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INTERNATIONAL

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FUNCTIONAL SPECIFICATION FOR THE DIABLO CANYON CASK TRANSPORTER

FOR

PACIFIC GAS & ELECTRIC

Holtec Report No: HI-2002501

Holtec Project No: 1073

Report Class : SAFETY RELATED

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☐ Technical Report (Per HQP 3.2) (Such as a Licensing Report)

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SUMMARY OF REVISIONS

Revision	
Rev. 0	Original Issue.
Rev. 1	Incorporated significant PG&E comments
Rev. 2	Incorporated additional PG&E comments
Rev. 3	Incorporated additional PG&E comments
Rev. 4	Corrected auto numbering and auto reference error.
Rev. 5	Numerous typos corrected and PG&E comments incorporated as noted. All figure 4.*.* deleted and figures 5.3.1 and 5.3.2 deleted

1. INTRODUCTION

1.1 This specification covers the minimum functional and dimensional requirements for the cask transporter to be used at Pacific Gas & Electric's Diablo Canyon Power Plant (DCPP). The cask transporter may also be used at the Humboldt Bay Power Plant for operations involving the HI-STAR Humboldt Bay Cask. This document forms the basis by which the cask transporter design shall be completed.

1.2 The cask transporter shall perform the following functions individually:

a. **Mode 1:** Horizontal handling of the HI-TRAC transfer cask with bottom shield in the DCPP cask transport frame (See Figure 1.1);

b. **Mode 2:** Vertical handling of the HI-STORM Overpack when used in conjunction with the HI-STORM lifting brackets (See Figure 1.2);

c. **Mode 3:** Vertical lifting of the HI-TRAC transfer cask using the cask lifting links (See Figure 1.3);

d. **Mode 4:** Upending of the HI-TRAC in the DCPP cask transport frame (See Figures 1.4 through 1.6); and

e. **Mode 5:** MPC Raising and lowering between HI-TRAC and HI-STORM (See Figure 1.7).

1.3 The scope of supply shall include the following:

a.

b.

c.

d.

e.

1.4 Scope of supply does not include:

a.

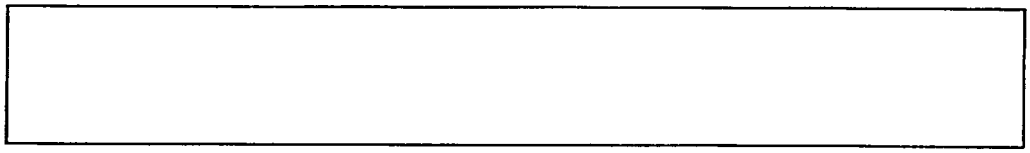
b.

c.

d.

1.5 Important to Safety Designation

a.



2. REFERENCES

(Note: The applicable version of the following references shall be the current revision unless otherwise indicated)

2.1 Holtec References

a. HI-STORM Final Safety Analysis Report, as amended by Holtec LAR 1014-1, Holtec Report HI-2002444.

2.2 Regulatory References

a. Nuclear Regulatory Commission (NUREG-1567 "Standard Review Plan for Spent Fuel Dry Storage Facilities", March 2000.

b. NUREG/CR-6407, "Classification of Transportation Packaging and Dry Spent Fuel Storage System Components According to Importance to Safety."

c. U.S. Nuclear Regulatory Commission, "Standard Review Plan for Dry Cask Storage Systems", NUREG-1536.

d. *U.S. Code of Federal Regulations,* Title 10, "Energy", Part 72, "Licensing Requirements for Independent Storage of Spent Nuclear Fuel and High-Level Radioactive Waste."

e. Nuclear Regulatory Commission NUREG-0612 "Control of Heavy Loads at Nuclear Power Plants."

2.3 Industry Standards

a. American Society of Mechanical Engineers, Boiler and Pressure Vessel Code, Section III, Subsection NF, "Component Supports", 1995 Edition with 1996 and 1997 Addenda.

b. Crane Manufacturers Association of America, Inc. "Specifications for Electric Overhead Traveling Cranes", CMAA-70.

c. American Society of Mechanical Engineers , American National Standard, Safety Standards, "Mobile and Locomotive Cranes", ASME B30.5.

d. American Welding Society, "Specification for Welding of Industrial and Mill Cranes and Other Material Handling Equipment", AWS D14.1.

e. California Code of Regulations, Title 8, "General Industry Safety Orders".

f. National Fire Protection Association (NFPA), NFPA 70, "National Electric Code".

g. American National Standard Institute, "American National Standard for Special Lifting Devices for Shipping Containers Weighing 10 000 Pounds (4500 KG) or More for Nuclear Materials", ANSI N14.6.

h. American Society of Mechanical Engineers , American National Standard, Safety Standards, "Jacks", ASME B30.1.

i. American Society of Mechanical Engineers , American National Standard, Safety Standards, "Slings", ASME B30.9.

j. American Institute for Steel Construction, Specification for Structural Steel Buildings, Allowable Stress Design and Plastic Design, Ninth Edition, June 1, 1989.

