QUARTERLY STATUS REPORT NO. 9

Period 23 September 1966 - 22 December 1966

DESIGN, DEVELOPMENT, FABRICATION AND INSTALLATION OF 105-INCH LUNAR AND PLANETARY TELESCOPE AT McDONALD OBSERVATORY

Contract NASr-242

SC/44-012-025-(056)

FACILITY FORM 602

N67-82720
(ACCESSION NUMBER)

(THRU)

15
(PAGES)

(CODE)

CR 83380
(NASA CR OR TMX OR AD NUMBER)

(CATEGORY)

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A. Outline of Progress Prior to this Reporting Period

The telescope design has been completed, along with the technical concept and basic mechanical requirements of a horizontal coude spectrograph. The primary mirror has been edge-beveled and the center hole polished. On the telescope construction contract, Westinghouse started fabrication of the polar axis and placed subcontracts for most of the smaller telescope parts. C. H. Leavell of El Paso, Texas began construction of the Texas-furnished piers, dome and building.

B. Progress during the Period 23 September 1966 - 22 December 1966

1. Mechanical

Westinghouse completed rolling and welding the two conic sections that go together to make the polar axis shaft (Figure 1), and nearly finished the large tubular section (Figure 2) that forms the joint between the two halves of the polar axle, mating it to the declination axle. No problems are anticipated in completing the welding of the three pieces (Figure 3). The north bearing (Figure 4) and south bearing (Figure 5) are both complete. After the center weld is finished, the two bearings will be welded to the ends of the shaft. Figure 6 and 7 are included to aid in visualizing the complete part.

2. Controls

Westinghouse has made very slow progress on the control system. It seems that Westinghouse, Sunnyvale, did not have an engineer with sufficient experience in controls, and finally decided to use a control engineer from the Westinghouse Research Labs in Pittsburgh. As a result of the slow start, the control drawing release date has been rescheduled to the middle of January. It appears that the control system will produce a hold on the manufacturing schedule in January or February.

3. Westinghouse Contract

A problem has developed in interpreting contract requirements. Westinghouse stated, in a review meeting, that each and every change from the C. W. Jones bid drawings becomes a change in the contract and therefore requires a change in target cost. Texas has not accepted this, asserting rather that it is the responsibility of Westinghouse to complete the design including corrections to the C. W. Jones drawings where necessary.

A joint meeting between Westinghouse, Texas, and NASA has been scheduled for January 24, to attempt to reconcile this difference of interpretation.

4. Optics

Davidson Optronics holds the contract for optically finishing the following mirrors for the telescope (all of the blanks necessary for Davidson's work have been purchased):

Mirrors	Approximate Delivery of Finished Mirror
Primary	August 1, 1967
f/9 Secondary	August 1, 1967
f/33 Secondary	August 1, 1967
f/18 Secondary	November 1, 1967
1st Flat	November 1, 1967
Second Flat	November 1, 1967

Figure 8 shows the primary after the outside edge was beveled and the center hole polished. Davidson has started optical figuring of the primary.

5. Coude Spectrograph

Final plans for the coude frame were included with the dome and building plans; the building contractor will install the coude frame during construction of the dome.

Davidson Optronics was chosen to figure the optics for the short coude camera (both collimator and camera mirror). The University of Arizona Optical Shop was chosen to figure the medium camera mirror. No problems are anticipated in achieving the desired optical figures or in meeting the optical delivery schedules for the spectrograph.

6. Dome and Building

Although not financed by this contract, construction of the piers and the rotating dome and building necessary to support it constitutes a parallel project, obviously integral to the schedule of the telescope erection and installation of the coude spectrograph.

C. H. Leavell of El Paso, Texas has made good progress on the telescope piers and building foundation (Figure 9). Some long-range problems have developed due to errors in the bid drawings. It now appears that Leavell will request a 3-month time extension over the original date that the dome crane was to be in operation. This delay can be accepted, since Westinghouse will not be ready to use the crane at the originally estimated date.

7. Project Meetings

A NASA-Texas-Westinghouse project review was held at Sunnyvale on November 3, 1966. NASA was represented by Dr. Brunk; Texas, by Charles Jenkins and Don Bresie. The Westinghouse General Manager, A. L. Bethel, reviewed the project status and gave his opinion that the telescope would be complete about the end of the year in 1967.

C. Financial Report

NASA Form 1030 (2-64) for this contract is submitted quarterly by the Auditor's Office of The University of Texas.

