

UNCONTROLLED

Applicable Field Changes _____

SOP 63-4

VITRIFICATION TURNTABLE STANDARD OPERATING PROCEDURE.

Rev. 0

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Date 8/6/87

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Quality Assurance
Manager

Date 8/6/87

Date 8/6/87

System Safety Class N

System Quality Level B

The estimated accumulated dose for the work described
in this document is less than 100 mRem.

WEST VALLEY NUCLEAR SERVICES CO., INC.

AUGUST 1987

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VITRIFICATION TURNTABLE STANDARD OPERATING PROCEDURE

1.0 SCOPE

This procedure provides operating instructions for the Vitrification turntable (63-V41) in a nonradioactive environment. This procedure covers the following turntable operations: turntable seals and positioning; canister installation and retrieval; carrousel rotation; and turntable cooling.

2.0 ABBREVIATIONS

- 2.1 SFCM - Slurry Fed Ceramic Melter
- 2.2 T/T - Turntable
- 2.3 CLCWS - Closed Loop Cooling Water System
- 2.4 DCS - Distributed Control System.
- 2.5 DW - demineralized water
- 2.6 IR - instrument rack

3.0 RESPONSIBILITIES

- 3.1 The Vitrification Operations Manager is responsible for directing the overall operation of the Vitrification System.
- 3.2 Vitrification Product Qualification Engineer provides technical direction for the operations and testing of the Vitrification System.

- 3.3 The Vitrification Operations Shift Supervisor is responsible for assignment of properly trained operators at Vitrification and for day-to-day direction of those operators.
- 3.4 The Vitrification Operator is responsible for operation of the plant according to approved operating procedures, run plans, per the supervisors direction. When a situation is not covered by a procedure, is responsible for notifying the shift supervisor.
- 3.5 Quality Assurance will perform surveillance of the ongoing work as deemed appropriate.

4.0 TOOLS, EQUIPMENT, COMPONENTS, AND REFERENCES

4.1 Tools and Equipment

- 4.1.1 CTS Overhead Crane and hook, 10000# dynamometer.
- 4.1.2 Gore-Tex and RTV sealants, scraper, 3" c-clamps.
- 4.1.3 1/2 ton come-along, slings, cable, and shackles.
- 4.1.4 Canister grapple # 2. Figure 1
- 4.1.5 200 ft-lb torque wrench and vise grip pliers.
- 4.1.6 Flat washers and tool control area signs.

4.2 Components

- 4.2.1 SFCM/Turntable Seal. Figure 2
- 4.2.2 T/T Access Port Seal (top hat). Figure 3
- 4.2.3 Canisters.
- 4.2.4 T/T access port cover.

4.3 References

- 4.3.1 SOP 63-2, "Vitrification Operations Cleanliness and Tool Control Procedure", West Valley Demonstration Project, June 1987.
- 4.3.2 WVNS-OM-001, "WVDP Hoisting and Rigging Manual", West Valley Demonstration Project, March 1985.
- 4.3.3 SOP 00-4, "Lock and Tag Procedure", West Valley Nuclear Services Co., Inc., March 1987.

5.0 GENERAL INFORMATION

The primary functions of the turntable are to position canisters under the SFCM for glass loading operations and accommodating the cooldown of filled canisters. The turntable holds up to four canisters in a carousel assembly.

Operators should perform frequent checks on systems that are turned on or shut down to assure the system does what is expected, for example, cooling water flows, pressure rises, level indicators, etc.. If required action that is supposed to happen does not happen, (1) stop do not attempt to perform the next step, (2) secure system in a safe mode, and (3) notify shift supervisor immediately.

6.0 PROCEDURE

All steps in this procedure which require an inspection, the recording of data, or a sign off will be denoted by a [+] in the left hand margin. The inspection results, data, or sign off will be recorded in the Vitrification Daily Log.

6.1 Turntable Seals

SFCM/Turntable Seal Installation and Removal

The T/T has two fill stations corresponding to the 2 SFCM discharge sections. However, only the west fill position is used at this time; the other station is a backup. The SFCM/turntable seal prevents air leaks between the two units and provides sample and video ports.

6.1.1 INSTALLATION

6.1.1.1 The T/T top plate shall be established as a tool control area per section 6.4 of SOP 63-2 prior to starting the following work.

6.1.1.2 If the SFCM/turntable seal is not attached to the turntable top plate, complete steps 6.1.1.3 and 6.1.1.4. If the SFCM/turntable seal is attached to the turntable top plate, go to step 6.1.1.5 and continue with the procedure.

- 6.1.1.3 Remove the T/T northwest port cover.
- 6.1.1.4 Place the SFCM/turntable seal on the T/T northwest port and secure to the turntable by torquing the 8 free nuts 25 ft-lbs, repeat torque at 75 ft-lbs, and finally 200 ft-lbs. See Figure 4 for the torquing sequence.
- 6.1.1.5 Clean the top of the SFCM/turntable seal with acetone, apply Gore-Tex joint sealant to the top rim of the SFCM/turntable seal and RTV sealant to the SFCM/turntable joints.
- 6.1.1.6 Remove the c-clamps from the stainless steel SFCM west discharge port cover plate and slide the plate off.
- 6.1.1.7 Rig a come-along to the T/T north I-beam support and sling(s) to the SFCM south I-beam support. See Figure 5 for example rigging.

An additional operator or the shift supervisor will be required to complete this next step.

6.1.1.8 While rolling T/T under SFCM, the additional operator or supervisor shall verify the SFCM/turntable seal is clearing SFCM west discharge port $\sim 5/8"$.

6.1.1.9 Remove the come-along and sling(s) from the T/T and SFCM support beams.

6.1.1.10 Rig a come-along to the SFCM north I-beam support and sling to the T/T north I-beam support. See Figure 6 for example rigging.

6.1.1.11 While rolling T/T under SFCM, the additional operator or supervisor shall verify the SFCM/turntable seal is clearing SFCM west discharge port $\sim 5/8"$.

6.1.1.12 Remove the come-along and sling(s) from the T/T and SFCM support beams.

6.1.1.13 Install C-clamps to attach the SFCM discharge port to the SFCM/turntable seal.

6.1.2 REMOVAL

6.1.2.1 The T/T top plate shall be established as a tool control area per section 6.4 of SOP 63-2 prior to starting the following work.

6.1.2.2 Remove the C-clamps attaching the SFCM discharge port to the SFCM/turntable seal.

6.1.2.3 Rig a come-along to the south T/T support I-beam and sling(s) to the south T/T angle iron. See Figure 7 for example rigging.

