QUALIFICATION PROGRAM BASICS

A. SELECT QUALIFIED/COMPETENT PERSONNEL.

B. PROVIDE FORMAL FUNDAMENTALS TRAINING.

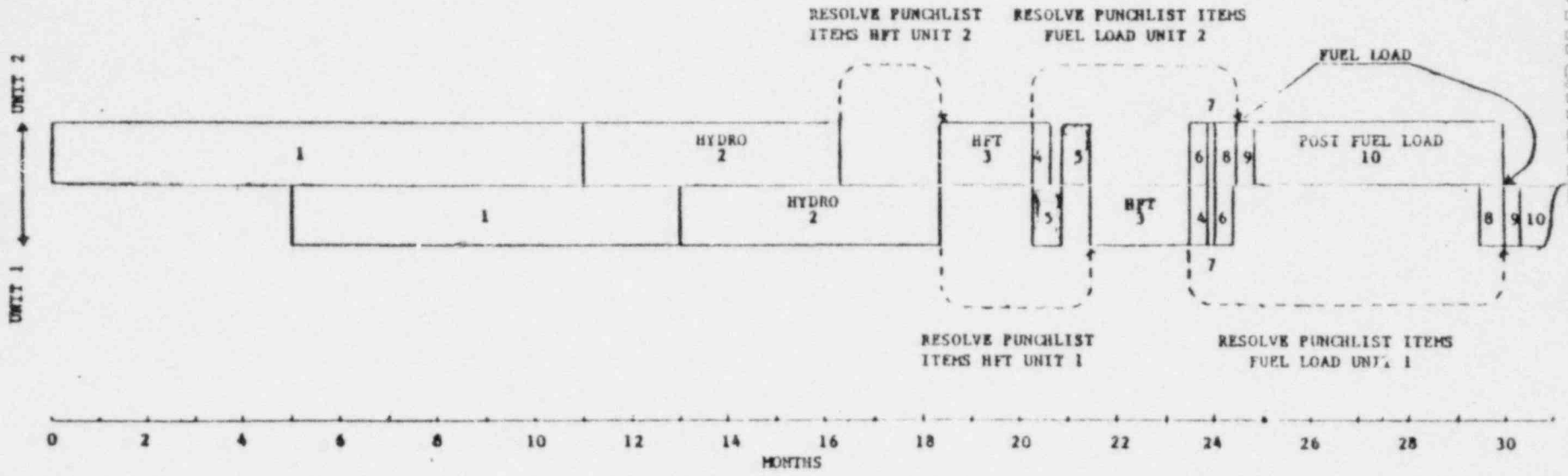
C. PUT PEOPLE INTO OJT.

D. EXAMINE FOR KNOWLEDGE AND SKILL BEFORE PUTTING "ON THEIR OWN."

E. FOLLOW-UP WITH REQUALIFICATION TRAINING AND EXAMINATION.

MIDLAND UNIT 1 & 2

PLAN FOR TWO UNIT STARTUP



ENERGIZE, FLUSH, HYDRO & COMP. TEST	1	POST HFT BASELINE	6
RCS HYDRO PHASE CD/FW CYCLE CLEANUP	2	ESFAS TEST PHASE	7
HOT FUNCTIONAL TEST	3	FUEL LOAD PREPS	8
REMOVE HEAD	4	FUEL LOAD	9
SIT/ILRT PHASE	5	POST FUEL LOAD ACTIVITIES (PES)	10

