

INDUSTRIAL - ACADEMIC

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INSPECTION REPORT NO. 81-02

Attached

- Appendix A
- Appendix B
- Appendix C
- Memo

Defense Nuclear Agency  
AFFRI  
Bethesda, Maryland

Licensee contact: MAJ. R. R. SMOKER Telephone no. 295-1048

License no. 19-08330-03 Last amendment and date:                     

Category: E, and Priority: IV, as of last amendment.

Inspection date(s): May 16, 1981 Type of inspection: Special Announced

SUMMARY OF FINDINGS AND ACTION

- No noncompliance,
- Noncompliance, Appendix A
- Action on previous noncompliance, Appendix B
- Noncompliance, 591 issued
- Regional action                      No action
- Supplemental info, Appendix C

RECOMMENDATIONS

See basis in Appendix C of attached memo.

- Change Category to:
- Change Priority to:
- Next inspection date: June 1982

PERSONS CONTACTED

Col. B. Adcock, Program Coordinator  
Major R. Smoker, Facility Supervisor  
Numerous Defense Nuclear and AFFRI personnel  
involved in restoration operation

8211110143 820825  
PDR FOIA  
MACKLINB2-269 PDR

Inspector: C. Rowe  
Approved: V. Costello fa (B)

June 25, 1981  
7-13-81

## APPENDIX C - SUPPLEMENTARY INFO

Licenses: \_\_\_\_\_

License no: \_\_\_\_\_

- Uncorrected/repeated noncompliance  
 Unusual occurrence, conditions, etc  
 Basis for change of Category or Priority

- Unresolved issues  
 Inspector's comments

Gamma Facility source elevator #2 loaded with approximately 24,000 Ci of Co-60 jammed on an experimental support apparatus about 2.5 feet above the storage pool on April 22, 1981. This inspection was limited to observation of the licensee restoration operation in accordance with procedure previously submitted to Region I for review. Prior to start of restoration I toured the facility with Major Smoker and inspected the shield which was constructed around the entrance door to the Facility exposure room. This shielding designed to house the robot and enable the door to be opened remotely with minimal radiation levels had been completed the previous evening and the robot was positioned inside the shield. The restoration procedure and various options were discussed with Major Smoker. Numerous remote TVs were set up in the facility to ~~operate~~ monitor operations. A briefing was conducted by Col. Adcock and Maj. Smoker for all personnel involved in restoration operation at 0930 May 16, 1981. Col. Adcock controlled the operation from a Command Area. The Facility door was opened and a ramp lowered across the door sill to allow the robot to enter. Surveys were taken for radiation levels inside and outside the facility during this time with no increase in radiation levels reported. The robot was positioned in the exposure room and raised the elevator, repositioned it and slipped the elevator into the storage pool. The radiation level in the exposure room decreased from 650 R/hr to 110 mR/hr at this time. The elevator cable was then cut by the robot and the level in the room was reduced to background. I then observed the initial entry into the exposure room for radiation level and wipe surveys. The survey team reported no radiation level above background or any other radiological hazards in the room. I then entered the exposure room with Maj. Smoker and the facility investigator

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## APPENDIX C - SUPPLEMENTARY INFO

Licensee: \_\_\_\_\_

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 Uncorrected/repeated noncompliance Unresolved items Unusual occurrence, conditions, etc Inspector's comments Basis for change of Category or Priority

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officer and confirmed the successful completion of the restoration of the facility to a radiologically safe condition. I informed Major Smoke that no report would be required by Region I until completion of their investigation and at that time they should submit close-out report. The restoration operation was uneventful and was completed with strict adherence to their procedure. This report was mailed to Region I by the licensee on June 16, 1981.

