March 12, 1985

Docket No: 50-390

APPLICANT: Tennessee Valley Authority

FACILITY: Watts Bar Nuclear Plant, Unit 1

SUBJECT: SUMMARY OF MANAGEMENT SITE VISIT TO THE WATTS BAR NUCLEAR PLANT, UNIT 1

On March 4 and 5, 1985, representatives of the NRC and TVA met to discuss the readiness of Unit 1 of the Watts Bar facility to load fuel. Attendees are listed in Enclosure (1).

On March 4, 1985, the staff met with TVA at the TVA simulator to run through two accident scenarios. Although the staff felt that the operating crew identified the accident situations well, concern was expressed that the crew were not clearly notifying each other of their actions, particularly during the non-accident part of the scenarios.

On March 5, 1985, the staff met with TVA at the Watts Bar site to tour the facility and discuss operational readiness. The agenda and TVA's presentation are attached as Enclosure (2). During the discussion, TVA announced that due to a need to complete work on their surveillance instructions as well as complete certain work on the facility, the fuel load date was going to be slipped four weeks. Based upon the tour, and subsequent discussions, the staff agreed with TVA's decision to change the fuel load date.

Thomas J. Kenyon, Project Manager
Licensing Branch No. 4
Division of Licensing

Enclosures:
As stated
See '83 Reports

DESIGNATED ORIGINAL
Certified By Angela Hatton

DL:LB #4
TKenyon
3/12/85

DL:LB #4
EAdensam
3/12/85

WATTS BAR

Mr. H. G. Parris
Manager of Power
Tennessee Valley Authority
500A Chestnut Street, Tower II
Chattanooga, Tennessee 37401

cc: Herbert S. Sanger, Jr., Esq.
General Counsel
Tennessee Valley Authority
400 West Summit Hill Drive, E 11B 33
Knoxville, Tennessee 37902

Mr. D. Checcet
Westinghouse Electric Corporation
P.O. Box 355
Pittsburgh, Pennsylvania 15230

Mr. Ralph Shell
Tennessee Valley Authority
400 Chestnut Street, Tower II
Chattanooga, Tennessee 37401

Mr. Donald L. Williams, Jr.
Tennessee Valley Authority
400 West Summit Hill Drive, W10B85
Knoxville, Tennessee 37902

Resident Inspector/Watts Bar NPS
c/o U.S. Nuclear Regulatory
Commission
Rt. 2 - Box 300
Spring City, Tennessee 37381

Ms. K. Mali
Tennessee Valley Authority
400 Chestnut Street, Tower II
Chattanooga, Tennessee 37401

J. Nelson Grace, Regional Administrator
U.S. Nuclear Regulatory Commission,
Region II
101 Marietta Street, N.W., Suite 2900
Atlanta, Georgia 30323

Mr. David Ellis
Tennessee Valley Authority
400 Chestnut Street, Tower II
Chattanooga, Tennessee 37401

Mr. Mark J. Burzynski
Tennessee Valley Authority
Watts Bar NP
P.O. Box 800
Spring City, Tennessee 37381

Enclosure (1)

WATTS BAR MANAGEMENT SITE VISIT

MARCH 5, 1985

NAME	AFFILIATION
E. G. Adensam	NRC
T. J. Kenyon	NRC
S. P. Weise	NRC, Region II
J. N. Grace	Regional Administrator, NRC
M. Shymlock	NRC, SRI
W. T. Cottle	Site Director
R. Norman	WBN - Operations
George Dilworth	Director Eng. & Tech. Services-TVA
J. Edward Gibbs	TVA - Site Services Manager
J. W. Hufham	TVA - Manager Licensing
M. S. Willis	TVA - Ops. & Eng. Supt. - WBNP
Bob Bryan	TVA - Office of Eng.-Supv. Nuclear Analy.
R. T. Wimbrow	TVA - Office of Eng.-Fire Prot. Staff
H. L. Thompson, Jr.	NRC, NRR
L. F. Blankner	WBN - Site Services
W. V. Johnston	NRC - NRR, Div. of Eng.
R. M. Bernero	NRC, NRR - Div. Sys. Int.
D. L. Ziemann	NRC - NRR - DHFS
J. D. Collins	TVA - PMO - WBN
R. C. McKay	TVA - PMO - WBN
Don L. Williams	TVA - Office of Engr. - NEB
Douglas W. Wilson	TVA - Design Services Mgr. - WBN
H. B. Bounds	TVA - Plant Support (Maint.)

MEETING SUMMARY DISTRIBUTION

Docket No(s): 50-390
NRC PDR
Local PDR
NSIC
PRC System
LB #4 r/f
Attorney, OELD
E. Adensam
Project Manager T. Kenyon
Licensing Assistant M. Duncan

NRC PARTICIPANTS w/o encl.

E. Adensam
T. Kenyon
W. Weise
J. Grace
M. Shymlock
W. Cottle
R. Norman
G. Dilworth
J. Gibbs
J. Hufham
M. Willis
B. Bryan
R. Wimbrow
H. Thompson, Jr.
L. Blankner
W. Johnston
R. Bernero
D. Ziemann
J. Collins
R. McKay
D. Williams
D. Wilson
H. Bounds

DESIGNATED ORIGINAL
Certified By Angela Hatter

bcc: Applicant & Service List

50-390

SUMMARY OF MANAGEMENT SITE VISIT TO THE WATTS BAR NUCLEAR PLANT, UNIT I.

Dkt: 50-390
Ctrl: 8503200561
Date: 3/12/85 of Document:
REGULATORY DOCKET FILE

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DEADLINE RETURN DATE _____

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RECORDS FACILITY BRANCH

WATTS BAR NUCLEAR PLANT

NRC ONRR MANAGEMENT SITE VISIT

MARCH 05, 1985

Enclosure (2)

WATTS BAR NUCLEAR PLANT

NRC ONRR MANAGEMENT SITE VISIT

MARCH 5, 1985

8:00 a.m.	MEET IN FIELD SERVICES BUILDING CONFERENCE ROOM
8:15 a.m.	PLANT TOUR
11:30 a.m.	LUNCH
12:15 p.m.	INTRODUCTION
	FACILITY MAINTENANCE PROGRAM
	ORGANIZATION, STAFFING, AND TRAINING
	OPERATIONAL EXPERIENCE
	OPERATIONAL READINESS
	FACILITY PROGRAMS
	- Electrical Environmental Qualification - Fire Protection - Physical Security
	MAIN STEAMLINE BREAK
	CERTIFICATION OF TECHNICAL SPECIFICATIONS
3:30 p.m.	DEPART SITE

FACILITY MAINTENANCE PROGRAM

WATTS BAR NUCLEAR PLANT
FACILITY MAINTENANCE PROGRAM

ORGANIZATION

- STANDARD TWO-UNIT PWR ORGANIZATION (SQN/WBN)
  - PROPOSED STAFF (TWO-UNIT)--484 (ANNUAL)
- CURRENT STAFF
  - ANNUAL--314
  - HOURLY--170
- REFUELING OUTAGES
  - SUPPLEMENT STAFF WITH ADDITIONAL HOURLY

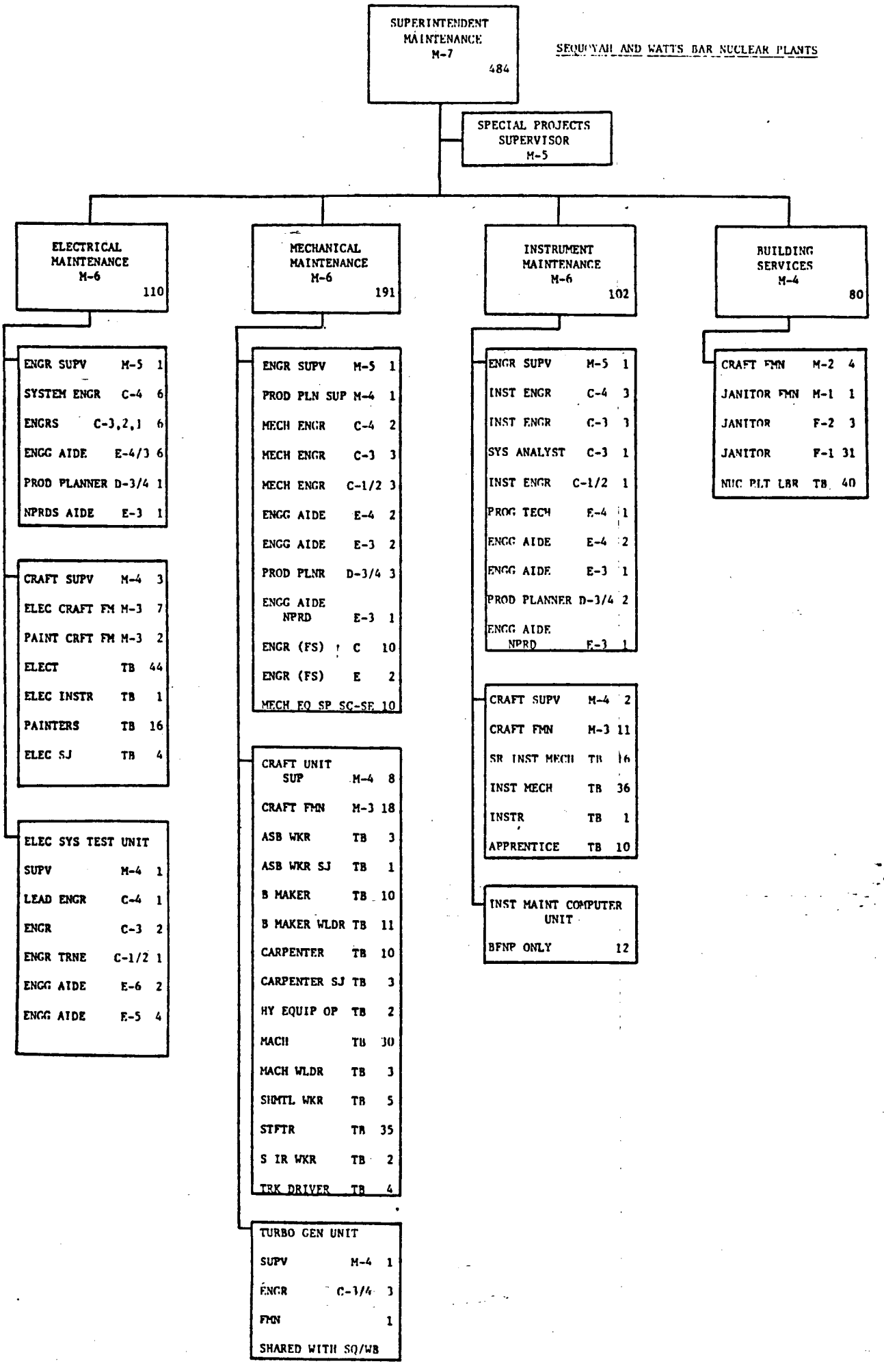
PROGRAM

- NQAM, PART II, SECTION 2.1--PLANT MAINTENANCE
  - DEFINES REQUIREMENTS
- PLANT IMPLEMENTING PROCEDURES
  - ADMINISTRATIVE INSTRUCTIONS (AI)
  - SECTION INSTRUCTION LETTERS (SIL)
  - MAINTENANCE INSTRUCTIONS (MI)
  - SPECIAL MAINTENANCE INSTRUCTIONS (SMI)
- CORRECTIVE MAINTENANCE
  - MAINTENANCE REQUEST (MR)
    - QA REVIEW (CSSC)
    - MIs
    - SMIs
    - STEAR
- PREVENTIVE MAINTNENANCE
  - ROUTINE SERVICING
  - UTILIZE MI FOR COMPLICATED INSTRUCTIONS

