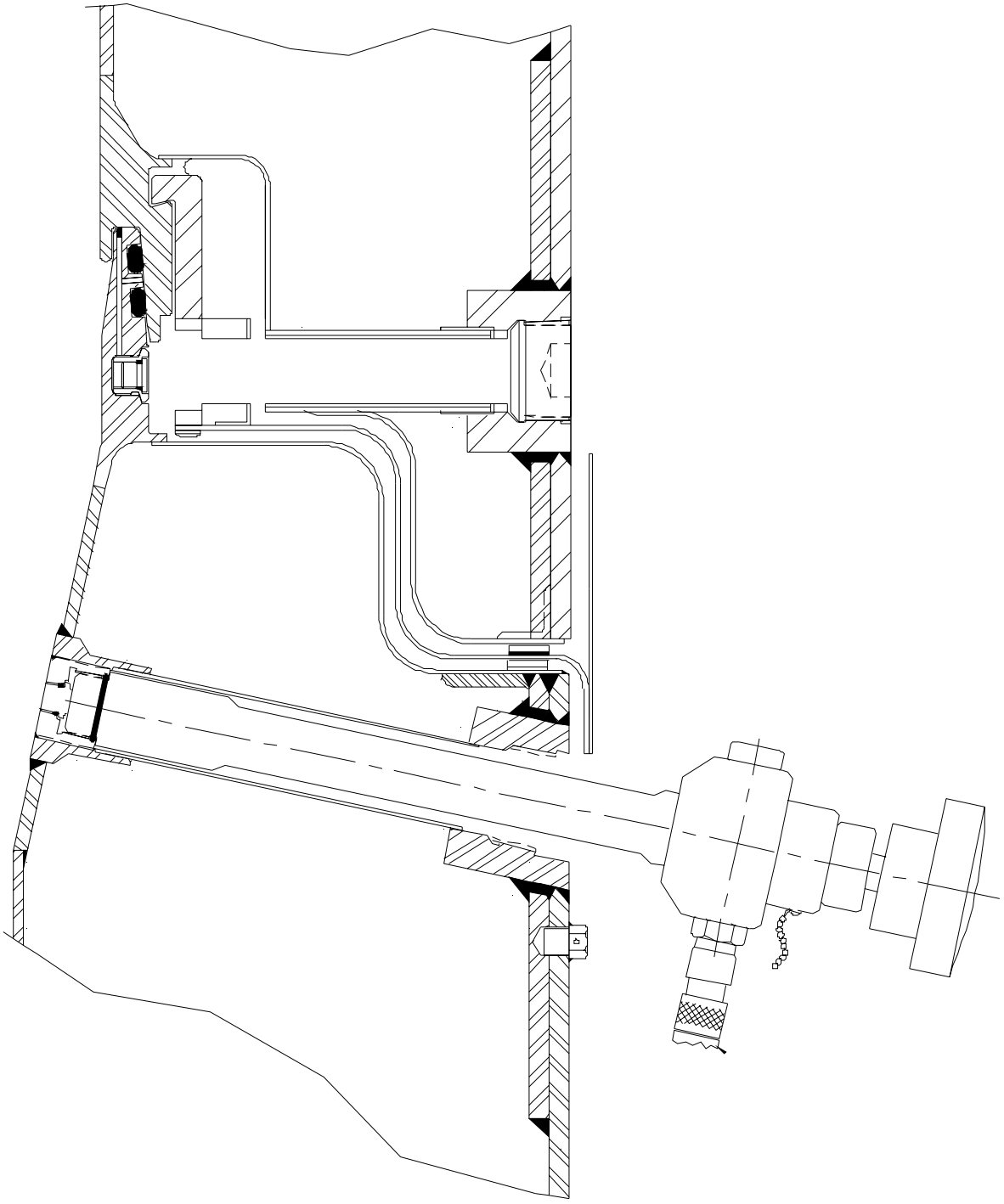


Figure 1.2 - ICV/OCV Vent Port Cover Removal Tool (2077-092-A1)



Not to scale

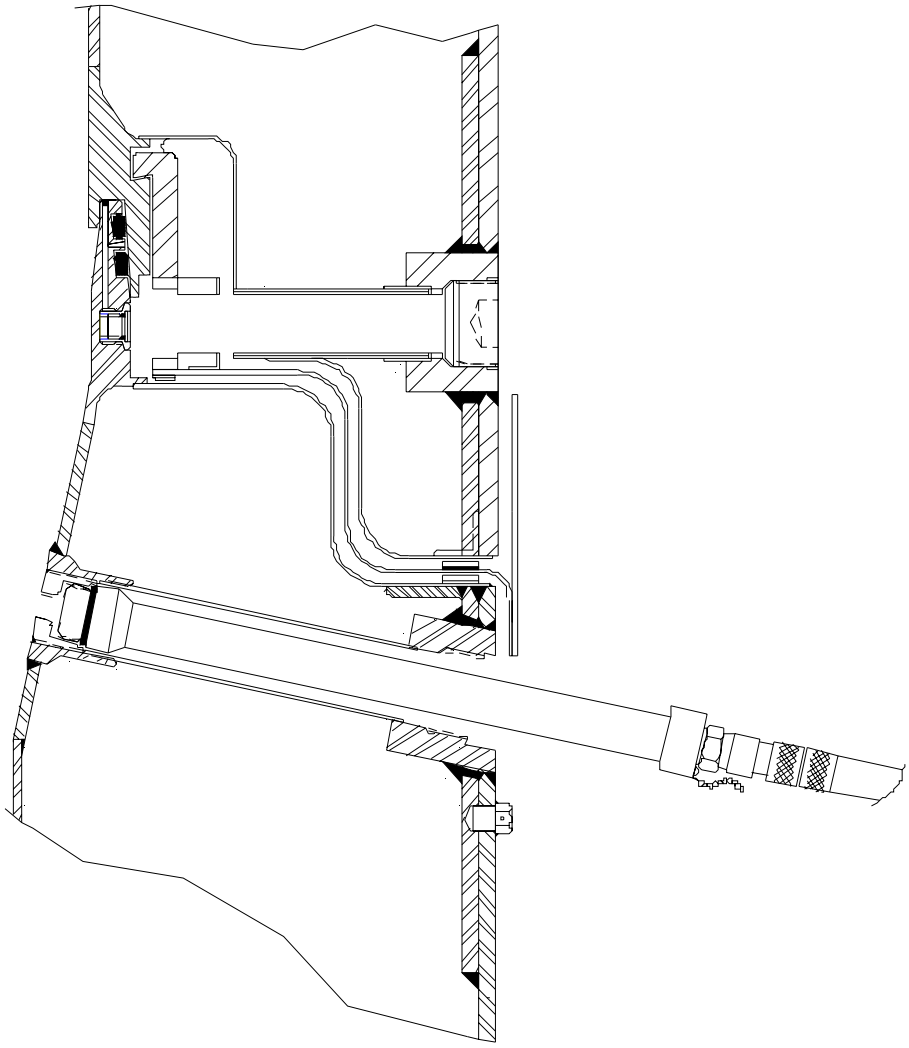
Figure 1.3 - OCV Vent Port Plug Removal/Pressure Relief Tool (2077-091-A2)



Not to scale

Note: Uses National O-ring, Buna N, Part #AS-568-914, #AS-568-912, and #AS-568-015

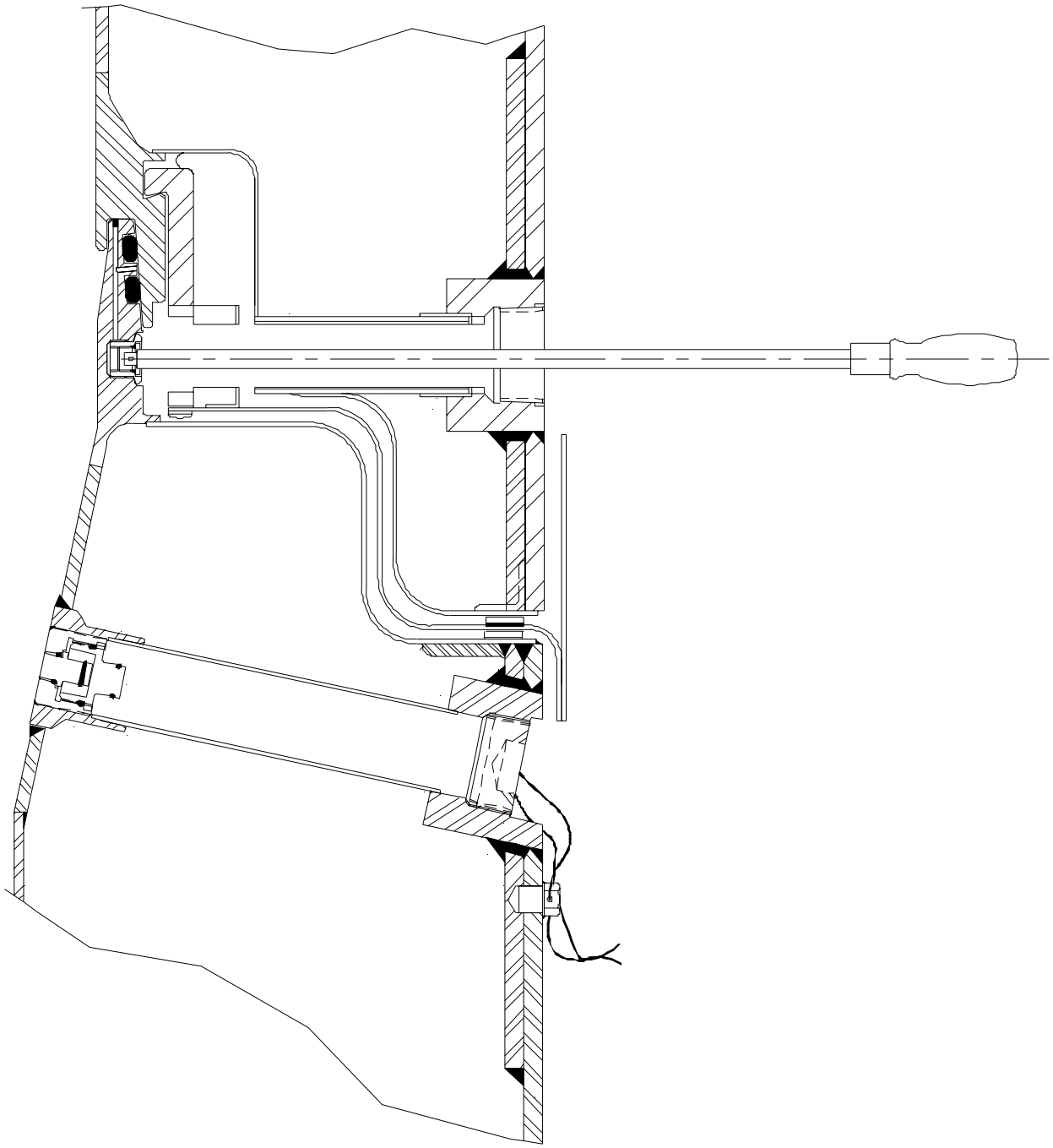
Figure 1.4 - OCV Leak Detection Tool (2077-095-A1)



