

**DATE:** April 22, 1994  
**SUBJECT:** Salt-Buster Demonstration  
**TO:** Frazer Lockhart, MSA Program Manager

A. **TIME OF VISIT:** 8:00 - 10:45 a.m.

B. **PERSONS CONTACTED:**

EG&G: Steve Keith - SPP Director, Tom Beckman - ASRP Project Manager.  
Other EG&G staff members present included: Dave Chojnacki - Safety Representative, Nancy Candido - Industrial Hygienist, Leon Collins - ASRP, Al Smith, Vivian Vallencia - Procedure Development, Ed Blush - Radiological Engineering. Vac-N-Jet personnel.

C. **ACTIVITIES OBSERVED:**

Operation of the salt-buster which will be used to break down the layer of metallic salts in the 207C pond.

D. **OBSERVATIONS/FINDINGS:**

A demonstration of the salt buster was scheduled for 8:00 a.m. Friday, April 22 at the Vac-n-Jet facility located at 44th Avenue and McIntyre. I arrived at the facility shortly after 8:00 a.m. Leon Collins was the only EG&G representative who was present at the time. EG&G management arrived approximately an hour later. I requested to borrow a camera from the subcontractor in order to take some pictures. It was provided as requested.

The salt buster is approximately 28 feet in length (photo #1). Operation of the vehicle will be provided by one driver and one or two spotters. (continued on next page)

The vehicle operates by means of a diesel engine (photo #2) and two hydraulic pumps (photo #3). The engine compartment is located on the left side of the vehicle adjacent to the cab. Some of the wires/hoses had duct tape on them. There is no air conditioning in the cab. The cab has been retrofitted with a HEPA filter system on top to filter and circulate the incoming air (photo #4). The air will continue to circulate even if the engine is turned off. The source of power is a 110 volt converter, powered by the main battery. The floor of the cab is approximately 36" from ground level. The rubber seal for around the door is approximately 33" from ground level (photo #5). The vehicle can be operated by means of 2-wheel, 4-wheel, or "crab" steering.

E. **SURVEILLANCE REPORT PREPARED:** Yes  X  No

Margaret Witherill  
Signature

Margaret Witherill  
Name

The hydraulic lift is supported by a gray, Y-shaped brace that provides an automatic stopping point (photo #6). This device was installed to prevent the roto-mill planer from extending below a certain point that could endanger the integrity of the liner.

The roto-mill planer contains a rotating attachment with rows of carbide tips (photos #7 and #8). The planer can be changed out, using quick disconnect couplings for a brush-type attachment when only a few inches of salt remain (photo #9). The rotating device can operate at a maximum speed of 100 rpm and can dig a maximum of 4-1/2 inches deep. The planer depth is controlled by manually turning two red-handled levers located on the side of the unit (photo #10). The depth will probably be maintained at 2-1/2 inches (photo #11). A kerf will be dug that is approximately 48 inches wide and 20 feet long. This kerf will be done in two separate passes of 24 inches wide (photo #12). After a layer is broken up it will be removed by means of the vacuum truck.

Several passes were made in the compacted dirt in the back parking lot of the Vac-N-Jet facility. EG&G Health and Safety personnel requested that the operation of the rotator be demonstrated in water to observe the extent of splashing. Due to the design of the scoop, there was very minimal splashing that occurred (photos #13, #14, #15).

#### F. CONCERNS/CONCLUSIONS:

The demonstration appeared to be very disorganized. It was difficult for me to tell who was in charge. There was no pre-briefing to explain to the observers what was going to take place.

There is no air conditioning in the cab. Taking into consideration the time of year that this operation will be taking place, this could become a safety concern. The operators will have to work in shifts or provisions must be made to hydrate the operator.

