SAXTON NUCLEAR EXPERIMENTAL CORPORATION
GENERAL PUBLIC UTILITIES SYSTEM
JERSEY CENTRAL POWER & LIGHT COMPANY
NEW JERSEY POWER & LIGHT COMPANY
PENNSYLVANIA ELECTRIC COMPANY
METROPOLITAN EDISON COMPANY

P. O. Box ~~542 Reading, Pa.~~ 352 Saxton, Penna.

Telephone: ~~Reading, Walker 9-2691~~ Melrose 52937

V-4

June 9, 1961

Atomic Energy Commission
Germantown, Maryland

Attn: Mr. George Spencer
Mr. Stanley Kline

Dear Sirs;

In regard to your question of June 2, 1961, concerning materials of construction of the Saxton Reactor Core and Control Rod Drive mechanisms, Westinghouse has checked the materials used. Although there are a few parts made of 17-4-PH stainless steel these applications do not raise a question of reactor safety.

The following information is enclosed:

1. Letter No. RD-D-M-1371 dated May 31, 1961, from S. Kmonk to E. U. Powell (both of Westinghouse) along with Process Specification 292082. In this letter Mr. Kmonk identifies ten "Conoseal" clamping rings on the outside of the reactor vessel head which are made of 17-4-PH stainless steel.

2. Letter No. PD-G-1188 dated May 15, 1961, from R. L. Whitney to E. U. Powell (both of Westinghouse) along with drawing No. 618J698 (General Assembly Magnetic Control Rod Drive) and a materials list identifying each numbered item shown on the drawing. Inspection of this list of materials will show that no precipitation hardened stainless steel is used anywhere in the control rod drive mechanisms.

Very truly yours,

D. E. Hetrick

DEH/pl

D. E. Hetrick

V-4

I/20

(2)

Item	Description	Notes	Material(s) Used
1	[illegible]	[illegible]	[illegible] S.St. [illegible] Type 410 S.St. Bar Type 304 S.St. Tube Type 410 S.St. Bar
2	Pressure Housing	A,B	Type 403(Mod.)S.St.Forging
3	Locking Plate	B	Type 304 S.St. Bar
4	Locking [illegible]	B	Type 304 S.St. Sheet
5	Shim	B	Type [illegible] Bar
6	Pin	B	Type 304 S.St. Bar
7	[illegible]	C	--------
8	Pole	B	Type 410 S.St. Bar
9	Sleeve	B	Type 304 S.St. Sheet
10	Screw	B	Type 304 S.St.
11	Spacer	B	Type 304 S.St. Sheet
12	[illegible]	B	Type 304 S.St. Bar Type 405 S.St. Bar Inconel Weld Rod
13	[illegible]	[illegible]	Type 304 S.St. Bar Type 405 S.St. Bar Inconel Weld Rod
14	Pin	B	Type 304 S.St. Bar
15	Lock Ring		Type 304 S.St. Tube
16	[illegible]		Type 304 S.St. Bar
17	[illegible]		Type 304 S.St. Bar

Saxton Nuclear Exp. Corp.
Saxton, Pa (1)

Reactor —

F.B- N.C.A. — monthly normal issue β γ. (60 badges) : (30 used.) (30 temp. use badges, permanent arrange)
visitors separate. ~ 25/mo.

n badges issued to persons. ~~entering~~ n areas. (~ 5 people)
call by Schlaro at 200 mrem on badge.

Dosimeters ~~[illegible]~~ Landsverk — 0-200
γ (non self reading) 30 people read weekly.
Self reading in color back up. to people entering [illegible] high fields.

some. wrist + finger badges. and used - results insignificant

Use — AEC - 4 + 5. all 60 people

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saw [illegible] badge checks,
1 rough check using waste drum. NCA results seem low. — 3/63

2nd 4/63

10 badges range 10 to 350

mr β. (Co-60 source) results

β reported

expected	reported
100	15
200	30
200	30

γ

expected	reported
100	95
100	130
200	200
200	200
350	345
350	330

max 95% to 130% for β.