An additional operator or the shift supervisor will be required to complete the next step.

6.1.2.4 While rolling the T/T from under the SFCM, the additional operator or supervisor shall verify the SFCM/turntable seal is clearing the SFCM discharge port ~5/8".

6.1.2.5 Once the turntable is out from under under the SFCM, replace the SFCM discharge port cover and C-clamp in place.

- 6.1.2.6 Remove the come-along and sling(s) from the appropriate support beams.
- 6.1.2.7 Gently scrap and/or peel the sealants from the SFCM/turntable seal and cover.
- 6.1.2.8 If the SFCM/turntable seal is to be removed from the T/T top plate, complete steps 6.1.2.9 and 6.1.2.10. Otherwise, place a cover over the SFCM/turntable seal opening.
- 6.1.2.9 Unbolt the SFCM/turntable seal from the T/T and remove the SFCM/turntable seal.
- 6.1.2.10 Place a cover over the T/T top plate SFCM/turntable seal port.

6.1.3 Turntable Access Port Cover

The turntable access port allows canister installation and removal. There are two types of seals for the T/T access port. One is a circular plate which covers the access port and the other is the T/T access port seal (top hat).

6.1.3.1 INSTALLATION

6.1.3.1.1 The T/T top plate shall be established as a tool control area per section 6.4 of SOP 63-2 prior to starting the following work.

6.1.3.1.2 Clean the T/T southwest port rim with acetone and apply Gore-Tex sealant.

6.1.3.1.3 Place the T/T access port cover over the T/T southwest port and secure to the T/T by bolting down with flat washers.

6.1.3.2 REMOVAL

6.1.3.2.1 The T/T top plate shall be established as a tool control area per section 6.4 of SOP 63-2 prior to starting this work.

6.1.3.2.2 Unbolt and remove the T/T access port cover from the T/T.

6.1.3.2.3 Place a temporary cover over
the T/T access port.

6.1.4 Turntable Access Port Seal Installation & Removal

The T/T access port seal (top hat) allows canister installation and removal with minimum vacuum loss. During canister glass loading this unit simply covers the T/T southwest port. To access a canister position, the cover of the access port seal is lifted. This lowers the seal holder onto the canister liner isolating this canister position from the rest of the T/T. This enables canister manipulation without affecting system vacuum.

Installation

- 6.1.4.1 The T/T top plate shall be established as a tool control area per section 6.4 of SOP 63-2 prior to starting this work.
- 6.1.4.2 Remove the T/T access port cover per section 6.1.3.2.
- 6.1.4.3 Clean the T/T southwest access port rim with acetone and apply Gore-Tex sealant.

6.1.4.4 Rig the top hat lifting base, shackles, and cables to the CTS overhead crane in accordance with Figure 8 and lift into place over the T/T southwest port.

6.1.4.5 Secure the top hat to the T/T by torquing the 8 free nuts 25 ft-lbs, repeat torque at 75 ft-lbs, and finally 200 ft-lbs. See Figure 4 for the torquing sequence.

6.1.4.6 At instrument rack 8, verify the following:

Valve	Position
6-DW-GL-001	Open
CV-4105	Closed
CV-4105 isolation valves	Open

6.1.4.7 Connect the DW hose from IR 8 to nozzle G of the top hat.

An additional operator or the shift supervisor, would be helpful to complete the next two steps. So the additional person can verify the water level at the top hat.

6.1.4.8 On the DCS or P-200, adjust the % out for micon 3 loop 8 until LI-4101 process variable reaches ~16 inches.

- 6.1.4.9 At the top hat overflow pipe, visually verify the water level has reached the overflow pipe. If not, repeat steps 6.1.4.8 and 6.1.4.9 until the water level has reached the overflow pipe.
- 6.1.4.10 On the DCS or P-200, return % out for micon 3 loop 8 to 0. This should stop the flow of DW to the top hat which can be observed by the level being sustained on LI-4101.

REMOVAL

- 6.1.4.11 The T/T top plate shall be established as a tool control area per section 6.4 of SOP 63-2 prior to starting this work.
- 6.1.4.12 At IR 8, verify the following:
- | Valve | Position |
|--------------------------|----------|
| CV-4105 | Closed |
| CV-4105 isolation valves | Closed |
- 6.1.4.13 Disconnect the DW hose from nozzle G of top hat.
- 6.1.4.14 Unbolt the top hat from the T/T.

6.1.4.15 Rig the CTS overhead crane to the top hat lifting base with shackles and cables in accordance with Figure 8 and remove the top hat.

6.1.4.16 Cover the T/T southwest port with a temporary cover or follow the steps in 6.1.3 of this procedure to install the T/T access port cover.

6.2 CARROUSEL ROTATION

The turntable drive system rotates and positions the four canister positions under the SFCM discharge and canister access ports. The drive system is composed of three modules: the drive assembly, the drive extension, and the canister carousel. The carousel can be rotated while the T/T is sealed to the SFCM or when the T/T is out from under the SFCM.

Carousel rotation will require two persons, one to verify the T/T lobe position and the other to operate the T/T drive controls.

6.2.1 The T/T top plate shall be established as a tool control area per section 6.4 of SOP 63-2 prior to starting this work.

- 6.2.2 Verify the T/T motor control "ON/OFF" switch, located behind IR 8, is in the "OFF" position by depressing the switch.
- 6.2.3 Verify the T/T motor control "START/STOP" switch, located behind IR8, is in the "STOP" position by depressing the switch.
- + 6.2.4 Prior to rotation of the T/T, the Vitrification Shift Supervisor must visually inspect the T/T internals for obstructions and remove the "Danger" tag from the T/T motor control safety switch per SOP 00-4.
- 6.2.5 Place the T/T motor control "FWD/REV" switch located behind IR8, in the desired position.
- 6.2.6 Place the T/T motor control "ON/OFF" switch in the "ON" position. This switch must be on in order for the T/T carousel to rotate.
- 6.2.7 Place the T/T motor control "START/STOP" switch in the "START" position. This will start the T/T carousel to rotate.
Wait for the second person watching the access port to signal the desired canister lobe is in the correct position.
- 6.2.8 Place the T/T motor control "START/STOP" switch in the "STOP" position. This will stop the T/T carousel from rotating.

- 6.2.9 Place the T/T motor control "ON/OFF" switch in the "OFF" position. This turns off the T/T motor control.
- 6.2.10 If the T/T is to be rotated numerous times for example to install or remove canisters and/or thermocouples, the Vitrification Shift Supervisor must visually inspect the internals of the T/T for obstructions, then repeat steps 6.2.5 through 6.2.10.
- + 6.2.11 The Vitrification Shift Supervisor must lock out the T/T motor control safety switch per SOP 00-4.