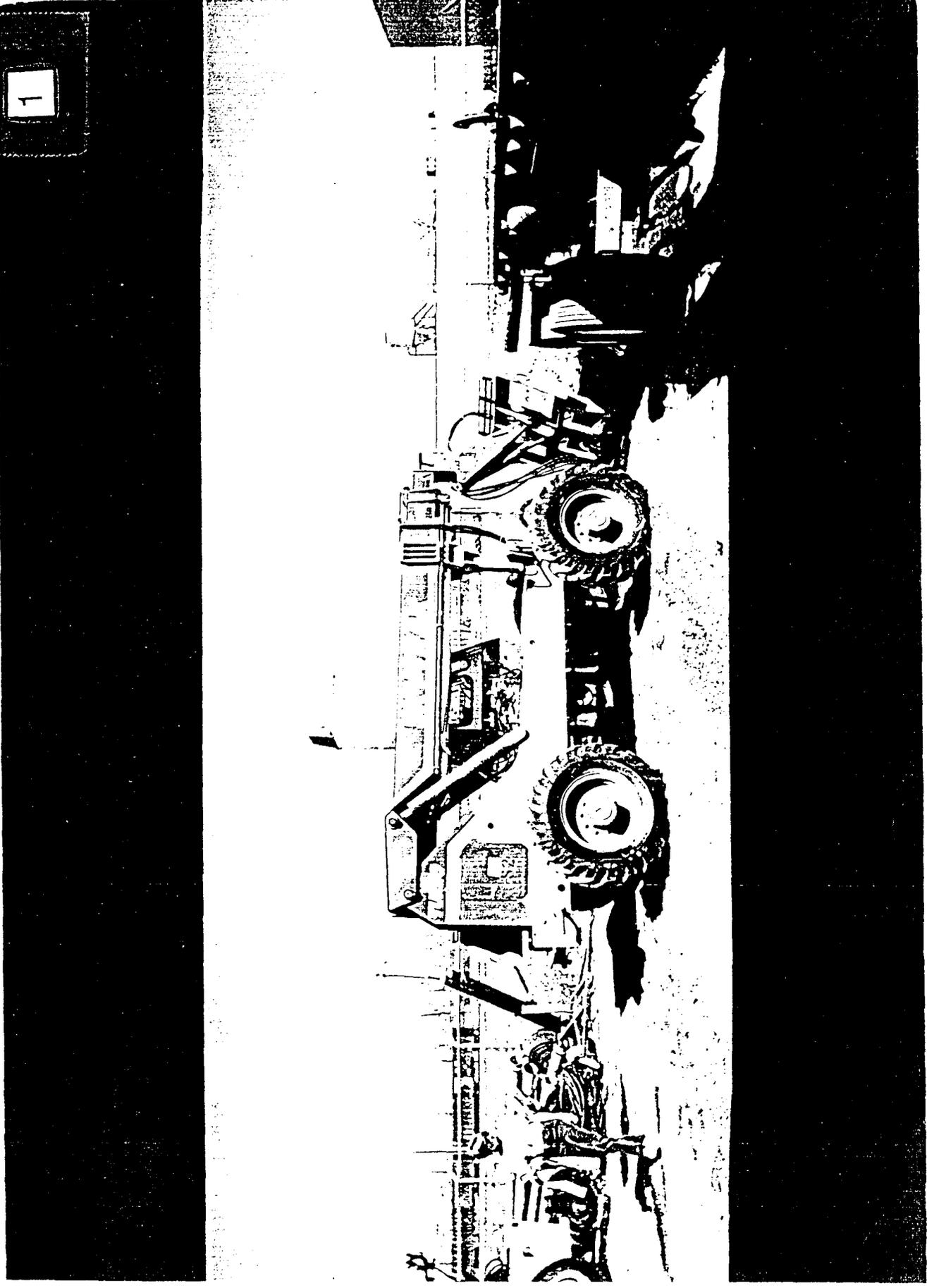
The C Pond is approximately 30-inches deep. As stated previously, the rubber gasket around the door of the cab is at 33-inches above ground level. Proper sealing must be maintained to ensure protection of the operator.

There was conflicting information provided by EG&G (Leon Collins) and the Vac-N-Jet operator with respect to tearing the liner. EG&G stated that the operator will definitely know if the carbide tips hit liner material because the scoop will start to vibrate. The Vac-N-Jet operator stated that the Y-shaped brace that was installed will help protect against tearing the liner. He stated that the driver will have no idea if he is hitting asphalt or not because the consistency is softer than the salt.

There was lengthy discussion with EG&G Health and Safety representatives in regard to rescuing the operator of the salt buster in the event that the vehicle breaks down in the middle of the pond. One person stated that the boat would be used for rescue operations. Another person stated that SCBA (5-minute Scat Pak), Saranax, and waders would be stored in the cab for the driver to don in the event of an emergency. There was discussion on whether a respirator or Scat Pak would be used. These scenarios need to be defined in the Emergency Preparedness Plan.

