



UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

June 1, 1995

MEMORANDUM TO: William Dean, Regional Coordinator
Office of the Executive Director
for Operations

FROM: Phillip F. McKee, Director *PF McKee*
Project Directorate I-3
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

SUBJECT: BRIEFING PACKAGE FOR VISIT BY NORTHEAST UTILITIES

Enclosed is the briefing package on the status of Millstone Nuclear Power Station, Units 1, 2, and 3, the Haddam Neck Plant, and Seabrook Station, Unit No. 1 as background for the visit by Northeast Utilities on June 8, 1995.

Docket Nos. 50-213, 50-245, 50-336
50-423, 50-443

Attachment: As Stated

cc w/atts: J. Taylor
J. Milhoan
W. Russell
F. Miraglia
R. Zimmerman
S. Varga
P. McKee
J. Andersen
G. Vissing
V. Rooney
A. Wang
A. DeAgazio

SCHEDULE OF COMMISSION/SENIOR STAFF VISITS

10:00 a.m.	Ashok Thadani, NRR (Dacimo & Kacich)
11:00 a.m.	Steve Varga, NRR (Dacimo & Kacich) John Zwolinski, NRR
1:00 p.m.	Commissioner Jackson (Fox & Busch)
2:00 p.m.	Frank Miraglia, NRR (Busch, Dacimo, & Kacich) Roy Zimmerman, NRR
3:00 p.m.	Jared Wermiel, NRR (Dacimo & Kacich)
3:30 p.m.	Conrad McCracken, NRR (Dacimo & Kacich)
4:00 p.m.	William Russell, NRR (Busch, Dacimo & Kacich)

BRIEFING PACKAGE FOR VISIT BY NORTHEAST UTILITIES

Visiting Officials:	Bernard M. Fox	President & Chief Executive Officer Northeast Utilities
	Robert E. Busch	President - Energy Resource Group & Chief Financial Officer Northeast Utilities
	Fred R. Dacimo	Vice President - Haddam Neck Station Northeast Utilities
	Richard Kacich	Director - Nuclear Planning, Licensing & Budgeting Northeast Utilities

Date of Visit: June 8, 1995

Plants: Millstone Nuclear Power Station, Units 1, 2, and 3
Haddam Neck Plant
Seabrook Station, Unit No. 1

Note: Northeast Utilities (NU) is a holding company whose subsidiaries include: the Northeast Nuclear Energy Company (NNECO), the licensee for Millstone Nuclear Power Station, Units 1, 2, and 3; the Connecticut Yankee Atomic Power Company (CYAPCO), the licensee for Haddam Neck; and the North Atlantic Energy Service Corporation (NAESCO), licensee for Seabrook Station, Unit No. 1.

MILLSTONE NUCLEAR POWER STATION, UNITS 1, 2, AND 3

BACKGROUND

- o The SALP Report for the period of April 4, 1993, to July 9, 1994, found that performance at all three units was generally good; however, performance at Unit 2 indicated significant weaknesses in the areas of plant operations and maintenance. The SALP report rated Millstone Units 1, 2 and 3 as Category 2 in the engineering and plant support areas. The plant operations area was rated Category 2 at Units 1 and 3, and Category 3 at Unit 2. The maintenance area was rated Category 2 at Units 1 and 3, and Category 3 at Unit 2. During the SALP period, weaknesses in performance, common to all three units were noted, including continuing problems with procedures, the informality in several maintenance and engineering programs, and the failure to resolve several longstanding problems at the site. The staff noted that licensee management must pay closer attention in these areas. In contrast, performance in radiological controls at all three units and Unit 3 plant operations area was assessed to be very good.

