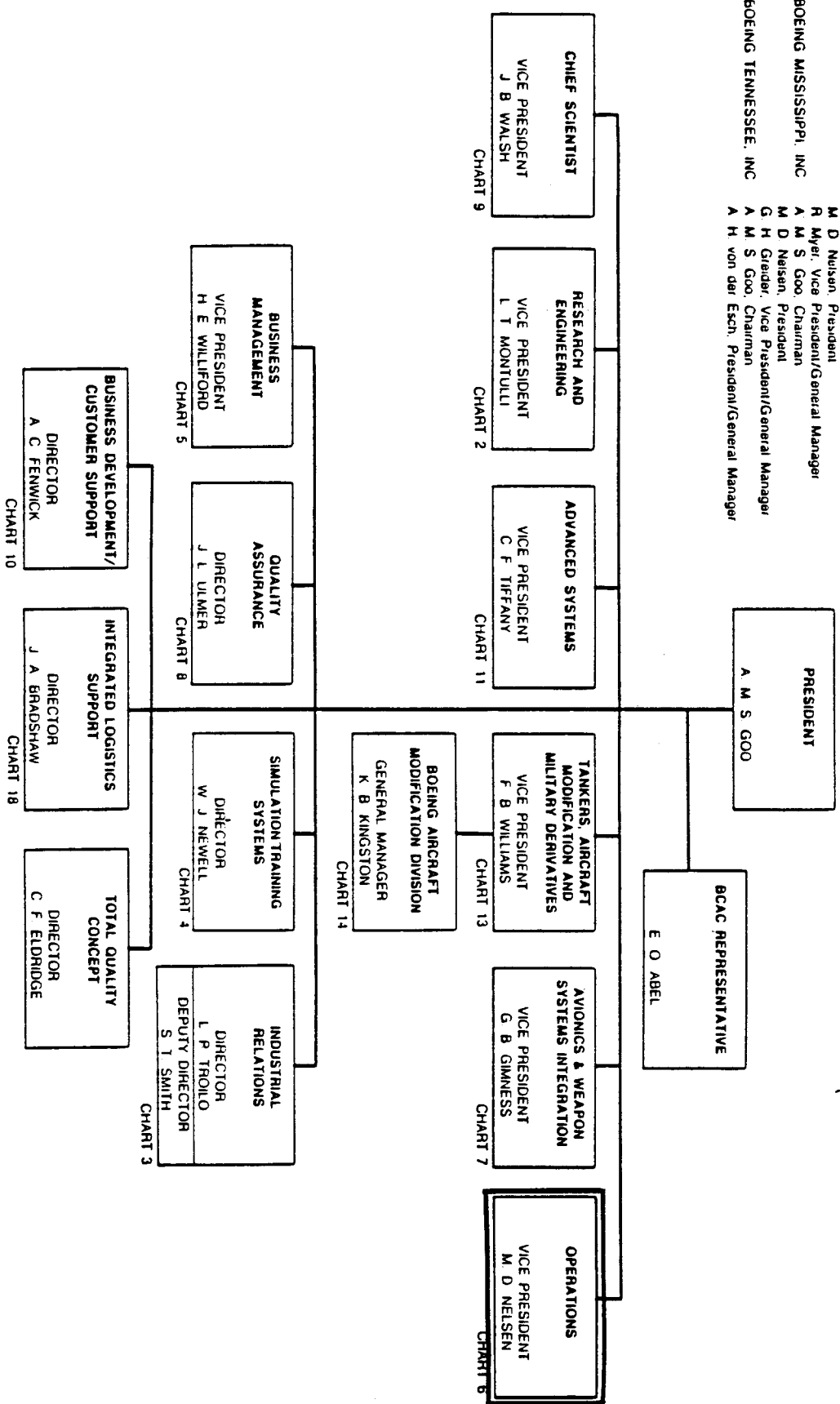


OPERATIONS OVERVIEW

BOEING MILITARY AIRPLANE COMPANY

SUBSIDIARIES

- BOEING GEORGIA, INC A. M. S. Goo, Chairman
M. D. Nilsen, President
R. Myer, Vice President/General Manager
- BOEING MISSISSIPPI, INC A. M. S. Goo, Chairman
M. D. Nilsen, President
G. H. Greider, Vice President/General Manager
- BOEING TENNESSEE, INC A. M. S. Goo, Chairman
A. H. von der Esch, President/General Manager



BOEING MILITARY AIRPLANE COMPANY

Chart No. 1 Date: 8-22-85

OPERATIONS

- MANUFACTURING ENGINEERING
- NUMERICAL CONTROL PROGRAMMING AND TOOL DESIGN
- TOOL FABRICATION
- MANUFACTURING
- PARTS CONTROL AREAS (PCA)
- INDUSTRIAL ENGINEERING (I.E.)
- OPERATIONS CHANGE MANAGEMENT
- OPERATIONS COMPUTER SYSTEMS
- MILITARY SYSTEMS OPERATIONS (MSO) PROGRAM MANAGEMENT

MANUFACTURING ENGINEERING CONSISTS OF:

- PROJECT PLANNING GROUPS
- SUPPORT PLANNING GROUPS
- LIAISON GROUP
- SPARES PLANNING GROUP

PROJECT PLANNING GROUPS

RESPONSIBILITIES

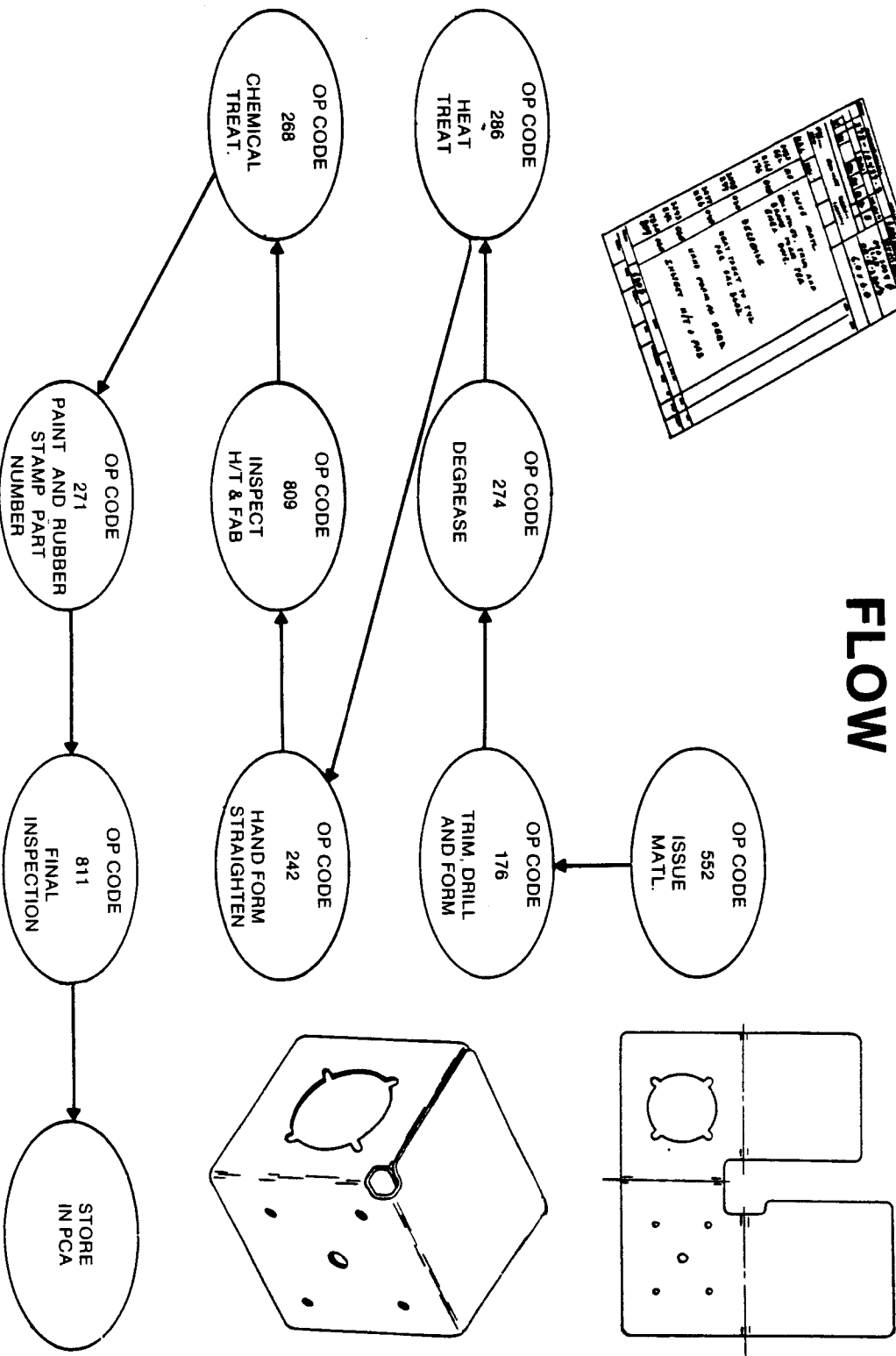
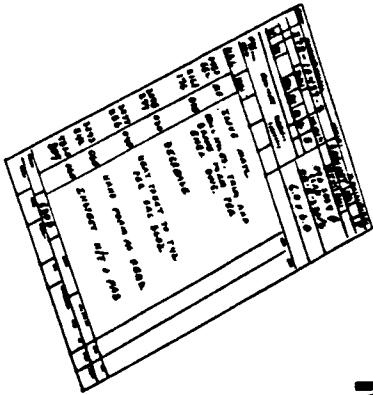
- DEVELOP PROGRAM VISIBILITY AS REQUIRED.
- DEVELOP ASSEMBLY AND INSTALLATION JOB PLANS FROM THE MASTER PARTS LISTING FOR ALL MAJOR ASSEMBLIES, INSTALLATIONS, AND FIELD WORK.
- DETERMINE TOOL REQUIREMENTS. DESIGN AND FABRICATION OF REQUIRED ASSEMBLY AND INSTALLATION TOOLING.
- COORDINATE WITH DETAIL PLANNING GROUPS TO PROVIDE PLANNING ORDERS FOR FABRICATION OF DETAIL PARTS OR ELECTRICAL ASSEMBLIES.
- SUPPORT PROPOSAL ACTIVITY BY PREPARING PLANNING MANHOUR ESTIMATES, DETAIL PART BREAKDOWN'S (DPB'S) AND SUPPORT THE OPERATIONS PROPOSAL MANAGER.
- PROVIDE PRODUCTIBILITY INPUTS TO ENGINEERING AT THE DRAWING BOARD AND DURING REVIEW OF PRELIMINARY DRAWINGS.

SUPPORT PLANNING GROUPS

RESPONSIBILITIES:

- COORDINATE WITH PROJECT PLANNING TO PLAN THE MANUFACTURE OF DETAIL PARTS AND ELECTRICAL/ELECTRONIC ASSEMBLIES.
- DETERMINE TOOL REQUIREMENTS, ORDER TOOL DESIGN, TOOL FABRICATION AND NUMERICAL CONTROL TAPE PROGRAMMING FOR DETAIL PARTS AND ELECTRICAL/ELECTRONIC ASSEMBLIES.
- APPLY TOOL CODES TO THE DETAIL PARTS BREAKDOWN PREPARED BY PROJECT PLANNING IN SUPPORT OF PROPOSAL ACTIVITY.
- SUPPORT PROJECT PLANNING PRODUCTIBILITY ACTIVITIES.

SAMPLE MANUFACTURING FLOW



LIAISON PLANNING GROUP

RESPONSIBILITIES:

- INVESTIGATE, COORDINATE, AND REVISE PRODUCTION AND TOOL PROCESSING DUE TO ENGINEERING GENERATED CHANGES OR SHOP REQUEST.

