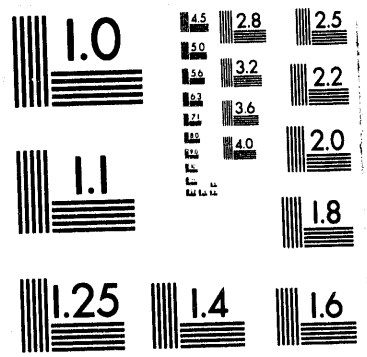
1.0
1.1
1.25
1.4
1.6
2.8
3.2
3.6
4.0
2.5
2.2
2.0
1.8

1 of 1

DECLASSIFIED

DUN-5298 RD
Hanford Category C-65
Copy No. 1

D. L. Hirschel
1/10/69

DUN RECORDS DISPOSITION

Indefinite Retention _____
Destruction Date Until Reactor is abandoned
Authority B-5-2

CIRCULATING COPY
RECEIVED [illegible] AREA
JAN 14 1963
DOCUMENT

SECTION IV

REACTOR INCIDENT FILE

GENERAL INFORMATION

From 1945

By Process Engineering Unit

This document classified.
A K Hardin

Classification Cancelled and Changed To
DECLASSIFIED
By Authority of PR-24
WA Snyder 11/13/94
By DG Kristner 11/23/94
Verified By MC Hanson, 1-14-94

CLASSIFICATION REVISED FOR DECLASSIFICATION LEFT UNCHANGED
23.

DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

RECEIVED
MAR 08 1994
OSTI

MASTER
DECLASSIFIED
DISTRIBUTION RESTRICTED TO U.S. ONLY

SECRET RESTRICTED DATA DISPOSITION RECORD

DECLASSIFIED

NON-CONTROLLED DOCUMENTS

CUSTODIAN: D. L. Kirschel

DATE	DESCRIPTION TITLE, DOCUMENT NUMBER, ETC.	COPY NO. AND SERIES	NUMBER COPIES PREPARED	DISPOSITION IF DESTROYED, INCLUDE SIGNATURE AND DATE

54-3000-583 (8-68)
AEC-RL RICHLAND, WASH.

SECRET RESTRICTED DATA DISPOSITION RECORD

NON-CONTROLLED DOCUMENTS

CUSTODIAN: _____

DATE	DESCRIPTION TITLE, DOCUMENT NUMBER, ETC.	COPY NO. AND SERIES	NUMBER COPIES PREPARED	DISPOSITION IF DESTROYED, INCLUDE SIGNATURE AND DATE

DECLASSIFIED

54-3000-583 (8-68)
AEC-RL RICHLAND, WASH.

COPY 1 OF A SERIES

CONTINUOUS PAGINATION FOR DUN-5298 RD

AS OF 1-31-69	(DATE)	THIS DOCUMENT CONSISTS OF 12	PAGES
AS OF	(DATE)	THIS DOCUMENT CONSISTS OF	PAGES
AS OF	(DATE)	THIS DOCUMENT CONSISTS OF	PAGES
AS OF	(DATE)	THIS DOCUMENT CONSISTS OF	PAGES
AS OF	(DATE)	THIS DOCUMENT CONSISTS OF	PAGES
AS OF	(DATE)	THIS DOCUMENT CONSISTS OF	PAGES
AS OF	(DATE)	THIS DOCUMENT CONSISTS OF	PAGES
AS OF	(DATE)	THIS DOCUMENT CONSISTS OF	PAGES
AS OF	(DATE)	THIS DOCUMENT CONSISTS OF	PAGES
AS OF	(DATE)	THIS DOCUMENT CONSISTS OF	PAGES
AS OF	(DATE)	THIS DOCUMENT CONSISTS OF	PAGES
AS OF	(DATE)	THIS DOCUMENT CONSISTS OF	PAGES
AS OF	(DATE)	THIS DOCUMENT CONSISTS OF	PAGES
AS OF	(DATE)	THIS DOCUMENT CONSISTS OF	PAGES
AS OF	(DATE)	THIS DOCUMENT CONSISTS OF	PAGES
AS OF	(DATE)	THIS DOCUMENT CONSISTS OF	PAGES
AS OF	(DATE)	THIS DOCUMENT CONSISTS OF	PAGES
AS OF	(DATE)	THIS DOCUMENT CONSISTS OF	PAGES
AS OF	(DATE)	THIS DOCUMENT CONSISTS OF	PAGES
AS OF	(DATE)	THIS DOCUMENT CONSISTS OF	PAGES
AS OF	(DATE)	THIS DOCUMENT CONSISTS OF	PAGES
AS OF	(DATE)	THIS DOCUMENT CONSISTS OF	PAGES
AS OF	(DATE)	THIS DOCUMENT CONSISTS OF	PAGES
AS OF	(DATE)	THIS DOCUMENT CONSISTS OF	PAGES
AS OF	(DATE)	THIS DOCUMENT CONSISTS OF	PAGES
AS OF	(DATE)	THIS DOCUMENT CONSISTS OF	PAGES
AS OF	(DATE)	THIS DOCUMENT CONSISTS OF	PAGES
AS OF	(DATE)	THIS DOCUMENT CONSISTS OF	PAGES
AS OF	(DATE)	THIS DOCUMENT CONSISTS OF	PAGES