## COBALT FACILITY RESTORATION

Summary - Saturday, 16 May 1981

At 0800 hours all predesignated personnel (see enclosure 1) will be assembled in the main conference room for an operation/safety briefing. The AFRRI Watch will be at the front desk to secure the AFRRI complex, and will not admit any personnel via the front door. Upon completion of the briefing all personnel will report to their designated duty/staging areas (see enclosure 1). The duty officer and duty watch will reposition their activities to the receiving dock area located in the northwest section of the Institute. The duty officer phone will be switched over to this area to receive incoming calls. All inquiries concerning the restoration operation will be referred to the Director's Office, 51210/51792. After 0800 hours all invited personnel will enter the AFRRI via the receiving dock entrance. Only predesignated personnel (see enclosure 1) will be authorized admission. Should any questions arise as to entrance of someone not on this list, the duty officer will contact the Director's Office. After completion of specific tasks, operational personnel will then return, via designated routes, to their duty/staging area. At no time will personnel enter the Phase IV posted area unless accompanied by SAF personnel and with the approval of the Operations Commander. The security NCOIC will notify NNMC security to install barricades to prevent unnecessary traffic flow in front of the complex, not for radiological safety purposes.

SAF personnel will sweep the previously posted Phase IV area to insure no personnel are in the area. Upon confirmation that all personnel are positioned and required actions have been completed the Command & Control (C&C) element will initiate the restoration operation. CCTVs will be prepositioned focusing on the facility door. Each sub-operation will be initiated by the C&C element. The facility door interlock will be bypassed. The main circuit breaker, 2nd floor will be closed. Circuit breaker in the Cobalt prep area will be closed. The door will be opened to its designated 48" position. SAF personnel will monitor the opening both within and outside the facility. Since the shield was tested the previous day no levels above those proposed are expected. The ramp system will be lowered. The robot system will be moved across the ramp onto the entrance platform. It will remove the hook chain and enter onto the elevator. Cables for the system will be fed via the 4" I.D. conduit running through the shield. Personnel feeding the cable will have,

in addition to their regular dosimetry, finger and wrist dosimetry. Once the robot is on the elevator, the ramp will be retracted into the shield cave and the door will be moved to approximately 6" from the closed position. This gap is required to allow free travel of the robot's cables. The robot will be lowered on the elevator to the facility floor level. While the robot is being lowered the CCTV's within the facility will be used to monitor its descent. Cable will be fed during this operation but care will be taken to insure the cable is kept relatively taut at all times. This will limit the possibility of the cables tangling or getting caught during this procedure. Upon reaching the floor level the robot will be moved off of the elevator and positioned to conduct the actual restoration operation. The proposed scenario is presented in such a manner as to provide a logical flow from one sequence of operational procedures to the next. Although it is planned to follow the procedures as presented, alteration of, or deviation from, any of the selected operations can be authorized by the Operations Commander. Additionally, upon entry into the facility the robot's cameras will be used to survey the entire situation from its vantage point. This survey will include but not be limited to, the position of carriage brake controls, condition of source elevator doors and cables, position of carriages in respect to each other, and the position and condition of the jammed experiment support frame member. Once the survey is complete the restoration operation will be performed as follows:

a. The robot will approach source elevator #2 from the south. Using its hook attachment, which will be attached prior to entering the facility, it will release the elevator #2 carriage brake. The robot will be repositioned, if necessary, to insure it is parallel to the carriage. It will use its cutting hook to cut the elevator down-haul cable. It will grasp the source rack in the back support area with its hook. Place its one camera boom against the jammed support member and apply slight pressure. Then it will raise the source high enough to insure the jammed support member is not in contact with the rack. Simultaneously it will move the source rack and carriage to the south and boom out with the camera boom toward the north, thus clearing the jammed support frame from under the source rack. Once the support frame is clear of the carriage source rack area, the source rack will be lowered to the water then released to drop to the storage pool bottom. If the cable should hang up, keeping the source rack from going all the way to the bottom, the robot will use its cutting hook to cut the cable. Should this procedure fail - the situation will be evaluated by the C&C element and a decision as to which of the following alterations will be selected.