3. GENERAL DESCRIPTION OF THE CASK TRANSPORTER

3.1 Overview

a. Referring to Figures 1.1 through 1.8, the cask transporter is a U-shaped tracked vehicle used for handling and on-site transport of loaded and empty HI-STORM Overpacks and HI-TRAC transfer casks. The transporter consists of the vehicle main frame, the lifting towers, an overhead beam system that connects between the lifting towers, a cask restraint system, the drive system and control system, and a series of cask lifting attachments. The casks are individually carried within the internal footprint of the transporter tracks. The cask is supported by the lifting attachments that are connected to the overhead beam. The overhead beam is supported at the ends by a pair of lifting towers. The lifting towers transfer the cask weight directly to the vehicle frame. The transporter has the added capability of being able to raise and lower an MPC between HI-TRAC and HI-STORM when used in conjunction with the DCPP Cask Transfer Facility (CTF).

3.2 Cask Operations

The following description provides one possible method of cask handling. Other methods may also be used.

The HI-TRAC is loaded in the fuel building and transported through the fuel-building door in the horizontal orientation to the waiting transporter. HI-TRAC is loaded on a specially designed cask transport frame used to transport and upend the HI-TRAC transfer cask. Attached to the bottom of the HI-TRAC is a bottom lid shield. This device provides supplemental shielding to the operators during horizontal cask movement. The HI-TRAC is lifted vertically using a horizontal lift rig.

The cask transport frame is positioned within the internal opening of the transporter with its top lid facing toward the back of the cask transporter. The cask transport frame is raised to a nominal height of between 6 and 12 inches and secured to the transporter to limit lateral movement during transport.

The HI-TRAC is transported from the fuel building to the CTF in the horizontal orientation. Travel distance to the CTF is approximately 1.2 miles. On arrival at the CTF the cask transport frame is placed on the ground and disconnected from the transporter. The horizontal lift rig is replaced with HI-TRAC lifting links that attach the HI-TRAC lifting trunnions to the primary lifting points of the transporter./

/HI-TRAC is rolled to the vertical orientation and the upending blocks are removed. To remove the cask transport frame from between the transporter and the HI-TRAC, the long leg of the cask transport frame is removed. Following upending, the cask transporter will lift the HI-TRAC clear of the cask transport frame. HI-TRAC will be transported vertically to the CTF where the HI-STORM and

mating device are positioned. [

] The CTF has no above-grade obstructions that would affect the cask transporter operation. All CTF components are below grade and accessed via removable covers. Following placement of the HI-TRAC on the HI-STORM Overpack, the HI-TRAC is secured to the cask transporter or directly to the CTF pad. If necessary (See Section 4.5d), the cask transporter may be restrained to the CTF pad. The cask restraints serve to limit HI-TRAC and/or cask transporter movement during a seismic event. Once secured, the cask transporter will then disconnect from the HI-TRAC lifting trunnions.

[

]

The MPC is raised and lowered by movement of the overhead beam. A movement of the overhead beam results in a twice the movement of the MPC. Once the MPC is lowered into the HI-STORM Overpack, the slings are released from their attachment lug and pulled over the pulleys and lowered onto the lid of the MPC. The slings will be recovered following removal of the HI-TRAC from on top of the HI-STORM Overpack.

The HI-TRAC is removed and placed aside until the HI-STORM Overpack is placed on the ISFSI pad. The MPC lift cleats and slings are recovered from on top of the MPC. The HI-STORM lid is installed and the HI-STORM is raised to the up position. Meanwhile the cask transporter has been outfitted with the HI-STORM lifting brackets. The cask transporter is positioned over the HI-STORM Overpack and the HI-STORM Overpack is raised to the up position. The cask transporter attaches to the HI-STORM Overpack via the lifting brackets. The HI-STORM is raised out of the CTF hole and moved to the ISFSI. [

] Threaded studs are installed through the HI-STORM bottom flange and into the ISFSI pad. Nuts are installed on the studs and tightened. Once secured, the cask transporter then releases from HI-STORM and is used to return the empty HI-TRAC to storage.