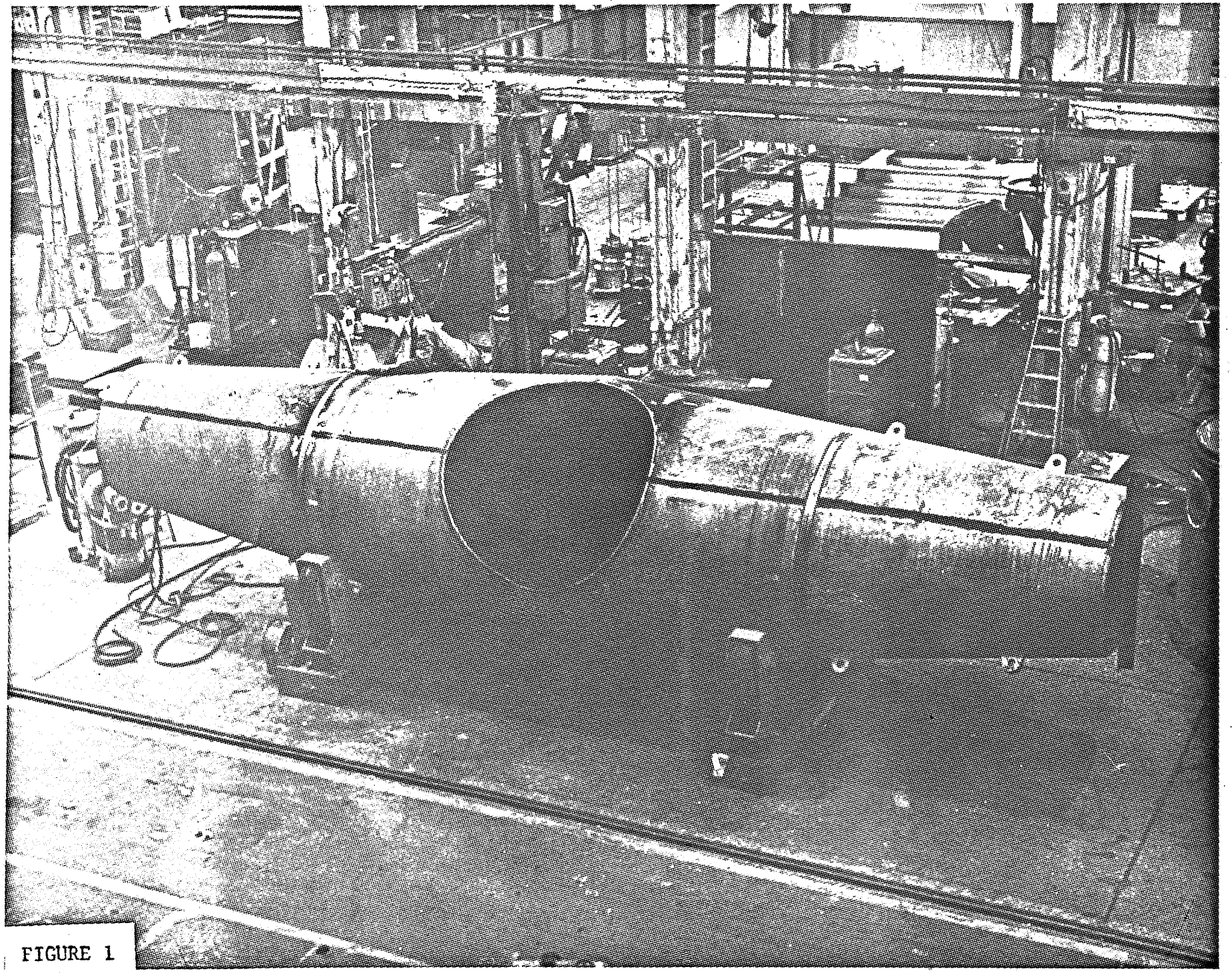


FIGURE 1

FIGURE 2

