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12 CONDUCT OF OPERATIONS

12.1 INTRODUCTION

The Davis-Besse Nuclear Power Station will be owned as tenants in common by The Toledo Edison Company and The Cleveland Electric Illuminating Company. Toledo Edison, however, will be responsible for operation of the station.

12.2 ORGANIZATION AND RESPONSIBILITY

12.2.1 GENERAL

The Power Production Division of The Toledo Edison Company is responsible for the operation of all electric generating stations. The general superintendent of this division is located at the Acme Station and reports to the vice president, Power Group. He has direct access to the Mechanical Engineering Division on engineering matters. The station superintendents are responsible for the safe, reliable and efficient operation of the assigned station and are responsible for the routine and miscellaneous maintenance of equipment at the generating stations.

An organization chart outlining this organization is shown on Figure 12-1.

12.2.2 DAVIS-BESSE NUCLEAR POWER STATION ORGANIZATION

The Davis-Besse Nuclear Power Station operating force will consist of about 57 full time employees. The anticipated organization chart for the station is shown on Figure 12-2.

The normal operating shift will consist of a shift supervisor, plant control operator, reactor operator, major equipment operator, and an auxiliary equipment operator. The shift supervisors report to the operations engineer who is a graduate engineer.

The technical support group will consist of about eight people under the technical engineer. This group will function in the area of reactor physics, overall reactor and primary system performance, plant performance and instrumentation and control maintenance.

The health physics, radiochemistry, radiological protection and conventional chemistry will be under the responsibility of the chemical and health engineer with four technician level employees under him.

Routine maintenance will be under the responsibility of the maintenance engineer who will have about twelve employees under him. During maintenance outages or other times when a larger force is required, additional maintenance crews will be assigned from the Heavy Maintenance Department force or outside contractors. This type of maintenance will be the responsibility of the superintendent of the Heavy Maintenance Department.

12.2.3 PERSONNEL QUALIFICATIONS

It is anticipated that most of the personnel to man the Davis-Besse Nuclear

Power Station 11 come from existing positions within the Company. This will ensure having a competent group of people with extensive power station experience. The nuclear training and experience required of these people are being acquired at this time and will continue to be acquired to provide a plant staff that is fully qualified for operation of a nuclear power generating station.

The following plant supervisory personnel will be graduate engineers with extensive experience in operation and maintenance of fossil-fired generating stations:

Plant Superintendent
Operations Engineer
Technical Engineer
Results Engineer
Chemical and Health Engineer
Maintenance Engineer

In addition, the technical engineer and at least one of the engineers under him will have a formal nuclear education.

12.3 PERSONNEL TRAINING

12.3.1 GENERAL

All engineers assigned to the Power Group of The Toledo Edison Company have participated in the nuclear engineering courses which have been conducted by The University of Michigan and Babcock & Wilcox at the company offices and that are outlined in Appendix 1C. A number of the engineers in the Power Production Division have also attended special courses and others will attend these special courses in the future.

The plant superintendent for the Dav's-Besse Nuclear Power Station will be relieved of all of his present duties in 1970 and will be assigned to the nuclear project full time. During the period from 1970 until the formal operator training program commences in mid-1972, he will receive nuclear training in selected nuclear courses, be assigned to operating plants, review design details and will organize and prepare the formal operator training program. Additional plant supervisory people will be relieved of all present duties in advance of the formal operator training program to assist the plant superintendent and to obtain nuclear and specialty training. The anticipated assignment dates of these supervisory people are shown on Figure 12-3.

12.3.2 OPERATOR TRAINING PROGRAM

The purpose of the training program is to develop a complete operating staff that will assure the safe and efficient operation of the Davis-Besse Nuclear Power Station. It will also assure that a fully qualified and Atomic Energy Commission licensed staff will be available when required for initial plant operation. The plant superintendent, operations engineer, technical engineer, results engineer, one staff engineer, technical leader and all shift supervisors will obtain their AEC senior license prior to initial fuel loading as described in 10 CFR 55.25. The plant control operators and the reactor

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operators will obtain their operating experience at the plant during the pre-critical and low power test period and will be licensed prior to commercial operation of the plant.

A chart of the training schedule and assignment times is given on Figure 12-3. A brief description of the six phases of this nuclear plant staff training program follows.

12.3.2.1 Nuclear Theory (Phase I)

This course will cover basic nuclear physics, reactor theory, nuclear instrumentation, health physics and nuclear power plant fundamentals. The teaching staff will include local college instructors and engineers from vendors and nuclear consultants. This course will be presented to all personnel requiring this background before proceeding with the other phases of their training. This course will be offered at several times during the training period to accommodate the plant personnel involved.

12.3.2.2 PWR Observation (Phase II)

The plant superintendent, operations engineer, maintenance engineer, all technical staff engineers, technical leader, and all shift supervisors will receive observation experience at a nuclear power station following the theory course outlined above. This experience will consist of three months of observing the plant operation.