REV. 0
AUG. 1980

MIDLAND UNIT 1 & 2

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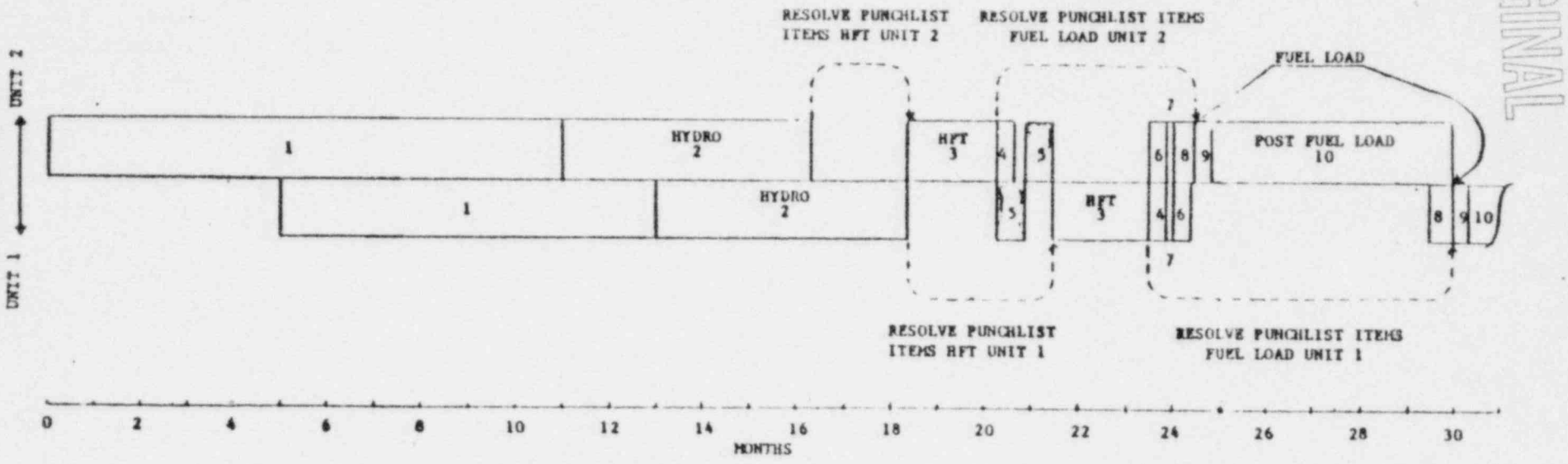

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REV. 0
AUG. 1980

STAFFING ASSUMPTIONS

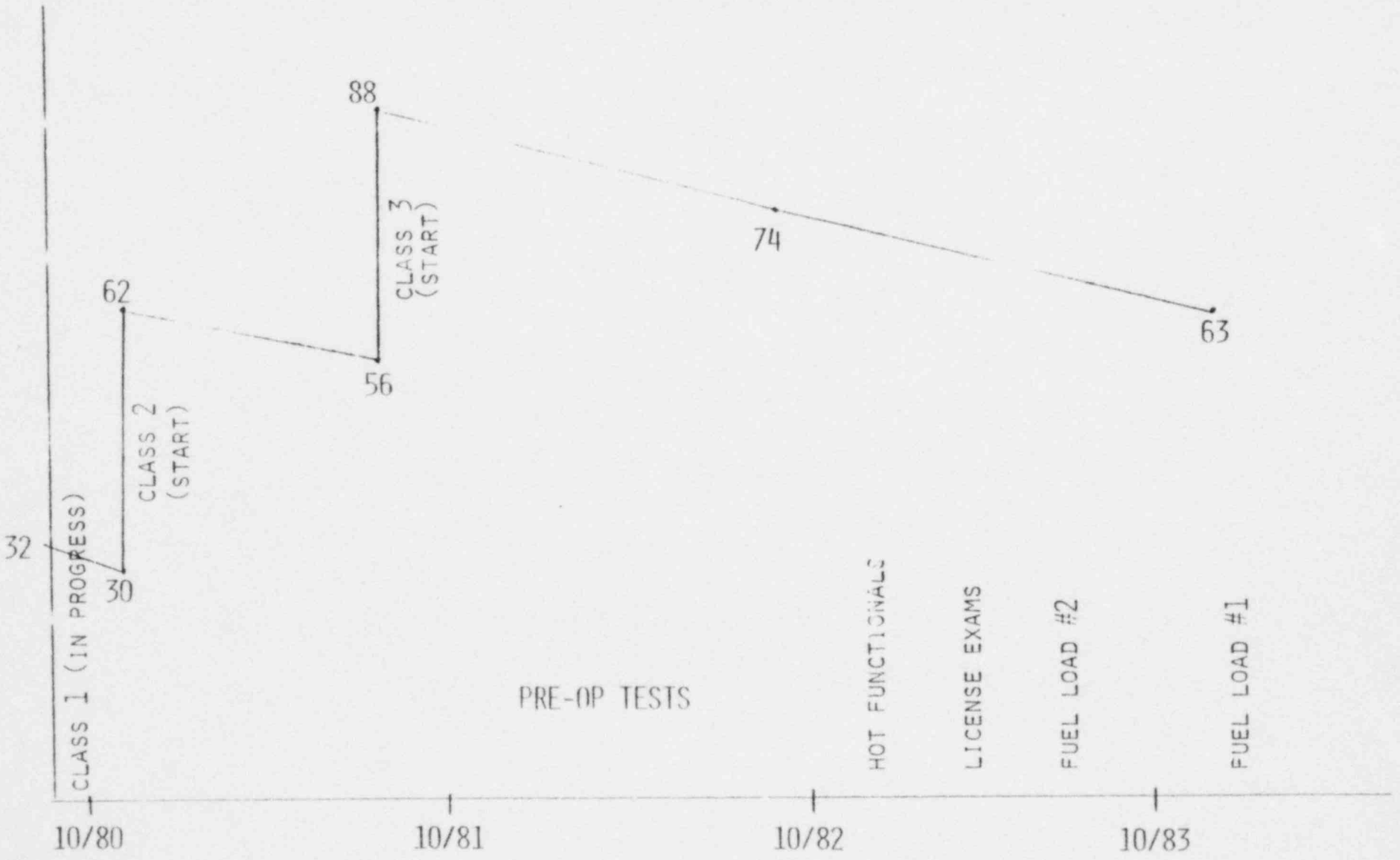
- PLANT SUPERVISOR, 1 PER SHIFT	=	6
- SHIFT SUPERVISOR, 1 PER SHIFT PER UNIT	=	12
- AUXILIARY OPERATOR SUPERVISOR, 1 PER SHIFT	=	6
- SHIFT ENGINEERS, 1 PER SHIFT	=	6
- PLANT STAFF WITH LICENSES	≥	10
SRO	=	40
- CONTROL OPERATORS, 2 PER SHIFT PER UNIT	=	24
EXPECTED TOTAL LICENSES	=	64