Not to scale

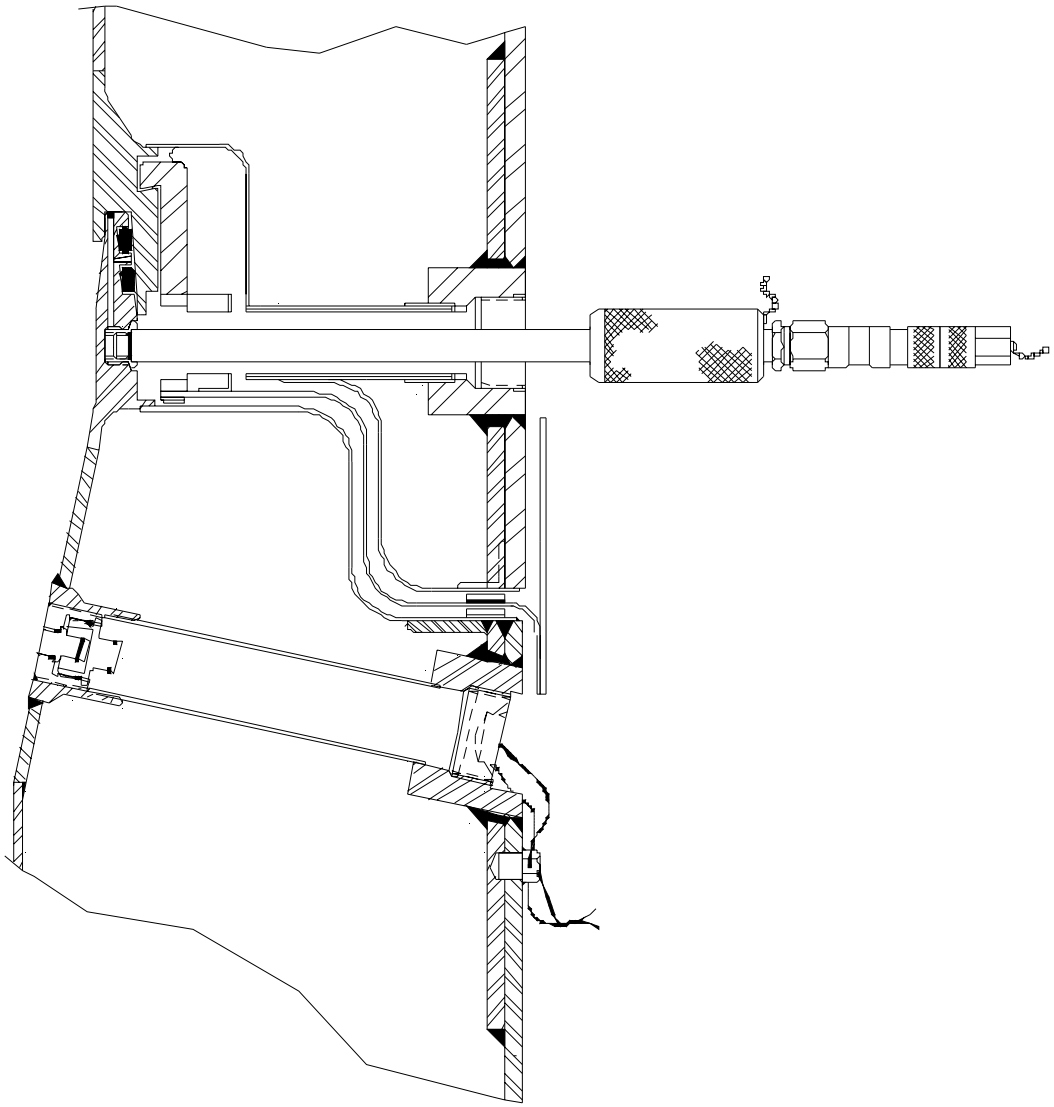
Note: Uses National O-ring, Buna N, Part # AS-568-914

Figure 1.5 - OCV Seal Test Port Plug Installation/Removal Tool (2077-094-A1)



Not to scale

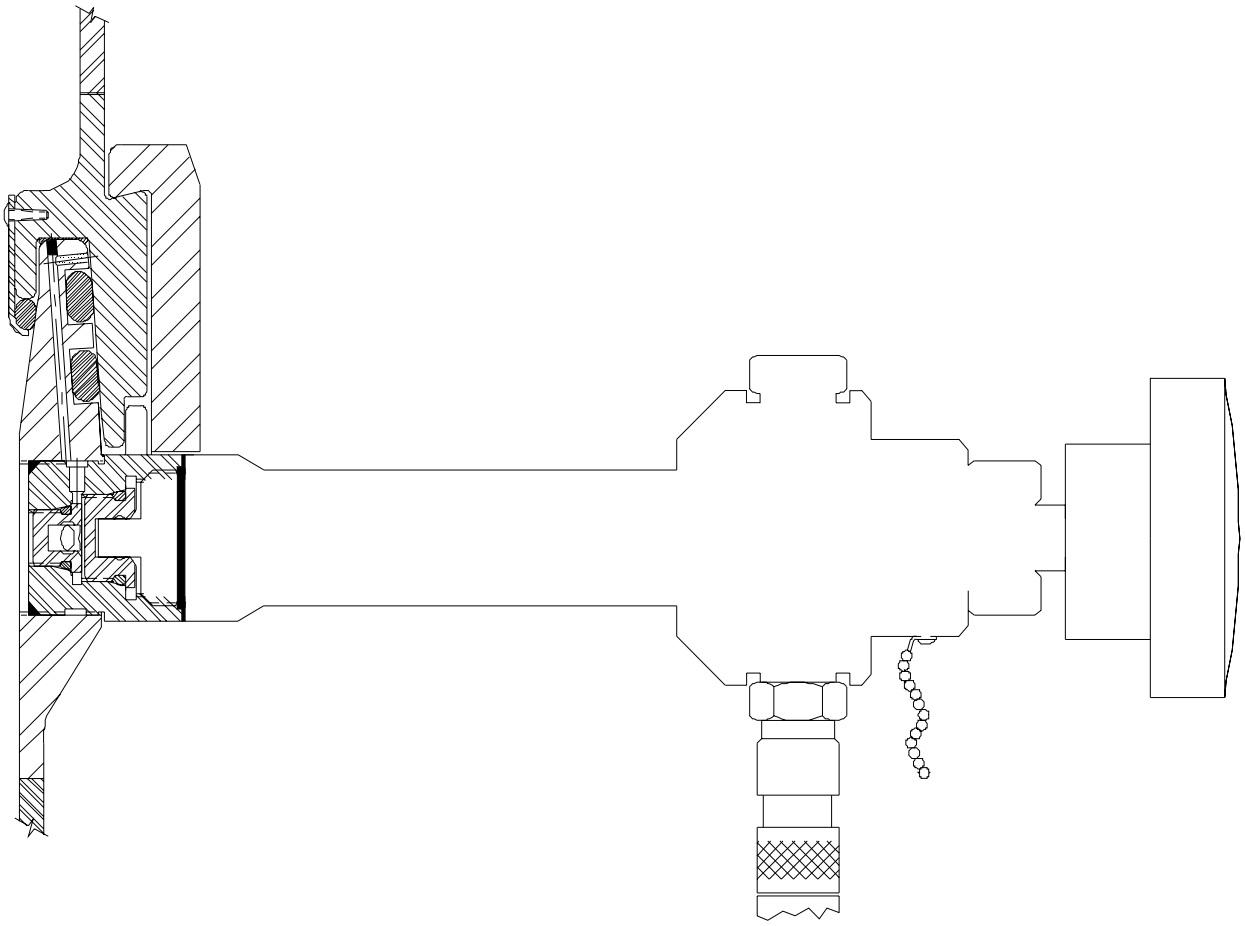
Figure 1.6 - OCV Seal Leak Check Tool (2077-093-A2)



Not to scale

Note: Uses Parker O-ring, Buna N, Part # 3-905

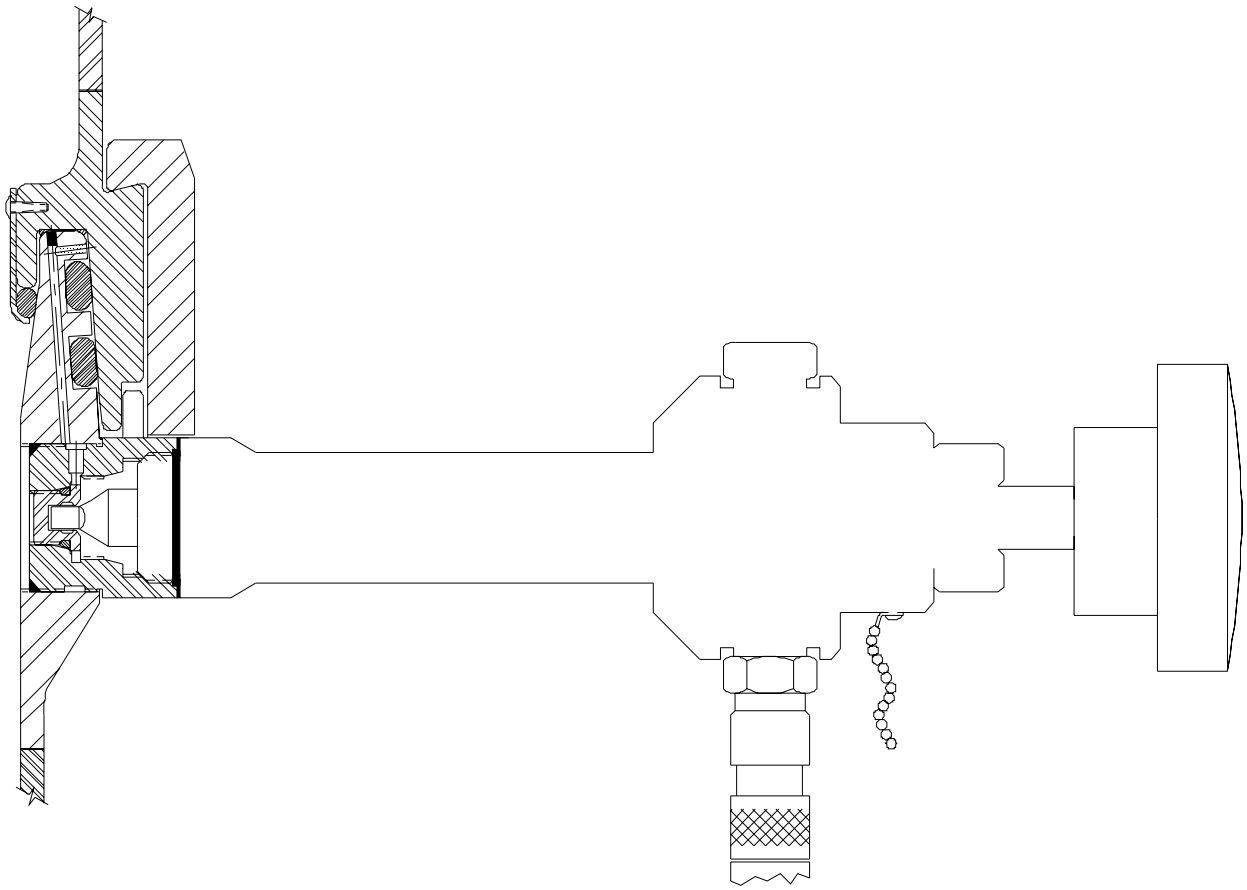
Figure 1.7 - ICV Vent Port Plug Removal/Pressure Relief Tool (2077-091-A1)



Not to scale

Note: Uses National O-ring, Buna-N, Part # AS-568-916 and # AS-568-015

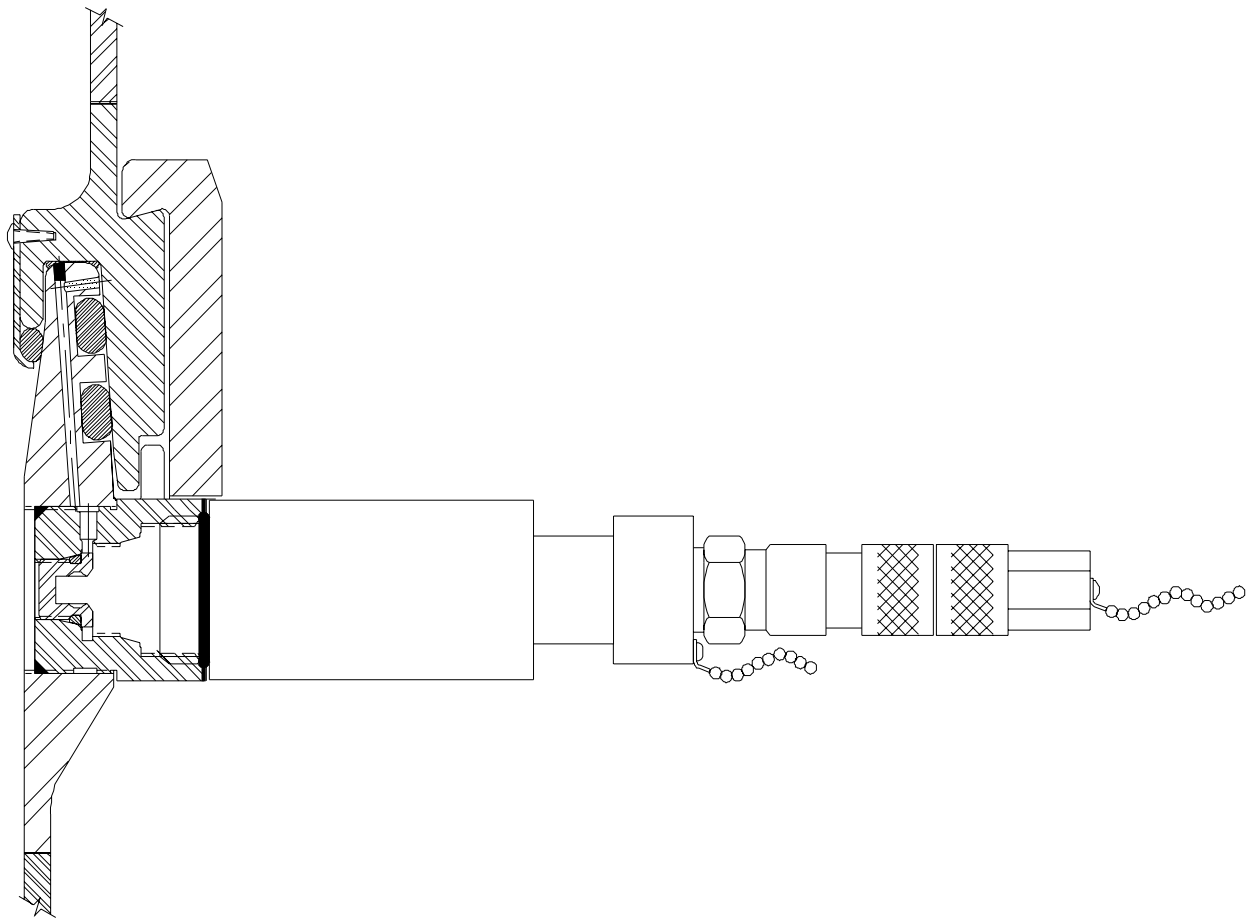
Figure 1.8 - ICV Vent Port Plug Removal/Pressure Relief Tool with Adapter (2077-091-A1 and 2077-091-24)