6.3 Cooling Water to the Turntable

6.3.1 Supplying Cooling Water to the Turntable

6.3.1.1 Verify closed loop cooling water return valve 66-GT-039 located at instrument rack 8 is open.

6.3.1.2 Verify closed loop cooling water control valve TV-4101, located at IR 8, is closed.

6.3.1.3 Verify closed loop cooling water supply valve 66-GT-132, located at IR 8, is open.

6.3.1.4 Verify closed loop cooling water valve 66-GT-133, located at IR 8, is open.

6.3.1.5 On the DCS CRT or at the P-200, adjust micon 3 loop 6 TIC-4101 % out until ~10 gpm (or a value set by the Vitrification Product Qual. Engineer) is reached as indicated on micon 3 bonus tag 6 FT-4109. Also, CW flow to the T/T can be observed on DCS Graph 80 CLCWS or on FT-4109 at IR 8, or on Micon 5 Input 15.

6.3.2 Shut Down of Cooling Water to the T/T

6.3.2.1 On the DCS CRT or P-200, adjust micon 3 loop 6 TIC-4101 % out until ~0 gpm is reached as indicated on micon 3 FT-4109. Also, CW flow to T/T can be observed on DCS Graph 80 CLCWS or at IR #8 FT-4109, or on Micon 5 Input 15.

6.4 CANISTER INSTALLATION AND RETRIEVAL

6.4.1 Turntable Canister Installation

- 6.4.1.1 Remove the T/T access port cover or top hat cover or the top hat and position the carrousel per section 6.2 of this procedure.
- 6.4.1.2 Rig a dynamometer, shackle, and the canister grapple to the CTS overhead crane in accordance with Figure 9.
- 6.4.1.3 Rotate the grapple screwjack until the engaging fixture is open enough to provide clearance to fit over the canister flange.
- 6.4.1.4 Using the CTS overhead crane, position the grapple over the canister.
- 6.4.1.5 If the canister is in the upright position, lower the grapple over the canister flange until the grapple is resting flush against the canister flange. Proceed to step 6.4.1.7.

- 6.4.1.6 If the canister is horizontal or lying at an angle off the vertical, the grapple must be rotated such that the opening of the grapple engaging fixture is the first to contact the canister flange when the grapple is lowered onto the canister flange.
- 6.4.1.7 Rotate the grapple screwjack until the grapple engaging fixture is closed.
- 6.4.1.8 Using the CTS overhead crane, lift the canister and position over the T/T access port.
- 6.4.1.9 Slowly guide the canister into the T/T lobe.
- 6.4.1.10 Once the canister is supported by the bottom of the T/T liner, supply a small amount of slack to the CTS overhead crane cable and open the grapple engaging fixture by rotating the grapple screwjack.
- 6.4.1.11 Remove the grapple from the canister flange and lift to a resting area.

6.4.2 Turntable Canister Retrieval

CAUTION: The canisters may be thermally hot when removed. Wear coveralls and heat resistant gloves if this condition exists.

- 6.4.2.1 Remove the T/T access port cover or the top hat cover or the top hat and position the carrousel per section 6.2 of this procedure.
- 6.4.2.2 Rig the canister grapple, dynamometer, and shackle to the CTS overhead crane in accordance with Figure 9 .
- 6.4.2.3 Rotate the grapple screwjack until the engaging fixture is open enough to provide clearance to fit over the canister flange.
- 6.4.2.4 Using the CTS overhead crane, position the grapple over the canister.
- 6.4.2.5 Lower the grapple over the canister flange until the grapple is resting flush against the canister flange.

- 6.4.2.6 Rotate the grapple screwjack until the grapple engaging fixture is closed.
- 6.4.2.7 Using the CTS overhead crane, lift the canister and remove from the T/T access port.
- 6.4.2.8 Slowly guide the canister into the canister six pack or another designated area of CTS by the Vitrification Operations Shift Supervisor.
- 6.4.2.9 Once the canister is set down, supply a small amount of slack to the CTS overhead crane cable and open the grapple engaging fixture by rotating the grapple screwjack.
- 6.4.2.10 Remove the grapple from the canister flange and lift to a designated area of CTS by the Vitrification Operations Shift Supervisor.

7.0 List of Figures

Figure 1 - Canister Grapppler #2

Figure 2 - SF6M/Turntable Seal (Temporary)