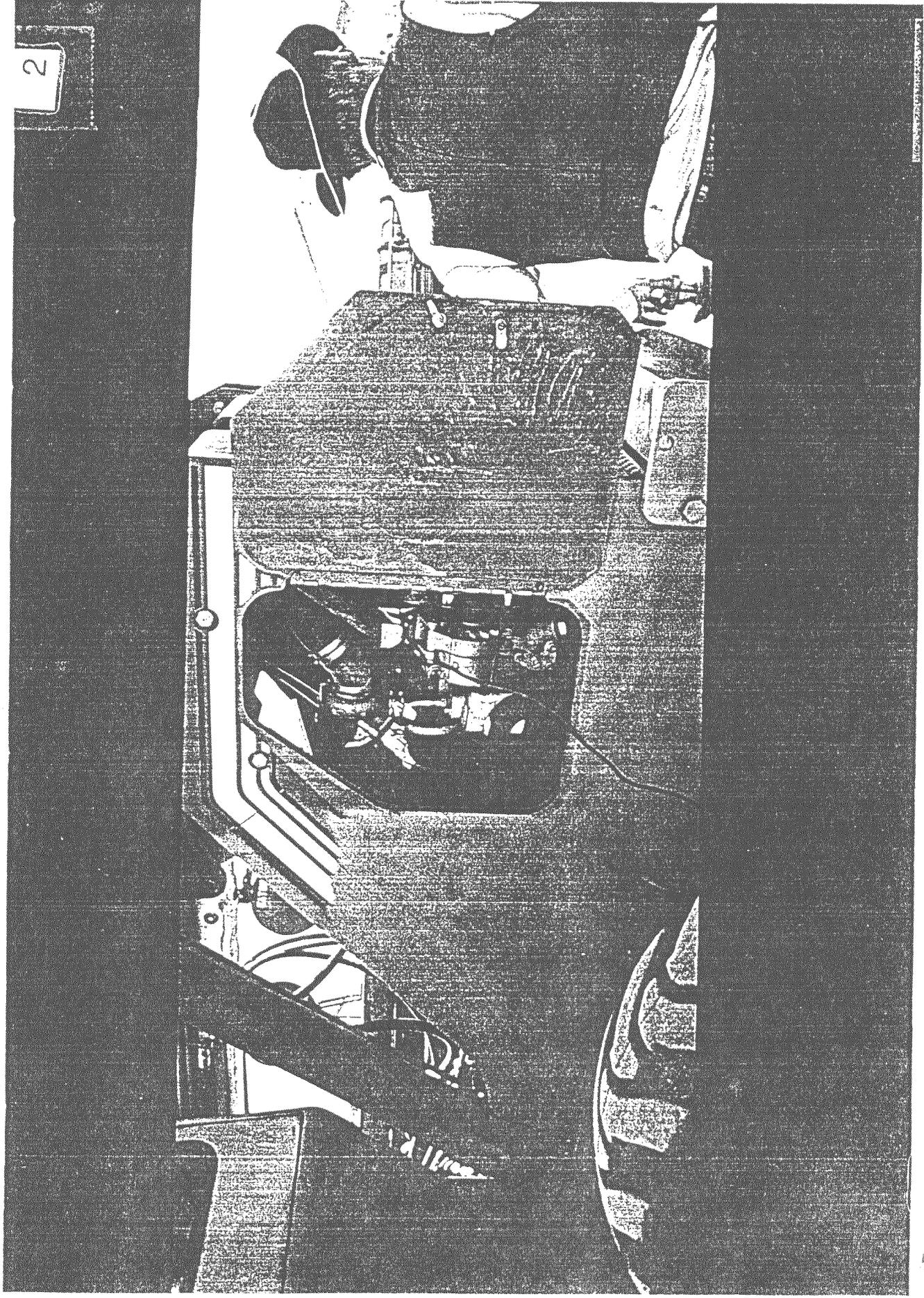
There was some uncertainty if the salt buster would automatically crunch the salt into 2-inch pieces for the vacuum truck. If the pieces are 2-foot in size then there is a possibility that the chunks would have to be manually broken up. The Health and Safety Plan does not have provisions to have waste operators in the pond. The problem is that the equipment could not be demonstrated on material that provided a simulation that was very close to the actual product.

The vehicle must be in prime operating condition. Duct tape and other temporary repairs should be corrected.



