[illegible]

Operations Report for July 1968

1. [illegible]

At the beginning of this report period the reactor was in a hot shutdown condition. On July 1, the reactor was utilized for operator training. On July 2, the reactor was taken critical and loaded to 18.5 MWt. A flux map was taken and analyzed and the peak linear power of the overpower test subassembly measured was 15 kw/ft. The reactor power was increased in two steps to a power level of 22.5 MWt on July 3. The peak linear power measured in the overpower test subassembly was 22.3 kw/ft. Reactor power was maintained at 22.5 MWt until July 11 to complete the preconditioning period of the overpower test subassembly. During the period July 12 to July 23 the reactor was maintained in a hot shutdown condition for reactor operator training and for an AEC operator examination for one Rochester Gas and Electric Company trainee. There were a total of sixty-six operator training start-ups during July. On July 24, cooldown of the main coolant system was initiated in preparation for removal of subassemblies for visual inspection and measurements.

2. [illegible]

Phase A of the overpower test was initiated and completed during the month. This included preconditioning the overpower test subassembly at 22.3 kw/ft simulating full power steady state conditions. The reactor power was increased in three steps. The first step was to increase power to 18.5 MWt corresponding to 15 kw/ft. The next step was to 20.6 MWt corresponding to 16.5 kw/ft. The final step was to 22.5 MWt corresponding to 22.3 kw/ft which completed the preconditioning of the overpower test subassembly.

Following shutdown and cooldown eight fuel rods were removed, visually inspected, and profilometer measurements made.

The clad fuel detection systems installed during the last shutdown were monitored during this power increases. The monitors followed the radiation level increases with increased power level indicating they are operating properly, however, since there was no fuel failure the instrument response was not determined.

A zero power pil test was completed during the month and the results indicate that there is no reactivity gain or loss at zero power.

3. [illegible]

The radiation monitoring system circuits were tested on July 5, 1968.

The normal tests of the safety injection were completed on July 1 and July 15.

The SNPC fire and evacuation alarms were tested on July 5, 12, 19 & 26.

4. MAINTENANCE

The principal items of mechanical maintenance for the month included replacing the filter cartridges in the storage well filter and the purification system filter; replacement of a section of pipe on the river water line to the control rod drive room air handler; cleaning the waste plant gas compressor seal water coolers; cleaning the check valves on the RCDF gas compressor discharge piping; replacing packing in the charging pump stuffing boxes; draining the evaporator and mixing eight drums of bottoms with cement; installing new piping from the control and auxiliary building sump pumps to the monitor tanks; inspecting one sump pump for wear; installing a new check valve and cleaning the other check valve on the sump pump discharge piping; replacing the pre-filters on the control and auxiliary building inlet air handler and the containment vessel air handlers; painting the walls in the office area; cleaning the tube bundle of the storage well heat exchanger; fabricating and installing a grating for an opening in the containment vessel operating floor; repairing the valve stem on the river water regulating valve to the primary compartment air handler.

The major items of electrical and instrument maintenance for the month included repairing the level probes in the monitor tanks; installing a new paging phone in the training office; repairing the pressure gauge for number one charging pump discharge pipe; repairing the shielded G-M scaler; checking the specific gravity of the station batteries; installing a new cable for source range channel B nuclear detector; sampling the 1000 KVA transformer oil and testing for dielectric strength; repairing the gamma spectrometer scaler; repairing the site particulate air monitor, RIC-8, vacuum pump; installing a 120V outlet in site particulate air monitor cabinet, RIC-9, for a portable air sampler; repairing the starter on the fork lift truck; and replacing the intermediate range channel B nuclear detector.