THIS CONTINUOUS PAGINATION FORM IS TO BE USED FOR REVISING CLASSIFIED MANUALS OR ACCUMULATING CLASSIFIED WORKING PAPERS IN A BINDER ISSUED AND CONTROLLED BY CLASSIFIED FILES.

54-3000-470 (10-65)
AEC-RLOO RICHLAND, WASH.

[redacted]
(CLASSIFICATION)

DOCUMENT NO.
DUN-3331 RD

SERIES AND COPY NO.
A 1

DATE
November 9, 1967

DOUGLAS UNITED NUCLEAR, INC.
RICHLAND, WASHINGTON

[X] [redacted]
THIS DOCUMENT CONTAINS [redacted] AS DEFINED IN THE ATOMIC ENERGY ACT OF 1954. ITS TRANSMITTAL OR THE DISCLOSURE OF ITS CONTENTS IN ANY MANNER TO AN UNAUTHORIZED PERSON IS PROHIBITED.

TITLE
INCIDENT: PANELLIT SCRAMS - VENTURI SCREEN PLUGGING

[ ] OTHER OFFICIAL CLASSIFIED INFORMATION
THIS MATERIAL CONTAINS INFORMATION AFFECTING THE NATIONAL DEFENSE OF THE UNITED STATES WITHIN THE MEANING OF THE ESPIONAGE LAWS, TITLE 18, U. S. C., SECS. 793 AND 794, THE TRANSMISSION OR REVELATION OF WHICH IN ANY MANNER TO AN UNAUTHORIZED PERSON IS PROHIBITED BY LAW.

AUTHOR
R. W. Toivonen

ISSUING FILE

THIS DOCUMENT MUST NOT BE LEFT UNATTENDED OR WHERE AN UNAUTHORIZED PERSON MAY HAVE ACCESS TO IT. WHEN NOT IN USE, IT MUST BE STORED IN AN APPROVED LOCKED REPOSITORY WITHIN AN APPROVED GUARDED AREA. WHILE IT IS IN YOUR POSSESSION AND UNTIL YOU HAVE OBTAINED A SIGNED RECEIPT FROM CLASSIFIED FILES, IT IS YOUR RESPONSIBILITY TO KEEP IT AND ITS CONTENTS WITHIN THE LIMITS OF THIS PROJECT AND FROM ANY UNAUTHORIZED PERSONS. ITS TRANSMITTAL TO, AND STORAGE AT YOUR PLACE OF RESIDENCE IS PROHIBITED. IT IS NOT TO BE DUPLICATED. IF ADDITIONAL COPIES ARE REQUIRED, OBTAIN THEM FROM THE RELATED ISSUING FILE. ALL PERSONS READING THIS DOCUMENT ARE REQUESTED TO SIGN IN THE SPACE PROVIDED BELOW.

ROUTE TO:	PAYROLL NO.	LOCATION	FILES RO... DATE	SIGNATURE AND DATE
K. L. Hladek				

54-5100-165 (10-65) AEC-RLOO RICHLAND, WASH.

[redacted]
(CLASSIFICATION)

DECLASSIFIED

DECLASSIFIED

This document consists of restricted as defined by Atomic Energy Act of [illegible]. It is transmitted for the information of the recipient only. Any unauthorized person is prohibited.

This document consists of 3 pages, No. 1 of 3 copies. Series A.

