ROHR CORPORATION
CHULA VISTA, CALIFORNIA, POST OFFICE BOX 878, 92012, TELEPHONE 422-7111, CODE 714

July 25, 1967
Ref: 250-3913-RDH

National Radio Astronomy Observatory
Edgemont Road
Charlottesville, Virginia 22901

Attention: Mr. J. Marymor - ~~Contracts~~/Business Manager

Subject: Proposal - VLA Antenna Design

Reference: N.R.A.O. Request for Proposal Letter dated 4-26-67

Gentlemen:

In compliance with the referenced request for proposal, we are pleased to submit to N.R.A.O. the following proposal consistent with the requirements of the request.

The General Summary, Technical Proposal, Management Proposal and Master Summary Schedule are contained in Volume I. The cost and price analysis is contained in Volume II and by this reference all are made a part of our proposal.

We concur with the Federal Procurement Regulations as a guide for the required contract clauses; however, we reserve the right to review and accept such clauses prior to final contract execution.

We are pleased to have this opportunity to submit a proposal for this very important project and feel our proposal is indicative of our interest.

Yours very truly,

ROHR CORPORATION
ANTENNA DIVISION

R. D. Hall
Division Manager

Attachments

ROHR CORPORATION

ANTENNA DIVISION

VOLUME II

COST PROPOSAL

VLA ANTENNA SYSTEM DESIGN

Prepared for

NATIONAL RADIO ASTRONOMY OBSERVATORY

Charlottesville, Virginia

In Response to

NRAO REQUEST FOR PROPOSAL LETTER

DATED APRIL 26, 1967

July 28, 1967

NRAO 25 METER RADIO TELESCOPE (VLA)

COST AND PRICE ANALYSIS SUMMARY

		Hours	Cost
1.	Direct Engineering Labor (Phase 1 thru 5)	13,400	$75,040.00
2.	Engineering Burden @ 108% of Direct Labor		81,070.00
3.	Other Direct Costs		
	a. Manufacturing Engineering Labor	3,000	14,550.00
	b. Manufacturing Burden @ 125% of Direct Labor		18,150.00
	c. Quality Assurance Reliability Labor	260	1,027.00
	d. Manufacturing Burden @ 153% of Direct Labor		1,573.00
	e. Erection-Engineering Labor Costs	500	2,790.00
	f. Manufacturing Burden @ 108% of Direct Labor		3,025.00
4.	Total Direct Labor Hours and Costs	17,160	$93,407.00
5.	Total Burden Costs		103,818.00
6.	Total Labor and Burden Costs		$197,225.00
7.	General and Administrative Expense 6.1% of Labor and Overhead Costs		12,031.00
8.	Subcontracts (Computer-Univac 1007)		4,000.00
9.	Travel and Subsistence		13,959.00
10.	Total Costs (Fee Applicable)		$227,215.00
11.	Fee 15%		34,082.00
12.	Material Costs		-0-
13.	Reproduction Costs		-0-
14.	Other and Unusual Costs		-0-
15.	Total Contract Price		$261,297.00

COST AND PRICE ANALYSIS

A. Cost Breakdown

1. Direct Engineering Labor (Phase 1 thru 5)

Phase 1 - Systems Integration, Specification Review and Statement of Work

1. Master Load Document
2. Master Configuration Document
3. Overall Error Budget Document

Systems Engineering	840 @ $5.60	$ 4,704.00
Mechanical Engineering	180 @ $5.60 + 125%	1,008.00
Structural Engineering	180 @ $5.60 + 125%	1,008.00
Total Labor Dollars - Phase 1		$ 6,720.00

Phase 2 - Preliminary Design, Producibility and Associated Studies

Systems Engineering	960 @ $5.60	$ 5,376.00
Mechanical Engineering	1,920 @ $5.60	10,752.00
Structural Engineering	1,920 @ $5.60	10,752.00
Total Labor Dollars - Phase 2		$26,880.00

Phase 3 - Interim Review of Phase 2

Systems Engineering	800 @ $5.60	$ 4,480.00
Mechanical Engineering	1,600 @ $5.60	8,960.00
Structural Engineering	1,600 @ $5.60	8,960.00
Total Labor Dollars - Phase 3		$22,400.00

Phase 4 - Final Review - Phases 2 and 3

Systems Engineering	480 @ $5.60	$ 2,688.00
Mechanical Engineering	960 @ $5.60	5,376.00
Structural Engineering	960 @ $5.60	5,376.00
Total Labor Costs - Phase 4		$13,440.00

Phase 5 - Update Systems and Final Documentation

Systems Engineering	700 @ $5.60	$ 3,920.00
Mechanical Engineering	150 @ $5.60	840.00
Structural Engineering	150 @ $5.60	840.00
Total Labor Costs - Phase 5		$ 5,600.00

TOTAL LABOR COST BY PHASE

Hours	Phase	Cost
1,200	1	$ 6,720.00
4,800	2	26,880.00
4,000	3	22,400.00
2,400	4	13,440.00
1,000	5	5,600.00
13,400	Total	$75,040.00

Other Direct Costs:

Manufacturing Engineer	3,000 @ $4.85	12 5 %	$14,550.00
Quality Assurance	260 @ $3.95		$ 1,027.00
Erection Engineering	500 @ $5.56		$ 2,790.00

2. Material Cost - Not applicable.

3. Sub-Contracts - The computer time of 100 hours is applied at 400.00/hr. for a sum cost of $4,000.00.

   There is a possibility consultant time will be required for servo effort, however, it is not included at this time.

4. Travel and Subsistence - 3 round trips, six men per trip to Charlottesville, Virginia.

   Air Fare - $350.00/round trip per man
   $350.00 X 6 X 3 — $ 6,300.00

   Labor Hours:

   Meeting - 48 hours per meeting X 2 days X 3 meeting = 288 hrs.

   Travel Time - 96 hours per group each trip X 3 trips = 288 hrs.

Rate	$ 5.60	- Engineering Labor
	6.05	- Burden
	$11.65	
G&A, 6.1%	.71	
Total Rate	$12.36	

Meeting Hours	288		
Travel Hours	288		
	576	X $12.36/hr. =	$ 7,119.00

   Per Diem $15.00/day X 6 = $90.00/day X 2 = $180.00/trip
   $180.00/trip X 3 trips — 540.00

   Total Travel and Subsistence — $13,959.00

5. Reproduction Costs - These items are part of burden rate.

6. Other and unusual costs - Not applicable.

7. Overhead and G & A:

Overhead	Developed for a fiscal year period August 1 thru July 31, used for bidding and bookings.
G & A	Corporate developed, division applied, for fiscal year period. G & A applied for this proposal is 6.1% of labor and overhead dollars.

8. Fee is applied at 15% per ASPR 3-807.10(d)(i) in case of any subcontract for experimental, developmental, or research work.

B. Supporting Cost Information

1. Furnished in (A) cost breakdown.

2. Materials (not applicable).

3. Subcontracts - overhead not applicable in subcontract area.

4. Travel and Subsistence - Furnished in (A) 4.

5. Rates are bidding and booking rates

   (a) One overhead rate applied for all area, i.e., Engineering, Manufacturing, Erection.

   (b) Address - Cognizant Government Audit Agency

   Resident Auditor
   Defense Contract Audit Agency
   Ryan Aeronautical Company
   2701 Harbor Drive
   San Diego, California 92112

   (c) August 1, 1967 thru July 31, 1968.

6. Certificate of Current Pricing

Certificate #3027

ROHR CORPORATION - ANTENNA DIVISION
Chula Vista, California

CERTIFICATE OF CURRENT COST OR PRICING DATA

This is to certify that, to the best of my knowledge and belief, cost and pricing data submitted to the Contracting Officer or his representative in support of V.L.A. Antenna Design, Ref. Rohr Letter to N.R.A.O. #250-3913-RDH dated July 25, 1967, are accurate, complete, and current as of the date of execution of this certificate.

