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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555

OFFICE OF THE
COMMISSIONER

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September 6, 1983

SERVED SEP 6 1983

MEMORANDUM TO THE FILES

FROM: James K. Joosten, Technical Assistant to Commissioner Gilinsky

SUBJECT: SEABROOK TRIP REPORT

At 8:15 am, on August 19, 1983 Commissioner Gilinsky, Roxanne Goldsmith and I arrived at the Seabrook site and met with Antone Cerne, the senior resident inspector. Mr. Cerne presented an agenda including fact sheets on the current status of the station. This information is attached. Following a brief review of the material, Mr. Cerne escorted us on a tour of the plant.

The following areas were inspected:

1. The Off-site Power Switchyard
2. The Unit 2 Containment
3. The Unit 2 Primary Auxiliary Building and Fuel Storage Building
4. The Ultimate Heat Sink Cooling Tower and Waste Processing Building
5. The Unit 1 Primary Auxiliary Building
6. The Unit 1 Reactor Containment
7. The Circulating Water Intake Tunnel
8. The Control Room and Cable Spreading Rooms
9. The Main Steam Safety Valve Room
10. The Simulator and Training Center

The Unit 2 activities were largely building construction and relatively few components had been set in place.

Unit 1, on the other hand, was approximately 75-80% complete. Most components had been set in place; however, pipe flushing and systems pre-operational testing had not yet begun.

The size of the Seabrook work force was discussed and Mr. Cerne indicated that, of the work force of approximately 9,000, about 5500 were on the day shift, and of these, approximately 4500 were assigned to Unit 1 activities.

The entire length of the Circulating Water (CW) Intake Tunnel was toured while accompanied by Mr. Tony Stewart and Mr. Jim Philbrich. The 19' diameter tunnel had been bored

DS02

through solid granite bedrock so as to minimize the enviromental impact on the 2½ mile swamp adjacent to the plant. The tunnel was approximately 260 ft. deep and ran horizontally approximately 3½ miles to the ocean. A similar tunnel had also been constructed for the CW System discharge.

The tour met with Mr. Gerald McDonald, PSNH QA manager, and Mr. Richard Davis, NDE/QA/QC Supervisor for Pullman-Higgins, to discuss welder qualifications and record-keeping. It was noted that Pullman-Higgins initially qualifies their welders using a multi-step "process" test. However, subsequent requalifications are done for the process only. Logs of weld rod requests are used to certify that the process was in fact used within the required currency time period.

While touring the simulator and training facility, it was noted that critical alarms for the reactor operators had been condensed onto one alarm panel. The several hundred non-critical alarms had been placed on CRT displays. Alarm response procedures and accident diagnostic procedures had also been innovatively incorporated on the same CRT's for easy operator access.

Following the simulator tour the Commissioner met with the PSNH management. A list of attendees is attached. Mr. Wendell Johnson discussed the construction schedule and indicated that the licensee was still hoping for a September 1984 fuel load date. The advisory role of the Florida Power and Light utility's management was also briefly discussed.

Mr. Bruce Beckley then discussed the emergency implementation procedures which are intended for the plant. He explained the notification sequence during an accident.

Mr. Beckley indicated that the station planned to "harden" the EOF which is located at the tour center adjacent to the plant. He said that the facility will have a protection factor of 5, be equipped with closed circuit ventilation, filtration systems and window covers. The back-up EOF is in an administration building 12 miles away. Commissioner Gilinsky asked why PSNH had chosen to locate the EOF so near to the plant, rather than in the administration building. Mr. Beckley said that PSNH felt it was more desirable this way since it would be closer to the plant staff and it would have better communications. Commissioner Gilinsky noted that, while that location might be acceptable for those accidents with small off-site releases, it was really intended to protect against accidents with larger releases. He expressed his concern that the evacuation of the EOF during the very accident for which it was intended might lead to even greater disorientation by the recovery teams. He further suggested that PSNH look at the intent of the EOF and not just the letter of the regulation. Mr. Beckley

agreed to do this. It was also mentioned that the emergency procedures were being prepared by both the Yankee organization and the station staff. The FEMA exercise, now scheduled for May 16, 1984, would probably be delayed.