Figure 3 - Access Port Seal

Figure 4 - Turntable Seal and Cover Ports Torque Sequence

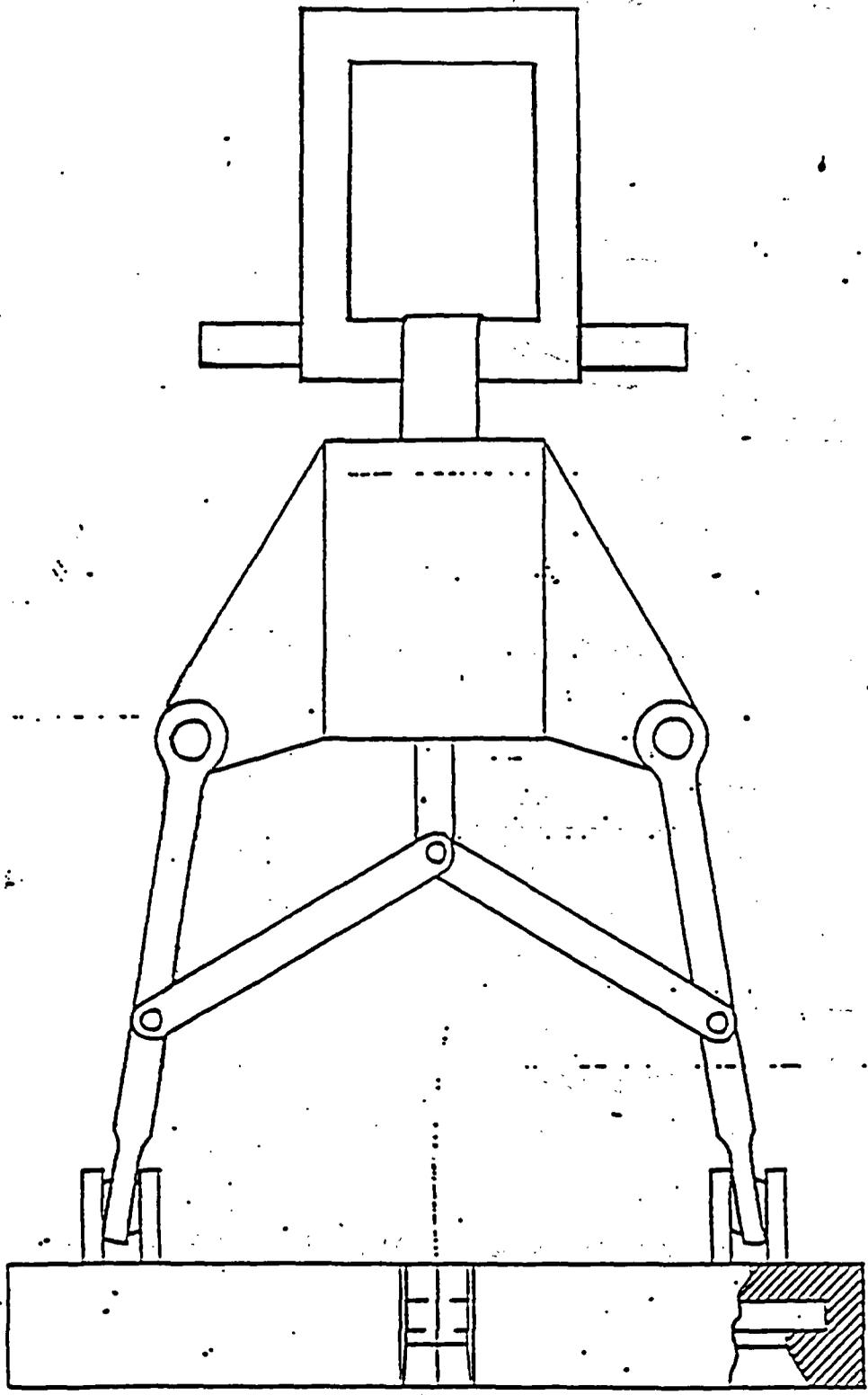
Figure 5 - Turntable Temporary Installation Rigging

Figure 6 - Turntable Temporary Installation Rigging- Step 2

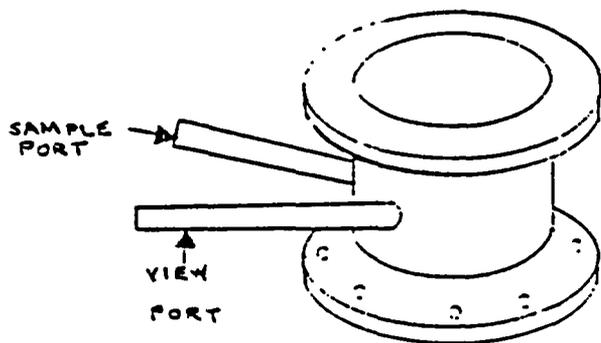
Figure 7 - Turntable Temporary Retraction Rigging

Figure 8 - Turntable Access Port Lifting Base Rigging

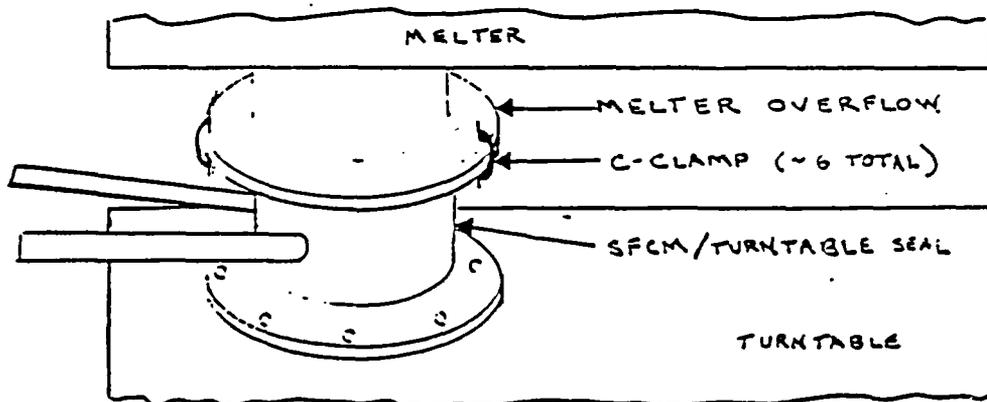
Figure 9 - Canister Rigging



CANISTER GRAPPLE #2
FIGURE 1



SLURRY FED CERAMIC MELTER/TURNTABLE SEAL



SFCM/TURNTABLE SEAL INTERFACE

SUBJECT: SFCM/TURNTABLE SEAL
(TEMPORARY)