- TURNOVER - 15% PER YEAR

- EACH SRO TURNED OVER REQUIRED RO REPLACEMENT

TOTAL NUMBER TO BE TRAINED ≥ 100

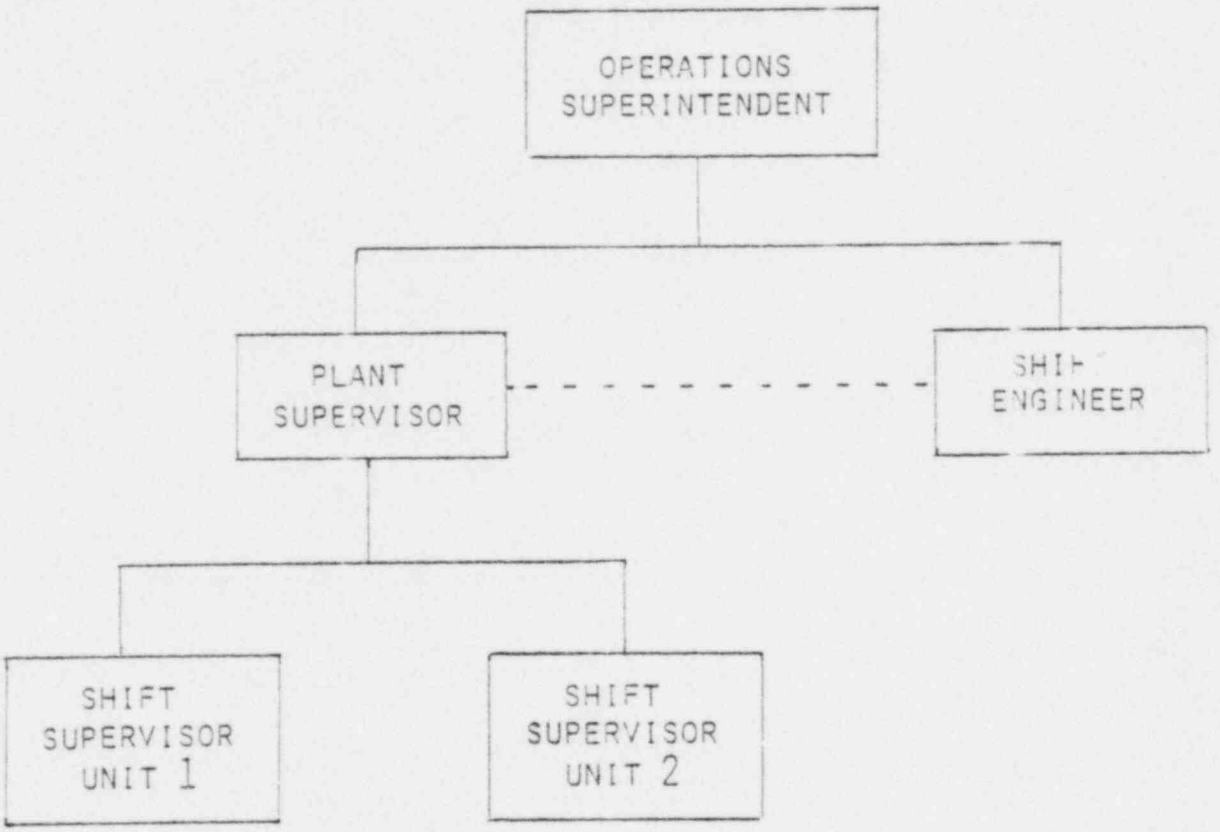
PROJECTED TRAINING NEED
COLD LICENSES



Responsibilities Of Shift Engineers

- Obtain and retain SRO license.
- Advisor to the plant supervisor.
    - Technical support during operation
    - Accident assessment and recommendations (if required)
    - Coordinate activities of other departments on shift. (including startup test program)
- Assume responsibilities of plant supervisor in his absence.
- Provide independent evaluation function.
    - NRC information review (LER's, IE bulletins)
    - Review site logs and records for deficiencies or adverse trends.
    - Investigate and coordinate thermal performance program.
    - Review plant operations with operators, repairmen, and techs to identify problems, recommend solutions to management.
- Member of PRC.

ORGANIZATION STRUCTURE



Minimum Qualifications

- Engineering degree - or equivalent.
- 2 years of experience - before starting training.
- SRO training.
- Qualifications reviewed by nuclear operations department qualifications board.
- Screen successfully by management interviews.

First Group Selected

Previous Title	Nuclear Experience	Locations
SENIOR ENGINEER -B.S.M.E. - MTU	7 YEARS	-PALISADES -MIDLAND
QA SUPERINTENDENT -B.S.M.E. - MSU	10 YEARS (IN QA)	-G.O. FUELS -PALISADES -BIG ROCK -MIDLAND
SENIOR ENGINEER -B.S.M.E. - MTU	7 YEARS	-GENERAL ELECTRIC -CALVERT CLIFFS -MIDLAND
ELECTRICAL MAINT ENGINEER -B.S.M.E. - ANNAPOLIS	7 YEARS	-NAVY NUKE OFFICER -MIDLAND
NUCLEAR PLANT SUPERVISOR -B.S.M.T.	10 YEARS	-NAVY NUKE OPERATOR -MIDLAND