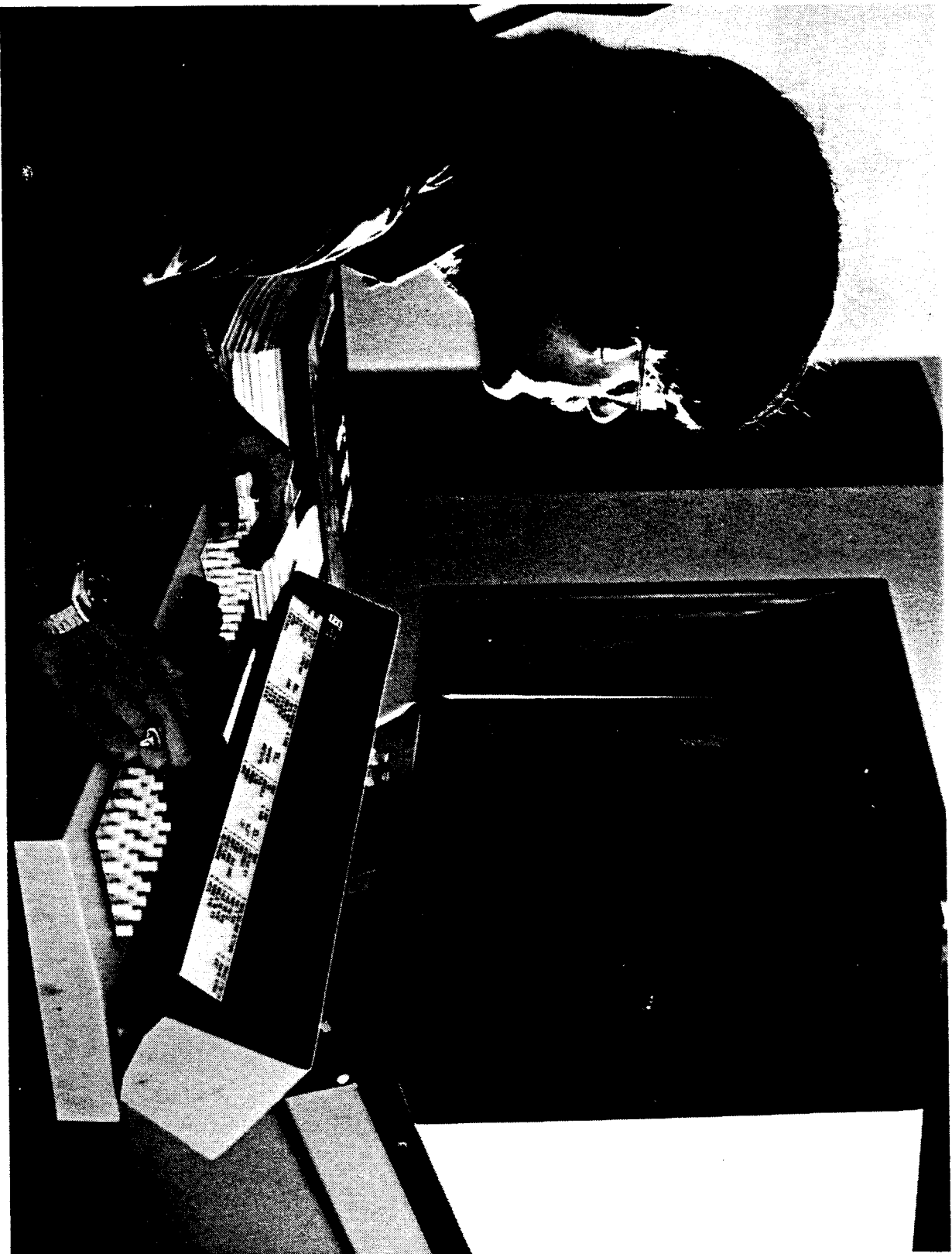
SPARES PLANNING GROUP

RESPONSIBILITIES:

- DEVELOP ASSEMBLY PLANNING FOR SPARE REQUIREMENTS.
- COORDINATE WITH DETAIL PLANNING GROUPS TO PROVIDE PLANNING ORDERS FOR FABRICATION OF DETAIL PARTS OR ELECTRICAL ASSEMBLIES.
- COORDINATE SPARES ESTIMATING ACTIVITIES.

OPERATIONS

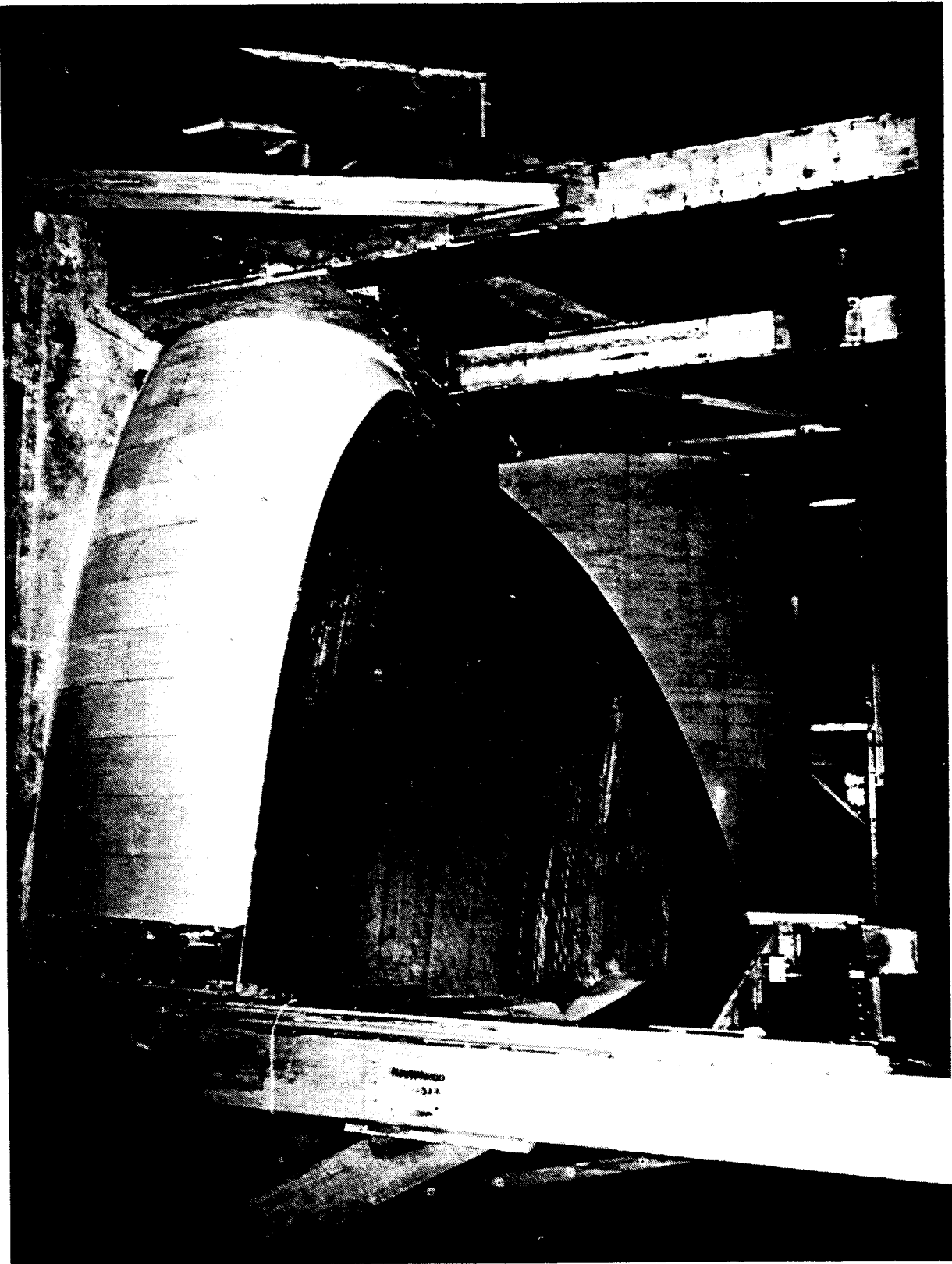
- MANUFACTURING ENGINEERING
- NUMERICAL CONTROL PROGRAMMING AND TOOL DESIGN
- TOOL FABRICATION
- MANUFACTURING
- PARTS CONTROL AREAS (PCA)
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- MILITARY SYSTEMS OPERATIONS (MSO) PROGRAM MANAGEMENT



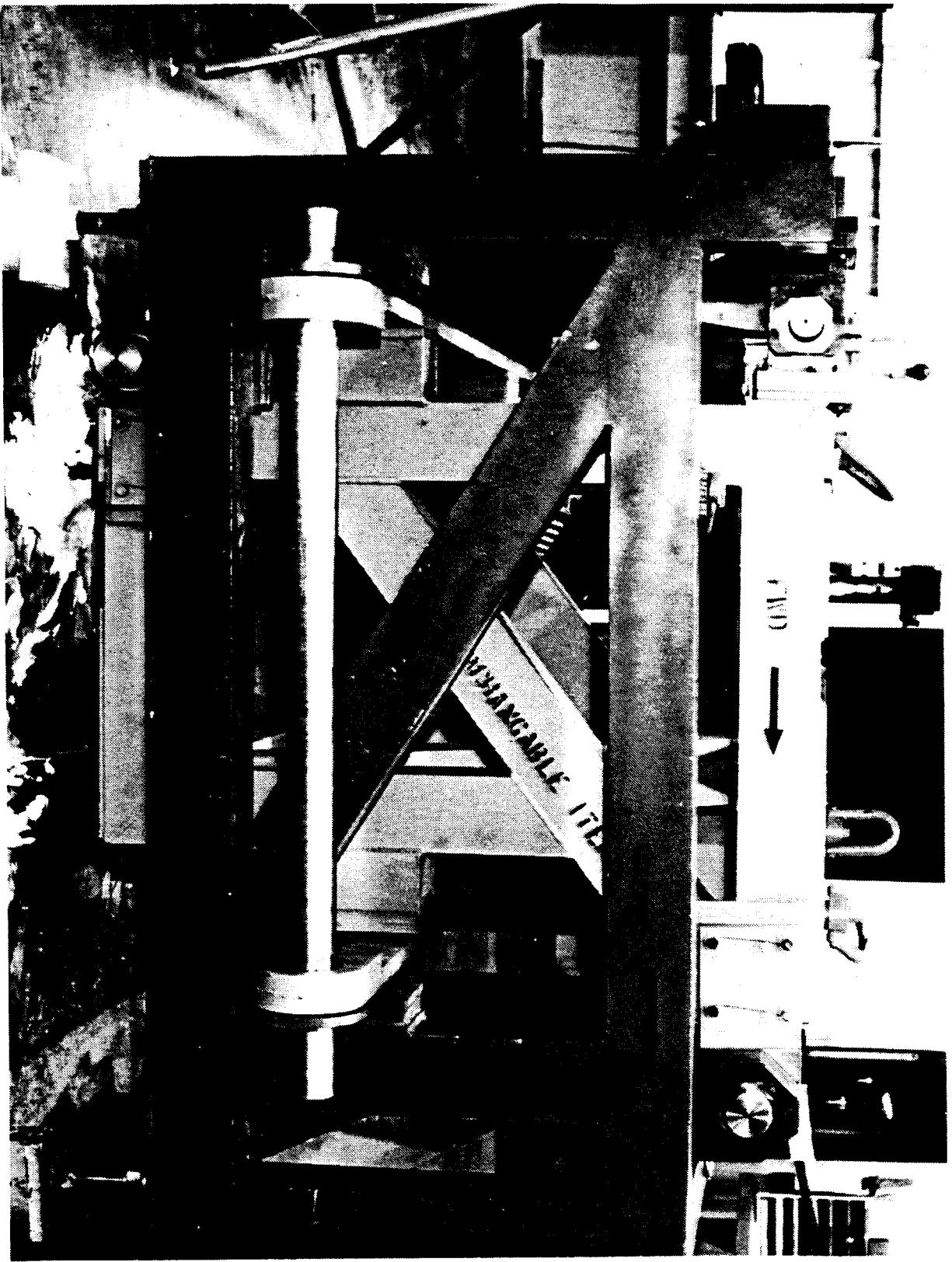
COMPUTER GRAPHICS PROGRAMMING

OPERATIONS

- MANUFACTURING ENGINEERING
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- MANUFACTURING
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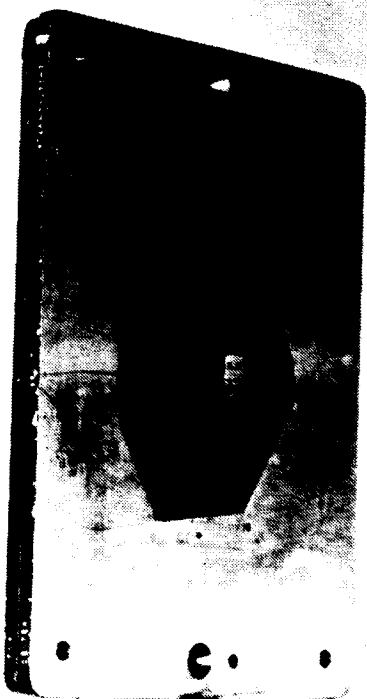
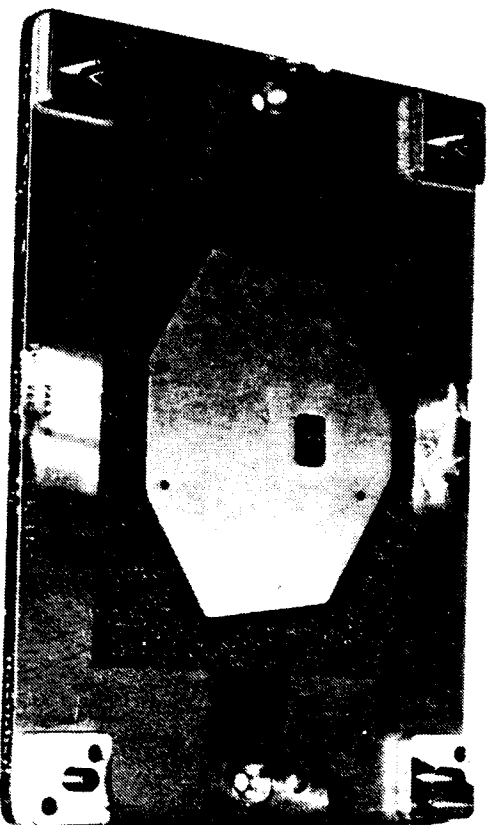
PLASTIC-FACED MASTER MODEL ASSEMBLY



