

SAXTON NUCLEAR EXPERIMENTAL CORPORATION

Operations Report for November 1968

1. REACTOR OPERATIONS

The reactor was in a cold shutdown condition throughout this report period for defueling of Core II.

On November 25 and 26 the facility was made available for reactor operator examinations. Seven Westinghouse customer trainees completed ABC written and oral examinations for reactor operator licenses.

2. GENERAL

The plant outage which was begun on October 18, was continued throughout this report period.

At the beginning of the month work was underway in preparation for removal of the reactor vessel head. On November 8, the reactor vessel head was removed and stored on the operating level. On November 12, the upper barrel with the instrument package was removed and placed on the storage platform in the storage well.

The irradiated fuel shipping cask was received on November 6. Four plutonium 9x9 fuel assemblies were removed from the reactor, loaded into the shipping cask and shipped to the Westinghouse Post Irradiation Facility on November 16. The shipping cask was again received at Saxton on November 19. Three plutonium 9x9 assemblies and one Core I 9x9 assembly were loaded into the cask. The cask was shipped on November 21. During the period November 13 thru 20 the remaining fourteen 9x9 assemblies and six control rods were removed from the reactor and stored in the fuel storage rack.

Insulation was removed from the main coolant system piping on the suction and discharge of the main coolant pump and from the steam generator and the pressurizer as part of the main coolant system inspection. The areas to be inspected were wire brushed to remove paint and oxides in order to get to the base metal. The secondary side of the steam generator was inspected with no abnormal conditions found.

Installation of a Recirculation System was started during this period. An additional check valve was installed in each safety injection line. The RWST level d/p cell penetrations were made into the tank during the period the storage well was flooded. The pressurizer safety valve platform was fabricated and installed and a section of the safety valve discharge piping was removed. The recirculation system level and pressure transmitters power supplies were connected to the vital bus and the emergency bus. The RWST level indicators and a control switch for a motor operated valve were installed in the control room on panel H. The additional control switches for the recirculation pumps and the motor operated valve will be installed after installation of the pumps and valves.

3. EXPERIMENTAL PROGRAM

Both the conductivity boron analyzer and the absorption boron analyzers were swapped from the site during the month for additional testing and evaluation at other sites.

4. OPERATIONAL TESTS

The SNEC fire and evacuation alarms were tested on November 1, 8, 15, 22 and 29.

The monthly test of the radiation monitoring system was completed on November 1.

The monthly test of the safety injection system was not conducted due to the depressurized condition of the main coolant system.

5. MAINTENANCE

The principal items of mechanical maintenance during the month included repacking the safety injection pumps; installing a new universal and repairing the shaft on the containment vessel rotary crane; inspecting the RWST internally; installing new condensate return line piping to the condensate surge tank; replacing the five micron filters in the storage well filter; installing steam tracing on the discharge tank piping; removal of the steam generator secondary side manway and handholes; and repairing leaks in the containment vessel air handler steam coil.

The major items of electrical and instrument maintenance included installing a new clothes dryer; calibration of the containment vessel pressure transmitter; relocating the watthour meter relay above the VFG control cabinet; installing a new vacuum pump on site particulate monitor, RIC-8; cleaning the leak-off system d/p cell; repairing the RWDF hotwell level d/p cell; calibration of the pressurizer pressure channel, PIC-3; repairing the purification filter d/p transmitter; installing reactor vessel head bolt heaters; repairing a portable CP-3 survey meter; replacing a transformer on the stack radiation monitor, RIC-3; installing new hoses on the instrument air dryer piston and a new heating element in the drying column; replacing tubes in the computer indicator circuit for RWDF effluent monitor, RIC-6; replacing the brake shoes on the containment vessel rotary crane; and repairing the indicator on the RWDF tank bubbler system.