GENERAL ENGINEER -B.S.N.E - U OF M	6 YEARS	-MARE ISLAND R' FUEL ENGINEER -MIDLAND

I&C Technician Certification

- Hire personnel with prior experience and/or training.
- Work under close supervision as trainee until class is scheduled.
- Provide formal training on:
    - fundamentals of instruments
    - plant systems
    - control systems
    - administrative controls
- Examine through formal "tool" (general physics).
- Evaluate on job - supervisor.
- Place at appropriate job level depending on skills and knowledge.
- Put to work.
- Provide continuing education to improve understanding of basics and improve skills.
- Re-evaluate at regular intervals to determine whether progress is satisfactory.

MIDLAND PLANT SHIFT SUPERVISOR

1. HAVE A GOOD PAST WORK RECORD

2. SUCCESSFULLY COMPLETE AN NRC LICENSING PHYSICAL

3. OBTAIN AN ACCEPTABLE SCORE ON ALL SECTIONS OF THE NUCLEAR OPERATORS TEST BATTERY

4. OBTAIN AN ACCEPTABLE RATING ON THE BEHAVIORDYNE TEST

5. MUST, IN THE OPINION OF PLANT MANAGEMENT, BE CAPABLE OF OBTAINING AN OPERATOR'S LICENSE IN THE TIME REQUIRED

6. HAVE 4 YEARS OF CONSUMERS NUCLEAR OPERATING EXPERIENCE OR ITS EQUIVALENT

   A. CONSUMERS EXPERIENCE IS GENERATING PLANT EXPERIENCE WHICH CULMINATES WITH AN RO OR SRO LICENSE

   B. EQUIVALENT EXPERIENCE INCLUDES:

      1. PREVIOUS COMPARABLE UTILITY EXPERIENCE

      2. NAVY NUCLEAR EXPERIENCE

      3. PREVIOUSLY NRC LICENSED RO OR SRO

MIDLAND PLANT CONTROL OPERATORS

1. SATISFY CRITERIA 1-5 OF THE SHIFT SUPERVISOR QUALIFICATIONS.

2. HAVE 2½ YEARS OF CONSUMERS OPERATING EXPERIENCE OR ITS EQUIVALENT.

   CONSUMERS EXPERIENCE IS GENERATING PLANT EXPERIENCE ABOVE THE LEVEL OF PLANT UTILITY MAN.

