SAXTON NUCLEAR EXPERIMENTAL CORPORATION

Operations Report for August 1969

V-H

1. GENERAL

At the beginning of this report period, the primary system was in a cold, depressurized condition for replacement of a conoseal gasket which had been leaking at operating temperature and pressure. After replacement of the gasket and pressurizing the primary system, the conoseal gasket was still leaking. In order to continue with low power operation of the reactor, a new conoseal with a cap was designed and fabricated to seal off the entire port, since the teleflex thimbles are only required for power physics measurements. The necessary design and fabrication of a seal will be made during the zero power operation.

An Atomics International reactor vessel material specimen was inserted in N-6 core position for irradiation on August 5.

2. REACTOR OPERATIONS

On August 15 filling and venting of the primary system was completed and heatup initiated. On August 17, a hot leak test of the primary system was performed at 2560 psig to test the repairs on the reactor vessel instrumentation port.

The period from August 17 thru August 22 was used for startup training for both SNEC trainees and Westinghouse customer trainees. A total of twenty-six full startups and fifty-nine recoveries were made. On completion of the startups, control rod drop times were measured as a continuing check on control rod six requalification.

The period from August 25 thru August 29 was used for the written, oral and reactor startup portion of the AEC operator examinations for twenty-two Westinghouse trainees.

3. EXPERIMENTAL PROGRAM

Background and zero power data were collected on the Failed Fuel Monitor System after calibration and checkout of the system.

4. OPERATIONAL TESTS

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

The monthly test of the safety injection and recirculation system was conducted on August 18.

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

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5. MAINTENANCE

The principal items of mechanical maintenance during the month included installing a new battery in the forklift truck; repairing the safety chains around the storage well; replacing a rupture disc on the caustic neutralizing pump; repairing the flowmeter on the makeup purification system piping; replacing the pre-filters and absolute filters on the control rod room air handler; repacking and installing a seal ring on the boric acid mix pump; installing a new rupture disc on the saline pump; oiling all pumps and motors outside the containment vessel; installing a fitting on the safety injection system pump pressure gauge line; lapping the seat on the demineralized water relief valve; installing a river water connection in the RWDF compressor room; repairing a bonnet leak on the main steam line drain valve; and installing a modified conoseal cap on reactor vessel instrument port N-7.

The major items of electrical and instrument maintenance included repairing the timer circuit on the count room liquid scintillation counter; cleaning contacts on the VFC relays; checking the specific gravity of the station service batteries; adjusting the mechanical trip linkage of the 440V bus tie breaker; installing a new cable and detector in source range channel A nuclear detector; cleaning the pneumatic lines of the steam generator level control loop; repairing the saline pump pressure gauge; cleaning the (RWDF) liquid effluent monitor holdup tank; repairing the alpha probe for a portable survey meter; replacing the power cord on the count room G-M scaler; replacing batteries in a portable survey meter; cleaning and lubricating the control room multipoint temperature recorder; and cleaning the instrument air solenoid valve on the chem shim inlet valve, HIC-27V.

6. CHEMISTRY

The primary coolant system was in a cold shutdown condition until August 15. On August 15, hydrazine was added during the filling and venting and the oxygen concentration reduced to 0.015 ppm. Heatup was completed on August 17 and the system maintained in a hot, pressurized condition for the remainder of the month.

Analyses of the primary coolant samples are summarized in the following table:

	Minimum	Maximum
pH at 25°C	5.80	6.70
Conductivity, umhos	3.95	18.6
Boron, ppm	618	753
Chlorides, ppm	<0.005	<0.005
Oxygen, ppm	<0.005	<0.005
Lithium, ppm	0.15	0.18
Crud, ppb	44	150
Gross Beta-Gamma (15 Min. Degassed) uc/cc	2.06×10^{-2}	6.41×10^{-2}
Tritium, uc/cc	4.53×10^{-3}	4.90×10^{-3}

6. CHEMISTRY (Continued)

Analysis of the component cooling water is as follows:

pH	Conductivity	CrO_4, ppm	Activity, uc/cc
8.79	891	355	4.27×10^{-5}

Analysis of the RWST water and storage well water is as follows:

	RWST	Storage Well
pH	5.15	4.98
Conductivity, umhos	5.30	5.85
Boron, ppm	1628	1758
Chlorides, ppm	<0.005	<0.005
Activity-Beta Gamma, uc/cc	5.17×10^{-4}	7.77×10^{-4}
Tritium, uc/cc	9.43×10^{-3}	9.78×10^{-3}

7. RADIATION AND WASTE DISPOSAL

Radiation surveying consisted of routine plant surveys, and the containment vessel. The following maximum radiation readings were taken:

