NOTICE

**CERTAIN DATA
CONTAINED IN THIS
DOCUMENT MAY BE
DIFFICULT TO READ
IN MICROFICHE
PRODUCTS.**

DECLASSIFIED

HW--33998-RD

DE93 001731

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.

DATE
12-3-54

COPY NO.

FILE DESIGNATION

300 N

SUBJECT OR TITLE
REACTOR SECTION, RADIATION MONITORING

SUB-SECTION MONTHLY REPORT (ADMINISTRATIVE)

NOVEMBER, 1954 (ROUGH DRAFT)

TO

J. H. Warren

FROM

P. C. Jerman

THIS DOCUMENT CONTAINS RESTRICTED INFORMATION AS DEFINED IN [REDACTED] ITS DISCLOSURE IN ANY MANNER TO AN UNAUTHORIZED PERSON IS PROHIBITED BY LAW.

THIS DOCUMENT MUST NOT BE LEFT UNATTENDED OR WHERE AN UNAUTHORIZED PERSON MAY HAVE ACCESS TO IT. IT MUST BE STORED IN AN APPROVED GUARDED AREA. WHEN YOU HAVE OBTAINED A SIGNED RECEIPT FROM CLASSIFIED FILES, IT IS YOUR RESPONSIBILITY TO RETURN ITS CONTENTS WITHIN THE LIMITS OF THIS PROJECT AND FROM AN UNAUTHORIZED PERSON. ITS STORAGE AT YOUR PLACE OF RESIDENCE 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:	READ BY:	DATE	ROUTE TO:	READ BY:	DATE
H. C. Smith	H. C. Smith	11/6			
J. H. Warren	J. H. Warren	12/16/54			
P. C. Jerman 156	P. C. Jerman	12.17			

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.

06-105 (12-54)

DECLASSIFIED

MASTER

OCT 13 1992

DISTRIBUTION RESTRICTED TO U.S. ONLY

DECLASSIFIED

HW-33998 RD

Copy #1 - P. C. Jerman

December 3, 1954

Mr. J. H. Warren, Manager
Reactor Section
HANFORD ATOMIC PRODUCTS OPERATION

REACTOR SECTION
RADIATION MONITORING SUB-SECTION MONTHLY REPORT
NOVEMBER, 1954

I. RESPONSIBILITIES

✓ Assigned responsibilities of the Radiation Monitoring Sub-Section were not changed during November.

II. ACHIEVEMENT

A. Operating Experience

1. Statistics

	<u>October</u>							<u>November</u>							<u>1954</u>
	<u>B</u>	<u>C</u>	<u>D</u>	<u>DR</u>	<u>F</u>	<u>H</u>	<u>Total</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>DR</u>	<u>F</u>	<u>H</u>	<u>Total</u>	<u>Date</u>
Special Work Permits	134	73	82	85	64	152	590	187	173	83	74	108	110	737	8167
Routine & Special Surveys	465	265	414	377	475	701	2697	580	517	473	343	633	499	3045	30334
Retention Basin	158	158	176	173	128	200	993	210	139	137	167	111	150	914	11816
Air Monitoring Samples	43	60	75	46	56	135	415	95	41	80	39	134	40	429	4030
Hand Contamination cases	0	3	0	0	2	6	11	0	1	0	0	2	0	3	116
Skin Contamination Cases (other than hands)	3	2	1	0	1	11	18	0	1	1	0	2	1	5	257

Retention Basin Effluent

The activity of the water leaving the retention basins was as follows:

	<u>100-B</u>	<u>100-C</u>	<u>100-D</u>	<u>100-DR</u>	<u>100-F</u>	<u>100-H</u>
Average beta dosage-rate (mrads/hr)	3.5	2.3	3.0	5.1	3.6	4.7
Average gamma dosage-rate (mr/hr)	6.3	3.5	6.1	9.1	8.7	10.2
Average total dosage-rate (mrads/hr)	9.8	5.8	9.1	14.2	12.3	14.9
Average integrated dose in 24 hours	235	129	218	341	295	358
Maximum integrated dose in 24 hours	305	211	310	451	521	439
Maximum integrated dose in 24 hours 1954	460	391	670	682	521	854