Date: November 9, 1967

To: K. L. Hladek

From: R. W. Toivonen

Distribution:

1. KL Hladek
2. RW Reid
3. RW Toivonen - File

Subject: INCIDENT: PANELLIT SCRAMS - VENTURI SCREEN PLUGGING

On 10-17-67 and 10-18-67 KE Reactor experienced a series of Panellit scrams. All of the Panellit scrams occurred within six hours following startup. Times for the various scrams are given below. The scram at 0417 was on 10-18-67, the remaining four on 10-17-67.

No.	Startup	Scram	Tube	Trip Mechanism
1	1502	1553	4449	Low trip
2	1630	1734	4887	Undetermined
3	1808	1924	2955	Undetermined
4	1945	2200	4775	Low trip
5	2232	0417	2245	Low trip

In an effort to discover the cause of these scrams, Process Engineering recommended a number of actions. A check of the screens on crossheaders 22 and 44 revealed plugging by masking tape.

The source of the masking tape was hypothesized to be the #6 high-lift pump which had been repaired during the outage prior to the series of scrams. Masking tape had been used to hold a gasket in place between fittings on the pump discharge line leading to the reactor. After water pressure was raised this tape may have become dislodged and carried to the reactor. Since the #6 high-lift pump supplies only even numbered crossheaders through C Riser, Process Engineering recommended that certain even numbered crossheader screens be examined, and further examination of crossheader screens would follow if deemed necessary. Processing subsequently decided to examine all of the crossheader screens supplied

GROUP I
Exempt from automatic downgrading and declassification.

by C Riser. Following is a partial record of their findings. The conditions of even numbered screens from 8 through 24 excluding 22 are not listed as that information was not entered in the reactor log book.

Crossheader	Comments
22	Tape
26	Clean screen
28	Tape and rust
30	Rust (minor)
32	Tape - rust (minor)
34	Tape - rust (minor)
36	Tape - rust (minor)
38	Tape - rust (minor)
40	Tape - rust (minor)
42	Clean screen
44	Tape
46	Rust (minor)
48	Tape - 2 large pcs.
50	Tape - 2 large pcs.
52	Tape and rust (minor)
54	Tape (minor)
56	Tape and rust (minor)
58	Clean
2	Flushed
4	Flushed
6	Flushed

As indicated, tape was found on nearly all of the crossheader screens supplied by #6 high-lift pump. Following a check of the crossheader screens a further examination was made of the venturi screens of each of the tubes which had experienced scrams. Of the five, only the venturi screen on tube 2245 revealed plugging. Masking tape was blocking 75 percent of the screen's surface, whereas no tape was found on the other four venturi screens. Because #6 high-lift pump only supplies even numbered crossheaders, the only other tube whose Panellit scrammed, which may have experienced plugging either downstream or upstream is tube 4449. However, Process Engineering suspects that a partially opened toggle valve in the Heise manifold into which Panellit 4449 is connected and its dial rolled too near low trip, was the cause of the eventual low trip. Panellit 4440 read 35 psi on the dial after scram with cold flow. A 5-8 psi rise due to cooling of the water in the tube following shutdown would bring the dial near low trip on its 25-75 gauge.

Panellit dial on 4775 read 37 after scram. Because this tube's Heise showed a rising pressure from 244 at 0745 to 269 at 2136, downstream plugging was suspected. The tube was recommended to be discharged and each element was carefully examined for hole plugging. No evidence of

[redacted]
DECLASSIFIED

DECLASSIFIED

such plugging was seen. No apparent reasons can be given for a low trip on this gauge and speculation is both unnecessary and precarious. A high trip scram was probable on Panellit 4887 and 2955. Panellit 2955 was throttled about one-half hour prior to scram. Two perfs at the downstream end of each of the above five tubes were checked for possible plugging. No evidence of such plugging was seen. In addition to the previously discussed venturi screens, the following venturis were also removed and checked for probable screen plugging.

Tube No.	Comment
0464	Clean
0670	Clean
0852	30 percent plugged
2248	Clean
2267	Clean
2268	Clean
3249	Clean
4466	Small amount of tape found

No further problems with screen plugging has been noted in ten days of subsequent reactor operation.