July 25, 1967
Date of Execution

Firm ROHR CORPORATION

Name B. A. Ronald

Title Controller, Antenna Division

Rohr Corporation
1966
Annual Report

1966 Annual Report
Rohr Corporation
Chula Vista, California

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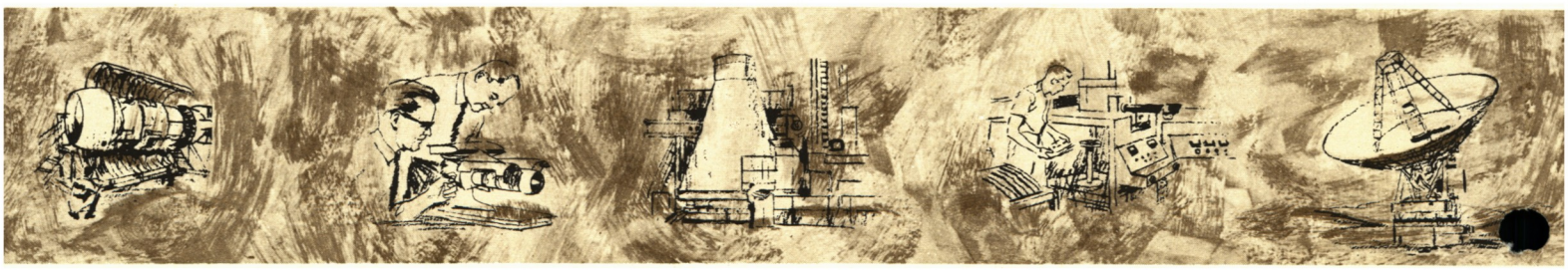


Highlights

OPERATING SUMMARY	1966	1965	1964	1963	1962
Sales	$197,275,784	$158,719,237	$128,537,039	$104,164,095	$151,034,579
Earnings Before Income Tax	11,353,071	9,402,410	5,447,867	3,779,148	10,070,530
Taxes on Income	5,124,000	4,560,552	2,832,235	1,745,861	5,242,854
Net Earnings	6,229,071	4,841,858	2,615,632	2,033,287	4,827,676
Dividends Paid	2,103,629	2,010,422	1,996,975	1,993,731	1,979,737
Net Earnings Per Share (1)	2.96	2.41	1.31	1.02	2.44
Dividends Paid Per Share	1.00	1.00	1.00	1.00	1.00
Percentage of Earnings to Sales Before Taxes on Income	5.8%	5.9%	4.2%	3.6%	6.7%
Percentage of Taxes on Income to Sales	2.6%	2.9%	2.2%	1.7%	3.5%
Percentage of Net Earnings to Sales	3.2%	3.0%	2.0%	2.0%	3.2%
POSITION AT YEAR END					
Working Capital	$ 30,687,604	$ 29,296,136	$ 25,661,812	$ 26,246,579	$ 27,811,391
Ratio Current Assets to Current Liabilities	1.37	1.64	1.83	1.86	2.31
Earnings Retained for Use in the Business	$ 23,187,370	$ 19,061,928	$ 16,230,492	$ 15,611,835	$ 15,572,279
Stockholders' Equity Per Share (1)	19.64	16.96	15.47	15.15	15.19
Number of Shares Outstanding (1)	2,101,835	2,009,242	1,996,623	1,993,403	1,978,524
Backlog	$421,000,000	$227,000,000	$212,300,000	$163,037,000	$108,638,000
GENERAL INFORMATION					
Total Wages and Salaries	$ 83,343,294	$ 59,697,007	$ 54,098,632	$ 50,855,950	$ 61,190,677
Average Number of Employees	10,716	8,039	7,494	7,129	9,045
Gross Addition to Plant and Equipment	$ 4,298,868	$ 1,871,432	$ 3,571,381	$ 3,422,376	$ 2,670,677

(1) Per share figures adjusted to reflect average number of shares outstanding for each year.

President's Letter

BURT F. RAYNES
President and
Chief Executive Officer

While establishment of new records from year to year has become commonplace in the aerospace industry, we at Rohr are particularly proud to have achieved new record highs in sales, earnings and backlog during the last fiscal year.

The backlog of firm orders stood at $421,000,000 as of July 31 this year, as compared with $227,000,000 on the same date a year ago. During the fiscal year our backlog reached an all-time record high of $433,000,000.

Sales for fiscal 1966 amounted to $197,275,784, compared with $158,719,237 the year before. Net earnings were $6,229,071, or $2.96 a share on an average of 2,101,835 shares outstanding during the year. During the previous fiscal year net earnings amounted to $4,841,858, or $2.41 a share on the average number of shares outstanding during that year. Quarterly cash dividends of 25 cents a share were paid. Additional details on financial operations are contained elsewhere in this report.

Aircraft programs, most of which can be expected to continue for many years, accounted for the major portion of the increase in sales and earnings. We are participating in most of the major, multi-engine transport aircraft programs in production today, as well as in development of the new Boeing 747 commercial transport and the Lockheed C-5A—aircraft with such passenger and cargo capacity and economic advantage that they must be considered giant steps forward in air transportation. We also expect to participate to a considerable degree in supersonic transport programs.

Both our Antenna and Space Products divisions have made significant accomplishments during the year.

The Antenna Division completed the "colossus" of Free World antennas for NASA and the Jet Propulsion Laboratory. This 210-foot diameter tracking and communications antenna is now in operation and is considered the most precise instrument of its kind—extending the range of NASA's Deep Space Instrumentation Facility to the edge of our solar system. The division has also found a new market in the communications satellite program, having built a number of ground station antennas for this growing worldwide communications network.

Our Space Products Division has become an important subcontractor to the companies developing the nation's large solid rocket motor capability, and has achieved a high level of technical competence in the fabrication of nozzles, motor cases and insulation for the largest solid fuel rocket motors.

As a consequence of the general increase in activity in the aerospace industry, considerable pressure is being exerted on available manpower and materiel resources. Just as experienced by other companies in our field, we have been confronted with the necessity for hiring large numbers of new employees to meet added work loads. The majority of these new employees have had no previous aircraft experience. The problem is also aggravated by industry-wide high labor turnover ratios. This situation, combined with rising costs of raw materials furnished by suppliers and vendors has made it increasingly difficult for us to achieve hoped for profit levels from operations. Our management team has been successful in minimizing the effect of this situation to date but we can see no early end to these problems.

As the accompanying chart points out, the aircraft industry is far from reaching its full potential market

volume. We have every reason to anticipate growth in aircraft production almost indefinitely, since increases in air travel volume over the past 30 years are insignificant compared with what we can expect in the next few decades. Development of new generations of aircraft with their much lower seat-mile and ton-mile operating costs can only mean increases in both passenger travel and cargo volume which will in turn create a growing demand for our products.

It is a tribute to the wisdom and foresight of the late Fred H. Rohr that the company he founded and directed, both as president and board chairman, for so many years continues to function efficiently and profitably in the basic subcontractor role he first conceived.

Your company's success through the years has been due to the skills, effort and cooperation of our personnel and the confidence of our customers, for which I express sincere appreciation on behalf of the Board of Directors and Management.

Burt F. Raynes

BURT F. RAYNES
President and Chief Executive Officer

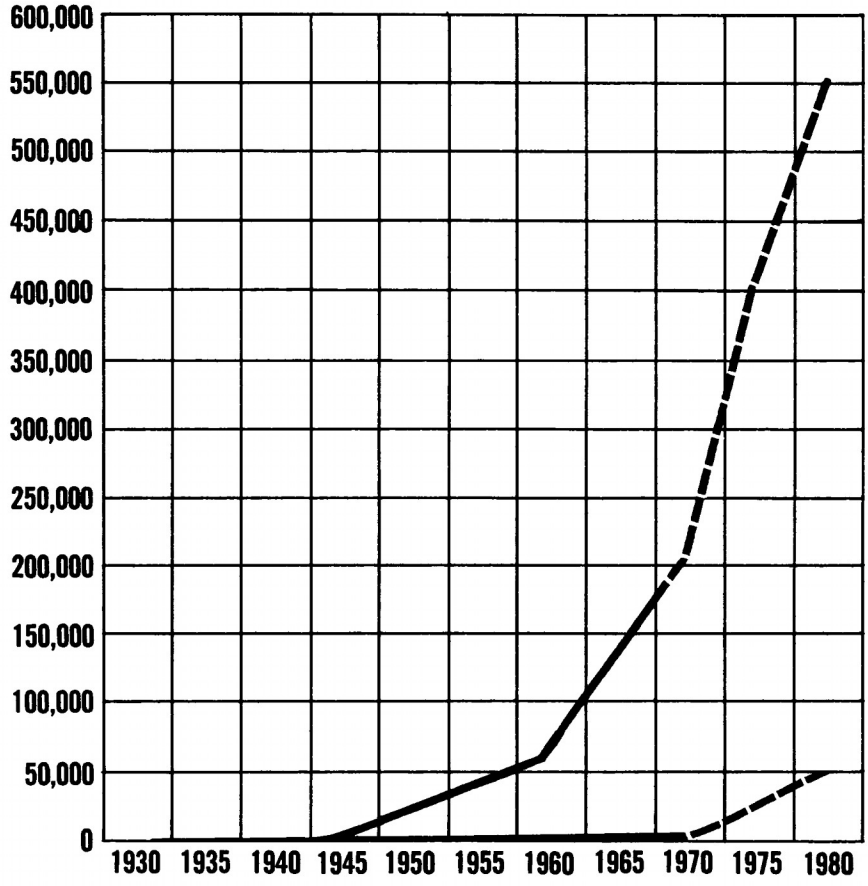
Growth in Air Transportation

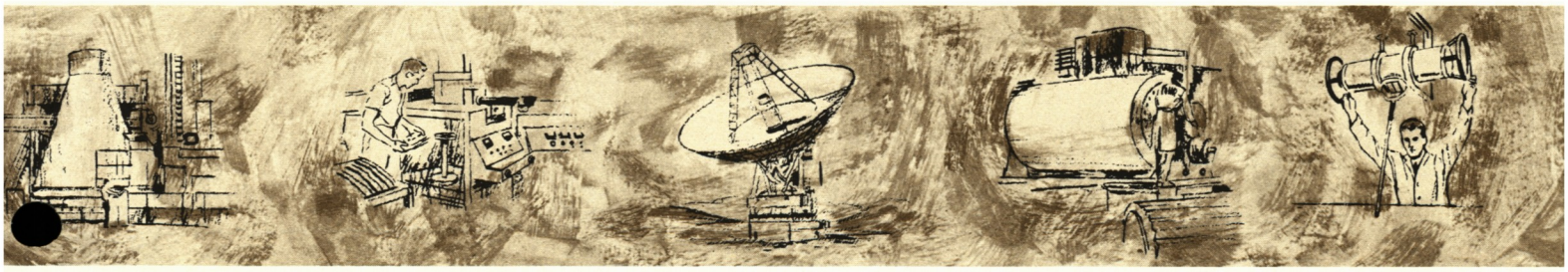
ALL WORLD CIVIL AIRLINES

PASSENGER AND CARGO
1930-1980

REVENUE PASSENGER MILES
IN MILLIONS ——

CARGO TON-MILES
IN MILLIONS ——





Net sales for the fiscal year ended July 31, 1966 were $197,275,784, compared with $158,719,237 in fiscal 1965. Net earnings for the fiscal year were $6,229,071, or $2.96 per share on 2,101,835 shares, as compared with $4,841,858, or $2.41 per share for the 1965 fiscal year. Per share earnings are calculated on the average number of shares outstanding during the fiscal year and earnings for the 1965 fiscal year have been adjusted on that basis.

