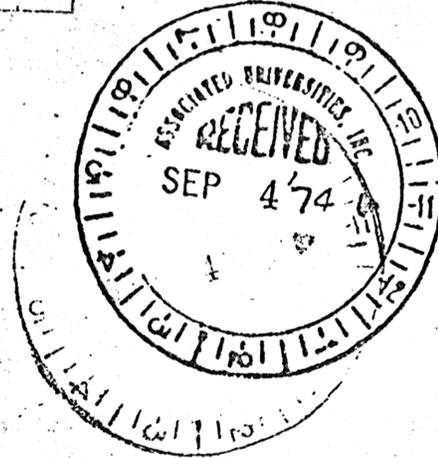


MEMO # 11

Bery  
to B. Turner

INDUSTRIES, INC.

CMHS DIVISION  
4000 MARLENA BOULEVARD  
SAN DIEGO, CA 92117August 28, 1974  
#297-8246-REENational Radio Astronomy Observatory  
Edgement Road  
Charlottesville, Virginia 22901

Attention: Mr. Bill Horne, Chief Engineer

Reference: NRAO's Mr. Horne's RFQ Dated June 5, 1974

Subject: Rohr's Price Quotation and Proposal for Machining and  
Measuring Two (2) NRAO Surface Panels

Gentlemen:

We are pleased to submit the following quotation and proposal in response to your referenced RFQ. Our quotation is for production and tooling labor and tooling material to perform the items listed in the Statement of Work Section "A" of subject proposal. This price is a commitment to perform per the aforementioned Statement of Work on a best effort basis as determined by Rohr Industries, Inc., CMHS Division. The price for engineering is \$9,500.00 and \$30,000.00 for machining and measuring the panels and is based on the following conditions, in addition to the foregoing.

- ✓ 1. NRAO will furnish to Rohr's CMHS Division the two (2) NRAO castings and the parabolic equation and focal length for numerical control surface and tape development by September 15, 1974. The design of the required tooling and N/C tapes will not be started until both panels are received by Rohr's CMHS Division for verification of part dimensions and casting configuration. If either one, or both, of the castings is significantly different to Philco Drawing Number 18S251, this quotation will require revisions to suit the differences.
- ✓ 2. Quotation is based upon attempting to machine to a .001 RMS on a best effort as determined by Rohr and there is no guarantee of achievement of this tolerance. Rohr will machine each of the two panels twice in an attempt to achieve this tolerance. Rohr shall not be responsible for defects, loss, or damage resulting from this work.
3. Price does not include any applicable sales, use, or property tax.

Continued . . .

NRAO  
#29703246-REE  
August 28, 1974  
Page Two

4. The Rohr Statement of Work is shown in Section "A" and is the method that will be used by Rohr to complete the requirements of this quotation.
5. Price is F.O.B. Chula Vista, California, and does not include any provision for packaging.
6. Final acceptance shall be accomplished by Buyer on receipt of test panels and report documents as indicated in this proposal. Payment is due at this time and shall be paid within 30 days after receipt of invoice.
7. Delivery will be in accordance with Section "B", Schedule section of this proposal.
8. This price quotation is valid until September 13, 1974.

Thank you for giving Rohr Industries, Inc., CMHS Division, the opportunity to bid on this program. If the foregoing is acceptable, a prompt Purchase Order to the attention of the writer will insure timely completion of this study program.

Very truly yours,

ROHR INDUSTRIES, INC.  
CMHS DIVISION

John F. Ryder  
CMHS Division Marketing Manager

Section A  
August 26, 1974  
#297-0246-PEE

### STATEMENT OF WORK

This is a statement of work for performing a study on two antenna surface panels to be supplied by the National Radio Astronomy Observatory (NRAO), Charlottesville, Virginia.

The study is based on using existing panels as depicted on Philco Drawing Number 118251, Sheet 2. The panel material is cast aluminum, A356, tempered to T-51.

The scope of work is as follows:

1. Receive two panels from NRAO with periphery and parabolic surfaces previously machined.
2. Inspect for shipping damage.
3. Layout, bore, and burr eight (8) holes, (four (4) holes in each outer longitudinal stiffener) in subject casting.
4. Develop numerical control tapes for measurement on the Portage Machine based on a 1" grid system.
5. Measure each panel on the Portage Machine. The panel is to be supported in the mill fixture. No warpage is to be induced into the panel. Measure the deviation of the panel surface on a 1" grid system and compute the RMS for the panel.
6. Make contour plots of the deviations for each panel.
7. Provide production aids, tooling and cutters for N/C machining each panel surface to 0.001" RMS on a best effort basis. A 2 flute carbide tipped end mill having a diameter of 1" with a cutting radius of 12" will be used. N/C machine part with a depth of cut of 0.010".

8. Provide numerical tapes for inspecting the machined panels on the numerically controlled milling machine on a 3" grid system.
9. Measure the surface deviations of each panel on a 3" grid system while the panel is still on the numerically controlled machine. This is to be done after machining, but prior to unloading from the machine.
10. Remachine each of the panels, if the panel surface deviation is greater than 0.001" RMS.
11. Remeasure the panel on the numerical control machine. Proceed to Step 12, even if .001 RMS is not achieved.
12. Measure the surface deviations using the Portage Machine as described in Step 5.
13. Make contour plots of the deviations of each panel.
14. Compile data and write a final report describing the machining, measuring techniques, the RMS and the maximum and minimum peak variations from the best fit parabolic curve. Included will be any tooling drawings or contour plots developed during the program.

SECTION "B"

SCHEDULE - MACHINING AND MEASURING TWO (2) NRAO PANELS

1974

1975

AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE
<p>▽ SUBMIT PROPOSAL</p>	<p>▽ GO AHEAD</p> <p>▽ ENGINEERING</p>	<p>TOOL ORDERS</p> <p>DATS (DATA SETUP INSTRUCTIONS)</p> <p>MACA DESIGN (SPECIAL TOOLING)</p> <p>MACC DESIGN (CUTTING TOOL)</p>		<p>▽ CUSTOMER FURNISHED PANELS REQUIRED</p> <p>MACA FABRICATION (SPECIAL TOOLING)</p> <p>NCIS (NUM. CONTROL INSP. SYSTEM)</p> <p>MACC FABRICATION (CUTTING TOOL)</p> <p>M S PLANNING (MACHINE SHOP)</p>	<p># 1 # 1 INSPECTION</p> <p># 1 # 2 MACHINING</p> <p># 1 # 2 SHIPPING</p>					