FACILITY MAINTENANCE PROGRAM

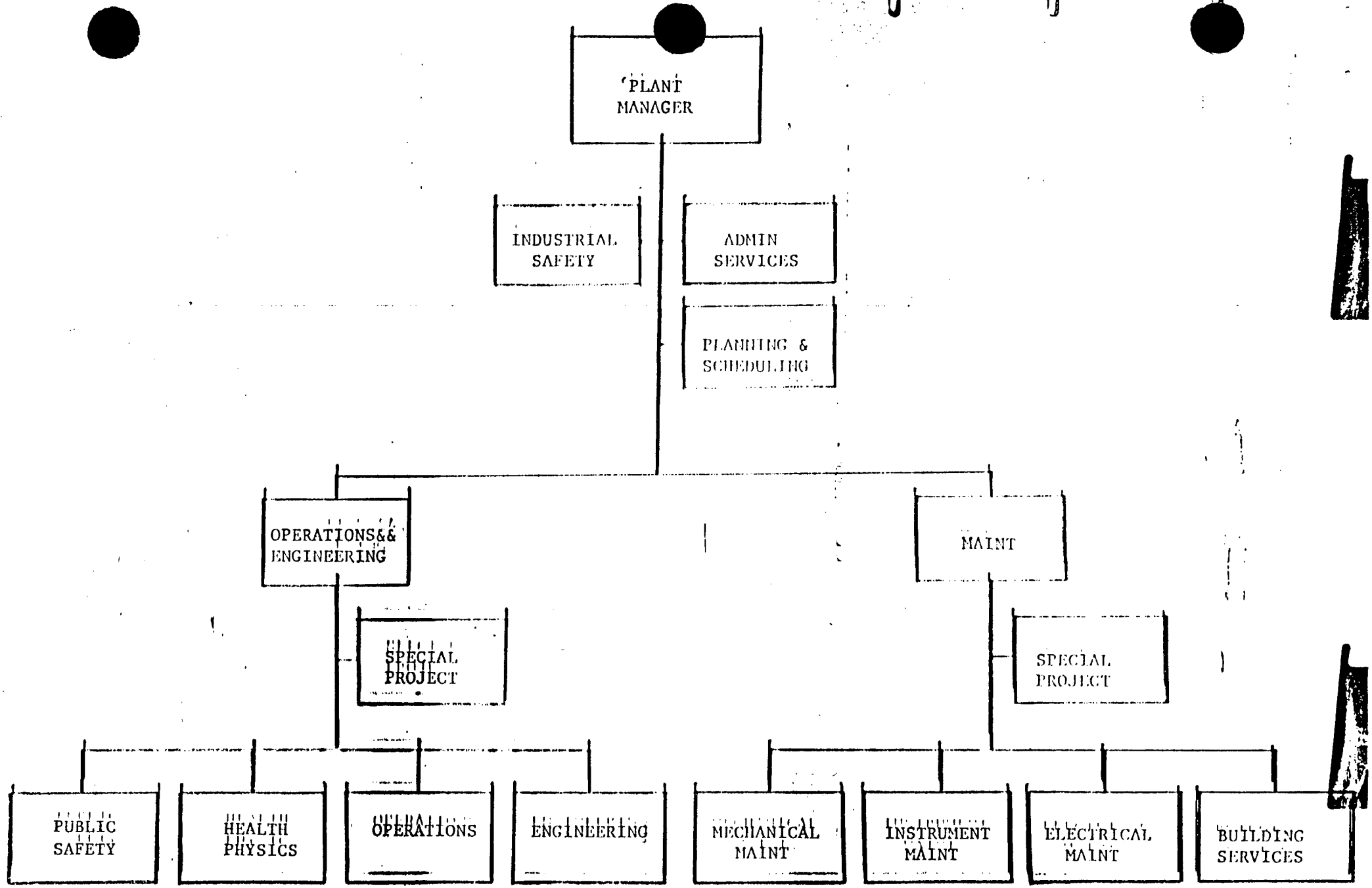
- PLANNING AND SCHEDULING MAINTNENANCE
  - LONG TERM--PLANNING AND SCHEDULING STAFF--P2
  - DAILY ACTIVITIES--PLANNERS/OPERATIONS
    - TWO DAILY MEETINGS
  - PLANT PROCESS EQUIPMENT
    - OPERATIONS DETERMINES PRIORITY
- EQUIPMENT HISTORY
  - MR
  - NPRD
    - QUARTERLY REVIEW
      - REPETITIVE FAILURES
      - GENERIC FAILURES
  - VENDOR INFORMATION
  - INDUSTRY EXPERIENCE
  - NRC NOTICES, CIRCULARS, BULLETINS
- SIGNIFICANT CORRECTIVE/PREVENTIVE MAINTENANCE
  - ERCW PUMP SHAFT REPLACEMENT
  - ERCW MOTOR ANTI-REVERSING DEVICE MODIFICATION
  - CCS HEAT EXCHANGER TUBE REPLACEMENT
  - LIMITORQUE OPERATOR MAINTENANCE
  - COMMON STATION SERVICE TRANSFORMER REPAIR
  - 500-kV CURRENT TRANSFORMER REPLACEMENT
  - H_2 ANALYZER INSTALLATION
  - SEAL TABLE CONNECTOR CHANGEOUT
  - MSR REPAIR
  - SECONDARY SIDE VALVE MAINTENANCE