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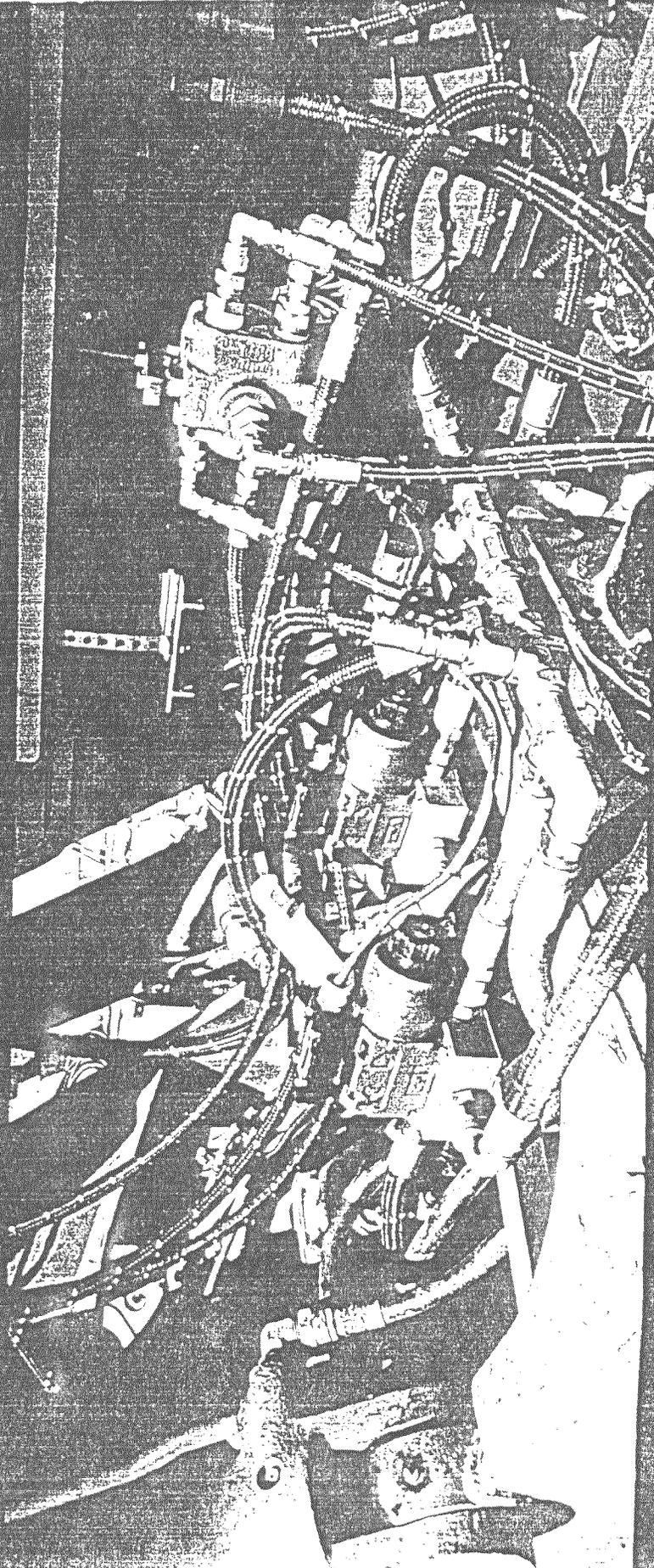
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