Not to scale

Note: Uses National O-ring, Buna-N, Part #AS-568-916, #AS-568-914 and #AS-568-015

Figure 1.9 - ICV Leak Detection Tool (2077-095-A2)

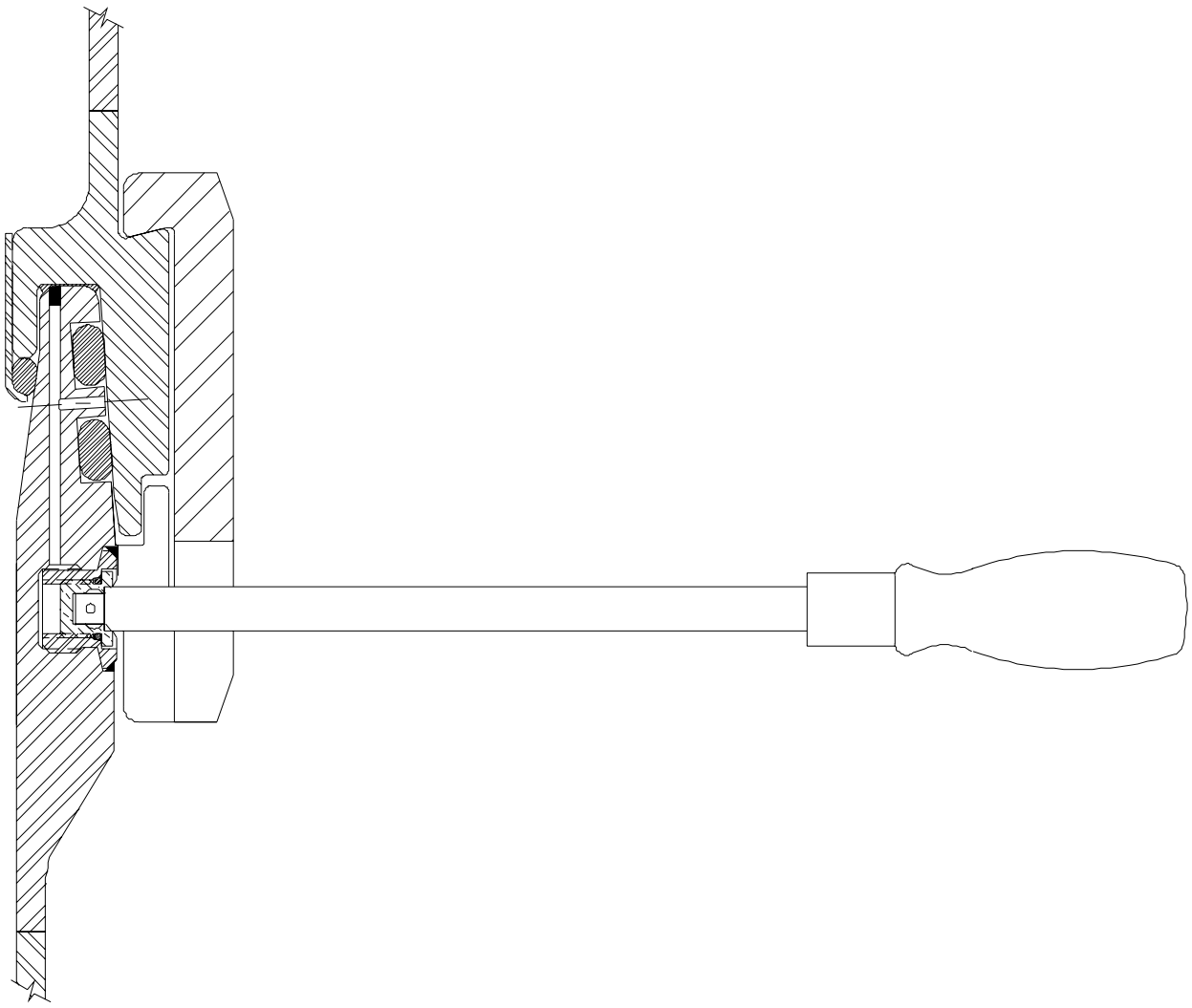


Not to scale

Note: Uses National O-ring, Buna-N, Part # AS-568-916

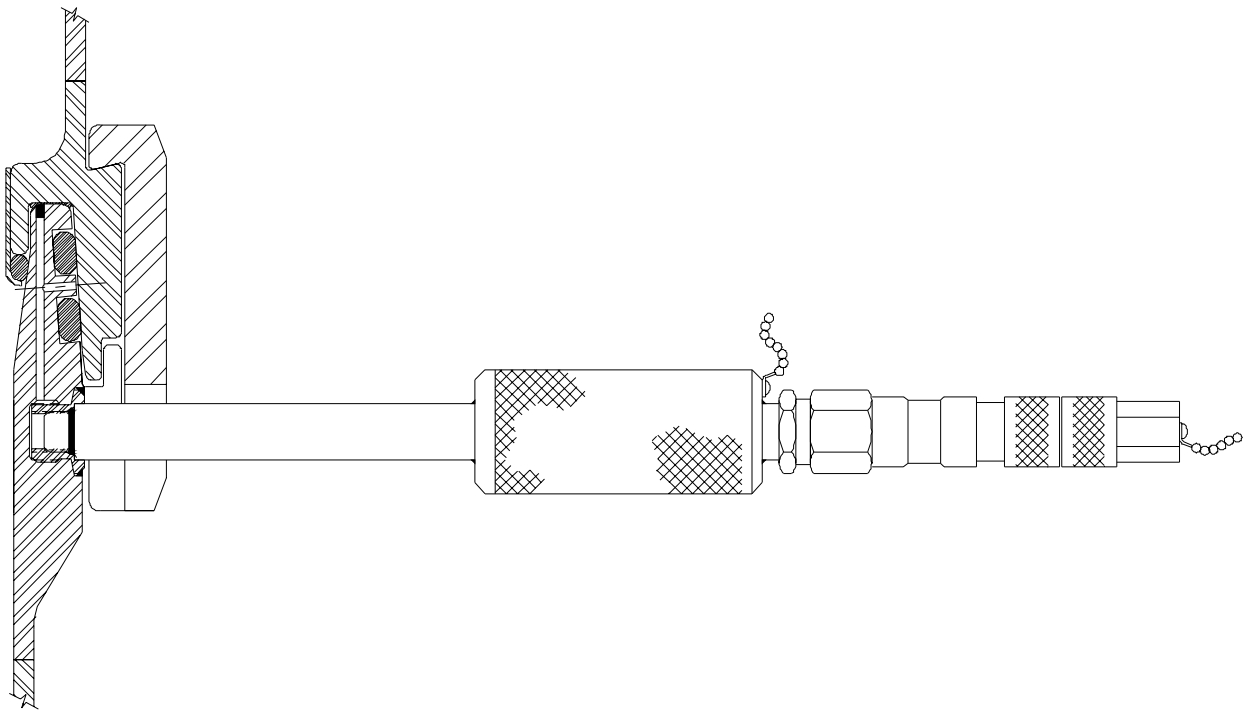
Figure 1.10 - ICV Seal Test Port Plug Installation/Removal Tool (2077-094-A2)

Not to scale



Note: Proto brand tools should be used to ensure proper fit.

Figure 1.11 - ICV Seal Leak Check Tool (2077-093-A1)