To alert the beach community, Mr. Beckley said a warning system with both sirens and voice capability would be used. Three contractors are bidding for the final design, which should be completed in December and installed in March, 1984. Emergency plans have been drafted for all but 2 of the 23 towns within the EPZ.

Following the management meeting, the plant perimeter and two of the beach evacuation routes were toured under the guidance of Mr. Cerne.

Enclosures

ATTENDANCE OF MANAGEMENT MEETING
AUGUST 23, 1983

Victor Gilinsky	Commissioner, USNRC
James K. Joosten	Technical Assistant to Commissioner Gilinsky, USNRC
Roxanne Goldsmith	Special Assistant to Commissioner Gilinsky, USNRC
J. W. Singleton	Yankee Construction Field QA Manager
Bruce Beckley	PSNH Project Manager
A. C. Cerne	Senior Resident Inspector, USNRC
Gerald F. McDonald	Yankee Atomic Construction QA Manager
Wendell P. Johnson	PSNH, Vice President

AGENDA - COMMISSIONER GILINSKY VISIT - 8/19/83

8:00 am - Arrive on site & meet with Sr. Resident Inspector (SRI)

8:30 am - Tour site with SRI

9:30 am - Tour cooling tunnels with SRI & Licensee

11:15 am - Visit simulator & site training center

12:00 pm - Lunch

1:00 pm - Meeting with Licensee

-- Construction QA
-- Construction Planning and Schedule
-- Emergency Preparedness Status

Prepared by: A. Cerne

SEABROOK STATION

Current Status (July,'83):

Unit 1 - 80% complete; FLD = September 1984
Unit 2 - 23% complete; FLD = April 1987
(Note: NRC Caseload Forecast Panel estimate of Unit 1 FLD = February 1986)

Total Project Cost Estimate = $5.24 billion

Total Site Manpower = 9000 (two production shift/work day)

Full Licensing Hearings begin - August 17,1983

Issues -- disagreement between NRC/licensee on realistic Unit 1 Fuel Load Date.
-- funding of continued construction on Unit 2 with N.H. PUC and certain utilities of the joint owners' group recommending delay in Unit 2 completion.

Strengths -- Management is supportive of Quality Assurance.
-- Strong site QA implementation is evident at the surveillance and audit levels.
-- Licensee responsiveness to NRC initiatives/concerns is good.
-- Unit 2 construction is being facilitated by the Unit 1 learning curve.
-- Operator training reflects an advanced state of the art and utilizes a site-specific simulator.
-- The Operations staff is being integrated early into the Pre-Operational Test Program.

Weaknesses -- The organizational set-up of many contractors each with a different QA program makes construction manager control and QA overview difficult.
-- Programmatic problems have been identified in the past in the areas of process controls and design and design change controls (primarily UE&C interface breakdowns). Consequently, several as-built reviews and inspections and plant and system walkdowns are required to verify certain quality criteria.
-- The performance of the site piping contractor has been suspect in the areas of aggressive pursuit of corrective action, process controls, and QA program implementation.
-- While it has not been heretofore detrimental to construction quality, schedular pressures are present and in evidence in certain construction manager programs and policies.

SEABROOK UNIT 1

Owner/Operator: Public Service Company of New Hampshire (with 15 other joint owners)

Address: Seabrook Station
Rt. 1, Box 300
Seabrook, NH 03874

Type: Pressurized light water moderated and cooled.

NSSS Supplier/AE/Turbine Supplier: Westinghouse/UE&C/General Electric

Design Output: 3411 MWt, 1198 MWe(gross), 1148 MWe(net)

Fuel: 3 region core, 2.37% av. enrichment, 17 x 17 array, 50952 rods, Zirc-4 clad; sintered UO_2 pellets; 264 rods/assembly, 193 fuel assemblies, 132.7 in. core diameter (equivalent); 143.7 in. activ fuel height. Fuel weight as UO_2: 222,739 lbs.

Control: 57 RCC hybrid assemblies (B_4C and Ag-In-CD), 304 SS clad, 24 rods/assembly. 946 burnable poison rods (Borosilicate glass).

Reactor Vessel: 173 in. ID; clad with 0.125 in. SS, 43 ft. 10 in. high, 8-5/8 in. wall thickness.

