718065

DECLASSIFIED

(CLASSIFICATION)

RECORD CENTER FILE

GENERAL ELECTRIC

HANFORD ATOMIC PRODUCTS OPERATION – RICHLAND, WASHINGTON

DOCUMENT NO.

HW-7-1115

SERIES AND COPY NO.

[redacted] 1

DATE

1-8-45

☐ 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.

☐ 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

Weekly H. I. Reports on 200 Area and Environs for 1-5-45 thru 2-13-46 (#1 thru #58)

AUTHOR

HM Parker,
CC Gamertsfelder

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 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
File Copy	.....			[signature] 3/25/58
RECORD CENTER FILE				
R. H. Wilson	12715	3746	JUL 19 '62	

REPOSITORY DNL

COLLECTION General

BOX No. N/A

FOLDER N/A

C-3195-MS (7 – 55) A.E.C.-G.E.-RICHLAND, WA

112046

DECLASSIFIED

(CLASSIFICATION)

PH-2 REV. 1

DU PONT

ESTABLISHED 1802

E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED

P. O. Box 100 RICHLAND, WASHINGTON

EXPLOSIVES DEPARTMENT—TNX

Copy #1 - W. C. Kay
#2 - F. A. Otto
#3 - S. T. Cantril - H.I. File
#4 - H. M. Parker - C. C. Gamertsfelder
#5 - 700 Area File
#6 - 300 Area File
#7 - Pink copy
#8 - Yellow copy

This Document consists of 263 Pages No. 1 of 8 Copies, [redacted]

January 8, 1945

W. C. KAY, SUPERINTENDENT
S DEPARTMENT

H. I. REPORT ON 200 AREA AND ENVIRONS FOR WEEK ENDING JANUARY 5, 1945

Group A - F. P. Seymour, Senior Supervisor:

1. Statistics

Surveys for Special Work Permits	141
5 Point Fan Duct Surveys	35
21 Point Fan Duct Surveys	7
Other routine and Special Surveys	146
Tools counted	300
Gloves counted	200

2. 221 T

The centrifuge from Section 16 R gave 40 mr/hr. at 8" from the collar. That from 6R gave 150 mr/hr. at one of the connector flanges.

In the canyon the yoke prong gave 100 mrep/hr. The 10 ton hook on the crane gave 3 mrep/hr.

Plugs from Section 8 samples gave 2000mrep/hr.

The H.I. group has expressed repeated dissatisfaction with the current sampling procedures. The situation should be adequately corrected by the program of the Special Sampling group.

3. 222 T

The reports from this building give the impression that co-operation with the supervision there has not yet achieved the desirable standard that has been maintained in the balance of the area.

To date, only one work permit has been issued for maintenance work in 222 T. Yet a spot on gloves worn by maintenance men there showed 2500 c/min. (700 was the accepted maximum) A smear count of 4000 c/min was obtained near a hot sink that had required maintenance work.

On the 12-8 shift, January 5, 1945, a chemist sustained a cut to a finger in an accident involving the dropping of a bottle containing a dilute product solution. Information on this reached the H.I. group in the 200 Area via Dr. Fuqua at noon on January 5, 1945. Clarification of the advantages of voluntarily informing the H.I. representative of all accidents involving a known, suspected or potential health hazard should be made.

The two-fold hand counter in 222 T was found to be contaminated and was decontaminated by the Instrument Department without reference to the H.I. Section which is responsible for all health instruments.

4. 224 T

The H.I. group is highly appreciative of the office space provided in this building. No significant survey data has turned up yet.

5. 291 T

The fan ducts from 221-T to the stack are becoming progressively contaminated as the extraction process continues. The hot spot on the fan housing has gone from 8 to 115 mr/hr. this week (140 mr/hr. on January 6, 1945 and 125 mr/hr. on January 7, 1945). The Technical Department will make an analysis of the active components which should help to determine the approximate saturation value. In the meantime, a fence around the area and installation of remote oilers adequately controls the hazard.

6. 292 T

The stack monitoring equipment is in poor condition at the present time.

1. Both the Xenon and Iodine chambers are contaminated.
2. Condensate from the gas inlet is trapped in the base of the rotameter and reads up to 55 mr/hr.
3. A filter upstream from the Xenon chamber seems to clear most of the contamination problem. Obviously such contamination indicates imperfect scrubbing of iodine and the constancy of percentage removal will have to be checked.
4. Collection of moisture in the flowmeter periodically affects the flow readings.
5. No successful method of decontamination of the iodine chamber has been found.
6. R. M. Girdler now reports that the iodine calibration is possibly faulty by a factor of 10.