Not to scale

Note: Uses Parker O-ring, Buna-N, Part # 3-905

Figure 1.12 - ICV Components

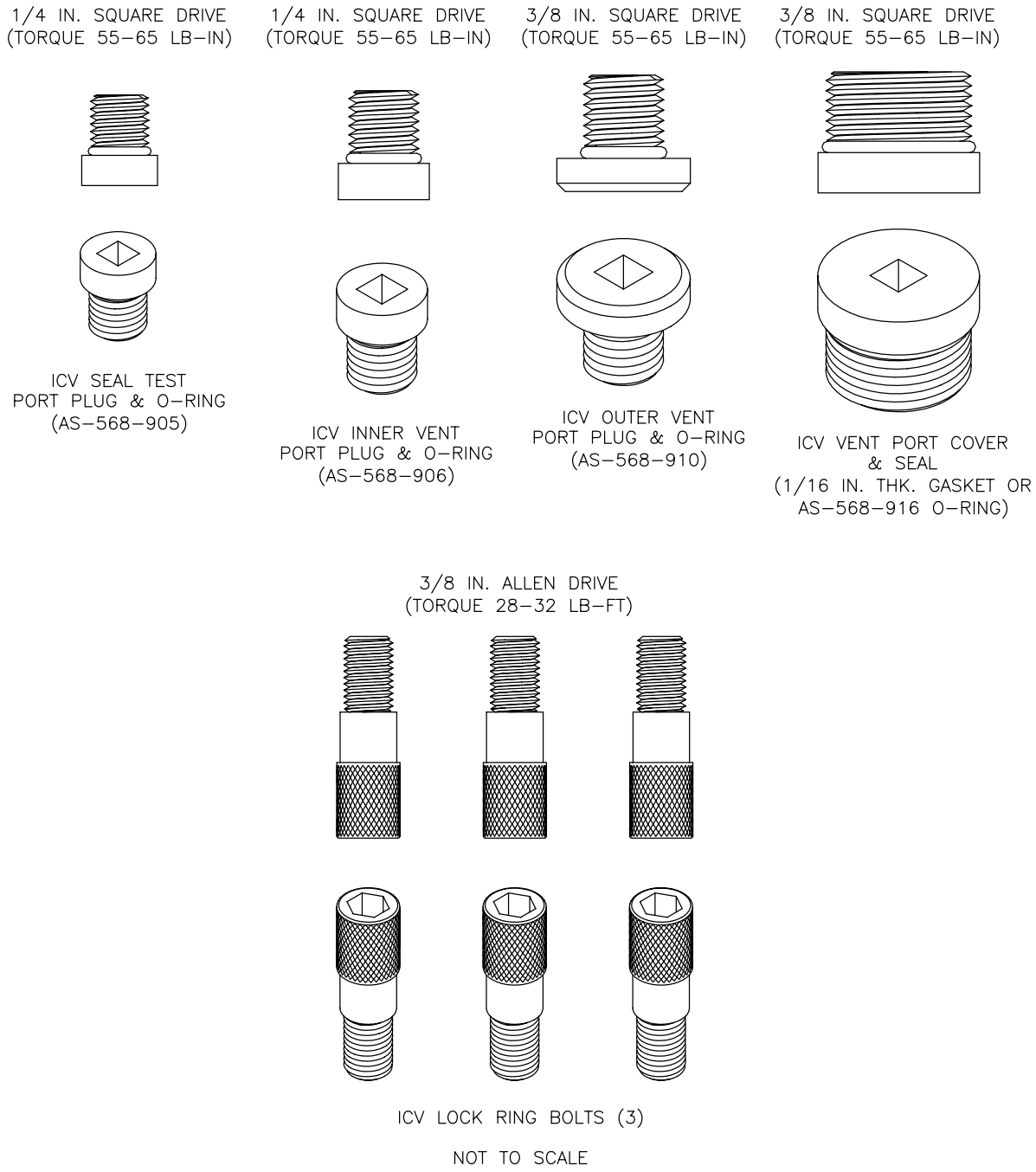
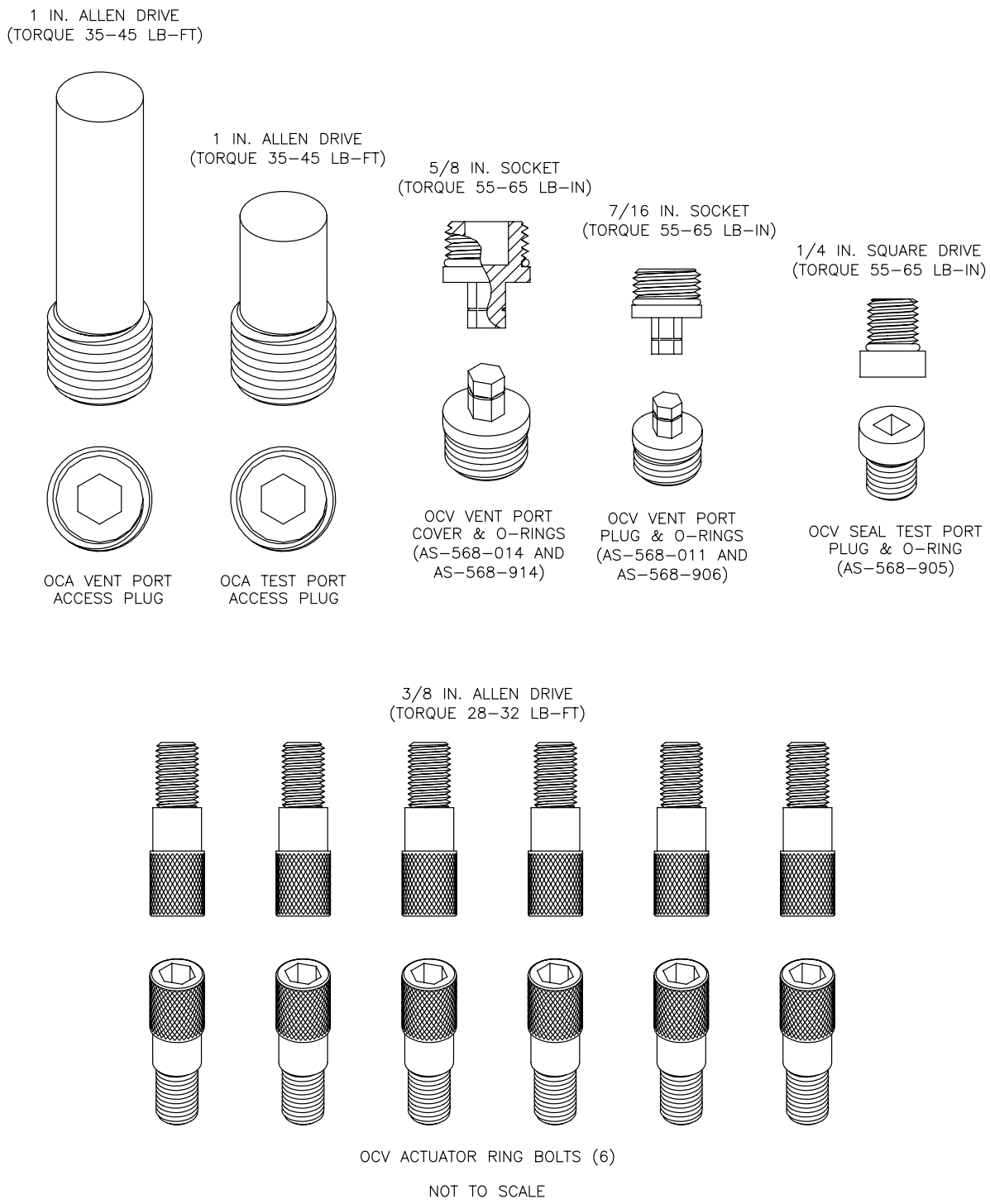


Figure 1.13 - OCA/OCV Components



1.6.6 Spare Parts/Bench Stock

Table 1.3 lists the spare parts that support replacement of packaging components during routine operations. Levels of supply are based on historical data relating to the frequency of usage of packaging and are expressed in terms of the quantity of parts that should be on hand with minimum/maximum levels to be stocked. A bench stock inventory shall be conducted quarterly to determine shortages. Replacements will be provided by the WIPP M&O contractor CH Packaging Maintenance Engineer. All items shall be checked against their listed shelf life. The on-hand and needed columns may be used to conduct inventories. Inventory data shall be sent to the WIPP M&O contractor CH Packaging Maintenance Engineer quarterly (at the end of March, June, September, and December) for parts replacement. Sites are responsible for notifying the WIPP M&O contractor when spare parts are needed.

Figures 1.12 and 1.13 show ICV and OCV parts. As parts are removed from the packaging, they should be placed on the shadow board. A laminated copy of these figures placed behind the shadow board will assist in parts accountability and identification.

Table 1.3 - Spare Parts (Bench Stock)

Description	Part No.	P.O. No.	Min/ Max	On Hand	Needed
ICV/OCV seal test port plug	156-07		1-3		
ICV outer vent port plug	156-09		1-3		
ICV inner vent port plug	156-10		1-3		
ICV vent port cover	156-11		1-3		
OCA seal test port access plug	156-12		1-3		
OCA vent port access plug	156-13		1-3		
OCA test port thermal plug (foam)	156-14		1-3		
OCA test port thermal plug (ceramic paper)	156-14A		1-3		
OCA vent port thermal plug (foam)	156-15		1-3		
OCA vent port thermal plug (ceramic paper)	156-15A		1-3		
OCV vent port plug	156-17		1-3		
OCV vent port cover	156-18		1-3		
Annulus debris seal	156-21		1-2		
ICV locking ring bolt	156-A1		1-6		
OCV locking ring bolt (HalfPACT)	156-A1		1-6		
OCV locking ring bolt (TRUPACT-II)	156-A1 or 156-A2		1-6		

Table 1.3 - Spare Parts (Bench Stock)

Description	Part No.	P.O. No.	Min/ Max	On Hand	Needed
OCV locking Z-flange screw	160-13		2-10		
OCA lid guide plate screw	160-14		2-10		
OCV upper main O-ring	160-15		3-15		
OCV vent port cover O-ring	160-16		5-10		
OCV vent port plug O-ring	160-17		5-10		
OCV vent port plug handling O-ring	160-18		5-15		
OCV vent port cover handling O-ring	160-19		5-15		
OCV lower main O-ring	160-24		3-15		
OCV seal test port plug O-ring	160-26		5-10		
Ceramic fiber gasket	160-27		1 roll		
ICV/OCV locking ring bolt threaded insert	160-28		1-6		
OCA forklift pocket cover threaded insert (for sites that remove packaging from trailer)	160-29		1-2		
OCA forklift pocket screw	160-30		2-10		
OCA forklift pocket washer	160-31		2-10		
OCA lid lift pocket tube	163-02		1-3		
OCA lid lift pocket tube attachment screw	163-03		1-6		
Lift pocket washer	163-04		1-6		
OCA lift pocket cover fastener	163-05		1-6		
OCA lift pocket cover plate	163-06		1-6		
OCA lift pocket cover lanyard	163-07		1-5		
OCA lift pocket cover plate screw	163-08		2-10		
OCA lift pocket cover nut	163-09		2-10		
OCA lift pocket cover clip	163-10		1-6		
Burn out plug	170-06		1-3		
Forklift pocket cover, right side	171-11		1-2		
Forklift pocket cover, left side	171-12		1-2		
ICV upper and lower spacer washer	180-06		1-6		
ICV upper main O-ring	180-09		3-15		
ICV lower spacer screw	180-10		2-10		
ICV wiper O-ring holder driver screw	180-11		5-10		

Table 1.3 - Spare Parts (Bench Stock)					
Description	**Part No.**	**P.O. No.**	**Min/ Max**	**On Hand**	**Needed**
ICV vent port cover seal (gasket)	180-16		3-15		
ICV vent port cover seal (O-ring)	180-16A		3-15		
ICV lower main O-ring	180-19		3-15		
ICV upper spacer screw	180-20		3-15		
ICV outer vent port plug seal	180-21		3-15		
ICV inner vent port plug seal	180-22		5-10		
ICV fastener, ICV upper and lower spacer	180-23		1-6		
ICV seal test port plug O-ring	180-24		5-10		
ICV lid debris seal	180-25		1-2		
ICV lid debris seal tape	180-26		1-2		
ICV wiper O-ring seal	180-27		1-2		

1.6.7 Transport Trailer

The transport trailer is designed to transport loaded packages. Air-ride suspension trailers are designed with a goose neck that is equipped with a standard king-pin arrangement.

Each trailer is equipped with tie-down devices used for securing packages to the trailer (four tie-downs for each package). The tie-downs include adjustable length bolts that interface with and clamp down on corresponding lugs on the packaging.

There are two types of tie-downs; cam handle tie-downs and screw jack tie-downs. Either type can be used with either TRUPACT-IIs or HalfPACTs.

WP 08-PT.04, CH Packaging Trailer O&M Manual, provides descriptions and information on operation and maintenance of the transport trailers and the two types of tie-downs used. This document is available on the Internet at http://www.wipp.ws/library/caolib.htm.

2.0 GENERAL REQUIREMENTS

2.1 Records Maintenance

Packaging users must comply with 10 CFR §71.91 regarding records. Specifically, records regarding inspections, tests, and maintenance must be retained for a period of three years after the life of the package to which they apply. Records relating to each shipment must be maintained for a period of three years after the shipment.

All records of maintenance activities performed on the packaging shall be forwarded to the WIPP M&O contractor for retention (see Section 5.6.2). Records are designated as QA records.

2.2 Document Distribution

Upon completion, original maintenance records and copies of supporting documentation shall be transmitted to the WIPP M&O contractor CH Packaging Maintenance Engineer, P.O. Box 2078, Carlsbad, NM 88221, and become a part of the CH packaging system record.

Users preparing the maintenance records shall retain a copy for their files.

The work instructions should be used as a checklist. Data attachments to the work instructions **must be** transmitted to WIPP with the original CH packaging maintenance record, unless stated otherwise in the work instruction.

2.3 Approved Work/Periodic Maintenance Instructions

Periodic and unscheduled maintenance tasks shall be accomplished using approved work instructions and/or one-time use repair procedures.

Approved work and periodic maintenance instructions are listed in Attachment B, Approved Work Instructions. These are available on the internet at: http://www.wipp.ws/library/t2omi/t2omi.htm. Completed originals will be filed with and become part of the record package. For approved work instructions intended for one-time use (either the WIPP M&O contractor or vendor-generated), the original will become part of the record package. Users are responsible for ensuring that they have the latest approved version.

2.4 Material Control

All initial and replacement packaging components are procured by WIPP and shall be verified as complying with applicable material requirements as specified in SARP drawings. Inspection reports, certified material test reports, and material certificates of conformance shall be maintained by the WIPP M&O contractor.

Spare parts will be furnished by the WIPP M&O contractor. The parts package will be labeled with part number, description, WIPP purchase order number, and shelf-life expiration date, if applicable. Users will segregate and store parts by part number. Parts having the same part number but different purchase order numbers shall be segregated to maintain their individual traceability to the source purchase order. Site bench stock will be maintained at levels consistent with that shown in Table 1.3. Shelf life should be examined prior to issue of O-rings, with priority of issue given to O-rings with the shortest remaining shelf life. Shelf life should also be considered when conducting inventories and requesting additional stock.

All replaced (used) components should be disposed of in accordance with site procedures. If return of used components is deemed necessary for analysis, usage trends, or investigation, a formal request for return will be issued to user sites.

2.5 Quality Assurance Requirements

A QA program, meeting controlling functions of the applicable 18 criteria of 10 CFR Part 71, Subpart H, shall be in place at the loading and unloading facilities as defined by DOE Order 460.2, "Departmental Materials Transportation and Packaging Management." Annex 2 of the NRC Regulatory Guide 7.10 shall be used as a guideline. These requirements also apply to maintenance, repair, replacement, and/or modifications, as approved by the owner.

Existing QA programs may be used to satisfy the above requirements provided a review has been made as to its applicability to the scope of activities performed by each participant. It is the responsibility of the involved participant to obtain approval of their QA program from the appropriate DOE Field Office.

