

SAXTON NUCLEAR EXPERIMENTAL CORPORATION

Operations Report for May 1969

1. GENERAL

The scheduled plant outage which was begun on October 18, 1968, was continued throughout this report period. On May 7, the installation of the reactor vessel head bolts was completed and the head bolt insulation can was installed. Five conoseals were installed on the instrumentation ports on the vessel head.

An irradiated fuel shipment containing the pH subassembly, the pH subassembly support tube and two specimens removed during refueling was made to the Westinghouse Post Irradiation Facility on May 14.

The rod room leak was located near the reactor vessel skirt seal and underwater repairs made. At the end of the month the leakage had been completely stopped.

A failed fuel detector system was installed during the month consisting of a flow control valve, a flow meter, a heat exchanger and stainless steel tubing. The system is installed across the steam generator and utilizes the differential pressure to obtain flow. The primary coolant tubing was hydrostatically tested at 3800 psig and the component cooling piping at 235 psig. The system is entirely contained within the containment vessel.

Three test subassemblies were received for insertion in Core III as follows:

Subassembly No. 503-4-32 - Low Pressure Creep Test
Subassembly No. 503-4-33 - High Pressure Creep Test
Subassembly No. 503-4-34 - Materials Compatability Test

2. OPERATIONAL TESTS

The SNEC fire and evacuation alarms were tested on May 2, 9, 16, 23 and 30.

The monthly test of the radiation monitoring system was completed on May 2.

3. MAINTENANCE

The principal items of mechanical maintenance during the month included fabricating a new after cooler for the instrument air dryer; installing reactor vessel head bolts; manually rotating the main coolant pump; tightening the containment vessel rotary crane rails and lubricating the crane cables; installing a spray nozzle on the pressurizer spray line; installing five conoseals on the reactor vessel instrument ports; locating and repairing leaks in the reactor vessel skirt seal; repairing cracks in the storage well lining; repairing the adjusting screw threads on pressurizer safety valve, V-373; setting both pressurizer safety valve lift set points on a test stand; repairing leaks in the reactor vessel head bolt can;

cleaning the control room air conditioner filters and fabricating shock absorbers for the compressor; welding a new tubing fitting on a core outlet pitot tube; processing eight drums of evaporator bottoms; reinsulating the safety injection system d/p cell lines; and fabricating and installing a ladder to the roof of the control and auxiliary building.

The major items of electrical and instrument maintenance included repairing the reactor vessel head bolt heaters; repairing the temperature monitor on the off-site weather station; installing gaskets and replacing bolts in the containment vessel junction boxes; installing a new temperature regulating valve in the steam line to No. 2 discharge tank; repairing the flow alarm switches in site particulate monitors, RIC-8 and RIC-9; cleaning all electrical switchgear and breakers; installing a new speaker on the entrance intercom system; replacing the BF₃ neutron detector in source range channel A; checking the specific gravity on the station service batteries; replacing a bearing in the RWDF supply fan motor; repairing the louvre operator and setting the thermostat on the RWDF drum shipping room air handler; replacing the carbon vanes on site particulate monitor vacuum pump, RIC-9; installing two battery operated emergency lights; checking and replacing the vacuum tubes in the count room G-M scalars, the liquid scintillation counter and the containment vessel monitor; repairing the high range portable survey meter and a portable alpha survey meter; and repairing a paging phone in the office spaces.

4. CHEMISTRY

The main coolant system was maintained for cold shutdown conditions throughout the entire month. A summary of the analyses performed on the primary coolant is contained in the following table:

<u>Primary Coolant Samples</u>	<u>Minimum</u>	<u>Maximum</u>
pH at 25°C	5.22	5.51
Conductivity, umhos	5.49	7.63
Boron, ppm	1628	1639
Chlorides, ppm	<0.005	<0.005
Gross Beta-Gamma (15 Min. Degassed) uc/cc	2.28×10^{-3}	9.25×10^{-3}
Tritium, uc/cc	7.40×10^{-3}	7.85×10^{-3}

A summary of the analyses performed on the component cooling system is as follows:

<u>Date</u>	<u>pH</u>	<u>Conductivity (umhos)</u>	<u>CrO₄ (ppm)</u>	<u>Activity (uc/cc)</u>
5-19	8.89	1030	435	8.81×10^{-6}