12.3.2.3 PWR Technology (Phase III)

This course is organized and presented by Babcock & Wilcox and will cover the design and basic functions of the components and systems furnished by this company. The course will be presented at Babcock & Wilcox facilities following the Nuclear Plant Observation Experience and will require a period of about six weeks. This course will be attended by the plant superintendent, operations engineer, maintenance engineer, all technical staff engineers, technical leader, and all shift supervisors. In addition the plant control operators and the reactor operators will receive this course prior to reporting for on site training. This course will cover the following areas:

- a. Reactor Physics - Review of reactor physics as applied to the specific plant design.
- b. Heat Transfer and Fluid Flow - Review of the nuclear plant design, design objectives, reactor design considerations and limitations.
- c. Reactor Vessel and Internals - Review of the design, materials, fabrication, inspection, NDTT and purposes.
- d. Primary Loop Components - Simplified two-loop heat transport system with a description of piping, pumps, and pressurizer relative to design considerations, analyses performed, and materials.

- e. Once-Through Steam Generators - Description, peculiarities, heat transfer characteristics, mechanical design considerations, materials, chemistry necessities, and maintenance.
- f. Reactor Auxiliary Systems - Functional requirements (normal and emergency), design objectives, criteria, and analysis including a system-by-system description, arrangements, parameters, and equipment access and maintenance.
- g. Control Rod Drives - Description of drives and controls.
- h. Instrumentation and Control - Functional requirements and description of integrated plant control system, nuclear instrumentation and reactor protective system. Primary loop and reactor auxiliaries nonnuclear instrumentation will be covered as well as the incore monitoring system and automatic data logging and on-line computer requirements.
- i. Normal and Emergency Power Requirements - Description of functional needs and procedures.
- j. Chemistry - Water chemistry application to the nuclear plant, including radiochemistry measurements, sampling and chemical analysis.
- k. Health Physics - Review of radiation monitoring systems, decontamination methods and precautions and administrative procedures and controls.

12.3.2.4 PWR Operation (Phase IV)

This last course to be given off site will be an operation training period utilizing classroom lectures, the Lynchburg Pool Reactor, and the B&W Nuclear Power Station Simulator to provide required operational experience for qualification to take the AEC precritical licensing examination. This training is directed toward the understanding and actual completion of operational procedures as they would be accomplished on an actual power station. This course consists of six weeks of classroom and operational training on the simulator, two weeks of training on the Lynchburg Pool Reactor which will include ten actual reactor startups for each trainee, and finally four weeks of shift operation on the simulator. This course will be completed by the plant superintendent, operations engineer, technical engineer, results engineer, one general engineer, technical leader and all shift supervisors.

12.3.2.5 On-The-Job Training (Phase V)

It is anticipated that all Davis-Besse personnel will have completed their off site training and be ready for plant assignment with the initiation of the plant startup activities. This phase of the training program will be organized to obtain the maximum participation of the plant staff. They will participate in:

- a. Preparing test programs and test procedures.

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- b. Testing of components and systems.
- c. Preparing operating, refueling and emergency procedures.
- d. Evaluating routine and emergency operating procedures.
- e. Preparing maintenance procedures.
- f. Evaluating maintenance procedures and observing the installation of major and auxiliary systems and equipment.
- g. Preparation of the AEC operating license material with particular emphasis on the operational aspect of the technical specifications.
- h. Calibration of all instruments and control systems.

A few months prior to fuel loading, the personnel scheduled to obtain an operator's license for participation in fuel loading and initial operation of the reactor, will take license examinations. This will be preceded by several weeks of on-site classroom study to review the theory covered in earlier courses and to familiarize the staff with the latest developments in the station design. The procurement of the AEC Senior Operating License by this group will complete their formal initial training. The plant control operators and reactor operators will attend similar classes, receive actual experience on the Davis-Besse plant during the startup test program, and be presented to the AEC for licensing prior to commercial operation.

12.3.2.6 Specialist Schools and Training (Phase VI)

Engineers, technicians, and the maintenance engineer will be involved in specialized courses to prepare them for their assigned task. These courses are from two weeks to several months in duration and will provide both theoretical and practical training. The vendors will provide some of these courses, while others will be obtained at colleges and government facilities. The types of courses included in this group are nuclear engineering, fuel management, instrumentation, radiation protection, radiochemistry and maintenance of major equipment.

12.3.3 REPLACEMENT AND REFRESHER TRAINING

To provide the necessary replacements for the initial group of plant personnel who will leave through retirement, promotion, etc., additional employees will be added to the station staff as necessary. These personnel will receive similar training to that outlined for the original personnel. This training will be conducted by the station staff with outside assistance as required. All of Phase II training for these replacement personnel will be obtained using our operating reactor.

Refresher training for all station personnel will be given on a continuing basis. This will cover nuclear theory, reactor physics, health physics, systems design and operation, instrumentation and control and operating procedures. This training will be conducted by the station staff with outside assistance as required.

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12.4 WRITTEN PROCEDURE

Written procedures for normal and emergency operating conditions will be prepared. These procedures will be reviewed periodically and revised as necessary. The procedures will include a course of action for the operator for all credible off-standard conditions. Included will be emergency procedures applicable to accidents which might release radioactivity beyond the site boundary.