2.6 Training Requirements

Users shall have the responsibility for a training program specific to this work scope to ensure that qualified personnel, experienced in their assigned tasks, satisfactorily perform maintenance, nondestructive testing, leak testing, component replacement, and related operations. To ensure uniformity of training, Attachment C, CH Packaging Qualification Requirements, is included and provides the **minimum** requirements that must be included in site qualification cards for those sites which use the packaging. Users may supplement these requirements as appropriate.

Leak test personnel shall meet the requirements of the American Society of Nondestructive Testing (ASNT) Recommended Practice No. SNT-TC-1A, June 1980 edition and supplement.

2.7 Maximum Packaging Weights

The maximum gross shipping weight of a TRUPACT-II shipping package is 19,250 lb.

The maximum gross shipping weight of a HalfPACT shipping package is 18,100 lb.

The maximum allowable gross shipping weight for three loaded packages, including the tractor and trailer, is 80,000 lb. The WIPP Waste Information System (WWIS) Packaging Reference Data Table may be used to obtain packaging weights.

Payload weight limits are listed in the CH TRAMPAC and DOE/WIPP 02-3122, *Contact-Handled Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant* (WAC).

2.8 Forklift Specifications

Forks shall have a minimum bearing area of 960 square inches (two forks, 8 inches wide by 60 inches long). The forks shall be at the minimum spread to ensure that the package is centered with respect to the direction of the forklift. Forklift capacity must equal or exceed 10 tons at 48 inches.

Bumper pads should be provided on the face of the forklift if tip-back is used. A suitable bumper pad would be a 62-inch long, 24-inch high stainless steel plate with a 48-inch radius. A thin pad of neoprene, rubber, or similar material would further preclude damage. The bumper should be located at the upper surface of the fork tine at the appropriate angle to the face of the forklift.

2.9 Shipping Requirements

When shipping an empty package to WIPP, a copy of the radiation and contamination survey and survey map (internal [if opened] and external) performed when the packaging was last closed will be faxed to the WIPP M&O contractor Radiological Control at (505) 234-8963, or 234-6030 (Shipping Coordination), prior to departure.

2.10 Shipment Scheduling

Package shipments are coordinated by the WIPP M&O contractor. Once agreed upon by the shipping site traffic manager and the representative, the WIPP M&O contractor will enter the advance shipment schedule into the DOE TRANSCOM satellite-based shipment tracking system. Based on this schedule, the shipper is responsible for entering the bill of lading into TRANSCOM at the time of shipment. Prior to departure of the shipment, the shipper is required to change the Designated User in the TRANSCOM bill of lading to that of the WIPP Central Monitoring Room. In addition, only shipments approved in the WWIS shall be accepted for transport to WIPP.

2.11 Nonconformance Reports

Conditions encountered during operation or inspection of the packaging, excluding those that are correctable using the work instructions in Attachment B (that can be corrected by packaging users), shall be brought to the attention of the WIPP M&O contractor Packaging Engineer for resolution, and shall be entered into the Computerized History and Maintenance Planning System (CHAMPS). An evaluation of the noted condition will be performed to determine whether a Condition Adverse to Quality (CAQ) exists. If a CAQ exists, the packaging shall be controlled to prevent further use until either dispositioned to "use as is" or until the problem is corrected. A nonconformance report shall be issued when a CAQ exists.

3.0 PAYLOAD PREPARATION

The CH Packaging Operations Manual for the payload assembly is available on the internet at http://www.wipp.ws/library/t2omi/t2omi.htm. Users are responsible for ensuring they are using the current revision and change notice.

4.0 PACKAGE OPERATING INSTRUCTIONS

The CH Packaging Operations Manual is available on the internet at: http://www.wipp.ws/library/t2omi/t2omi.htm. Users are responsible for ensuring they are using the current revision and change notice.

The remainder of this section provides users the benefit of lessons learned when using CH packaging. The user should note that many of the techniques are intentionally **NOT** included in DOE/WIPP 02-3184, *CH Packaging Operations Manual*, unless they affect safety.

4.1 General Information on Section 4.0

Should users decide to prepare their own site-specific procedures, they need only address the functions performed at their site. If fixed loading facilities are used, the user need not include removal of the packagings from the trailer. If only empty packagings are received, there is no need for a procedure on receipt of packages. Each site must have a program in place to accept return shipments from WIPP. DOE/WIPP 02-3184 may always be used as an authorized operating procedure.

Section 4.3 includes applicable notes and cautions associated with packaging operations with which a user should be familiar.

4.2 Operating Tips and Techniques

The following information is provided as guidance in CH packaging operations and testing. It provides supporting information to DOE/WIPP 02-3184.

4.2.1 Unloading a Package from a Trailer

Trailer tie-down guidance is provided in WP 08-PT.04, CH Packaging Trailer O&M Manual. This document is available on the Internet at http://www.wipp.ws/library/caolib.htm

When using a forklift in conjunction with the packaging, the fork tines must fully engage the pockets. This, however, does not imply contact between the fork uprights and the packaging exterior. In addition, it is necessary to keep the package level to prevent damage to the exterior surface.

4.2.2 OCA/ICV Lid Removal

Before unlocking the OCA lid, the alignment of the seal test port, in relation to the lid, must be checked to verify that the seal test tool can be installed with no binding. In the event the alignment is not correct, the lid should be temporarily marked to show the proper orientation of the locking ring when aligned correctly. This marking can then be used to realign the locking ring after the lid has been removed and is on the lid stand.

The ACGLF legs must be verified to be locked into the load/lift fixture prior to placing any load weight on the ACGLF. The legs are locked when the green LOCKED lights

are **ON** and the amber UNLOCKED lights are **OFF** at the ACGLF console. Verify the legs physically rotate when the leg Lock/Unlock switch is engaged in either position.

The ACGLF counterweights should be used to assist in the removal of OCA and ICV lids. Rotating the weights clockwise, and/or counterclockwise, while placing tension on the crane will allow the operator to remove a lid.

When the ACGLF is used properly, the lid will shift toward the high point, compensating for an uneven lift. This is done when the weights are rotated toward the area of the lid that is at the highest point. After the weight shift has occurred, the lid can be lifted normally by repositioning the weights to the 180˚ and 000˚ positions and continuing with the upward motion of the crane. The lids must be lifted with a straight (vertical) pull; side pulls are not allowed.

In the event the ICV has rotated within the OCV during shipment, the following corrective actions can be implemented. The operator can lift an empty ICV with the ACGLF and crane, and reorient it to the required position, or insert the T-handles into the slots and rotate the ICV as necessary. When the ICV is loaded, the T-handles must be inserted into the slots and the ICV rotated as necessary.

When OCA and ICV lid component parts are removed from their installed positions, they should be placed in a tray that includes a full-scale picture or drawing of all parts. There should be space to set each part in front of its associated picture to allow for easy identification of what parts have and have not been removed during the lid removal process. This tray should also provide for the segregation of OCA parts from ICV parts.

The operator should verify that the proper T-handles are being used for the respective lids. The ICV T-handles have a longer shaft on the pins than the OCA T-handles due to the difference in thickness between the locking rings. If the ICV T-handles are used in the OCA locking ring there will be excessive play, which creates the potential for damaging the locking ring.

In addition to the T-handles, there are locking ring tools which are extensions to aid the operator in the rotation of the locking rings. They provide additional leverage and control to prevent slamming the locking ring up against the stop tabs. These tools should be used for all locking ring manipulations to minimize the possibility of damage to the locking ring stop tabs.

After evacuating the OCV or ICV, the associated vent port tool must be removed. This must occur prior to lifting the lid to prevent damage to the tool, the locking ring, the lid and/or the body of the package during lid removal. It also facilitates thread inspections, and allows the cavity to return to atmospheric pressure in less time because the vent port has a larger opening than the vent port tool adaptor.

It may be necessary to hold the vent port tool to prevent the rotation of the ICV body when rotating the ICV locking ring. If this is done, the operator **must** hold the tool at the base (i.e., closest to the body). If the tool is held at the end by the rotating handle, the lateral stresses being applied could break the tool.

When lifting the OCA lid, verify through the use of a load cell that the load exerted on the lift pockets does not exceed 7,500 lb. (Load cell indication of 10,000 lb minus the weight of the ACGLF @ 2,500 lb=7,500 lb load.) An indication of 10,000 lb or greater may mean the lid is binding.

When lifting the ICV lid, verify through the use of a load cell that the load exerted on the lift pockets does not exceed 5,000 lb. (Load cell indication of 7,500 lb minus the weight of the ACGLF @ 2,500 lb=5,000 lb load.) An indication of 7,500 lb or greater may mean the lid is binding.

4.2.3 Inspections and Cleaning

The alignment of the seal test port with the OCA lid must be verified prior to reinstalling the lid. If necessary, the locking ring can be realigned, with the lid on the stand, using the marks made on the lid prior to unlocking and removal. Using the OCA T-handles, three operators located around the circumference of the lid can lift slightly and evenly on the locking ring and rotate it in the required direction to realign the seal test port.

When applying the vacuum grease to the threads of the plugs and covers, and their associated O-rings, the term "very light coat" should be understood to mean no more than what is necessary to give the O-rings a glossy appearance or the threads a dull appearance.

O-rings are considered clean when they are absent of free standing vacuum grease, dirt, debris or other foreign matter. Vacuum grease embedded in the O-ring is acceptable.

The main O-rings should be lubricated with approximately one tablespoon of vacuum grease. When two operators (recommended) are greasing a main O-ring, they should use approximately one-half tablespoon each, or one operator should use approximately one tablespoon while the other assists in holding the main O-ring during greasing.

When applying the nickel-bearing lubricant to the threads of the access covers, bolts, and/or access ports, use only enough to give the threads a dull appearance.

Due to the leak test sensitivity, it is imperative that all sealing surfaces be cleaned thoroughly. If not, a failed leak test may result, and it will be necessary to repeat the cleaning process.

If water is found in the ICV cavity, it is necessary to remove the water by means of a wet/dry vacuum, or by entering the cavity and using absorbent materials to soak up the water. After this is accomplished, it is then necessary to remove the ICV to inspect the OCV for water, and remove the water if found. When removing the ICV, care should be taken to prevent damage to the bottom, and to verify that the ICV is placed in a safe, secure place.

4.2.4 Loading a Payload

When initially raising a payload with the ACGLF to balance it, the operator should note the counterweight positions. These positions are to be written on tape affixed to the top of the payload in the vicinity of the leg opposite the two electrical junction boxes on the ACGLF.

The payload must be balanced to minimize the possibility of damage to the interior of the ICV. Care should be exercised to avoid hitting, scraping, or binding the payload assembly against the ICV body flange, because damage could result.

The payload must be aligned such that the center-of-gravity is in alignment with the centerline of the trailer. This is necessary to minimize the effects of an unbalanced load on the safe handling of the truck-trailer assembly when traveling over the road.

4.2.5 Unloading a Payload

Prior to removing the payload, the operator must note the counterweight positions marked on the top of the payload. This will indicate the proper orientation of the ACGLF legs and let the operator know where to position the weights for a balanced lift.

The payload must be balanced prior to being removed from the ICV to prevent damage to the interior of the ICV body.

4.2.6 ICV/OCA Lid Installation

The ICV is designed for safe operation with a full internal vacuum. However, due to the possible presence of VOCs in the payload, general operations of the ICV shall be accomplished using less than 15-inch-Hg vacuum.

An appropriate T-handle should be installed in the slots of the locking ring near the vent port to assist in aligning the lid during installation.

The operators should check for proper alignment of the unlock arrows with the seal test port arrows, and check for proper orientation of the vent port with the cutout in the locking ring during alignment of the lids. The operators must also verify that the lid is balanced when lowered. They can listen for air rushing out of the vent port to indicate that the lid has fully seated.

Care should be taken to avoid scraping the guide plates against the ICV locking ring, by ensuring that the OCA lid is centered directly over the OCA body during installation. A straight (vertical) lift shall be used; side pulls are not allowed.

When installing a lid on a packaging, it is quicker to vent the internal pressure by removing the vent port tool than to leave the tool in place and insert an adaptor. The vent port has a larger opening than the vent port tool adaptor.

4.2.7 Loading Packaging onto a Trailer

When loading packaging onto a trailer, the forklift operator is required to use a spotter at all times.

It is necessary to align the tie-down lugs with the tie-down assemblies prior to setting the packaging into place. The operator should lower the packaging slowly onto the trailer in the designated location.

The packaging designated for the #1 trailer position should be loaded first, the packaging designated for position #2 (if applicable) next, and the packaging designated for position #3 (if applicable) last. This ensures the maximum amount of operating room for the forklift operator.

Guidance for securing packaging to the trailer can be found in WP 08-PT.04. This document is available on the Internet at http://www.wipp.ws/library/caolib.htm.