5. RADIATION AND WASTE DISPOSAL

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

<u>Location</u>	<u>Radiation Reading</u>
<u>C&A Building</u>	
Waste Drum (baling machine)	0.8 mrem/hr beta-gamma
Charging Pump (contact with chamber)	27 mrem/hr beta-gamma
Sample Room (door of sample panel)	1.5 mrem/hr beta-gamma
Chemical Lab Hot Sink (1" from drain)	13.5 mrem/hr beta-gamma
<u>RWDF</u>	
Evaporator (under bottom)	17 mrem/hr beta-gamma
Evaporator (contact outside upper level)	11 mrem/hr beta-gamma
Drum Storage Area (at HRA fence)	9.5 mrem/hr beta-gamma
<u>C.V.</u>	
Primary Compartment (general upper level)	75 mrem/hr beta-gamma
Primary Compartment (contact M.C. pump volute)	475 mrem/hr beta-gamma
Primary Compartment (S.C. bottom)	175 mrem/hr beta-gamma
Primary Compartment (pressurizer bottom)	150 mrem/hr beta-gamma
Primary Compartment (general lower level)	55 mrem/hr beta-gamma
Primary Compartment (Regen. HX)	495 mrem/hr beta-gamma
Primary Compartment (Non-Regen. HX)	40 mrem/hr beta-gamma
Auxiliary Equipment Compartment (S.C.H.X.)	10 mrem/hr beta-gamma
Auxiliary Equipment Compartment (D.T. top)	8 mrem/hr beta-gamma
Auxiliary Equipment Compartment (D.T. bottom)	37 mrem/hr beta-gamma
Auxiliary Equipment Compartment (general lower level)	3 mrem/hr beta-gamma
Reactor Deck (water level at grating)	55 mrem/hr beta-gamma
Reactor Deck (instrument ports)	210 mrem/hr beta-gamma
Reactor Deck (waist level)	100 mrem/hr beta-gamma
Reactor Deck (storage well railing)	60 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 area was 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	41490 d/m/smear beta-gamma
Charging Pump Chamber	< 10 d/m/smear alpha
Charging Room Floor	590 d/m/smear beta-gamma
Sample Room Sink	39180 d/m/smear beta-gamma
Sample Room Sink	< 10 d/m/smear alpha
Sample Room Floor	< 100 d/m/smear beta-gamma
Chemical Lab Hot Sink	4710 d/m/smear beta-gamma
Chemical Lab Hot Sink	< 10 d/m/smear alpha

RWDF

Pump Room Floor	1250 d/m/smear beta-gamma
Shipping Room Floor	< 100 d/m/smear beta-gamma

C.V.

Operating Deck	7450 d/m/smear beta-gamma
Operating Deck	< 10 d/m/smear alpha
Reactor Deck (head)	54730 d/m/smear beta-gamma
Reactor Deck (head)	< 10 d/m/smear alpha
Reactor Deck (grating)	104550 d/m/smear beta-gamma
Reactor Deck (grating)	< 10 d/m/smear alpha
Primary Compartment (grating)	3700 d/m/smear beta-gamma
Primary Compartment (grating)	< 10 d/m/smear alpha

Liquid and gaseous effluents from the SNEC site for the month of May 1969 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	0.000404	0.003298	0.009210
Tritium	0.131100	0.453041	5.631301
Air, Xe	0.000080	0.040196	3.586236
Air, I-131	0.000000	0.000000	0.000173
Air, M.F.P.	0.000000	0.000401	0.035862

Five barrels of waste were drummed for temporary storage. Thirty-two (32) drums were shipped from the site.

Radiation exposure for all SNEC personnel as measured by film badges for the month of April 1969 were a maximum of 700 mrem with an average of 105.8 mrem.

Radiation exposure for all visiting personnel as measured by film badges for the month of April 1969 were a maximum of 0.0 mrem with an average of 0.0 mrem.

The average radiation exposure for all personnel as measured by film badges for the month of April 1969 was 54.83 mrem.

SAXTON NUCLEAR EXPERIMENTAL CORPORATION

OPERATING STATISTICS

	MONTH	<u>MAY</u>	YEAR	<u>1969</u>	
<u>NUCLEAR</u>					<u>TO DATE</u>
TIMES CRITICAL	NO.	0	0		823
HOURS CRITICAL	HRS.	0	0		22,948.49
TIMES SCRAPPED (MANUAL)	NO.	0	0		449
* TIMES SCRAPPED (INADVERTANT)	NO.	0	0		42
THERMAL POWER GENERATION	MWH	0	0		429,077.53
AVERAGE BURNUP (Pu Region)	MWD/MTU	0	0		18,029.03
CONTROL ROD POSITIONS AT END OF MONTH AT EQUILIBRIUM POWER OF					0 Mwt
MAIN COOLANT BORON					<u>1631</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>

	UNIT	MONTH	YEAR	TO DATE
<u>ELECTRICAL</u>				
GROSS GENERATION	MWH	0	0	73,529.3
STATION SERVICE	MWH	92.14	444.26	15,617.66
STATION SERVICE	%	0	0	21.24
AVG. PLANT EFFICIENCY - MWH(e)/MWH(t)	%	0	0	17.14
AVG. GENERATION RUNNING (<u>0</u> HRS)	KW	0	0	3,461.11
PLANT LOAD FACTOR - (AVG. GEN. FOR MONTH/MAX. LOAD)	%	0	0	18.67