August 9, 1963

G. Fiorelli, Acting Manager
KW Processing Unit

J. C. McLaughlin, Manager
K Power Unit

CROSSHEADER SCREEN PROBLEM

As you know, on August 4, 1963, crossheader screens #22 and #34 on the "C" riser side were found to contain foreign material. In header screen #34, a 1-1/8" X 5" bolt was lodged crosswise. Some evidence of chattering was found on the bolt and the inside 8 X 8 mesh screen sustained minor damage. In screen #22 the nut, evidently the corresponding 1-1/8" hexagonal head nut, was found. The action of the water flow and the restricting screen was that of peening the nut round on the external surfaces. The nut had completely penetrated the screen (three layers) and was lodged in the hole. Both the nut and bolt showed evidence of considerable corrosion.

The rounded nut, had it entered into #22 crossheader and drifted downstream toward the null flow point, could have been drawn into a tube inlet fitting where, by virtue of its shape, it may have drastically reduced tube flow, possibly completely stopping it. Therefore, there exists a reasonable probability that a major incident was averted by the timely changeout of the #22 crossheader screen.

By carefully checking all bolt sizes (piping inspection, material lists, etc.) throughout the primary and secondary water system from 105-KW to the 183-KW clearwell, it appears that the bolt and nut came from the pump casing on one of the low lift pumps. The most probable pumps would be Nos. 4 and 6 although other possibilities do exist.

The following recommendations are presented in order to minimize the chances of such a condition existing again:

1. All work performed on critical* piping, fittings, or pumps be supervised in such a manner that:

   a. All loose material--nuts, bolts, pins, etc.--be strictly accounted for.

   b. Opened critical piping be covered or protected to eliminate the chance of tools, parts, or clothing being introduced into said piping.

   c. After work is completed, a thorough inspection is made of the equipment, surrounding area and, if applicable, the bottom of the 183 clearwell in the vicinity of the work.

*Critical as used here means that there is a connection between location of the work and the reactor front risers.

2. Although not a Standards requirement, it is recommended that the crossheader screens be inspected at least once per year.

If any or all of the above items are now a part of the standard procedure, then this should serve as a reminder. If they are not, it is urged that they be incorporated as soon as possible. It is recognized that the maintenance work referred to under item 1 above may be performed by Minor Construction and possibly other groups as well as our own K plant forces. Therefore, it would be appreciated if these points would be discussed with these people prior to any work applicable to this problem.

W. H. Radtke

W. H. Radtke
Process Engineering

WHR:r

cc: RS Bell
MA Clinton
RG Clough, Jr.
LC Lessor
EE Weyerts
WHR-File

(CLASSIFICATION) DECLASSIFIED

DOCUMENT NO.

SERIES AND COPY NO.

DATE December 6, 1962

GENERAL ELECTRIC

HANFORD ATOMIC PRODUCTS OPERATION - RICHLAND, WASHINGTON

[X] RESTRICTED DATA

THIS DOCUMENT CONTAINS RESTRICTED DATA AS DEFINED IN THE ATOMIC ENERGY ACT OF 1954. ITS TRANSMITTAL OR THE DISCLOSURE OF ITS CONTENTS IN ANY MANNER TO AN UNAUTHORIZED PERSON IS PROHIBITED.

TITLE

UPSTREAM PLUGGING IN TUBE 0570-KE

[ ] OTHER OFFICIAL CLASSIFIED INFORMATION

THIS MATERIAL CONTAINS INFORMATION AFFECTING THE NATIONAL DEFENSE OF THE UNITED STATES WITHIN THE MEANING OF THE ESPIONAGE LAWS, TITLE 18, U.S.C., SECS. 793 AND 794, THE TRANSMISSION OR REVELATION OF WHICH IN ANY MANNER TO AN UNAUTHORIZED PERSON IS PROHIBITED BY LAW.

AUTHOR

L. C. Lessor

ISSUING FILE

THIS DOCUMENT MUST NOT BE LEFT UNATTENDED OR WHERE AN UNAUTHORIZED PERSON MAY HAVE ACCESS TO IT. WHEN NOT IN USE, IT MUST BE STORED IN AN APPROVED LOCKED REPOSITORY WITHIN AN APPROVED GUARDED AREA. WHILE IT IS IN YOUR POSSESSION AND UNTIL YOU HAVE OBTAINED A SIGNED RECEIPT FROM CLASSIFIED FILES, IT IS YOUR RESPONSIBILITY TO PROTECT IT AND ITS CONTENTS WITHIN THE LIMITS OF THIS PROJECT AND FROM ANY UNAUTHORIZED PERSON. IT TRANSMITTAL TO, AND STORAGE AT YOUR PLACE OF RESIDENCE IS PROHIBITED. IT IS NOT TO BE DUPLICATED. IF ADDITIONAL COPIES ARE REQUIRED, OBTAIN THEM FROM THE RELATED ISSUING FILE. ALL PERSONS READING THIS DOCUMENT ARE REQUESTED TO SIGN IN THE SPACE PROVIDED BELOW.