4. DESIGN AND CONSTRUCTION

4.1 Load Combinations

a. The design loads shall be based on Table 4.1 with a 1.15 multiplier for impact loads.

b. Non-load bearing components are designed at the discretion of the manufacturer.

c. The design loads shall consider applicable seismic loads.

TABLE 4.1
HI-STORM SYSTEM OVERPACK GENERAL DIMENSIONS FOR LIFTING AND HANDLING

Measured From	Measured To	Cask Handling Case	Distance (Inches)	Weight (Lbs.)[1]

4.2 Critical Parameters

a. The cask transporter shall maintain the critical parameters listed in Table 4.2.

a. _____

[1] Weights may be rounded up from actual loads for additional design margin of the lifting components.
[2] Weight includes HI-STORM lift bracket

TABLE 4.2:
NOMINAL TRANSPORTER PARAMETERS

PARAMETER	NOMINAL VALUE
Vehicle Weight (empty)	
Vehicle Width	
Maximum Length	
Maximum Center of Gravity (at maximum Lift Position cask transporter empty and towers retracted)	
Track Length (approximate)	
Minimum Track Bearing Length	
Track Width	
Track Spacing	
Minimum Undercarriage Clearance	
Minimum Total Track Bearing Contact Surface Area	

4.3 Drop Protection Prevention

a. Prevention of a cask or canister drop is afforded by improving the reliability of the load supporting systems of the cask transporter by using a combination of component redundancy and increased factors of safety.

4.4 Special Lifting Devices

a. Special Lifting Devices consisting of the cask lift links, attachment pins, overpack lifting bracket, MPC downloader slings, pulleys and their attachment points shall be designed in accordance with the guidance of Reference 2.2e Section 5.1.6.

b. Slings used in conjunction with the special lifting devices meet the guidance of Reference 2.2e Section 5.1.6 (1)(b).

4.5 Cask Transporter Lift Points, Overhead Beam, and Vehicle Body

a. Unless otherwise specified, the cask transporter lift points overhead beam, and load supporting members (whose failure will result in a drop of an MPC, HI-TRAC or HI-STORM Overpack) of the vehicle frame shall be designed in accordance with Reference 2.3a or 2.3j whichever is more limiting.

b. Restraint sling components shall meet Reference 2.3i for appropriate seismic loads.

c. Overhead beam deflection shall meet the requirements of Reference 2.3b.

d. If deemed necessary by analysis to prevent damage to the transfer cask, HI-STORM Overpack and/or MPC, the transporter body shall have provisions for interfacing with CTF pad for the purpose of limiting lateral and front-to-back

movement of the cask transporter during a seismic event tie-downs. These restraints may take many forms. Design details shall be developed in accordance with input from the cask transporter manufacturer and the design of the CTF.

4.6 Lifting Towers

[

]

4.7 Hydraulics and Hydraulic Fluids

a. Hydraulic fluids used in jacks or other hydraulic equipment (if used) shall be appropriate for the temperature range specified (0 °F minimum). Suitable antifreeze shall be specified as appropriate. The fabricator shall specify the operating temperature range of the hydraulic fluid in the operations manual.

b. Hydraulic fluids used in the cask transporter shall be non-flammable.

c. High-energy hydraulic lines shall be guarded for personnel protection.

4.8 Stability Evaluation

a. The transporter plus its carried load must remain stable (not overturn) and remain on the travel path under all design basis seismic events applicable to the Diablo Canyon ISFSI defines the acceptance criteria for the stability analyses of the transporter.

4.9 Maximum Incline

a. The cask transporter shall be capable of carrying the loads (See Table 4.1 for loads).

b. Loaded HI-STORM Overpack (Mode 2) on grades up to 5% grade.

c. Horizontal HI-TRAC (Mode 1) on grades up to 10%.

4.10 Seismic Restraints

a. The cask transporter shall have provisions for interfacing with seismic restraints located in or on the CTF pad. Seismic restraints may take many forms and may interface with the CTF pad via any combination of hard stops, rigid connections and/or flexible connections. The seismic restraints may work in concert with the HI-TRAC seismic restraints or may be independent. The seismic restraints shall restrict movement of the cask transporter during a seismic event. The seismic restraint configuration shall be developed in conjunction with the design of the Cask Transfer Facility.