AUXILIARY STEAM SUPPLY - NUCLEAR

STEAM SUPPLIED BY REACTOR	HRS.	0	0	19,259.74
RWDF EVAPORATOR OPERATION	HRS.	107.50	645.29	8,060.15

* REMARKS: _____

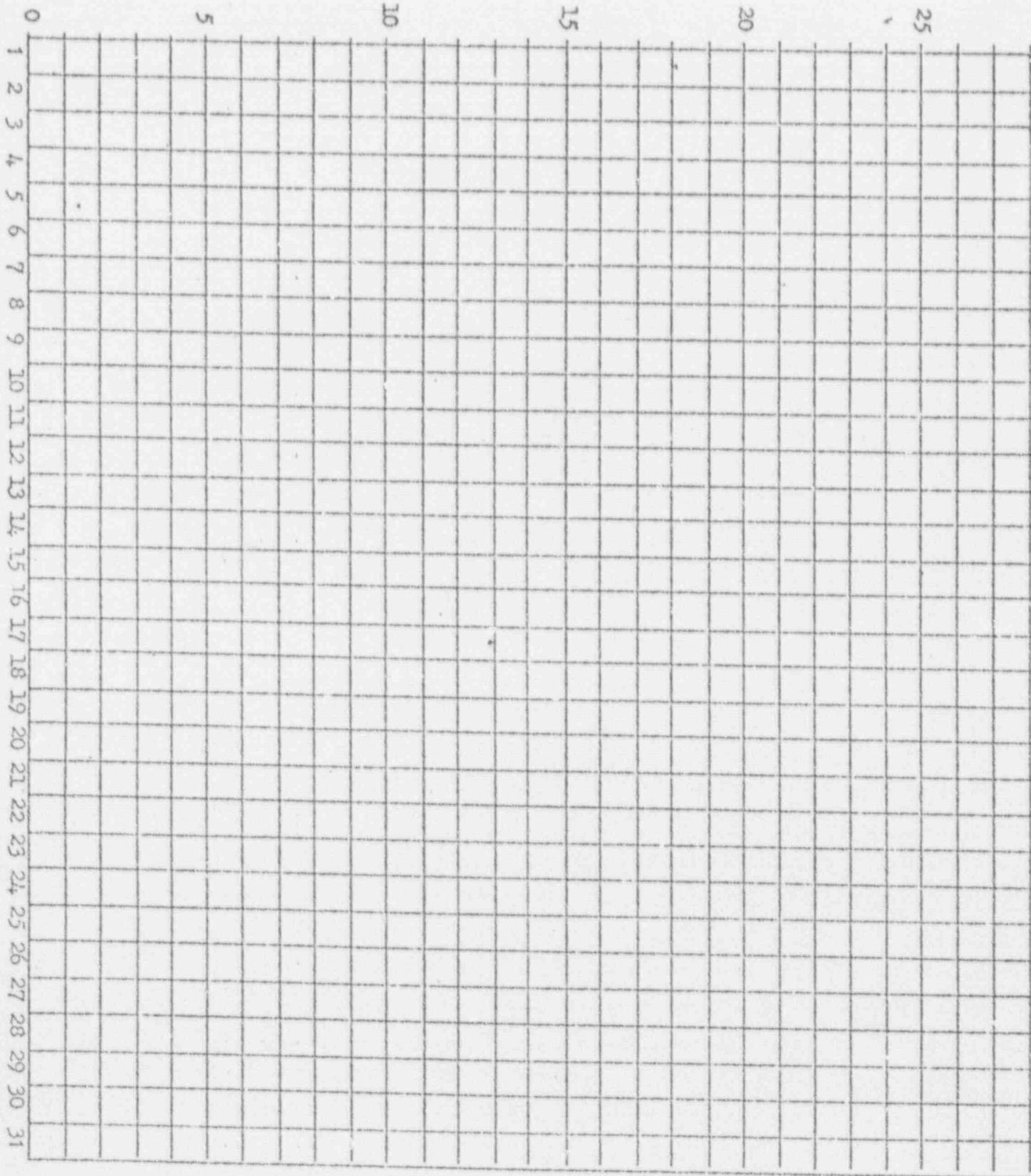
AVERAGE REACTOR POWER - MW

(UPPER CURVE)

SAXION NUCLEAR EXPERIMENTAL CORPORATION
DAILY AVERAGE POWER LEVELS FOR MAY, 1969

--- INTERMITTENT OPERATION

— CONTINUOUS OPERATION



AVERAGE ELECTRICAL POWER (GROSS) - MW

(LOWER CURVE)