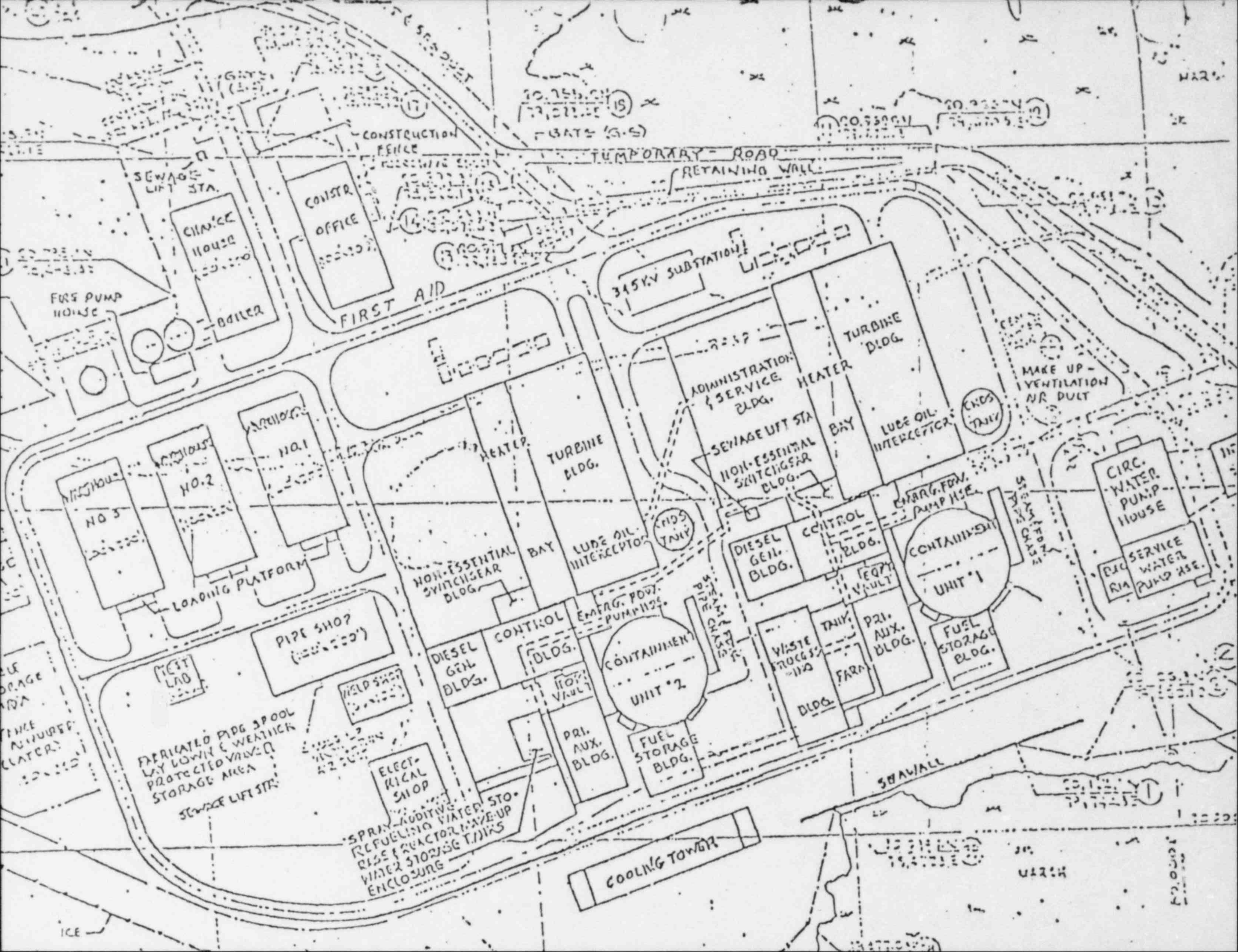
Thermal & Hydraulic: 2250 psia RCS operating pressure. 142.1×10^6 lbm/hr total coolant flow, 558.8°F nominal reactor inlet; 62.6°F av. rise in core; 189800 Btu/hr-ft^2 average heat flux.

Containment: Reinforced concrete right vertical cylinder with hemispherical dome: 140 ft. ID, 219 ft. inside height. Vertical wall thickness 4 ft. 6 in. - 4 ft. 7 1/2 in. dome thickness 3 ft. 6 1/8 in. Foundation mat thickness 10 ft. Founded on bedrock. Max leak rate is 0.1%/day at 52 psig design. Free volume is 2.704×10^6 Ft^3. Calculated DBA containment pressure is 46.1 psig. Containment building is surrounded by containment enclosure building 158' ID varying in thickness 36" - 15", clearance betwee buildings 5' 6".