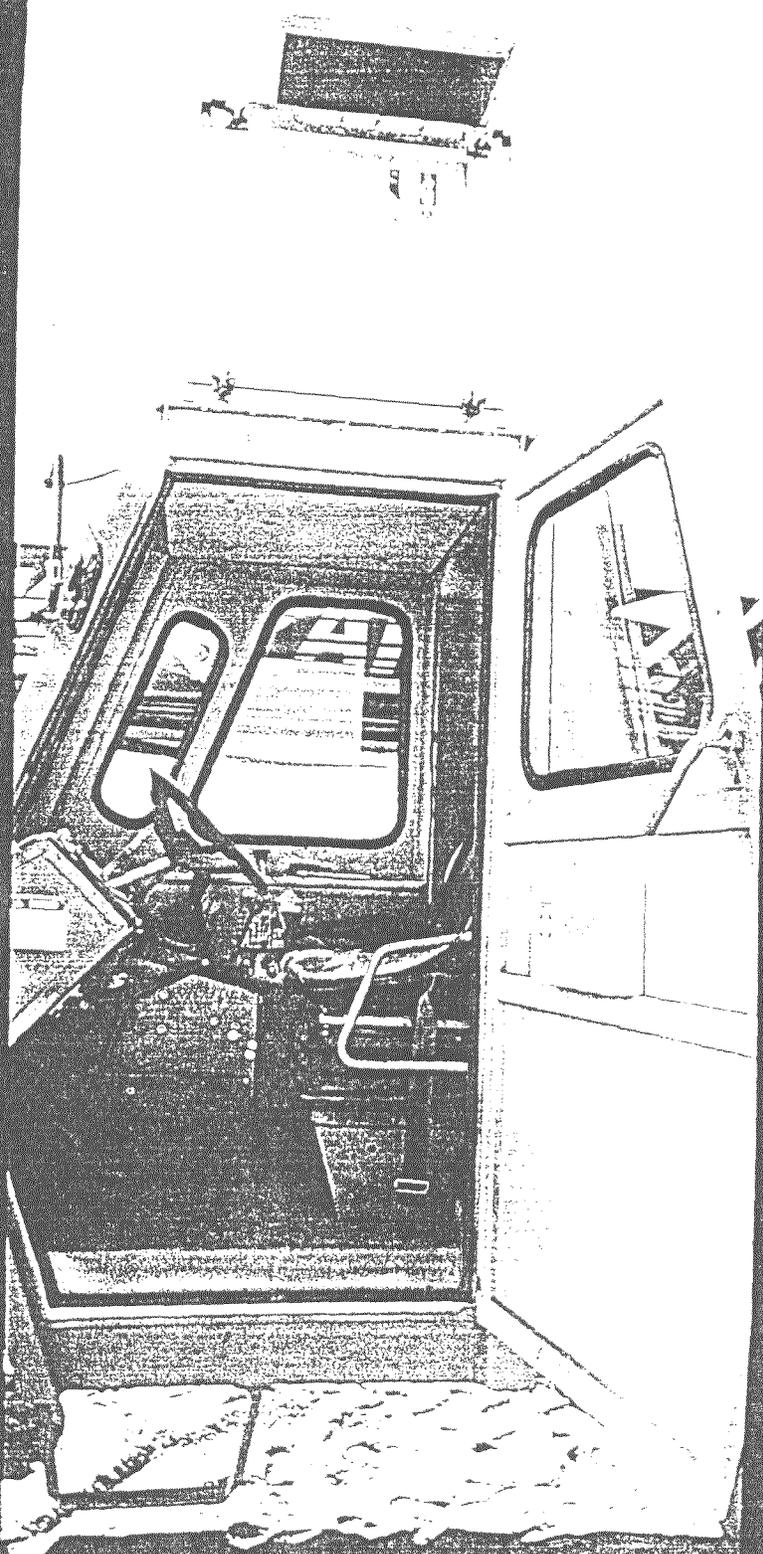
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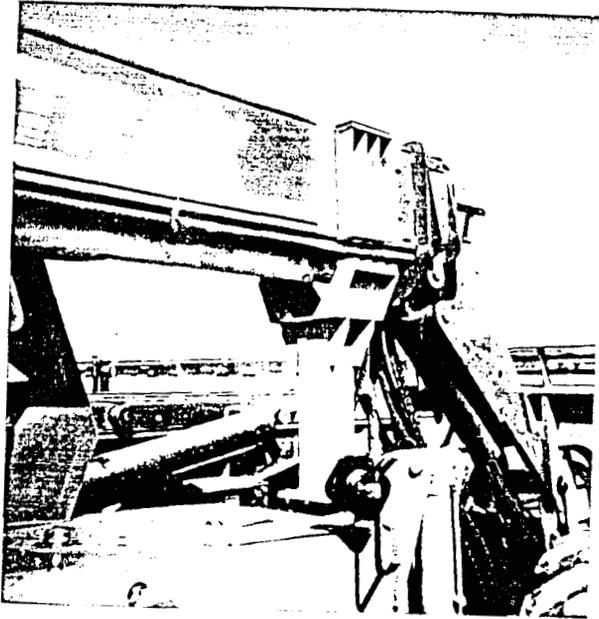