5. CHEMISTRY

Main coolant system chemistry was being maintained for power operation conditions at the beginning of the month. On July 12, lithium was added to the main coolant in preparation for the zero power test. High pH was maintained until July 16 when the lithium was removed by demineralization to 0.015 ppm. Lithium was again added on July 22 to raise the pH and repeat the initial step. The hydrogen was removed during the operator training phase and on July 24 it was less then 5 cc/kg of water in preparation to opening the main coolant system. Boron concentrations varied from a low of 393 during the operator training phase to a high of 1783 ppm after the main coolant was mixed with the storage well water. A summary of the analyses performed on main coolant samples during the month is contained in the following table:

Main Coolant System	Minimum	Maximum
pH at 25°C	5.44	7.04
Conductivity, umhos	1.84	21.4
Boron, ppm	393	1783
Chlorides, ppm	0.005	0.005
Oxygen, ppm	< 0.005	< 0.005
Hydrogen, cc/kg H_2O	2	34
Crud, ppb	106	106
Gross Beta-Gamma (15 Min. Degassed) uc/cc	1.26×10^{-2}	7.83×10^{-1}
Tritium, uc/cc	1.04×10^{-2}	7.36×10^{-2}
Gross Iodine, uc/cc (one determination)		1.05×10^{-1}

A component cooling system sample analyzed had a pH of 8.64 and a chromate concentration of 530 ppm. The gross beta-gamma activity was 1.46×10^{-6} uc/cc.

Analyses of samples of storage well and refueling water storage tank water are as follows:

Analysis	Storage Well	RWST
pH	5.55	5.46
Conductivity	20.56	8.65
Chlorides, ppm	0.03	0.05
Boron, ppm	1930	1852
Gross Beta-Gamma, uc/cc	7.79×10^{-3}	5.88×10^{-3}

Except for a brief period on July 8, the steam generator chlorides were within specifications. The average activity of the steam generator blowdown to the river was less than 1×10^{-8} uc/cc.

6. RADIATION AND WASTE DISPOSAL

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

Location	Radiation Reading
C&A Building	
Waste Drum (baling machine)	0.7 mrem/hr beta-gamma
Charging Pump (contact with chamber)	19 mrem/hr beta-gamma
Sample Room (door of sample panel)	8 mrem/hr beta-gamma
Chemical Lab Hot Sink (1" from drain)	1.3 mrem/hr beta-gamma

Location	Radiation Reading
W.D.F.	
Evaporator (under bottom)	35 mrem/hr beta-gamma
Evaporator (contact outside upper level)	18 mrem/hr beta-gamma
Drum Storage Area (at HRA fence)	2.3 mrem/hr beta-gamma
C.V.	
Primary Compartment (general upper level)	100 mrem/hr beta-gamma
Primary Compartment (contact N.C. pump volute)	350 mrem/hr beta-gamma
Primary Compartment (S.G. bottom)	190 mrem/hr beta-gamma
Primary Compartment (Pressurizer bottom)	115 mrem/hr beta-gamma
Primary Compartment (general lower level)	70 mrem/hr beta-gamma
Primary Compartment (Regen. HX)	450 mrem/hr beta-gamma
Primary Compartment (Non-Regen. HX)	40 mrem/hr beta-gamma
Auxiliary Equip. Compartment (S.C.H.X.)	6 mrem/hr beta-gamma
Auxiliary Equip. Compartment (D.T. top)	6 mrem/hr beta-gamma
Auxiliary Equip. Compartment (D.T. bottom)	12 mrem/hr beta-gamma
Auxiliary Equip. Compt. (general lower level)	3 mrem/hr beta-gamma
Reactor Deck (water level at grating)	10 mrem/hr beta-gamma
Reactor Deck (instrument ports)	170 mrem/hr beta-gamma
Reactor Deck (waist level)	75 mrem/hr beta-gamma
Reactor Deck (storage well railing)	10 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 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	2160 d/m/smear beta-gamma
Charging Pump Chamber	< 10 d/m/smear alpha
Charging Room Floor	2220 d/m/smear beta-gamma
Sample Room Sink	67320 d/m/smear beta-gamma
Sample Room Sink	< 10 d/m/smear alpha
Sample Room Floor	270 d/m/smear beta-gamma
Chemical Lab Hot Sink	162470 d/m/smear beta-gamma
Chemical Lab Hot Sink	< 10 d/m/smear alpha
R.W.D.F.	
Pump Room Floor	2370 d/m/smear beta-gamma
Shipping Room Floor	< 100 d/m/smear beta-gamma