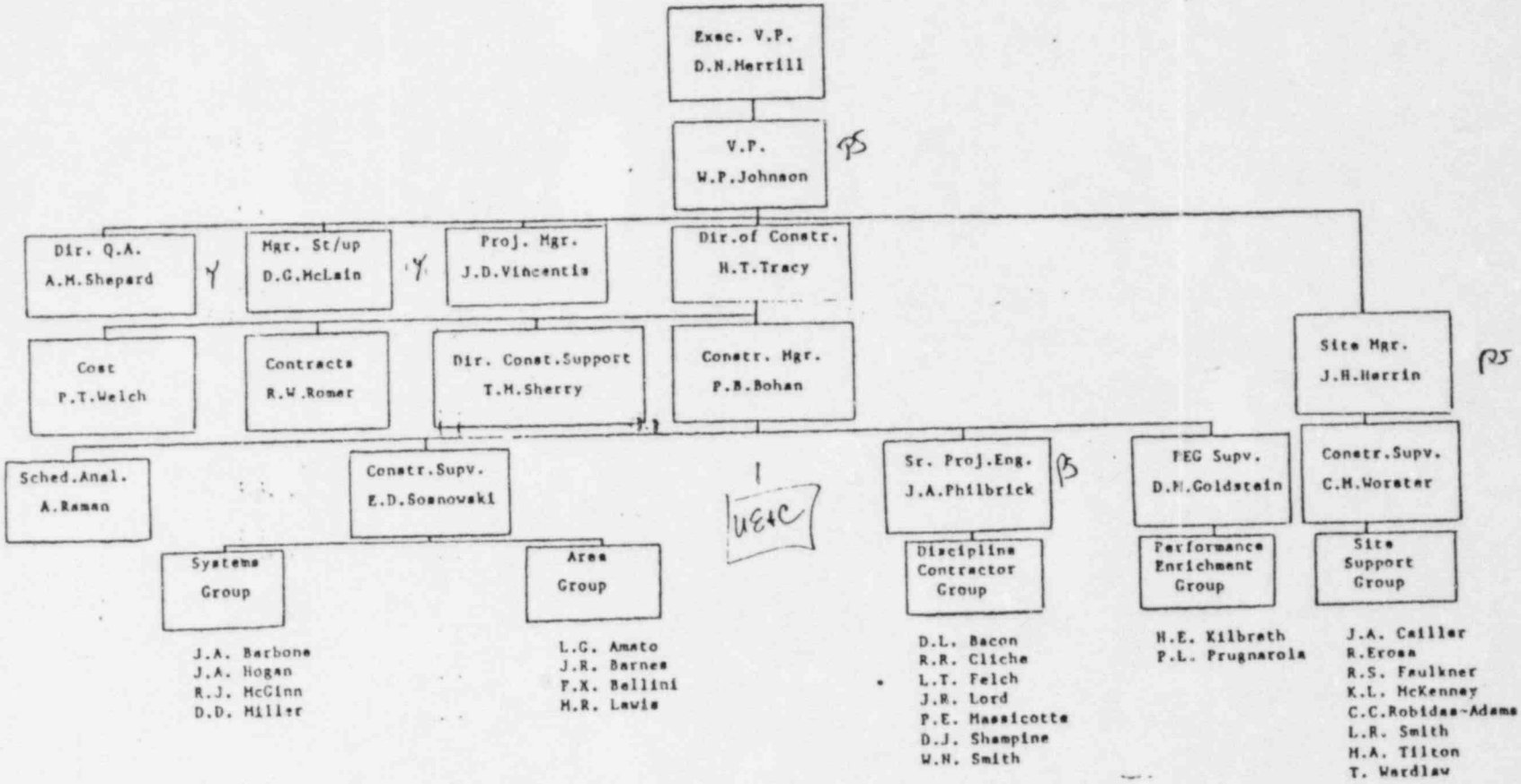
ECCS:	QTY	DRIVE	TYPE	GPM
Centrifugal Charging Pumps	1	Elect	Centri	150 @ 5800 ft.
Safety Injection Pumps	2	Elect	Centri	425 @ 2700 ft.
Residual Heat Removal Pumps	2	Elect	Centri	3000 @ 375 ft.
Safety Injection Accumulators	4 tanks each with 1900 ppm Boron in 850 ft^3 water at 600 psig.			