Steps are being taken to correct all these matters. Subject to many errors, the peak iodine concentration has been 1.2 x 10^{-12} curie/cc. Peak Xenon concentration was 2.8 x 10^{-10} curie/cc.

H.I. Special Studies measured 10^{-14} curie/cc of iodine in 292 T presumed due to a spill and poor drainage.

7. 200 N

Material is now being stored in 212 R and notice has been received that 212 N will be freed from material. It is suggested that the reservior be drained and a final survey made by H.I. before the badge and pencil system is terminated. It is understood that no need for integrons in 212 Building other than at the loading mechanism is seen. A water level indicator is to be used to protect against accidental loss of the shielding water.

8. General

Two four-fold hand counters have just arrived and will be operating next week. It is expected that all men who may reasonably be supposed to be exposed to hand contamination will use these instruments once or twice daily and that the records will be written on the Forms provided which will be kept on file by H.I. The operation requires only 20 seconds and in general, four single digit numbers will provide the log entry. It is hoped to supplement those self checks by a weekly examination by H.I. at which time the area and nature of any persisting contamination will be more fully investigated. Hand counting and decontamination is supervised by P. L. Eisenacher (Headquarters in 2723). For your convenience, the day-to-day contacts will be handled through Group A.

Group B - J. W. Morris - 231 Building:

No active work has been done. The work on the ventilation and filter system is being closely followed. Instrumentation for this building has always been behind schedule. It can now be foreseen that at least one of each kind of health instrument proposed will be available in 231 for start-up.

Beta and Gamma Instruments	Plentiful
Plutos	Plentiful
Precipitrons	Adequate
Auxiliary equipment for precipitrons	Amplifiers scarce
Big Suckers	Being made
Little Suckers	Abundant
Hand Counters	Probably two.

All current delays are Instrument Department hold-ups.

Group C - P. E. Lindvig - Site Survey:

The progress of atmospheric activity during the first hot dissolving step was followed by spot checks around the desert by K-22 chambers. Contrary to expectations an area of significant contamination was set up at ground level

at about 2000 feet from the stack. Maximum reading obtained was less than 0.1 mr/hr. However, if this was due to iodine the hazard would be greater than the numerical value indicates. Analysis has not yet been made. The first attempt to delineate the boundaries of the affected area failed because the counter tubes provided in the portable GM tubes were of the neon amyl acetate type which are quite unsuited to outdoor measurements. This had been noted in another connection earlier in the week, but no substitute tubes are yet available.

The general Integron program for atmospheric monitoring seems to have taken a decided turn for the better. No significant reading has ever been found on such meters.

The present waste disposal system causes some concern to the H. I. Section and a general report is being prepared on this subject.

General:

The Personnel Meters program is in very disappointing condition at this time, due mainly to two manufacturing problems.

1. New pencils have been held up due to a faulty bakelite shipment. The section is compelled to use meters in second class condition. This shows a marked difference in the number of high readings for the area. Those which are off scale are checked by badge readings which have always been insignificant. Readings between 100 and 200 are not checked by badges because the films are not sufficiently accurate to give a clear answer at this level. Co-operation in handling a number of questionnaires that the H. I. Section expects to be due to poor grade pencils would be appreciated. Such investigations can not be dropped because they <u>may</u> be due to a condition that would be hazardous if it persisted. To date there has been no evidence in the 200 Area of an overexposure.

2. The manufacturer of the special film pockets for badges has reported loss of the new stock by technical difficulties. It is, therefore, impossible at present to carry out standard practice of changing the pockets once per week. Enough film is on hand to change pockets for off scale pencils, new employees and transfers.

H. M. Parker

H. M. PARKER
Chief Supervisor
Health Instrument

HMP:oh/bk

[redacted]

1124050

5 7-1115 7-745

Copy #1, 2, 3, 4, 5 - H. C. Kay
#6 - F. A. Otto
#7 - S. T. Cantril - H.I.File
#8 - C. C. Gamertsfelder
F. P. Seymour-J.W.Morris
#9 - C. M. Patterson -
P. E. Lindvig
#10 - 700 Area
#11 - 300 Area
#12 - Yellow copy
#13 - Pink copy

January 15, 1945

H. C. KAY, SUPERINTENDENT
S DEPARTMENT

H.I. REPORT FOR 200 AREA AND ENVIRONS FOR WEEK ENDING JANUARY 12, 1945

GROUP A - 200 Area Survey Group:

1. Statistics:

Surveys for Special Work Permits	134
5 Point Fan Duct Surveys	42
21 Point Fan Duct Surveys	7
Other Routine or Special Surveys	93
Tools counted	~ 250
Gloves counted	~ 150 pairs
Rubbers counted	~ 100 pairs

2. 221-T:

Item	Readings
Sewer Cell	350 mr/hr
Miscellaneous articles removed from sewer cell	40 mr/hr
Centrifuge from Sect. 16	24 mr/hr

3. 222-T:

This building is reported to be in good shape.