NUMBER: FIGURE 2

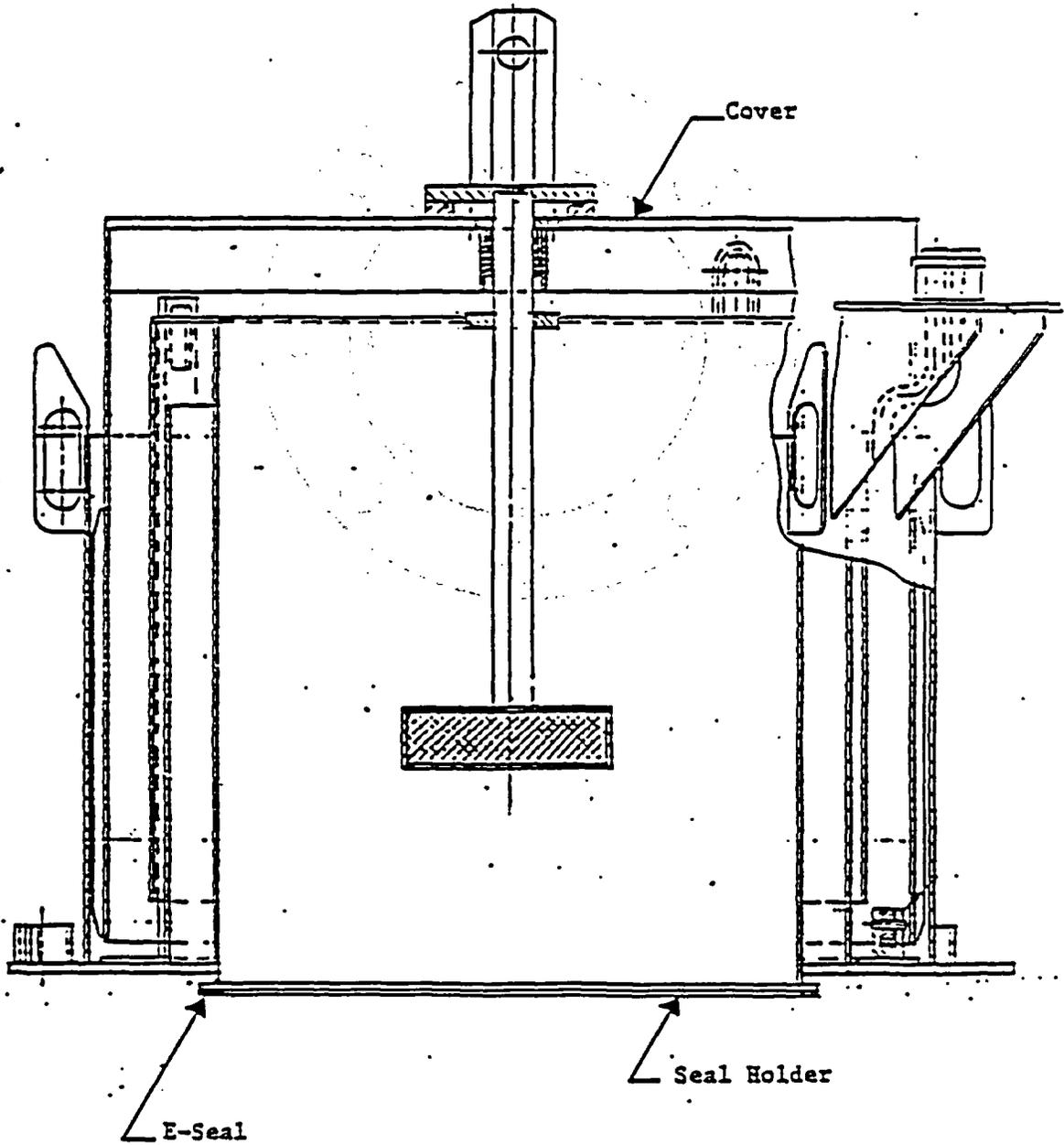
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PREPARED BY: B. F. LEWIS

DATE: 8-5-57

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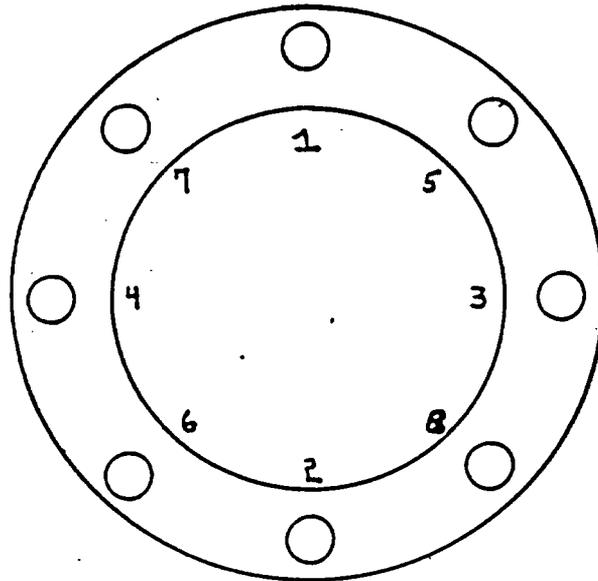
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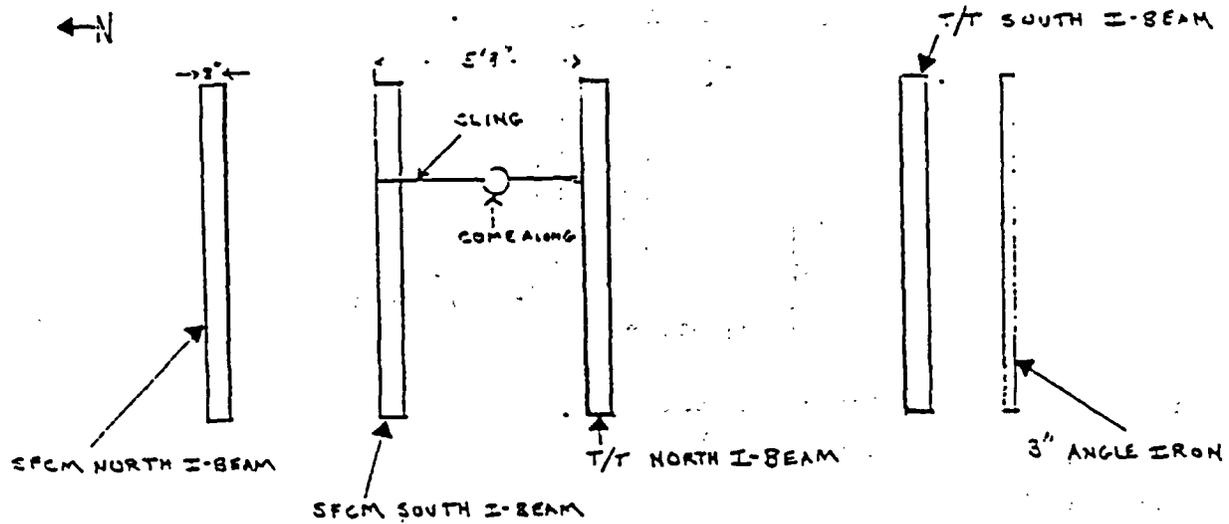
Access Port Seal
FIGURE 3



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West Valley, New York



SUBJECT: TURNTABLE SEAL AND COVER	NUMBER: FIGURE 4	PAGE OF
PORTS TORQUE SEQUENCE	PREPARED BY: B. F. LEWIS	DATE: 8-3-87
	CHECKED BY: <i>[Signature]</i>	DATE: 8-3-87



SLING
SWL 1000#
LENGTH ~ 8'

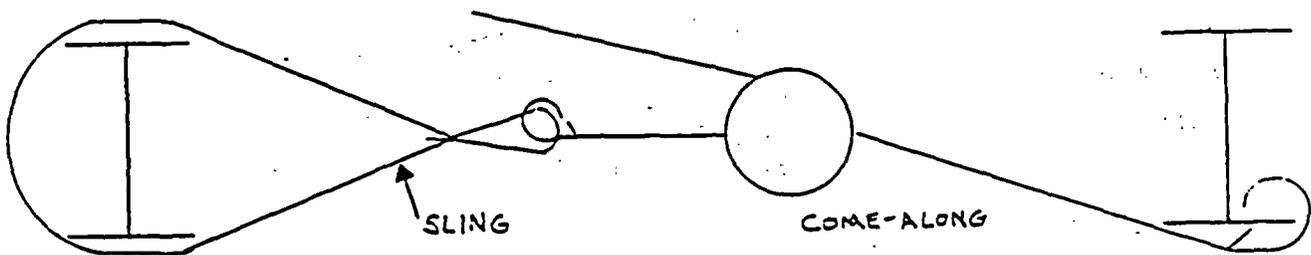
COME-ALONG
SWL 1000#

TOP VIEW

SCALE 3/16" = 1'