Containment Cooling: Initiation: 20.4 psig (18.0 psig nominal) Spray: 2 electric centrifugal pumps 3010 GPM each (independent systems). Fans: 6 units, 56000 CFM each

Electrical: Offsiste power: 3 sources
Battery: 125 V DC
2 Diesel Generators: 8375 KVA @ 0.8pf continuous, each


TEMPORARY ROAD
RETAINING WALL
CONSTRUCTION FENCE
SEWAGE LIFT STA.
CHANGE HOUSE
BOILER
CONSTR. OFFICE
FIRE PUMP HOUSE
FIRST AID
345 K.V SUBSTATION
ADMINISTRATION & SERVICE BLDG.
SEWAGE LIFT STA
NON-ESSENTIAL SWITCHGEAR BLDG.
HEATER BAY
TURBINE BLDG.
LUBE OIL INTERCEPTOR
CHEM. TANK
MAKE UP VENTILATION AIR DUCT
CIRC. WATER PUMP HOUSE
SERVICE WATER PUMP HSE.
CHARG. PUMP HSE.
CONTROL BLDG.
DIESEL GEN. BLDG.
EQPT. VAULT
CONTAINMENT UNIT #1
FUEL STORAGE BLDG.
WASTE PROCESS BLDG.
TANK FARM
PRI. AUX. BLDG.
EMERG. POWER PUMPHSE.
CONTAINMENT UNIT #2
HOT VAULT
NO. 1
NO. 2
NO. 3
LOADING PLATFORM
PIPE SHOP
WELD SHOP
HEAT LAB
ELECTRICAL SHOP
FABRICATED PIPE SPOOL LAY DOWN & WEATHER PROTECTED VALVE STORAGE AREA
STORAGE LIFT STA.
SPRAY ADDITIVE, REFUELING WATER, REACTOR MAKE-UP WATER STORAGE TANKS ENCLOSURE
SEAWALL
COOLING TOWER
ICE

OWNER'S CONSTRUCTION MANAGEMENT GROUP



August 1, 1983

United Engineers

DAILY CONSTRUCTION REPORT

Seabrook, New Hampshire

Job: 9763.011

FRIDAY Date AUG 12 1983

SUBCONTRACTORS	SUPERVISION & OFFICE	BOILERMAKERS	Inspectors	CARPENTERS	CEMENT FINISHERS	ELECTRICIANS	FIELD PARTIES	Guards	IRONWORKERS (REINFORCING)	LABORERS	MILLWRIGHTS	PAINTERS	Sheet metal workers	PIPEFITTERS-PLUMBERS	OPERATING ENGINEER	Teamsters	OTHER	TOTAL
U. E. & C. & JOB SHOP	1417/1268						47/42			14/13						4/3	91/91	1573/1417
PERINI	245/189			527/406	57/51		33/31		315/242	575/509	36/34			52/45	118/118	64/58		2022/1683
PULLMAN-HIGGINS	447/323	20/0									21/18			1082/941			44/34	1614/1316
SHAH FAB, INC.	63/54								3/3				232/194				10/10	313/261
MORRISON-KNUDSEN	15/15			1/1		6/6				52/50					28/28	2/2	-	104/102
P. D. M.	7/7	36/36																43/43
PITTSBURGH TESTING	3/2		22/17															25/19
N. E. SURFCO-LEONARD	12/12											52/50						64/62
ROCKINGHAM SECURITY								57/57										57/57
GENERAL ELECTRIC	4/4					1/1				1/1	6/6			1/1				13/13
FISCHBACH-BOULOS	213/192					651/601												864/793
JOHNSON CONTROL	133/113													204/180				337/293
DANIEL O'CONNELL	1/1																	1/1
OTIS ELEVATOR			NO				REPORT											—
GRINNELL	3/3																8/5	11/8
NISCO	9/7	6/6								2/2								17/15
WILLIAM CRANE	3/3									14/14					2/2			19/19
UNION BOILER	2/2	12/12																14/14
E.F. BRYNES	2/2									3/3							1/1	6/6
MORIN ERRECTION	2/2								9/9									11/11
TERMINATIONS / HIRES																		7108/6133
ND 4:00 - 12:00	204/172		3/3	278/179	15/11	208/140	25/19	53/53	127/85	346/272		28/20	12/12	37/31	74/45	27/21		1710/1423
) 12:00 - 7:30	35/27			13/9		8/7		49/49		61/102		29/26			31/31	1/1		230/212
TOTALS	5010/[illegible]	74/54	23/20	814/595	72/62	874/805	105/92	154/159	450/359	1041/921	63/53	104/96	247/206	1590/1478	252/254	93/85	154/141	9048/7768