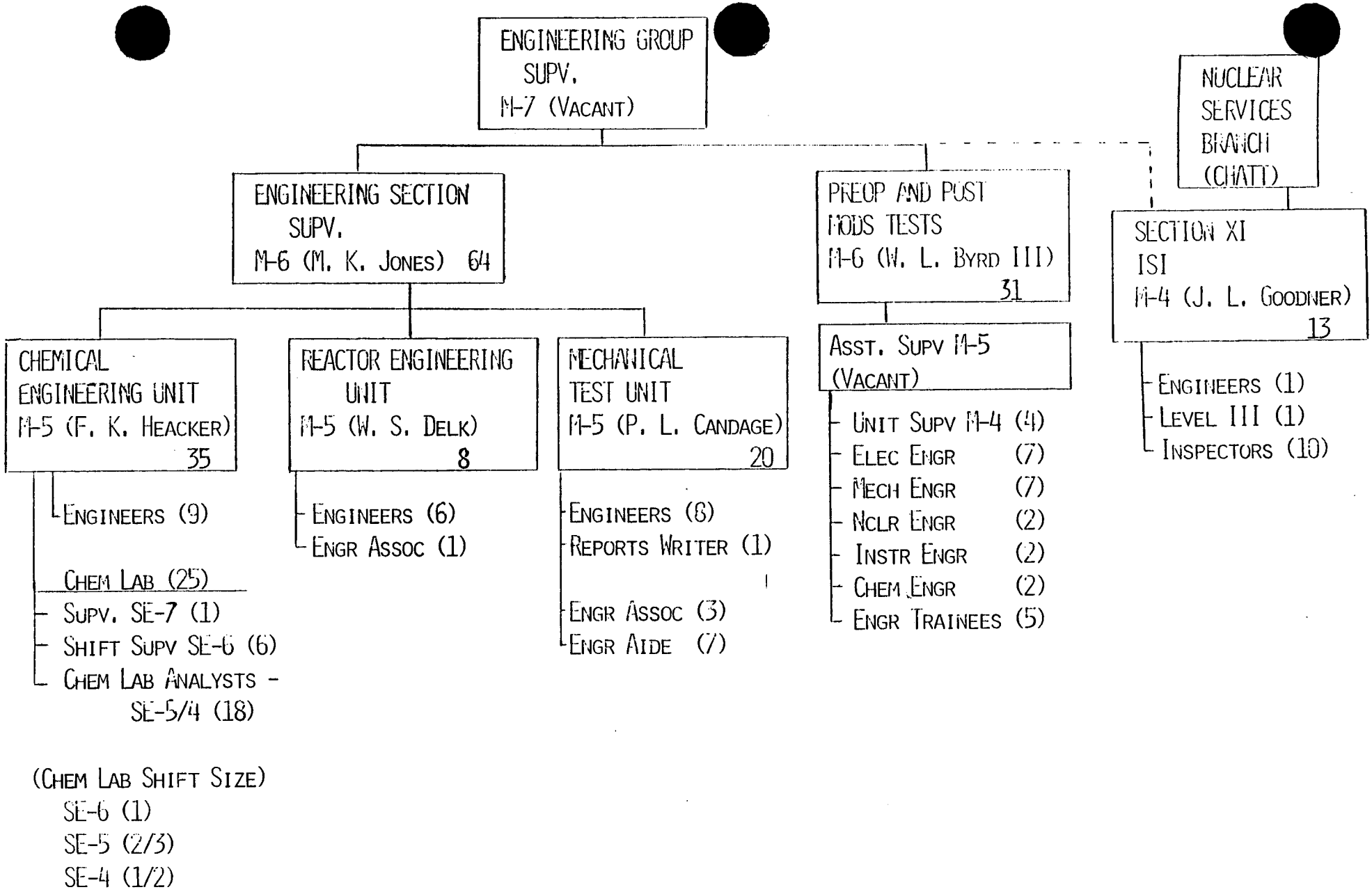
SEQUOYAH AND WATTS BAR NUCLEAR PLANTS

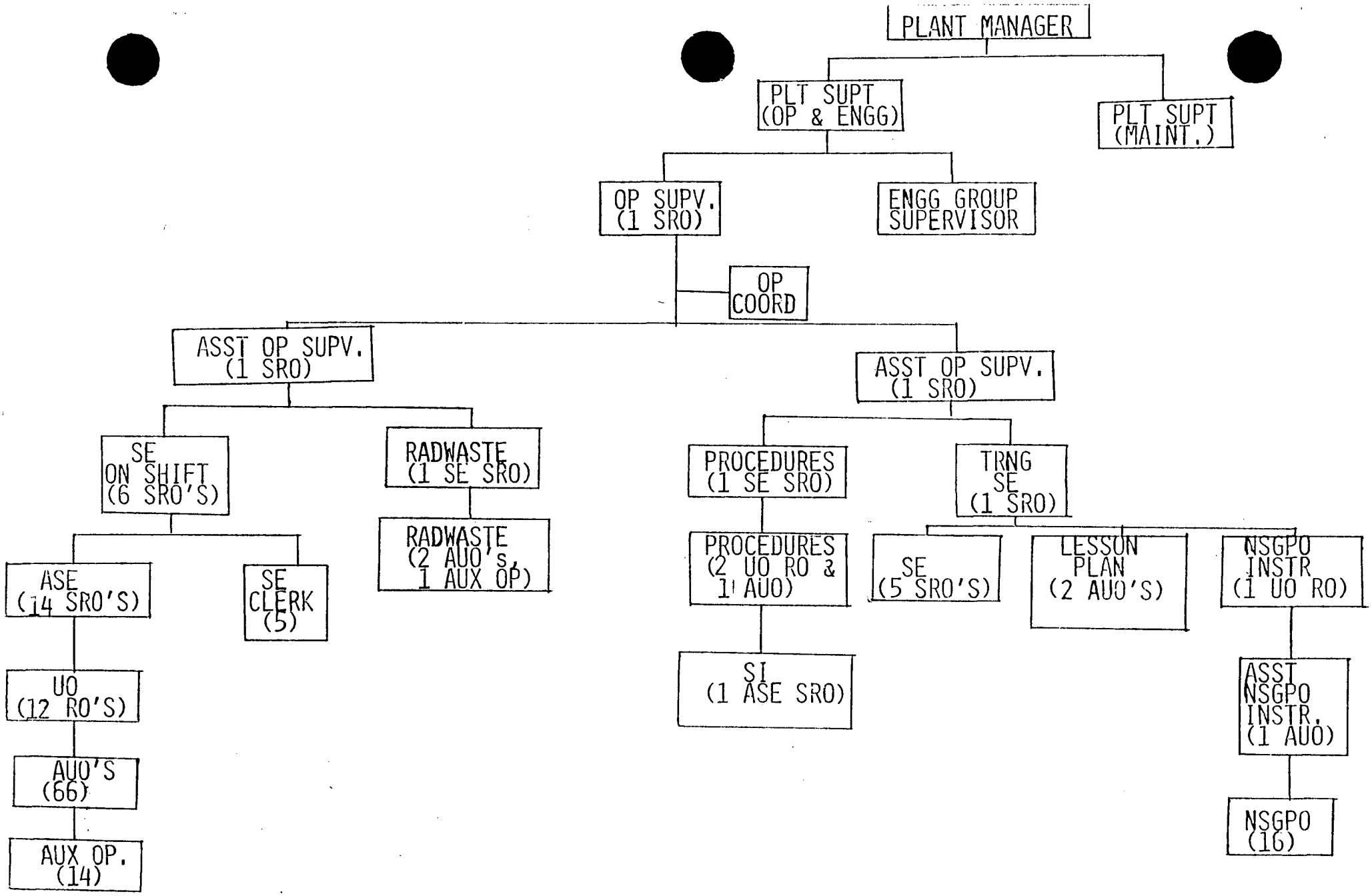


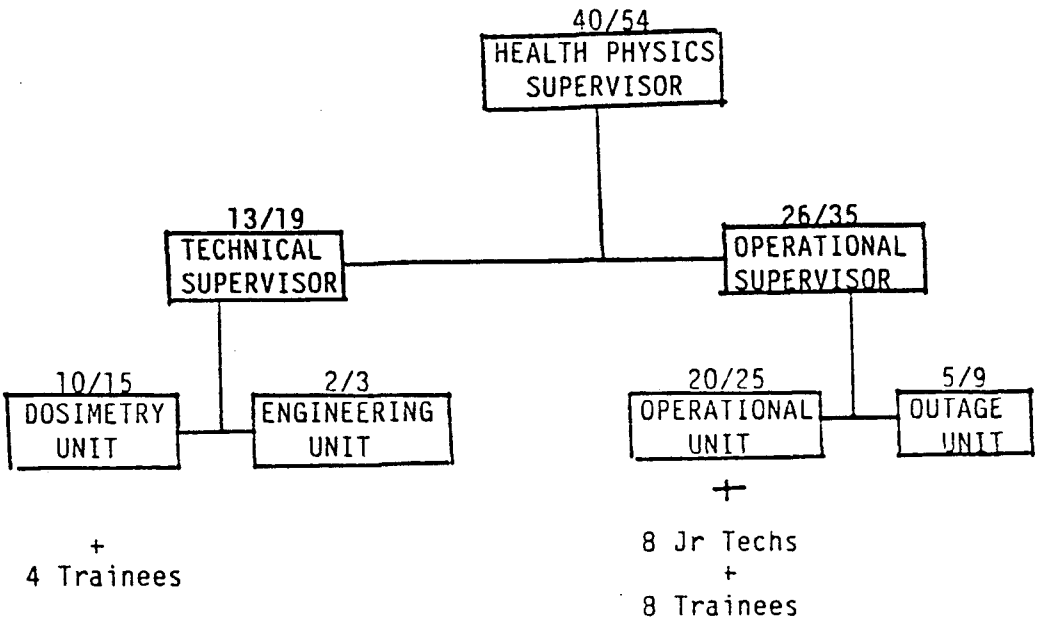
ORGANIZATION, STAFFING, AND TRAINING

PLANT STAFF ORGANIZATION




ENGINEERING GROUP SUPV.
M-7 (VACANT)
NUCLEAR SERVICES BRANCH (CHATT)
ENGINEERING SECTION SUPV.
M-6 (M. K. JONES) 64
PREOP AND POST MODS TESTS
M-6 (W. L. BYRD III) 31
SECTION XI ISI
M-4 (J. L. GOODNER) 13
CHEMICAL ENGINEERING UNIT
M-5 (F. K. HEACKER) 35
REACTOR ENGINEERING UNIT
M-5 (W. S. DELK) 8
MECHANICAL TEST UNIT
M-5 (P. L. CANDAGE) 20
ASST. SUPV M-5 (VACANT)
ENGINEERS (1)
LEVEL III (1)
INSPECTORS (10)
ENGINEERS (9)
CHEM LAB (25)
SUPV. SE-7 (1)
SHIFT SUPV SE-6 (6)
CHEM LAB ANALYSTS - SE-5/4 (18)
ENGINEERS (6)
ENGR ASSOC (1)
ENGINEERS (8)
REPORTS WRITER (1)
ENGR ASSOC (3)
ENGR AIDE (7)
UNIT SUPV M-4 (4)
ELEC ENGR (7)
MECH ENGR (7)
NCLR ENGR (2)
INSTR ENGR (2)
CHEM ENGR (2)
ENGR TRAINEES (5)
(CHEM LAB SHIFT SIZE)
SE-6 (1)
SE-5 (2/3)
SE-4 (1/2)


PLANT MANAGER
PLT SUPT (OP & ENGG)
PLT SUPT (MAINT.)
OP SUPV. (1 SRO)
ENGG GROUP SUPERVISOR
OP COORD
ASST OP SUPV. (1 SRO)
ASST OP SUPV. (1 SRO)
SE ON SHIFT (6 SRO'S)
RADWASTE (1 SE SRO)
PROCEDURES (1 SE SRO)
TRNG SE (1 SRO)
ASE (14 SRO'S)
SE CLERK (5)
RADWASTE (2 AUO's, 1 AUX OP)
PROCEDURES (2 UO RO & 1 AUO)
SE (5 SRO'S)
LESSON PLAN (2 AUO'S)
NSGPO INSTR (1 UO RO)
UO (12 RO'S)
SI (1 ASE SRO)
ASST NSGPO INSTR. (1 AUO)
AUO'S (66)
NSGPO (16)
AUX OP. (14)



HEALTH PHYSICS STAFF

ACTUAL/AUTHORIZED

February 27, 1985

PERSONNEL

HEALTH PHYSICS STAFF

SUPERVISORS (9)

EDUCATION: 3 B.S.
2 A.S.

EXPERIENCE: 97.2 YEARS COMMERCIAL NUC PR
17 YEARS NAVAL NUCLEAR (ELT)
41.5 YEARS NUCLEAR SHIPYARD
26.6 YEARS NATIONAL LAB AND OTHER

182.3 YEARS

OPERATIONAL TECHNICIANS (27) 19 ANSI N18.1 + 8 JR TECHS

EDUCATION: 10 B. S.
3 A. S.
15.6 YEARS POST SECONDARY

EXPERIENCE: 50.5 YEARS COMMERCIAL NUC PR
28.5 YEARS NAVAL NUCLEAR (ELT)
50.5 YEARS NUCLEAR SHIPYARD
29 YEARS NATIONAL LAB AND OTHER

158.5 YEARS

TECHNICAL PERSONNEL (12)

EDUCATION: 3 B. S.
4 A. S.

EXPERIENCE: 15 YEARS COMMERCIAL NUC PR
24 YEARS LAB AND OTHER

39 YEARS

TOTAL MAN-YEARS EXPERIENCE 379.8

TRAINING

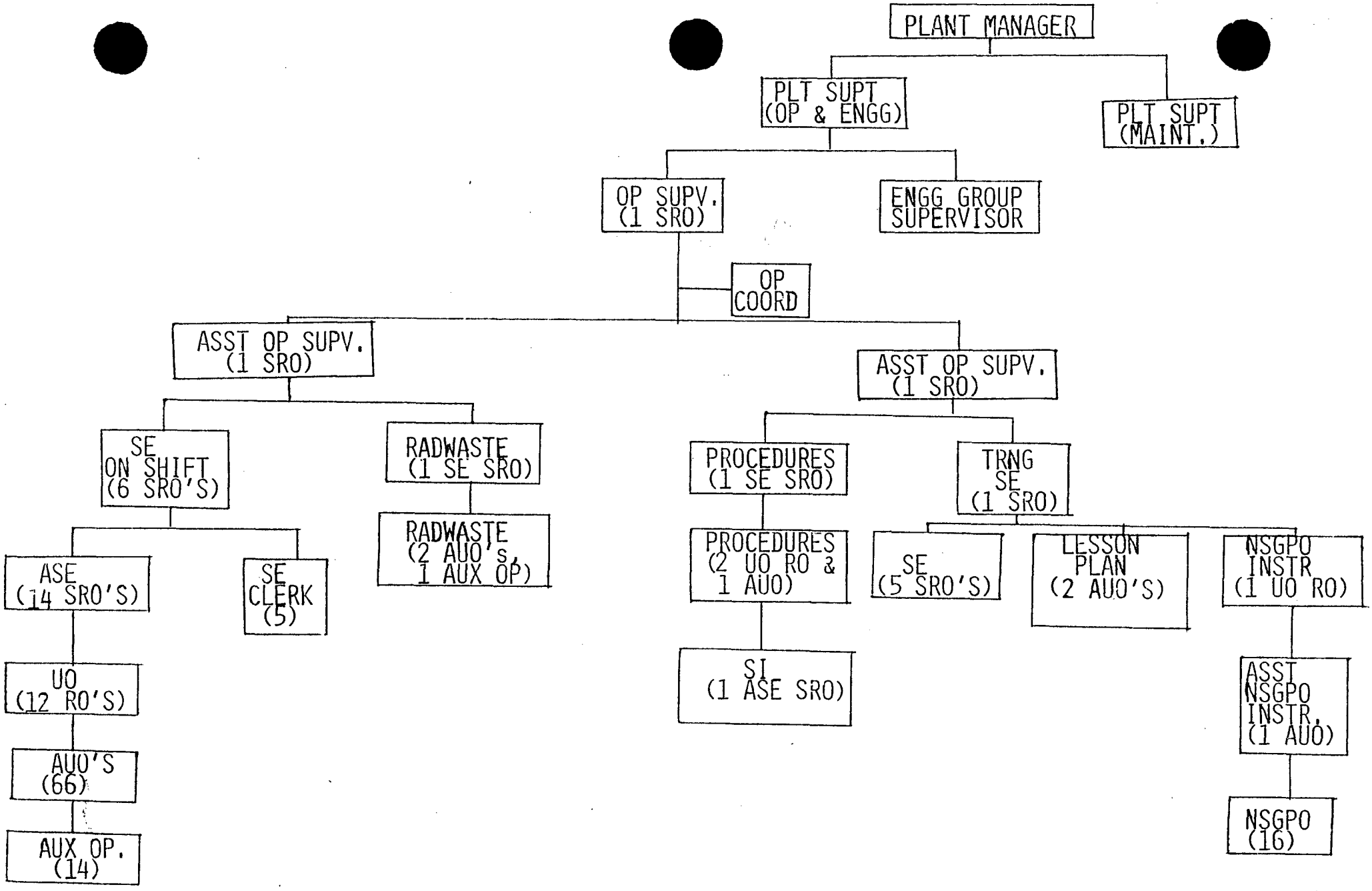
- INPO ACCREDITATION OF THE FOLLOWING TRAINING PROGRAMS IS EXPECTED IN 1985.

- SEQUOYAH PROGRAMS (EXCEPT ELECTRICAL AND MECHANICAL MAINTENANCE) ARE INPO ACCREDITED. WBNP PROGRAMS ARE NEARLY IDENTICAL.

  - INSTRUMENTATION AND CONTROLS TECHNICIAN (I&C)
  - HEALTH PHYSICS TECHNICIAN (HP)
  - RADICHEMICAL LABORATORY ANALYST (RLA)
  - NONLICENSED OPERATORS (AUO)
  - LICENSED OPERATORS (SRO/RO)
  - OPERATOR REQUAL
  - SHIFT TECHNICAL ADVISOR (STA)
  - MANAGERS AND ENGINEERS SRO CERTIFICATION
  - ELECTRICAL MAINTENANCE
  - MECHANICAL MAINTENANCE

NOTE: NUMARC RECOMMENDATION IS TO COMPLETE INPO ACCREDITATION WITHIN TWO YEARS OF FUEL LOADING.

OPERATIONAL EXPERIENCE


PLANT MANAGER
PLT SUPT (OP & ENGG)
PLT SUPT (MAINT.)
OP SUPV. (1 SRO)
ENGG GROUP SUPERVISOR
OP COORD
ASST OP SUPV. (1 SRO)
ASST OP SUPV. (1 SRO)
SE ON SHIFT (6 SRO'S)
RADWASTE (1 SE SRO)
PROCEDURES (1 SE SRO)
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ASE (14 SRO'S)
SE CLERK (5)
RADWASTE (2 AUO's, 1 AUX OP)
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SE (5 SRO'S)
LESSON PLAN (2 AUO'S)
NSGPO INSTR (1 UO RO)
UO (12 RO'S)
SI (1 ASE SRO)
ASST NSGPO INSTR. (1 AUO)
AUO'S (66)
NSGPO (16)
AUX OP. (14)

OPERATIONS SECTION SUPERVISORS

	FOSSIL OPERATIONAL EXPERIENCE	NUCLEAR OPERATIONAL EXPERIENCE	TOTAL OPERATIONAL EXPERIENCE	AVERAGE
OPS. SUPVS. (4)	48 YRS.	51 YRS.	100 YRS.	25 YRS.
SE/ASE (29)	69 YRS.	269 YRS.	339 YRS.	12 YRS.
UO (19)	10 YRS.	114 YRS.	124 YRS.	7 YRS.
EXPERIENCED SRO'S (9)	73 YRS.	106 YRS.	179 YRS.	20 YRS.