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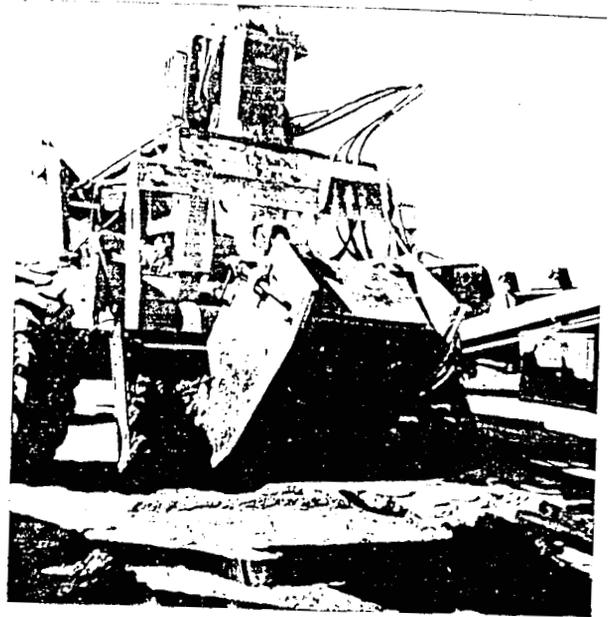


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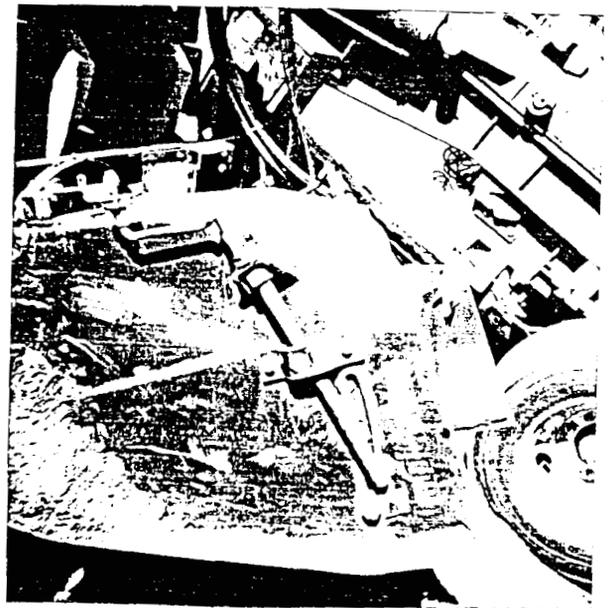
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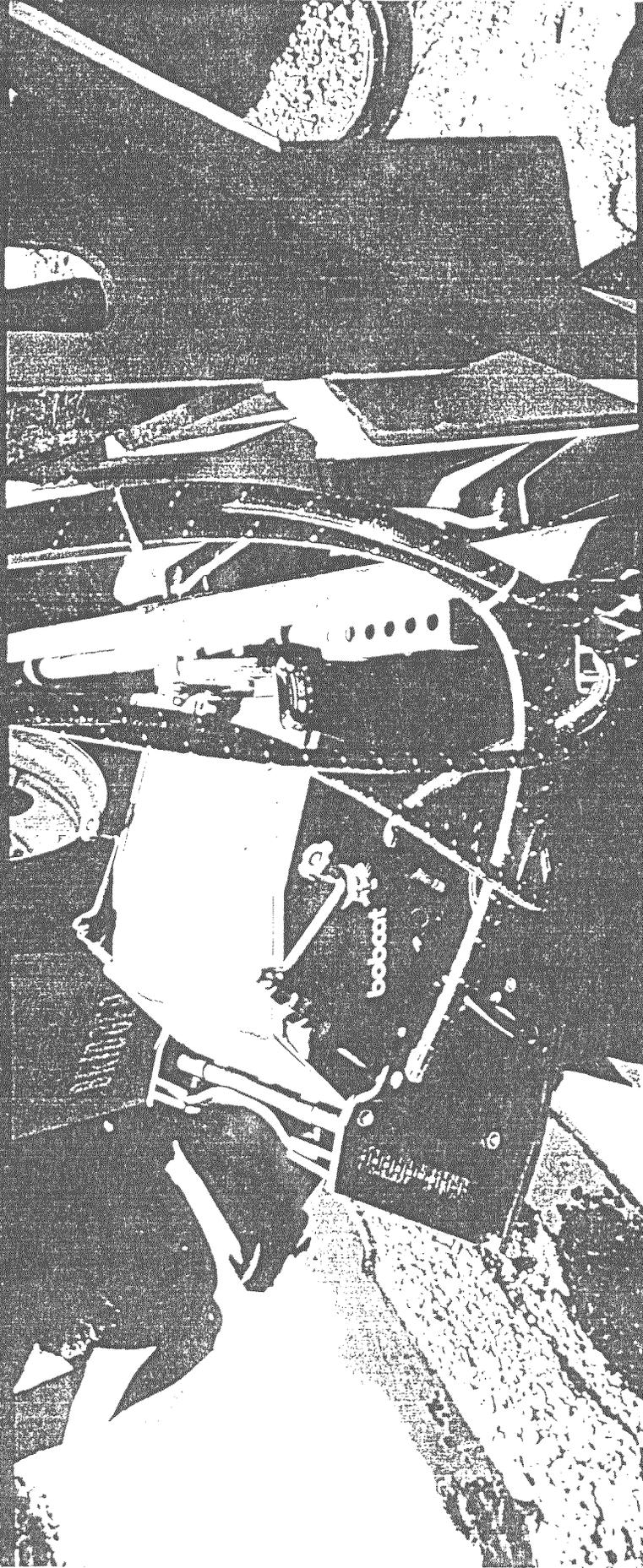