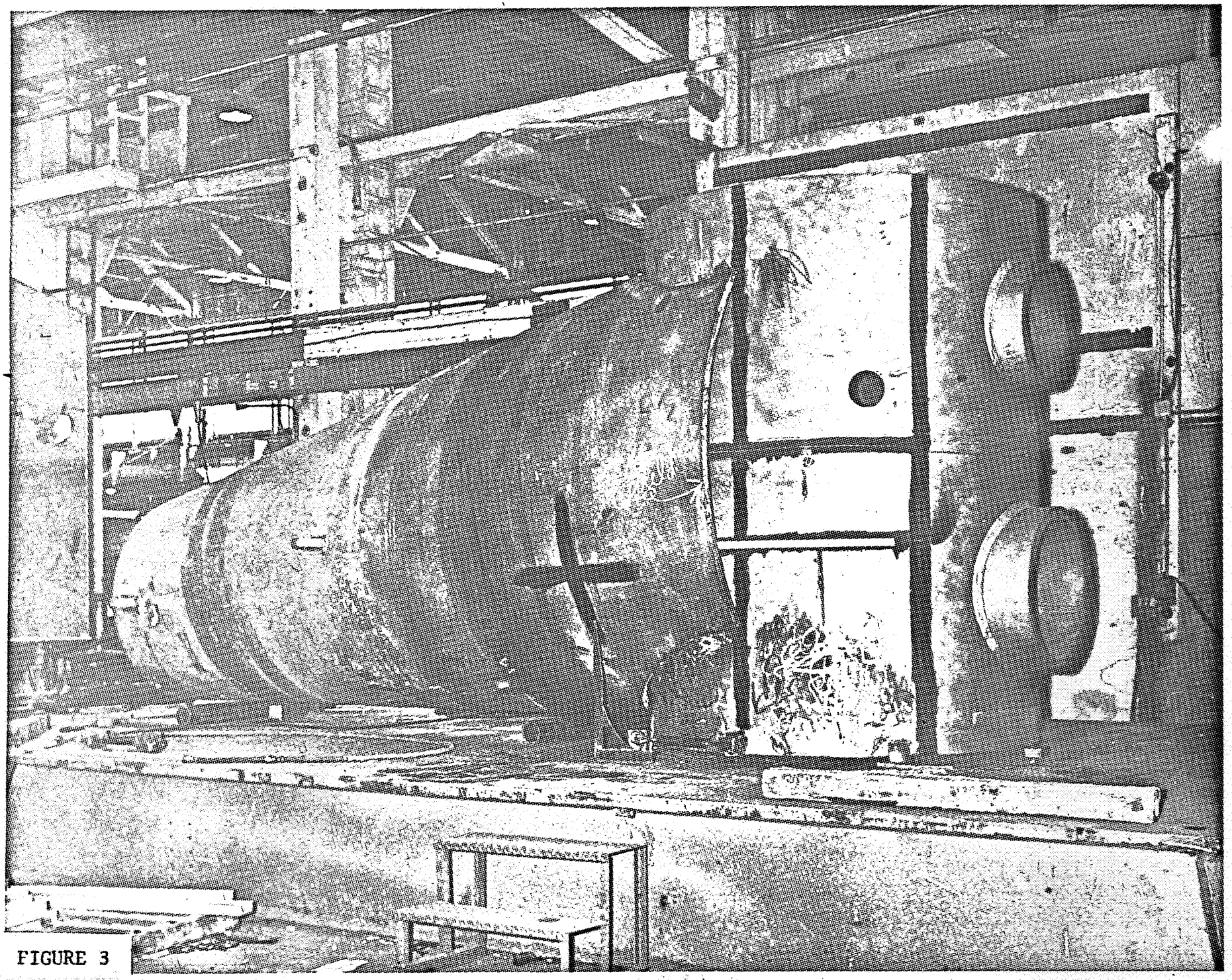


FIGURE 3

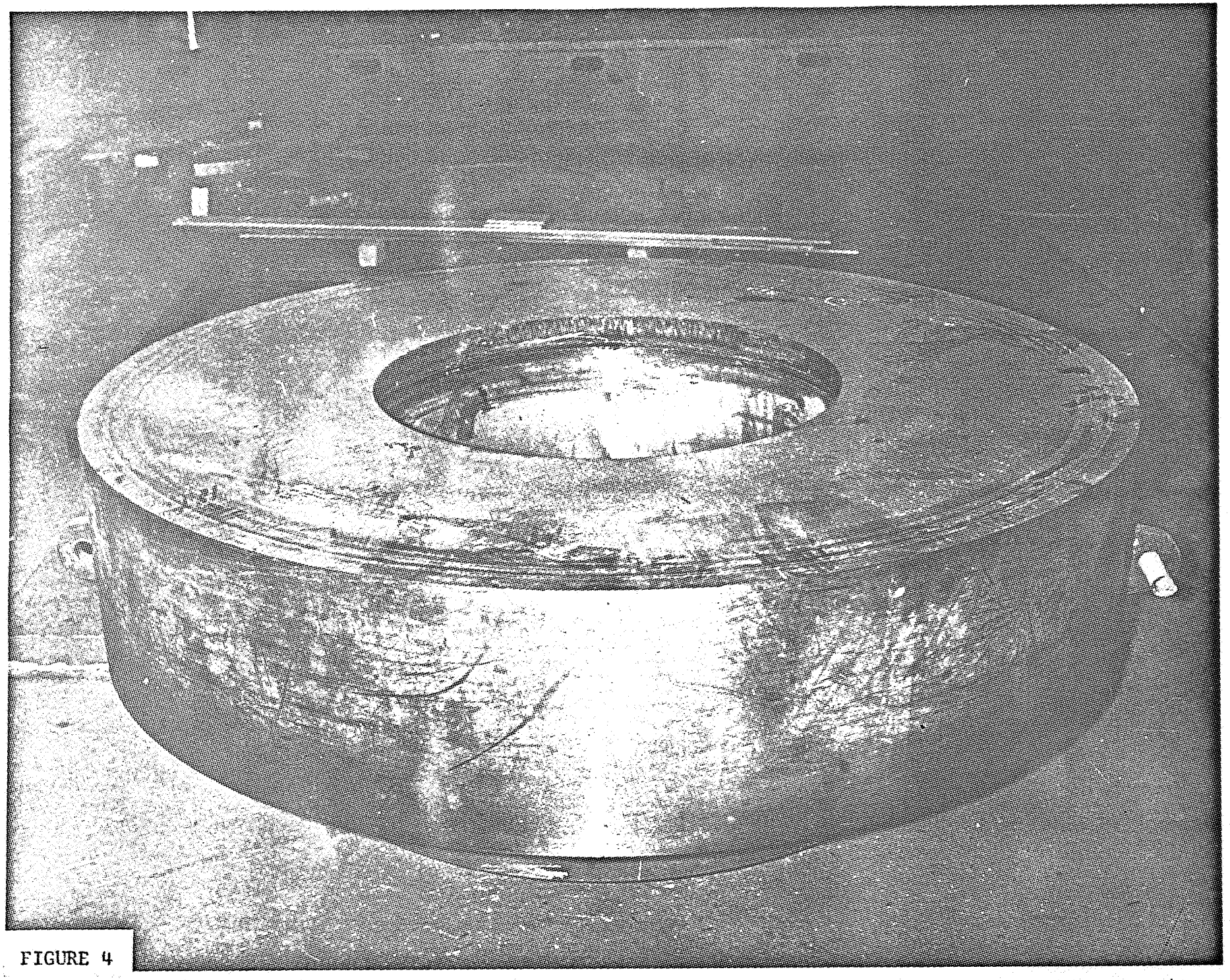