12.4.1 EMERGENCY PLAN

As a part of the program of developing station procedures, an emergency plan will be developed prior to operation. This plan will cover emergencies such as fire, medical injury and illness, radiation and contamination accidents, and other emergency conditions that may result from operational malfunctions, natural disasters, and civil disturbances. Insofar as possible, the station will be self-sufficient in handling emergency conditions, but outside agencies such as the U. S. Coast Guard, Ohio State Highway Patrol, State of Ohio Department of Health, Ottawa County Civil Defense, local police and fire departments, the AEC, and area hospitals and medical clinics, will be called upon as needed. These agencies will be familiarized with the Davis-Besse Nuclear Power Station, with the emergency plan, and with their expected role in assisting with an emergency situation. The services of professional consultants in the areas of medical radiation and radiation accident control will be obtained if deemed necessary. Alerting procedures will be included in the emergency plan in order to quickly bring these outside forces into active assistance if required.

All station personnel will receive copies of the emergency plan prior to plant operation, and will be required to be thoroughly familiar with the emergency plan; practice drills will be held on a regular schedule for training. Periodic review of their expected role in an emergency situation will be conducted with all outside agencies, and communications will be routinely tested.

Procedures will be provided to maintain the emergency plan up to date and responsive to personnel and organization changes in participating organizations and agencies.

Among the bases for the emergency plan will be 10 CFR 20, 10 CFR 100,

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Federal Radiation Council Report No. 5, and Section 2 (Site and Environment) of this PSAR.

12.4.1.1 Protective Action Levels

Initiation of designated alarms will alert the Control Room to the possible existence of an accident in which the release of radioactive material could occur to the environment.

After receiving one or more of the designated alarms, the Operator will evaluate the conditions producing the alarms, and if instrumentation indicates that radiation has resulted which presents a danger to station personnel or the surrounding population, he will sound the radiation emergency plan alarm. The audible signal will be unique and distinguishable and will sound throughout the station and surrounding site area.

12.4.1.2 Station High Radiation Evacuation

Upon the sounding of the station radiation emergency plan alarm, all station personnel and visitors except those assigned to the Control Room will report to an emergency control center. All evacuees will be surveyed by an emergency monitor prior to leaving the station boundary. All personnel remaining at the station to perform emergency operating procedures will be surveyed for possible contamination. Accountability of site personnel will be provided for.

12.4.1.3 Evaluation of On-Site Conditions

To evaluate the radiation levels on-site, readings will be taken from the station radiation monitoring system in the Control Room, and a monitoring team will survey the station and immediate environment. Appropriate records will be kept of the results of the surveys.

12.4.1.4 Evaluation of Off-Site Conditions

To evaluate the radiation levels off-site, a monitoring team will survey designated areas reflecting accident and post-accident wind conditions. Appropriate records will be maintained.

12.4.1.5 Protective Action for Local Population

If radiation monitoring teams have reported high radiation levels on the off-site survey and these radiation levels are above the average projected dose limit recommended by the Federal Radiation Council, and radiation levels are increasing, appropriate local, state and federal authorities will be notified. These authorities will be informed that a major release of radioactive material occurred at the Davis-Besse Station; evacuation of the low population zone may then be performed by prearranged methods.

12.4.1.6 Hospitalization of Contaminated Casualties

In the event a medical injury occurs that necessitates hospitalization before decontamination, action will be taken for a preliminary survey of the

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contaminated individual, and for the alerting of designated hospital authorities providing them with pertinent information so that applicable phases of the emergency plan may be initiated.

12.4.1.7 Emergency Reserve of Personnel

The emergency plan will make provisions for the obtaining of additional personnel from within the Company, from other nuclear power stations, outside agencies, and appropriate vendors if required in the event of an emergency.

12.4.1.8 Recovery Plan

Part of the emergency plan will pertain to the requirements of a plan to return the station site and environment to an acceptable standard of radiation safety.

12.4.2 EMERGENCY PROCEDURE

Emergency procedures will be prepared, distributed, initiated, and maintained current to implement the Davis-Besse Nuclear Power Station emergency plan.

12.5 RECORDS

Toledo Edison's regular system of record keeping, revised as necessary, will be utilized at the Davis-Besse Station. These records will include permanent logbooks, daily log sheets, recorder sheets, maintenance files and other special records which verify compliance with various governmental regulations.

12.6 ADMINISTRATIVE CONTROLS

Administrative controls will be established to assure that all operations, maintenance, tests and emergencies will be handled in accordance with the written procedures which have been reviewed and approved by established authorities. The station superintendent has the responsibility and authority to operate the station within the limits of the administrative controls.

A Station Review Board consisting of the station superintendent and the supervisors of the operations, technical, health physics and maintenance groups will be permanently created to meet periodically and review normal operations and written procedures to assure safe and continuous operation. This Board will also review every abnormal occurrence or departure from the technical specifications to determine its cause and will make recommendations to the General Superintendent, Power Production Division prior to any changes being made.

A Company Nuclear Review Board will also be established, consisting of Company engineers and outside consultants as required to audit and review station operations and activities of the Station Review Board. This Board will review any major abnormal occurrence or departure from technical specifications and review any matter referred to it by the Station Review Board.