PHOTO BY MICHAEL GOODMAN FOR THE FBI

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PHOTOGRAPH BY W. J. BRADY

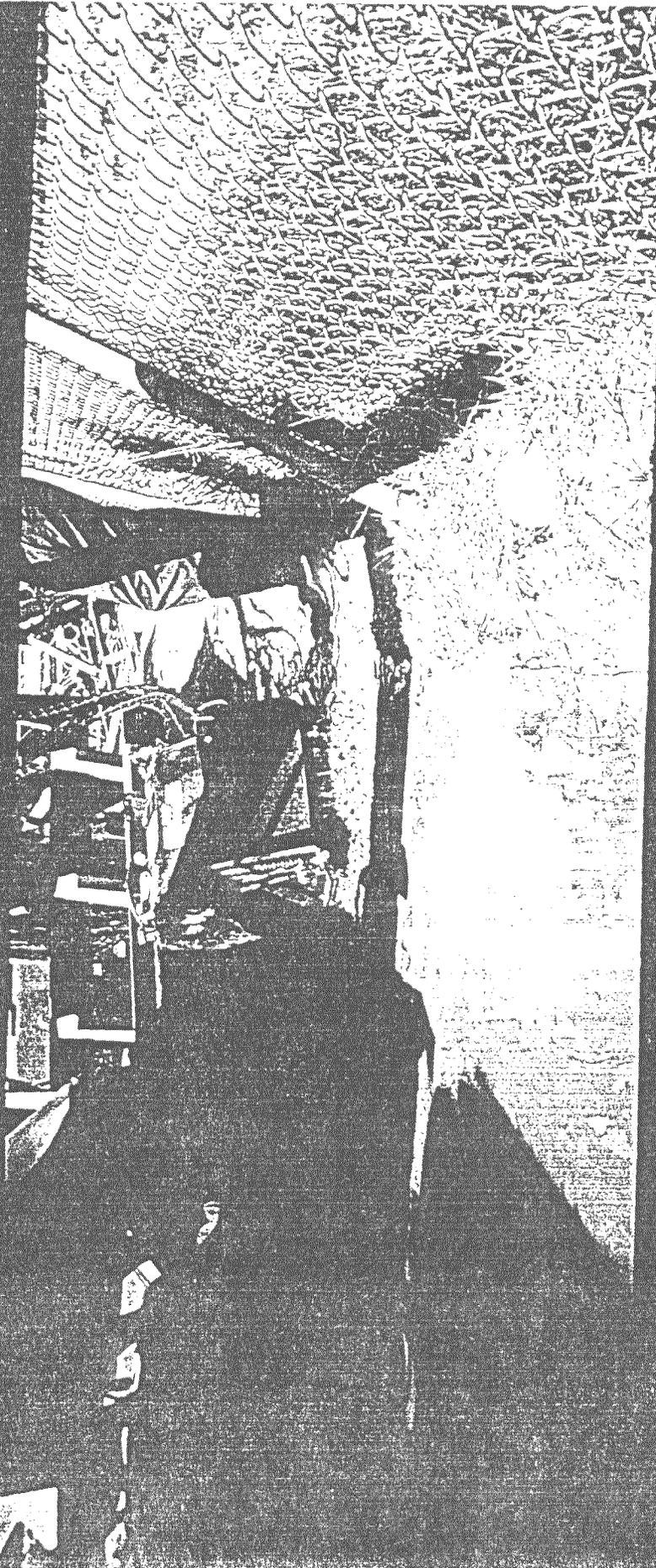
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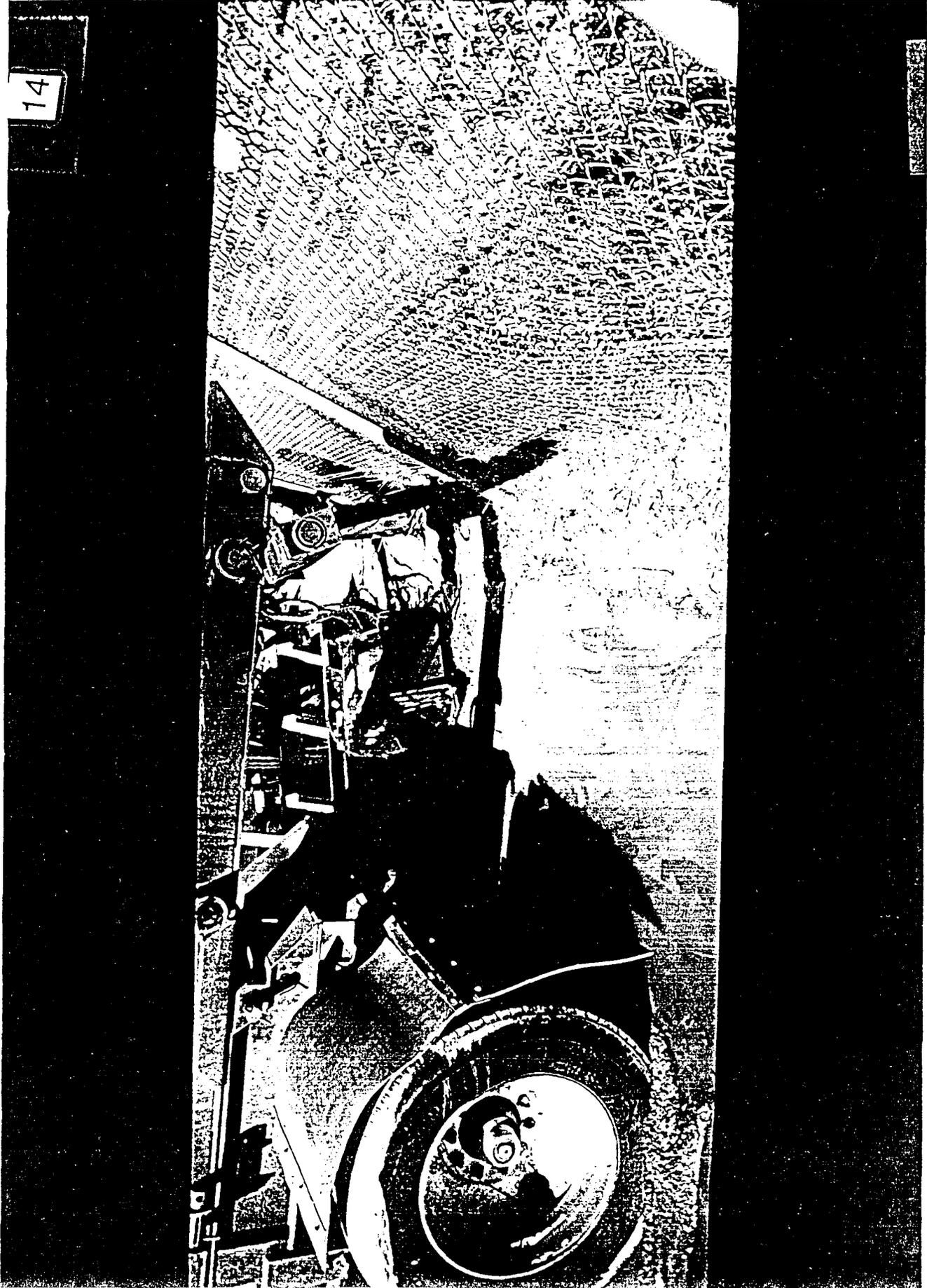


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1. Verify completion of the prescribed modification to the vehicle:
  - clevis for recovery
  - hydraulics
  - cab modifications

Verification results: Based on weekly inspections at the GBC fabrication shops, these items were verified complete.