4.11 Structural Rigidity

a. [

]

5. FUNCTIONAL/TECHNICAL REQUIREMENTS:

5.1 Lifting Towers

a. Towers shall be positioned such that the loads remain balanced around the towers in all modes of operation.

b. [.] Figure 5.1.1 shows the rectangle that must fit inside the frame of the cask transporter for a regular octagonal inside transporter configuration. The towers must be centered along the mid length of the rectangle.

c. Lifting Towers shall be capable of lifting the fully loaded HI-STORM Overpack (See Table 4.1).

[

]

e. Towers shall be equipped with access ladders to access the locking pins and/or wedge brakes.

f. Towers shall be readily removable for storage and transport.

g. Towers shall be readily capable of being installed and removed using small crane or lifted with a forklift and common hand tools.

h. If bolts or screws are used to secure the towers in place, the recommended torque shall be stamped on the base metal near the location of the fasteners.

5.2 Overhead Beam

a. An overhead beam is supplied to transfer the lift force of the towers to the cask transporter lift points. The overhead beam shall also support the MPC downloader pulleys.

b. [

.]

[]

[

]

h. MPC downloader components shall not be side loaded.

i. [

.]

j. Bearings shall be replaceable.

k. Bearing shall be sealed or equipped with dust plates.

l. [

]

m. The overhead beam shall be readily removable. Special lift lugs are not needed if the beam can be rigged by normal means.

n. If bolts or screws are used to secure the overhead beam in place, the recommended torque shall be stamped on the base metal near the location of the fasteners.

o. Rated load of the components shall be clearly and prominently labeled on the overhead beam.

p. Overhead beam shall be removable for transport and storage.

5.3 Cask Lift Points

a. The cask lift points shall accommodate the following special lifting devices.

b. HI-STORM lifting brackets (See Figure 1.2). For this lift, a load link inner spacing of 4 inches is required.

c. HI-TRAC lift links (See Figure 1.3). For this lift, a load link inner spacing of 2.5 inches is required.

d. Horizontal lift rig (See Figure 1.1). For this lift, a load link inner spacing of 8

inches is required. A special adapter device may be used if this is not practical.

e. The spacing need not be adjusted from the control console. Adjustment of the spacing shall not require significant operator effort.

f. The cask lift points shall be remotely moved along the overhead beam and operated from the control panel. The cask transporter load links need not be capable of side shifting under load.

g. [.]

h. [.]

5.4 Drive and Brake System

a. The cask transporter shall be capable of forward and reverse movement as well as turning and stopping.

b. The cask transporter shall be self- powered (no pusher or puller vehicle shall be required).

c. The cask transporter shall contain an on-board engine capable of supplying enough power to perform the functions described herein. The cask transporter need not perform simultaneous lifting and traveling.

d. The fuel tank capacity that provides fuel for all onboard power unit shall be at least 40 gallons but shall not exceed 50 gallons. Engine shall be diesel type.

e. The cask transporter shall be equipped with a flashing movement warning light and audible alarm with a minimum 10-meter range.

f. [.]

g. The cask transporter shall be capable of a loaded travel speed of approximately 0.4 mph on all cask handling described herein at maximum incline.

h. The cask transporter shall have a nameplate that, as a minimum, specifies the design rated load, empty weight minimum and maximum operating temperature limits (if applicable). The nameplate shall be located on or adjacent to the control panel.

i. [.]

j. Cask transporter shall meet applicable portions of Reference 2.3.c.

k. The cask transporter shall be capable of driving over the lip of the cask storage pad or a doorway threshold if necessary. The maximum lip height to be designed for is two (2) inches if graded to 5% on both sides.

l. Brakes shall be capable of stopping a fully loaded (Mode 1) cask transporter on the maximum designed grade.

m. *[*

]

5.5 Hydraulic System

a. Any hydraulic system shall be sized to perform all cask-handling operations without exceeding the component's rated hydraulic pressure. This includes fittings, hoses, valves, gauges, controls, and cylinders. The maximum rated pressure shall be the component manufacturer's rated pressure.

b. Any hydraulic lines shall be positioned to protect them from damage due to normal operations.

c. The main lift cylinders shall be capable of being visually inspected to check for hydraulic leaks prior to each use.