- o In response to licensee and NRC identified declines in performance in the late 80s and early 90s, the licensee initiated a number of evaluation efforts to assess their performance. The results of their efforts and the follow-on management actions to correct these deficiencies portrayed a strong commitment for improvement, but highlighted the inherent ineffectiveness of other established management programs to identify and correct the performance weaknesses noted. The licensee's Performance Enhancement Plan (PEP), which was submitted in June of 1992, represented the vehicle by which the licensee addressed the recommendations of their internal task forces and other evaluation processes. In response to the PEP, the NRC formed a Millstone Assessment Panel (MAP) to evaluate the effectiveness of PEP. To date, the effectiveness of the PEP in achieving performance improvement has been limited, as evidenced in plant operational performance at Millstone, particularly at Unit 2. The licensee has integrated the remaining PEP action items into the 1995 and beyond Business Plans. The MAP has extracted the salient issues and developed a MAP problem list; the MAP no longer plans to address PEP as a separate effort but plans to monitor the licensee's corrective action efforts regarding the issues on the problem list.
- o Prior to 1992, the number of allegations received from Millstone employees was high. The number decreased to industry norms from 1992 until early 1993. Since the spring of 1993, the number of allegations has again increased, coming mostly from [REDACTED] NU employees and [REDACTED] employees. More than half are related to work processes such as processing and control of work at the site, supervisor/peer competence, tagging, unauthorized work, improper work orders, improper storage and handling of materials, training deficiencies, operability calls, timeliness of engineering findings, access and control of fitness for duty computer records, and effectiveness of the Nuclear Safety Concerns Program. [REDACTED] EX. 6
- o The site and corporate engineering organizations were restructured under Eric DeBarba, Vice President - Nuclear Engineering Services. Most of the corporate engineers were relocated to the site and aligned in separate unit organizations. The reorganization was made to enhance engineering's accountability and responsiveness to site technical issues, as well as to enhance their personnel's access to the units. The reorganization incorporated the implementation of the systems engineering concept at the Millstone site. The current organization chart is included at the back of this attachment.
- o The licensee has a substantial investment in Probabilistic Risk Assessment which is used in evaluation of plant improvements and changes in plant configuration including shutdown risk. The licensee has an Integrated Safety Assessment Program (ISAP) for Haddam Neck and Millstone Unit 1 which is used to prioritize NRC and licensee initiatives based upon such inputs as plant safety, worker radiation exposure, productivity and cost. The Unit 2 and 3 ISAPs are under development.

CURRENT STATUS

- o Site management still has not demonstrated effectiveness in addressing significant performance issues such as procedural adherence, work control and tagging problems, ineffective communications and team work between organizations, continued weaknesses in identifying and correcting performance problems, and poor self assessment and quality verification effectiveness. Correction of these weaknesses are the focal point of the new management team, but significant changes have yet to be seen. Management meetings were held with the licensee in October, November, and February to discuss additional steps the licensee planned or took to further resolve these issues, particularly at Unit 2. NU's formal program for implementing these long-term improvements are detailed on the Millstone "Improving Station Performance" matrix which was published in February 1995.
- o Millstone Unit 1 - The unit was restarted on May 18, 1994, following the cycle 14 refueling outage and operated mostly at power until November 24 when the licensee shut the plant down due to leaking safety relief valves (SRVs). The licensee replaced all 6 SRVs and restarted on December 2, 1994. The historical performance of the SRVs has been poor and the licensee's engineering department is further evaluating possible modifications to the valves. The plant has operated at power since; the next refueling outage is scheduled for October 1995. On May 17, 1995, William J. Riffer, the new Unit Director arrived onsite, he will officially take over the Unit Director role after a short indoctrination period.
- o Millstone Unit 2 - The Unit 2 cycle 12 refueling outage, which began on October 1, 1994, has experienced several problems. On October 19, 1994, spent fuel pool cooling was temporarily lost when operators, because of failed level indication, drained the fuel pool to a level below the suction of the system pump. On October 20, 1994, an Unusual Event was declared when approximately 150 gallons of service water overflowed from an open room cooler vent in the upper vital 4160 volt switchgear room. The event was caused by a shift supervisor who did not verify system isolation and did not use their required work control process to drain the system. After a work stoppage by management, on October 24, 1994, maintenance personnel inadvertently began removing a spool piece that was part of a pressurized main hydrogen supply line. As a result of these events, a broad work stand-down was ordered by licensee management pending their review and assessment of the work control issues. On October 31, the licensee began working a limited work scope of core off-load, steam generator wet lay-up, and maintaining essential equipment.

On November 2, 1994, a MAP meeting was held at the site. The MAP discussed possible NRC actions given the recent work stand-down by the licensee on Unit 2 and other inspection issues. As a followup to one of the MAP meeting recommendations, a meeting between the NRC and Unit 2 management was held on November 17, 1994. At the November 17, 1994, meeting, the licensee presented the current status of Unit 2 and what performance issues they would resolve prior to unit restart. The NRC requested that the licensee document their planned corrective actions in a letter and that a second management meeting be held, prior to Unit 2

achieving criticality, to discuss the results of those corrective actions. This second meeting is intended to focus on why the licensee believes they have improved performance sufficiently to support plant operations.