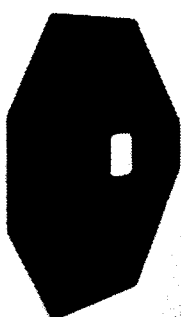
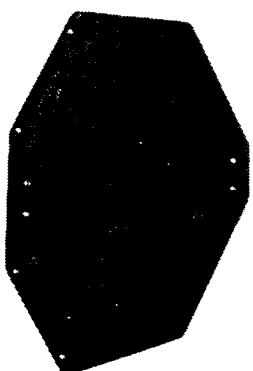
MASTER GAGE COORDINATED TO MASTER CONTROL GAGE FOR 757 WHEEL WELL



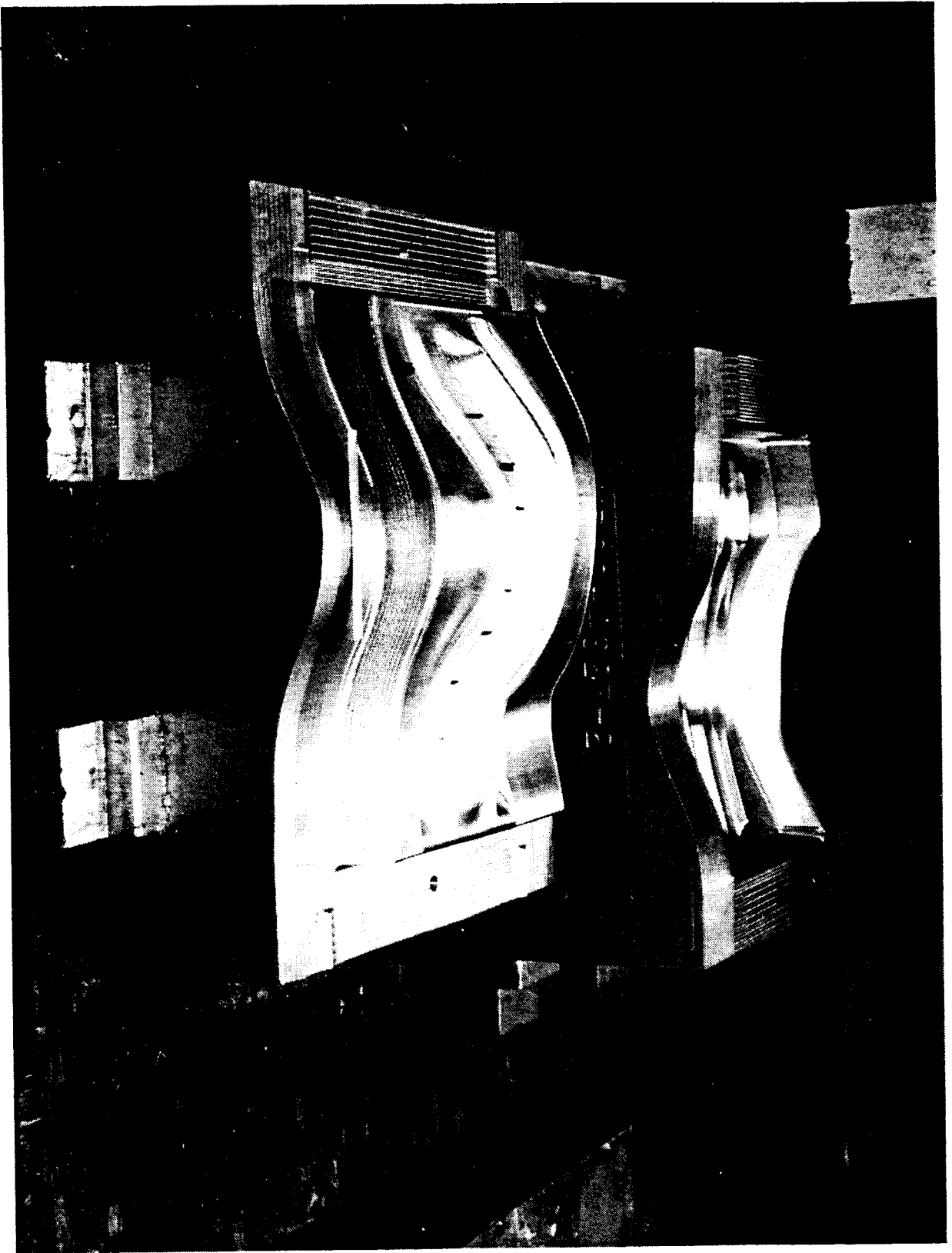
PLASTIC PATTERN AND PRODUCTION PART



69-73273-3



N/C HURCO MACHINED BLANKING TOOL AND DRILL LAYOUT TEMPLATE



MACHINED HAMMER DIE

OPERATIONS

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MANUFACTURING FACILITIES

MILITARY SYSTEMS OPERATIONS - W. SAMPLES - DIRECTOR MSO

- o PRODUCTION DEVELOPMENT SHOPS (PDS) - IBP2
- o ELECTRONIC BOX AND CIRCUIT CARD ASSY AND TEST SHOPS
 - ELECTRONICS BASEMENT IN PLANT II

BMAC MANUFACTURING - D. BERRY - DIRECTOR OF MANUFACTURING

- o BLUE STREAK SHOPS - IPB2
- o WIRE HARNESS ASSY SHOPS - IPB1
- o PRODUCTION SHEET METAL FABRICATION SHOPS
 - WAREHOUSE 2
- o PRODUCTION SHOPS - PLANT II

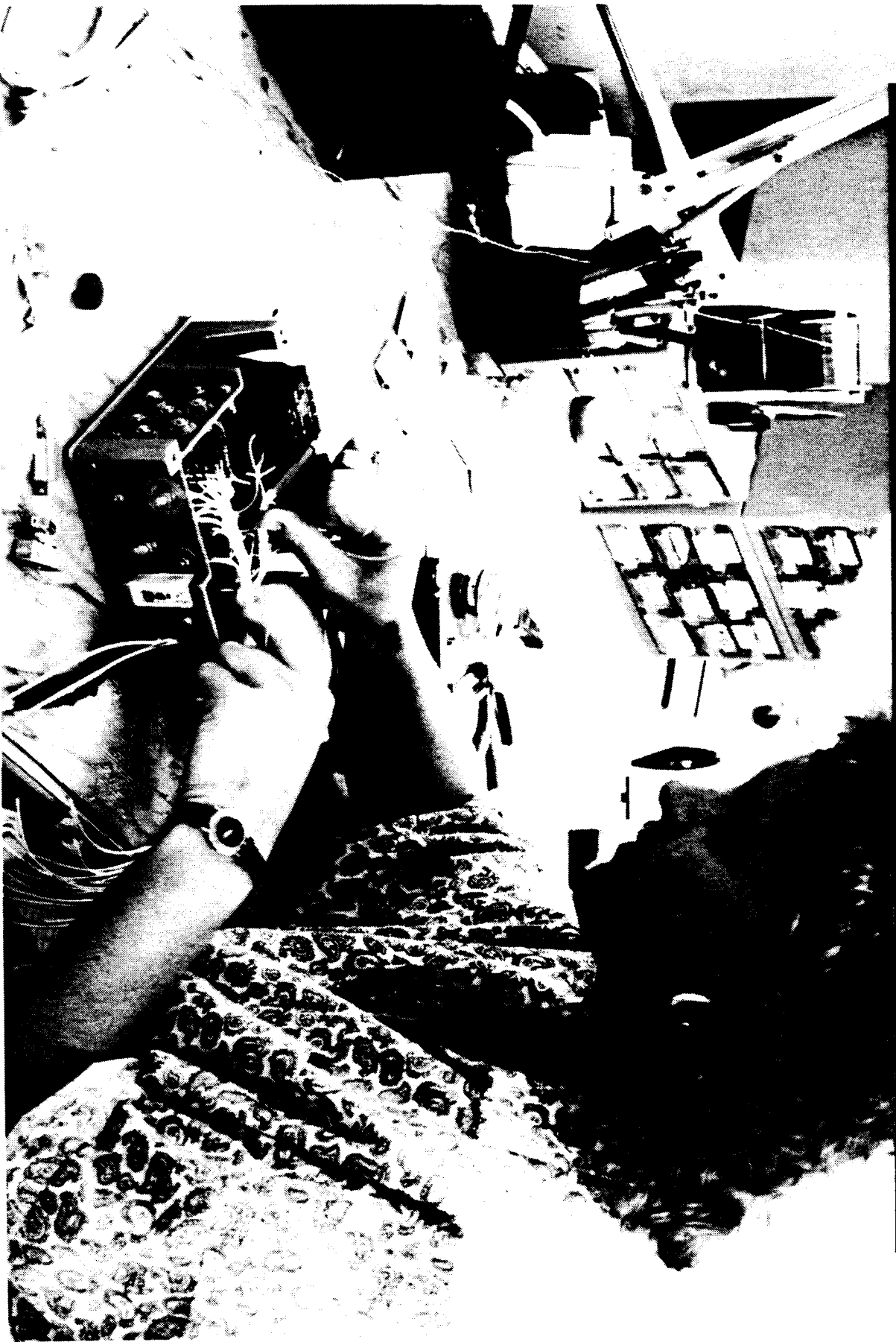
PRODUCTION DEVELOPMENT SHOP (PDS)

THE PDS SHOP IS USED TO PROVIDE A MEANS OF ECONOMICAL FABRICATION FOR DEVELOPMENTAL PROGRAMS OR SMALL QUANTITY PRODUCTION RUNS.

THE TYPES OF SHOP CAPABILITIES ARE . . .

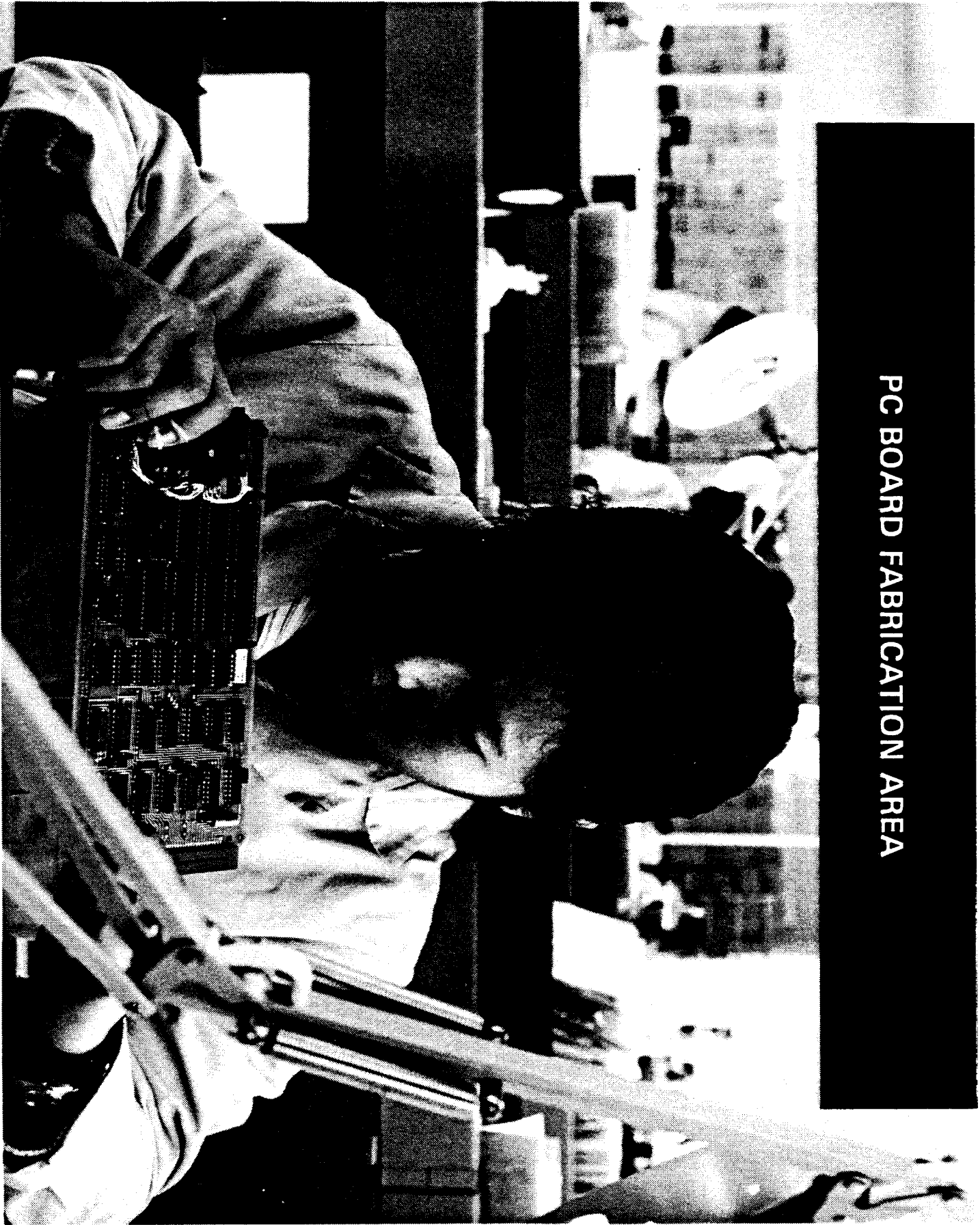
- SHEETMETAL FABRICATION AND ASSEMBLY
- MACHINING (LIMITED)
- WELDING
- CIRCUIT CARD ASSEMBLY & TEST
- ELECTRONIC BOX FABRICATION, ASSEMBLY & TEST
- WIRE HARNESS ASSEMBLY & TEST
- FUNCTIONAL TEST

CERTAIN OPERATIONS SUCH AS HEAT TREAT AND FINISHING OPERATIONS ARE GENERALLY SENT TO THE PRODUCTION SHOPS FOR THOSE SPECIFIC OPERATIONS.