DIVIDENDS

Four quarterly cash dividend payments of 25 cents a share were made during the year.

BACKLOG

The backlog of unfilled orders at July 31, 1966 stood at $421,000,000, as compared with $227,000,000 at the end of the 1965 fiscal year. In accordance with company policy, backlog figures include only firm orders. They do not include projects in negotiation, anticipated orders, unpriced letter contracts or letters of intent.

FINANCIAL POSITION

At the close of the fiscal year the Company's net working capital was $30,687,604, as compared with $29,296,136 a year ago. Bank borrowings increased from $14,000,000 at the end of the 1965 fiscal year to $38,000,000 at the end of our 1966 fiscal year.

Gross additions to plant and equipment amounted to $4,298,868.

There were 153,695 shares of common stock issued during the year as a result of conversions of $2,844,000 face value of 5¼ per cent convertible debentures. The amount outstanding on this issue was $2,944,000 at July 31, 1966.

TAXES AND RENEGOTIATION

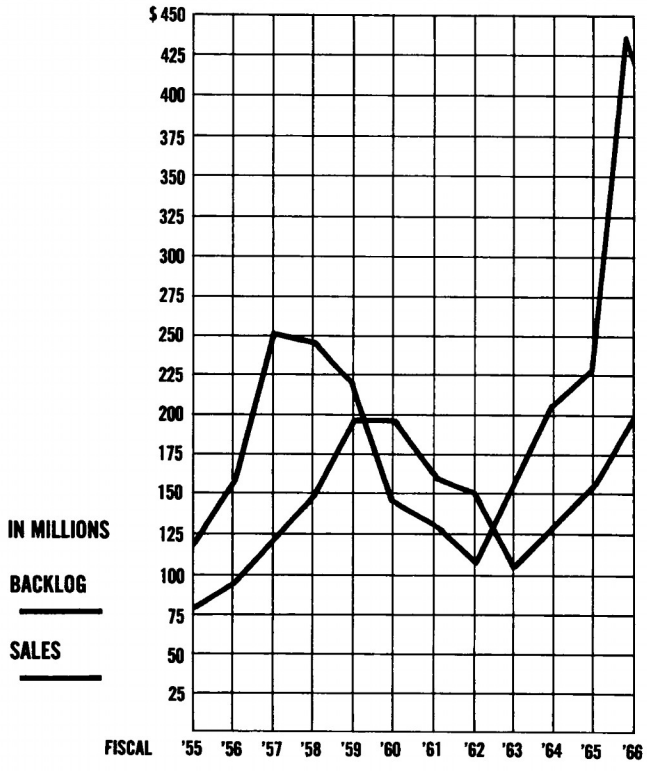
Income tax returns have been examined through July 31, 1965, and renegotiation proceedings have been completed through fiscal 1964. In the opinion of management, no provision for adjustment arising from renegotiation is deemed necessary for fiscal 1966.

CAPITAL STOCK AND SURPLUS

At July 31, 1966 the common stock outstanding totaled 2,193,008 shares owned by 10,266 shareholders of record residing in the 50 states, the District of Columbia and abroad.

Consolidated earned surplus at July 31, 1966 amounted to $23,187,370, compared with $19,061,928 a year ago. Shareholder equity was $19.64 a share, compared with $16.96 a share last year.

Corporate Sales and Backlog



Financial Operations

SUBCONTRACTING GROWS ON NEW GENERATION AIRCRAFT

While your company's product line has expanded from year to year, major structural components for aircraft continue to account for the bulk of the company's sales and backlog.

Continuing development of new generations of aircraft by the prime manufacturers makes it evident that this situation with respect to Rohr will prevail indefinitely.

In addition to the company's involvement in the majority of the current major, multi-engine transport programs, we are participating in the preliminary development stages on the Boeing 747, 490-passenger commercial transport, and anticipate participation to some substantial degree in the forthcoming supersonic transport program.

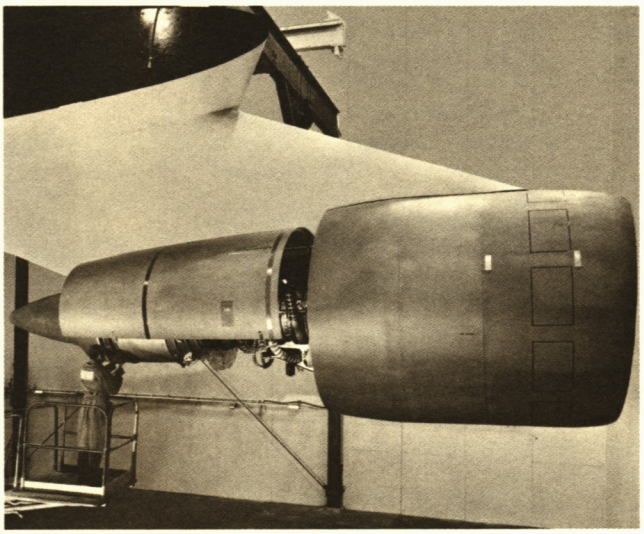
Manufacturing techniques involving the titanium alloys and stainless steel structures required for supersonic flight have been developed by Rohr's manufacturing research engineers and specialized facilities required for such production have been planned.

The company is proceeding under terms of a letter contract from Boeing with plans for production of the engine pods and pylons for the giant 747. An eight-to-ten-year span is anticipated for this contract and Boeing's sales projections indicate that 747 production will mean some $250 million in business to Rohr during that period.

As a participant in the 747, Rohr is a part of one of the largest subcontracting programs in the history of our industry. During our many years as a subcontractor to Boeing we have produced more than 15,000 power plant assemblies for Boeing aircraft.

Meanwhile, work has been under way at our Chula Vista plant for some time on the power plant mockup for the world's largest aircraft, Lockheed's C-5A heavy logistics transport. Rohr engineers are working with Lockheed on the nacelle and pylon design and production will be carried out at the Chula Vista, Riverside and Winder, Georgia plants.

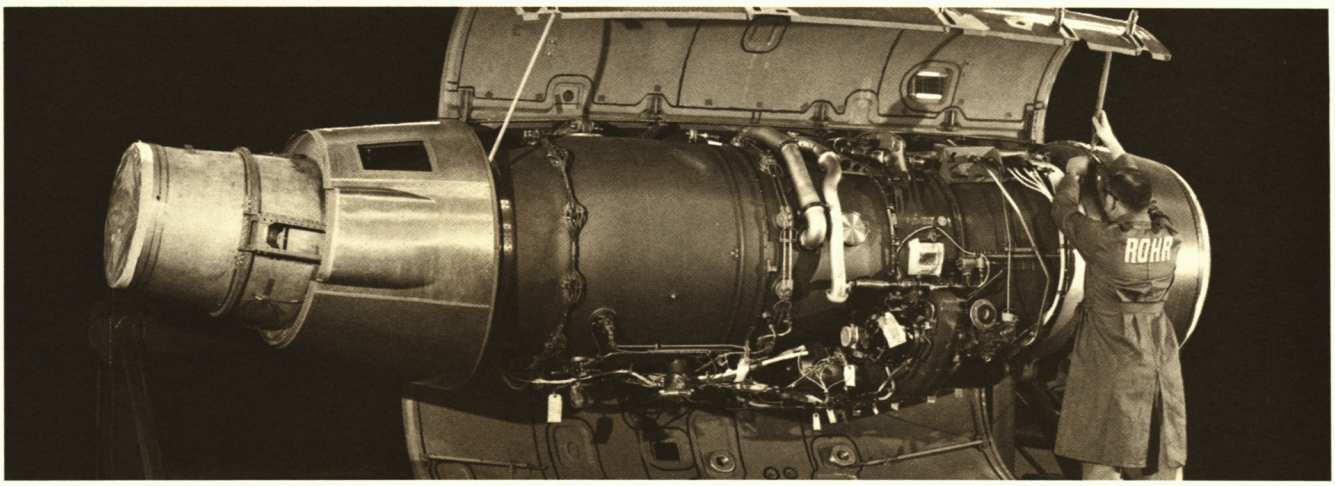
This 700,000-pound airlifter is being developed by Lockheed under the direction of the Air Force Systems Command for delivery in 1969 to the Military Airlift Command. It will be used for transportation of personnel and material—including the largest items in the Army inventory—over the long oceanic routes at jet speed.