ROUTE TO:	PAYROLL NO.	LOCATION	FILES RECEIPT DATE	SIGNATURE AND DATE
J.M. GRAVES				

,-3000-052 (7-59) A.E.C.-G.E.-RICHLAND, WASH.

(CLASSIFICATION) DECLASSIFIED

DECLASSIFIED

December 6, 1962

UPSTREAM PLUGGING IN TUBE 0570-KE

On November 27, KE reactor was shut down because of data indicating severe upstream plugging in tube 0570.

The following is a rapidly written running record of the summary of events that occurred and is presented as a record that may be useful to evaluate future problems.

Water pressure was raised Friday morning, November 23, 1962, and the Panellit board was cleared. A complete full board base pressure check was also made. It appears that pressures on all gauges but 0570 were entered in the old ROL report. An asterisk had been placed on the base check data sheet adjacent to 0570 and the new base had been calculated. The new base was 153.

The reactor was started up at 2326, November 23, 1962. Panellit gauge 0570 was rolled from 52 to 62 at 0822, November 24, 1962, prior to removing a spline in that tube. The new base was calculated by subtracting the dial change from a previously entered base (11/9/62) of 215 and the new base of 205 was entered in the ROL report. Actually, the base pressure at this time was 143. The temperature on 0570 ran hotter than surrounding tubes on Saturday and Sunday, November 24 and November 25.

The following data were obtained at 0800, Monday, November 26, 1962:

Tube #	Flow	Fact	T_i	To	T	P	Load	Charge Date
0570	?	?	11.0	116	105	?	KIVN	9/25/62
0470	67.0	17.7	11.0	78	67	1190	KIVN	7/10/62
0569	70.5	18.6	11.0	84	73	1360	KIVN	10/30/62
0571	69.9	18.4	11.0	81	70	1290	KIVN	11/10/62
0670	70.8	18.7	11.0	96	85	1590	KIVE	9/25/62

Assuming that the same amount of heat was being removed from 0570 as the three surrounding natural tubes, a flow was calculated:

$\bar{P}$ surrounding = 1146

$$\frac{1280}{105 \times .2635} = 46.5 \text{ gpm}$$

The flow on this tube during the previous operating period was caluclated to be 70 gpm. Therefore, the per cent flow reduction was $\frac{70 - 46.5}{70} \times 100 = 32\%$

At 1615 on November 26, 1962, it was requested that gauge be rolled to 35 so that it would be nearer low trip in the event of further upstream plugging. It was also agreed that the gauge would not be rolled up, that temperature and pressure be monitoried at least hourly and that I be notified of a 5 psi or greater change in pressure. During the night, three splines were inserted around 0570 in tubes 0567, 0573, and 0770. This changed the temperature to values as indicated:

Tube #	J To
1570	104
0470	72
0569	77
0571	73
0670	86

The Panellit pressures on gauges adjacent to 0570 raised slightly as a result of the lower temp. However, the pressure on gauge 0570 decreased. From the best assessment of pressure changes with available data, it was concluded that the pressure change on 0570 would have dropped about 4 psi from the previous dial of 35 had the splines not been inserted. This was concluded to be an indication of further plugging.

DECLASSIFIED

Dale Waters indicated in a telephone conversation on November 27, 1962, that he was sure that from lab data taken during upstream plugging tests that a 30 per cent flow reduction in the K tube would probably be caused by 80 to 90 per cent of the screen being plugged and maybe even more. The screen has 45 square openenings, and with 90 per cent plugged, this would leave only five openings unplugged. Since it was felt that re-arrangement of particles or further plugging may quite easily result in complete flow stoppage thru the tube, it was decided that the reactor should be shut down. Processing followed the recommendation and the reactor was shut down immediately.