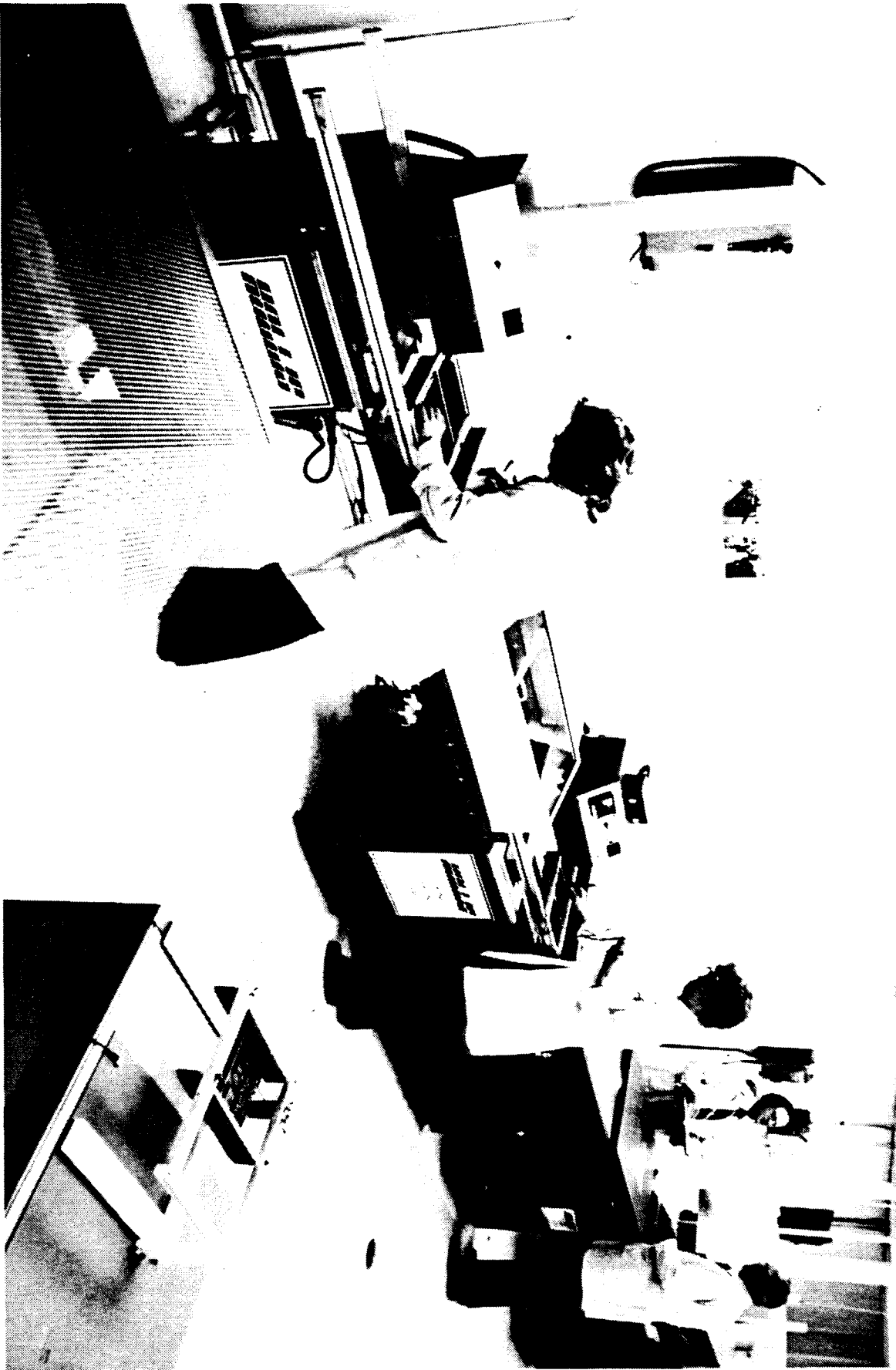


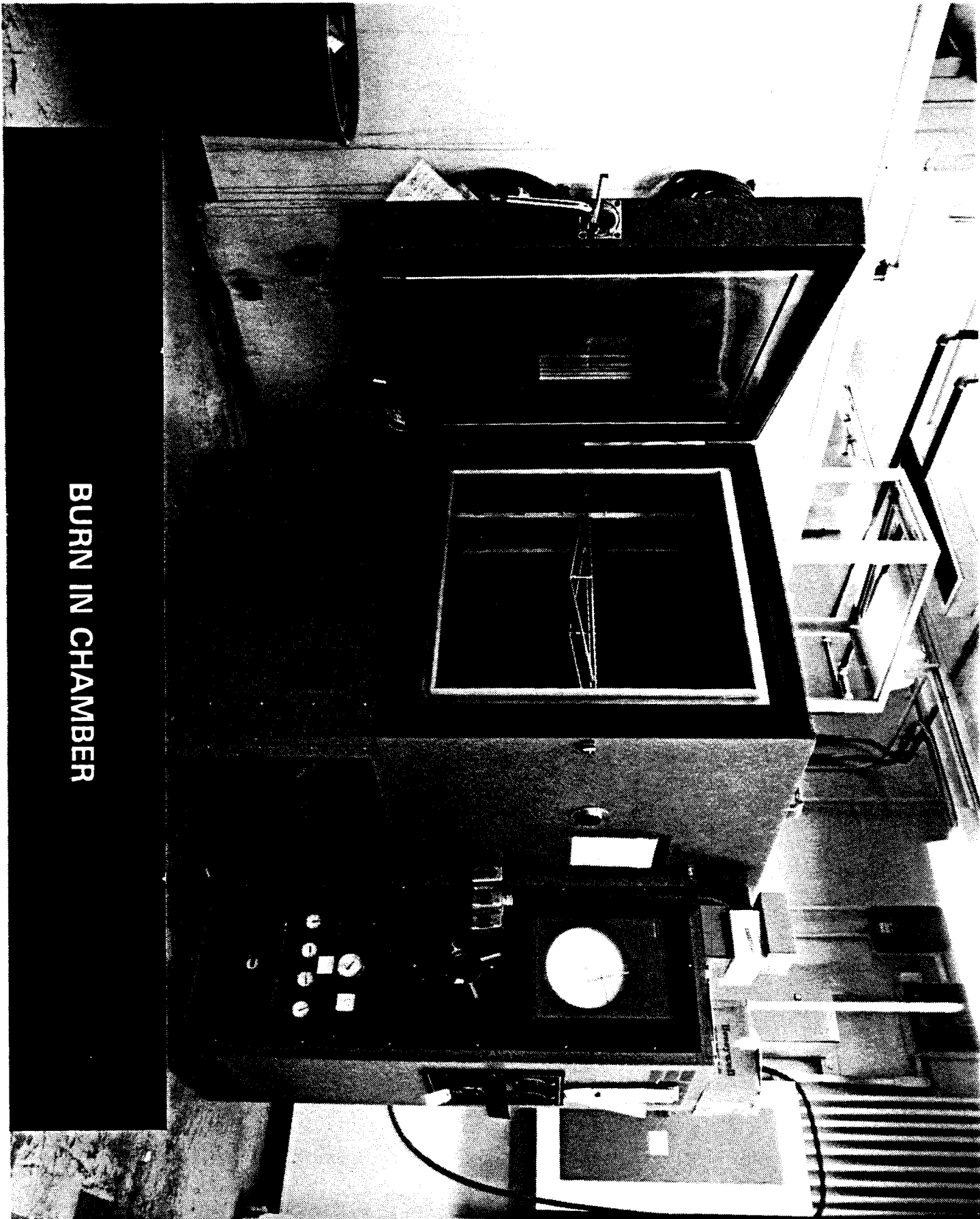
BOX/DRAWER ASSY AREA

PC BOARD FABRICATION AREA

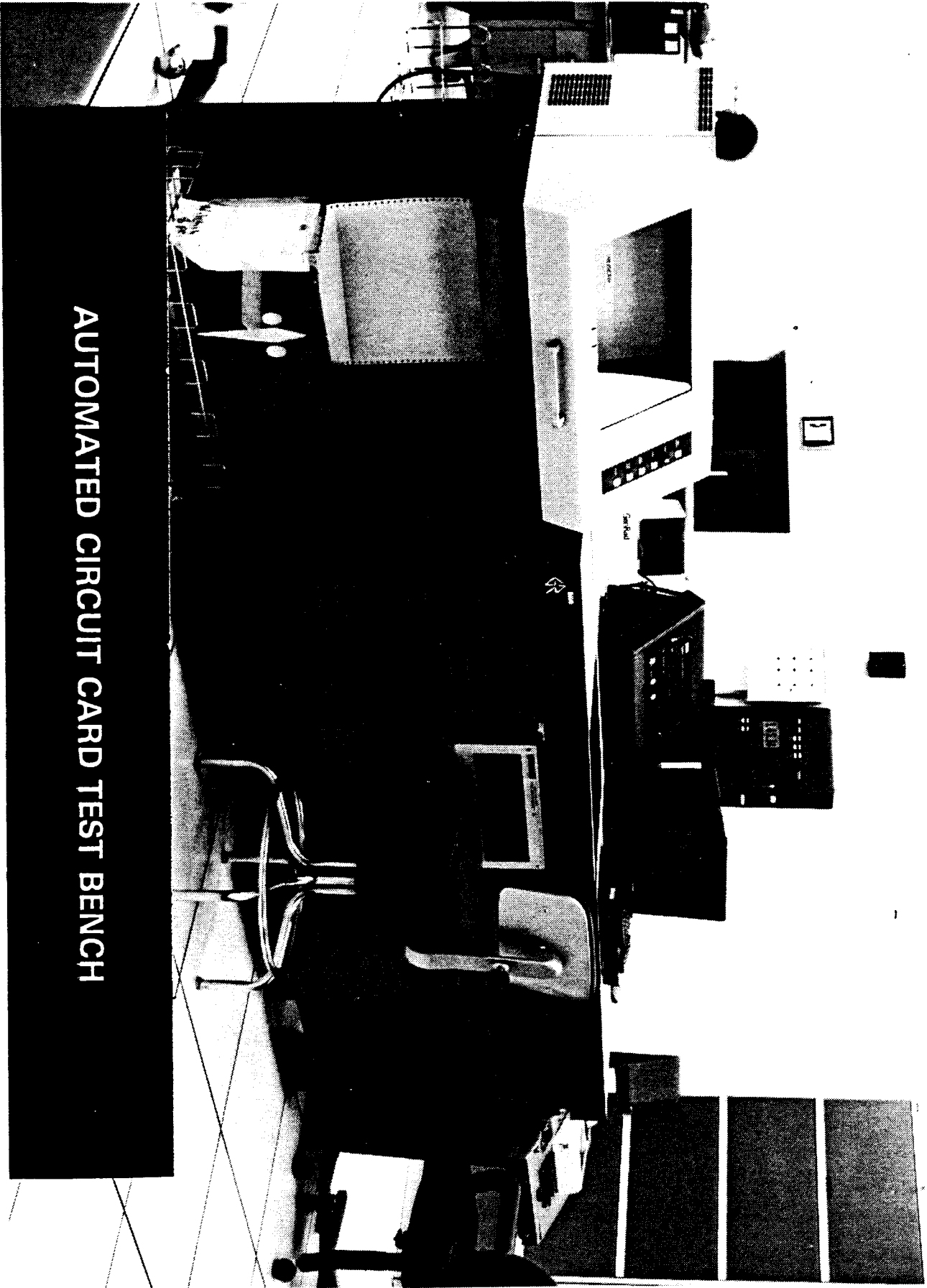


**PCB COMPONENT LEAD TRIMMING
FLUXING & FLOW SOLDER LINE**





BURN IN CHAMBER



AUTOMATED CIRCUIT CARD TEST BENCH

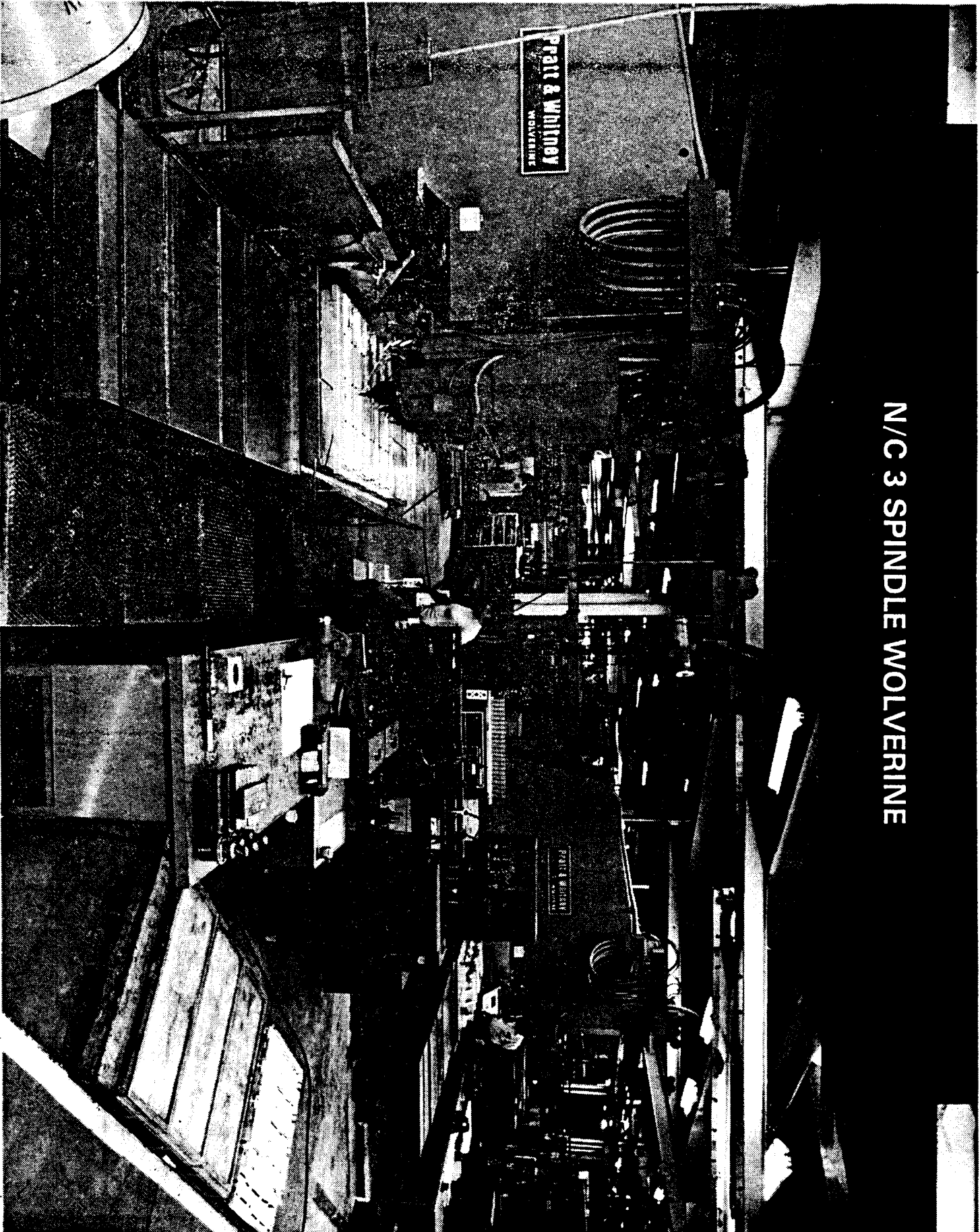
BLUE STREAK SHOP

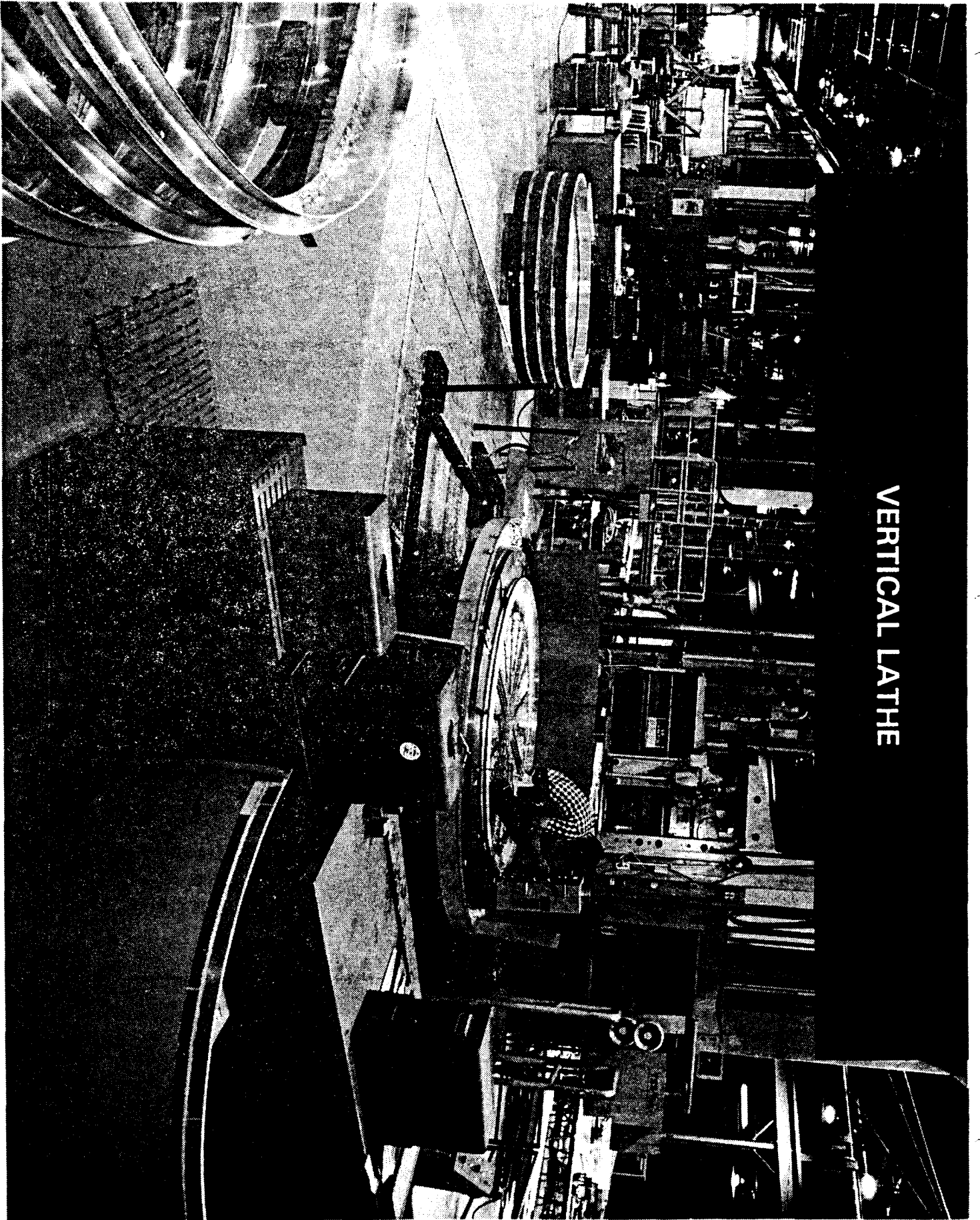
THE BLUE STREAK SHOP IS USED TO PROVIDE A MEANS OF RAPID, ECONOMICAL FABRICATION FOR SMALL QUANTITY PRODUCTION RUNS. THIS AREA HAS THE CAPABILITY OF FABRICATING SHEETMETAL DETAILS AND MACHINED DETAILS WITH MINIMUM TOOLING.

THE TYPES OF SHOP CAPABILITIES ARE

- SHEETMETAL FABRICATION (INCLUDING BAG PRESS HYDROFORMING)
- MACHINING (EXTENSIVE)
- HEAT TREATING (LIMITED)
- CHEMICAL TREAT
- FINISH LINES