6. CHEMISTRY

The main coolant system was in cold shutdown and open to the storage well throughout this report period. A summary of the analyses performed on main coolant samples taken during this period is contained in the following table:

<u>Main Coolant Samples</u>	<u>Minimum</u>	<u>Maximum</u>
pH at 25°C	5.07	5.65
Conductivity, umhos	5.82	8.55
Boron, ppm	1754	1875
Chlorides, ppm	< 0.005	< 0.005
Gross Beta-Gamma (15 Min. Degassed) uc/cc	7.52×10^{-4}	3.46×10^{-2}
Tritium, uc/cc	8.38×10^{-3}	1.15×10^{-2}

A component cooling sample analyzed on November 21 showed the pH to be 8.83 and the chromate concentration to be 500 ppm. The gross beta-gamma activity was 6.08×10^{-6} uc/cc.

7. RADIATION AND WASTE DISPOSAL

Radiation surveying consisted of routine plant surveys, C.V. during shut down and materials shipments. The following maximum radiation readings were taken:

<u>Location</u>	<u>Radiation Reading</u>
<u>CGA Building</u>	
Waste Drum (baling machine)	1.2 mrem/hr beta-gamma
Charging Pump (contact with chamber)	32 mrem/hr beta-gamma
Sample Room (door of sample panel)	1.5 mrem/hr beta-gamma
Chemical Lab Hot Sink (1" from drain)	11 mrem/hr beta-gamma
<u>RWDF</u>	
Evaporator (under bottom)	17 mrem/hr beta-gamma
Evaporator (contact outside upper level)	5 mrem/hr beta-gamma
Drum Storage Area (at HRA fence)	7.5 mrem/hr beta-gamma
<u>C.V.</u>	
Primary Compartment (general upper level)	150 mrem/hr beta-gamma
Primary Compartment (contact M.C. pump volute)	1100 mrem/hr beta-gamma
Primary Compartment (S.G. bottom)	450 mrem/hr beta-gamma

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Location

Radiation Reading

Primary Compartment (pressurizer bottom)	150 mrem/hr beta-gamma
Primary Compartment (general lower level)	75 mrem/hr beta-gamma
Primary Compartment (Regen. HX)	450 mrem/hr beta-gamma
Primary Compartment (Non-Regen. HX)	35 mrem/hr beta-gamma
Auxiliary Equipment Compartment (S.C.H.X.)	8 mrem/hr beta-gamma
Auxiliary Equipment Compartment (D.T. top)	10 mrem/hr beta-gamma
Auxiliary Equipment Compartment (D.T. bottom)	30 mrem/hr beta-gamma
Auxiliary Equipment Compartment (general lower level)	5 mrem/hr beta-gamma
Reactor Deck (water level at grating)	50 mrem/hr beta-gamma
Reactor Deck (instrument ports)	700 mrem/hr beta-gamma
Reactor Deck (waist level)	30 mrem/hr beta-gamma
Reactor Deck (storage well railing)	35 mrem/hr beta-gamma
Reactor Head (after removal - underneath)	1000 mrem/hr beta-gamma
Instrument Rack (top)	350 mrem/hr beta-gamma

Contamination surveying consisted of routine plant site surveys, surveys of materials shipped, tools, equipment and C.V. during shutdown. The clean areas were within the "Clean Area" limits. The controlled areas were generally within the "Clean Area" limits. The controlled area was cleaned frequently to keep and/or to return it to the "Clean Area" limits. The exclusion areas were cleaned periodically to minimize the amount of smearable contamination. The following contamination levels were observed:

Location

Contamination Reading

C&A Building

Charging Pump Chamber	21700 d/m/smear beta-gamma
Charging Pump Chamber	< 10 d/m/smear alpha
Charging Room Floor	951 d/m/smear beta-gamma
Sample Room Sink	75000 d/m/smear beta-gamma
Sample Room Sink	< 10 s/m/smear alpha
Sample Room Floor	355 d/m/smear beta-gamma
Chemical Lab Hot Sink	11210 d/m/smear beta-gamma
Chemical Lab Hot Sink	< 10 d/m/smear alpha

RWDF

Pump Room Floor	1010 d/m/smear beta-gamma
Shipping Room Floor	< 100 d/m/smear beta-gamma

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Location

Contamination Reading

C.V.