SFCM SOUTH I BEAM

T/T NORTH I BEAM



SIDE VIEW

SCALE 1" = 1'

SUBJECT: TURNABLE - TEMPORARY
INSTALLATION RIGGING

NUMBER: FIGURE 5

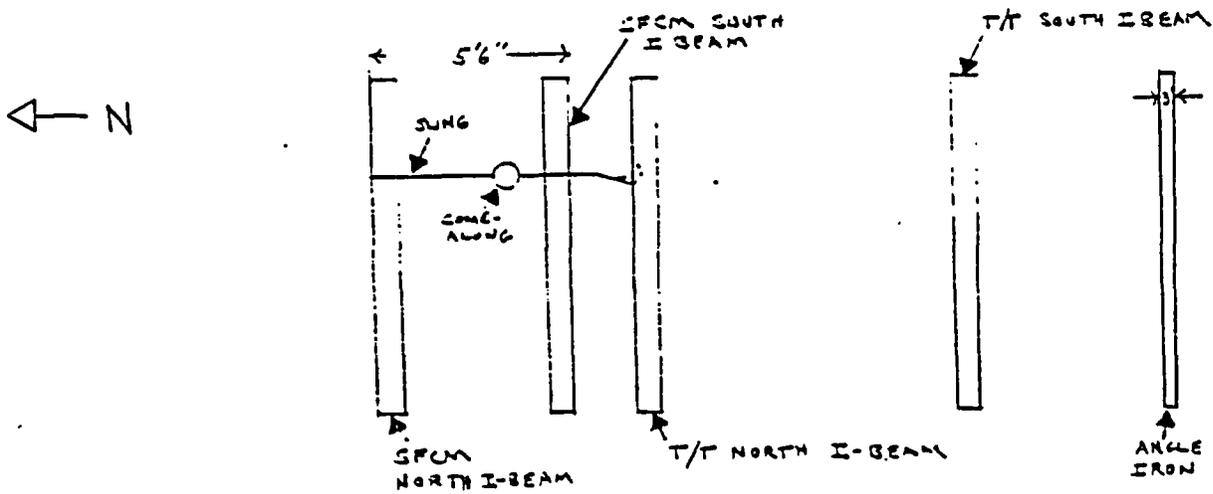
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PREPARED BY: B. F. LEWIS

DATE: 2-5-27

CHECKED BY: T. Murawski

DATE: 3-6-27



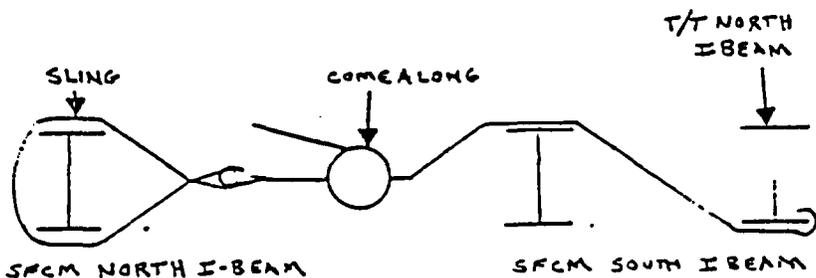
SLING
SWL 1000#
LENGTH ~ 8'

COME-ALONG
SWL 1000#

TOP VIEW

SCALE $\frac{3}{16}'' = 1'$

SLING
SWL 1000#
LENGTH ~ 8'