Location	Radiation Reading
C&A building	
Waste Drum (baling machine)	1.25 mrem/hr beta-gamma
Charging Pump (contact with chamber)	22.5 mrem/hr beta-gamma
Sample Room (door of sample panel)	1.9 mrem/hr beta-gamma
Chemical Lab Hot Sink (1" from drain)	4.1 mrem/hr beta-gamma
RWDF	
Evaporator (under bottom)	10.5 mrem/hr beta-gamma
Evaporator (contact outside upper level)	5 mrem/hr beta-gamma
Drum Storage Area (at HRA fence)	3.2 mrem/hr beta-gamma
C.V.	
Primary Compartment (general upper level)	100 mrem/hr beta-gamma
Primary Compartment (contact M.C. pump volute)	350 mrem/hr beta-gamma
Primary Compartment (S.G. bottom)	260 mrem/hr beta-gamma
Primary Compartment (pressurizer bottom)	110 mrem/hr beta-gamma
Primary Compartment (general lower level)	70 mrem/hr beta-gamma
Primary Compartment (Non-Regen. HX)	55 mrem/hr beta-gamma
Primary Compartment (Regen. HX)	340 mrem/hr beta-gamma
Auxiliary Equipment Compartment (S.C.H.X.)	9 mrem/hr beta-gamma
Auxiliary Equipment Compartment (D.T. top)	8 mrem/hr beta-gamma
Auxiliary Equipment Compartment (D.T. bottom)	80 mrem/hr beta-gamma
Auxiliary Equipment Compartment (general lower level)	3 mrem/hr beta-gamma
Reactor Tank (water level at grating)	50 mrem/hr beta-gamma
Reactor Tank (instrument ports)	250 mrem/hr beta-gamma

7. RADIATION AND WASTE DISPOSAL (Continued)

C.V. (Continued)

	Radiation Reading
Reactor Deck (waist level)	75 mrem/hr beta-gamma
Reactor Deck (storage well railing)	50 mrem/hr beta-gamma
Letdown Valve	100 mrem/hr beta-gamma

Contamination surveying consisted of routine plant site surveys, surveys of materials shipped, tools, equipment and the containment vessel. 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
CAA Building	
Charging Pump Chamber	11720 d/m/smear beta-gamma
Charging Pump Chamber	<10 d/m/smear alpha
Charging Room Floor	202 d/m/smear beta-gamma
Sample Room Sink	20900 d/m/smear beta-gamma
Sample Room Sink	<10 d/m/smear alpha
Sample Room Floor	112 d/m/smear beta-gamma
Chemical Lab Hot Sink	6690 d/m/smear beta-gamma
Chemical Lab Hot Sink	<10 d/m/smear alpha
RWDF	
Pump Room Floor	490 d/m/smear beta-gamma
Shipping Room Floor	<100 d/m/smear beta-gamma
C.V.	
Operating Deck	1874 d/m/smear beta-gamma
Operating Deck	<10 d/m/smear alpha
Reactor Deck (head)	45600 d/m/smear beta-gamma
Reactor Deck (head)	<10 d/m/smear alpha
Reactor Deck (grating)	37500 d/m/smear beta-gamma
Reactor Deck (grating)	<10 d/m/smear alpha
Primary Compartment (grating)	6521 d/m/smear beta-gamma
Primary Compartment (grating)	<10 d/m/smear alpha

7. RADIATION AND WASTE DISPOSAL (Continued)

Liquid and gaseous effluents from the SNEC site for the month of August, 1969 were as follows:

Effluent Type	(Curie) Activity This Month	(Curie) Activity Year to Date	(Curie) Activity Last Twelve Months
Liquid	0.000146	0.004571	0.006996
Tritium	0.128700	0.773151	3.130972
Air, Xe	0.000053	0.270099	2.558279
Air, I-131	0.000000	0.000000	0.000143
Air, M.F.P.	0.000000	0.002700	0.025582

No barrels of waste were drummed for temporary storage. No drums were shipped from the site.

Radiation exposure for all SNEC personnel as measured by film badges for the month of July, 1969, were a maximum of 372 mrem with an average of 29.6 mrem.

Radiation exposure for all visiting personnel as measured by film badges for the month of July, 1969, were a maximum of 0 mrem with an average of 0 mrem.

The average radiation exposure for all personnel as measured by film badges for the month of July, 1969, was 20.18 mrem.

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OPERATING STATISTICS

MONTH AUGUST YEAR 1969

NUCLEAR	UNIT	MONTH	YEAR	TO DATE
TIMES CRITICAL	NO.	107	178	1,001
HOURS CRITICAL	HRS.	45.66	139.24	23,087.73
TIMES SCRAMMED (MANUAL)	NO.	30	59	508
* TIMES SCRAMMED (INADVERTANT)	NO.	0	1	43
THERMAL POWER GENERATION	MWH	0	0	429,077.53
AVERAGE BURNUP	MWD/MTU	0	0	18,029.03