OPERATIONAL READINESS

INDEPENDENT REVIEWS OF WBN UNIT 1

FOR READINESS TO LOAD FUEL

Office of Quality Assurance

Nuclear Safety Review Staff

WATTS BAR NUCLEAR PLANT - UNIT 1

ITEMS EVALUATED TO PREPARE

READINESS TO LOAD FUEL MEMO

I. Outstanding Work Items

A. 10 CFR 50 Appendix R

B. Critical Safety System Components (CSSC) and Non CSSC

C. Temporary Alterations and Interfaces

D. Operational Instructions (EOIs, SOIs, SIs)

II. Preoperational Testing

III. 10 CFR 50.55(e) Reports (Construction Deficiency Reports)

I. OUTSTANDING WORK ITEMS

A. 10 CFR 50 APPENDIX R

Item	Remaining Quantity	Schedule
1. Hangers	107	3/10/85
2. Conduit Wrap	5400 FT	Before Mode 3
3. Cable Tray Wrap	825 FT	Before Mode 3
4. Fire Detectors	RB complete and Preop tested	
Valve Room & Pipe Chase - 52		Before IC
5. Fire Doors		Before FL

I OUTSTANDING WORK ITEMS

B. CSSC ITEMS

OWIL #	Description	Completion Schedule
ECN 2351	Additional Diesel Generator Unit (ADGU)	U2 FL
ECN 4594	Complete HVAC controls work in LLRW drywaste compactor building	field complete
ECN 4816	Add temperature switch on auxiliary building standby HVAC coolers	3rd qtr of 1985
ECN 4884	VHF Radio and Paging (radio equipment is scheduled for delivery 3/13/85)	IC
ECN 4978	Spray shields on hydrogen igniters in upper compartments	
ECN 5070 and 5355	Technical Support Center (TSC) and Safety Parameter Display System (SPDS)	1st U1 refueling
PT-18279	Terminate cables for reactor vent and condenser vacuum vent radiation monitors to the TSC computers	1st U1 refueling
ECN 5246	Reanalyze RHR relief valve discharge lines inside containment	3/10/85
ECN 5320	Modify Foxboro racks for addition of automatic low power feedwater control	U1 FL
NUREG 0612 FS-439 ECN 4411	Replacement and/or upgrade of cranes, slings and other lifting devices	1st U1 refueling

PREOP PROGRAM SUMMARY

184 PREOPERATIONAL TEST IDENTIFIED BY TVA TO BE BEFORE FUEL LOAD

REMAINING WORK

21 TESTS TESTING COMPLETE IN THE APPROVAL CYCLE

10 TESTS WITH OPEN ITEMS REMAINING THAT WILL BE COMPLETE PRIOR TO FUEL LOAD

14 TESTS IDENTIFIED IN THE READINESS TO LOAD FUEL LETTER

3 TESTS TO BE ADDED TO THE LETTER

III 10 CFR 50.55(e) REPORTS (CDRs)

Item No.	Description	Completion Schedule
WBN MEB8107 et al	NUREG 0588 - Environmental qualification of electrical equipment (1) cable qualification	11/30/85
WBN NEB 8208	Accuracy problems with RCS wide range pressure transmitter	FL
WBN NEB 8335	Error in peak containment temperature analysis	4th qtr 1985
WBN NEB 8403	Error in the Westinghouse main steam valve room temperature analysis	6/14/85 (final report)
5760, 5761 WBN MEB 8422 WBN MEB 8430	10 CFR 50, Appendix R specifications were not met	U1 IC
WBN EEB 8425	Field wiring that terminates within the housing of 2 solenoid valves has insulation which is not qualified for temperatures it might experience.	9/13/85

FACILITY PROGRAMS

ENVIRONMENTAL QUALIFICATION

I. SCOPE AND SCHEDULE

II. INITIAL QUALIFICATION

A. STATUS

1. EEEQR

REVISED - 12/84
SUPPLEMENTED - 2/85
FOLLOWUP: - REMAINING EQSs BY INITIAL CRITICAL
FINAL REVISION BY 3 MONTHS AFL

2. HARDWARE

TOTAL DEVICES: 2400 SPECIFIC DEVICES
13 GENERIC COMPONENTS (CABLE, SEALS, CONDUIT, ETC.)

BEFORE FUEL LOAD (ALL MATERIALS ARE ONSITE)

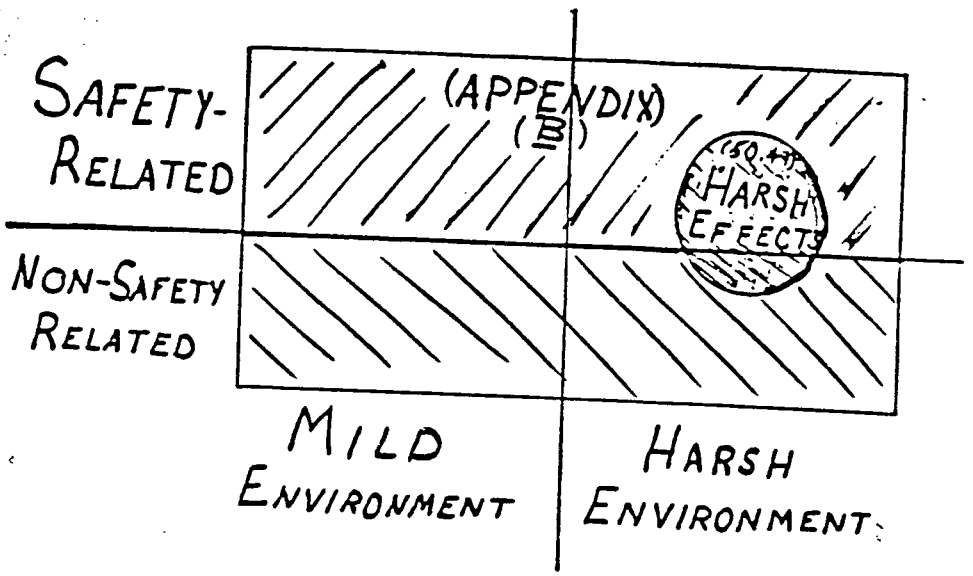
INCORE THERMOCOUPLE SYSTEM - 1-1/2 WEEKS
ABGTS, EGTS, HEATER CONTROLS - 1 WEEK
CONTAINMENT PRESSURE TRANSMITTERS - APPROVAL + 4 DAYS

AFTER FUEL LOAD

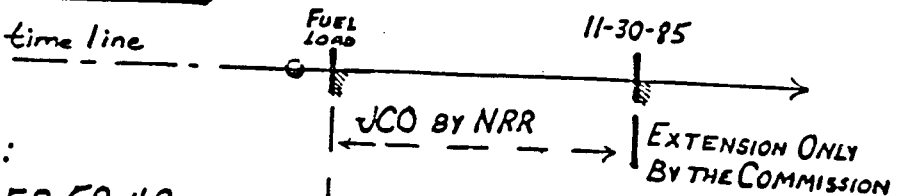
MSLB, INSIDE AND OUTSIDE CONTAINMENT
GENERIC CABLE QUALIFICATIONS
DOW CORNING RTV (PROTECTIVE COATING)
INCORE THERMOCOUPLE SYSTEM
MP&L CIRCUIT BREAKER TEST DEFICIENCY

III. MAINTENANCE OF QUALIFICATION

SCOPE OF QUALIFICATIONS



REQUIREMENT:



BASIS:

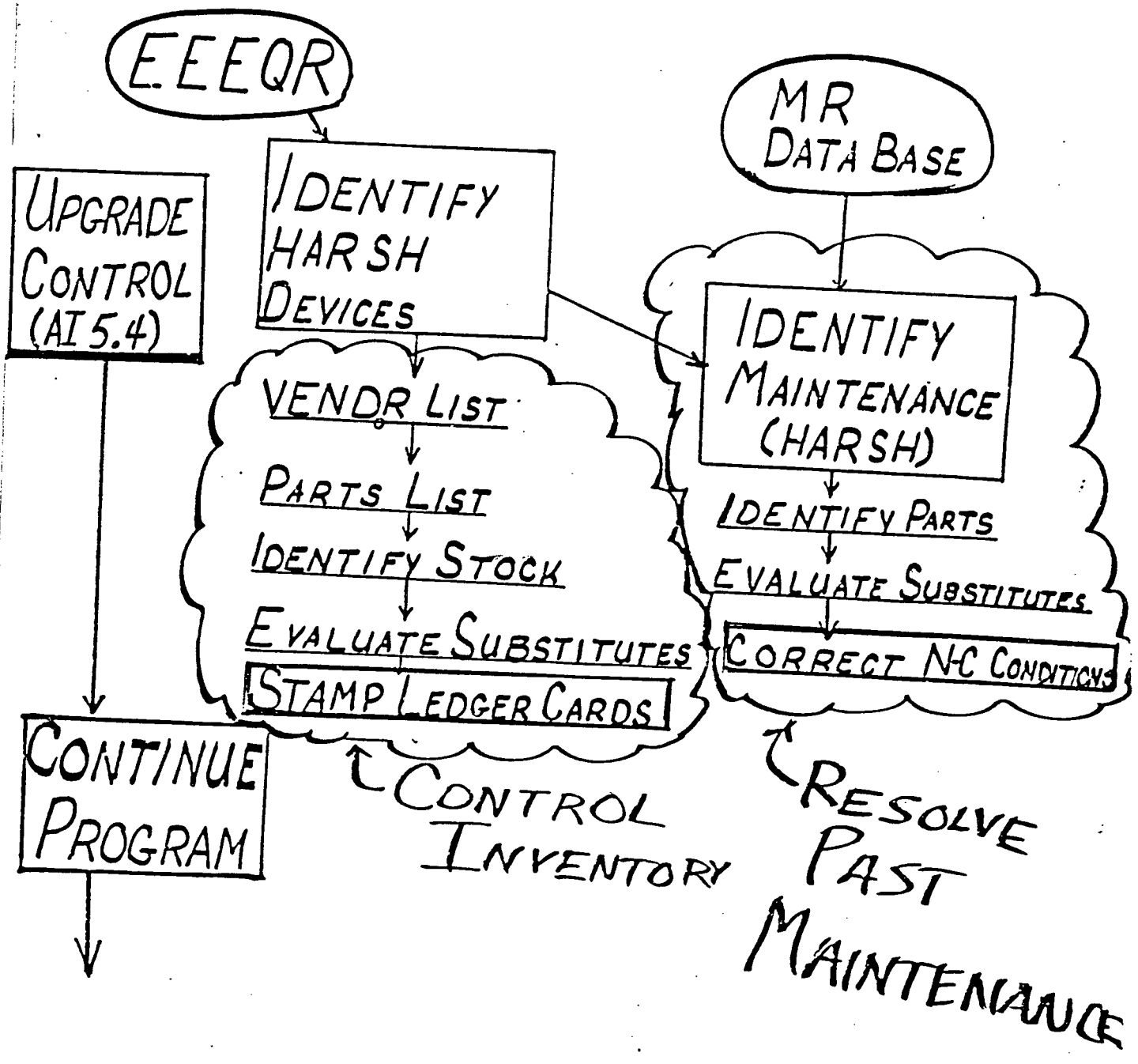
- 10 CFR 50.49
- FSAR/SER 3.11

PROGRAM OBJECTIVES

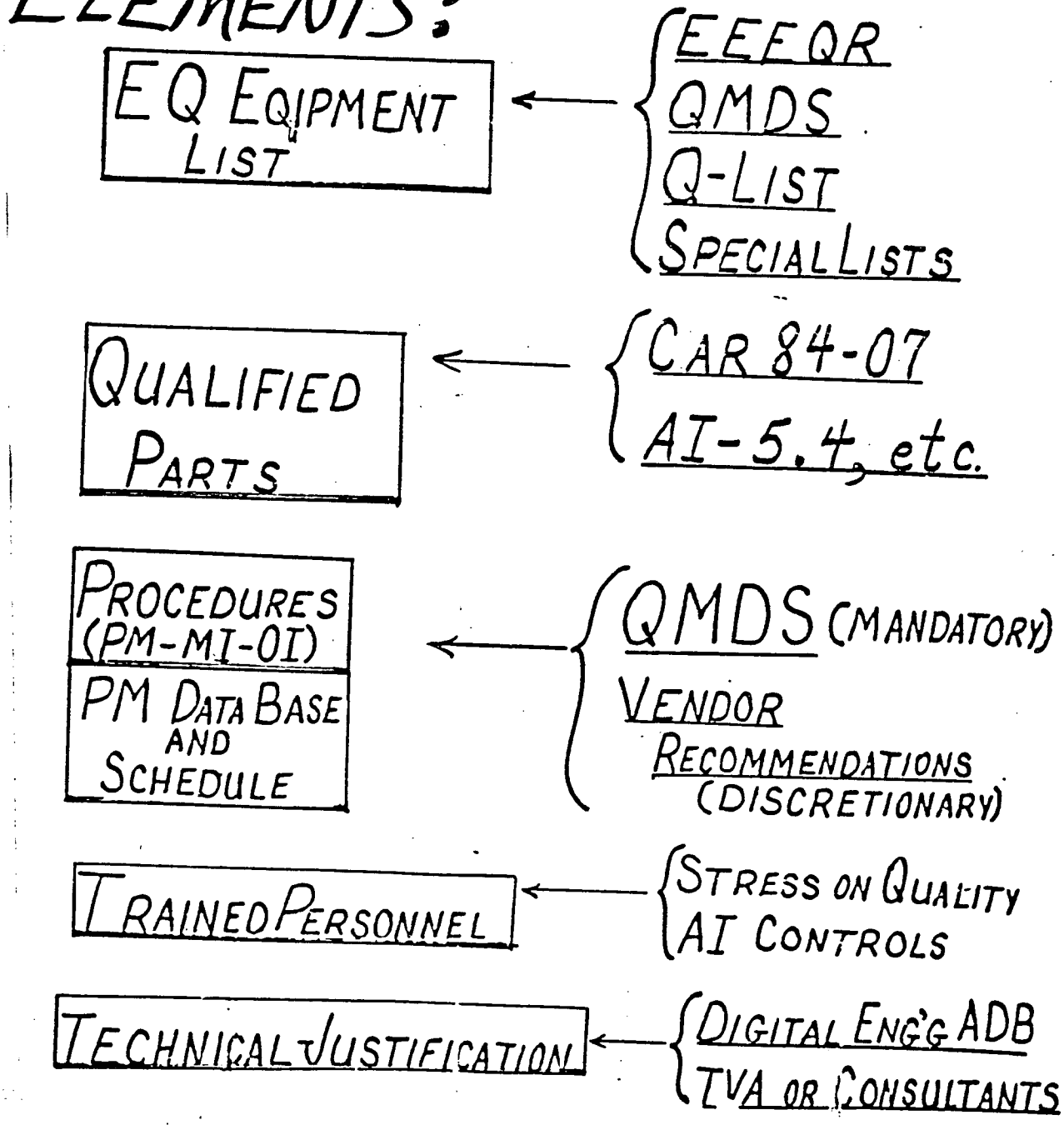
	DEADLINE
EEEQR - STATUS REPORT	• 2-15-85
• JUSTIFY ANY EXTENSIONS (JCO)	
INITIAL INSTALLATION -	• FUEL LOAD-DATE
• VERIFIED AGAINST EEEQR	
QMDS - INITIAL ISSUE	• 2-15-85
• SEVERAL EXCEPTIONS - BFL	
INITIAL PMs	• BFL
PREVIOUS MAINTENANCE	* • CAR 84-07
PROCUREMENT	* • CAR 84-07

* INITIATED AN ONGOING PROGRAM

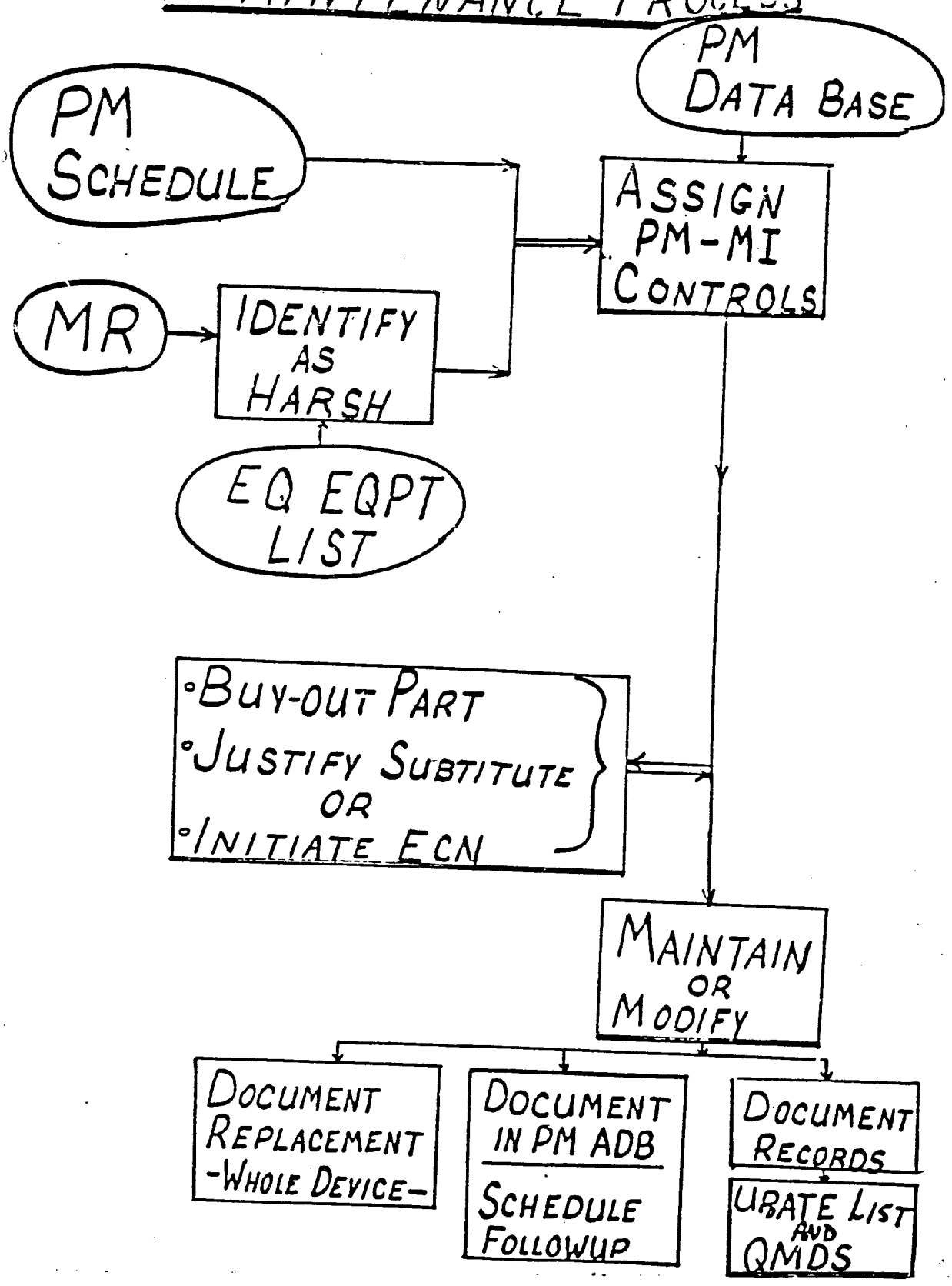
CAR 84-07


EEEQR
MR DATA BASE
UPGRADE CONTROL (AI 5.4)
IDENTIFY HARSH DEVICES
VENDR LIST
PARTS LIST
IDENTIFY STOCK
EVALUATE SUBSTITUTES
STAMP LEDGER CARDS
IDENTIFY MAINTENANCE (HARSH)
IDENTIFY PARTS
EVALUATE SUBSTITUTES
CORRECT N-C CONDITIONS
CONTINUE PROGRAM
CONTROL INVENTORY
RESOLVE PAST MAINTENANCE

MAINTENANCE PROGRAM ELEMENTS:



MAINTENANCE PROCESS



PROCUREMENT CONTROLS

- **PROCUREMENT** (AIs 5.1, 5.8)

PREPARE REQUISITION → CLASSIFY HARSH OR MILD ← EQ EQP. LIST

(TESTED By TVA) — (By VENDOR)

- SPECIFY IDENTICAL DEVICE

(HARSH)
- TECHNICAL RQMTS (AI 5.8 - Att A, B, C, D)
- QA REQUIREMENTS (N-QAM)
- TECHNICAL REVIEW

(MILD)
- TECHNICAL RQMTS (AI 5.8 - Att C, D, E)
- QA REQUIREMENTS (N-QAM)

- **BID AWARD** (AI 5.1) Rev 6) – JUSTIFY EXCEPTIONS, SUBSTITUTIONS

- **RECEIPT** (AI 5.2) – INSPECT TO { TVA REQUIRENTS (AI 5.2) / VENDOR RECOMMENDATIONS
  - LABEL WITH CONTRACT No., RECEIPT DATE
  - STAMP LEDGER CARDS
- **STORE** – SATISFY TVA (AI 5.6) + VENDOR

- **ISSUE**

IDENTIFY EQ APPLICATION ← EQ EQPT LIST

MILD | HARSH

VERIFY QA QUALIFICATIONS — VERIFY LEDGER CARD (JUSTIFY SUBSTITUTIONS) → MARK LEDGER CARDS

RECORD TRACEABILITY (CONTRACT No, RECPT DATE)

- ISSUE PART

TOPICS OF DISCUSSION

- Nature of the Appendix R Problems
- Resolution of the Appendix R Problems
- Appendix R Deviation Requests
- Impact of Appendix R Problems
- Status of Appendix R Modifications
- Status of Miscellaneous Fire Protection Issues

WBN APPENDIX R PROBLEMS IDENTIFIED BY TVA

- The analysis for associated circuits of concern did not adequately address the issues of common power supplies and common raceways.
- Deviations to the NRC interpretations of Appendix R existed that could be justified, but formal deviation requests had not been submitted to NRC for approval.
- The cable separation analysis did not adequately address fire induced spurious equipment operation.
- Separation of redundant circuits located on different building elevations was not evaluated when fire rated barriers were not provided between the elevations.
- The cable separation analysis for the auxiliary power system looked at load circuits only and did not cover power supplies and controls for motor control centers and switchboards.

WBN APPENDIX R PROBLEMS IDENTIFIED BY NRC

- Insufficient spacial separation was provided inside containment for redundant pressurizer heater cables and reactor coolant system instrumentation.

- Unprotected cables for redundant safe shutdown equipment in the CVCS, auxiliary feedwater, CCS, ERCW, and auxiliary power systems were separated by less than 20 feet.

- Redundant CCS, ERCW, and CVCS valves that are required for safe shutdown were separated by less than 20 feet.

- Automatic fire suppression coverage was not provided in two areas containing redundant safe shutdown cables that were protected by 1-hour fire rated wraps.

- Fire detection was not provided in all plant areas containing safety-related or safe shutdown equipment.

- Cable trays located between redundant safe shutdown circuits had not been adequately addressed as intervening combustibles.

- Existing sprinkler head locations did not adequately address obstructions in their spray patterns.

- Insufficient fire hose stations were provided to reach all areas of safety-related structures with no more than 100 feet of hose.

- Redundant safe shutdown circuits on different auxiliary building elevations were not adequately separated when located in the vicinity of two open stairwells, one unprotected metal hatch, several HVAC duct penetrations that were not provided with fire dampers, and spare conduit sleeves.

- The cable separation analysis did not adequately address fire induced spurious operation of valves in required safe shutdown systems.

- The positive displacement charging pumps were defined as required safe shutdown equipment. These pumps were not considered to be reliable for this purpose since they were not tested under the Preoperational Test Program nor were they covered by the Technical Specifications.

- Discrepancies were noted in the operating instruction covering main control room abandonment. In addition, not all the operating instructions that might be needed for shutdown after main control room abandonment were required to be maintained in the auxiliary control room.

WBN APPENDIX R PROBLEMS IDENTIFIED BY NRC (Continued)

- Level indication was not provided in the auxiliary control room for the refueling water storage and condensate storage tanks.
- Emergency lighting was not provided in all areas where manual actions are required for safe shutdown during a fire.
- Fire doors were modified by TVA in such a manner that their fire endurance rating could be compromised.
- Surveillance inspection frequency proposed by TVA for fire protection valves that were locked with seal wires was not acceptable.

WBN APPENDIX R DEVIATION REQUESTS

- Redundant safe shutdown circuits on different auxiliary building elevations are not separated in literal compliance with Section III.G.2.

- Not all of the instrumentation required by IE Information Notice 84-09 has been provided in the auxiliary control room.

- Redundant component cooling system pumps are separated by a partial fire barrier that does not meet the literal requirements of Section III.G.2.

- Duct penetrations in the fire wall separating the ventilation and purge air room from the post-accident sampling facilities are not provided with fire dampers.