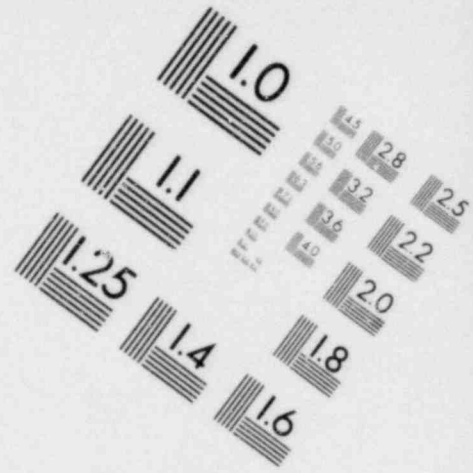
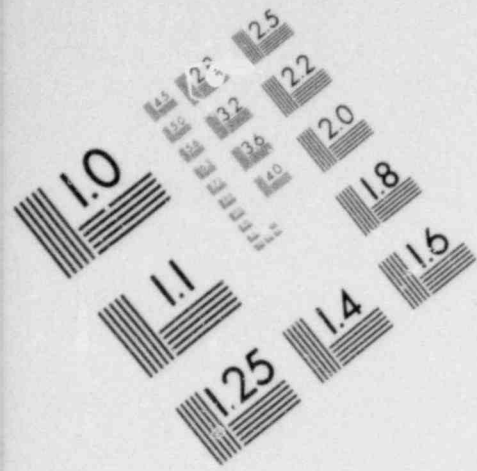
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It is anticipated the Vice President, Power Group; Chief Mechanical Engineer; General Superintendent, Power Production; Davis-Besse Station Superintendent; | 3
Station Electrical Engineer; and Nuclear Engineer in the Mechanical Engineer-
ing Division will be members of this Board.

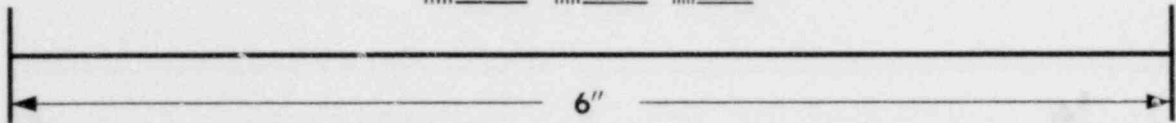
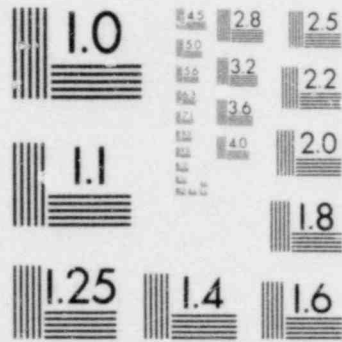
A daily review of operating logs, charts and other data will be made by engi-
neers and technicians under the technical engineer to assure that the station | 3
is being operated in a safe and efficient manner.

Periodic staff meetings will be held to keep all operating personnel advised | 3
of current conditions in the station.

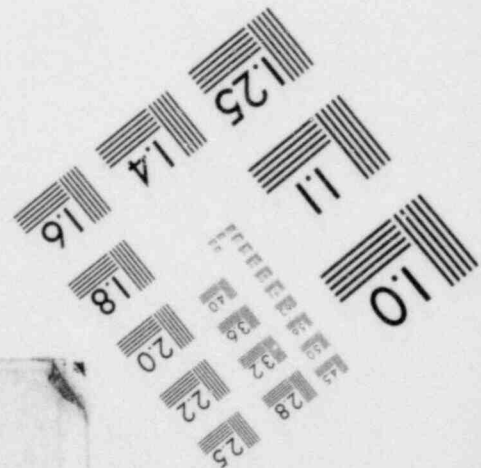
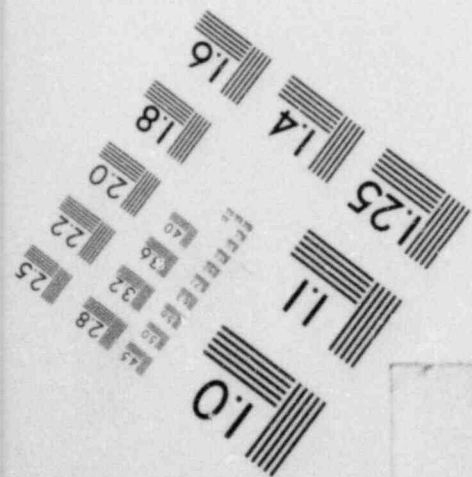
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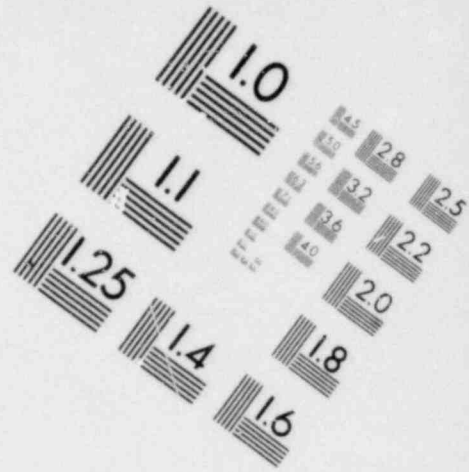
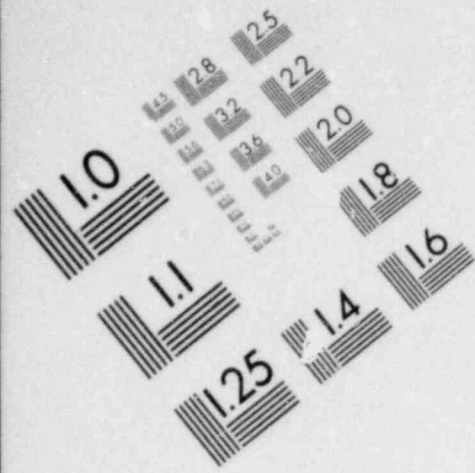