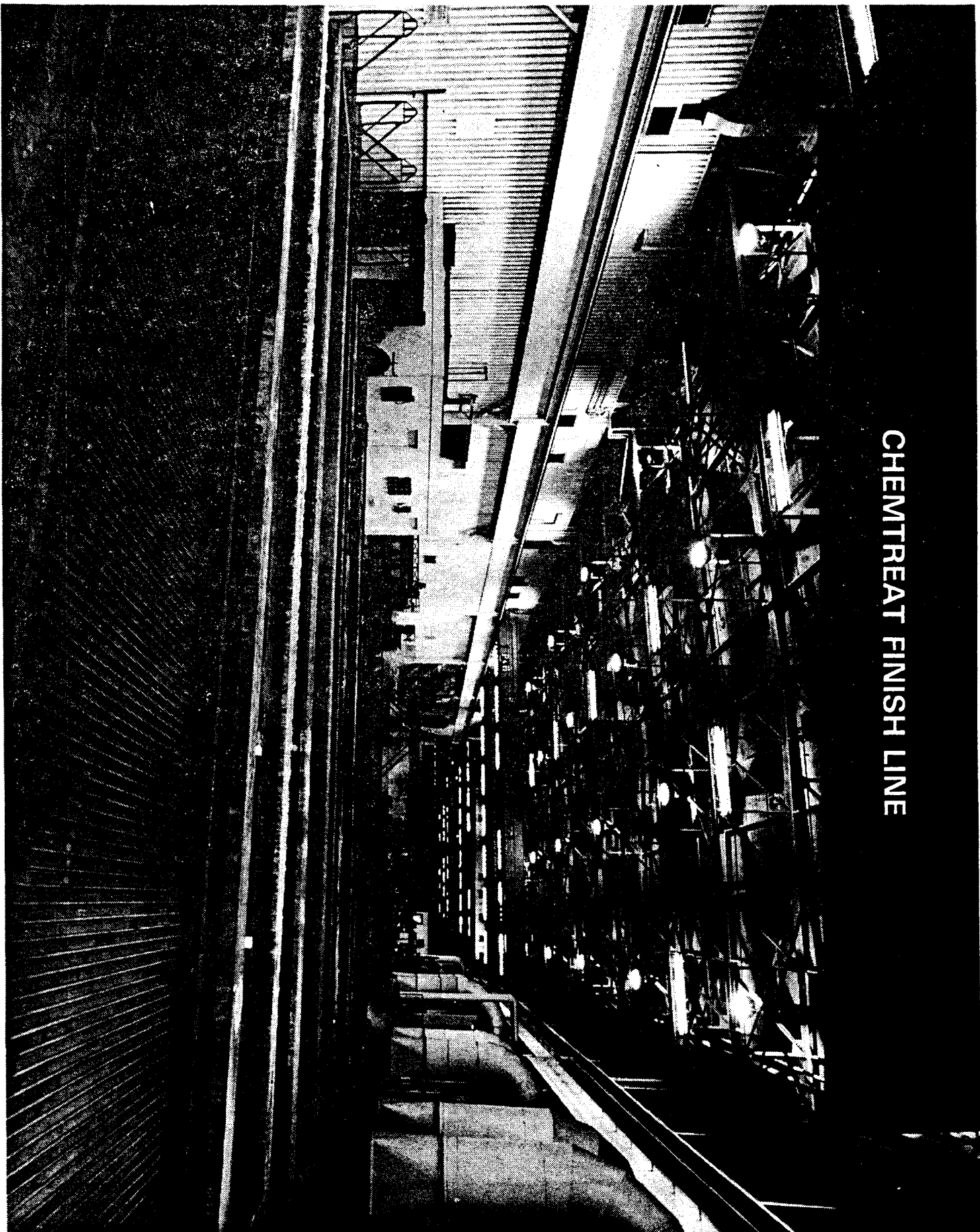
N/C 3 SPINDLE WOLVERINE

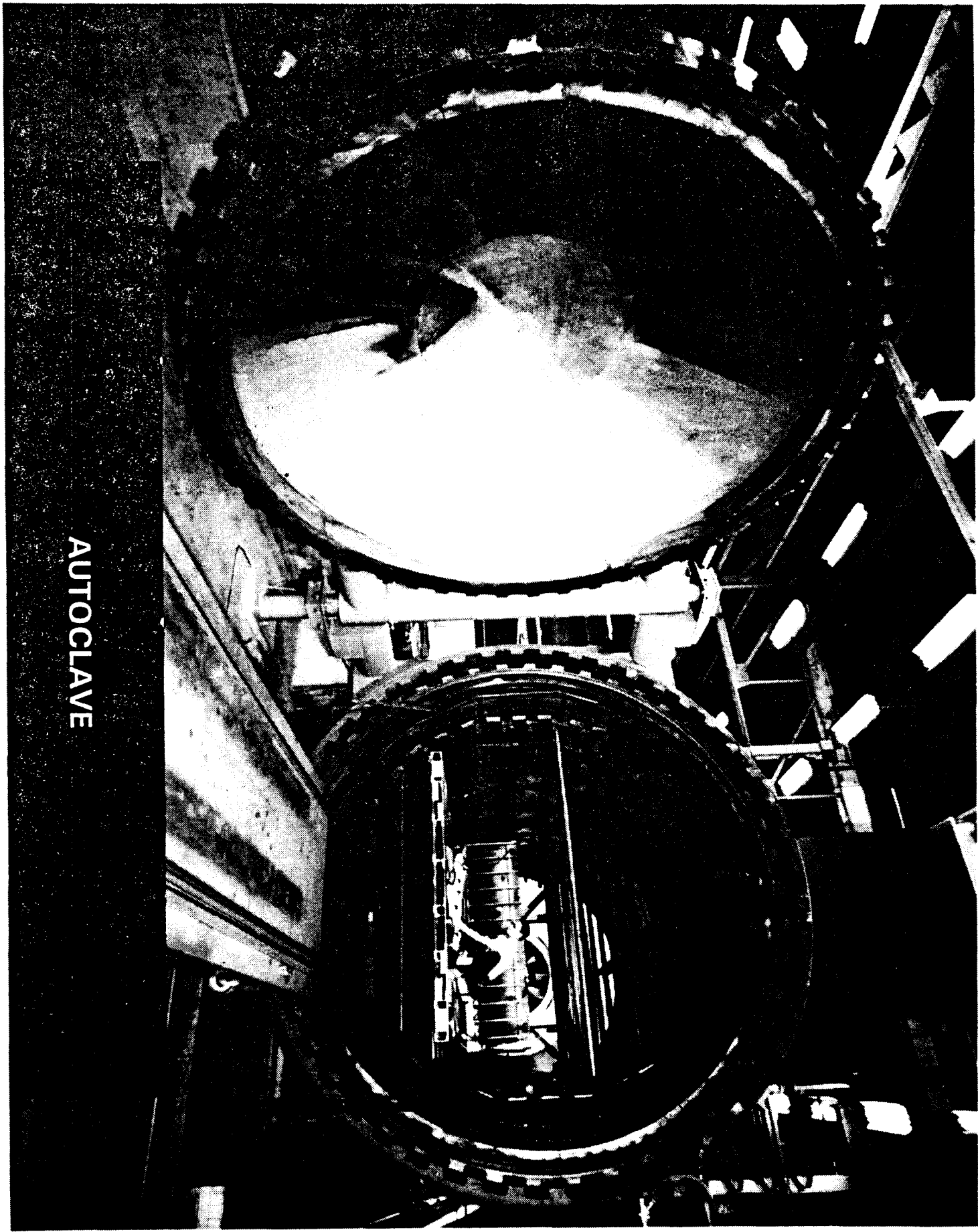




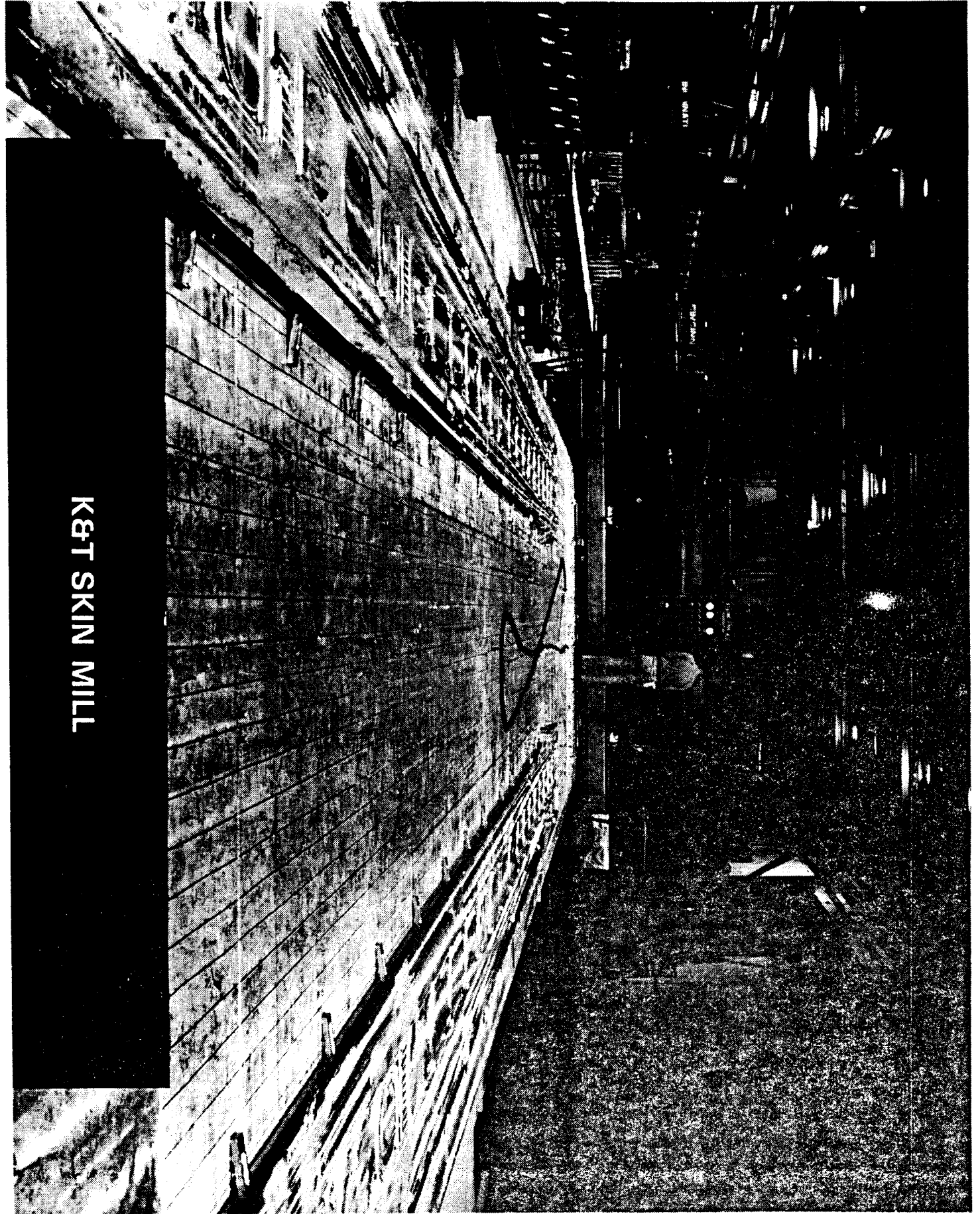
VERTICAL LATHE

CHEMTREAT FINISH LINE

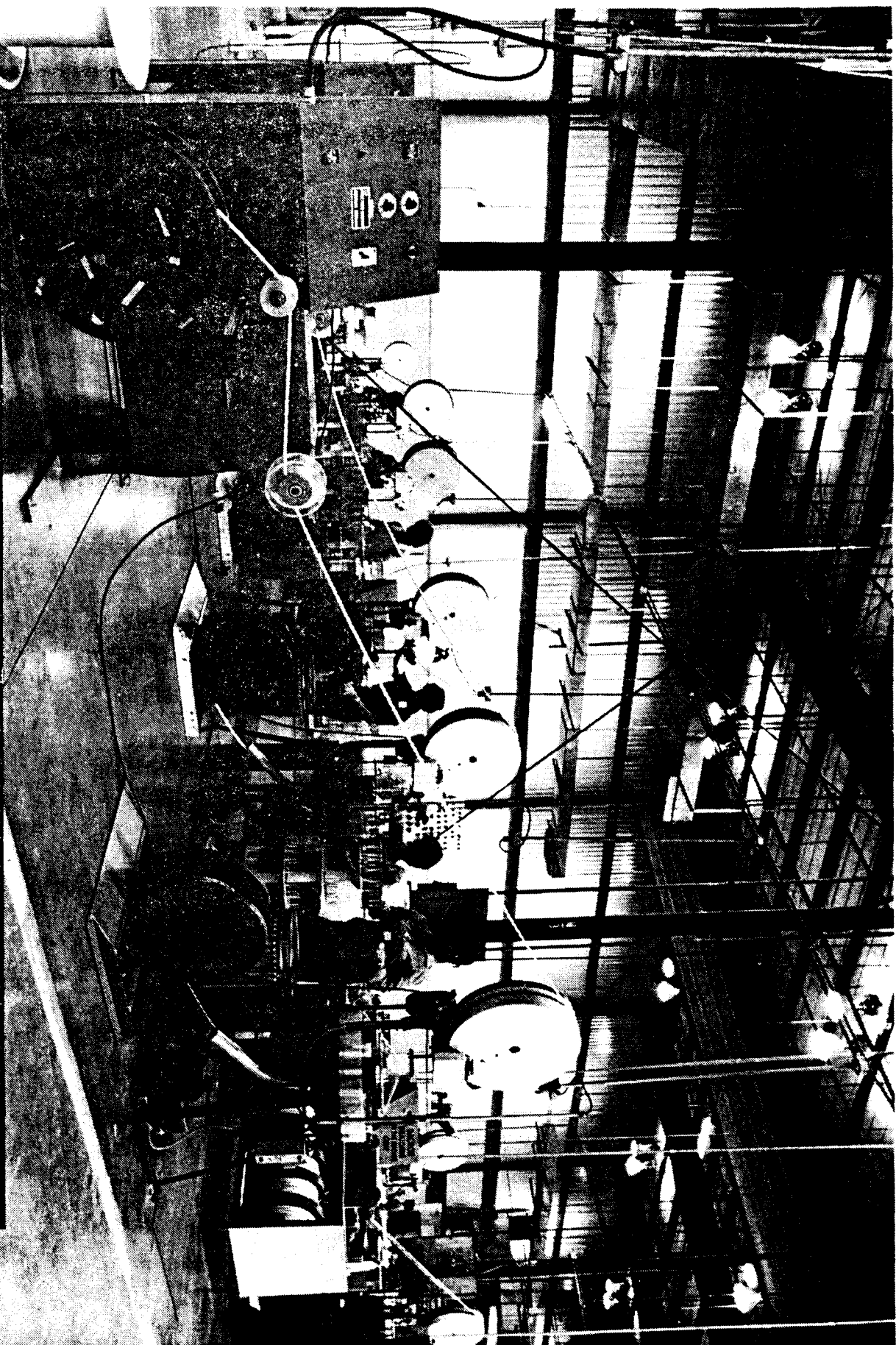




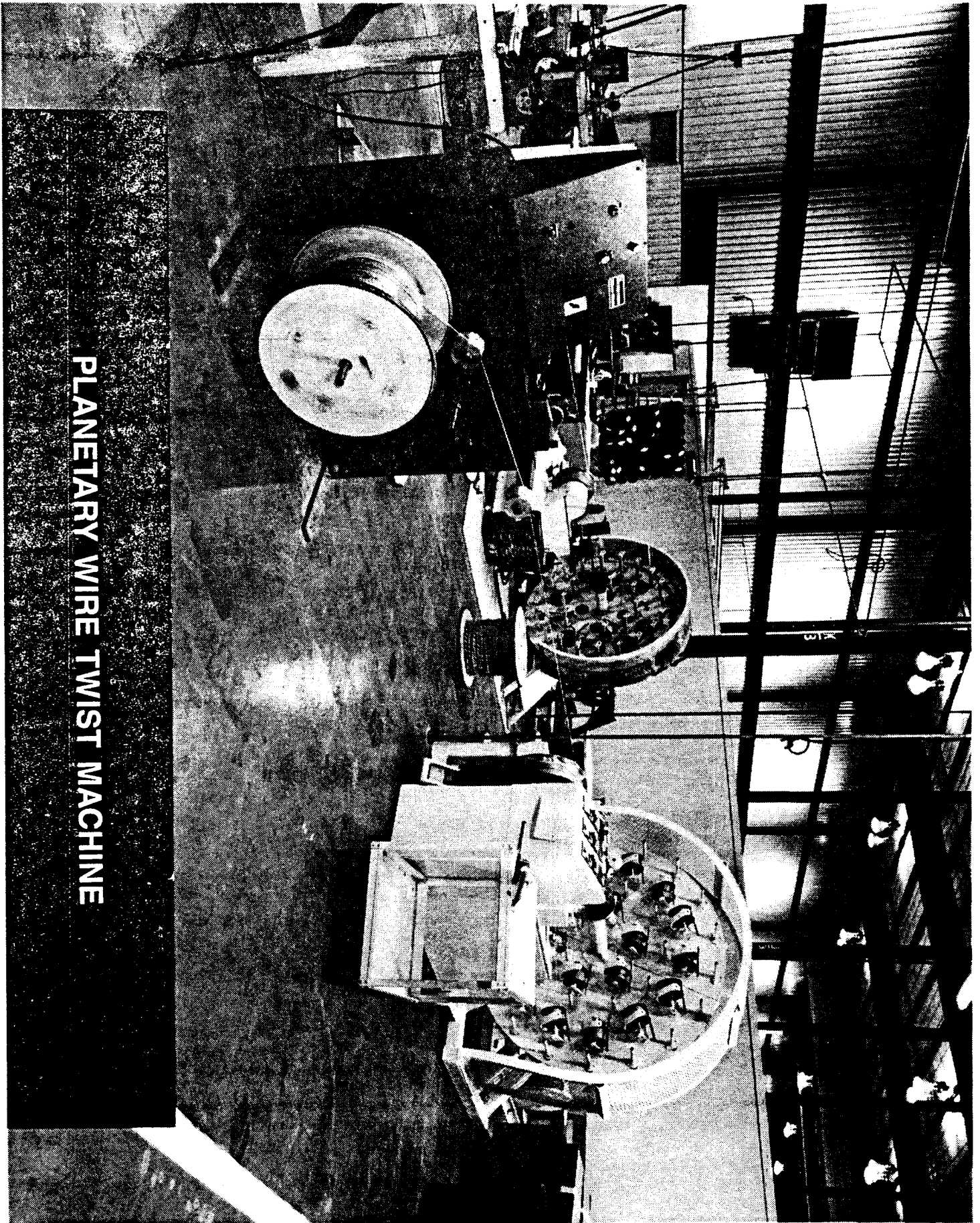
AUTOCLAVE



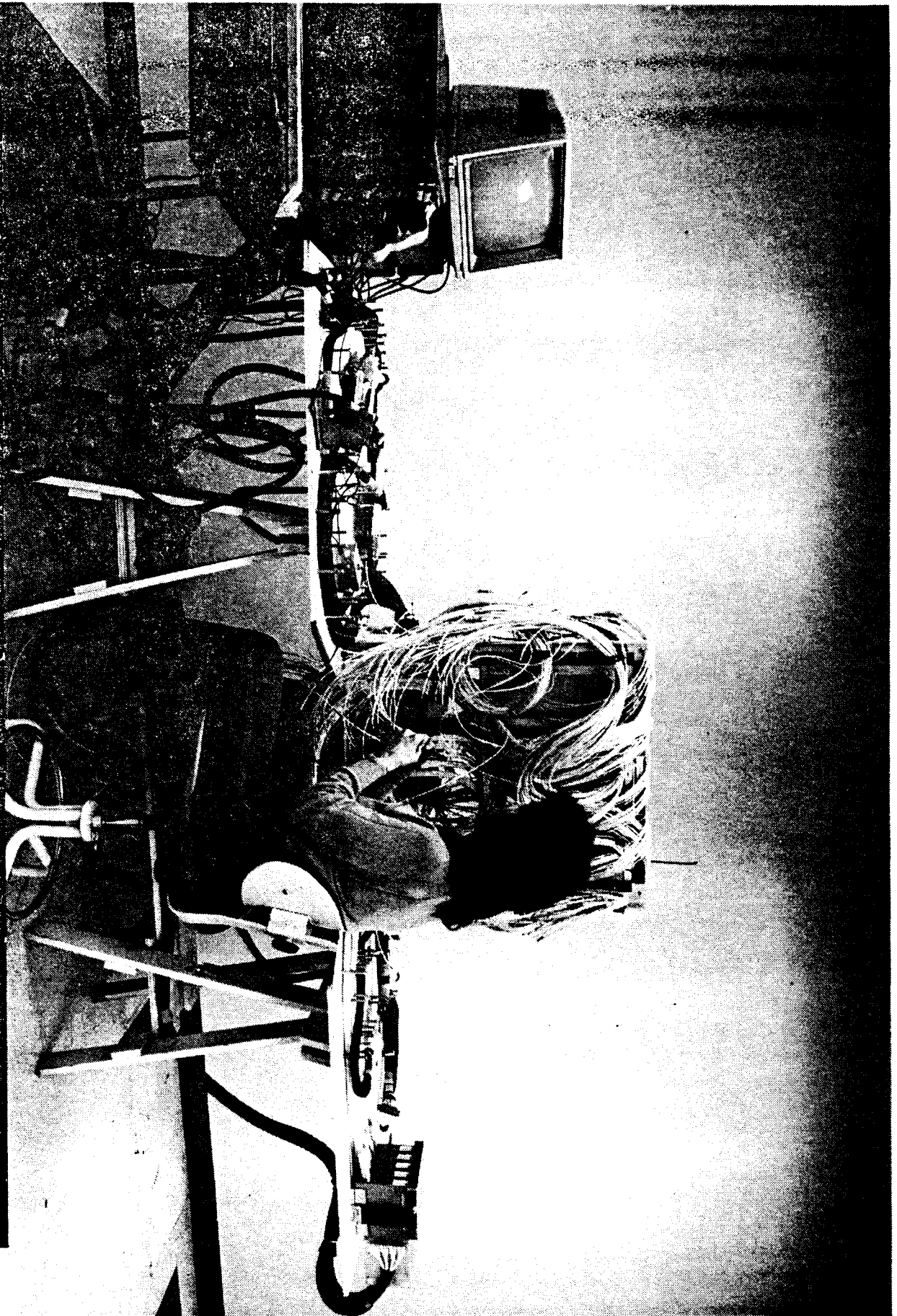
K&T SKIN MILL



DACRON BRAIDING MACHINE FOR D3 CABLES



PLANETARY WIRE TWIST MACHINE



**NATIONAL WIRE HARNESS ASSY AID &
TESTER WITH FORM BOARD**

OPERATIONS

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PARTS CONTROL AREAS

- 0 PCA'S ARE STORAGE AREAS FOR COMPLETED
DETAIL PARTS AND ASSEMBLIES.
- 0 THERE ARE APPROXIMATELY 11 MILITARY PCA'S.
THESE PCA'S ARE CO-LOCATED AND DEDICATED TO
THE SHOPS THEY SERVE, MOST ARE ALSO DEDICATED
TO AN AIRCRAFT MODEL, A GROUP OF PROGRAMS OR
A SINGLE SPECIFIC PROGRAM.
- 0 THE PCA ALSO PROVIDES EXPEDITING SERVICES.
THE EXPEDITERS GO INTO THE SHOPS TO MAINTAIN
STATUS ON ALL PARTS APPROX 30 M-DAYS BEFORE
THEY ARE REQUIRED TO BE IN THE PCA. THEY
ALSO DOES WHAT EVER IS REQUIRED TO EXPEDITE
THE FLOW OF CRITICAL DELINQUENT PARTS AND
ASSEMBLIES THROUGH THE SHOPS.

OPERATIONS

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INDUSTRIAL ENGINEERING

I.E. ESTIMATING

1. ASSIST OPERATIONS PROPOSAL COORDINATOR IN ESTABLISHING DATES FOR THE PROPOSAL SCHEDULE.
2. COMPILE ESTIMATE FOR ALL OPERATIONS ACTIVITIES AND DOCUMENT FOR FINANCE PRICING.
3. REVIEW ESTIMATE WITH THE PROPOSAL COORDINATOR, AND OPERATIONS MANAGEMENT.
4. SUPPORT PROPOSAL COORDINATOR IN ANY FACTFINDING ACTIVITIES.
5. SUPPORT NEGOTIATING TEAM.

I.E. PROGRAM VISIBILITY

1. PREPARE OPERATIONS PROPOSAL DOCUMENTS WHEN REQUIRED.
2. PREPARE VISIBILITY FOR OPERATIONS MANAGEMENT AND DIRECTORS REVIEWS.
3. SUPPORT CONTRACT DATA REQUIREMENTS LIST TASKS (PRODUCTION ANALYSIS REPORT DI-P-3455).

INDUSTRIAL ENGINEERING (CONT.)

I.E. METHODS

1. DEVELOP WORK PLANS. (LOAD AND BAR CHARTS)