Engineering mockup being developed at Rohr for the C-5A's 41,000-pound-thrust power plant.

Nine-abreast seating is a feature of the 490-passenger Boeing 747 airliner, for which Rohr will build pods and pylons.

Aircraft



Final assembly on a Grumman Gulfstream II turbo- fan engine pod.

Lockheed also has designed commercial versions of this aircraft for both passenger and cargo or combination service.

We are in the early production stage on the new Douglas "Super-Sixties" series DC-8s—a larger, faster version of this highly successful aircraft. The engine pods built by Rohr are a major factor in the greater speed and range of the Super 62. These pods are cleanly tapered cylinders with external lines unbroken from inlet to nozzle. By-pass air from the turbofan engines is expelled at the nozzle rather than through side outlets, providing substantially greater efficiency. The long ducts and external panels which surround them to make up this unique structure are adhesive metal bonded assemblies, designed and fabricated by Rohr.

Another program in the early production stages is the Grumman Gulfstream II business jet, for which Rohr designed and is building the engine pods and thrust reversers. The Gulfstream II was designed as the world's fastest corporate transport with transcontinental range. Its Rohr-designed thrust reversers will shorten the landing roll to allow use of many smaller airfields.

The first shipset of production power plant assemblies has been shipped to Boeing for that company's new 737, a twin engine commercial jet transport designed for shorter route segments and feeder type airlines.

Mockup of the nacelle for the Boeing 747 airliner.

Meanwhile, there are nine major aircraft programs in the routine production stage, most of them with substantial order backlogs and several years of production anticipated.

These include the pods and pylons, aft fuselage sections, thrust reversers, ailerons, nose and main landing gear doors and horizontal stabilizers for the Boeing 707

A model of the Grumman Gulfstream II. Rohr is building pods and pylons.

Boeing's new 737 twinjet for the short haul market. Rohr produces the power plant assemblies.

Boeing's big 747 "jumbo" jet, as seen by an artist.

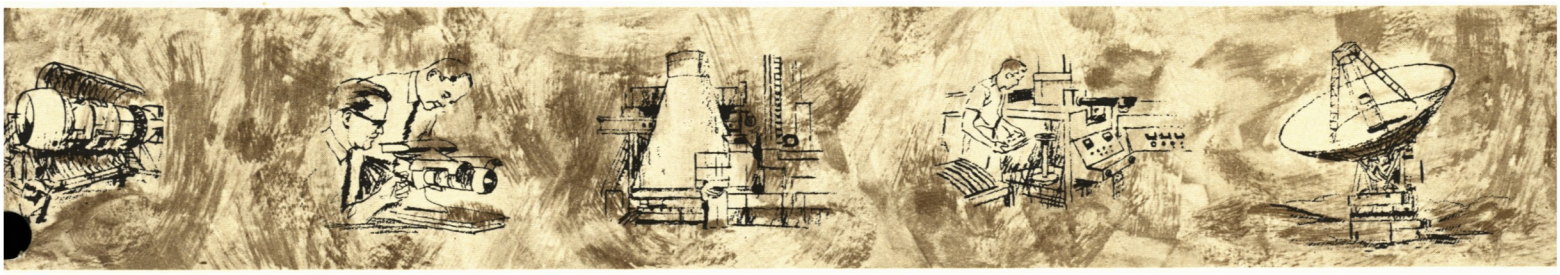
Artist's conception of Lockheed's C-5A, which will be the world's largest plane to date.

and 720 series commercial transports, for which Boeing is still receiving new orders, and the aft-mounted pods and flight and ground spoilers for the Boeing 727 short-to-medium range commercial transport.

For Lockheed we are building the pods, pylons, thrust reversers and main landing gear doors, aft pressure and cargo doors for the C-141 Starlifter military logistics transport. Lockheed also has proposed a commercial version of this aircraft, the L-300, for which they anticipate future sales. Also for Lockheed, we are building the propjet engine power plant assembly for the P3-B Orion anti-submarine patrol plane employed by the Navy, power plant assemblies and landing gear doors for the C-130 Hercules propjet logistics transport, and the twin aft-mounted pods and thrust reversers for the JetStar business-military transport.

In addition to the new versions of the DC-8, we are building the engine pods and thrust reversers for the Douglas DC-9, a highly successful short-to-medium range commercial jet.

At the Winder plant we are building aft fuselage and empennage components for the Grumman E-2A Hawkeye early warning and intercept control airplane used by the Navy. And at Riverside, for Douglas, we are producing bonded honeycomb trailing edge wing panels for the McDonnell F-4B attack aircraft and a bonded honeycomb control panel for the DC-9.



ANSWERING NEW CHALLENGES WITH ADVANCING TECHNOLOGY

In response to an increasing demand for engineering support from customers and the need for greater research effort in the company's specialty areas, Rohr's staff of engineers and scientists is being expanded at a rapid rate.

The number of trained engineers employed by the engineering department increased 65 per cent during the past fiscal year and a further increase of 40 per cent is anticipated during the 1966-67 fiscal year. By that time professional employees in the various engineering and scientific disciplines within the engineering department will number about 500.

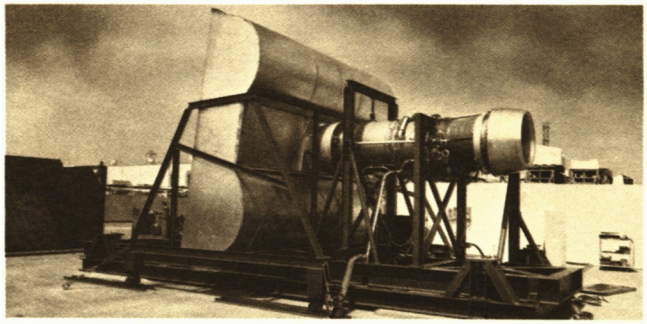
The spectrum of engineering skills is expanding with the rapid technological advance of our industry, ranging from aero and thermodynamicists to acoustical research specialists involved in studies of jet engine sound. The average professional experience in the engineering department is nine years, with about half of the staff holding one or more academic degrees.

While the nature and scope of engineering activities changes with the technology of the industry, Rohr's approach remains closely tied to customer requirements, either present or anticipated. Many of the company's engineers are called upon to work for extended periods at customer plants in the development of new aircraft designs—lending their knowledge in Rohr specialty areas to the overall customer design effort.

In some cases, Rohr's engineers have complete design responsibility in specific areas, such as nacelles or thrust reversers.

To support this design effort and advance the technology in the company's specialty areas, a variety of research programs are under way—some company financed and others under contract.

One Air Force contract, for example, calls for study and design development on a thrust reverser for in-flight



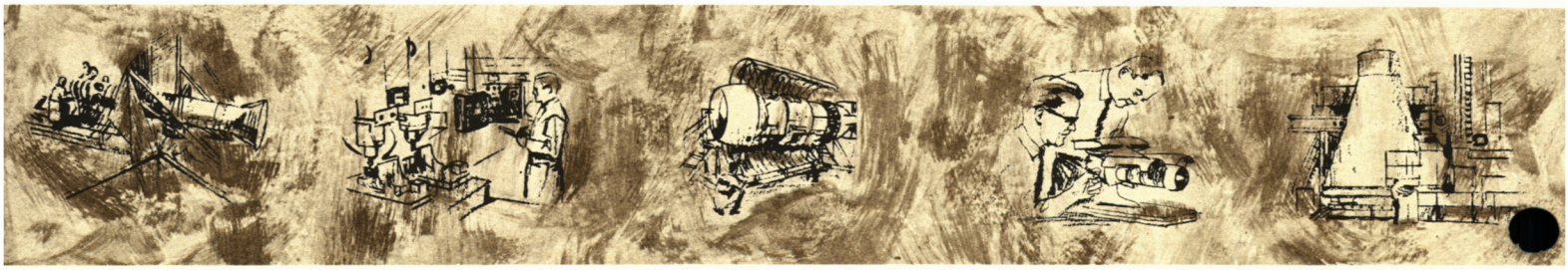
A scene at Rohr's Chula Vista Plant during the testing of Rolls Royce Spey jet engine thrust reverser for the Grumman Gulfstream II business aircraft.

