SAXTON NUCLEAR EXPERIMENTAL CORPORATION

Operations Report for February 1965

1. GENERAL

The scheduled plant outage which was begun on January 22, 1965 was continued throughout this report period.

The major work effort during the month was directed toward the installation of the supercritical technology test loop. The piping work is being done by the National Valve Company of Pittsburgh, Pa. and the electrical work is being done by Electrical Associates, Inc. of Altoona, Pa. The work is being supervised by personnel of the Westinghouse Nuclear Power Services Department.

On February 1st the fuel shipping cask containing irradiated fuel rods #101 (defect), #321 (defect), #330, and #754 was removed from the containment vessel and returned to the Westinghouse Post Irradiation Facility at Waltz Mill, Pa.

During the week of February 15th an inspection team assigned by the Savannah River Operations Office of the AEC made an inventory of the special nuclear material on hand at Saxton; reviewed the procedures for computing nuclear material consumed and produced; and audited the lease material records that are kept at Saxton.

2. EXPERIMENTAL PROGRAM

Several attempts were made to view the inner-most rods of the center fuel assembly in the core with a boroscope. Much difficulty was experienced in making the boroscope operable. The observations that were made showed the crud deposition on the rods to be as heavy or heavier than that seen on the fuel rods of the 3x3 subassembly removed from the center of the fuel assembly. The inspection had to be halted when the light failed in the boroscope. Further inspections will be made when the work schedule permits.

3. OPERATING TESTS

The radiation monitoring system circuits were tested on February 17th.

4. MAINTENANCE

The principal items of mechanical maintenance for the month included preparing the irradiated fuel shipping cask for return to Westinghouse Post Irradiation Facility; machining and lapping the seat ring and plug of valve HIC-23V; cleaning the blowdown meter and installing a new disc in it; replacing the discs in several of the valves associated with the RWDF gas decay tanks; replacing the belts on the RWDF exhaust air handler; enlarging the inside diameter of the lantern rings in the stuffing boxes of charging pump no. 1; repairing the latch mechanism on the outer door of the containment vessel main access air lock; fabricating an underwater sweeper and cleaning the storage well floor; replacing a shear pin on the RWDF cement mixer; replacing the RWDF evaporator demister drain line with a larger one; insulating the RWDF evaporator level column; lapping the seat and disc of the purification system letdown valve LIC-21V; and cleaning the boric acid from the stems of shut-off valves on instruments located inside the containment vessel.

The major items of electrical maintenance included fabricating a new underwater light for use during fuel handling; meggering the pressurizer heater cables; replacing the G.M. tube on the area radiation monitor being used in the containment vessel; cutting back the cable and remaking the cable connections to the detector and the cable seals to the enclosure for the detector in power range channel B; replacing a broken bushing on the drive bar of a line contactor on the inverter-diverter; cleaning and calibrating the service water flow measuring instrument channel FIC-25; replacing a G.M. tube on the area radiation monitor RIA-2 in the charging room; replacing the diaphragm in the vacuum breaker for RWDF gas compressor No. 1; replacing the batteries in two "cutie pie" radiation survey meters; cleaning the control air pitot valve on the deaerator steam regulating valve; and replacing the high voltage transformer in the radiation monitor located in the health physics office.

5. CHEMISTRY

The main coolant system was in cold shutdown condition throughout the month. The shutdown cooling system was operated to remove residual core heat. A summary of the analyses of samples taken from the shutdown cooling system during the month are:

Shutdown Cooling System	Minimum	Maximum
pH	6.15	6.33
Conductivity, umhos	13.2	13.6
Boron, ppm	727	747
Chlorides, ppm	0.010	0.010
Gross Beta-Gamma 15 Min. (degassed), uc/cc	0.176	0.702

An analysis of a sample taken from the shutdown cooling system for gross cesium activity gave a value of 0.078 uc/cc.

The gross radioactivity in the storage well water decreased from a high of 1.61 x 10^{-4} uc/cc to 7.45 x 10^{-5} uc/cc during the month.

During the month an investigation was made of tritium concentration in the main coolant water. The maximum concentration determined in the samples analyzed was 0.592 uc/cc. A program is being developed for sample analysis to ensure that effluent is always within 10 CFR 20 limits and that personnel can not receive an excessive body burden of tritium in any on site activity. Our preliminary conclusion is that there has been no excessive personnel exposure and that the large dilution of effluent by Saxton Steam Station condenser cooling water is adequate to maintain 10 CFR 20 standards.

6. RADIATION AND WASTE DISPOSAL

Radiation surveying consisted of routine plant site surveys, C.V. during shutdown, fuel cask shipment, waste drums for storage and shipment, teleflex wires upon removal for maintenance, and waste truck prior to leaving site. The following maximum readings were taken:

Location	Radiation Reading
Reactor Deck ([illegible])	35 mrem/hr beta-gamma
Reactor Deck ([illegible]ent port)	100 mrem/hr beta-gamma
Reactor Deck (contact at grating)	80 mrem/hr beta-gamma
Reactor Deck (arms reach over storage rack)	210 mrem/hr beta-gamma
Operating Deck (over storage well)	50 mrem/hr beta-gamma
Operating Deck (at storage well protective rope)	19 mrem/hr beta-gamma
Primary Compartment (M.C. pump volute)	70 mrem/hr beta-gamma
Primary Compartment (side - pressurizer)	18 mrem/hr beta-gamma
Primary Compartment (side - steam generator)	14 mrem/hr beta-gamma
Primary Compartment (general upper level)	20 mrem/hr beta-gamma
Primary Compartment (general lower level)	25 mrem/hr beta-gamma
Primary Compartment (contact - regen. HX)	90 mrem/hr beta-gamma
Primary Compartment (contact - non-regen. HX)	60 mrem/hr beta-gamma
Auxiliary Compartment (shutdown cooling pump outlet)	100 mrem/hr beta-gamma
Auxiliary Compartment (shutdown cooling HX)	60 mrem/hr beta-gamma
Auxiliary Compartment (discharge tank - bottom)	150 mrem/hr beta-gamma
Auxiliary Compartment (discharge tank - top)	35 mrem/hr beta-gamma
Auxiliary Compartment (general - lower level)	10 mrem/hr beta-gamma
RWDF	
Evaporator (under bottom)	90 mrem/hr beta-gamma
Evaporator (contact outside upper level)	60 mrem/hr beta-gamma
Drum Storage Area (at HRA fence)	6.5 mrem/hr beta-gamma
Waste Drum (contact)	120 mrem/hr beta-gamma
Waste Drum (meter)	10 mrem/hr beta-gamma
C&A Building	
Chemical Lab Hot Sink (1" from drain)	4.0 mrem/hr beta-gamma
Charging Pump (contact with chamber)	40 mrem/hr beta-gamma
Sample Room (at door of panel)	3.5 mrem/hr beta-gamma
Sample Storage Drum (contact)	25 mrem/hr beta-gamma
Waste Drum (baling machine - contact)	13 mrem/hr beta-gamma

Contamination surveying consisted of routine plant site surveys, surveys of the C.V. during shutdown, fuel shipping cask prior to shipment, new fuel rods, waste drums for storage and miscellaneous equipment. The clean and controlled areas were generally within the "Clean Area" limits with the exception of permanent exclusion areas. All areas were cleaned periodically, within practical limitations, to minimize the amount of smearable contamination. The following contamination readings were taken:

Location	Contamination Reading
RWDF	
Pump Room	258 d/m/smear beta-gamma
Evaporator Room	1110 d/m/smear beta-gamma
Concentrates Room	291 d/m/smear beta-gamma

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Location	Contamination Reading
C&A Building	
Charging Pump Chamber	63000 d/m/smear beta-gamma
Charging Room Floor	780 d/m/smear beta-gamma
Sample Room Sink	440 d/m/smear beta-gamma
Sample Room Floor	110 d/m/smear beta-gamma
Chemical Lab Hot Sink	1350 d/m/smear beta-gamma
C.V.	
Reactor Deck	545000 d/m/smear beta-gamma
Auxiliary Compartment (lower level)	1790 d/m/smear beta-gamma
Primary Compartment (equipment)	31500 d/m/smear beta-gamma
Primary Compartment (floor)	6150 d/m/smear beta-gamma
Operating Deck	568 d/m/smear beta-gamma
Storage Well Bridge	974 d/m/smear beta-gamma

Liquid and gaseous effluents from the SNEC site for the month of February 1965 were as follows:

Effluent Type	(Curie) Activity This Month	(Curie) Activity Year To Date	(Curie) Activity Last 12 Months
Liquid	0.001813	0.002643	0.014259
Air, Xe	2.215237	10.825648	48.056605
Air, I-131	0.000047	0.000266	0.000818
Air, M.F.P.	0.022152	0.108256	31.243305

Six barrels of waste were drummed for temporary storage and thirty drums were shipped from the site.

Radiation exposure for all personnel as measured by film badges for the month of January, 1965 were a maximum of 290 mrem with an average of 23 mrem.

SAXTON NUCLEAR EXPERIMENTAL CORPORATION

OPERATING STATISTICS

MONTH February YEAR 1965

NUCLEAR	UNIT	MONTH	YEAR	TO DATE
TIMES CRITICAL	NO.	0	0	377
HOURS CRITICAL	HRS.	0	514.4	11,457.63
TIMES SCRAMMED (MANUAL)	NO.	0	1	217
* TIMES SCRAMMED (INADVERTANT)	NO.	0	0	25
THERMAL POWER GENERATION	MWH	0	9,497.[illegible]	187,763.44
AVERAGE BURNUP	MWD/MTU	0	454.51	8,457.00

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

MAIN COOLANT BORON 734 PPM

RODS OUT - INCHES

NO. 1 - NO. 2 - NO. 3 -

NO. 4 - NO. 5 - NO. 6 -

ELECTRICAL	UNIT	MONTH	YEAR	TO DATE
GROSS GENERATION	MWH	0	1,595.00	31,202.00
STATION SERVICE	MWH	91.570	286.12	6,817.68
STATION SERVICE	%	-	12.20	21.85
AVG. PLANT EFFICIENCY - MWH(e)/MWH(t)	%	0	16.79	16.69
AVG. GENERATION RUNNING (0 HRS)	KW	0	3,103.11	3,313.37
PLANT LOAD FACTOR - (AVG. GEN. FOR MONTH/MAX. LOAD)	%	0	31.80	28.05

AUXILIARY STEAM SUPPLY - NUCLEAR	UNIT	MONTH	YEAR	TO DATE
STEAM SUPPLIED BY REACTOR	HRS.	0	514.00	8,559.82
RWDF EVAPORATOR OPERATION	HRS.	0	0	[illegible].00

* REMARKS: No operation for the month of February due to the installation of the experimental supercritical loop.