The forklift pocket covers may be installed at any time after the packaging is loaded onto the trailer.

4.2.8 Lifting a Stuck Lid

The crane should be operated at the slowest possible operating speed when attempting to lift a stuck lid.

When using heat guns, it is necessary to ensure that the locking ring is heated evenly. This may require the use of more than one heat gun. The time limits are provided as a guideline to ensure the even and complete heating of the locking ring. Additional heating time may be required in colder climates.

If it is necessary to pressurize a packaging to remove a stuck lid, the Abnormal Operations Section (Section 3.0), of DOE/WIPP 02-3184 must be followed **as written** to prevent personnel injury/contamination and/or equipment damage.

Under no circumstances are the safe working limits of the crane, ACGLF, and/or any associated rigging materials to be exceeded to remove a stuck lid. To do so could result in undue stresses and damage to equipment, personnel injury, and various other costly and unnecessary occurrences.

4.2.9 Helium Leak Test Post-Test Calibration Deviation Check

The following guidance has being generated for use by personnel performing helium leak testing of the TRUPACT-II and HalfPACT. This guidance should be used in conjunction with any site specific procedures generated for helium leak testing the TRUPACT-II and the HalfPACT.

1. During the post-test calibration deviation check the current temperature of the calibrated standard leak is recorded in the post-test section of the applicable attachments.

2. Using the current temperature of the calibrated standard leak the Helium Leak Detection (HLD) operator should determine the temperature adjusted leak rate.

3. Record this value in the margin adjacent to the applicable recalibration step on the corresponding attachment for future calculation purposes.

4. With the calibrated standard leak installed on the Helium Mass Spectrometer Leak Detector (HMSLD), the HLD technician should record the helium reading displayed on the HMSLD on the appropriate section of the applicable attachment.

5. With the calibrated standard leak installed on the HMSLD, the HLD operator should close the valve on the calibrated standard leak and record the helium reading displayed on the HMSLD on the appropriate section of the applicable attachment.

6. Any difference between the value recorded in Step 4 minus itself that does not equal the value recorded in Step 5 above will be added or subtracted (as applicable) to the calibration difference. The following are provided as examples;

No Zero difference*		No Zero difference*	
HMSLD with CSL	= 5.0×10^{-8}	HMSLD with CSL	= 6.0×10^{-8}
Zero Reading	= $\underline{0.0 \times 10^{-8}}$	Zero Reading	= $\underline{1.0 \times 10^{-8}}$
Zero difference	= 0.0×10^{-8}	Zero difference	= 0.0×10^{-8}

*- Temperature adjusted leak rate is 5.0×10^{-8}

Add Zero difference*		Add Zero difference*	
HMSLD with CSL	= 4.0×10^{-8}	HMSLD with CSL	= 5.0×10^{-8}
Zero Reading	= $\underline{0.0 \times 10^{-8}}$	Zero Reading	= $\underline{0.6 \times 10^{-8}}$
Zero difference	= 1.0×10^{-8}	Zero Difference	= 0.4×10^{-8}

* -Temperature adjusted leak rate = 5.0×10^{-8}

Subtract Zero difference*		Subtract Zero difference*	
MSLD with CSL	= 6.0×10^{-8}	MSLD with CSL	= 6.0×10^{-8}
Zero Reading	= $\underline{0.0 \times 10^{-8}}$	Zero reading	= $\underline{0.6 \times 10^{-8}}$
Zero difference	= 1.0×10^{-8}	Zero difference	= 0.4×10^{-8}

* -Temperature adjusted leak rate = 5.0×10^{-8}

7. The HLD technician should then compare the helium reading recorded in Step 4 above with temperature adjusted leak rate determined in Step 2 above.

8. If the helium reading recorded in Step 4 above along with the value determined in Step 6 above is equal to the temperature adjusted leak rate then use "Condition A" from the applicable section of DOE/WIPP 02-3184.

9. If the helium reading recorded in Step 4 above along with the value determined in Step 6 above is less than the temperature adjusted leak rate then this value is

added in the equation reflected in "Condition B" from the applicable section of DOE/WIPP 02-3184.

10. If the helium reading recorded in Step 4 above along with the value determined in Step 6 above is more than the temperature adjusted leak rate then this value is subtracted in the equation reflected in "Condition C" from the applicable section of DOE/WIPP 02-3184.

4.3 Notes and Cautions Regarding Operating Instructions

4.3.1 Notes

The package unloading operation shall only be performed in a dry environment. In the event of precipitation during outdoor unloading or loading operations, precautions such as covering the OCA and ICV cavities shall be implemented to prevent precipitation from entering the package interior cavities. If precipitation does enter the interior cavities, all freestanding water shall be removed prior to loading the package for shipment, and handled according to the site waste management procedures.

The ACGLF may be left in place while leak tests are performed so as to be available if the leak tests fail and a lid must be removed for additional cleaning.

The ICV is designed for safe operation with a full internal vacuum. However, due to the possible presence of VOCs in the payload, general operations of the loaded ICV shall be accomplished using less than 15-inch-Hg vacuum.

| Verify the lugs are aligned with the tie-down bolts while placing the package on the trailer.

If required, clean and/or dry the package before transport to a designated area. The package may be cleaned with water and damp cloths or a soft brush. Used cleaning materials should be managed according to site waste management procedures.

When replacing main O-ring(s), leak testing **is not required** if shipping an **empty** container (see WI-CH.02). However, a Leak Check Required tag identifying the containment O-ring(s)/seal(s) replaced must be attached to the vent port indicating testing is required prior to loaded shipment and the appropriate Maintenance Record entries **are** required.

| For shipments to WIPP, the shipper shall verify that each payload container number has been entered into the WWIS and verify that the shipment has been approved by the WIPP WWIS Data Administrator.

NOTE

When loading packages on a trailer, or loading payload into packaging that is already on a trailer, the following applies:

- Packages having a gross weight difference (heaviest to lightest) of 2,000 lb or less can be considered equal and do not require a specific sequence for positioning on the trailer.

- Packages having a gross weight difference (heaviest to lightest), greater than 2,000 lb shall be positioned on the trailer as follows:

TRAILER FRONT	*1. Heaviest	Medium	Lightest	TRAILER REAR
	2. Heaviest	Lightest	Medium	
	*3. Heaviest	Lightest	None	
	4. Lightest	Heaviest	None	
	5. Heaviest	None	None	
The asterisk indicates the preferred, but not mandatory method.				

Rotation of the ACGLF weights should be used to assist in the removal of the OCA and ICV lids; however, care must be taken to verify the weights are positioned in the 180° and 000° positions prior to lifting either lid.

Security seals are only required on loaded shipments. A Leak Test Required tag attached to the vent port seal boss indicates that containment rings/seals were replaced prior to an **empty** shipment per WI-CH.01 and WI-CH.02, and a leak test is required prior to shipping a package. After the leak test, remove the tag and forward a copy of the leak test results to the WIPP CH Packaging Maintenance Engineer to be filed with the original work instructions and Maintenance Record.

Refer to a site-specific lift fixture Operation and Maintenance Manual for detailed ACGLF operating instructions.

The radiation/contamination surveys listed in the body of the operations procedures are recommendations. Site-specific procedures and policies shall be referenced to determine the necessity and sequencing of actual surveys and hold-points.

4.3.2 Cautions

A physical check shall be made to verify the air bags on the trailer have fully inflated before the loaded trailer is moved by a user site trailer jockey. Failure to do so may cause the tires to rub on the bottom of the rear packaging.

Tip-back may damage the exterior surface when a forklift is used to reposition a packaging.

Three operators should be able to rotate the locking ring with reasonable effort. Do not attempt to rotate the OCA or ICV locking ring assembly with mechanical force other than the locking ring tool (an extension to provide additional leverage and control). Care should be used to prevent the locking rings from slamming into the stops.

Verify that the two ACGLF counterweights are located at the 180° and 000° positions, respectively, prior to lifting an ACGLF, lid, or payload.

Exceeding a crane load cell indication of 10,000 lb can damage OCA lid lift points.

Exceeding a crane load cell indication of 7,500 lb can damage ICV lid lift points.

The operator shall obtain protective clothing and equipment prior to entering the OCV cavity. The operator shall also enter the OCV cavity using precautions to preclude damage to the OCV body sealing flange.

Operators shall avoid damage caused by hitting or scraping the payload assembly against the ICV body flange.

Operators shall ensure vertical alignment of the crane with the component being lifted. Off-centered pulls could damage the packaging.

Care should be taken when removing O-rings to prevent damage to the O-ring grooves and seal surfaces, and the O-rings themselves. Do not use metallic tools when removing O-rings.

5.0 PACKAGE MAINTENANCE INSTRUCTIONS

This section describes the maintenance program used to ensure continued performance of the packaging (see Definition section for annual and five-year maintenance). The annual maintenance tests and inspections described in this section shall be performed within 12 months prior to each shipment. Annual maintenance tests and inspections need not be performed for out-of-service packages. The five-year cycle for structural pressure tests shall begin when the packaging is first placed into service and shall include cumulative in-service time only.

All maintenance, repairs performed, or components replaced will be documented using the Maintenance Record. Information regarding preparation of the Maintenance Record is outlined in Section 5.6. The Maintenance Record is available at: http://www.wipp.ws/library/t2omi/t2omi.htm. Records shall be maintained by the WIPP M&O contractor to document completion of the maintenance schedule.

If a deficiency is found which is not covered by this document, or which is beyond the repair capability of the discovering site, that site will follow its approved procedure for reporting deficiencies and contact the WIPP CH Packaging Maintenance Engineer within 24 hours for disposition. All questions regarding the continued integrity of

packagings shall be addressed to the WIPP M&O contractor Transportation Program, P.O. Box 2078, Carlsbad, NM 88221.

Approved work instructions are listed and linked in Attachment B. Maintenance activities not within the scope of approved work instructions shall be performed in accordance with procedures that have been reviewed and approved by the WIPP M&O contractor prior to implementation. Recommendations for new work instructions or modifications to existing work instructions shall be forwarded to the WIPP M&O contractor Transportation Program.

Scheduled and unscheduled maintenance will be coordinated by the WIPP M&O contractor Transportation Program. Maintenance will be scheduled so as to maximize the availability of packaging.

NOTE: Sections 5.1 through 5.4 are normally done at WIPP or by a WIPP M&O contractor subcontracted vendor. Work Instruction WI-CH.15, Annual and Five-Year Maintenance Inspections, should be used as a checklist when performing these inspections.

Structural, periodic, and maintenance leakage rate test procedures are found in DOE/WIPP 02-3185, *CH Packaging Maintenance Manual*, at the following link: http://www.wipp.ws/library/t2omi/t2omi.htm.

5.1 Annual Visual Inspections

Tables 5.1 and 5.2 define the annual visual inspections to be performed on the ICV and OCA, respectively. General cleanliness should be observed for all components. Clean components with cloths or towels and denatured alcohol to enable proper visual inspection. Visual inspections shall determine that surfaces are free of excessive deformation, sliding surfaces do not have excessive wear, and threaded components are as specified and in good operating condition.

5.2 Annual Dimensional Inspections

Table 5.3 denotes the annual dimensional inspections to be performed on the ICV and OCA. General cleanliness should be observed for all components. Clean components with cloths or towels and denatured alcohol to enable proper dimensional inspection. Should components fail to meet the defined acceptance criteria following corrective action(s), prepare an NCR for disposition. All NCRs shall be dispositioned by the WIPP M&O contractor.

5.3 Annual ICV Interior Surfaces Inspection

An annual inspection shall be performed on the ICV in accordance with Section 8 of the TRUPACT-II and HalfPACT SARP. If unacceptable indications are found, record the locations and submit an Approval Request/Variation Request (AR/VR) for disposition by the WIPP M&O contractor.

Relevant indications shall be repaired in accordance with WI-CH.12.

When an annual inspection is performed in conjunction with a five-year structural pressure test, liquid penetrant examinations shall be conducted **AFTER** the structural pressure test to avoid duplication of effort.

5.4 Five-Year Structural Pressure Tests

Five-year structural pressure testing of the OCV and ICV shall be performed in accordance with Section 8 of the TRUPACT-II and HalfPACT SARP. Unacceptable indications of cracking or distortion shall be recorded by the maintenance vendor and submitted to the WIPP M&O contractor for disposition.

Upon successful completion of the preceding tests, periodic leakage rate testing shall be performed.

5.5 Packaging Component Replacement Schedule

Packaging components shall be replaced as defined in the schedule provided in Table 5.4, or when damage is noted. Should replacement of a given component fail to meet the acceptance criteria, an NCR shall be prepared for disposition by the WIPP M&O contractor.

