DECLASSIFIED

HW--30863

DE93 003440

GENERAL ELECTRIC
COMPANY

HW-30863

1. AEC-HOO - Attn: D.G. Sturges
2. AEC-HOO - Attn: J.I. Thomas
3. J.T. Baker
4. C.W. Botaford
5. R.G. Cline
6. E.J. Fitt
7. O.H. Greager
8. H.L. Henry
9. D.R. Lewis
10. C.G. Lewis
11. R.C. Lovington
12. A.R. Maguire
13. R.E. McGrath
14. R.D. Mehan
15. S.L. Nelson
16. P.H. Reinker
17. R.B. Richards
18. O.C. Schroeder
19. C.A. Priode
20. J.E. Maider
21. J.H. Warren
22. H.O. Spencer
23. J.C. Wood
24. R.L. Call - J.H. Rector
25. 300 File
26. 700 File
27. Yellow File

RECORD CENTER FILE

NOV 23 1992

Classification Cancelled (Change)

DECLASSIFIED

By Authority of

Doc

May 1973

PM Eick 10-27-92
J.H. Wells 10-27-92

SPECIAL RE-REVIEW
FINAL DETERMINATION

DECLASSIFICATION CONFIRMED

BY J.W. Jordan DATE 6-11-81
BY J.P. Seroussi DATE 6-15-81

This document consists of 4
pages 9 - Copy 22 of 27
copies: Series A

copy 1 of 1

February 15, 1954

PRODUCTION TEST NO. 105-263-A

HORIZONTAL ROD CONVERSION - OLD PILES

INTRODUCTION:

In numerous instances the graphite growth in the older piles has deformed the horizontal control rod holes with a resultant jamming of the rods and overstressing of the rods and thimbles. In addition, special operating procedures to maintain very low differential pressures are required with the present allowed maximum graphite temperatures to prevent collapse of the thimbles because of loss of strength at this temperature. This is currently a limit to the power level of the H Pile. A new rod tip and seal have been developed (1) which will allow the removal of the thimble and permit sealing at the pile face. This will allow advantage to be taken of any future increases in maximum graphite temperature with proportional increases in allowable power.

(1) Lovington, R.C., "Process and Engineering Specifications - Horizontal Control Rod Conversion and Thimble Removal," HW-2743 10-19-53.

JUL 1956

300 AREA
OLD FILES

DECLASSIFIED

MASTER

EB

DECLASSIFICATION RESTRICTED TO QUALIFIED

DECLASSIFIED

GENERAL ELECTRIC
COMPANY

-2-

HW-30863

OBJECT:

The purpose of this test is to determine the operating characteristics of the new rod under actual in-pile conditions.

BASIS AND JUSTIFICATION:

Although the conversion rod tip has been satisfactorily tested in the horizontal rod mockup in 189-D(2) and the seal has been tested on the cycler in 189-D(3), there is a great deal of information that can be obtained only from an actual installation. The residual radioactivity of the rod tip after a period of use in the pile, seal life under irradiation, behavior of the coating, and installation and maintenance problems are some of the items to be studied. This information as well as more accurate cost data and the experience gained in converting one rod will be of great benefit in the later full-scale rod conversion program.

SCHEDULE:

Preliminary arrangements have already been made to remove an old rod tip and thimble at 105-B and install a conversion tip and seal in its place. This is scheduled to be done during the shutdown the latter part of February.

COSTS:

Cost Code: XXXX-5270-253.61

Reactivity: None

Manhours: 836 at \$5.50 = \$4598.

Material Costs: \$402.

Total \$5000.00

Shutdown Time: It is anticipated that no shutdown time in addition to that now scheduled will be needed to install the tip and seal. However, if conditions are such that additional time is needed, then such additional time is authorized.

DESCRIPTIVE DETAILS:

The descriptive details are covered in document HW-29673(4) previously mentioned. However, two major changes have been made since that document was issued.