**IMAGE EVALUATION
TEST TARGET (MT-3)**

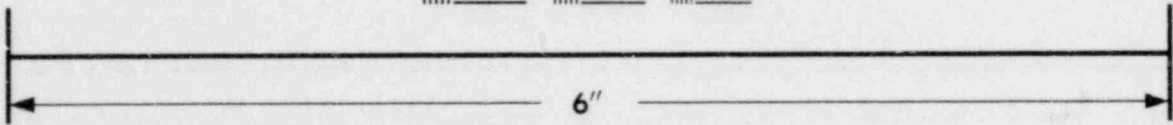
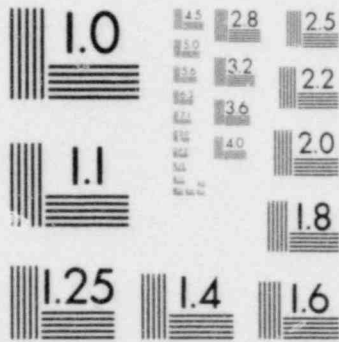


MICROCOPY RESOLUTION TEST CHART

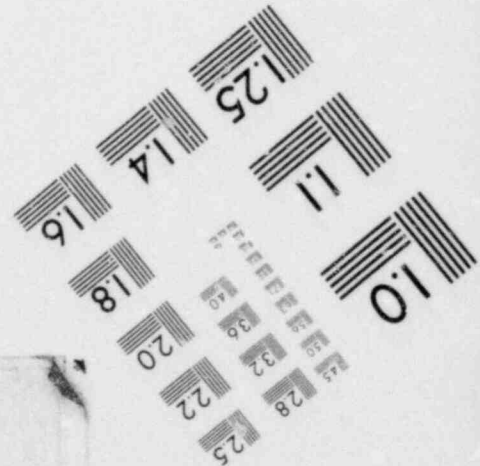
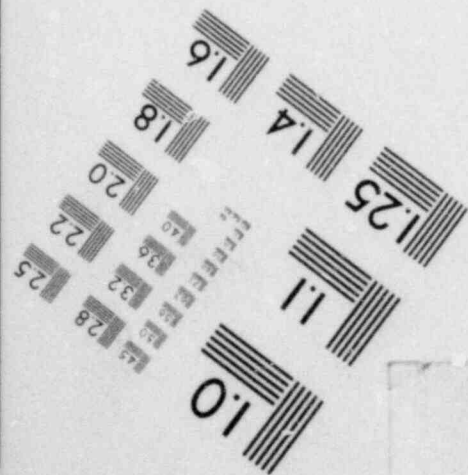