2. COORDINATE WITH BUDGETS GROUP TO DEVELOP MANPOWER FORECASTS FOR SHOPS.
3. ASSIST SHOP MANAGEMENT IN DEVELOPMENT OF MEAC'S.
4. MAINTAIN DAILY SHOP STATUS FOR POSITION UNIT TIME.
5. DEVELOP RECOVERY PLANS AS REQUIRED.
6. STANDARDS APPLICATION.

I.E. SCHEDULES

1. PREPARE DETAIL SCHEDULES FOR MANUFACTURING AND DELIVERY OF HARDWARE.
2. DEVELOP MASTER SCHEDULES.
3. DEVELOP CYCLE PROJECTIONS.
4. DETERMINE THE NUMBER OF MULTIPLE SETS OF TOOLING REQUIRED TO SUPPORT THE REQUIRED PRODUCTION RATE.

I.E. BUDGETS

1. MAINTAIN BUDGET SPREADS AND MEACS (MANAGEMENT ESTIMATE AT COMPLETION)
2. ESTABLISH EARNED VALUES.
3. PREPARE VAR'S (VARIANCE ANALYSIS REPORTS).
4. DISTRIBUTE BUDGETS.

INDUSTRIAL ENGINEERING (CONT.)

I.E. PROGRAM PLANNING

1. OPERATIONS PROPOSAL PREPARATION FOR NEW AND ON-GOING MILITARY PROGRAMS.
2. PROVIDE SUPPORT TO OPERATIONS FOR DOCUMENTS, REPORTS AND CUSTOMER REVIEW MEETINGS REQUIRED BY THE CUSTOMER.
3. PROVIDE RFE (REQUEST FOR ESTIMATE) AND COORDINATE DESIGN TO COST AND TRADE STUDY ESTIMATES FOR OPERATIONS.
4. SPECIAL ASSIGNMENTS GENERATED BY OPERATIONS MANAGEMENT.

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OPERATIONS CHANGE MANAGEMENT

THE CHANGE MANAGEMENT ORGANIZATION IS FUNCTIONALLY RESPONSIBLE TO COORDINATE OPERATIONS ACTIVITIES IN DEVELOPING COMMITMENTS TO SUPPORT CHANGE ACTIVITY TO DO THIS THEY

- PROVIDE A PERMANENT REPRESENTATIVE TO THE PROGRAM CHANGE BOARD.
- REVIEW ALL COMMITMENTS FOR IMPACT ON OPERATIONS
- COMMIT ALL OPERATIONS ACTIVITIES (PLANNING, TOOLING, MANUFACTURING, ETC.) AS COORDINATED THROUGH FUNCTIONAL CHANGE MANAGEMENT REPRESENTATIVES.

OPERATIONS

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OPERATIONS SYSTEMS

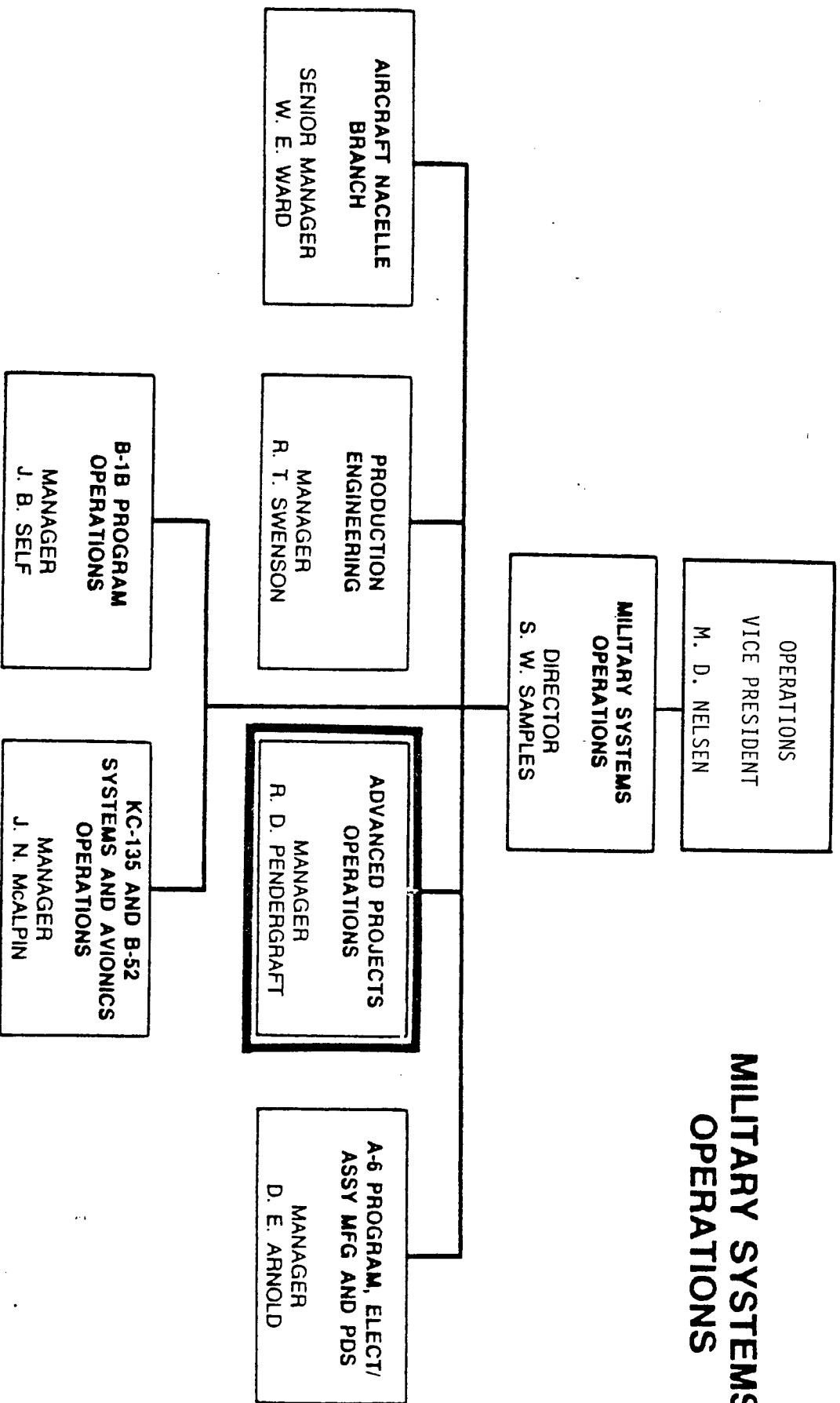
- PROVIDE USER SUPPORT FOR COMPUTER SYSTEMS, TROUBLESHOOTING, COORDINATING PROBLEMS, QUESTIONS, AND SYSTEM IMPROVEMENTS WITH BOEING COMPUTER SERVICES.
- HELP DEVELOP NEW OR REPLACEMENT SYSTEMS FOR OPERATIONS.
- CONTROL SYSTEM ACCESS.