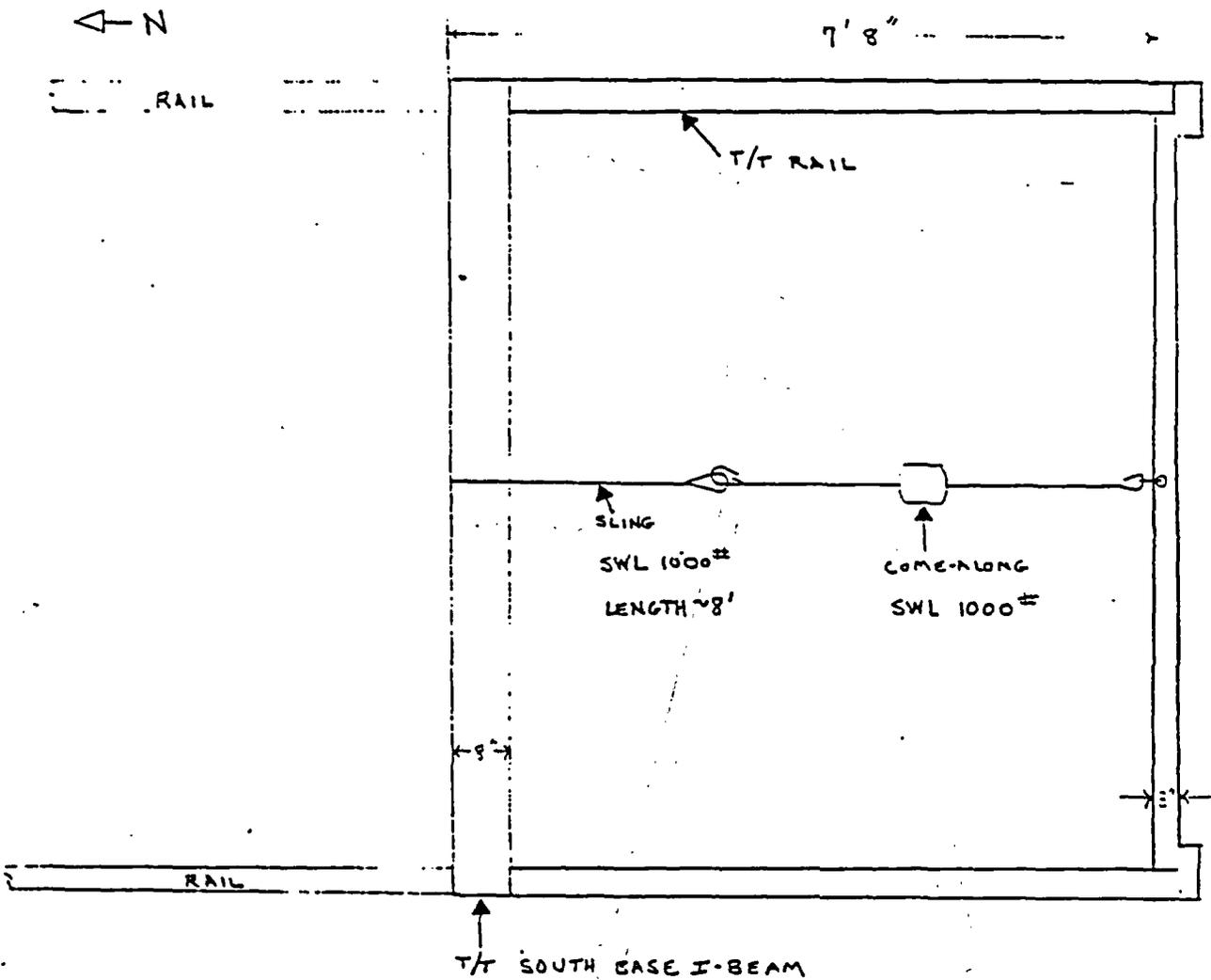


COME-ALONG
SWL - 1000#

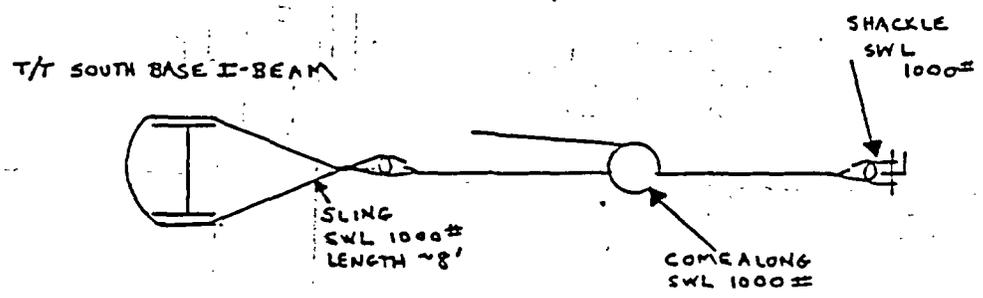
SIDE VIEW

SCALE $\frac{1}{2}'' = 1'$

SUBJECT: TURNABLE TEMPORARY	NUMBER: FIGURE 6	PAGE	OF
INSTALLATION RIGGING - STEP 2	PREPARED BY: B. F. LEWIS	DATE: 8-6-87	
	CHECKED BY: T. M. W. [Signature]	DATE: 8-10-87	



TOP VIEW SCALE $\frac{1}{2}'' = 1'$

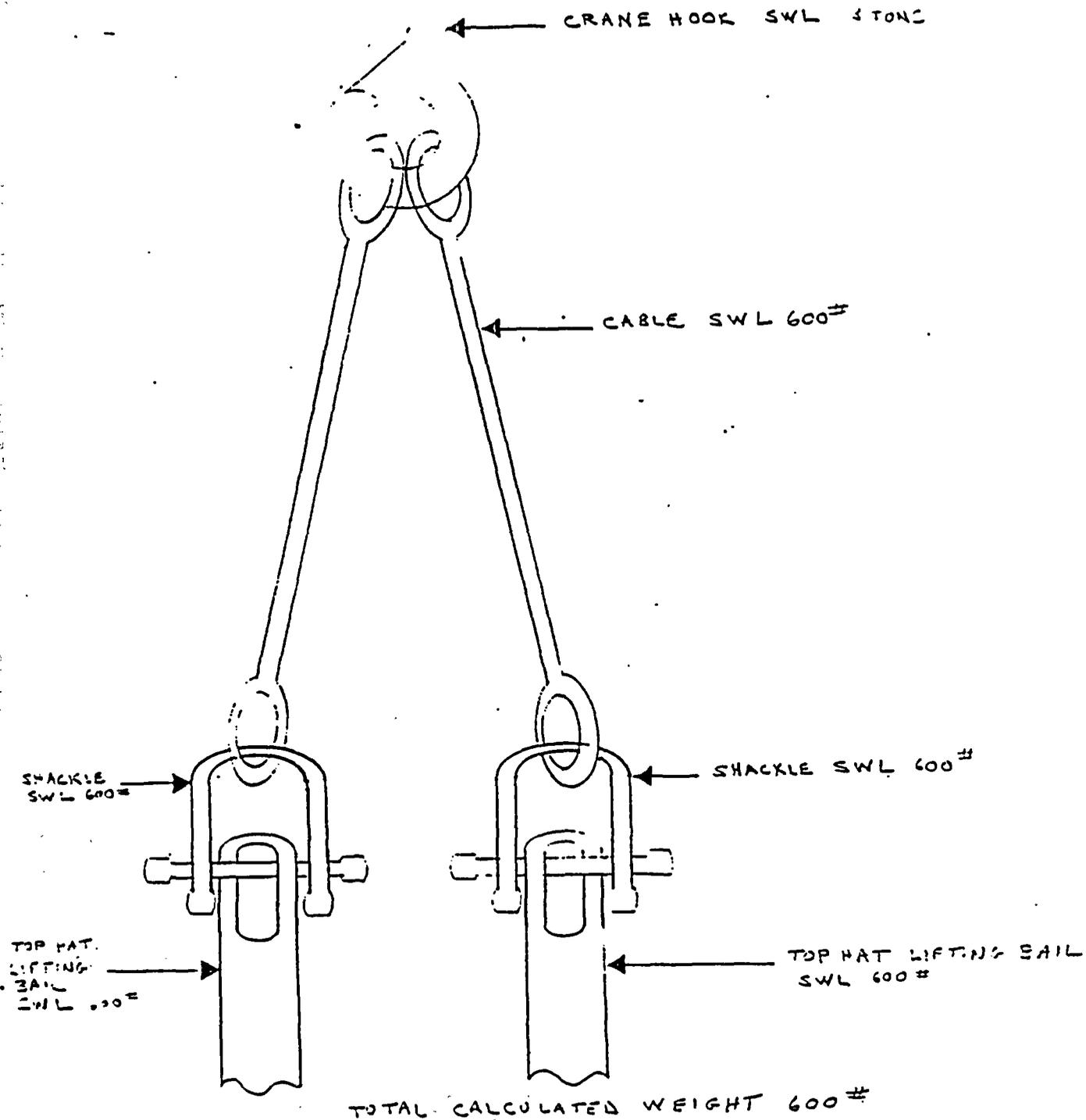


SIDE VIEW SCALE $\frac{1}{2}'' = 1'$

SUBJECT: TURNTABLE TEMPORARY	NUMBER: FIGURE 7	PAGE	OF
RETRACTION RIGGING	PREPARED BY: R. F. LEWIS	DATE: 2-5-87	
	CHECKED BY: T. F. MULLAUSTE	DATE: 8-6-87	



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West Valley, New York



SUBJECT: TURNABLE ACCESS PORT

NUMBER: FIGURE?