3rd

expected	β reported	γ reported
20	0	0
20	0	0
30	20	5
30	10	0
40	20	0
40	25	0
55	30	20
50	30	20
60	50	20
60	35	20
70	25	25
70	35	30
80	40	90
80	55	45

all results ok,
Dosimeter tests to be higher.

extremities run same as total body.. generally..

no problem with β. (skin dose)

Only maximum skin + external dose recorded.

γ dose never indicated on badge

Inst.

- 4π gas flow - prop. - R.I.D.L.
- α scin crystal
- unshielded GM
- shielded GM.

Single Channel Analyzer.

α scin - cal. RaDE. - 183 ± 5% D/S.
cal. 5/1/58 by Nu. Ch.
Eff. Daily - 15-15.4%
overall Eff. — [redacted] Std of unknown
Bkg - strip dep. 0.66 cpm
2 Bkg daily. Plastic Clad Lucite
Disc std.

(4)

313,300 d/m
36,000 d/m
11.5 8

Stainless Steel planchets used for all liquid samples.

Unshielded G.M. - Daily Eff overall 11.9%

using Cs-137 - [illegible] 3.133x10^5 d/m/1/2/63

Bkg - ~103 CPM.

CPM - ~36,000 CPM

voltage - 935 plateau only when deviation noted on CPM check.

Samples counts run main coolant 31,000 cpm

~~Shielded G.M.~~ ~10.35% overall Eff.

Daily. plateau as necessary when D noted.

Cs-137 Std. plated on bottle of S.S. planchet. SS. planchet

use on water eff. 1×10^{-8}

Spec. 1×10^{-7}

Tap water - varies 0 to 6×10^{-7} $\mu c/ml$

avg - 3.4×10^{-8} $\mu c/ml$.

Gross β. Water effluent release - ~ same as tap.

- grab sample. -

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access door.
Opening Entrance surface 10 mr
Reactor Shell. – 2 mr max (rope off).
other < .5 mr.
~1 mr on filter housing.
<.5 of fence
~1 mr around pressure.
ambient in press area .5 mr

~1 100 mr max
200 mr contact
Drums. – [illegible] on contact
and ~~ 10 not labeled.
other P+L.

RWDF discharge tanks (5000 gal ea)
water Sample. varies to 0 – 1 or 2 × 10^{-4} Gross β
usually – 10^{-5} to [illegible] " β
max 5.5 mc/day.
avg/yr 1.1 mc./day

3-16-64
Service Water – 148 ± 6.02 × 10^{-8}
Gross β. Final Discharge Sample – 160.5 ± 5.36 × 10^{-8}
after dilution

RWDF Discharge tanks require as much as 10,000 – 1 ratio for dilution
D.F obtained from. any of 6 circ. pumps in power plant.

RADIATION SURVEY RECORD
SAXTON NUCLEAR EXPERIMENTAL CORPORATION

Survey Date:	Surveyor:	Survey No.:
Survey Time:		

Location:

Floor Plan Attached ( )

Type of Instrument Used:

Description of Survey:

Remarks:

Sketch (If Applicable):

WATER SAMPLE RECORD

SAXTON NUCLEAR EXPERIMENTAL CORPORATION

Sample No.	Date:	Time:
Location and Type:		
Taken By:	Prepared By:	Counted By:

Special Instructions: Discharge Permit #_____

Analysis Data		Gross Alpha	Gross Beta		
Sample Volume Analyzed (ml)					
Counter Data	Counter #				
	Shelf				
	Counter Efficiency (%)				
	Counter Bkg. (c/m)				
Counting Data	Date & Time Start				
	Date & Time Stop				
	Total Counting Time(m)				
	Gross Counts				
	Total Gross Bkg. (rc/rr)				
	Net Count Rates (‰ - ‰)				
	Net c/m				
	Net d/m				
	uc/ml				

Process Data:

Calculation Alpha:

$$\frac{\text{Net c/m (\ )}}{\text{Counter Eff. (\ )}} \quad \underline{\qquad} = \text{d/m}$$