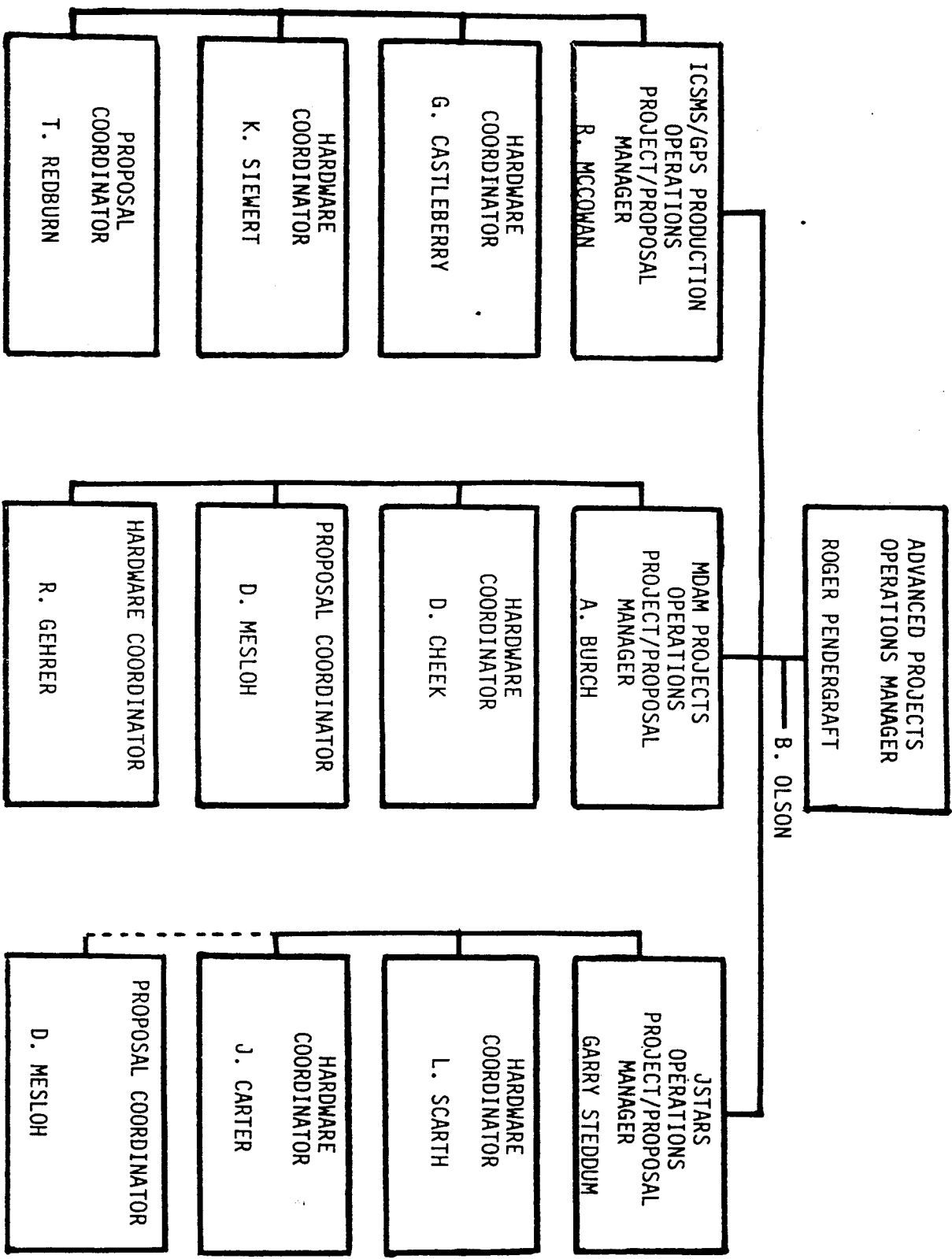
- MOL - MANUFACTURING ORDER LOCATION SYSTEM - LOCATION AND STATUS OF ALL LOT TIME FAB AND SUBASSEMBLY ORDERS. ON-LINE CICS/TOTAL SYSTEM.
- OLP - ON-LINE PLANNING SYSTEM - CORPORATEWIDE INTERACTIVE PLANNING SYSTEM MAINTAINS MANUFACTURING MASTER TOOL AND ASSEMBLY PARTS LIST RECORDS, PREPARES SHOP ORDER PACKETS. ON-LINE CORPORATE IMS-DLI SYSTEM, SEATTLE.
- BRQA - SCHEDULING REQUIREMENTS ORDERING ANALYSIS SYSTEM - SUMMARIZES REQUIREMENTS, APPLIES SCHEDULES, RELEASES ORDERS AND PRODUCES FORECAST. LOT TIME ORDERS ONLY. BATCH SYSTEM.

OPERATIONS

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MILITARY SYSTEMS OPERATIONS





HARDWARE COORDINATOR FUNCTION

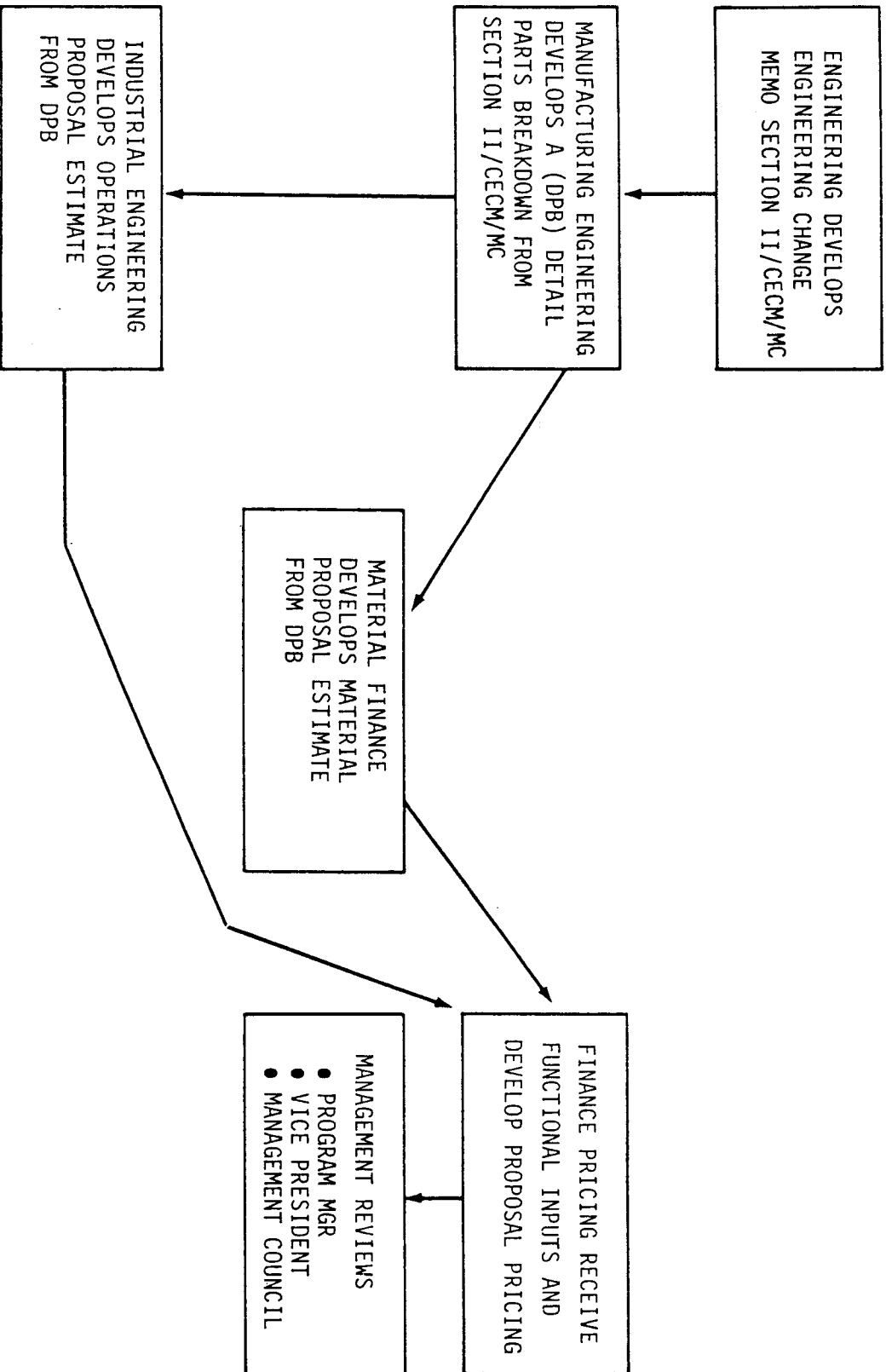
THE HARDWARE COORDINATOR'S FUNCTION IS TO ASSURE COMPLETION OF QUALITY HARDWARE TO MEET PROGRAM COST AND SCHEDULE REQUIREMENTS. TO DO THIS HE MUST - - - -

- KNOW STATUS OF ENGINEERING AND PLANNING RELEASE SCHEDULES.
- KNOW STATUS OF MATERIAL AVAILABILITY TO SUPPORT FABRICATION, ASSEMBLY AND KIT COMPLETION DATES.
- KNOW STATUS OF TOOLING REQUIRED TO MANUFACTURE HIS HARDWARE.
- KNOW MANUFACTURING STATUS ON HIS HARDWARE,
- PROVIDE THE SUPPORT REQUIRED TO RESOLVE AND PREVENT ANY DISCREPANCIES OR DELINQUENCIES IN THESE AREAS.

PROPOSAL COORDINATOR FUNCTION

1. COORDINATE ALL OPERATIONS PROPOSAL ACTIVITY WITH OPERATIONS SUPPORT ORGANIZATIONS (SHIPPING, PLANNING, I.E. ESTIMATING, ETC.) AND PROGRAM FUNCTIONAL ORGANIZATIONS (MODIFICATION CENTER, ENGINEERING, Q.A., FINANCE, PROGRAM MANAGEMENT, ETC.).
2. COORDINATE WITH THE INDUSTRIAL ENGINEERING (I.E.) PROGRAM VISIBILITY GROUP TO PREPARE OPERATIONS PROPOSAL DOCUMENTS WHEN REQUIRED.
3. REPORT PROPOSAL STATUS TO PROGRAM.

TYPICAL PROPOSAL FLOW CHART



MUSTS ON CECM/SECTION II DEVELOPMENT

ENGINEERING DESCRIPTION NEEDS TO BE CLEAR AND CONCISE.

MUSTS

- 1) USE "SIMILAR TO" PART NUMBERS WITH A COMPLEXITY FACTOR WHEN EVER POSSIBLE. THE "SIMILAR TO" PART NUMBER SHOULD BE AVAILABLE IN THE BLUE PRINT FILE AND SHOULD BE OAS OR LATER GENERATION ASSEMBLIES. THIS RECENT HISTORY IS AVAILABLE IN COMPUTER DATA BASES.
- 2) WHEN A GOOD "SIMILAR TO" NUMBER IS NOT AVAILABLE USE A CLEAR DESCRIPTION OF THE DETAIL PARTS INCLUDING A COMPLETE MATERIAL CALL OUT INCLUDING MATERIAL SPECIFICATION NUMBERS, HEAT TREAT WHERE APPLICABLE, AND DIMENSIONS. ALSO PROVIDE A SKETCH. THE SKETCH AND THE WRITTEN DESCRIPTION TOGETHER SHOULD BE ADEQUATE TO INDICATE WHAT MANUFACTURING PROCESSES WILL BE REQUIRED.
- 3) PROVIDE EASY TO READ GRAPHIC MATRIX FOR WIRE HARNESSSES THAT GIVE CONDUCTOR COUNTS, LENGTHS, GUAGES, QUANTITY OF BREAKOUTS CONNECTOR COUNTS, AND SHIELDING REQUIREMENTS.
- 4) USE CLEAR AND COMPLETE REFERENCING BETWEEN SECTIONS TO INSURE GOOD COMMUNICATION BETWEEN THE ENGINEERING AUTHORS AND THE USING FUNCTIONAL ORGANIZATIONS. OFTEN TIMES TASK NUMBERS IN THE MATERIAL SECTION IS USED.