Location	Contamination Reading
S.V.	
Operating Deck	10620 d/m/smear beta-gamma
Operating Deck	< 10 d/m/smear alpha
Reactor Deck (head)	14830 d/m/smear beta-gamma
Reactor Deck (head)	< 10 d/m/smear alpha
Reactor Deck (grating)	7810 d/m/smear beta-gamma
Reactor Deck (grating)	< 10 d/m/smear alpha
Primary Compartment (grating)	2240 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 July 1968 were as follows:

Effluent Type	(Curie) Activity This Month	(Curie) Activity Year to Date	(Curie) Activity Last Twelve Months
Liquid	0.001206	0.004390	0.011855
Tritium	1.188597	5.227587	6.683516
Air, Xe	0.263370	16.057301	26.895632
Air, I-131	0.000030	0.000351	0.002002
Air, M.F.P.	0.002633	0.160573	0.268956

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 June 1968 were a maximum of 575 mrem with an average of 81.5 mrem.

Radiation exposure for all visiting personnel as measured by film badges for the month of June 1968 were a maximum of 90 mrem with an average of 2.2 mrem.

The average radiation exposure for all personnel as measured by film badges for the month of June 1968 was 52.5 mrem.

SAXTON NUCLEAR EXPERIMENTAL CORPORATION

OPERATING STATISTICS

MONTH JULY YEAR 1968

NUCLEAR	UNIT	MONTH	YEAR	TO DATE
TIMES CRITICAL	NO.	71	176	718
HOURS CRITICAL	HRS.	269.52	1,387.08	21,960.08
TIMES SCRAMMED (MANUAL)	NO.	43	84	411
* TIMES SCRAMMED (INADVERTANT)	NO.	1	7	40
THERMAL POWER GENERATION	MWH	4,779.77	31,236.13	409,206.06
AVERAGE BURNUP	MWD/MTU	390.16	2,549.71	16,383.94

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

MAIN COOLANT BORON 1607 PPM

RODS OUT - INCHES

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

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

ELECTRICAL	UNIT	MONTH	YEAR	TO DATE
GROSS GENERATION	MWH	806	5,668	68,944.5
STATION SERVICE	MWH	261.74	1,937.65	14,153.55
STATION SERVICE	%	32.47	34.19	20.53
AVG. PLANT EFFICIENCY - MWH(e)/MWH(t)	%	16.86	18.15	16.85
AVG. GENERATION RUNNING (216.95 HRS)	KW	3,715.14	4,553.85	3,442.33
PLANT LOAD FACTOR - (AVG. GEN. FOR MONTH/MAX. LOAD)	%	27.64	17.60	19.82
AUXILIARY STEAM SUPPLY - NUCLEAR				
STEAM SUPPLIED BY REACTOR	HRS.	217.15	1,286.62	18,437.71
RWDF EVAPORATOR OPERATION	HRS.	91.5	356.01	6,914.41