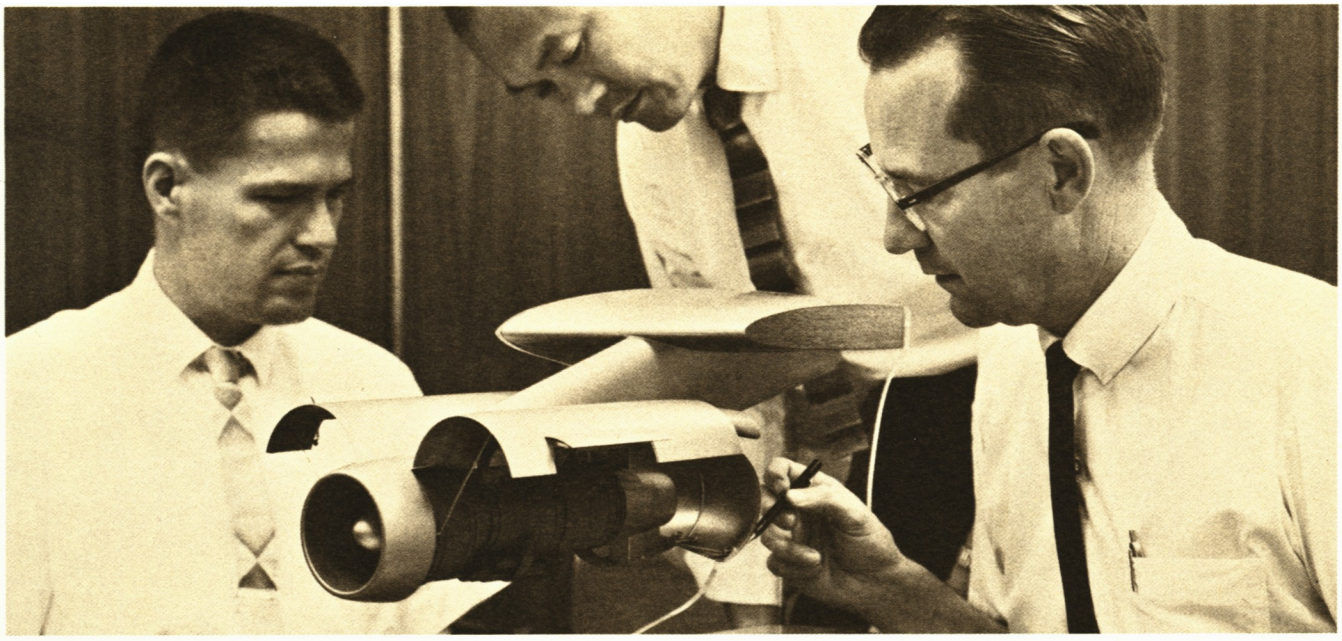
use on tactical aircraft. The reverser is being designed as a replacement for the drag chute and speed brakes presently in use on such aircraft to shorten the landing roll and improve tactical maneuverability respectively. In the second phase of this program, Rohr will be responsible for fabrication and flight test of the thrust reversers.

In the present Phase 1 portion of this program, Rohr engineers are studying the effect of the reverser on aircraft performance, problems of re-ingestion and impingement of the exhaust gases on the aircraft, relative noise

Wind tunnel test of a thrust reverser model, simulating operation and loads during actual flight conditions. Gas pattern is shown by movement of chalk compound.

Engineering & Research





Design evaluation on an advanced engine pod.

levels and a variety of design concepts.

The company's test facility at the Chula Vista plant has been supplemented to make possible a greater variety of tests in this and other programs. Scale model cold flow testing and hot gas testing on jet engines can be conducted simultaneously.

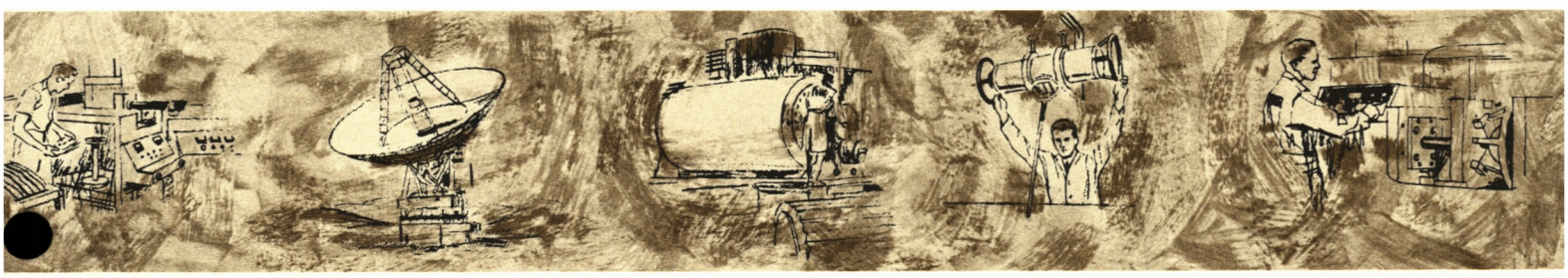
A contract from the Wright Aeronautical Division of Curtiss-Wright calls for design, fabrication and testing of vectoring nozzles for a turbo-fan engine to be used in vertical take off and landing aircraft. The vectoring tail pipe concept calls for several elliptical pipe sections connected by large diameter ball bearings and interconnecting gearing so that one section may rotate with respect to the other. In this way thrust may be vectored from the cruise attitude to the lift attitude without changing the fore and aft plane of the engine. This approach also avoids side thrust from the engine.

One unit has been built and tested on a jet engine and has produced confirmation of basic design concepts and sufficient data to support earlier laboratory test results. A second and more advanced nozzle has now been built and is beginning its test cycle.

Both engine test stand and wind tunnel tests have been conducted on a variety of thrust reverser designs — a specialized product in which Rohr has excelled since the introduction of commercial jet aircraft. These research efforts are aimed at both existing customer requirements and accumulation of data for proprietary use.

A wind tunnel test program on a Rohr target type reverser design was completed during the year. This test program provided dynamic simulation of reverser operation and loads under flight conditions. Rohr designed and fabricated models were used in the tests and the results showed that good in-flight thrust modulation could be achieved. These findings indicate a number of potential applications on military aircraft.

Engineering research efforts such as these illustrate both the growing complexity of our industry and Rohr's determination to remain competitive in that industry through constantly improving technology.



TOUCHE, ROSS, BAILEY & SMART

3350 WILSHIRE BOULEVARD
LOS ANGELES, CALIFORNIA, 90005

September 20, 1966

Board of Directors
Rohr Corporation
Chula Vista, California

We have examined the accompanying balance sheet of Rohr Corporation as of July 31, 1966, and the related statements of income, earned surplus, and capital surplus for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

In our opinion, the financial statements referred to above present fairly the financial position of Rohr Corporation at July 31, 1966, and the results of its operations for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

Certified Public Accountants

Rohr Corporation
Statement of Income

	Year ended July 31	
	1966	1965
Sales and sundry revenues	$197,275,784	$158,719,237
Costs and expenses	$184,642,771	$148,484,638
Interest	1,279,942	832,189
Earnings before federal taxes on income	$ 11,353,071	$ 9,402,410
Federal taxes on income	5,124,000	4,560,552
Net income	$ 6,229,071	$ 4,841,858

Depreciation and amortization of plant and equipment amounted to $1,846,858 (1966) and $1,918,354 (1965).

See notes to financial statements.

ASSETS

	July 31 1966	July 31 1965
CURRENT ASSETS:		
Cash	$ 6,484,200	$ 9,078,569
Accounts and notes receivable	30,657,557	18,025,684
Inventories (NOTE 1):		
Work in process	$ 90,234,599	$57,377,632
Raw materials, purchased parts, and supplies	12,935,973	9,986,388
Less customers' progress payments secured by specific accounts	(27,904,345)	(21,215,505)
	$ 75,266,227	$46,148,515
Prepaid expenses	1,973,729	1,490,542
TOTAL CURRENT ASSETS	$114,381,713	$74,743,310
LONG-TERM NOTES RECEIVABLE	558,000	94,378
PROPERTY, PLANT AND EQUIPMENT–at cost	$ 30,033,323	$26,782,755
Less accumulated depreciation and amortization	17,136,013	15,827,000
	$ 12,897,310	$10,955,755
OTHER ASSETS AND DEFERRED CHARGES	799,248	224,401
	$128,636,271	$86,017,844

See notes to financial statements.

rporation
e Sheet

LIABILITIES & STOCKHOLDERS' EQUITY

	July 31 1966	July 31 1965
CURRENT LIABILITIES:		
Notes payable to banks (unsecured) (NOTE 3)	$ 38,000,000	$14,000,000
Trade accounts, current maturities of long-term debt, and other payables	31,224,788	19,182,734
Salaries and wages, etc.	8,610,544	6,691,376
Federal taxes on income	2,838,045	3,640,000
Other accrued taxes	3,020,732	1,933,064
TOTAL CURRENT LIABILITIES	$ 83,694,109	$45,447,174
LONG-TERM DEBT:		
5¼ % Convertible subordinated debentures, due 1977 (NOTE 2)	$ 2,944,000	$ 5,788,000
Other obligations, less current maturities included above of $204,038 and $154,354	721,500	700,022
TOTAL LONG-TERM DEBT	$ 3,665,500	$ 6,488,022
STOCKHOLDERS' EQUITY (Note 3):		
Common stock, par value $1 a share:		
Authorized, 6,000,000 shares Issued and outstanding, 2,193,008 shares	$ 2,193,008	$ 2,026,204
Capital surplus	15,896,284	12,994,516
Earned surplus	23,187,370	19,061,928
TOTAL STOCKHOLDERS' EQUITY	$ 41,276,662	$34,082,648
	$128,636,271	$86,017,844

Rohr Corporation
Statement of Earned Surplus

	Year ended July 31	
	1966	1965
Balance at beginning of year	$19,061,928	$16,230,492
Net income for the year	6,229,071	4,841,858
	$25,290,999	$21,072,350
Cash dividends paid, $1 a share	2,103,629	2,010,422
Balance at end of year	$23,187,370	$19,061,928

Statement of Capital Surplus

	Year ended July 31	
	1966	1965
Balance at beginning of year	$12,994,516	$12,653,077
Sale of common stock under employee option plans, excess of proceeds over par value of shares issued	242,313	303,780
Common stock issued in exchange for convertible debentures, excess of conversion price over par value of shares issued	2,659,455	37,659
Balance at end of year	$15,896,284	$12,994,516

See notes to financial statements.