Classification Cancelled (Change to
DECLASSIFIED

By Authority of

DS Lewis 6/19/92
DG Krueger 9/4/92
JL Savely 9-4-92

2. Activities

There were 21 slug failures during the month, one at 105-B reactor, twelve at 105-C reactor, five at 105-DR reactor, and three at 105-H reactor. The maximum exposure rate encountered during the removal of ruptured slugs was 3 rads/hr at 105-B while a tube was set up for "quickie" discharge. A maximum dose rate of 100 mrad/hr including 50 mr/hr was observed at 105-C reactor on the charge elevator as a tube containing a ruptured "J" metal piece was discharged. The dose rate was due to fission gas from the ruptured slug. Nozzles below the tube discharged were contaminated up to 2.5 rads/hr including 100 mr/hr at 3 inches by contaminated water which dripped from the tube.

Irradiated third safety balls were located in the separator-collector hopper on top of the 105-C reactor. The maximum dose rate at the discharge elevator machinery room near door to the balcony was 150 mr/hr, and on the balcony, 1r/hr. The balls had evidently been brought to the top of the reactor when the ball elevator was operated during the previous outage. The balls were transferred to a cask at a maximum exposure rate of 600 mr/hr. On two occasions irradiated uranium pieces and on one occasion an irradiated 10-66 metal piece were brought up on the 105-B reactor wash pad dummy elevator with buckets of poison pieces which were to be reclaimed. In each case the removal was adequately monitored. Also the health monitoring chamber alarm sounded. The buckets were returned to the storage basin.

The 105-D reactor was shutdown for the week beginning November 14, for venturi installation. All work was completed without incident. On November 28, the 105-C reactor began an extended outage for the replacement of rear pigtails by Minor Construction forces. Outside of minor contamination problems, by month end the work had progressed without incident.

High dose rates were detected around the storage area chutes immediately after a start up of the 105-D reactor. Dose rates at the chute railings rose to 120 mrad/hr including 80 mr/hr, and at the water surface to 400 mrad/hr including 250 mr/hr at 2 inches as the result of the far riser drain valve in the discharge area being left open. The valve was closed during the outage for poison discharge.

Metal was brought into the 105-K reactor without interference with construction work. Exposure rates to Construction personnel was maintained below 1 mr/hr.

The 24-hour dose of the effluent water discharged to the Columbia River exceeded 360 mrad at the 105-H reactor throughout the month, and at the 105-DR and 105-F reactors for 9 days and 11 days respectively. The maximum 24-hour doses were 451, 521 and 439 mrad for 105-DR, 105-F and 105-H reactors respectively. For about three days the beta to gamma ratio of the activity of the effluent water at 105-C reactor was inverted. The normal ratio is 1 to 2. During this period the ratio was as high as 2.3 to 1. The cause was due to changes in the lime-alum coagulant feeds to process water. The total activity was lower than normal, with the beta activity about normal and the gamma activity much lower than normal. "Hot springs" along the bank of the river opposite the 107-F retention basins upstream to the 181-F building indicate severe leaks in the 100-F Area effluent system.

Equipment Experience

All Radiation Monitoring equipment operated satisfactorily during the month.

DECLASSIFIED

DECLASSIFIED

Warren

- 3 -

December 3, 1954

Improvement Experience

At 105-D reactor the near side sample room and outer rod room drains were isolated from the effluent system by a new piping arrangement. Since then there has been no high activity due to effluent vapors in these locations.

Several loose timbers and pieces of steel plate were removed from the cushion chamber at 105-B reactor. By this the effluent vapor problem in the cushion chamber corridor was eliminated. Timbers were also removed from the effluent line junction box outside the 105-D building. This reduced the effluent vapor activity at this location. The wooden screen was removed from the 1904-D effluent out-fall station and replaced with a steel screen. This should help eliminate overflow of effluent water to the 1904 spillway in that the steel screen is not as easily plugged.