- Fire non-rated doors are installed in the exterior fire walls of the emergency diesel generator building.

- Redundant circuits for the ERCW pumps and strainers are separated in two plant locations by wrapping circuits of one train in 1-hour barriers until 20-foot spacial separation is achieved from the second train.

- Air intake and exhaust openings in the exterior fire walls of the auxiliary and the emergency diesel generator buildings are not provided with fire dampers.

- The 1-hour fire barrier being utilized for cable tray enclosures did not meet the cold-side temperature criteria during its ASTM E119 qualification test.

- Total area suppression and/or detection system coverage has not been provided within all areas required by Sections III.G.2 and III.F.

- Three self-closing fire doors in CO_2 protected areas of the emergency diesel generator building are not supervised and fire doors have not been provided in the walls separating the CO_2 porotected 480V auxiliary diesel board rooms from adjacent rooms in the diesel generator building. Both conditions deviate from Section III.N.

- Contrary to Section III.G.2, redundant safe shutdown circuits in the auxiliary building are spacially separated by more than 20 feet with intervening cable trays present.

WBN APPENDIX R DEVIATION REQUESTS
(Continued)

- Contrary to Section III.G.3, fire detection and fixed fire suppression systems have not been provided throughout the control building.

- Contrary to Section III.O, the reactor coolant pump oil collection systems have drain piping that is not designed to maintain its pressure boundary integrity after a seismic event.

- Unprotected scupper openings have been provided in the fire wall separating the ERCW pump rooms and the traveling screen room in the intake pumping station.

IMPACT OF APPENDIX R PROBLEMS AT WBN

- 6,000 feet of pipe added.
- 944 hangers added or relocated (estimated).
- 388 sprinkler heads added or relocated.
- 46,041 feet of cable rerouted.
- 4,500 feet of conduit added.
- 437 feet of 3-hour rated conduit wrap added.
- 2,740 feet of 1-hour rated conduit wrap added.
- 1,345 feet of 1-hour rated cable tray wrap added.
- 8, 1-hour rated junction box enclosures added.
- 180 feet of instrument line enclosed in radiant energy shield or relocated.
- 12 disconnect switches added.
- 250 fuses added.
- 77 fire detectors added or relocated
- 28 emergency lighting units added.
- 20 associated circuit changes involving breaker set points, heater overloads, and cable sizing.
- 8 associated circuits requiring a change of power supply.

STATUS OF WBN APPENDIX R MODIFICATIONS

- All modifications inside containment will be completed prior to fuel loading.
- All other modifications will be completed prior to initial criticality.

ORIGINATION OF POWER BLOCK CONCEPT

1. SEQUOYAH CITED FOR INADEQUATE PA LIGHTING AND ISOLATION ZONE OBSERVATION.

2. INSTALLATION OF ADDITIONAL CAMERAS @ $4,000,000.

3. INSTALLATION OF ADDITIONAL LIGHTING @ $2,000,000.

4. TASK FORCE DEVELOPED TO EVALUATE ALL SECURITY CONCERNS & OPERATIONAL IMPACT.

5. CONSIDER IMPACT ON ALL FOUR TVA SITES.

MAJOR MODIFICATIONS FOR POWER BLOCK CONCEPT

1. CONSTRUCTION OF NEW ENTRY PORTAL
2. CONSTRUCTION OF NEW FENCE LINE
3. WATCHTOWER CONSTRUCTION AND INSTALLATION
4. SEGREGATED PROTECTED AREAS
5. REDESIGN OF INTERIOR BARRIERS FOR PA/VA

SECURITY PHILOSOPHY COMPARISONS

ITEM	PRESENT	MPBA
1. PROTECTED AREA TOTAL ACREAGE	85	8
LINEAL FEET OF FENCE	8800 (OUTSIDE)	1600 (INSIDE)
2. NUMBER OF CAMERAS	57	6
3. STAFFING LEVELS (INTERFACE)		
PUBLIC SAFETY OFFICERS	140	105
CLERK MONITORS	60	40
MANAGEMENT	19	17
	219	162
4. NUMBER OF CAS/SAS ALARMS MONITORED	212 ± 10 (PLUS CAMERAS)	53 ± 10 (INTERFACE)
5. NUMBER OF TOWERS	-0-	5

SECURITY BENEFITS

1. REDUCE NUMBER OF PERSONNEL INSIDE THE PA FROM APPROXIMATELY 1500 TO APPROXIMATELY 300 - REDUCED INSIDER THREAT.

2. REDUCE NUMBER OF VEHICLES INSIDE PA FROM APPROXIMATELY 150 DAILY ENTRIES TO AN OCCASIONAL ENTRY.

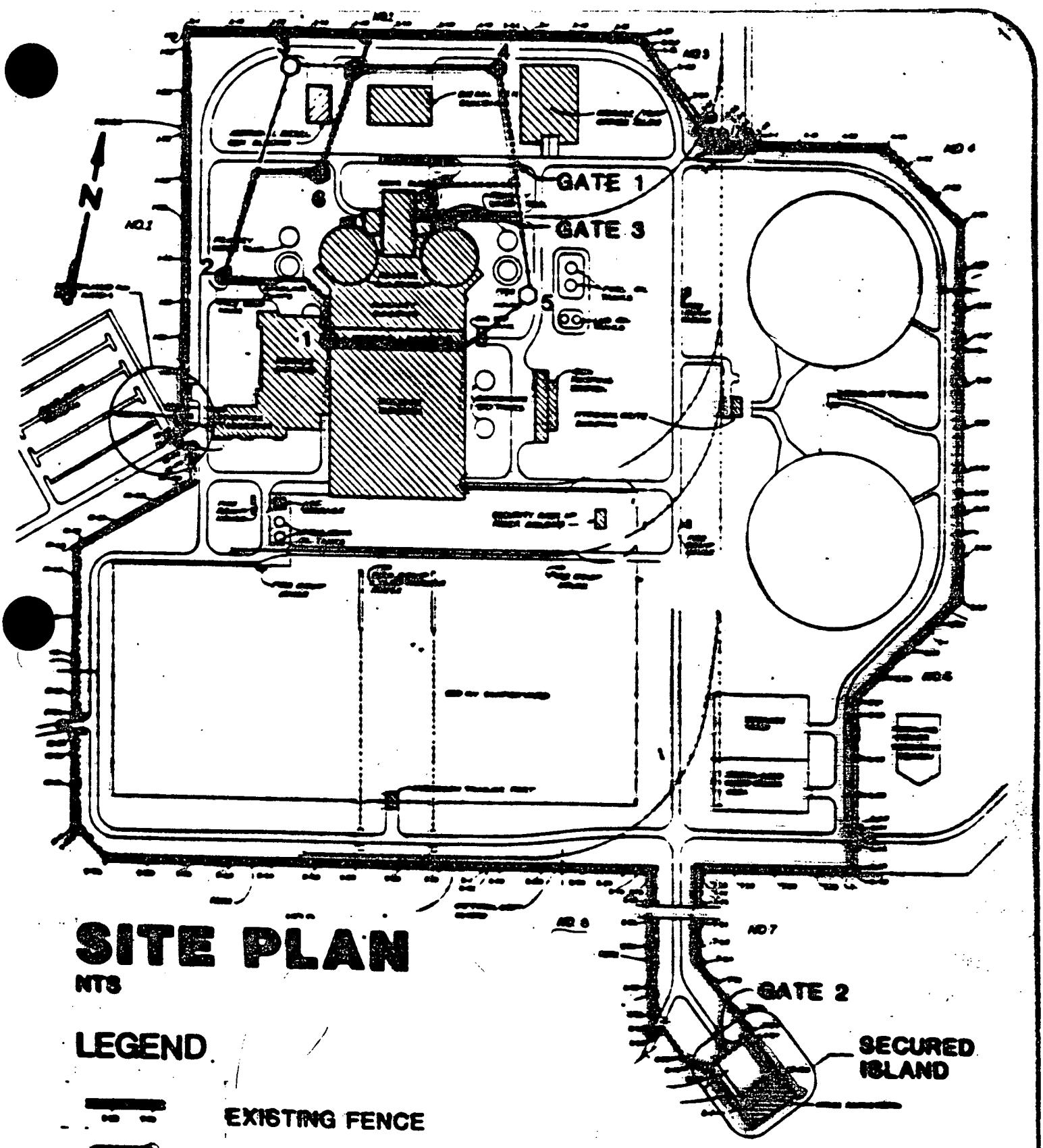
3. REDUCE REQUIRED NUMBER OF PUBLIC SAFETY OFFICERS AND CLERK MONITORS.

4. REDUCED MAINTENANCE COSTS.

5. REDUCED POTENTIAL FOR DEGRADED SYSTEMS AND THEREFORE REDUCED COMPENSATORY MEASURES.

6. REDUCE AREA OF PROTECTIVE RESPONSIBILITY TO A MORE MANAGEABLE SIZE THUS ENHANCING CONTROL.

REDUCTION OF ANNUAL BUDGET AT EACH PLANT BY 2.25 to $3,000,000.



SITE PLAN

NTS

LEGEND

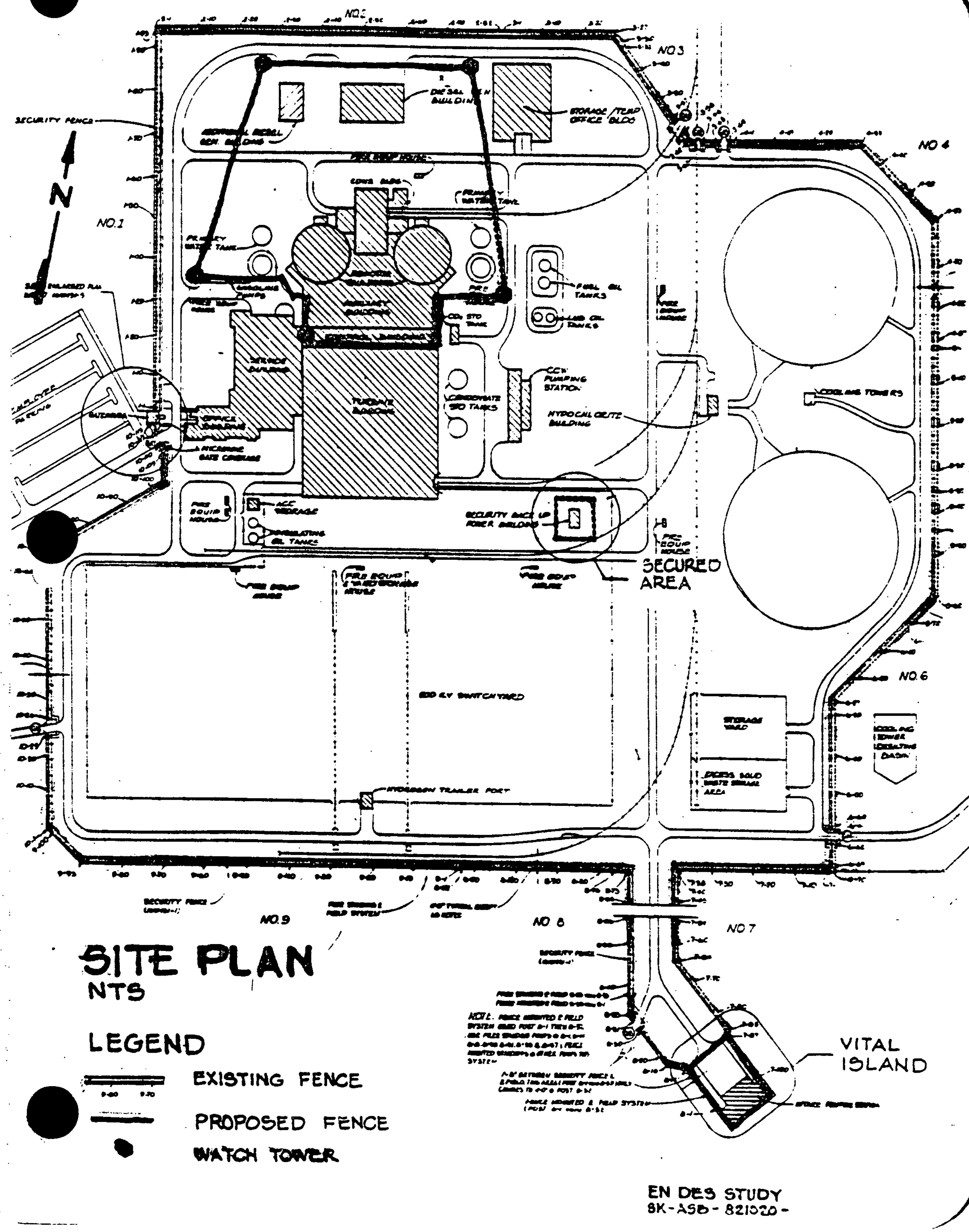
EXISTING FENCE

PROPOSED FENCE (unit 1)