FIGURE 4

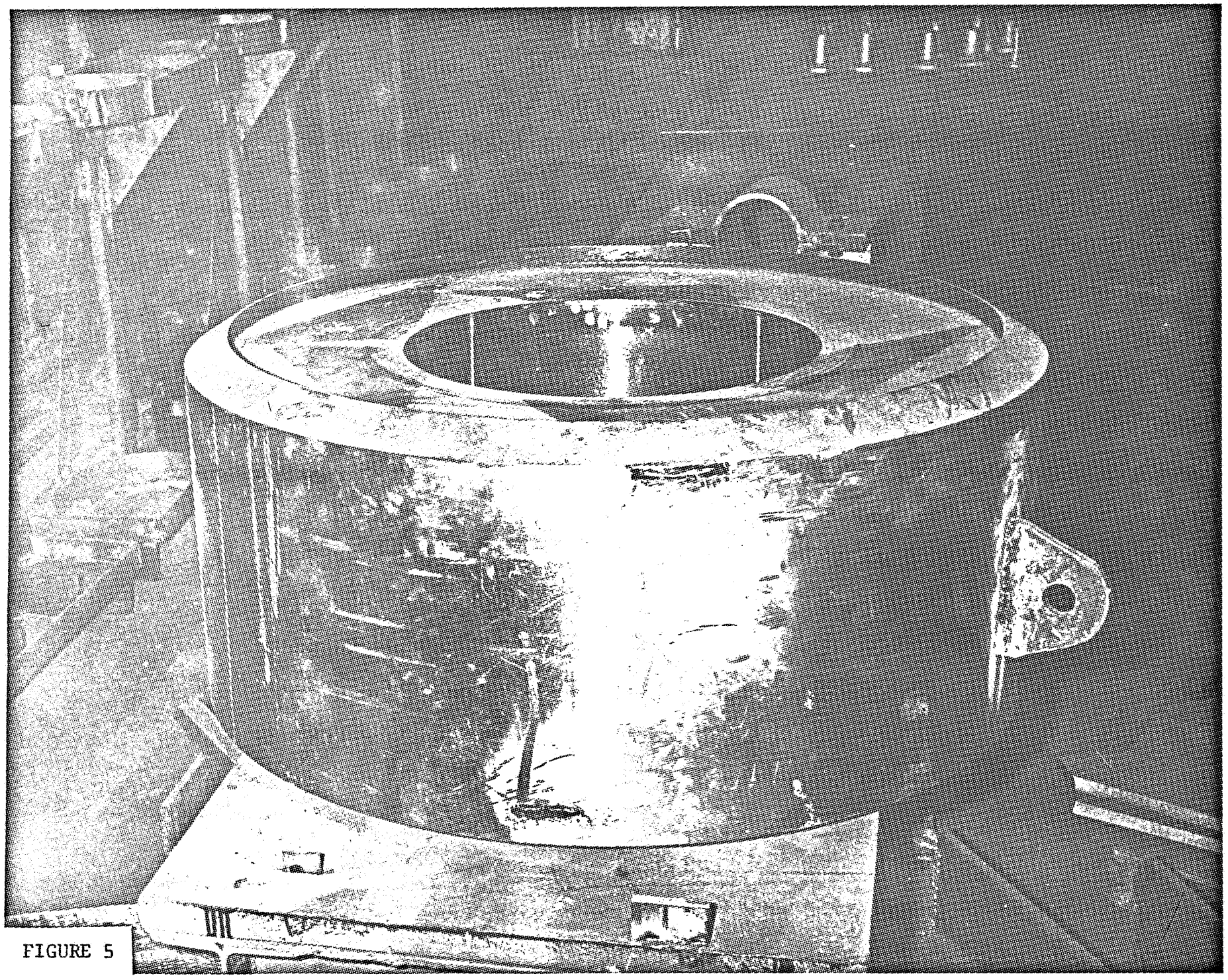


FIGURE 5