b. Position the robot parallel to source elevator #2. Using cutting hook pick up hydraulic cutter. Cut jammed support member on the west side. Attach hydraulic cutter to the jammed support member on the east side. Start to cut the member then stop. Release the hydraulic cutter. With the cutter hook grasp the storage rack in the rear support area. Raise the source rack to prevent it from resting on the support member. Remotely finish cutting the jammed support member on the east side. Release the source rack allowing it to fall to the bottom of the storage pool.

c. Position robot to the rear of elevator #2. Check up-haul cable. Attach snubber to up-haul cable. Draw snubber, with cable attached, down and to the south, thus raising sources. Attach snubber hook to rear structural member of carriage #2. Using its cutting hook remove jammed support frame. Again, using its cutting hook, cut up-haul cable immediately above the storage rack.

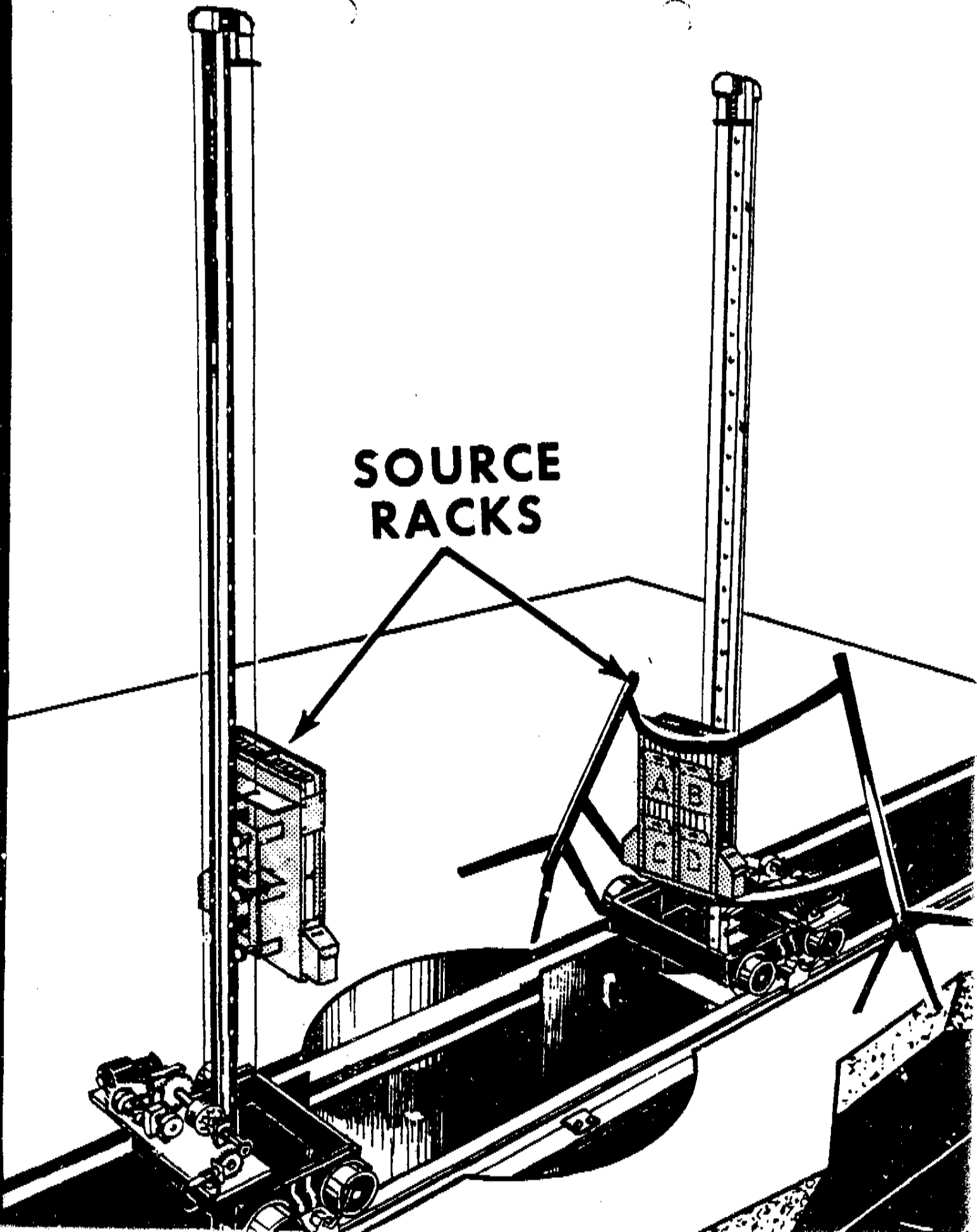
d. Position robot parallel to, or slightly north of elevator #2. Using previously fabricated hooks remove front two cassettes and place in wire basket. Remove rear two cassettes and place in wire basket. Attach robot winch system to basket handle. Lift basket over storage pool and lower. Take up slack on winch, then reel out on winch allowing basket with source to travel to the bottom of the storage pool. The scenarios proposed are all feasible operations that have been discussed in detail by the AFRR and Oak Ridge personnel. Exact sequence, procedure, positioning, separate action, etc, will depend on the existing situation and will be controlled, at all times, by the Operations Commander. Should the need arise to have a lengthy discussion after the robot has entered the facility, the robot will be positioned in the southwest corner of the extension room in the facility. This will drastically reduce its exposure to the radiation field. Once the sources have been lowered into the storage pool the restoration operation will continue as outlined in the restoration plan.