The reactor had been down 20 hours when the front pigtail and venturi assembly were removed. Water could be shut off to the tube or the header for six minutes and it was recommended that the front header be valved completely closed during the venturi removal on 0570 so that all particles could be found and the actual amount of plugging determined. The specialist on the front during the venturi removal was reluctant to valve the header closed and did not do so. As a result, the water gushing out the header fitting during the venturi removal probably washed away some of the particles. Even so, the screen was still about 50 per cent plugged. Some small particles were also found downstream of the screen which appears to have been held up by larger particles. This indicates that particles were removed or re-arranged during the venturi removal. It is still felt that the screen was around 80-90 per cent plugged before the venturi removal.

The particles saved included nine particles approaching the size of a 1/8 inch to 3/16 inch cube that were attracted by a magnet with various degrees of force. These particles look like "rust" particles. Another piece was flat and was a metal shaving which was also attracted by a magnet. A piece about 1/4 inch x 3/8 inch x 1/8 inch thick also was found upstream of the screen. This piece was white in

color and hard but was inadvertently dropped off the elevator into the water. Therefore, it could not be further analyzed.

Inspection of venturi screen on tube 0579 also revealed four particles of the size mentioned above that looked like rust particles. The pressure and temperature on this tube appeared normal during operation. The pressure did behave abnormally on this tube as water pressure was reduced after shutdown. This was the reason for inspecting this tube. The header was valved closed during the venturi removal on tube 0579 and flow was off the tubeson that header less than one minute. If it is desired to obtain the particles plugging the screen, I would again recommend the single header be valved closed as the venturi is removed providing standards time limits can be followed.

Both crossheader screens were removed and replaced with clean screens. Also, the header was flushed by inserting a bar in the check valve end flushing through the open screen.

A a result of this plugging, I have initiated an investigation to determine the possibility of going to a screen mesh with larger openings. It appears that the main objective of the screen is to prevent a particle from passing the screen that would plug the venturi. Therefore, the screen openings could be increased considerably and still serve its purpose.

L C Lessor
Process Engineering

LC Lessor:md

DECLASSIFIED

[redacted] (CLASSIFICATION) DECLASSIFIED

DOCUMENT NO.

RD

SERIES AND COPY NO.

1

DATE

August 1, 1961

GENERAL ELECTRIC

HANFORD ATOMIC PRODUCTS OPERATION - RICHLAND, WASHINGTON

[X] RESTRICTED DATA

THIS DOCUMENT CONTAINS RESTRICTED DATA AS DEFINED IN THE ATOMIC ENERGY ACT OF 1954. ITS TRANSMITTAL OR THE DISCLOSURE OF ITS CONTENTS IN ANY MANNER TO AN UNAUTHORIZED PERSON IS PROHIBITED.

[ ] OTHER OFFICIAL CLASSIFIED INFORMATION

THIS MATERIAL CONTAINS INFORMATION AFFECTING THE NATIONAL DEFENSE OF THE UNITED STATES WITHIN THE MEANING OF THE ESPIONAGE LAWS, TITLE 18, U.S.C., SECS. 793 AND 794. THE TRANSMISSION OR REVELATION OF WHICH IN ANY MANNER TO AN UNAUTHORIZED PERSON IS PROHIBITED BY LAW.

TITLE

TUBE LEAK 3063 F

AUTHOR

L. C. Lessor

ISSUING FILE

THIS DOCUMENT MUST NOT BE LEFT UNATTENDED OR WHERE AN UNAUTHORIZED PERSON MAY HAVE ACCESS TO IT. WHEN NOT IN USE, IT MUST BE STORED IN AN APPROVED LOCKED REPOSITORY WITHIN AN APPROVED GUARDED AREA. WHILE IT IS IN YOUR POSSESSION AND UNTIL YOU HAVE OBTAINED A SIGNED RECEIPT FROM CLASSIFIED FILES, IT IS YOUR RESPONSIBILITY TO KEEP IT AND ITS CONTENTS WITHIN THE LIMITS OF THIS PROJECT AND FROM ANY UNAUTHORIZED PERSON. ITS TRANSMITTAL TO, AND STORAGE AT YOUR PLACE OF RESIDENCE IS PROHIBITED. IT IS NOT TO BE DUPLICATED. IF ADDITIONAL COPIES ARE REQUIRED, OBTAIN THEM FROM THE RELATED ISSUING FILE. ALL PERSONS READING THIS DOCUMENT ARE REQUESTED TO SIGN IN THE SPACE PROVIDED BELOW.