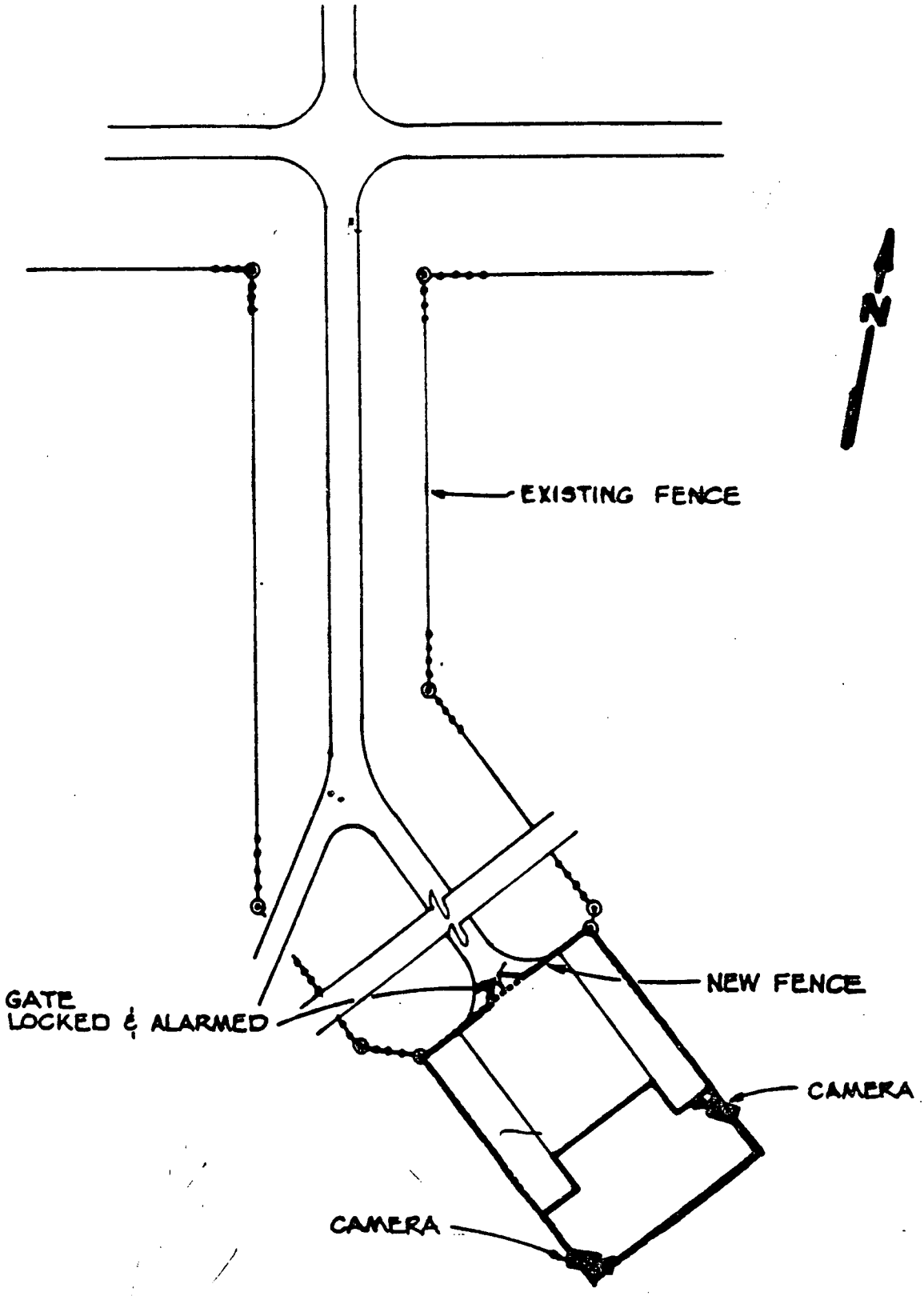
FUTURE FENCE (unit 2)

WATCH TOWER (unit 1)

FUTURE TOWER (unit 2)



SECURITY FENCE
N
NO.1
NO 3
NO 4
NO.6
NO 7
NO 8
NO.9
DIESEL GEN BUILDING
STORAGE/TEMP OFFICE BLDG
PRIMARY WATER TANK
FUEL OIL TANKS
CCW PUMPING STATION
HYPOCHLORITE BUILDING
COOLING TOWERS
SECURITY BACK UP POWER BUILDING
SECURED AREA
500 KV SWITCHYARD
HYDROGEN TRAILER PORT
STORAGE YARD
COOLING TOWER DESILTING BASIN
VITAL ISLAND
SITE PLAN
NTS
LEGEND
EXISTING FENCE
PROPOSED FENCE
WATCH TOWER
EN DES STUDY
SK-ASB-821020-



VITAL ISLAND

INTAKE PUMPING STATION

NTS

EN DES STUDY
SK-ASD-821020-6

MAIN STEAM BREAK

WATTS BAR

MAIN STEAM

LINE BREAK

Bob Bryan

March 5, 1985

- HISTORY
- HOW TO HANDLE
- WHERE ARE WE NOW
- WHEN WILL WE FINISH

HISTORY

- 1978 NRC Question On W MSLB Topical
- 1982 W Informed NRC of Potential Temperature Increase
- Dec 1983 W Told TVA
- Jan 1984 TVA Sent 50.55e To NRC

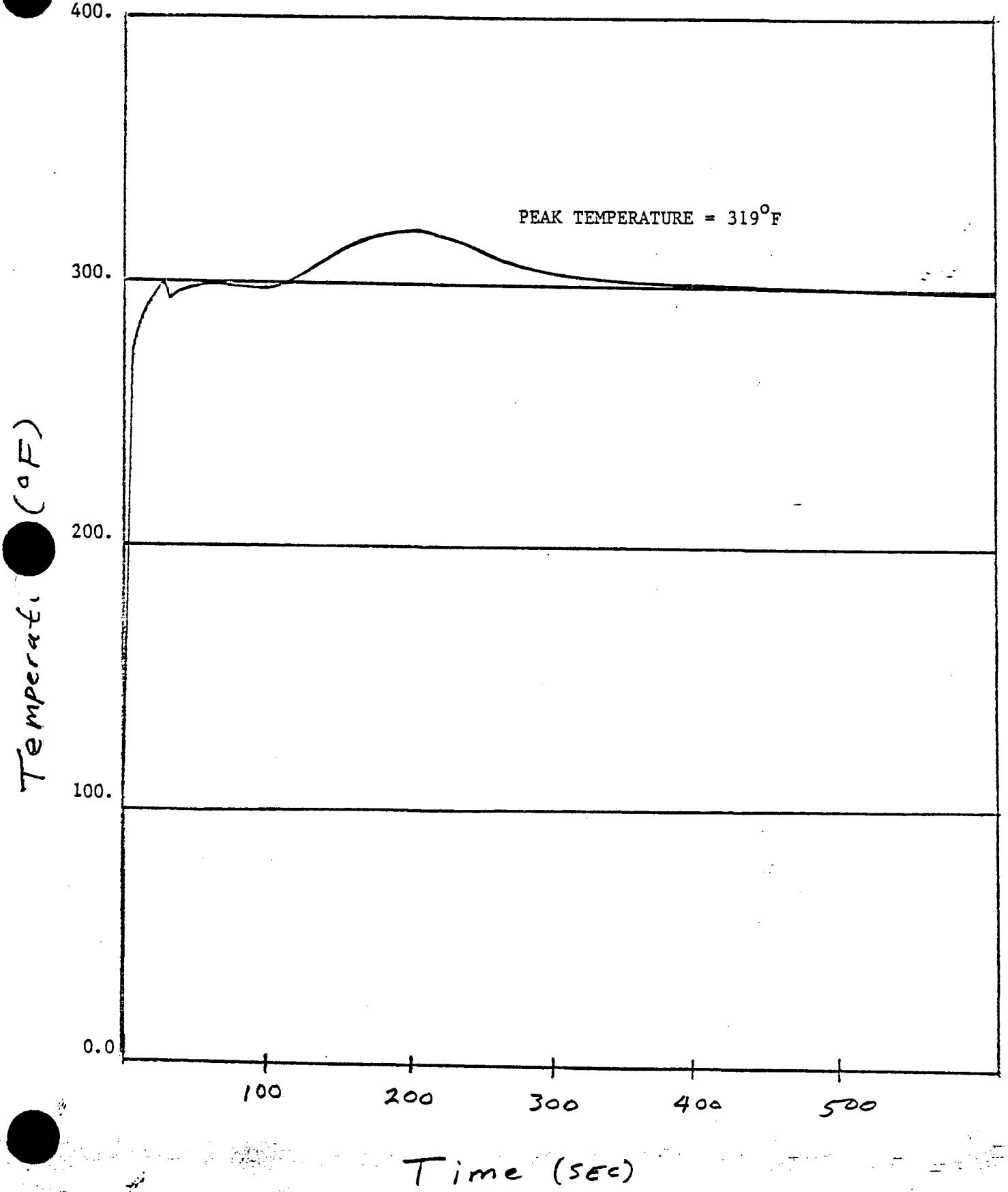
HOW TO HANDLE

- Ice Condenser Drains A Solution
- Support Computer Model With Test Data
- Submit Topical Report On New Methods
- Frequent Meetings With The Staff

WHERE ARE WE

- Peak Temperature Now 319 °F
- Less Than E Q Temperature of 327 °F
- Results Submitted To NRC Feb. 16, 1985
- High Confidence Inside Containment IS Not A Problem

WATTS BAR
CONTAINMENT TEMPERATURE
0.86 Ft^2 MSLB



WHEN WILL WE FINISH

- APRIL 85 - W Resumes Drain Testing
- AUG. 85 - Complete All Test Reports
- OCT. 85 - Final Submitta on Containment Code
- DEC. 85 - Submit WBN Containment Runs With NRC Approved Model

OUTSIDE CONTAINMENT HISTORY

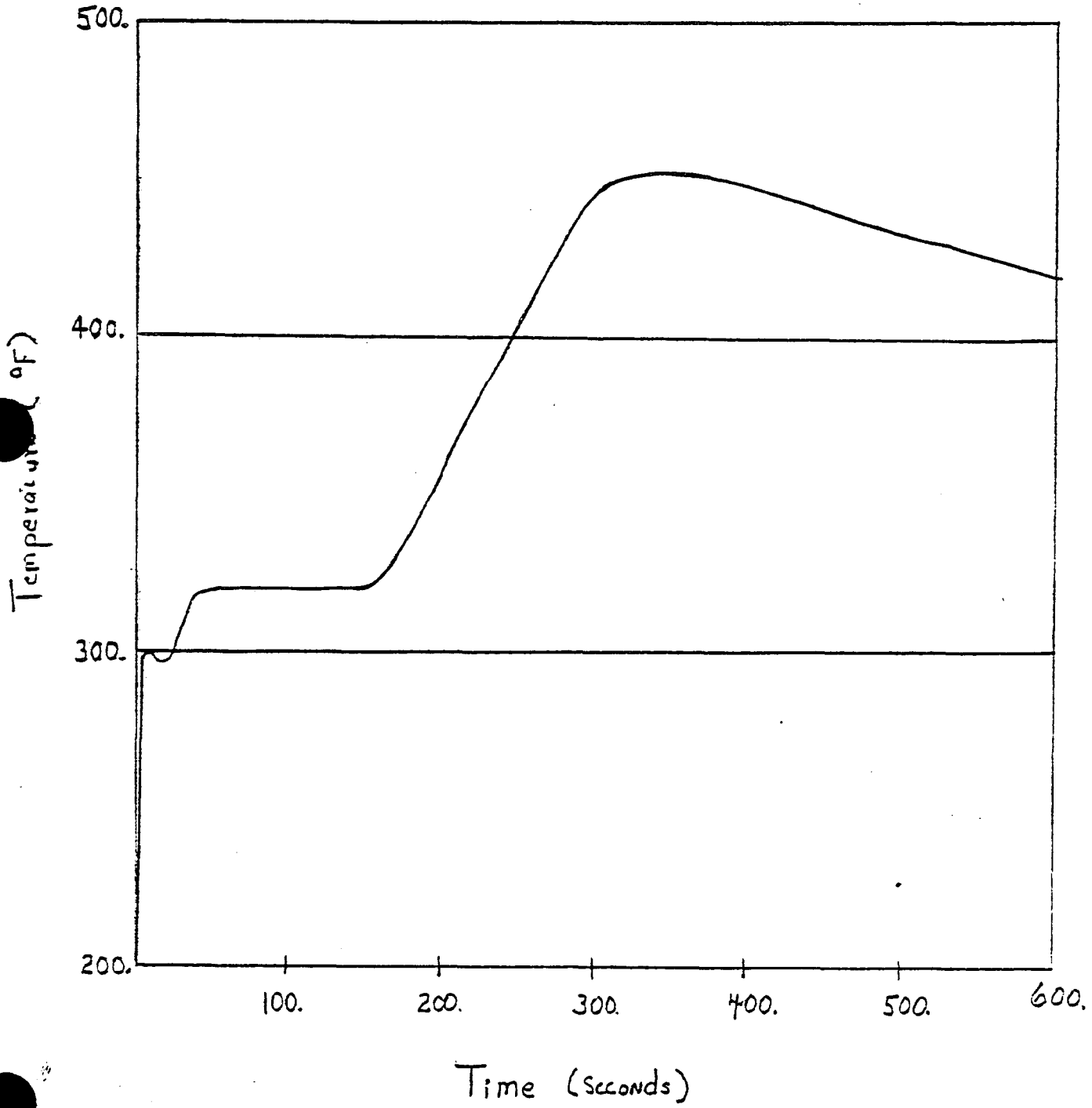
- Same Early History As Inside Containment
- NRC Notified by TVA May 22, 1984