   COMPARABLE EXPERIENCE INCLUDES:

   A. PREVIOUS UTILITY EXPERIENCE.

   B. NAVY NUCLEAR EXPERIENCE WITH QUALIFICATIONS ON THE ELECTRIC PLANT OR REACTOR PLANT CONTROL PANELS (THIS INCLUDES ENGINEERING WATCH SUPERVISOR).

   OR, IN LIEU OF (2):

3. HAVE MET ALL THE REQUIREMENTS FOR MIDLAND AUXILIARY OPERATOR AND BEEN EMPLOYED AT THE MIDLAND PLANT AS AN AUXILIARY OPERATOR FOR SIX MONTHS.

MIDLAND PLANT AUXILIARY OPERATORS

1. SATISFY CRITERIA 1-4 OF THE SHIFT SUPERVISOR QUALITICATIONS.

2. HAVE 2 YEARS OF CONSUMERS OPERATING EXPERIENCE OR ITS EQUIVALENT.

   CONSUMERS EXPERIENCE IS GENERATING PLANT EXPERIENCE AT THE LEVEL OF PLANT UTILITY MAN OR ABOVE.

   COMPARABLE EXPERIENCE INCLUDES:

   A. PREVIOUS UTILITY EXPERIENCE.

   B. NAVY EXPERIENCE WITH QUALIFICATIONS ON ENGINEERING WATCH STATIONS ASSOCIATED WITH POWER PLANT OPERATION.

OBSERVATION OBJECTIVES

-- NORMAL DUTIES

-- TYPICAL EVOLUTIONS

-- LOADING AND UNLOADING THE TURBINE

-- METHODS FOR CHANGING REACTOR POWER

-- LOGS

-- MAJOR CONTROLS AND INDICATION

-- MAJOR PRIMARY AND SECONDARY SYSTEMS

-- SURVEILLANCE TESTING

-- EQUIPMENT OUT OF SERVICE

-- REMOVAL AND RETURN TO SERVICE

-- CHEMISTRY SAMPLING

-- LIQUID OR GASEOUS WASTE DISCHARGE

-- RADIATION OR CONTAMINATION CONTROLLED AREA

-- SECURITY PRECAUTIONS

-- SHIFT TURNOVERS

-- OPERATOR OUTSIDE THE CONTROL ROOM CAN EFFECT THE REACTIVITY

-- ON-SHIFT COMMUNICATION

OBSERVATION CRITERIA

1. INDIVIDUALS WHICH DO NOT MEET ANY OF THE FOLLOWING CRITERIA (INEXPERIENCED INDIVIDUALS).

2. FOSSIL PERSONNEL WITH FOUR OR MORE YEARS OF POWER PLANT EXPERIENCE IN OPERATIONS, MAINTENANCE, OR ENGINEERING.

3. ENGINEERS AND NON-LICENSED OPERATORS WITH TWO OR MORE YEARS COMMERCIAL NUCLEAR POWER PLANT EXPERIENCE AT AN OPERATING PLANT AND NAVY NUCLEAR EXPERIENCE ELECTRICIANS, I&C, AND MACHINIST MATES.

4. NAVY NUCLEAR EXPERIENCED EOOW'S EWS'S AND REACTOR OPERATORS.

5. PREVIOUSLY LICENSED SRO'S AND RO'S ON ANY LIGHT WATER REACTOR AND PERSONNEL CERTIFIED TO TAKE THE NRC EXAM BUT WHO DID NOT.