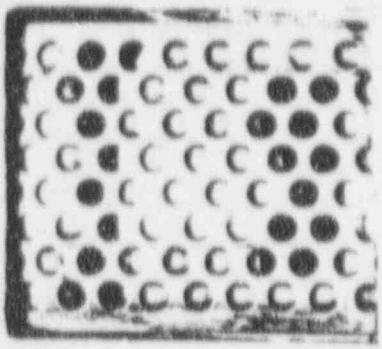
$$\frac{\text{d/m (\ )}}{2.22 \times 10^6 \ \frac{\text{d/m}}{\text{uc}} \ \text{Vol. Anal. (\ ) ml.}} = \text{uc/ml}$$

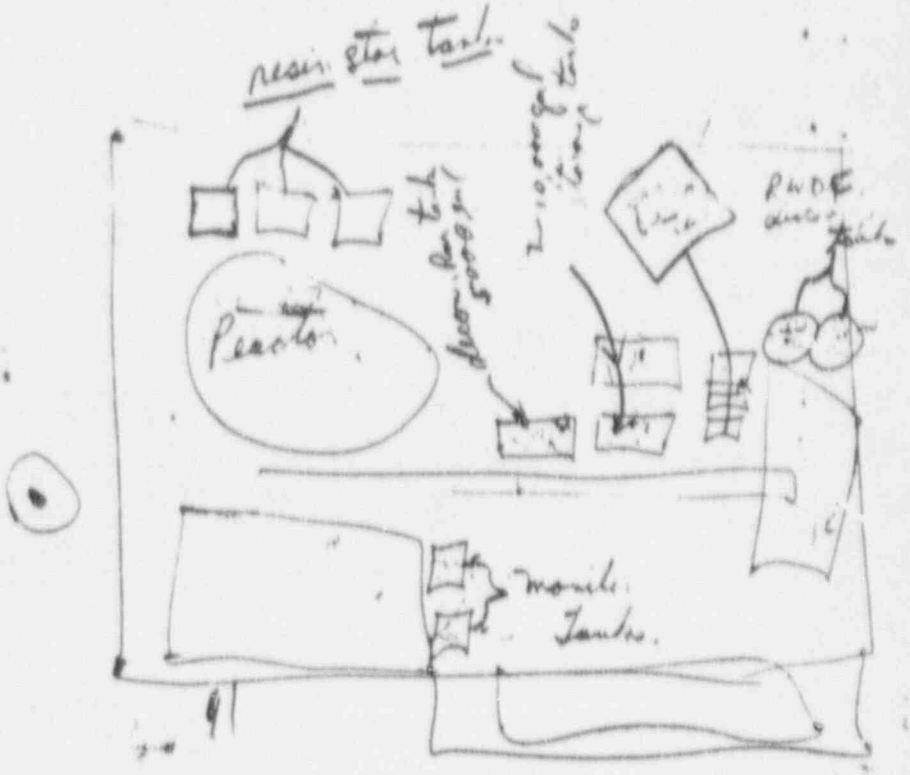
Calculation Beta:

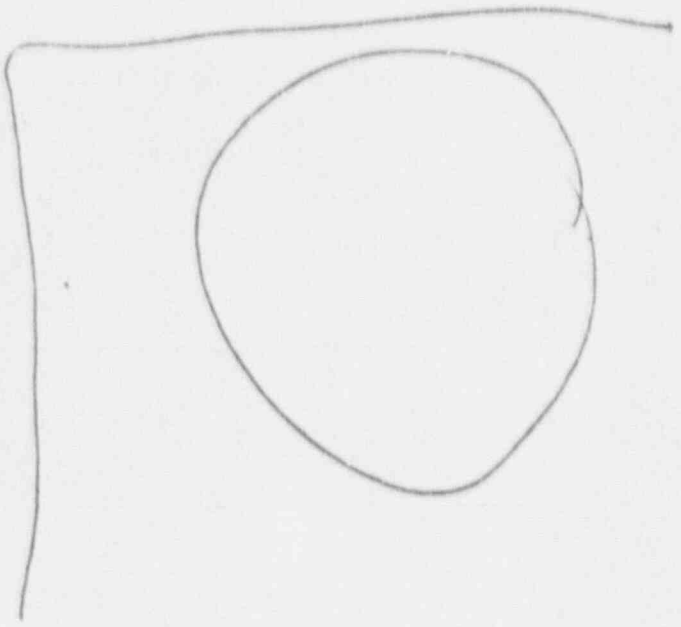
$$\frac{\text{Net c/m (\ )}}{\text{Counter Eff. (\ )}} \quad \underline{\qquad} = \text{d/m}$$