Designated Personnel to be in the AFRRI During Restoration Operation

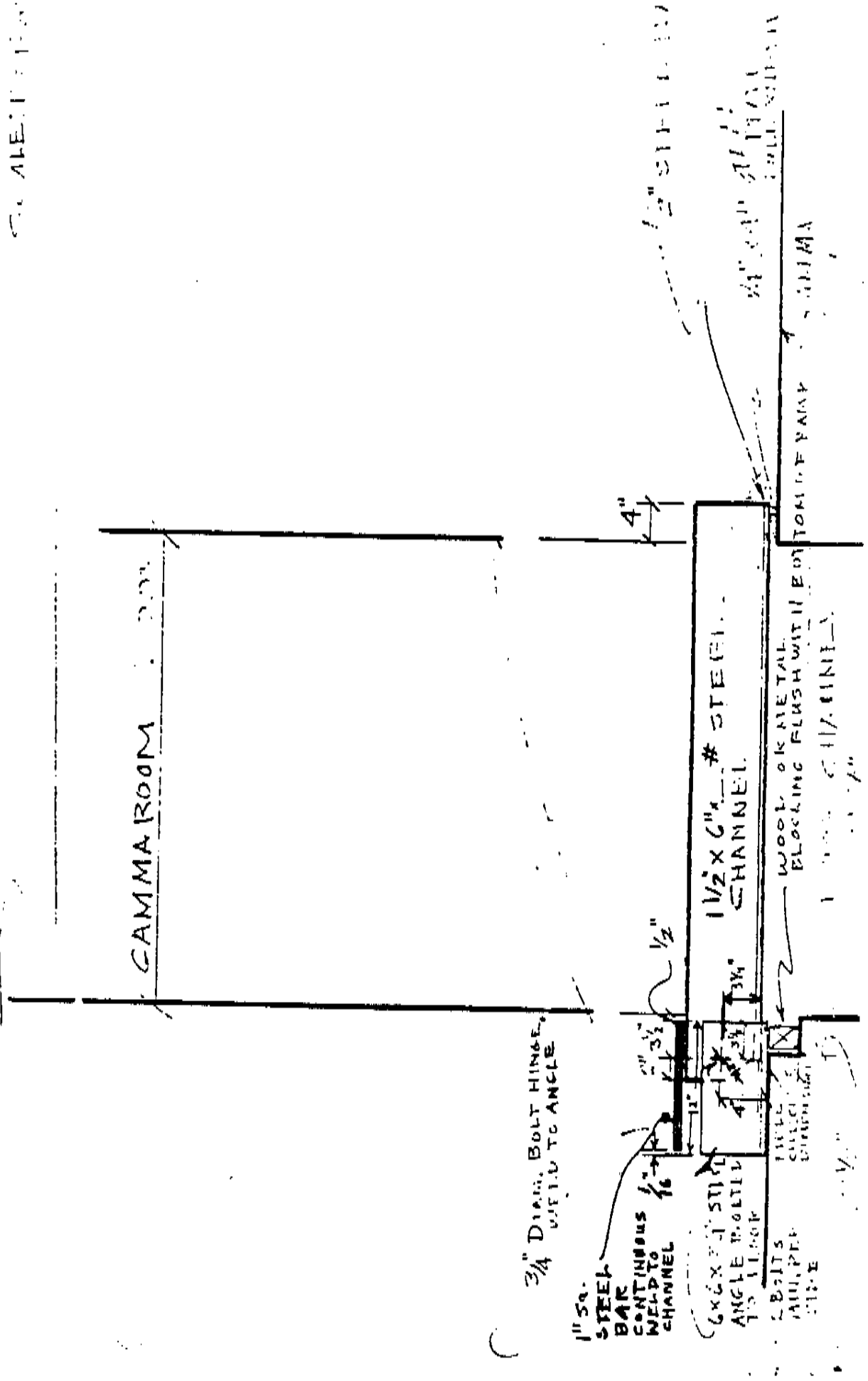
<u>NAME</u>	<u>LOCATION</u>	<u>DUTIES/REMARKS</u>
D. Gotthardt	Support Area	Machine Shop
M. Rentzel	"	Electrician
R. Florance	"	Facility Manager
J. Hamilton	"	Console Elec.
J. McPherson	"	Acting LOS Chairman
COL Adcock	C&C Area	Opns Commander
LTC Owen	"	Tech Advisor
LTC Cockerham	"	Investigating Officer
Dr. J. Auxier	"	Tech Advisor
P. Canada	"	Tech Advisor
R. Leavitt	"	Audio/Video Support
W. Webber	Cobalt Console	Shield Survey
M. Moore	"	Cable Control
SFC Spence	"	Cable Control
HM1 Frost	"	Cobalt Console/Oper.
LT Ferlic	"	Shield Survey
CPT Sholtis	"/Support Area	Support Coordination
SFC Harmon	"/Support Area	Support Coordination
T. Copeland	Robot Trailer	Robot Operator
R. Turner	"	Robot Operator
C. Carter	"	Cobalt Operator
MAJ Smoker	"	Project Officer