5.6 Maintenance Records

All maintenance performed on the CH packaging shall be documented on a maintenance record. Figure 5.1 is a sample of the maintenance record.

5.6.1 Instructions for Completing the Maintenance Record

- Packaging S/N - Record the serial number of the packaging.
- Date Initiated - Enter the date that the maintenance was initiated. *(If no corrective actions are immediately performed, enter the date the discrepancy was discovered.)*
- Location/Site - Enter the acronym for the site or location initiating the maintenance. *(Example: INEEL, WIPP, EPD.)*
- Job No. - Enter the next sequential job number from the site's packaging maintenance log. *(See Section 5.7.)*
- Reason for Maintenance - Check the appropriate block. Check *other* for unscheduled inspections, modifications, or repairs that are not listed in Attachment B.
- Discrepancy Description - Provide a short narrative description of repair or other discrepancies. No entry is required specifically for annual or five-year maintenance, but list discrepancies discovered as part of these scheduled inspections. List NCR numbers, tag numbers, or correspondence letter numbers, as applicable.

- Work Performed - Provide a concise description of the actions taken to correct discrepancies listed in the Discrepancy Description block *(example: replaced ICV upper main O-ring.)*

- Work Instructions Used - List the work instruction numbers *(example: WI-CH.10, WI-CH.11)* used to perform the maintenance covered by the maintenance record.

- Measuring and Test Equipment (M&TE) Used - List the M&TE description, serial number (SN), calibration due date, and the work instructions.

- Spare Parts Used - List any spare parts that were used including description, part number, and WIPP purchase order (PO) number. *(Required information normally is printed on packages.)*

- Work Inspected by - Should be signed and dated by the supervisor of the personnel who performed the work. The signature verifies that the actions taken were within the scope of the work instructions or traveler (if applicable) and the packaging can be returned to service. This signature also indicates that the maintenance record is accurate and complete (i.e., all applicable supporting documentation is attached).

5.6.2 Maintenance Record Disposition

Upon completion of maintenance, the **ORIGINAL** CH packaging maintenance record, including attachments to the work instructions, shall be transmitted to the WIPP CH Packaging Maintenance Engineer, P.O. Box 2078, Carlsbad, NM 88221. These should arrive within seven working days of job completion. A faxed copy or electronic submittal should be sent immediately after maintenance activities are completed.

5.7 Maintenance Log

Each user site shall maintain a packaging maintenance log. The log shall contain copies of completed maintenance records and a sequential listing, by job number, of maintenance performed on packaging. The user copies of maintenance records shall be kept for three years, after which they may be discarded.

5.8 Maintenance Due Labels

Upon completion of annual maintenance, the maintenance facility shall affix a maintenance due label adjacent to the packaging name plate. The packaging is considered **Out-of-Service** on the first day of the month indicated on this label.

Upon completion of five-year maintenance, the maintenance facility shall affix, adjacent to the packaging name plate, a maintenance due label. The packaging is considered **Out-of-Service** on the first day of the month indicated on this label.

Figure 5.1 - **Maintenance Record**

Package SN		**MAINTENANCE RECORD**			
Location/Site		Date initiated		Job No	
Check all applicable:	Five-Year PM ☐	Annual PM ☐	Repair ☐	Other ☐	
Discrepancy Description:					
Work Performed:					
Work Instructions Used:					

Measuring and Test Equipment Used

Description	SN	Calibration Due Date	Work Instruction

Spare Parts Used

(If self-stick labels are used, they shall contain a part description, part number and PO number. Enter each part quantity)

Description/part number/WIPP PO number:	Qty	Description/part number/WIPP PO number:	Qty

If Continuation Sheet used check, yes:	Yes	

Work Inspected by:

Printed Name	Signature	Date

M&O Contractor Review and Package Closeout:

Printed Name	Signature	Date

Figure 5.1 - Maintenance Record (continued)

MAINTENANCE RECORD - (Continuation Sheet)*			
Job No		Package	

Work Inspected by:

Printed Name	Signature	Date

M&O Contractor Review and Package Closeout:

Printed Name	Signature	Date

* If Continuation Sheet not used, discard.

Table 5.1 - ICV Visual Inspections, Acceptance Criteria, and Corrective Action

Component/Part No.	Acceptance Criteria	Corrective Action	✓
ICV vent port cover (2077-156-11)	No damaged threads or damaged recessed head	Replace per WI-CH.01	
ICV vent port insert (2077-156-06)	No damaged threads or damaged sealing area	NCR for disposition	
ICV outer vent port plug (2077-156-09)	No damaged threads or damaged recessed head	Replace per WI-CH.01	
ICV inner vent port plug (2077-156-10)	No damaged threads or damaged recessed head	Replace per WI-CH.01	
ICV seal test port insert (2077-156-05)	No damaged threads or damaged sealing area	NCR for disposition	
ICV seal test port plug (2077-156-07)	No damaged threads or damaged recessed head	Replace per WI-CH.01	
ICV wiper O-ring holder (2077-156-08)	No distortion affecting operation	NCR for disposition	
ICV upper and lower flange sealing surfaces (grooves and flats)	No scratch(es) causing leakage or finish >125 RMS micro-finish	Repair per WI-CH.12	
ICV upper and lower visible shell surfaces	No dents over 0.5-inch deep, gouges causing wall thickness under 0.240-inch, weld cracks or punctures	NCR for disposition	
ICV locking ring fasteners (2077-156-A1)	No damaged threads or damaged recessed head, welds intact	Replace per WI-CH.06	
ICV locking ring inserts (2077-160-28)	No damaged threads or missing insert lock keys	Replace per WI-CH.06	
ICV locking ring (2077-182-03)	No defects that impair general operation	NCR for disposition	
ICV upper spacer (2077-053-A1)	No damaged or missing fasteners	Replace per WI-CH.13	
	No punctures in plate	Replace per WI-CH.13	
ICV lower spacer (2077-053-A2)	No damaged or missing fasteners	Replace per WI-CH.13	
	No punctures in plate	Replace per WI-CH.13	

Table 5.2 - OCA Visual Inspections, Acceptance Criteria, and Corrective Action

Component/Part No.	Acceptance Criteria	Corrective Action	✓
OCV vent port access plug (2077-156-13) and OCV vent port thermal plug (2077-156-15)	No damaged threads or damaged recessed head; thermal plug not damaged	Replace per WI-CH.01	
OCV vent port coupling (outboard) (2077-173-13)	No damaged threads	Repair per WI-CH.04	
	No cracked welds	NCR for disposition	
OCV vent port fitting (2077-156-19)	No damaged threads or damaged sealing area	NCR for disposition	
OCV vent port cover (2077-156-18)	No damaged threads or damaged hex head	Replace per WI-CH.01	
OCV vent port plug (2077-156-17)	No damaged threads or damaged recessed head	Replace per WI-CH.01	
OCV seal test port access plug (2077-156-12) and OCV seal test port thermal plug (2077-156-14)	No damaged threads or damaged recessed head; thermal plug not damaged	Replace per WI-CH.01	
OCV seal test port coupling (2077-167-06)	No damaged threads	Repair per WI-CH.04	
	No cracked welds	NCR for disposition	
OCV seal test port insert (2077-156-05)	No damaged threads or damaged sealing area	NCR for disposition	
OCV seal test port plug (2077-156-07)	No damaged threads or damaged recessed head	Replace per WI-CH.01	
OCV upper and lower flange sealing surfaces (grooves and flats)	No scratch(es) causing leakage or surface finish damage >125 RMS micro-finish	Repair per WI-CH.12	
OCV upper and lower visible shell surfaces	No dents over 0.5-inch deep, gouges causing wall thickness under 0.240-inch for 1/4-inch material or 0.365-inch for 3/8-inch material, weld cracks or punctures	NCR for disposition	
OCV locking ring fasteners (HalfPACT) (2077-156-A1)	No damaged threads or damaged recessed head, welds intact	Replace per WI-CH.06	

Table 5.2 - OCA Visual Inspections, Acceptance Criteria, and Corrective Action

Component/Part No.	Acceptance Criteria	Corrective Action	✓
OCV locking ring fasteners (TRUPACT) (2077-156-A1) or (2077-156-A2)	No damaged threads or damaged recessed head, welds intact	Replace per WI-CH.06	
OCV locking ring bolt inserts (2077-160-28)	No damaged threads or missing insert lock keys	Replace per WI-CH.06	
OCV locking ring (2077-162-03)	No defects that impair general operation	NCR for disposition	
OCV locking ring Z-flange (2077-161-A1)	No defects that impair general operation	Clean or replace per WI-CH.07	
OCA ceramic fiber gaskets (2077-160-27)	No tears or excessive wear	Replace per WI-CH.02	
OCA upper burn out plugs (2077-163-13)	Properly tightened and not missing	Tighten or replace per WI-CH.03	
OCA lower burn out plugs (2077-170-06)	Properly tightened and not missing	Tighten or replace per WI-CH.03	
OCA upper burn out plug flanges (2077-163-12)	No damaged threads or cracked welds	NCR for disposition	
OCA lower burn out plug flanges (2077-173-15)	No damaged threads or cracked welds	NCR for disposition	
OCA lid guide plates (2077-163-11)	Screws tight, not missing	Replace per WI-CH.03	
OCA forklift pocket cover plates (2077-171-11 and 2077-171-12)	No distortion affecting operation	Replace per WI-CH.03	
OCA forklift pocket cover screws (2077-160-30)	No damaged threads	Replace per WI-CH.03	
OCA forklift pocket cover screw inserts (2077-160-29)	No damaged threads or missing insert lock keys	Replace per WI-CH.06	
OCA lid lift pocket cover assembly (2077-163-A2)	No damaged or missing components	Replace per WI-CH.03	
OCA lid lift pocket tube (2077-163-02)	Not damaged or missing	Replace per WI-CH.03	

Table 5.2 - OCA Visual Inspections, Acceptance Criteria, and Corrective Action

Component/Part No.	Acceptance Criteria	Corrective Action	✓
OCA lid lift pocket tube hex head cap screw (2077-163-03)	Not damaged or missing	Replace per WI-CH.03	
OCA lid lift pocket tube washers (2077-163-04)	Not damaged or missing	Replace per WI-CH.03	
Optional OCA annulus debris seal (2077-156-21)	No damage affecting operation	Replace per WI-CH.03	
Optional OCA weather seal (2077-156-22)	No damage affecting operation	Replace per WI-CH.03	
OCA cushion/wear pad, if visible (2077-156-23)	Not torn or missing	Replace per WI-CH.08	

Table 5.3 - Component Inspection, Acceptance Criteria, and Corrective Action

Component	Acceptance Criteria	Corrective Action	✓
ICV/OCV lid to body axial play	Inspect and accept to WI-CH.08	If acceptance criteria cannot be met, prepare NCR for disposition	
ICV/OCV lid and body flange tab widths	Inspect and accept to WI-CH.09	If acceptance criteria cannot be met, prepare NCR for disposition	
ICV/OCV lid and body flange groove widths	Inspect and accept to WI-CH.10	If acceptance criteria cannot be met, prepare NCR for disposition	
ICV/OCV upper main O-ring seal groove depth	Inspect and accept to WI-CH.11	If acceptance criteria cannot be met, prepare NCR for disposition	
ICV/OCV seal surface	Inspect and accept to WI-CH.11	If acceptance criteria cannot be met, prepare NCR for disposition	
ICV upper and lower spacers	Inspect and accept to WI-CH.13	If acceptance criteria cannot be met, prepare NCR for disposition	
ICV interior surfaces to include accessible shell, head, flange, and weld surfaces	Inspect visually for evidence of chemically induced stress corrosion.	If acceptance criteria cannot be met, prepare NCR for disposition	

NOTE: After completion of maintenance, the maintenance provider will affix a label indicating the date the next annual or five-year maintenance is due, adjacent to the packaging name plate. Packaging is considered out of service on the last day of the month indicated on the label if maintenance has not been performed.

Table 5.4 - Component Replacement Schedule and Work Instruction

Component/Part No.	Frequency	Work Instruction	✓
OCV upper main O-ring (2077-160-15)	Annual	WI-CH.02	
OCV lower main O-ring (2077-160-24)	Annual	WI-CH.02	
OCV vent port plug seal O-ring (2077-160-17/180-22)	Annual	WI-CH.01	
ICV upper main O-ring (2077-180-09)	Annual	WI-CH.02	
ICV lower main O-ring (2077-180-19)	Annual	WI-CH.02	
ICV outer vent port plug O-ring (2077-180-21)	Annual	WI-CH.01	
ICV wiper O-ring (2077-180-27)	Annual	WI-CH.02	
ICV lid debris seal (2077-180-25)	Annual	WI-CH.02	

6.0 PACKAGE MAINTENANCE LEAKAGE RATE TESTING

DOE/WIPP 02-3185, for maintenance leakage rate testing is available on the internet at: http://www.wipp.ws/library/t2omi/t2omi.htm.