OUTSIDE CONTAINMENT

- High Temperature - 450 °F Peak
- Grace Period Until SG Tubes Uncover
- Protection Systems Function Prior To Uncovery
- Pam Instrumentation Was Insulated
- No Structural Failures

MSLB - WBN Valve Vault

.86 Ft^2 Break



OUTSIDE CONTAINMENT

WHEN WILLWE FINISH

- W Mass & Energy Release Rates & Protection Systems Operating Times - Mar 11, 1985
- TVA To Generate New Temperature Profiles - April 85
- Complete Reevaluation of Equipment & Structures - June 85

CONCLUSIONS

- PLANT IS SAFE
  - -Containment Temperatur
    Less Than Design
  - - Plant Protection
    Equipment Will Function
    Before Tube Uncovery
  - -PAM Transmitters
    Insulated To Insure
    Long Term Operation

• TVA ACTIVELY WORKING TO RESOLVE ISSUE

- -Initiated Contact With W & NRC
- -W Started Test Program
- -Expidited WBN Analyses
- -TVA & Duke Have Spent Over $2.2 Million To Resolve These Concerns

CERTIFICATION OF TECHNICAL SPECIFICATIONS

TECHNICAL SPECIFICATION CERTIFICATION PROCESS

BACKGROUND

The Watts Bar technical specifications have been under fulltime active preparation (equivalent of 2 fulltime engineers) since 1981. This work began after Sequoyah unit 1 was licensed. The marked-up draft standard was submitted to NRC in late 1981. A set of over 100 questions was received in draft form requesting additional information required to complete the technical specifications, identifying differences between the TVA submittal and NRC standard which required additional justification, and a comparison between the SER and draft technical specifications. TVA responded to these questions in September 1982. Additional submittals were made in July 1983. The proof and review copy of the technical specifications were issued in December 1983. In early 1984 the FSAR certification process started for Watts Bar. TVA submitted additional technical specification changes resulting from review of the proof and review copy in June 1984. The NRC-OIE onsite inspection effort occurred in June also. The proof and review technical specifications were compared to the FSAR, the as-built plant, Sequoyah's technical specifications, and the NRC standard. TVA believes the inspection went well with no major problems identified. Several minor discrepancies were identified as well as clarification to several items. These items were addressed in several submittals up through January 1985. NRC-RSB issued 40 questions resulting from their detailed review of the technical specifications and the FSAR. The majority of the questions were resolved through meetings or the January 1985 submittal.

The final draft technical specifications were issued in December 1984. Several major issues were identified as not being resolved at the reviewer level in NRC. Certification technical specifications issued in February 1985.

CERTIFICATION PROCESS

The certification process consists of two major elements: detailed comparison of plant instructions to the technical specifications and the as-built plant and a detailed comparison of the SER requirements and the technical specifications. A detailed review of the FSAR will not be performed again. Credit is taken for the reviews conducted by TVA, Westinghouse, NRC-OIE, and NRR-RSB.

The organizations assigned responsibility for particular technical specification and surveillance requirements will review the appropriate sections for completeness and accuracy. A review checklist will be used at the plant to document that the specifications are consistent with the as-built plant and that the instructions are consistent with the specifications. The FSAR will be consulted when resolving discrepancies. Problems identified during this process will be resolved within TVA or with NRC-NRR, as appropriate.

The Regulatory Engineering Section is reviewing the NRC SER and supplements to identify technical specifications requirements. The technical specification requirements are being compared to the SER requirements. The correspondence record for SER comments is also being reviewed. The TVA position for SER/technical specification differences will be reviewed and updated as necessary. These differences will be resolved within TVA or with NRC-NRR, as appropriate.

MILESTONES

FIRST DRAFT WATTS BAR T/S SUBMITTED	12/4/81
DRAFT NRC T/S QUESTIONS RECEIVED	1/22/82
WATTS BAR SER ISSUED	6/82
TVA RESPONSE TO NRC QUESTIONS	9/15/82
NRC ISSUES CHANGE PAGES TO DRAFT T/S	1/83 to 7/83
TVA SUBMITS ADDITIONAL T/S CHANGES	7/27/83
PROOF AND REVIEW T/S ISSUED	12/21/83
WATTS BAR FSAR CERTIFICATION PROCESS	3/84 to6/84
TVA SUBMITS ADDITIONAL T/S CHANGES	6/19/84
NRC-OIE ONSITE INSPECTION OF T/S	6/18-22/84
NRC-RSB T/S QUESTIONS RECEIVED	8/22/84
FINAL DRAFT T/S ISSUED	12/11/84
TVA SUBMITS RESPONSE TO NRR-RSB QUESTIONS	1/3/85
TVA SUBMITS RESPONSE TO NRC-OIE FINDINGS	1/25/85
CERTIFICATION T/S ISSUED	2/15/85

TECHNICAL SPECIFICATION ISSUES

DIESEL GENERATOR ROOM TEMPERATURE

TURBINE OVERSPEED PROTECTION

FUEL OIL PIPING HYDRO TESTING

SNUBBER TESTING

WOG TECHNICAL SPECIFICATION OPTIMIZATION

HYDROGEN IGNITORS

PRESSURE ISOLATION VALVE TESTING

ICE CONDENSER BASKET WEIGHTS

OTHER ISSUES

DIESEL GENERATOR CRANKCASE EXPLOSION PROTECTION

ONSITE COMMUNICATION PREOPERATIONAL TESTING

COLD LEG TEMPERATURE INDICATION IN THE BACKUP CONTROL ROOM

PHYSICAL SECURITY

CERTIFICATION PROCESS

DETAILED COMPARISON OF PLANT INSTRUCTIONS TO TECHNICAL SPECIFICATION REQUIREMENTS AND AS-BUILT PLANT

DETAILED COMPARISON OF NRC SAFETY EVALUATION REPORT REQUIREMENTS AND TECHNICAL SPECIFICATION REQUIREMENTS

ATTACHMENT A

WATTS BAR NUCLEAR PLANT

TECHNICAL SPECIFICATION/SURVEILLANCE PROCEDURE REVIEW

Technical Specification(s) _____

Surveillance Procedure _____ Rev _____

Outstanding Temporary Changes not incorporated _____

Reviewed by: _____ Date _____

Remarks: _____

PROCEDURE REVIEW CHECKLIST

		YES	N/A	NO
1.	All findings of the SI-1 Technical Specification PORC subcommittee are satisfied.	☐	☐	☐
2.	Does the procedure address the applicable modes as stated in AI-6.1, section 4.3.3?	☐	☐	☐
3.	Does the procedure address common mode failure criteria per AI-2.2?	☐	☐	☐
4.	Does the procedure require SRO's approval to perform test?	☐	☐	☐
5.	Does the procedure verify other redundant loops or equipment are in nontripped condition?	☐	☐	☐
6.	Does the procedure notify operator which annunciators will light?	☐	☐	☐
7.	Do all reactor trip and ESF analog channels have status lamp check (see Attachment B)?	☐	☐	☐
8.	Do all analog response time tests place BLOCKING FUNCTION TEST switch to INHIBIT BLOCKS position prior to turning FUNCTION SELECTOR SWITCHES and inform operator of "GENERAL WARNING" condition?	☐	☐	☐
9.	Does the procedure take "As Found Data" and record ACM (acceptance criteria met)?	☐	☐	☐
10.	Does the procedure clearly indicate checks which are done but which are not required by Tech Specs (completion of these items is not required for SI approval)? DTM (desired tolerance met).	☐	☐	☐
11.	Does the procedure identify all hold points necessary?	☐	☐	☐
12.	Does the procedure require all data takers to be identified with signature/initials and date on each page data is taken?	☐	☐	☐
13.	Does the procedure require signoff for all important prerequisites?	☐	☐	☐
14.	Is the Tech Spec technically correct relative to existing plant design?	☐	☐	☐

		YES	N/A	NO
15.	Is the Tech Spec setpoint consistent with:			
	Instrument tab	☐	☐	☐
	Applicable drawings	☐	☐	☐
	Other Tech Specs	☐	☐	☐
	Tech Spec Bases	☐	☐	☐
16.	Is the Tech Spec reference in the procedure correct?	☐	☐	☐
17.	Is the "frequency" requirement in the procedure consistent with the applicable			
	Tech Spec	☐	☐	☐
	Pump and Valve Program	☐	☐	☐
	Tech Spec Table 1.1	☐	☐	☐
18.	Is the surveillance "frequency" correctly given in section 1.0 of the procedure including all special conditions, Tech Spec notes, and ISI requirements?	☐	☐	☐
19.	Is the procedure purpose correctly stated?	☐	☐	☐
20.	Does the procedure list material/test equipment required for the test? (Normal hand tools can be excluded.)	☐	☐	☐
21.	If "or equivalent" is listed under test equipment, is there sufficient information available for the technician or operator to determine what constitutes equivalent test equipment?	☐	☐	☐
22.	Is the procedure grammatically correct (typos, missing sections, English grammar)?	☐	☐	☐
23.	Is the procedure technically correct?			
	Procedure adequately verifies system operability as required.	☐	☐	☐
	Procedure will work as written.	☐	☐	☐
	Verbatim compliance with Tech Spec.	☐	☐	☐
	Verbatim compliance with Tech Spec definitions.	☐	☐	☐
	Procedure performance will not degrade or affect plant conditions in an unacceptable manner.	☐	☐	☐
	Complies with Tech Spec bases.	☐	☐	☐
	Properly obtains data required by Pump and Valve Program.	☐	☐	☐
24.	Are all temporary alterations in compliance with AI-2.15 and/or AI-2.19?	☐	☐	☐

		YES	N/A	NO
40.	Have head and temperature corrections been considered in the calibration? Are they correct?	☐	☐	☐
41.	Are both Tech Spec allowable values and desired setpoints listed and distinguishable from each other?	☐	☐	☐
42.	Is the procedure specific enough so it will be performed the same way each time, as necessary (e.g., recorders always connected at the same terminals)?	☐	☐	☐
43.	Are procedures, or procedures sections, the same for similar equipment (i.e., is the "A" diesel procedure the same as the "B" diesel procedure)?	☐	☐	☐
44.	If the Tech Spec allows alternate methods of testing, is this stated in the procedure?	☐	☐	☐
45.	Is the cross reference between Tech Spec and procedure SI-1 correct?	☐	☐	☐
46.	Is the Tech Spec clear such that most people will interpret it the same way, or would a written interpretation be helpful? (This includes action statements, notes, and surveillance requirements.)	☐	☐	☐
47.	Is the Tech Spec complete (e.g., are containment isolation valves, snubbers, thermal overloads, etc., missing from their tables)?	☐	☐	☐