Seabrook Station STATUS REPORT

PSNH

AUGUST 1983 (Data through June 1983)
A MONTHLY news media update on Seabrook Station

BACKGROUND

Seabrook Station is a two-unit, nuclear-fueled, electric generating station being built to supply the major share of New Hampshire's electrical needs, as well as helping meet the needs of the other New England states. Seabrook Station's design is a pressurized-water reactor system; ocean cooling water to condense steam will come into the plant through deep bedrock tunnels. Each turbine-generator unit will have the net production capacity of 1,150,000 kilowatts of electricity. Seabrook Station will potentially save 23 million barrels of oil each year it is in operation.

JULY MILESTONES

Structural work on Unit 1 containment building completed six weeks ahead of schedule; permanent plant security guardhouse completed.

CONSTRUCTION STATUS

Total project cost estimate: $5.24 billion. Unit 1, 79.8% complete*, scheduled for operation 12/84; Unit 2, 22.5% complete*, scheduled for operation 7/87; total project, 60.9% complete*.

Buildings and equipment		Percent complete*
Administration building		100
Circulating water tunnels		97
Circulating water pumphouse/ service water pumphouse		89
Control building:	Unit 1	91
	Unit 2	29
Cooling tower		92
Diesel generator:	Unit 1	80
	Unit 2	32
Emergency feedwater building:		
	Unit 1	79
	Unit 2	3
Equipment vault:	Unit 1	88
	Unit 2	31
Fire pump house		100
Fuel storage building:		
	Unit 1	75
	Unit 2	31
Guard house		100
Non-essential switchgear room:		
	Unit 1	89
	Unit 2	17
Penetration shield tunnel:		
	Unit 1	77
	Unit 2	16
Primary auxiliary building:		
	Unit 1	60
	Unit 2	15
Reactor containment building:		
	Unit 1	76
	Unit 2	29
Sewage treatment plant		100
Switchyard		99
Turbine generator building:		
	Unit 1	90
	Unit 2	23
Waste processing building		69
Yard work		79

*Percent complete is based on man-hours earned to date.

SIGNIFICANT QUANTITIES OF MATERIALS USED

Material	Installed to date	Percent of total	At completion
Structural concrete (cubic yards)	336,447	85	398,141
Structural rebar (tons)	48,253	83	57,935
Cadwelds (each)	68,481	85	80,729
Large bore pipe (linear feet)	142,168	49	293,101
Large bore valves (each)	1,767	47	3,749
Electrical conduit (linear feet)	427,928	56	761,012
Cable tray (linear feet)	80,653	53	152,950
Electrical cable (linear feet)	3,251,134	42	7,795,930

TOTAL WORK FORCE ON-SITE (July 29, 1983)

Total: 7,978. From New Hampshire- 58%; Massachusetts- 18%; Maine- 10%; other-14%.

EDITORS

For photographs of milestones, or further information, call John B. Cavanagh, manager, Information and Education,

ELECTRIC COMPANIES JOINTLY OWNING SEABROOK STATION

Public Service of New Hampshire
The United Illuminating Company
Massachusetts Municipal Wholesale Electric Company
New England Power Company
Central Maine Power Company
The Connecticut Light and Power Company
Commonwealth Electric Company
Montaup Electric Company
Bangor Hydro-Electric Company
New Hampshire Electric Cooperative, Inc.
Central Vermont Public Service Corporation
Maine Public Service Company
Fitchburg Gas & Electric Light Company
Vermont Electric Cooperative, Inc.
Taunton Municipal Lighting Plant Commission
Hudson Light and Power Department