On January 26, 1995, the licensee discovered the potential for pressure locking of the containment sump suction isolation valves. Engineering calculations performed as part of the licensee's motor operated valve (MOV) program determined the potential for pressure locking of containment suction valves used for post-loss of coolant accident recirculation which could prevent the valves from opening. This is a potential common mode failure. In subsequent tests and analyses, the licensee determined that the valves would not be subject to pressure locking; however, the licensee has modified the valves to further assure they would not be subject to pressure locking.

On February 21, 1995, the MAP met with licensee management to ascertain licensee corrective actions for past performance problems and readiness for Unit 2 startup. During this meeting the licensee detailed a plan for improving total Millstone Station performance in the areas of Operations, Work Planning, Procedure Development, and Effective Employee Communications. The licensee has also initiated the Adverse Condition Report which is an universal deficiency reporting system and the Action Item Trending and Tracking System.

Performance improvement efforts for Unit 2 are centered in the areas of work control, reductions in operator burdens, corrective action identification and implementation, and improving supervisory skills. The licensee's formal program for implementing these long-term improvements for the Millstone site are detailed on the Millstone "Improving Station Performance" matrix. The effectiveness of these improvement efforts are still under evaluation by the resident inspectors and is currently the subject of a Unit 2 Readiness Assessment Team Inspection (RATI) prior to the Unit 2 restart. Other changes made to enhance Unit 2 performance included the transfer of a former Unit 3 Operations Manager to become the Unit 2 Operations Manager and the temporary assignment of select managers to support the Operations Manager during their restart recovery efforts. Senior licensee management has also employed the use of four organizational consultants since mid-1994 to help elicit employee involvement in improving performance as well as assessing and helping to improve the organizational culture. The results of their work are not yet evident as much of their efforts are in progress.

Unit 2 is currently scheduled to have the turbine on-line July 2, 1995. The meeting to discuss Unit 2 restart, as well as the RATI exit meeting, are both currently scheduled for June 14, 1995. A public meeting will also be held on June 14, 1995, to discuss Unit 2 restart.

- o Millstone Unit 3 - The unit was continuously on-line for 382 days until problems encountered during main steam isolation valve testing caused the licensee to manually trip the reactor. The unit restarted on September 21, 1994, and operated at power until the licensee shut the plant down on April 14, 1995, for a scheduled refueling outage. Major activities accomplished during the outage include: completing MOV

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testing, service water erosion/corrosion inspections and replacements, 10 year plant inservice inspections - including core barrel inspection, and steam generator eddy current testing for two steam generators (two were inspected in 1993). Unit 3 is currently scheduled to have the turbine on-line June 3, 1995.

CURRENT CONCERNS

- o General licensee performance at Unit 2.
- o The performance concerns that led to the formation of the PEP are still being manifested at the Millstone site to some extent. Safety concerns (allegations) brought directly to the NRC are still above industry norms and procedural noncompliance and inattention to detail are still observed.
- o A recent licensee event report (LER) review by the NRC's Human Factors Assessment Branch showed that Millstone 1 had more than twice and Millstone 2 had more than three times the national average of human performance LERs. For both units, the mechanical and electrical maintenance departments were associated with the majority of the events.
- o All three Millstone units have experienced corrosion/erosion in their salt water cooling systems. A substantial number of temporary non-Code repairs (upgraded to Code repairs during outages) have been undertaken by the licensee. During the current refueling outages, Units 2 and 3 are replacing a portion of piping in their respective service water (SW) systems.
- o The licensee is concerned regarding the economic impact of NRC regulatory activities, especially expensive "backfits" and programs. The licensee has been actively involved in several programs to help reduce costs including: ISAP, the commitment management pilot program, and cost beneficial licensing actions.

POINTS TO BE EMPHASIZED

- o The licensee should maintain their commitment to the problem areas that led to the formation of PEP, and should continue to communicate management's goals to NU personnel.
- o The licensee should enhance their efforts in order to reduce the frequency of procedural violations, improve the quality and timeliness of corrective action programs, and to address employee concerns.