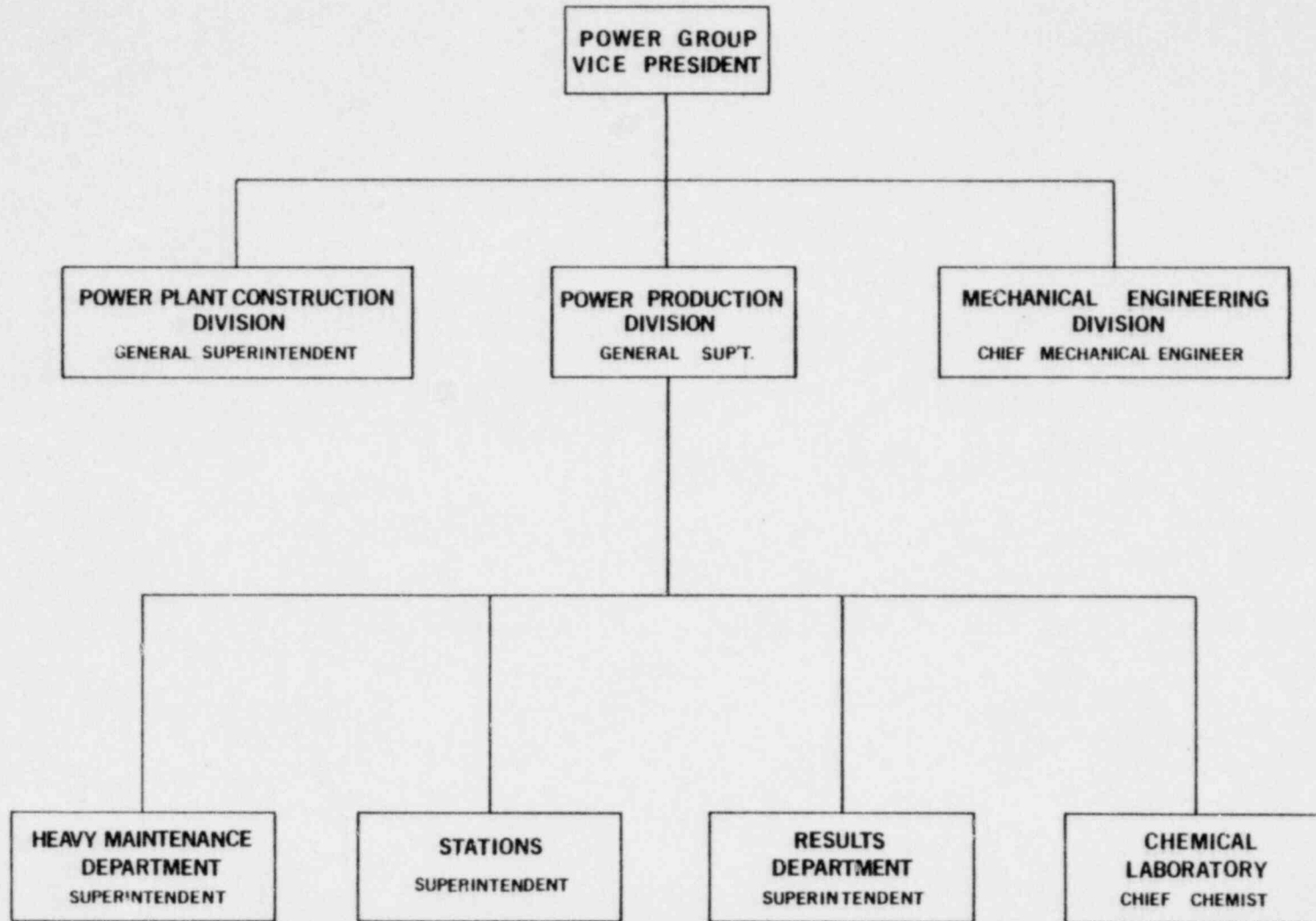


**IMAGE EVALUATION
TEST TARGET (MT-3)**



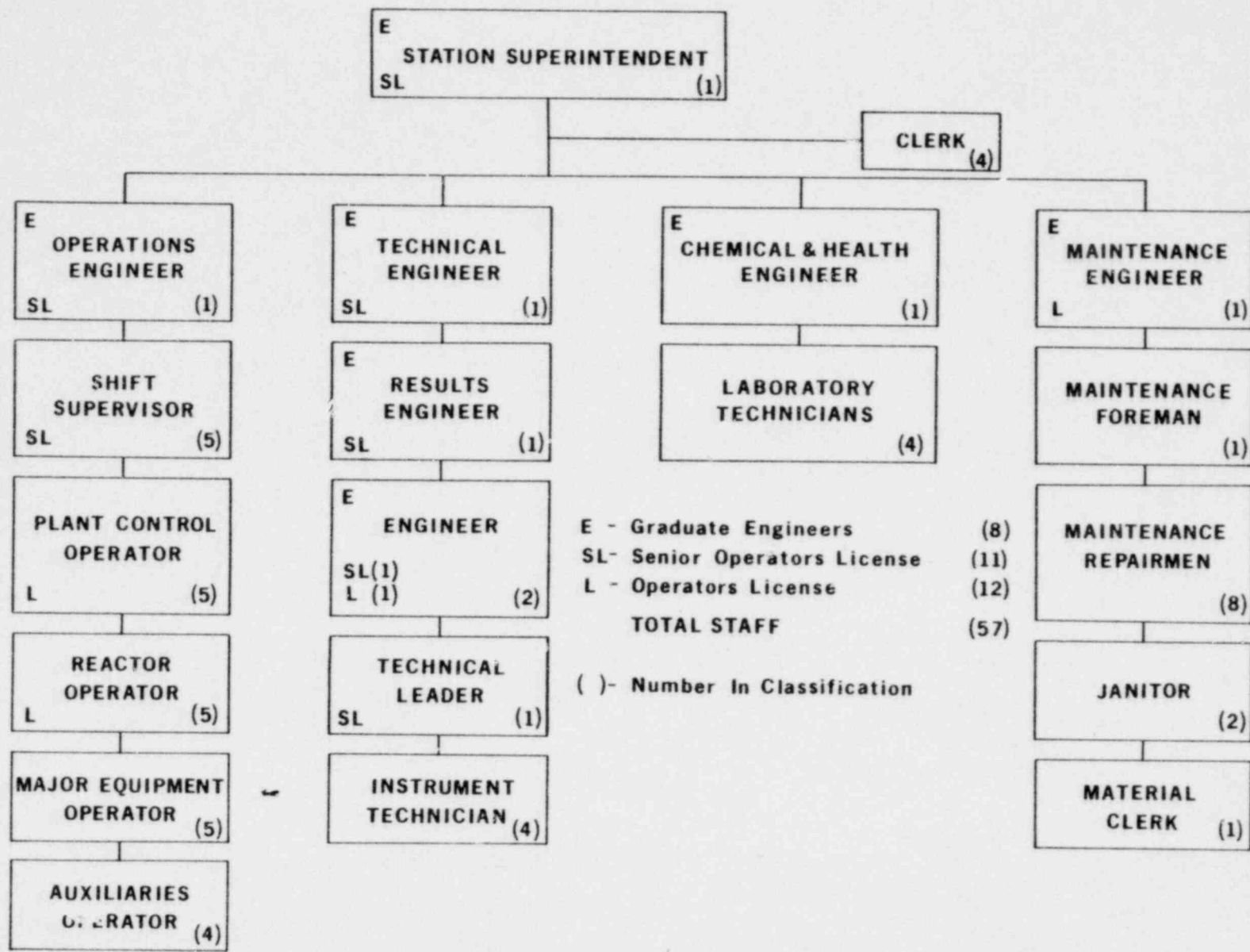
MICROCOPY RESOLUTION TEST CHART