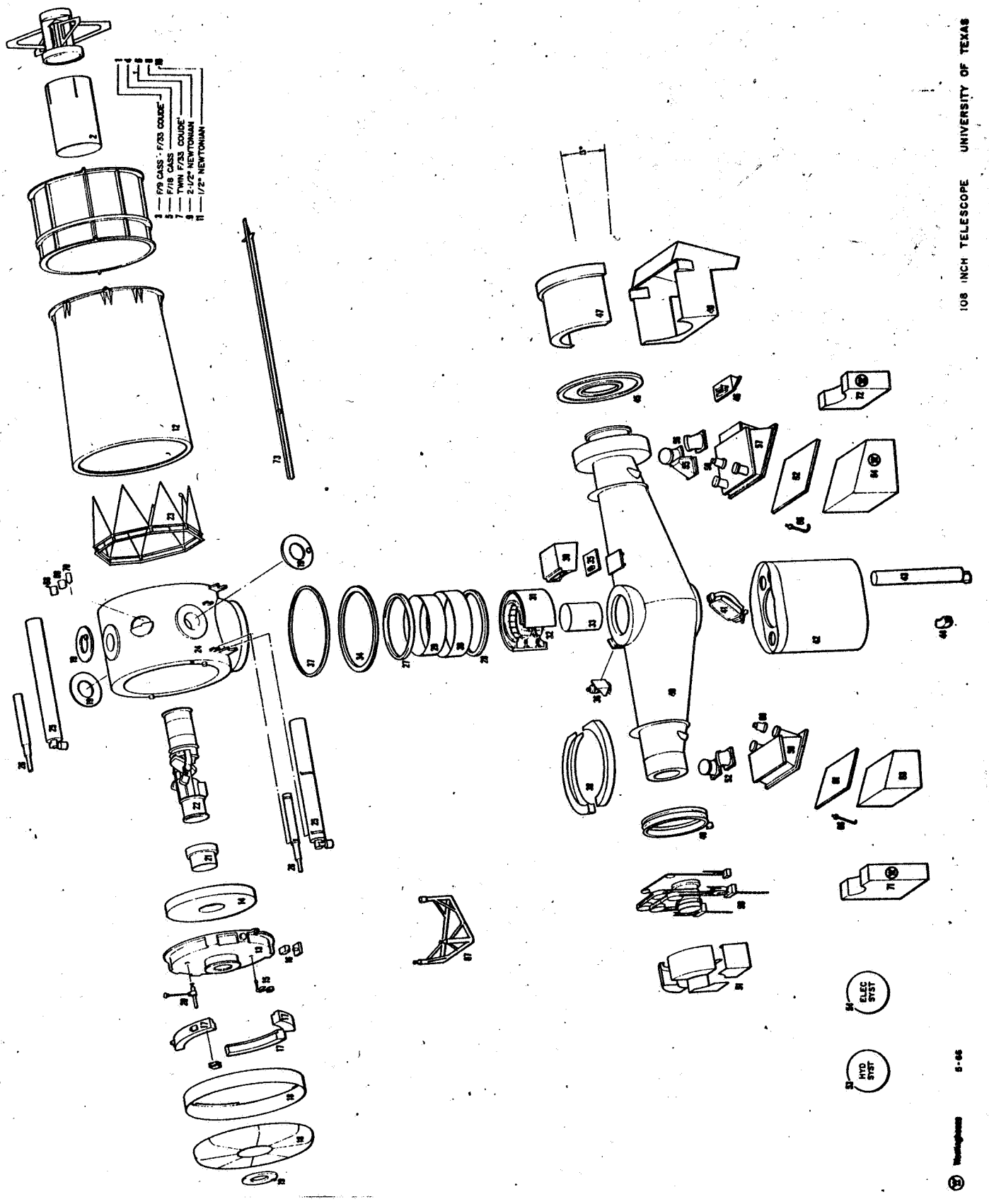
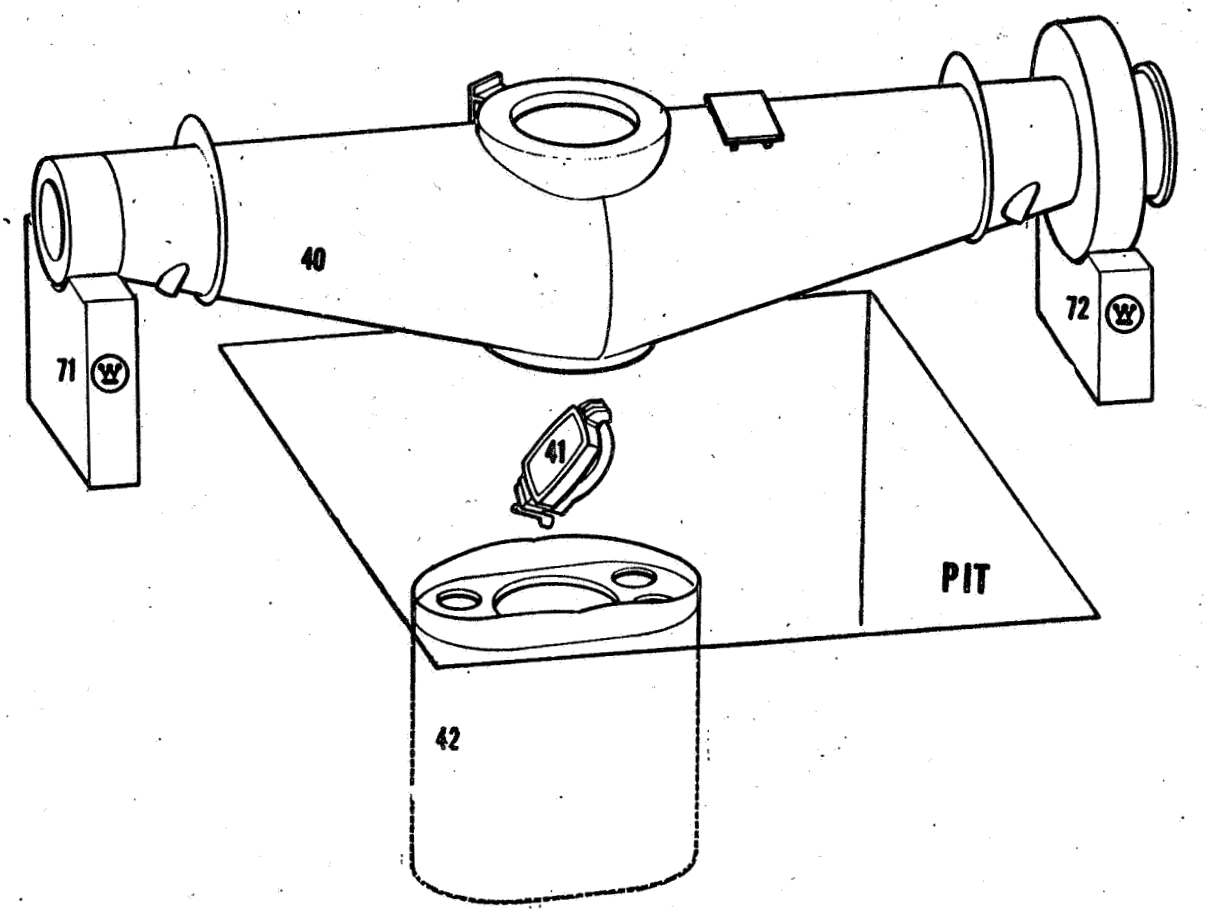