2. Call, R.L., "Interim Report, Horizontal Rod Conversion - Old Piles," HW-30865, 4-26-54.
3. Personal Communication, P.M. Jackson to R.L. Call.
4. Lovington, R.C., "Process and Engineering Specifications - Horizontal Control Rod Conversion and Thimble Removal," HW-29673, 10-19-53.

DECLASSIFIED

DECLASSIFIED

GENERAL ELECTRIC

COMPANY

HW-30863

1. The pressurized sphincter boot seal described in the above document has been replaced by a washer seal and work is being done to develop a molded washer seal similar to that developed for the 100-K VSR's. The change from a sphincter boot to a washer seal was made because the washer seal will cost about one-fourth as much as the sphincter boot, and does not require an elaborate pressurizing system.
2. In addition, the rod tip length has been increased 10-1/2 inches. The rod slots in the piles are long enough so that with the increased length, the end of the tip will be four inches from the end of the slot when the rod is full in (the stop block 1/4 inch from the bumper). The shorter water return block and the fabrication technique of the new control material used with the new tip allows the control material to extend closer to the end of the tip than on the present rod. This gives a total increase in control coating length of approximately 18 inches as compared to the old tip.

Because the main and barricade wall gates will not be replaced, the full out position of the rod should be changed so that the end of the rod tip will be 3 feet inside the pile shielding in the full out position. This will require re-locating the rear bumper and limit switch. The increased length of the rod tip will require that the normal out limit switch also be re-located so that in the normal out position the end of the rod tip will be at the edge of the pile graphite.

PROCEDURE:

The old rod tip, thimble, and step plug will be removed in the usual manner. The rod channel will then be inspected to determine whether or not the channel blocks will need to be removed. Decision will be made at that time whether or not to remove the channel blocks but it is anticipated that their removal will not be necessary. The rod rack section will be modified and the new transition and tubing installed as per drawing H-1-5148. The step plug will be replaced and the step plug bushing (see drawing H-1-5200) installed in the step plug. The rod seal will then be attached to the step plug bushing.

Normal procedure will be followed in replacing and re-aligning the guide rollers except that great care should be taken to insure that the three guide rollers nearest the pile face are aligned within .005 inches vertically. The main and barricade wall gates will not be replaced. The two rear limit switches, the rear bumper and two guide rollers will be re-located as shown in drawing HK-1-1483. The new tip will then be installed and the rack section replaced and connected to the tip. Normal procedures in connecting up equipment and cleaning the rod rooms will be followed.

SPECIAL EQUIPMENT:

The conversion rod tip, the transition and tubing, the seal and step plug bushing, and a bar for aligning the guide rollers will be supplied by Technical.

DECLASSIFIED

DECLASSIFIED

GENERAL ELECTRIC

COMPANY

HW-30363

RESPONSIBILITY:

The Reactor Section will be responsible for scheduling, installing, maintaining the equipment, and for operational safety and production continuity of the pile. Pile Technology Sub-Section represented by R.L. Call, J.H. Rector, and R.C. Lovington will be responsible for supplying the special equipment and for the preparation of all reports.

R.L. Call
Pile Engineering Unit
Technical Section
ENGINEERING DEPARTMENT

J.H. Rector
Pile Engineering Unit
Technical Section
ENGINEERING DEPARTMENT

RL Call:ms

APPROVALS:

<i>R.B. Richards</i>	R.B. Richards, Manager Pile Technology Sub-Section, ENGINEERING DEPARTMENT
<i>O.C. Schreuder</i>	O.C. Schreuder, Superintendent Process Unit, Reactor Section, MANUFACTURING DEPARTMENT
<i>R.O. Mohann</i>	R.O. Mohann, Superintendent Operations Unit, Reactor Section, MANUFACTURING DEPARTMENT
<i>J.H. Warren</i>	J.H. Warren, Manager Reactor Section, MANUFACTURING DEPARTMENT
<i>O.H. Greager</i>	O.H. Greager, Manager Technical Section, ENGINEERING DEPARTMENT
<i>J.E. Maider</i>	J.E. Maider, Manager MANUFACTURING DEPARTMENT

Date Issued _____

DECLASSIFIED

END

DATE
FILMED
2/12/93