MSG Baines	Front Desk	Security NCOIC
SSGT Barron	Front Desk/SE, SW	Security Force
SSGT Smedley	"	"
HM1 Davis	"	"
SSG Milton	"	"
SK1 Taylor	"	"
SP5 Valder	"	"
SP4 Hargett	"	"
SP4 Morris	"	"

<u>NAME</u>	<u>LOCATION</u>	<u>DUTIES/REMARKS</u>
LCDR Gray	Receiving Dock Desk	Duty Officer
SGT Felder	"	Duty Watch
J. Pierpont	Director's Office	Administrative Support
CPT Alt	Board Room	Briefing Officer
LTG Griffith	"	DNA
VADM Shaffer	"	DNA
Dr. Sevin	"	DNA
Dr. Still	"	DNA
Mr. Oswald	"	DNA
LTC Keller	"	DNA
D. Kerley	"	DNA
Mr. Brittigan	"	DNA
MAJ Riggs	"	DNA
CAPT Tyler	"	DIR/AFRRI
CAPT Mateik	"	ADM Officer/AFRRI
W. Owen	"	Photo Support
LCDR Kubich	"	NNMC
HMI Collins	Outside Library	SAF
CDR Durfee	"	SAF
U. Laaman	"	Audio/Video Support

# SOURCE RACKS



ENTRANCE MILLING-1  
RIGHT ELEVATION



SCALE: 1/4" = 1'-0"

# FILED ELEVATION

ELEVATION FOR  
OUTSIDE GALLERY