FIGURE 6 **EXPLODED VIEW WITH PARTS INDEX**



Assemble — Test

F

FIGURE 7

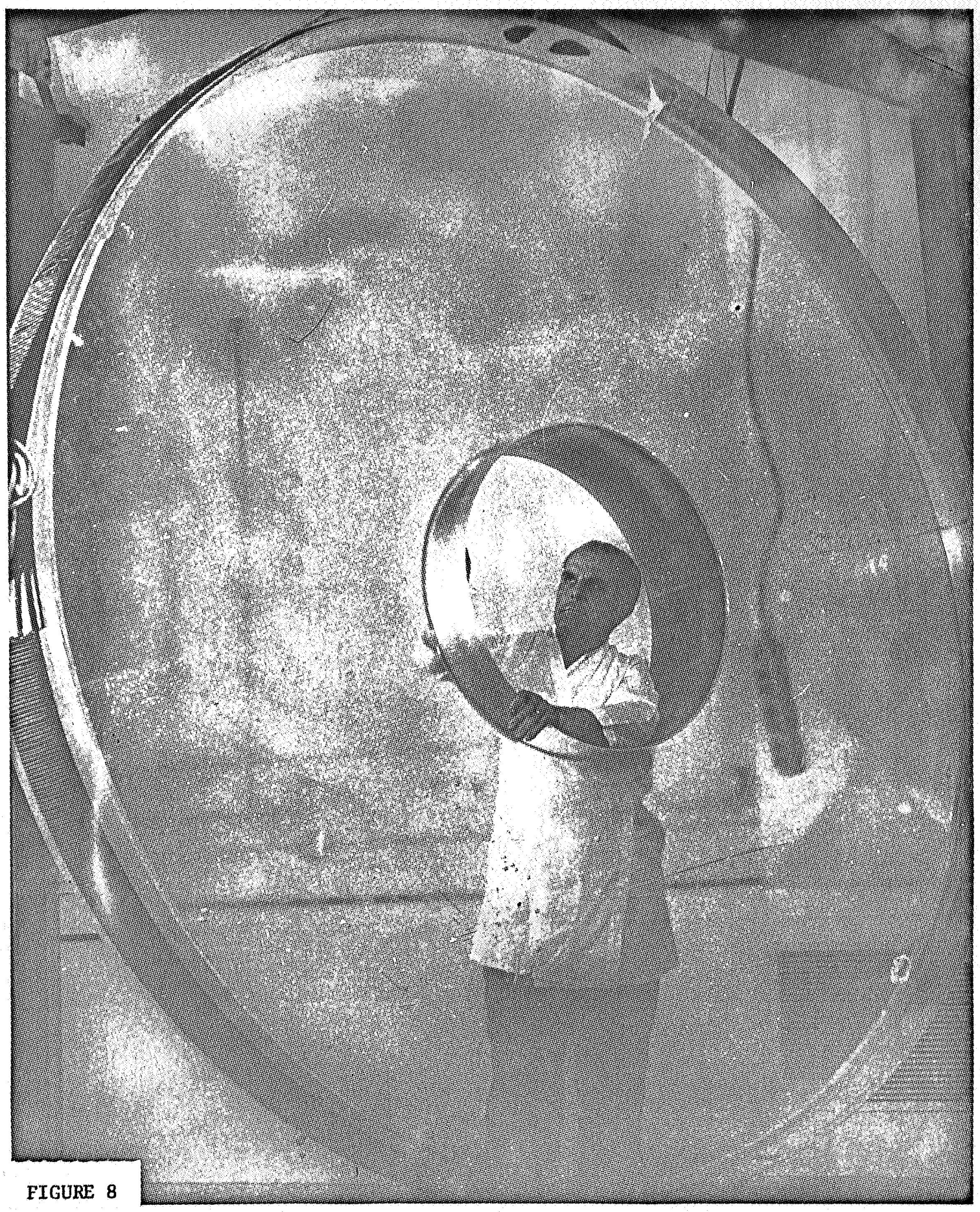