AREAS OF CONCERN

-- CONTROL ROOM EXPERIENCE

-- RO EXPERIENCE FOR SRO

-- EXTRA MAN ON SHIFT

SIMULATOR SCHEDULE

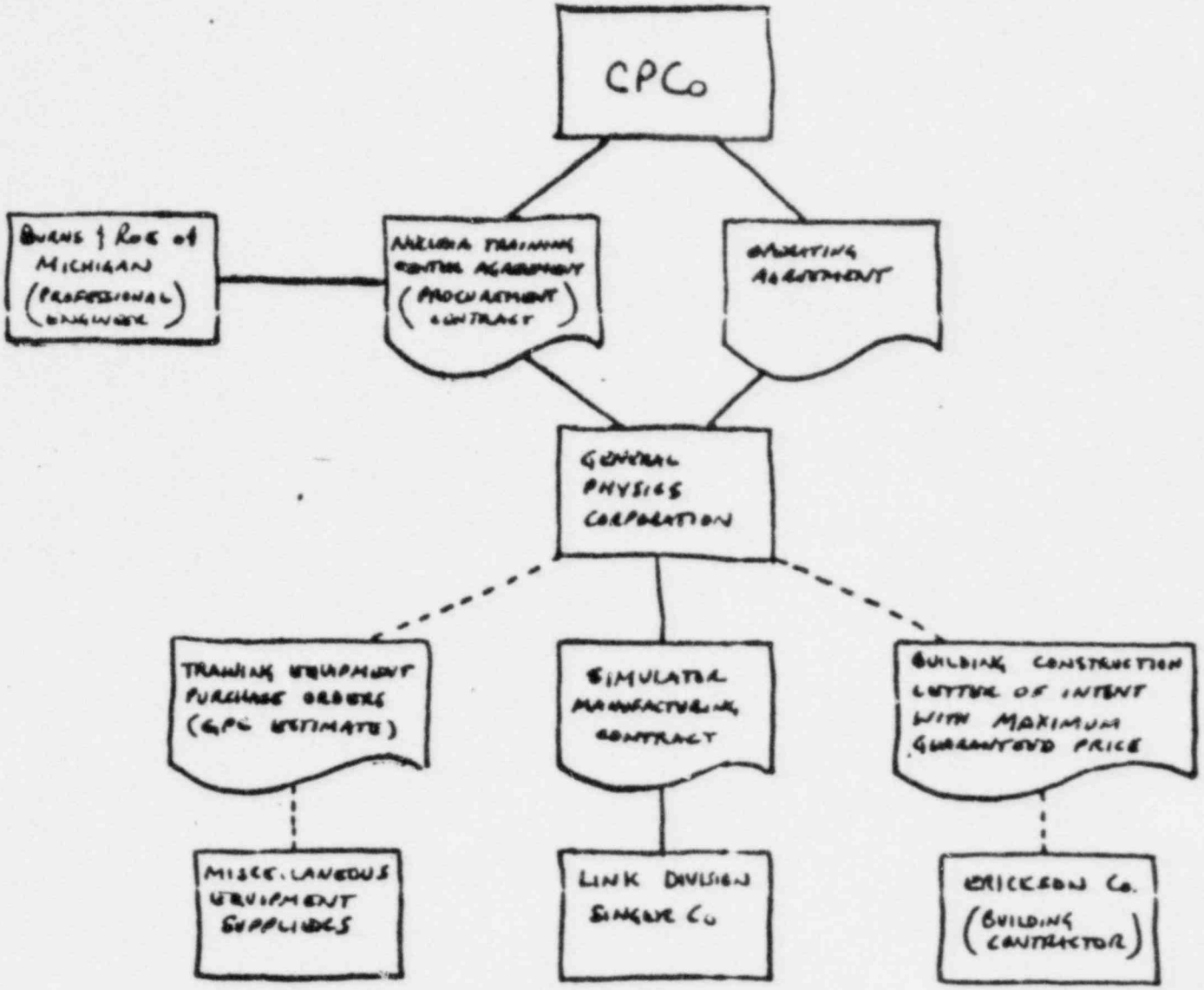
MILESTONE	DATE
EXECUTED CONTRACT	AUGUST 1980
HARDWARE DATA FREEZE	NOVEMBER 1980
SOFTWARE DATA FREEZE	JANUARY 1981
MIDLAND COMPUTERS RECEIVED	JUNE 1981
DESIGN REVIEWS COMPLETED	SEPTEMBER 1981
INTEGRATED HARDWARE CHECKOUT STARTED	JANUARY 1982
INTEGRATED HARDWARE CHECKOUTS COMPLETED (MORE THAN 98% OF HARDWARE UNDER COMPUTER CONTROL)	MAY 1982
MIDLAND #2 FACTORY ACCEPTANCE TESTING STARTED	SEPTEMBER 1982
MIDLAND #2 FACTORY TRAINING STARTED OR MIDLAND #2 FACTORY ACCEPTANCE TESTING COMPLETED	DECEMBER 1982
MIDLAND #1 AND PROCESS STEAM SYSTEM FACTORY ACCEPTANCE TESTING STARTED	DECEMBER 1982
MIDLAND #1 AND #2 AND PROCESS STEAM SYSTEM ON-SITE READY FOR TRAINING	JULY 1983
FINAL DOCUMENTATION APPROVED AND ALL ACCEPTANCE DISCREPANCIES CLEARED	OCTOBER 1983