ROUTE TO:	PAYROLL NO.	LOCATION	FILES ROUTE DATE	SIGNATURE AND DATE
R. A. Reid				R. A. Reid 8/15/61
[redacted]				

54-3000-052 (7-59) A.E.C.-G.E.-RICHLAND, WASH.

[redacted] (CLASSIFICATION) DECLASSIFIED

[redacted]

RESTRICTED DATA

This document contains restricted data as defined in the Atomic Energy Act of 1954. Its transmittal or the disclosure of its contents in any manner to an unauthorized person is prohibited.

This Document Classified

By [redacted]

1. RW Reid
2-3. LC Lessor

August 1, 1961

TUBE LEAK 3063 F

The reactor was scrammed at 2311, 7-27-61, due to a Panellit low trip on 3063. The Panellit pressure dropped from 264# to 30#. The front header pressure on this tube, 29 header, was 553#. Rear header pressure at 3063 location was approximately 49#.

Inlet and outlet gas pressure went full-scale immediately after scram. Inlet and outlet driplegs started dumping five minutes after scram. Graphite stringer points five and six on 2662 started a rapid decrease in temperature five minutes after shutdown. The temperature on these two points dropped to 30° within 45 minutes after scram. Points five and six on 1266 also decreased rapidly.

Gamma monitoring equipment showed no signs of a rupture.

A temperature check soon after scram showed 3063 had a temperature of 35° compared to 33° on equivalent powered surrounding tubes.

Water pressure was lowered to TORP of 75# at 2325. Temperature on 3063 steadily raised from 35° to 38°. The TORP was then raised to 175# and on to 275#. While making this raise, 3063 temperature took a surge to 43°. This may have been an indication of a steam sweep. The temperature then decreased to 28° after raising TORP to 275#.

Water pressure was lowered again at 1:12 a.m. to a TORP of 75#. Temperature on 3063 raised to 32°, an increase of 4°, while surrounding tube temperatures increased 2.5°. At 2:10 a.m., temperature on 3063 was 29° while temperature on 3613 was 25.8. At 2:15 a.m., TORP was increased to 275# to see how outlet temperatures changed. Temperature on 3063 dropped to 25.5, a Δt of 3.5, while 3163 dropped to 24.0, a Δt of 1.8. This tended to confirm that flow through the tube was from front to rear and that adequate cooling was being provided. Lowering the pressure to 75# at 2:40 a.m. increased temperature on 3063 by 1.5°, while 3163 increased only about .5°.

Figure 6 of Process Standards showed that the reactor downtime for infinite water shut off time was 5 hours. It was felt that this time was ultra-conservative since graphite temperature in the region had been cooled rapidly due to the leaks.

Water pressure was again raised and lowered to see if outlet temperatures again indicated that flow was from front to rear. Results were as before and a quickie discharge was planned.

[redacted]

DECLASSIFIED

Rear face entry was made at around 2:50 a.m. in preparation for the quickie discharge. A pigtail survey at this time dhowed no indication of a rupture. The header was valved to the drain. TORP during discharge was 75 to 80 pounds with no valving down on the front. At 3:40 a.m. the column was discharged with the charge machine without any sticking. The metal is being saved for inspection. Tube removal was initiated. A request was made to have the tube saved for inspecation, also.

Other criteria on 3063.

Metal Charged - 5-25-61. 31 & 1 I&E 0-III-N. Lot KZ-076-A
Tube Installed 4-22-56
T_o 95°
T_i 21°
Pan. base 196#
Dial prior to scram 68#
Flow prior to scram 49.7
Power = 9%

The tube was removed and inspected. The hole was 9' downstream from the front Van Stone and on the top of the tube. Size of hole was probably something in the order of 1 sq. inch. The hole was above the junction between the second and third fuel element which is also at the junction of the first and second graphite block. The cause of the hole appears to be due to chattering. Possibly, upstream dummies had been left in a short charge at one time or another. The tube will be more closely inspected.

This tube had not been probologged since installation.

L. C. Lessor/Smg

L. C. Lessor
Process Engineering

LCL:mf

DECLASSIFIED

DATE
FILMED
4/11/94
END