FIGURE 8

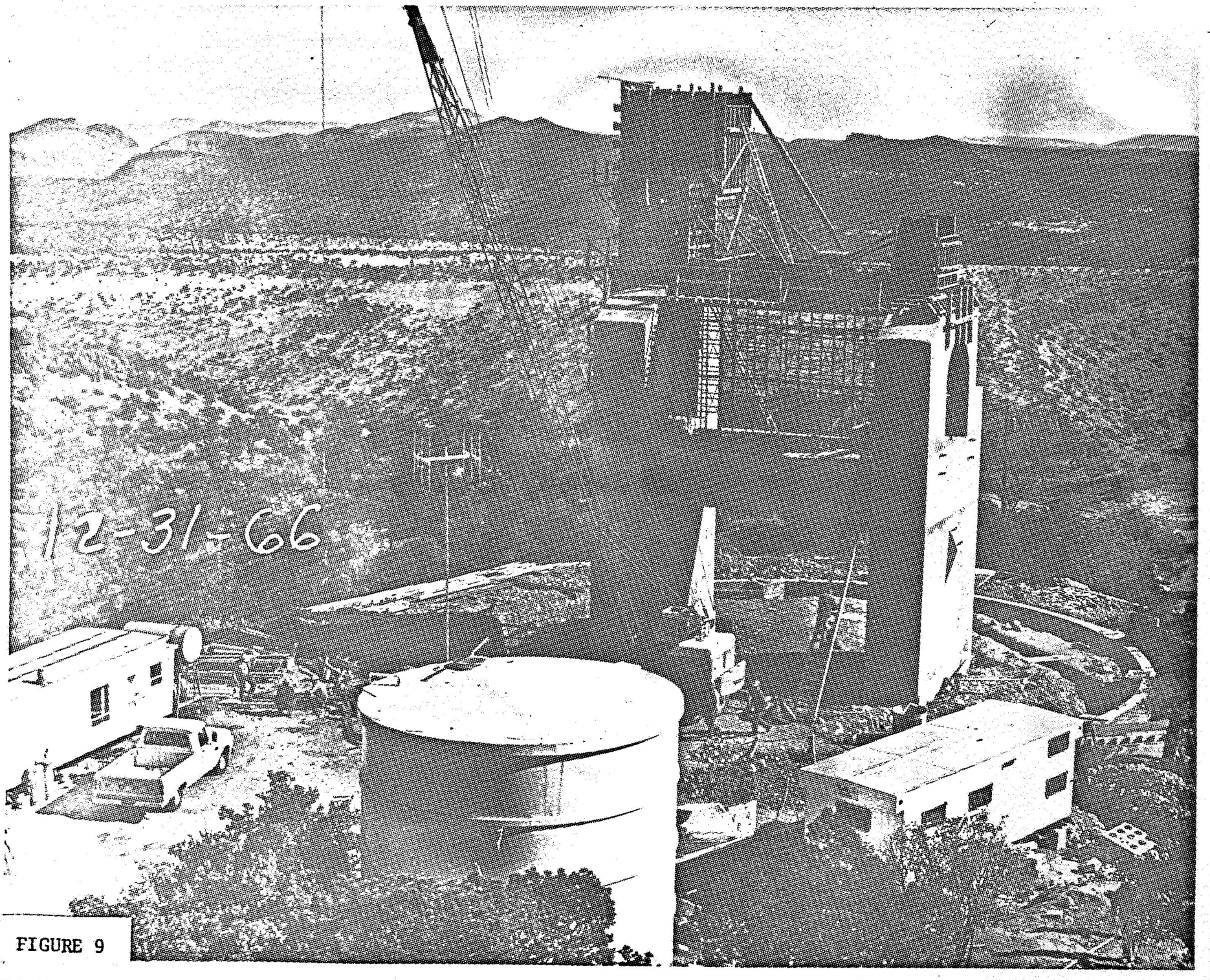
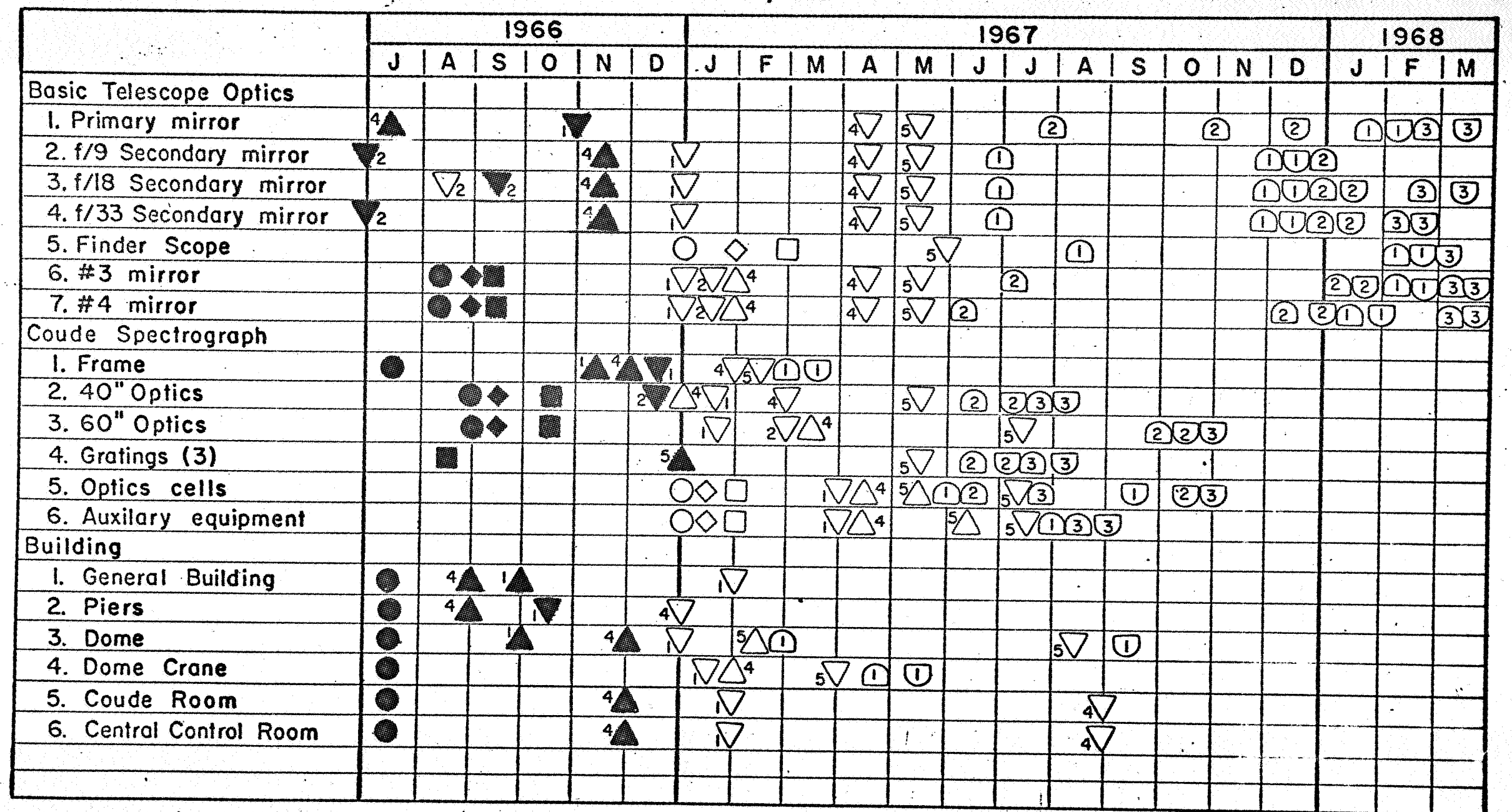