Operating Deck	2400 d/m/smear beta-gamma
Operating Deck	< 10 d/m/smear alpha
Reactor Deck (head)	35100 d/m/smear beta-gamma
Reactor Deck (head)	< 10 d/m/smear alpha
Reactor Deck (grating)	26000 d/m/smear beta-gamma
Reactor Deck (grating)	< 10 d/m/smear beta-gamma
Primary Compartment (grating)	7000 d/m/smear beta-gamma
Primary Compartment (grating)	< 10 d/m/smear alpha

Miscellaneous

Fuel Cask (11-15-68)	1880 d/m/smear beta-gamma
Fuel Cask (11-15-68)	< 10 d/m/smear alpha
Fuel Cask (11-20-68)	1200 d/m/smear beta-gamma
Fuel Cask (11-20-68)	< 10 d/m/smear alpha

Liquid and gaseous effluents from the SNEC site for the month of November 1968 were as follows:

<u>Effluent Type</u>	(Curie) Activity <u>This Month</u>	(Curie) Activity <u>Year to Date</u>	(Curie) Activity <u>Last Twelve Months</u>
Liquid	0.001489	0.009021	0.013458
Tritium	0.928122	7.376117	7.573459 *
Air, Xe	0.001325	18.598395	23.219115
Air, I-131	0.000000	0.000494	0.000494
Air, M.F.P.	0.000013	0.185983	0.232191

* Contains a 0.193 correction for August 1968

Seven barrels of waste were drummed for temporary storage. Thirty-one drums were shipped from the site.

Radiation exposures for all SNEC personnel as measured by film badges for the month of October, 1968, were a maximum of 515 mrem with an average of 95.3 mrem.

Radiation exposures for all visiting personnel as measured by film badges for the month of October, 1968, were a maximum of 0 mrem with an average of 0.0 mrem.

The average radiation exposures for all personnel as measured by film badges for the month of October, 1968, was 63.8 mrem.

SAXTON NUCLEAR EXPERIMENTAL CORPORATION

OPERATING STATISTICS

MONTH November YEAR 1966

<u>NUCLEAR</u>	<u>UNIT</u>	<u>MONTH</u>	<u>YEAR</u>	<u>TO DATE</u>
TIMES CRITICAL	NO.	0	261	823
HOURS CRITICAL	HRS.	0	2,375.49	22,948.49
TIMES SCRAMMED (MANUAL)	NO.	0	122	449
* TIMES SCRAMMED (INADVERTANT)	NO.	0	11	42
THERMAL POWER GENERATION	MWH	0	51,309.92	429,359.85
AVERAGE BURNUP	MWD/MTU	0	4,194.80	18,029.03
CONTROL ROD POSITIONS AT END OF MONTH AT EQUILIBRIUM POWER OF <u>0</u> Mwt				
MAIN COOLANT BORON <u>1861</u> PPM				

RODS OUT - INCHES

NO. 1 <u>0</u>	NO. 2 <u>0</u>	NO. 3 <u>0</u>
NO. 4 <u>0</u>	NO. 5 <u>0</u>	NO. 6 <u>0</u>

<u>ELECTRICAL</u>	<u>UNIT</u>	<u>MONTH</u>	<u>YEAR</u>	<u>TO DATE</u>
GROSS GENERATION	MWH	0	9,149.8	72,426.3
STATION SERVICE	MWH	92.50	2,862.75	15,078.65
STATION SERVICE	%	0	31.29	20.81
AVG. PLANT EFFICIENCY - MWH(e)/MWH(t)	%	0	17.80	16.87
AVG. GENERATION RUNNING (<u>0</u> HRS)	KW	0	4,451.85	3,461.11
PLANT LOAD FACTOR - (AVG. GEN. FOR MONTH/MAX. LOAD)	%	0	18.06	19.78

AUXILIARY STEAM SUPPLY - NUCLEAR

STEAM SUPPLIED BY REACTOR	HRS.	0	2,108.65	19,259.74
RWDF EVAPORATOR OPERATION	HRS.	196.5	856.46	7,414.86

* REMARKS: _____

AVERAGE REACTOR POWER - MW

(UPPER CURVE)

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DAILY AVERAGE POWER LEVEL OR November, 1968

--- INTERMITTENT OPERATION

--- CONTINUOUS OPERATION

AVERAGE ELECTRICAL POWER (GROSS) - MW

(LOWER CURVE)