d. The hydraulic system shall have protective features to enable limitation of the lift force applied to the MPC lift cleats in the event that the MPC is lifted hard against the underside of the HI-TRAC lid. The lift force limit shall protect the MPC, MPC lifting devices and HI-TRAC transfer cask from damage and subsequent load drop.

e. *[*

]

5.6 Control System

a. The cask transporter shall be equipped with a control panel that is suitably positioned on the transporter frame to allow the operator easy access to the controls located on the control panel and at the same time, allow an unobstructed view of the cask handling operations. The control panel should provide for all weather operation if the cab is not enclosed.

b. The control panel shall have controls for all cask transporter operations

including speed control, steering, braking, load raising and lowering, cask restraining, and engine control.

c. The drive control system shall be capable of being operated by a single operator from an on-board console.

d. The control panel shall contain all gages and instruments necessary for the operator to monitor the condition and performance of both the power source and hydraulic systems. Control panel layout and design shall meet applicable portions of Reference 2.3.c.

e. A cask lift-height indicator shall be provided. This may be an instrument or a graduated scale painted or affixed to the lifting towers.

f. *[*

]

g. Holtec International shall approve placement of the operator control station for impact on occupational exposure.

5.7 Cask Restraint System

a. The cask transporter shall be equipped with a cask restraining system to secure the cask during movement. The restraint system shall be designed to prevent lateral and transverse swinging of the casks during cask transport.

b. The restraint system shall not cause damage to the cask exterior. Padding may be used. The restraint system components that attach to the casks shall be capable of operating at temperatures up to 200 °F.

c. The cask restraining system shall be positioned to prevent any straps from having to be placed over sharp edges of the transporter frame.

d. The cask restraint for securing the HI-STORM and HI-TRAC during transport shall be positioned such that an operator can position and attach it from ground level.

e. *[*

]

f. The restraining system shall restrict HI-TRAC and HI-STORM lateral and transverse movement during transporter operation.

5.8 General

a. The vehicle shall be capable of being towed or secured against movement in the event that the vehicle becomes inoperable during transit. The operations manual shall address the means of towing or tie-down.

b. A portable fire extinguisher shall be provided per Reference 2.3.c

6. DESIGN LIFE

6.1 *[*

.]

7. ENVIRONMENTAL REQUIREMENTS:

7.1 Weather Conditions

a. The cask transporter shall be considered to be an "all weather" machine. It shall be designed to operate under the following environmental conditions:

b. Rain and Snow

c. 0 °F to 100 °F at 0% to 100% humidity

7.2 Painting

a. The cask transporter shall be painted so that it can be stored and used outside for its service life. Recommended repainting during the service life is permissible.

b. All painted surfaces shall be free of oil, grease, dirt and dust, and shall be applied per the paint manufacturer's instructions.

8. REGULATORY REQUIREMENTS AND INDUSTRY STANDARDS

8.1 OSHA Requirements

a. The cask transporter shall also meet the applicable portions of Reference 2.3e and 2.3f for a vehicle of its type and function.

9. FABRICATION REQUIREMENTS

9.1 Welding

a. The cask transporter is fabricated as a commercial item. All welding shall be performed in accordance with AWS D14.1.

10. INSPECTION REQUIREMENTS

10.1 Inspections

a. All components shall be visually inspected by the Supplier for conformance with the fabrication drawings including:

b. Dimensions and tolerances

c. Correct Assembly

11. TESTING REQUIREMENTS

11.1 Testing shall be performed as summarized below.

a. All testing described herein shall be performed in accordance with Holtec-approved procedures. Procedures shall include pre-test and post-test measurements, test requirements, inspections, and acceptance criteria.

b. A functional test shall be performed on the unloaded cask transporter to ensure that the instrumentation and controls function in their intended manner. As a minimum, the test shall confirm the proper performance of all control panel instrumentation, indicator devices, controls and safety features.

c. A loaded drive test shall ensure that the completed cask transporter is capable of driving forward, backward and turning under a 180-ton load as described herein. The test shall be performed with test weights to simulate cask transporter operations. The test shall be performed at the Supplier's facility on a pre-designated test area using test weighs provided by the fabricator. The test shall include, at a minimum, simulating cask raising (using test weights) to a height of 18 inches, driving the loaded vehicle around a pre-designated course using forward, reverse and turning movements. The brakes shall be tested for their ability to stop the vehicle in both forward and reverse. The dead-man controls shall be tested to ensure that they operate. The vehicle speed shall be measured to ensure it is within the specified limits.