CONTROL ROD POSITIONS AT END OF MONTH AT EQUILIBRIUM POWER OF 0 MWt

MAIN COOLANT BORON 631 PPM

RODS OUT - INCHES

NO. 1 0 NO. 2 10 NO. 3 0

NO. 4 0 NO. 5 10 NO. 6 0

ELECTRICAL	UNIT	MONTH	YEAR	TO DATE
GROSS GENERATION	MWH	0	0	73,529.3
STATION SERVICE	MWH	218.11	1,100.08	16,273.48
STATION SERVICE	%	0	0	22.12
AVG. PLANT EFFICIENCY - MWH(e)/MWH(t)	%	0	0	17.14
AVG. GENERATION RUNNING (0 HRS)	KW	0	0	3,461.11
PLANT LOAD FACTOR - (AVG. GEN. FOR MONTH/MAX. LOAD)	%	0	0	18.03

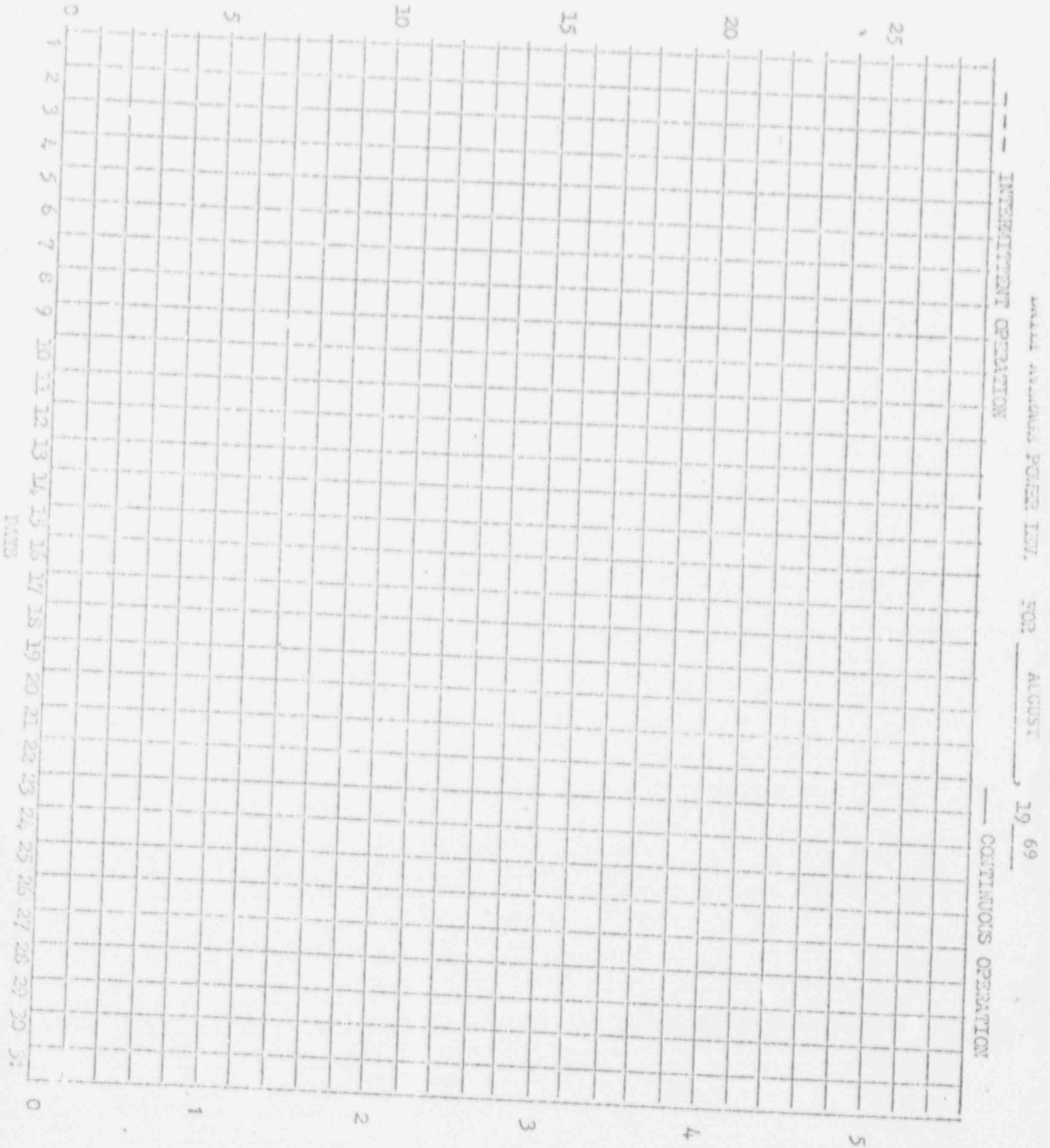
AUXILIARY STEAM SUPPLY - NUCLEAR

STEAM SUPPLIED BY REACTOR	HRS.	0	0	19,259.74
RWDF EVAPORATOR OPERATION	HRS.	266.83	1,252.76	8,667.62

* REMARKS: _____

AVERAGE REACTOR POWER - MW

(UPPER CURVE)



AVERAGE ELECTRICAL POWER (GROSS) - MW

(LOWER CURVE)