Rohr Corporation

Notes to Financial Statements

Year ended July 31, 1966

Note 1–Inventories:

Inventories are stated at the lower of average cost or market. Work on contracts in process is stated on the basis of accumulated costs including applicable administrative and general expense less the average cost of deliveries based on the estimated total cost of contracts. All foreseeable losses on contracts are charged against income when determined.

Note 2–5¼% Convertible subordinated debentures:

The debentures, due in 1977, are convertible into common stock of the Company at $18.50 a share, which price is subject to adjustment under certain circumstances. The annual sinking fund requirements beginning in 1967 are $550,000 less credits for previously converted debentures. The annual sinking fund requirements through 1970 have been met by conversions. The debentures are presently redeemable at 102.88%, declining annually thereafter to 100.26% in 1975.

Note 3–Stockholders' equity:

On July 18, 1966, the stockholders approved an increase in the authorized capital stock from 3,000,000 to 6,000,000 shares. Following the stockholders' meeting, the directors declared a share distribution, to be made as of September 16, 1966, of one share of common stock for each two shares of such stock outstanding at August 1, 1966. This share distribution has not been reflected in the accompanying financial statements. Under the terms of the Company's borrowing agreement with banks, earned surplus at July 31, 1966, of approximately $3,250,000 is available for repurchase of the Company's common stock and payment of cash dividends.

At July 31, 1966, 159,135 shares of common stock were reserved for the conversion of debentures, and 87,741 shares were reserved for exercise of stock options. Employee stock options for 75,304 shares of the Company's common stock, at prices ranging from $19.88 to $40.38, were outstanding. During 1966, 12,259 shares were issued upon exercise of options.

Note 4–Contingent liabilities:

The Company is defendant in a number of legal actions. In the opinion of the Company's counsel, such suits appear to be without merit.

Commitments for the purchase and construction of buildings and equipment at July 31, 1966, were approximately $1,352,400.

Cost of the Company's noncontributory pension plan for the year ended July 31, 1966, was $2,036,000. The unfunded past service cost under the plan is estimated at $10,953,000.

Certain contracts of the Company provide for redetermination of prices based on actual costs incurred. All known adjustments of this nature have been provided for. A substantial portion of the Company's sales is subject to renegotiation, but in the opinion of management, no refund is required.

COMSAT PROGRAM OFFERS PRIME NEW MARKET

Completion of the 210-foot diameter tracking antenna at NASA's Deep Space Network station at Goldstone, California marked a major milestone for the Antenna Division during our fiscal year.

The big 210, rising like a monument of achievement in the Mojave Desert, is the most powerful and precise instrument of its kind in the Free World. With the ability to track and communicate with spacecraft to the edge of the Solar System, this antenna demonstrates the division's expanding capabilities.

The 210, built under a $12 million contract, was turned over to NASA and its operating agency, the Jet Propulsion Laboratory, on April 21.

It was five years ago, in the summer of 1961, when the first Rohr-built antenna was erected in Alaska—a 60-foot-diameter instrument.

An expanding range of projects followed as the division broadened its diversification, erecting 85-foot tracking antennas in scattered locations throughout the Free World. Design and manufacturing capabilities now include microwave relay antennas, radio telescopes and troposcatter and radar antennas.

The 210 program stands as a milestone since it proved that larger precision antenna structures are technically and economically feasible. In line with these findings, the Engineering Department, in a contract with Massachusetts Institute of Technology, is currently engaged in a study program for fully steerable precision antennas as large as 500-feet in diameter.

Work presently in progress includes completion of two 85-foot-diameter high gain antennas for the Sylvania Electronic Systems Division, Waltham, Massachusetts. One is being erected on site at Brewster Flat, Washington, and the other near Paumalu, Hawaii. These, like a third now being fabricated, will be used in the communications satellite worldwide tracking network, established under a 50-nation consortium. They will serve as American tracking and relay points to provide global communications via future communications satellites similar to the Relay, TelStar, Early Bird and Syncom satellites already aloft.

The division also has been awarded a contract to build six Cassegrain Horn Reflectors for Page Communications Engineers, Incorporated of Washington, D. C., a subsidiary of Northrup Corporation. The horn antennas, like the 85-foot high gain antennas, will be used in the communications satellite network as a portion of the ground system equipment. Construction features a new configuration to eliminate environmental noise extraneous to the signals to be received by the antenna.

In the latter part of 1962, the division received its first order from Western Electric for microwave relay antennas. To date, more than 1,700 of these units have been built and production continues at the rate of two per day.

During the past year, the division also successfully machined to a surface accuracy of .004-inch a 36-foot-diameter millimeter wave reflector for the National Radio Astronomy Observatory at Kitt Peak, Arizona. The task, which advanced the state-of-the-art in millimeter wave reflectors, was accomplished with a Rohr-designed and built 50-foot radial arm mill, the largest of its kind in the world.

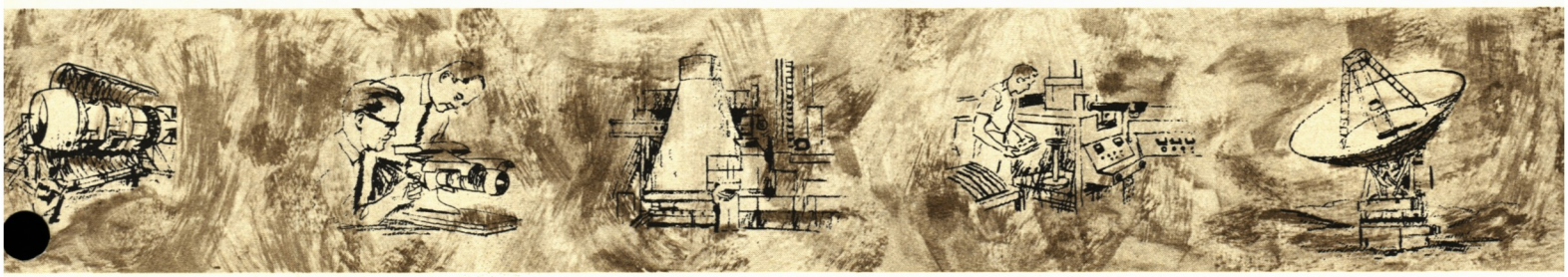
Transporting the 36-foot-diameter weldment 480 miles from Chula Vista to Kitt Peak called for a unique procedure. Rohr engineers and transportation personnel produced a hydraulically-actuated shipping fixture which allowed the precision instrument to be tilted to various angles as required by road and traffic conditions.

The division also completed fabrication, shipment and erection of a complex testing structure for a highly-classified advanced weapons system. This program involved development of several new manufacturing and welding techniques which may be utilized in future projects.

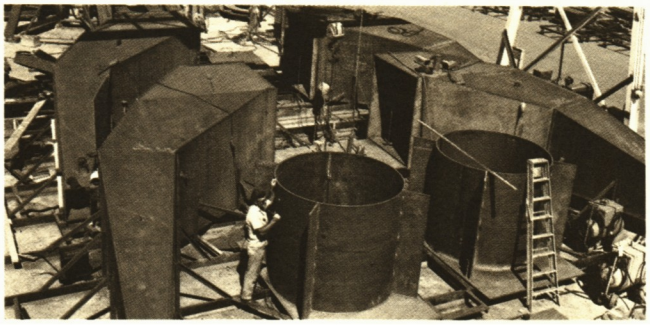
The past year also was highlighted by completion of a 65-foot welded aluminum patrol boat for the California

Antenna Division

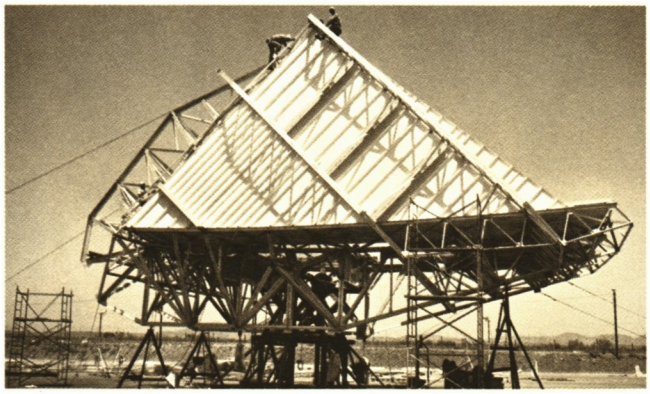
The reflector dish of the mammoth 210-foot-diameter Rohr-built deep space tracking antenna in California's Mojave Desert during dedication ceremonies last spring.