transparency
mounting frame

SCHEDULE

SIGN CONTRACTS	COMPLETE
SELECT SITE	OCT 13, 1980
BUILDIN[illegible] READY	OCT 19, 1981
FACTORY ACCEPTANCE	SEP 21, 1982
FACTORY TRAINING	JAN 18, 1983
PALISADES READY	MAY 20, 1983
ALL UNITS READY	AUG 20, 1983

3M



transparency
mounting frame

SIMULATORS

GENERAL DATA

MANUFACTURER	SINGER COMPANY-LINK DIVISION
PLANT SPECIFIC UNITS	PALISADES 1
	MIDLAND 1
	MIDLAND 2
LOCATION	MIDLAND, MICHIGAN
PROCUREMENT AGENT	GENERAL PHYSICS CORPORATION
INSTRUCTORS	NRC CERTIFIED
BUILDING	66,000 SQ FT
	CLASSROOMS
	LABORATORIES
	OFFICE SPACE
	VISITOR CENTER
	AVAILABLE OCTOBER 1981

PHASE A

ACADEMIC CLASSROOM TRAINING (TECHNICAL)

SUBJECT	APPROXIMATE HOURS OF INSTRUCTION
BASIC VALVES, PUMPS, HEAT EXCHANGERS	6
BASIC ELECTRICITY	8
ELECTRICAL/ELECTRONIC SAFETY	1
STEAM/WATER HAZARDS	1
BASIC CHEMISTRY, CHEMISTRY SAFETY	5
PRINT READING	3
BASIC (B&W) PWR MECHANICAL SYSTEM	8
TOTAL	32

PHASE B
REACTOR FUNDAMENTALS
PART 1

SUBJECT	APPROXIMATE HOURS OF INSTRUCTION
MATHEMATICS	28
CLASSICAL PHYSICS	13
NUCLEAR PHYSICS	23
ELECTRICITY	18
CHEMISTRY	15
RADIATION PROTECTION	23
HEAT TRANSFER	15
INSTRUMENTATION AND CONTROL	9
REACTOR THEORY	70
TOTAL INSTRUCTION	214
STUDY/REVIEW	144
WRITTEN EXAMINATIONS	41
TOTAL HOURS	399

PHASE B
REACTOR FUNDAMENTALS
PART 2

SUBJECT	APPROXIMATE NUMBER OF HOURS
Lectures on: Ford Nuclear Reactor, Reactor Physics Neutron Multiplicat. n, Reactor Kinetics, Reactor Core, Fuel Parameters and Operating Characteristics, Subcritical Multiplication, Control Rods, Xenon and Samarium, Reactor Operations, Nuclear Instrumentation and Control, Heat Transfer, Health Physics Theory, Operational Health Physics, and Radiation Shielding.	24
Experiments on: Reactor Startup, FNR Orientation, Subcritical Multiplication, Control Rod Calibration, Xenon Transient, Heat Transfer, Power Level Determination, Power Defect, Temperature Coefficient and Void Coefficient, Brittle Fracture, Radiation Shielding, and Reactor Flux Profile.	10
Reactor Operations including: Startup and Shutdowns, Period and Power Defect, Shutdown Margin and ECP, Shutdown Period and Subcritical Multiplication, and Reactivity Manipulations.	15
WRITTEN EXAMINATIONS	11
ORAL EXAMINATIONS	4
TOTAL	64

PHASE B
REACTOR FUNDAMENTALS
PART 3

SUBJECT	APPROXIMATE HOURS OF INSTRUCTION
VALVES, PIPING AND HEAT EXCHANGERS	6
HEAT EXCHANGE PROCESSES, FIRST AND SECOND LAWS OF THERMODYNAMICS, STEAM TABLES, ENERGY DISTRIBUTION OF THERMODYNAMICS SYSTEMS, HEAT TRANSFER, AND HEAT ENGINES	25
FLUID MECHANICS, BERNOULLIS EQUATION, CONCEPTS OF HEAD, HEAD LOSS, HEAD ADDED, AND HEAD REMOVED	10
METAL FATIGUE AND FAILURE (NDTT, ETC)	3
SUMMARY OF HEAT TRANSFER FOR REACTOR CONSIDERATIONS	8
TOTAL INSTRUCTION	52
STUDY/REVIEW	18
WRITTEN EXAMINATIONS	7