Follow-up Required: None

2. Insure range of motion of attachments are adequate for operational needs, i.e., Left, Right, In, Out.

Verification results: The vehicle went through a complete range-of-motion exercise including boom-out/in, mounting bracket tilt, miller traverse. All motions were completed satisfactorily.

Follow-up Required: None.

3. Verify vehicle performance and safety specifications from manufacturer have not been compromised due to modifications.

Verification results: GES Technology group letter, May 9, 1994, to Roland Nilsson, Subject : Skytrak 6036.

Follow-up Required: Ensure additional hydraulic cooler has been installed. Ensure that operator is briefed on limitations defined by the independent engineer.

4. Insure horizontal operations, i.e., boom-out/boom-in, function properly with milling machine in operation.

Verification results: Hydraulic lines were not "pinched" and miller and boom did not "bounce" when fully extended.

Follow-up Required: None

5. Verify adequate safety equipment has been installed:
  - fire extinguisher
  - first aid kit

Verification results: Visually inspect. Items were installed.

Follow-up Required: Extinguisher requires an approved "skirt" to keep the mud off. Verified installed as of April 22, 1994, by D. Chojnacki.

6. Assure adequate radio communication transmissions into and out of operator cab.

Verification results: Not completed.

Follow-up Required: Radio must be tested. If an antenna is needed one must be installed.

7. Verify the reconfiguration of the cab has not introduced excess heat stress on the operator such that we couldn't manage heat stress on behalf of the operator.

Verification results: Ongoing.

Follow-up Required: Heat load testing must be documented by Industrial Hygiene. If the heat load is excessive a cab and cooling system will have to be designed/installed/tested.

8. Verify geometry of cab to ensure safe maintenance, refueling, and access from the boat dock when the "salt buster" is in the pond.

Verification results: Design a dock, geometry to satisfy access/refueling/maintenance needs.

Follow-up Required: Practice "docking" procedures including temporary planking to access the fuel tank.

9. Verify the hydraulic system, as retrofit, would properly operate the miller:  
- miller demonstration in hard packed gravel with stones.  
- assure design of miller minimizes atomization of liquids.

Verification results: Operated the miller on hard fill and in water. It performed acceptably.

Follow-up Required: None

10. Assure tires have been installed which minimize flats or damage to the machine:  
- foam filled

Verification results: Fabrication job orders confirm foam installation.

Follow-up Required: None

11. Ensure adequate completion of cab enclosure which will provide positive breathing air pressure, thus isolating the operator from pond material, i.e., liquids and airborne particulates.

Verification results: Operate fan, view the magnehelic, differential pressure observed to be 3/4" of water  $\pm$ .

Follow-up Required: Industrial Hygiene must insure that all vent/differential pressure criteria have been satisfied.

12. Assure design for removal and replacement of miller assembly mitigates improper reinstallation, i.e. hydraulic hose quick-disconnect allows only one attachment technique.

Verification results: Practice connect/disconnect. Done successfully.

Follow-up Required: None

13. Verify adequate height of operator cab base to ensure the potential introduction of pond contaminates does not exist.

Verification results: Measure cab height compare ambient pond slurry height. Cab >30", slurry <25", therefore, acceptable.

Follow-up Required: Insure that battery compartment under the cab is not submerged.

14. Verify height of fuel tank, hydraulic reservoir, and engine to ensure their positioning will remain above the pond slurry.

Verification results: Measure found to be > 25", therefore, acceptable.

Follow-up Required: None

15. Verify positioning of axle differentials vent points. Must be well above brine levels.

Verification results: Inspected and found the axle vents would be submerged.

Follow-up Required: Install a vent tube to both axle vent ports to raise the vent elevation above the slurry. Verified, by M. O'Rell, as properly installed.

16. Verify new hydraulic hoses can operate with boom fully extended and hoses that hose will remain suspended above the brine/slurry.

Verification results: Vehicle operated and hoses observed. Operation was acceptable.

Follow-up Required: None

17. Verify operational versatility of the roto-mill such that large monoliths or small blocks (2'x2') could be milled into slurry.

Verification results: Must be practiced in the pond.

Follow-up Required: Operational techniques will be developed to mitigate this problem.

18. Verify variety of functioning/milling techniques will also rely on the crushing effect of the tines, and the street-sweeper and squeegee (blade) attachment to complete size reduction requirement.

Verification results: Must be practiced in the pond.

Follow-up Required: Operational techniques will be developed to mitigate this problem.

19. Insure miller will operate at a depth that will not threaten the integrity of the pond liner.

Verification results: A 2" X 2" TS bar was installed to measure depth.

Follow-up Required: Calibration marks must be installed on the TS bar.

20. Insure that an emergency response procedure or shift order exists to recover the operator from the vehicle.

Verification results: 94-ESD-007 has been written.

Follow-up Required: None