Part of the control complex for the Rohr-built 210-foot diameter deep space tracking antenna.



Fabrication of yoke arms and center hubs for 85-foot tracking antennas at Rohr's Antenna Division.



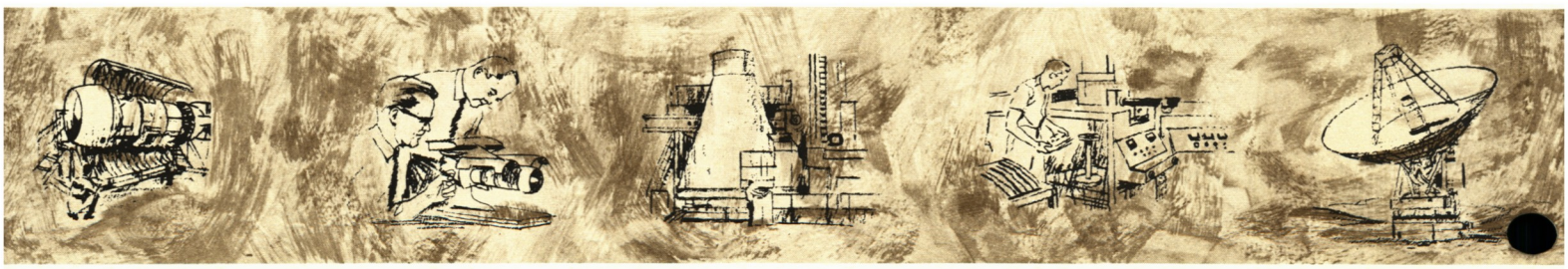
This Cassegrain horn reflector, being built by the Antenna Division, will eventually serve in the network of ground stations for the communications satellite system.

Department of Fish and Game. The craft, built of a special aluminum alloy developed for salt water service, was launched June 6 and turned over to the Fish and Game Department on August 2.

The division participated in the U. S. State Department's May 16-17 seminar on communication satellite earth-station technology in Washington, D. C., presenting an exhibit depicting Rohr's worldwide antenna installations and technical papers. The meeting brought together representatives of the 50 nations in the International Telecommunications Consortium and industry.

Rohr's Antenna Division has built and erected antennas in many of the far corners of the world. Installation sites in the United States include Rosman, North Carolina; Point Mugu, California; Wallops Island, Virginia; White Sand, New Mexico, and Fairbanks, Alaska. Some of the overseas sites include Grand Bahama Island; Canberra, Australia, and in the Middle East.

In expansion of capabilities, Rohr's Antenna Division built this 65-foot aluminum patrol craft for California Department of Fish and Game.



DIVISION GETS CONTRACT ON POWERFUL ROCKET MOTOR

The Space Products Division was an important contributor during the past year to the Air Force Space Systems Division's program on flight-weight prototype solid rocket motors.

Participating in this program, the division provided major components for three such motors, all successfully test fired under Air Force supervision. The program established the feasibility of such motors and developed technology against a possible future requirement.

The Rohr-built components included two 156-inch nozzles for solid-fueled flight-weight prototype rocket motors with future potential as first and upper stage space boosters. The prime contractors receiving these components were the Lockheed Propulsion Company and Thiokol Chemical Corporation.

The LPC first-stage motor was successfully test fired Dec. 14, generating 3 million pounds of thrust. Successful test firing of an LPC million-pound-thrust second stage motor, also with a Rohr component, followed on January 15. For the prototype second stage motor, Rohr provided a 35-foot-long, 156-inch diameter motor case, fabricated from two previously fired segmented cases which were cut and welded together at a savings of more than 50 per cent.

The "re-use" procedure gave the Air Force the opportunity to gain new information on 18 per cent nickel maraging steel, the new alloy adapted to large solid rocket motor use in the 156-inch motor program.

The other 156-inch nozzle which Rohr provided was for a successful May 13 test firing of a filament-wound third stage motor developed by Thiokol Chemical Corporation's Wasatch Division in Utah. Over 40 per cent of the Rohr-built nozzle was submerged in the motor case, increasing the amount of solid propellant in the case without increasing overall length. During the test the motor developed 300,000 pounds of thrust and temperatures of 5,700 degrees Fahrenheit.

Following the May 13 static firing Rohr Corporation was presented an award for outstanding performance by Thiokol's Wasatch Division. The award was a certificate of merit, citing Rohr Space Products Division

Rohr nozzle in test firing of a 156-inch Lockheed Propulsion Company motor for the Air Force Space Systems Division.

Space Products Division

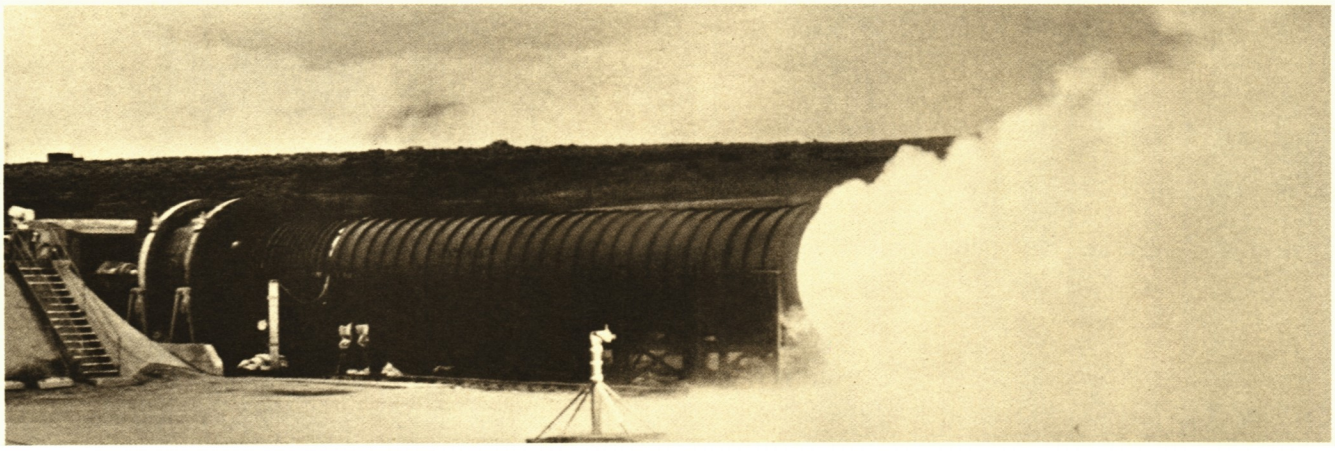
technical competence and contributions in support of Thiokol's Zero Defects Program.

During the year preliminary work was started in the division on fabrication of a nozzle for the largest solid-fueled rocket motor manufactured to date.

A contract exceeding $900,000 for the big component was received late in the fiscal year from Aerojet General Corporation of Sacramento. The nozzle, for a 260-inch rocket engine developed by Aerojet General, is scheduled for shipment in April, 1967 for test firing in June in Dade County, Florida. The project is part of a continuing research and development program on solid-fueled rockets, administered by the National Aeronautical and Space Administration.

In other product areas, the division was selected to design and fabricate three deep-submergence fiberglass reinforced plastic pressure vessels of advanced geometric design for the Navy's Electronics Laboratory in San Diego. The vessels, manufactured with numerical control filament winding techniques, won wide recognition for the division in this field of endeavor.

This upper stage prototype submerged nozzle for a 156-inch solid fueled rocket motor was fabricated by Rohr for Thiokol Chemical Corporation.



Testing of Thiokol Chemical Corporation's 156-inch solid-fueled rocket motor.

MANUFACTURING TECHNIQUES, FACILITIES ANTICIPATE DEMAND

Manufacturing techniques and facilities have advanced during the year to keep pace with design and material requirements created by the industry's fast moving technology and the company's growing order backlog.

Anticipating the requirements of the supersonic transport, significant advances have been made in welding and brazing techniques applicable to the components Rohr may expect to manufacture in connection with these programs. A production facility has been developed in conjunction with a high vacuum technique for use in manufacture of brazed assemblies. This facility makes possible production of such assemblies – brazed stainless steel honeycomb sandwich structures – for example – that are virtually free of contamination.

Rohr has long been a leader in the field of brazed sandwich structures and manufacturing research efforts have pushed this technology ahead despite difficulties inherent in the brazing process.

Electron beam welding technology has been moved forward as the only feasible approach to fabrication of certain titanium alloy structures for advanced aircraft such as the supersonic transport. Techniques have been developed to remove the limitations imposed by vacuum chambers and thus permit use of the electron beam in welding structures of unlimited size.

Electrical discharge forming, developed by Rohr as a tool in the fabrication of advanced alloy ducting, has been made still more efficient by the introduction of mechanized die actuation to increase machine output.

Manufacturing control functions have been improved through increased use of computerized data control, thus shortening reaction times and increasing efficiency in meeting customer requirements.

In keeping with the company's traditional manufacturing philosophy, equipment modernization is moving at a pace calculated to maintain a strong competitive position in this fast-moving industry. Advanced machines are being purchased or developed in-plant. Among these are a numerically controlled drafting machine, a six-axis, tape controlled automatic riveter and other new automatic riveting equipment, several Rohr-designed and fabricated milling machines and an automatic loading system for a 25,000-ton press.