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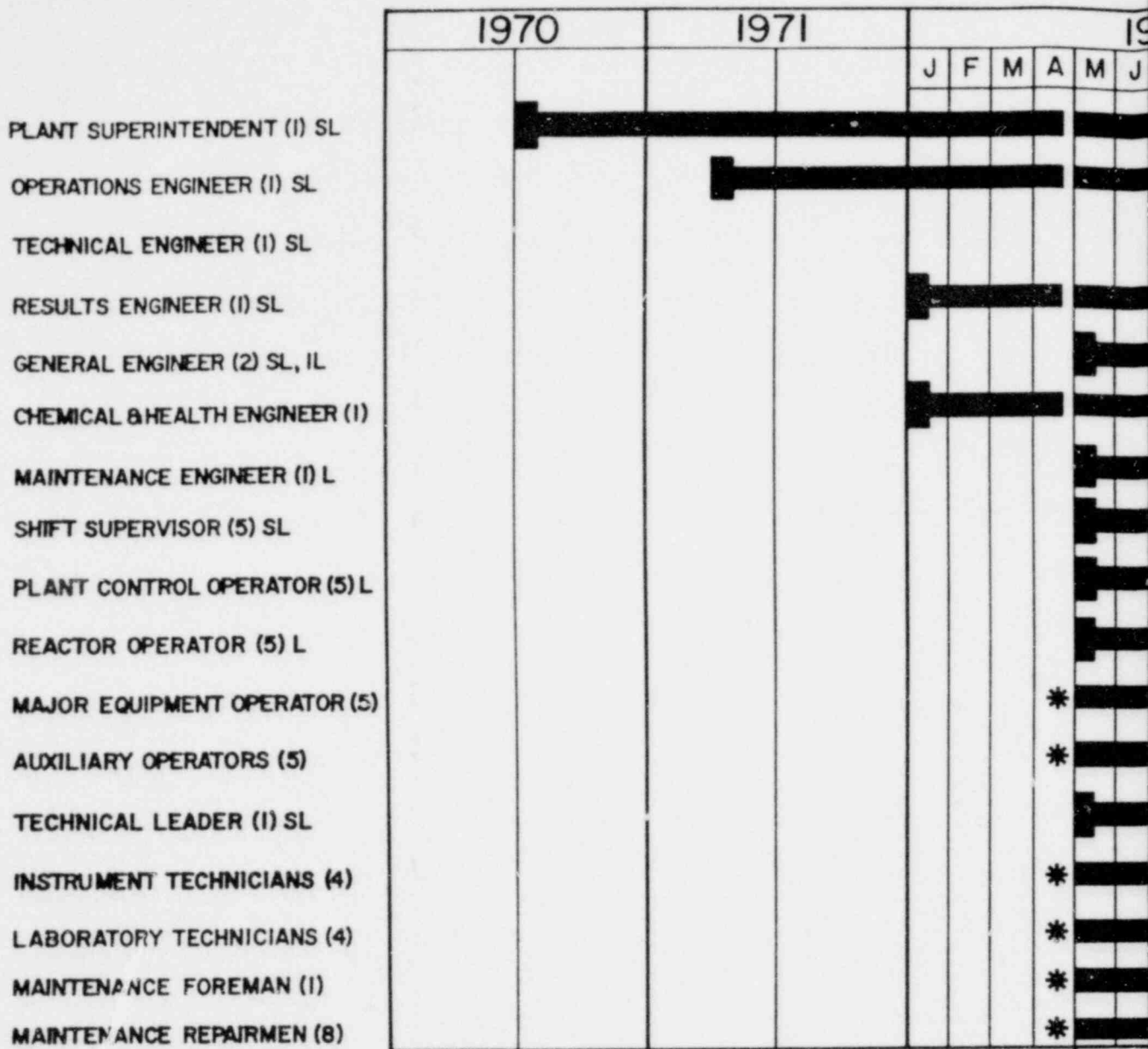
DAVIS-BESSE NUCLEAR POWER STATION
POWER GROUP
ORGANIZATION CHART
Figure 12-1