A new type fresh air supplied plastic head piece has been adopted for respiratory protection. The head piece offers much better visibility than the fresh air masks, is much more comfortable to wear, and allows better audibility.

J. S. Corbett submitted a report of invention for a canvas shoe cover. The cover has a wide opening making it easy to slip on the shoe. Closure is accomplished by wrapping the heel portion of the cover around the ankle and fastening a female metal fastener to any of four male fasteners at the side. The cover comes up higher on the ankle than the standard cover thus offering better protection.

D. Events Influencing Costs

Radiation Monitoring Sub-Section costs should be about the same for November as for October. The overtime used during November was slightly less than that used during October.

E. Significant Reports Issued

1. Routine

✓ "Reactor Section, Radiation Monitoring Sub-Section Monthly Report (Administrative) October, 1954, Rough Draft" - HW-33643-RD, dated November 3, 1954, author, P.C. Jerman.

✓ "Reactor Section, Radiation Monitoring Sub-Section Monthly Report for month of October, 1954" - HW-33644, dated November 3, 1954, author - P. C. Jerman.

2. Non-Routine

✓ "Manufacturing Department Radiation Incident Investigation, Class I, No. 392," HW-33907, dated November 15, 1954, author L. V. Barker.

Personnel

A. Organization

The unit structure of the Radiation Monitoring Sub-Section was reorganized as follows on November 1, 1954:

<u>Unit</u>	<u>Superintendent, Area, Radiation Monitoring</u>
100-B	L. V. Barker
100-D	M. M. Cox
100-F, H	R. B. Hall
100-K	J. G. Myers

"Round the Clock" coverage was provided for the 105-K reactor on November 9, 1954.

B. Force Summary

	<u>Start of Month</u>	<u>End of Month</u>	<u>Net Change</u>
Monthly	22	22	0
Weekly	<u>55</u>	<u>54</u>	<u>-1</u>
Sub-Section Total	<u>77</u>	<u>76</u>	<u>-1</u>
Rotational Pool Tech Grads.	0	0	0

The force change during the month was due to a termination.

C. Safety Experience

No major or sub-major injuries were sustained by Radiation Monitoring Sub-Section personnel during November. Two minor injuries were sustained.

D. Radiation Experience

No employee of the Reactor Section received a known overexposure to radiation during November.

The table below gives the radiation experience of the Reactor Section for the month.

	<u>100-B</u>	<u>100-C</u>	<u>100-D</u>	<u>100-DR</u>	<u>100-F</u>	<u>100-H</u>	<u>Total</u>
Exposure hours	1710	2042	1875	1202	2328	1167	10,324
Incident frequency rate/1000 hrs.	0.58	0	0	0	0	0	0.10
Average severity/incident	1.0	0	0	0	0	0	1.0

There were no Class II and one Class I radiation incidents. Class I, No. 392, Severity 1, occurred at 105-B reactor on November 15, 1954, when irradiated aluminum dummies washed out of a process tube onto the discharge elevator due to improper valving during displacement of poison columns. An Operations Unit employee received a dose of 400 mrad to his hand when he placed it over the end of the rear nozzle to stop the dummies from coming out.

E. Personnel Activities

At month end no Rotational Training Technical Graduates were assigned to the Radiation Monitoring Sub-Section.

The Superintendents, Area, Radiation Monitoring presented a radiation hazards training program to exempt personnel of the Section. The program consisted of two sessions, each of about 90 minutes duration. Each area, excepting 100-K Area, presented the program once each week throughout the month, making a total of 16 presentations in all areas. The number of people who attended broken down by Sections is as follows:

	<u>Session I</u>	<u>Session II</u>
Reactor	178	159
Electrical Utility	5	4
Transportation	16	13
Technical	11	6
Other	<u>4</u>	<u>1</u>
	214	183

RECEIVED
DEC 20 1954
100-D AREA
TO FILES

P. F. Jordan
Superintendent
Radiation Monitoring Sub-Section

DECLASSIFIED

END

**DATE
FILMED**

1 / 11 / 93