General Subject Areas	Approximate Instruction Hours
Primary Systems	44
Secondary and Process Steam Systems	75
Instrument and Control Systems	63
Electrical Systems	36
Safety and Protective Systems	45
Total Instruction	263 hours
Study/Review	127
Written and Oral Examinations	39
Total	429 hours

	SUBJECT MATTER EXPERTISE	OPERATING EXPERIENCE	RO LICENSE	SRO LICENSE
PHASE A		X		
PHASE B, Part I				
Math	X			
Classical Physics	X			
Nuclear Physics	X			
Chemistry	X			
Radiation Protection		X		
Electrical		X		
I&C		X		
Heat Transfer			X	
Reactor Theory			X	
PHASE B, Part II				X
PHASE B, Part III				
Heat Transfer			X	
PHASE C			X	
PHASE E				X
PHASE F				X
PHASE G				X
PHASE H				X
PHASE I		X		
PHASE J				X
FUEL HANDLING			X	
MITIGATING CORE DAMAGE				X
LEADERSHIP TRAINING	X			
Units 1 & 2 Differences and Interactions			X	

****

(1) Each catagory assumes the preceding.
For example, operating experience assumes subject matter expertise.

(2) All instructors to be evaluated by the Training Supervisor or his designee for instructional ability.

PHASE 4 Administrative/Operating/Emergency Procedures and Technical Specifications

The procedure section of this review series will be coordinated by the Midland Training staff and instructed by members of the Midland Plant staff and/or other personnel contracted specifically for that purpose.

The procedures portion is approximately two weeks in course length and will include the following general areas.

a. Administrative Procedures

1. General intent (Plant policy)
2. Operational requirements
3. Required reports.

b. Normal Operating Procedures

1. General intent
2. Method of accomplishment
3. Cautions and hazards.

c. Emergency Operating Procedures

1. General intent
2. Immediate actions
3. Supplementary course of action.

d. Emergency Plan Implementing Procedures

1. General intent
2. Immediate actions
3. Notifications and reports.

e. Off-Normal Procedures and Annunciator Alarm Lists

1. General intent
2. Operator action.

The technical specification segment of this phase will consist of approximately a one week course of training which will be coordinated by the Midland Training staff and instructed by members of the Midland Plant staff and/or other personnel contracted specifically for that purpose. The content of this training will be the review of the actual technical specifications for the Midland Plant.

PHASE I Plant Modifications, Changes, and
Operating Experience Feedback

This phase of training will be a continuing process, lasting throughout and becoming a part of the License Requalification program. Phase I will commence 90 days prior to the Nuclear Regulatory Commission operator licensing date. Applicable plant changes, modifications, and operating experience reports will be selected by the Plant technical and operating staffs in accordance with plant procedures and forwarded to the Training Supervisor for action. Items which do not require immediate feedback (<6 weeks) and do not lend themselves to formal presentations will normally be routed as required reading. Items which lend themselves to formal presentation and do not require immediate feedback will be presented as part of the License Requalification program lecture cycle. Items that require immediate feedback to the License operators will be covered as pre- or post-shift briefings as soon as practical, based on Plant operations in progress, availability of personnel, and the nature and safety significance of the material.

II.B.4
NR 0694

Information on anticipated plant conditions, available equipment, equipment locations, appropriate operating procedures, and parameter measurement will be presented in the following areas.

a. Core Cooling

b. Potentially Damaging Operating Conditions

c. Gas/Steam Binding

d. Recognizing Core Damage

e. Hydrogen Hazards During Severe Accidents

f. Monitoring Critical Parameters

g. Radiation Hazards and Radiation Responsibilities

h. Criteria for Operating and Cooling Mode Selection.

A special one week course in fuel handling will be held approximately six months prior to Nuclear Regulatory Commission License examinations The course content shall include the following areas.

a. Fuel Loading Procedures

b. Fuel Handling and Equipment Operation

c. Accidents and Hazards involved in the handling of new and spent fuel.