FIGURE 9

McDonald Observatory 105-inch Telescope Project

Milestone Chart

Nov 29, 1966



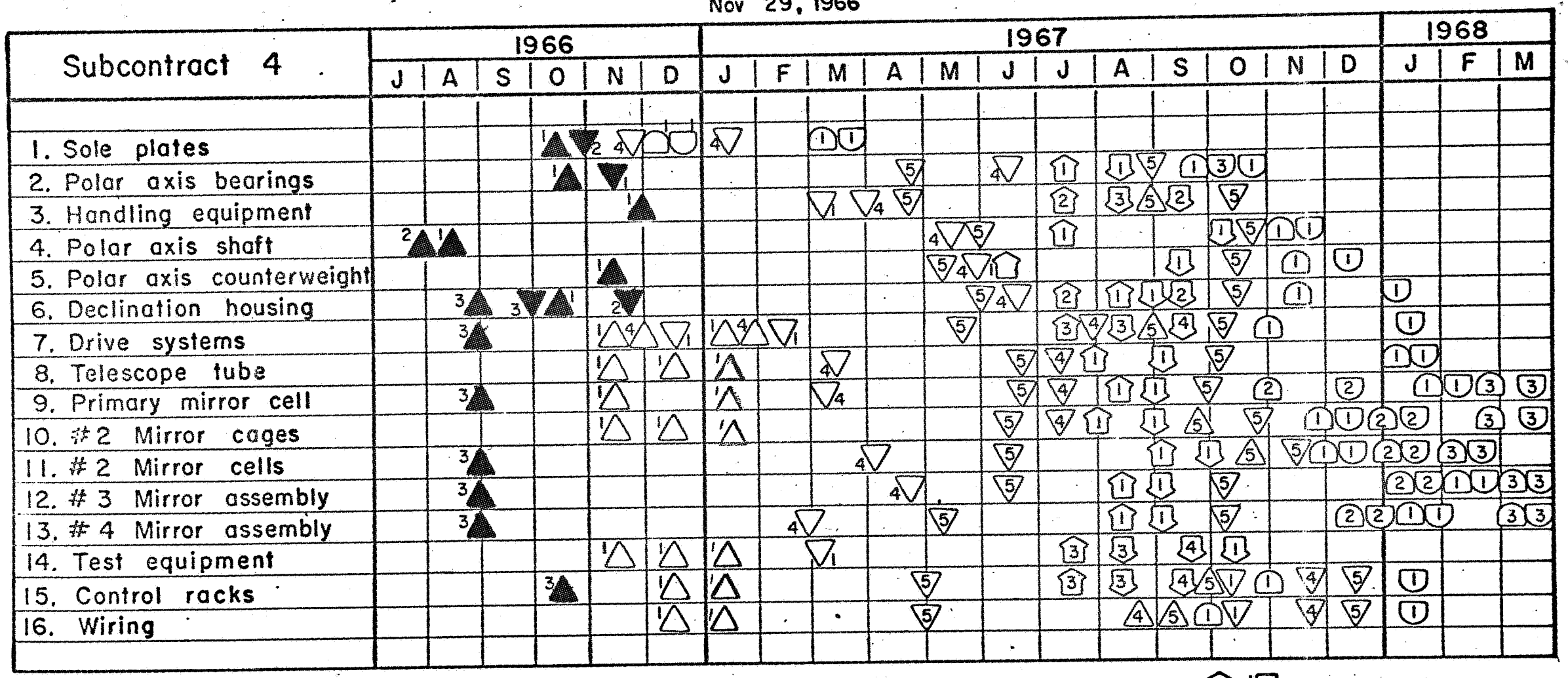
Revision A, Dec 1, 1966

McDonald Observatory 105-inch Telescope Project

Milestone Chart

Nov 29, 1966

Texas Interpretation of Westinghouse Critical Path Plan Dated Oct 3, 1966
Revision D



Begin and End Manufacture Task 1
1. Release Drawings
2. Obtain Materials
3. Let Subcontract
4. Manufacture
5. Ship

Begin and End Installation Task 1
1. Assembly
2. Optics
3. Aligment

Bid drawing, Specifications complete

Request for bid sent

Begin and End Test 1
1. Assembly & Function Test
2. Declination Bearing Test
3. Polar Axis Drive Test
4. Declination Drive Test

Contract let

Revision B, Dec 1, 1966