d. A 125% load test shall be performed with the transporter on a level surface with the vehicle stationary. The test weight, simulating 125% of the HI-STORM load shall be raised to a height of 6 inches, held for 10 minutes and lowered. Hydraulic pressure (if used) shall be maintained on the lift cylinders during the load test to prevent load settling. The lift towers shall operate smoothly and in unison during the raising and lowering operations. The hydraulic pressure shall be measured to ensure that pressure limits are maintained. This HI-STORM load may be simulated using test weights or a test device that applies the load to the lifting beam.

e. A 125% load test shall be performed with the transporter on a 5% inclined surface with the vehicle stationary. The test weight, simulating 125% of the HI-STORM load shall be raised to a height of[ ], held for 10 minutes and lowered. Hydraulic pressure (if used) shall be maintained on the lift cylinders during the load test to prevent load settling. The lift towers shall operate smoothly and in unison during the raising and lowering operations. The hydraulic pressure shall be measured to ensure that pressure limits are maintained. This HI-STORM load may be simulated using test weights or a test device that applies the load to the lifting beam.

f. A 125% load test shall be performed with the transporter on a level surface with the vehicle stationary. The test weight, simulating 125% of the HI-TRAC load shall be raised to a height such that the ground to centerline of lift link pin of [ ](see Figure 1.3), held for 10 minutes and lowered. Hydraulic pressure (if used) shall be maintained on the lift cylinders during the load test to prevent load settling. The lift towers shall operate smoothly and in unison during the raising and lowering operations. The hydraulic pressure shall be measured to ensure that pressure limits are maintained. This HI-TRAC load may be simulated using test weights or a test device that applies the load to the lifting beam.

g. All welds on primary structural components shall be visually inspected following load testing to determine that welds are not damaged (i.e., cracked). Any welds found to be unacceptable after load testing will require repair, followed by re-performance of load testing and reexamination of the welds. Components shall be visually examined to verify load testing did not cause any deformation or cracking of the base material.

h. The anti-drop protection system shall be tested using a 180-ton test weight to ensure that it holds the load.

i. The cask transporter shall be tested to ensure that it can travel up the design incline at the design speed and the brakes work according to this specification. Test shall occur at the site using combinations of actual equipment and test weights to be determined by the site. (See Sections 4.9a, 5.4f,5.4.g, 5.4i, 5.4l, and 5.4m).

j. Seismic restraint lugs or connections on the cask transporter shall be load tested.

11.2 Witness Hold Points

a. The functional and load tests described above shall be considered a hold point. The seller shall notify Holtec two (2) weeks in advance of such tests at which time PG&E and/or a representative of Holtec will confirm attendance to these tests. Holtec reserves the right to waive witnessing same; a waiver does not

relieve the seller of performing the tests.

12. DOCUMENTATION REQUIREMENTS

12.1 The cask transporter shall be supplied with an operations and maintenance manual which shall contain the following:

a. Maintenance Drawings

b. Maintenance Schedules and Procedures

c. Operating Procedures

d. Recommended Spare Parts List.

e. Precautionary information to avert performance malfunctions.

b.

FIGURE 1.1:
CASK TRANSPORTER CARRYING THE HI-TRAC IN THE HORIZONTAL ORIENTATION

FIGURE 1.2:
CASK TRANSPORTER CARRYING THE HI-STORM OVERPACK

FIGURE 1.3:
CASK TRANSPORTER CARRYING THE HI-TRAC TRANSFER CASK IN THE VERTICAL ORIENTATION

FIGURE 1.4:
HI-TRAC LIFT LINKS PREPARING TO UPEND THE HI-TRAC TRANSFER CASK

FIGURE 1.5:
HI-TRAC LIFT LINKS DURING UPENDING OF THE HI-TRAC TRANSFER CASK

FIGURE 1.6:
HI-TRAC AT THE COMPLETION OF UPENDING

FIGURE 1.7:
CASK TRANSPORTER PERFORMING MPC DOWNLOADING

FIGURE 1.8:
CASK TRANSPORTER MAJOR COMPONENTS

FIGURE 3.2.1:
DETAILS OF CASK LIFT POINTS AND MPC DOWNLOADER PULLEYS

FIGURE 3.2.2:
MPC DOWNLOADER COMPONENTS

FIGURE 5.1.1: PLACEMENT OF TOWERS FOR CASK HANDLING IN MODE 2.