7.0 PACKAGE STRUCTURAL PRESSURE TESTING

DOE/WIPP 02-3185, for structural pressure testing is available on the internet at: http://www.wipp.ws/library/t2omi/t2omi.htm.

Attachment A - Work Instruction Format

A.1 Preparing Work Instructions for Periodic Maintenance or Initial Release

All packaging work/periodic maintenance instructions will be written using the following work instruction format. The following descriptions and examples will aid in writing work instructions.

- Title

  A short description of the work or periodic maintenance to be performed.

- Instruction Number

- Page ___ of ___

  Insert form page numbering information here.

- Approval Signatures

  Assigned by the WIPP M&O contractor. After the instruction number, enter the revision number.

- Applicable Drawings

  Drawings that apply to the work instruction may be SARP drawings or additional shop drawings required to complete the task.

- SARP Requirements

  A short narrative of the SARP requirement, referencing the appropriate SARP Chapter and/or section(s).

- Tools Required

  List tools required to complete the task.

- Spare Parts Required

  List all packaging spare parts required to complete the task.

- Materials Required

  List all materials required to complete the task.

Attachment A - Work Instruction Format

- Safety Requirements

  List safety precautions needed to complete the task.

- Prerequisite Conditions

  List any required prerequisite conditions.

- Instruction steps

  List the detailed procedural steps to follow to complete the task.

- General Requirements

  List any general requirements applicable to the task.

- Verification Requirements

  List the verification requirements (for example, leak tests, material certification) required to complete the test.

A.2 Revising Existing Work Instructions

Users may recommend revisions by telephone or in writing to the WIPP M&O contractor. However, the revision will require the same approval as the original instruction.

The WIPP M&O contractor can be reached during business hours at (505) 234-7500. After business hours, call the WIPP Central Monitoring Room (CMR) at (505) 234-8125/8457 for communication of relevant items.

A.3 Cancellation of Existing Work Instructions

Approvals for cancellation will be made by the CBFO. A copy of the instruction shall be provided to the CBFO. The canceled work instruction and all references to the canceled work instruction shall be deleted from this document through the normal change and revision procedure, and changes will be distributed to all user sites.

Attachment A - Work Instruction Format

WORK INSTRUCTION	
Title:	
Instruction No.:	Page of
Approved for Use by:	Effective Date:
Applicable Drawings:	
SARP Requirements:	
Tools Required:	
Spare Parts Required:	
Materials Required:	
Safety Requirements:	
Prerequisite Conditions:	

Attachment A - Work Instruction Format

WORK INSTRUCTION
Instruction No. Continued Page of
Instruction Steps:

Attachment A - Work Instruction Format

WORK INSTRUCTION
Instruction No. Continued Page of
Instruction Steps Continued:

Attachment A - Work Instruction Format

WORK INSTRUCTION
Instruction No. Continued Page of
Instruction Steps Continued:
General Requirements:
Verification Requirements:

Attachment B - Approved Work Instructions

NOTE: All work instructions listed below can be performed by the maintenance vendor. Work Instructions WI-CH.01 through WI-CH.06, WI-CH.12, and WI-CH.14 are considered to be within the capabilities of a user to perform. Additionally, steps from WI-CH.08 that pertain to the adjustment of the wear pad, steps from WI-CH.13 that pertain to the replacement of spacer fasteners, washers, and screws, and steps from WI-CH.07 for installation of OCV locking Z-flange screws are considered within the capabilities of users to perform.

NOTE: Conditions may warrant that only specific steps of a work instruction are required for corrective action. Consequently, it is acceptable to perform only the necessary steps and to mark the ones not needed as NA.

NOTE: Packaging users are responsible for ensuring that the current revision of the work instruction is used.

- WI-CH.01, Replacement of ICV/OCV Small Plugs, O-rings, Gaskets
- WI-CH.02, Replacement of ICV/OCV Upper and Lower Main O-Rings, ICV Wiper O-ring, OCA Fiber Gasket and ICV Debris Seal
- WI-CH.03, Replacement of Miscellaneous Parts Not Requiring Detailed Instructions
- WI-CH.04, Cleaning Flange Threads for OCV Seal Test Port/Vent Port Access Covers
- WI-CH.05, Replacement of Polyethylene Filter in ICV Seal Flange
- WI-CH.06, Replacement of Threaded Inserts/Fasteners for Packaging
- WI-CH.07, Replacement of OCV Lock-Ring Actuator
- WI-CH.08, Axial Play Measurement (OCV Lid-to-Body) (ICV Lid-to-Body) and Wear Pad Replacement
- WI-CH.09, ICV/OCV Lid and Body Seal Flange Tab Widths
- WI-CH.10, ICV/OCV Lid and Body Flange Groove Widths
- WI-CH.11, ICV/OCV Upper Main O-Ring Seal Groove Depth Measurement and Surface Finish
- WI-CH.12, Minor Repair of Vessel O-ring Sealing Surface ICV/OCV, Minor Repair of Wall Surface ICV/OCA (Exposed Surfaces)

Attachment B - Approved Work Instructions

- WI-CH.13, Replacement/Inspection/Measurements ICV Honeycomb Spacers
- WI-CH.14, Minor Repair of ICV/OCV O-Ring Locking Surfaces (burrs, dings, and nicks)
- WI-CH.15, Annual and Five-Year Maintenance Inspections
- WI-CH.16, Repair of ICV/OCV Locking Ring Stop Plate(s)
- WI-CH.17, Repair of ICV Upper/Lower Spacer Bracket(s)
- WI-CH.18, Repair of ICV Upper/Lower Honeycomb Spacer

Attachment C - CH Packaging Qualification Requirements

The following guidelines establish the minimum training requirements for CH packaging operations. User site qualification cards SHALL include these items as a minimum. Users may separate the requirements to address different skills used to load a CH packaging per site requirements, as long as all areas are addressed by each site. It is not necessary to include activities that are not performed at a facility.

I. References

A. ADJUSTABLE CENTER OF GRAVITY LIFT FIXTURE

1. ACGLF Operation and Maintenance Manual

2. Drawing #41-J-513 W

B. OPERATIONS

1. *CH Packaging Program Guidance*, DOE/WIPP 02-3183

2. *Safety Analysis Report for the TRUPACT-II Shipping Package*, NRC Docket-71-9218

3. *Safety Analysis Report for HalfPACT Shipping Package*, NRC-Docket-71-9279

4. *Hoisting and Rigging*, DOE-STD-1090-2004

C. MAINTENANCE

1. *CH Packaging Program Guidance*, DOE/WIPP 02-3183

2. *Safety Analysis Report for the TRUPACT-II Shipping Package*, NRC Docket-71-9218

3. *Safety Analysis Report for HalfPACT Shipping Package*, NRC-Docket-71-9279

D. TRAILER LOADING AND UNLOADING CH PACKAGING[1]

1. *CH Packaging Program Guidance*, DOE/WIPP 02-3183

2. *Safety Analysis Report for the TRUPACT-II Shipping Package*, NRC Docket-71-9218

[1]This section applies only to those sites which remove the CH packagings from the trailer.

Attachment C - CH Packaging Qualification Requirements

3. *Safety Analysis Report for HalfPACT Shipping Package*, NRC-Docket-71-9279

4. *Hoisting and Rigging*, DOE-STD-1090-2004

5. WP 08-PT.04, CH Packaging Trailer O&M Manual

II. Knowledge

A. ACGLF

1. State the rated capacity of the ACGLF (ref. A.1, 2).

2. Describe the precaution that should be taken before the ACGLF is lifted without a load (ref. A.1, ACGLF Operating and Maintenance Instructions).

3. State what to look for when performing a preoperational check on the ACGLF (ref. A.1).

4. State what to inspect for on the SWB adapter (ref. A.1, ACGLF Operating and Maintenance Instructions).

5. State how to determine if lift clip assemblies are locked in the proper position (ref. A.1, ACGLF Operating and Maintenance Instructions).

B. PACKAGING OPERATIONS

1. Discuss the ICV/OCV lid removal process (ref. B.1).

2. Describe the purpose and identify the type of seals used on the packaging (ref. B.1, 2).

3. Describe the physical construction of the packaging assembly (ref. B.1, 2).

4. Describe the OCV Locking Ring Assembly (ref. B.1).

5. State the lubrication requirements for the O-ring seals (ref. B.1, 2).

6. Identify the tools required for packaging operation and discuss the function of each tool (ref. B.1, 2).

7. Explain the purpose of the following packaging components (ref. B.1, 2):

   a. Seals
   b. Lids
   c. Pallet
   d. Pick points
   e. Closure ring lock points
   f. Vent and test ports

8. Discuss the limits associated with packaging operations, i.e., pressure, radiation levels (ref. B.1, 2).

9. State the locations of the security seals (ref. B.1).

10. Describe the precautions that should be taken when removing the OCV/ICV lids (ref. A.1, B.1, 2).

11. Describe the precautions that should be taken when installing the lids (ref. B.1).

12. Describe the precautions that should be taken when removing the ACGLF from the OCV/ICV lids and the waste packages (ref. A.1, B.1).

13. State the inspection process for the ICV and OCV (ref. B.1).

14. Describe the stuck lid removal process (ref. B.1).

C. PACKAGING MAINTENANCE

1. Describe the method of cleaning the port threads (ref. C.1).

2. Discuss the three different types of leak testing required for the packaging and when each must be performed (ref. C.1, 2).

3. Identify the materials needed to clean the sealing surfaces (ref. C.1).

4. State the hazards associated with improper drill depth setting when replacing threaded inserts (ref. C.1).

5. Identify materials required to replace ICV lid debris seal (ref. C.1).

6. State how to replace ICV lid debris seal (ref. C.1).

7. Describe how to complete a packaging Maintenance Record.

8. State the record retention requirement for packaging Maintenance Records.

D. TRAILER LOADING AND UNLOADING [2]

1. Describe the use and/or purpose of proper fork tine position for handling packaging (ref. D.1, 2, 3).

2. Describe the process of removing the packaging from the trailer (ref. D.1, 5).

3. Discuss what is inspected on the trailer tie-down assembly (ref. D.5).

4. State how to rework/clean tie-downs (ref. D.5).

5. State how to lubricate tie-downs (ref. D.5).

6. State the maximum load limit for the CH Packaging trailer (ref. D.5).

7. State the process of installing packaging tie-downs (ref. D.5).

III. Operations

A. ACGLF

1. Perform a preoperational check of the ACGLF (ref. A.1).

2. Operate ACGLF (ref. A.1, B.1, 3).

3. Perform standard waste box adaptor preoperational checks (ref. A.1).

4. Operate standard waste box adapter (ref. A.1, B.1, 3).

[2] This section applies only to those sites which remove the CH packagings from the trailer.

Attachment C - CH Packaging Qualification Requirements

B. PACKAGING OPERATION

1. Perform OCV lid removal (ref. B.1, 3).

2. Perform ICV lid removal (ref. B.1, 3).

3. Load a standard waste box payload (ref. B.1, 3).

4. Load a drum payload (ref. B.1, 3).

5. Inspect OCV lid assembly (ref. B.1).

6. Inspect OCV lower assembly (ref. B.1).

7. Inspect ICV (ref. B.1).

8. Inspect ICV lower assembly (ref. B.1).

9. Perform ICV lid installation (ref. B.1).

10. Perform OCV lid installation (ref. B.1).

11. Prepare packaging for trailer loading (ref. B.1).

C. PACKAGING MAINTENANCE

1. Replace a small O-ring (ref. C.1).

2. Replace ICV/OCV locking ring bolt threaded inserts (ref. C.1).

3. Replace ICV lid debris seal (ref. C.1).

4. Complete Maintenance Record (ref. C.1).

D. TRAILER LOADING AND UNLOADING[3]

1. Transport a packaging from the trailer to a designated area (ref. D.1, 5).

2. Load a packaging on the trailer (ref. D.5).

[3]This section applies only to those sites which remove the CH packagings from the trailer.

3. Install trailer tie-downs (ref. D.5).
4. Perform trailer tie-down assembly inspections (ref. D.5).
5. Unload a packaging from a trailer (ref. D.5).