HADDAM NECK PLANT

BACKGROUND

- o The NRC staff's SALP report for the period of January 10, 1993, through September 10, 1994, rated the plant Category 2 in all functional areas except in the area of plant support which the plant received a Category 1 rating. During the previous SALP period the licensee received a Category 1 rating in the areas except maintenance and surveillance. The staff had noted a decline in performance.
- o The licensee continued to operate the plant safely and exhibited strong performance during power operations. Maintenance and surveillance has been only average and the licensee has had problems with follow-up on Quality Service Department audits related to maintenance and surveillance and the work control program. Even though the operators were very effective, the staff is concerned by the increased number of challenges to the operator (trips, power reductions, forced outages, etc.).
- o The staff notes continued strong performance in the area of radiological controls and security.
- o The licensee has completed or made significant progress on several long-standing licensing issues including: SEP Topic III-1 (Classification of Structures, Components, and Systems) and III.7.B (Design Codes, Design Criteria, Load Combinations, and Reactor Cavity Design Criteria); Generic Letter 88-20 (Individual Plant Examination); and Generic Letter 87-02 (Verification of Seismic Adequacy of Mechanical and Electrical Equipment in Operating Reactors, Unresolved Safety Issue A-46). These reviews entailed significant reviews in terms of resources and safety significance.
- o The plant shutdown in January 1995, for a refueling outage.
- o The plant came back online on April 18, 1995, after an 81 day refueling outage. The outage was slightly longer than expected as the licensee encountered problems with microbiologically induced corrosion (MIC) in the containment air recirculation (CAR) fan system and problems with thermal binding and pressure locking in several safety related MOVs. The plant essentially replaced all welds in the service water to CAR fan system and had to modify 17 MOVs to prevent thermal binding and pressure locking.

CURRENT STATUS

- o The plant is at 100% power. The plant operated at reduced power (80 to 97%) upon startup from the refueling outage due to flux tilt in the second quadrant.

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- o Fred Dacimo became the site vice president (VP) on January 1, 1995. He is the third site VP since 1991. In addition, there have been 3 site director changes and 4 station services director changes the last 18 months. These changes have a domino effect in the station management as in general the site director has been replaced with the station services director, who has been replaced by the operations manager, who has been replaced with the I&C manager. The site VP has been replaced by NU headquarters or Millstone site people in the past. The staff is closely monitoring the effects of these management changes.
- o Recent NRC Inspection Report 50-213/95-06 noted good management safety decisions and strong engineering performance in several areas (such as replacement of service water piping to containment air recirculation fans and thermal binding/pressure locking modifications in MOVs) during the 1995 refueling outage.
- o The licensee has committed to install an air-cooled diesel next outage and has installed an electric auxiliary feedwater (AFW) pump this past outage to resolve the SEP topic for wind and tornado loads. The licensee has also provided two barriers for the containment vent and purge lines this outage to resolve the SEP topic for containment isolation. The licensee has added pressure interlocks to the core deluge valves to complete Event V concerns.
- o The plant has completed the last phase of the Reactor Protection System replacement which converted the analog feedwater control system to a digital system. The safety-related portions of the feedwater system were replaced during the last outage and the feedwater control system for normal operation was replaced during this outage.
- o The licensee has changed fuel vendors from B&W to Westinghouse. This required significant staff review of the new fuel as the design changed.

CURRENT CONCERNS

- o The plant had three notices of violation and two shutdowns in 1994, which might have been avoided if better root cause and corrective actions had been taken.
- o The plant has had one violation this year (related to procedure compliance).
- o In June 1993, the plant found MIC in the service water system for the emergency diesel generator's heat exchanger. The licensee has performed fracture mechanics analyses and inspected all accessible welds to determine operability. The welds in the service water to diesel system were replaced and an inspection was performed to determine all piping that was susceptible to MIC. Some other stagnant SW piping was replaced. During the recent outage evidence of MIC was discovered in SW piping to the CAR fans. This piping was not considered to be susceptible to MIC and therefore was not inspected during the January 1994, SW outage. The staff is concerned as to why this was not identified earlier. A follow-up NRC inspection is in progress.

- o The licensee's performance in all SALP functional areas has been good. However, the staff has had concerns, as noted in the last two SALPs, in the area of maintenance and surveillance.
- o The licensee had stated that steam generator replacement is not an option. The plant has a partial roll in the tubesheet and the licensee has been able to re-roll tubes to keep them in-service. The licensee is considering withdrawing alternate steam generator plugging criteria as its significance has been greatly reduced because of the option for the plant to re-roll tubes.
- o The plant has submitted an amendment request for spent fuel pool rerack and the first of 15 amendment requests for 24 month refueling cycles. The remaining 24 month cycle submittals are expected to be submitted in the next 6 months. The plant considers both these issues to be critical to their economic viability. The 24 month cycle would eliminate two refuelings before the end of life and the rerack would allow full-core-off-load capability until end of life.
- o A recent plant concern involves cold leg plugs of the steam generators. Westinghouse may recommend that all cold leg plugs be replaced by the year 2000. The licensee estimates that this could have an impact in excess of \$50 million.