E - Graduate Engineers (8)
 SL - Senior Operators License (11)
 L - Operators License (12)
TOTAL STAFF (57)

() - Number In Classification

DAVIS-BESSE NUCLEAR POWER STATION
 ORGANIZATION CHART
 Figure 12-2
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TRAINING PHASE

- NUCLEAR THEORY (TOLEDO) _____
- PWR OBSERVATION (OPERATING PLANT) _____
- PWR TECHNOLOGY (LYNCHBURG) _____
- PWR OPERATION (LYNCHBURG) _____
- ON-THE-JOB TRAINING & TESTING (DAVIS-BESSE STATION) _____
- LICENSE REVIEW AND EXAMINATION (DAVIS-BESSE STATION) _____



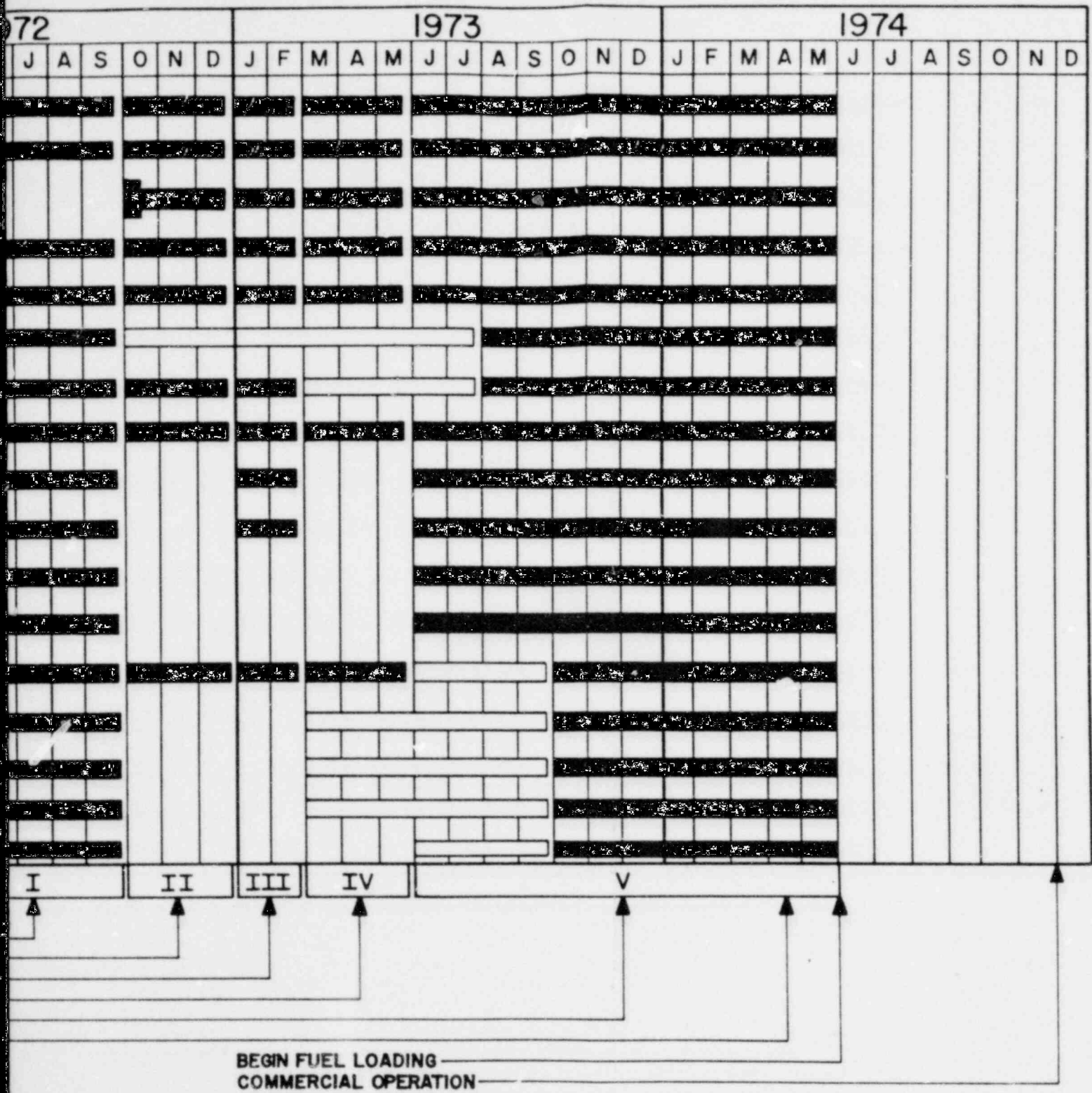
ASSIGNMENT DATE TO STATION STAFF



SPECIALTY SCHOOLS AND TRAINING



THESE PERSONNEL ASSIGNED TO STAFF APROXIMATELY OCTOBER 1972 AT WHICH TIME PHASE I WILL BE REPEATED FOR THEM.



DAVIS-BESSE NUCLEAR POWER STATION
 TRAINING AND ASSIGNMENT SCHEDULE
 Figure 12-3