PAGE OF

LIFTING BASE RIGGING

PREPARED BY: B. F. LEWIS

DATE: 8-5-57

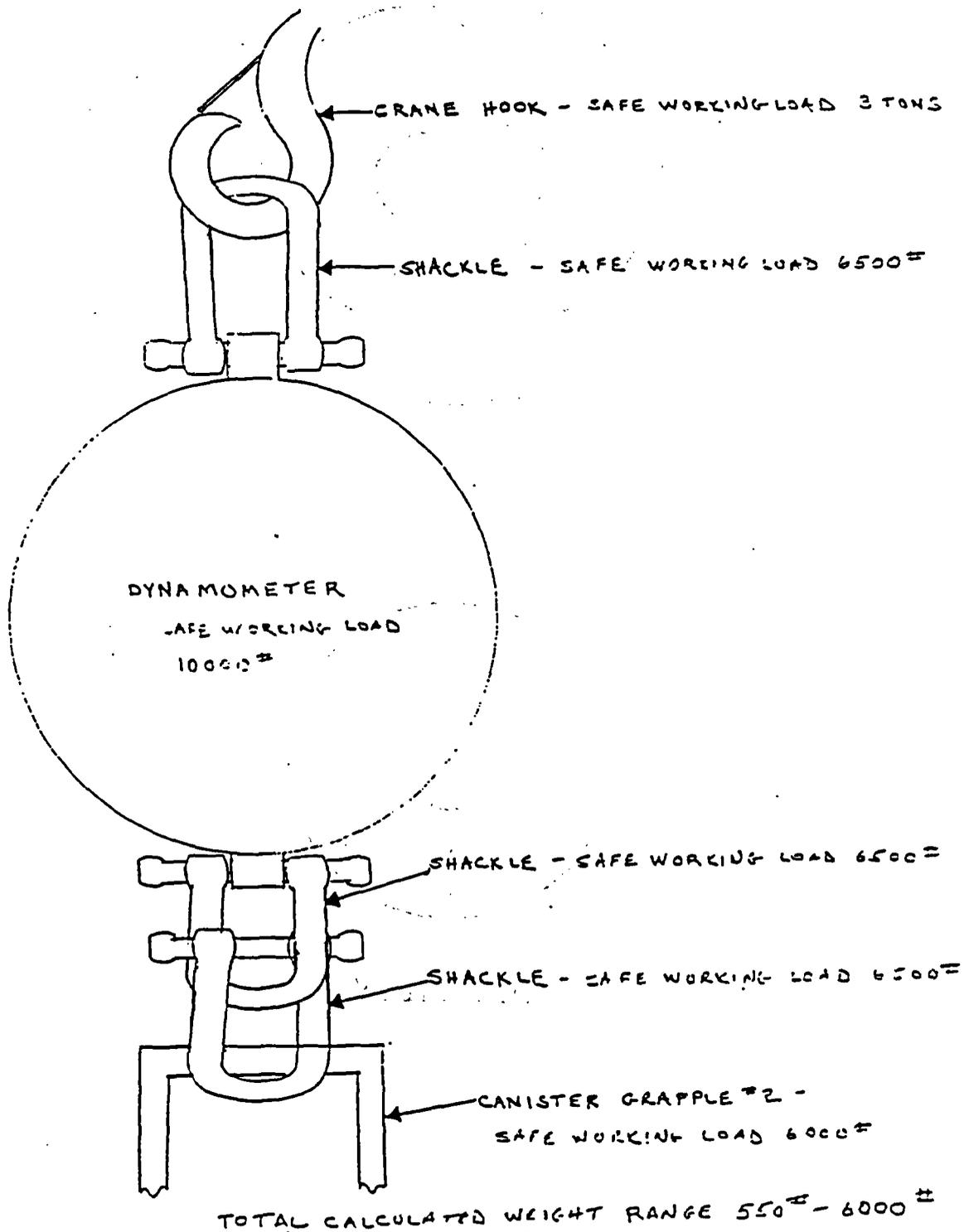
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DATE: 8-5-57

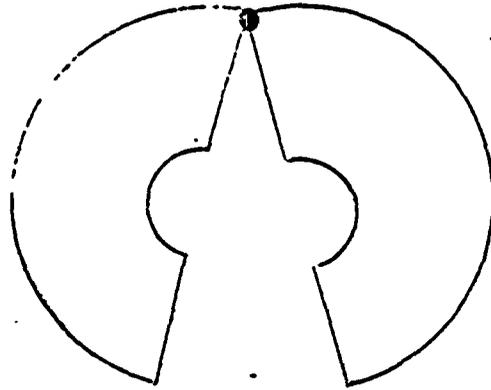


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West Valley, New York

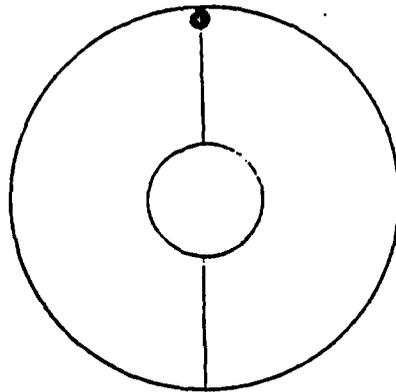


SUBJECT: CANISTER RIGGING	NUMBER: FIGURE 9	PAGE OF
	PREPARED BY: B. F. LEWIS	DATE: 8-5-87
	CHECKED BY: TFMW2Mki	DATE: 8-5-87



CANISTER GRAPPLE #2
OPEN POSITION

TOP VIEW



CANISTER GRAPPLE #2
CLOSED POSITION

TOP VIEW

SUBJECT: CANISTER GRAPPLE #2

NUMBER: FIGURE 10

PAGE OF

FAW POSITIONS

PREPARED BY: B.F. LEWIS

DATE: 8-5-87

CHECKED BY: T. M. G. [Signature]

DATE: 8-5-87