POINTS TO BE EMPHASIZED

- o The licensee needs to maintain their efforts in the area of improving root cause and corrective action plans and maintenance and surveillance audits.
- o The review to support 24 month cycles will require a significant amount of review and the licensee needs to be timely in submittal of their analyses and amendments. In particular the review of the Westinghouse Best Estimate Loss of Coolant Accident models and its application to Haddam Neck needs to be timely.
- o The staff has noted a declining trend in personnel errors affecting routine operations. Operations management has actions in progress to address this problem but licensee needs to reverse trend in this area.

SEABROOK STATION, UNIT NO. 1

BACKGROUND

- o The SALP report for the period August 29, 1993, to January 7, 1995, rated the plant Category 1 in the functional areas of engineering and plant support and Category 2 for the functional areas maintenance and plant operations. These ratings are unchanged from the previous SALP.
- o The licensee continues to operate the station in a safe, conservative manner with strong effective management in most areas. Well trained, knowledgeable operations staff is a strength. Management's efforts to reduce personnel errors has been productive.
- o Knowledgeable, well trained maintenance staff and excellent surveillance program, but generally excellent performance was marred by occasional failures to adhere to procedures and by some weaknesses in work control programs.
- o Engineering is a notable strength with continued effective management involvement. Excellent plant support programs in radiological protection, plant chemistry, radiological effluent and environmental monitoring, emergency preparedness, and security.

CURRENT STATUS

- o The station currently is operating at 100%. The station has operated at full power most of the time since it went into commercial operation in August 1990 with few operational problems experienced since commercial operation began (but see comments later regarding personnel error). The plant has operated at 100% since startup from the third refueling (3RFO) outage on August 1, 1994 (300 days to May 27, 1995)
- o The third refueling outage was scheduled for 59 days but actually lasted 115 days. The extended outage was due to two unforeseen circumstances.
- o Part of the 3RFO delay was due to the need to retube both primary component cooling water heat exchangers (PCCWHx). Both PCCWHx were completely retubed during 1RFO because of extensive pitting of the Cu-Ni tubes. The PCCWHx were fully examined during 2RFO and no pitting was found. However in 3RFO, extensive pitting again was found. The PCCWHx and inlet piping were redesigned somewhat to prevent reoccurrence, but tube material may be changed in a future outage.
- o The remainder of the 3RFO delay was caused by a problem with the RCPs. As the plant was preparing to reload the core, a loose part, later identified to be a locking device from a RCP turning vane cap screw, was discovered in the pressure vessel. Further examination for loose parts revealed a 5 lb 1½ inch cap screw (from the RCP turning vane) in the vessel. The cap screws (28 in each pump) and retaining devices were replaced with a new design.

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- o In late April 1994, the Salem, NH, Fire Department, which operated one of four reception centers for evacuees from the New Hampshire portion of the emergency planning zone, requested \$1.07 million for additional equipment, indicating that the requested resources would be needed for continued participation. Subsequent negotiations during May and early June between NH Office of Emergency Management and Salem did not resolve the issue. In late June, a site in Manchester, NH, was selected as the replacement for the Salem center. By the end of July, the new Manchester site was operational.
- o On August 10, 1994, a mechanic mispositioned a flow control valve in the spent fuel pool cooling system. A low flow alarm was acknowledged in the control room but the operator failed to followup on the cause. The low flow condition went uncorrected for more than 24 hours.
- o A routine underwater inspection (during 3RFO) of the cooling tower service water pumps led to the discovery of a number of severely corroded column flange and impeller bolts. Investigation revealed that the bolts supplied by the pump manufacturer had not been properly solution heat treated following fabrication and so were sensitized and susceptible to intergranular stress corrosion cracking. All bolts were replaced with properly heat treated bolts.