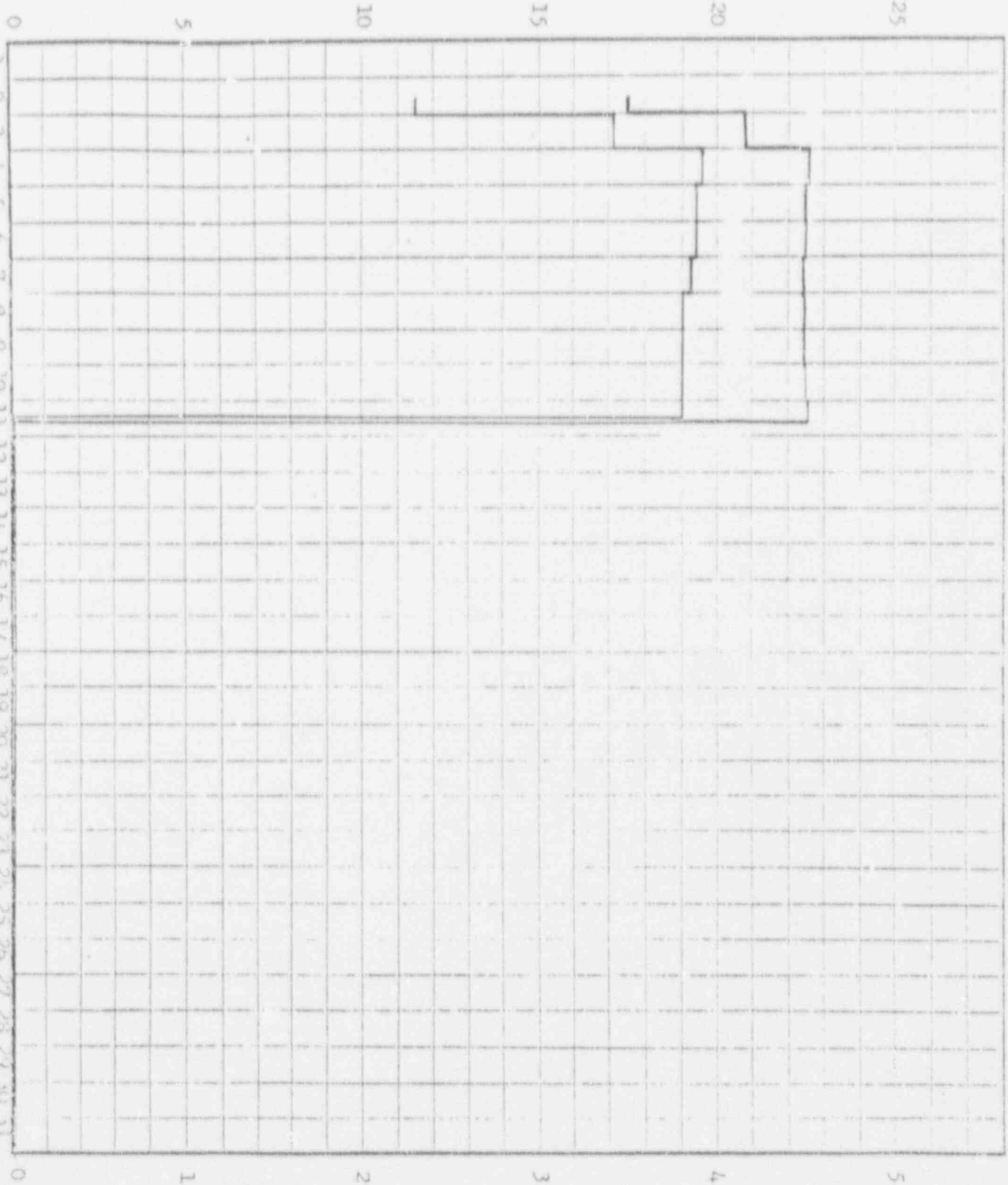
* REMARKS: July 23 - Reactor scram due to "Pump Trip" (27 Hert.) when an operator reduced frequency too rapidly on VFG

SAXTON NUCLEAR EXPERIMENTAL CORPORATION

DAILY AVERAGE POWER LEVELS FOR JULY 19 66

-- INTERMITTENT OPERATION — CONTINUOUS OPERATION

AVERAGE REACTOR POWER - MW
(UPPER CURVE)



AVERAGE ELECTRICAL POWER (GROSS) - MW
(LOWER CURVE)