Design and fabrication of our own equipment in-plant frequently assures a higher degree of compatibility with Rohr manufacturing techniques, and frequently results in cost savings.

Facilities also have kept pace with the general level of company activity. Construction was initiated or completed during the fiscal year on approximately a quarter of a million square feet of building area. At Chula Vista

An automatic, numerically controlled, drafting machine serves as both a manufacturing and an engineering tool.

Manufacturing & Facilities

the major expansion involved three warehouse buildings totaling 143,800 square feet constructed for the company on a lease basis. This facility incorporates programmable automatic stacker cranes and is a part of the company's improved material handling plan. Conveyorized handling facilities have been added in other areas as a part of this plan. Chula Vista construction also included 18,200 square feet of additional engineering space.

A major addition at Riverside was a modern cafeteria building, with adjoining offices for plant security. A 12,000 square-foot addition to the metal bonding facility reflects growing activity in this phase of the company's operations.

A 5,000 square-foot warehouse was completed at the Auburn, Washington plant.

With the increase during the past year, the company now occupies 2,669,409 square feet of floor space on a total of 511 acres of land, both owned and leased.

Industrial Relations

SUBSTANTIAL EMPLOYMENT INCREASE RECORDED

Rohr Corporation employment has experienced a substantial upward trend, reaching 12,449 by July 31, the end of the fiscal year.

Significant in this trend was an increase in the engineering work force which grew from 296 employes at the end of the first quarter of 1965 to 559 by July 1, 1966. The company is strengthening its engineering ranks in line with more emphasis on research and design and a widening spectrum of scientific disciplines.

By the end of the fiscal year, employment was at the 9,432 mark at corporate headquarters at Chula Vista, 2,669 at the Riverside plant and 166 at Auburn, Washington, and 191 at Winder, Georgia.

Response to requirements for more diversification and advancing technology has been felt in the company's Training Department where programs were intensified. The department accomplished considerable training under the Manpower Development and Training Act for development of unskilled new employes and in increasing the skills of those currently employed.

Technical training involved all areas of the company, particularly in the production and tool manufacturing departments. In all, 51 courses were presented to improve employe performance and to advance new techniques and processes.

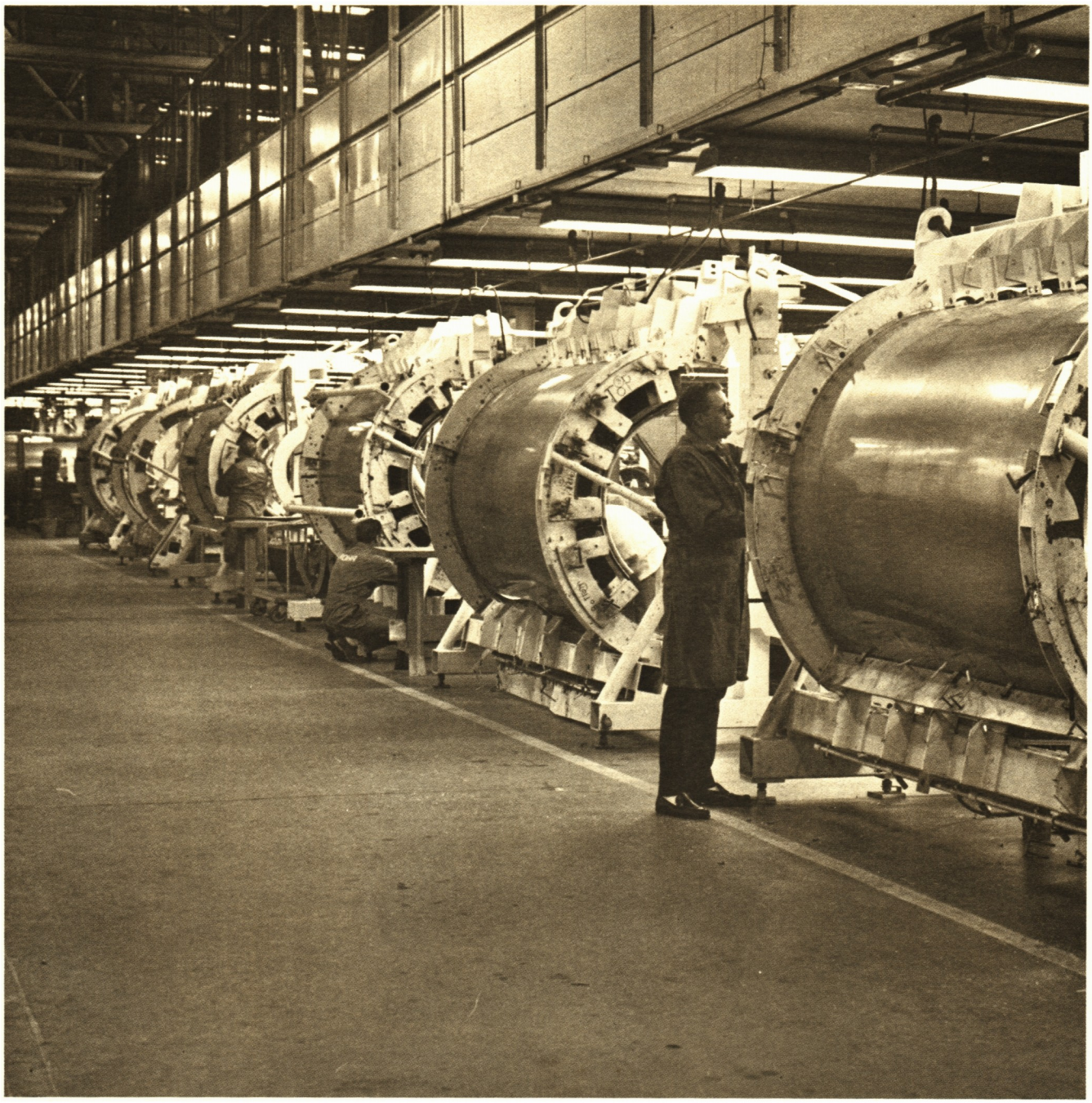
The company also is maintaining a closer relationship with schools and colleges and has embarked on a number of plant courses which provide college credit. In addition, college faculty members and school counselors have been placed in summer employment.

The fact that more than 25 company employes are teaching in local schools on their own time exemplifies the increased emphasis on education. Many others are enrolled in courses of higher education.

The objective of training continues to be the improvement of performance of individuals at all levels to insure efficient performance of the entire organization.

In the area of employe relations, the company negotiated union agreements with the International Association and Aerospace Workers with terms applied to all four plants. These agreements will expire in late 1968. The agreement with the United Welders of America was amended at the Chula Vista plant to provide for improved benefits. Termination date is in February, 1969.

Riverside Plant employees dine in pleasant surroundings in a new dining room, opened last summer.



Aft cowl panel assembly line for Lockheed C-141 StarLifter at Rohr's Riverside Plant.

Board of Directors

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Executive Vice President

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FRED H. ROHR JR.
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Vice President, Secretary and
General Counsel

FRED H. ROHR JR.
Vice President

GUY M. HARRINGTON
Treasurer

M. KOTEFF
Assistant Secretary

Plant and Division Managers

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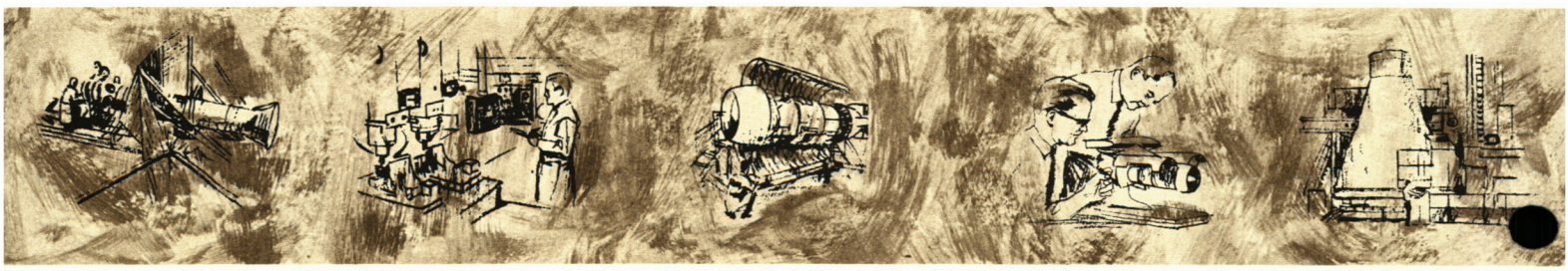
Manager
Riverside Plant

C. L. LIGHT
Manager
Winder, Georgia Plant

J. C. THOMPSON
Manager
Auburn, Washington Plant

R. D. HALL
Manager
Antenna Division

H. R. CLEMENTS
Manager
Space Products Division



Transfer Agents

The Chase Manhattan Bank (National Association) New York City
Security First National Bank, Los Angeles

Registrars

Bankers Trust Company, New York City
Equitable Trust Company, Los Angeles

Rohr Corporation Common Stock is listed for trading on the New York Stock Exchange and the Pacific Coast Stock Exchange.

ROHR
CORPORATION