CURRENT CONCERNS

- o The plant operated very well during the second operating cycle. The unit was on line continuously for 325 days. However, 8 plant trips occurred during Cycle 3. Management implemented a trip reduction/trip avoidance program and a personnel error reduction program. Management needs to continue to focus efforts on these programs to assure further reductions in the personnel error rate. The plant has operated at full power since restart from the last refueling outage.
- o Management has instituted a cost-control program focused to assure that the station remains economically viable in the emerging competitive electric utility environment. The staff has been monitoring these efforts, and has concluded that there has been no adverse effects upon operational safety to date.
- o The licensee has reexamined the susceptibility of all safety-related motor operated valves to thermal binding or pressure locking and has concluded that there are no operability problems associated with the phenomena. However, during the next refueling outage, valve modifications will be made to preclude the possibility of pressure locking.

POINTS TO BE EMPHASIZED

- o None

SUPPORTING DOCUMENTATION

MILLSTONE NUCLEAR POWER STATION UNITS, 1, 2, AND 3
HADDAM NECK PLANT AND
SEABROOK STATION, UNIT NO. 1

1. Biographical Data
2. Organization charts

~~LIMITED OFFICIAL USE ONLY~~

Biographical Data

~~LIMITED OFFICIAL USE ONLY~~



CONNECTICUT YANKEE ATOMIC POWER COMPANY

HADDAM NECK PLANT
382 INJUN HOLLOW ROAD • EAST HAMPTON, CT 06424-3088

**FRED DACIMO
VICE PRESIDENT
HADDAM NECK STATION**



EDUCATION:

1973 STATE UNIVERSITY OF NEW YORK MARITIME COLLEGE
B.S., NUCLEAR ENGINEERING

EXPERIENCE:

CONNECTICUT YANKEE SITE

1994 - 1995 VICE PRESIDENT, HADDAM NECK STATION

MILLSTONE SITE

1993 - 1994 DIRECTOR, NUCLEAR UNIT 3
1989 - 1993 DIRECTOR, SITE SERVICES
1987 - 1989 SUPERVISOR, ENGINEERING
1983 - 1987 SUPERVISOR, MAINTENANCE UNIT 2
1980 - 1983 SUPERVISOR, QUALITY SERVICES
1976 - 1980 ENGINEER, QUALITY ASSURANCE
1975 - 1976 PROCEDURE WRITER, CONSOLIDATED ENERGY SERVICES
1974 - 1975 ENGINEER, EXXON CORPORATION

PROFESSIONAL:

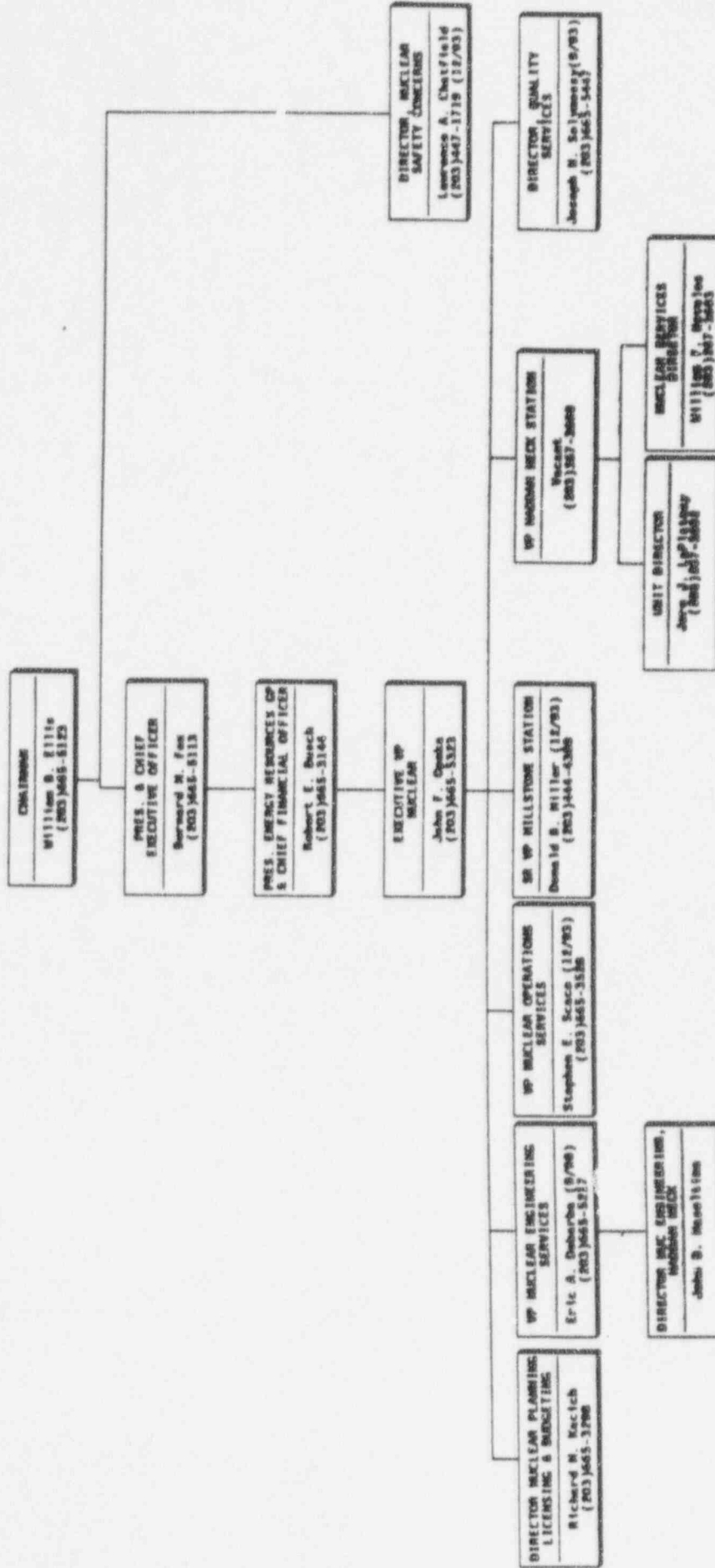
AMERICAN NUCLEAR SOCIETY
AMERICAN NAVAL SOCIETY

Organization Charts

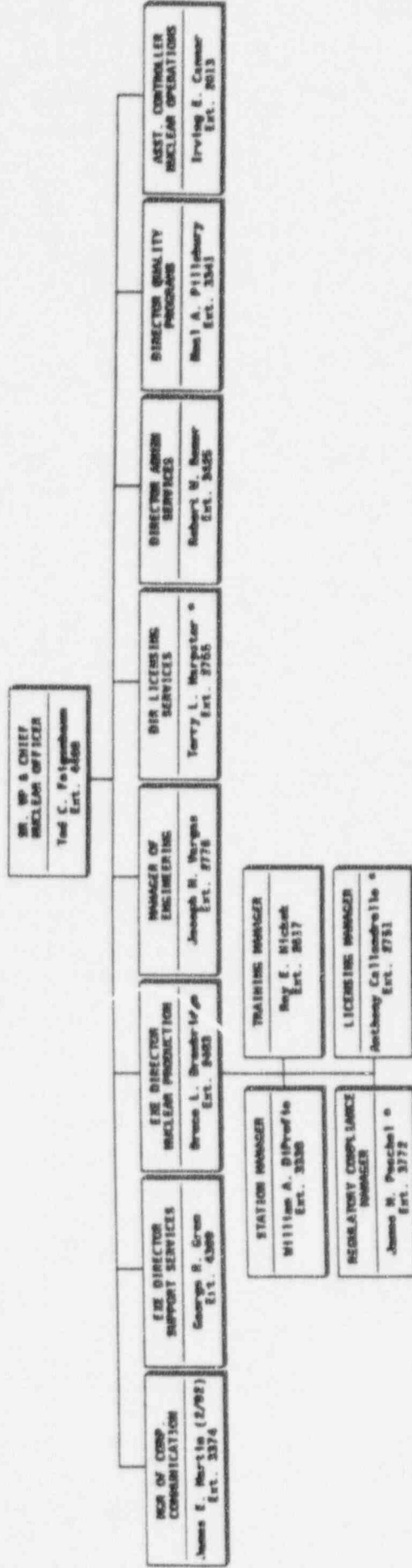
**DIRECTOR, SHELL OIL
SAFETY EDUCATION PROGRAM**

**L. A. Overholte (L2-703)
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CONNECTICUT YANKEE ATOMIC POWER COMPANY
NORWICH, CONNECTICUT



SOUTH ATLANTIC ENERGY SERVICE CORP.
MEMORANDUM



Mr. Harpster is detailed (March 1995) to work on the corporate reorganization effort in his absence, J. Prescher and A. Callandrelli report to B. Dranderidge.

Seitchman Phone
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