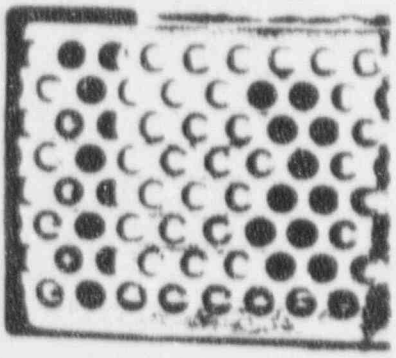
$$\frac{\text{d/m (\ )}}{2.22 \times 10^6 \ \frac{\text{d/m}}{\text{uc}} \ \text{Vol. Anal. (\ ) ml.}} = \text{uc/ml}$$

Remarks:




resin storage tank
Reactor
mould
Tanks





209 - CHEMICAL ADDITION SYSTEM

A. Function

The chemical addition system is designed to prepare and supply a source of boric acid as a neutron poison material for the main coolant system during cold shutdown, to prepare and supply borated water to the storage well system, to add hydrazine and lithium hydroxide or potassium hydroxide as required to maintain the oxygen content and pH of the main coolant water, and to add, if necessary, decontaminant solutions to remove radioactive corrosion products from the various plant systems.

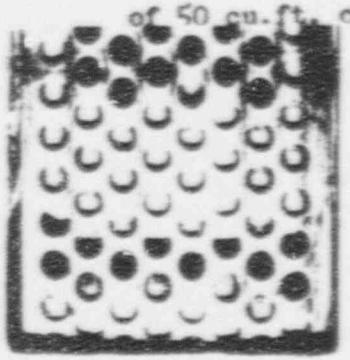
B. Description

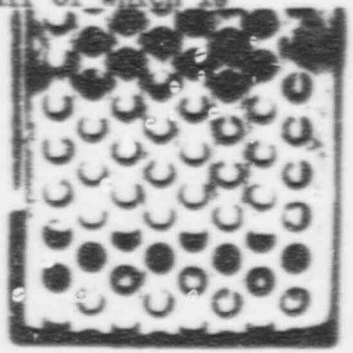
The system consists of a steam heated boric acid tank, a centrifugal pump for mixing and circulating the boric acid and decontaminant solutions, a chemical addition tank to supply other chemicals, and the associated piping, valves, fittings and instrumentation. The system is located outside the containment vessel. Figure 209-1 is a flow diagram for this system.

C. Components

1. Boric Acid Tank

The boric acid tank is a right circular, cylindrical vessel of 50 cu.ft. capacity with a dished bottom and flat top, half of which is





210 - SAMPLING AND LEAK DETECTION SYSTEM

A. Function

The sampling and leak detection system is designed to provide a source of main coolant system water for analysis; to provide a source of pressurizer vessel water for analysis; to provide a sample for determination of boric acid and purification demineralizer efficiency; to provide a sample for determination of storage well demineralizer efficiency; to provide a source of storage well water for analysis; to provide indication of leakage past the inner reactor vessel head gasket; to provide indication of leakage past the inner gaskets of the pressurizer vessel spray flange, pressurizer vessel heater flange, main coolant pump end plate, main coolant pump casing flange, and steam generator manways; to provide indication of leakage through main coolant system and auxiliary system valve leakoff connections; and to provide an indication of reactor vessel shell leakage.

B. Description

1. General

The system consists of piping and equipment located both inside and outside the containment vessel. The sampling portion of the system is composed of piping, valving and instrumentation necessary for transporting the samples from the source to the sampling station. Two sample coolers are provided to cool the high temperature, high pressure sample bomb effluent, and a vacuum pump is provided to evacuate the sample bombs. The leak