4. 224-T:

Alpha smear tests on the centrifuge in Cell F gave:
Center top, bowl inside, bowl baffles, bowl bottom, baffle plates all about 70 d/m.

Bowl lid underside	300 d/m
Housing bottom	3000 d/m
Plow blades	2400 d/m
Flanges in lines to F1 & F2	v. low

Results are qualitative only.

All air samples during the work indicated concentrations below 5×10^{-11} μg/cc.

Four containers were tested for leakage on transfer between 224 and 231 Buildings. On one run a smear test of 3300 d/min. was obtained. A second run gave 400 d/min. Two other runs were essentially leak free.

A suggested code of building rules in so far as the H.I. interest is concerned has been submitted separately for S Department consideration.

5. 241-T:

Four samples of mud from the bed and banks of the ditch gave about 20 c/min. on crude tests. A rag at the mouth of the ditch gave 3800 c/min. The H.I. Section would prefer to see measures taken to keep significant activity out of this disposal system.

6. 291-T:

Fan duct readings reached a maximum of 140 mr/hr and have since fallen steadily to 90 mr/hr. No decay period has been obtained by these observations because unknown additions to the activity have been made until the last day reported. There is reason to guess that the activity is largely due to radioactive iodine.

7. 292-T:

Improvements in the system have not yet been carried out. The iodine chamber has not been successfully decontaminated to date.

8. 200-N:

Six more casks have been checked for radiation leaks and found good.

Group B - Site Survey:

The contaminated ground region referred to in the previous report has been further investigated. Suitable outdoor counter tubes have not yet been provided so the work was done by removing samples of sage brush for direct counting in the laboratory with only visual regulation of equal sample size. The contaminated area is an approximate ellipse whose major axis points directly toward the stack. The near point is 1500 feet from the stack, the major axis 4 miles, minor axis 1/2 mile. The concentration is greatest at a point between the near point and the focus. Count was

60 c/min. on the hottest sample. The radiation at the side was about 0.1 mr/hr. A second contaminated area was located today north and east of the first area. Its boundaries have not yet been defined.

A one-quart sample of the water from each well on the reservation is being taken and kept for background reference.

GROUP C - 231 Group:

The health instrumentation outlook is essentially unchanged since last week. The filter tests by the Plant Assistance Group have been closely followed. H.I. is of the opinion that all filters should be tested at least for major leaks before product work begins.

GENERAL:

Four four-fold hand counters for beta are now available in the area.

The pencil situation has not improved.

New film stock has arrived so that standard badge practice can not be resumed.

H. M. Parker

H. M. PARKER
Chief Supervisor
Health Instrument

HMP:o'h

8

Copy #1 - W. C. Kay - K. W. Millet
#2 - F. B. Vaughan - 200 W
#3 - J. E. Cole - 200 W
#4 - L. L. Larson - 200 W
#5 - L. Squires - 3706 Bldg.
#6 - S. T. Cantril - H.I. File
#7 - H. M. Parker - C.C.Gamertsfelder
#8 - C. M. Patterson - 3706 Bldg.
#9 - 700 Area File
#10 - 300 Area File
#11 - Yellow copy
#12 - Pink copy

January 22, 1945

W. C. KAY, SUPERINTENDENT
S DEPARTMENT

#12 H.I. REPORT ON 200 AREA AND ENVIRONS FOR WEEK ENDING JANUARY 19, 1945

GROUP A - F. P. Seymour:

1. Statistics:

Surveys for Special Work Permits	157
5 Point Fan Duct Survey	42
21 Point Fan Duct Survey	7
Other routine and special surveys	109
Tools counted	~ 200
Gloves counted	~ 150 pairs
Rubbers counted	~ 125 pairs
Smears for alpha tests	~ 300

2. 221-T Building:

In dismantling a centrifuge (16-2) Pluto readings up to 80,000 dis/min. were found in the effluent line and centrifuge bowl. This represents about 0.01 μg Pu/cm^2. Product hazard in maintenance jobs in this building will have to be carefully checked. A sample of the precipitate in the effluent line was submitted to the Technical Department for analysis to check that the alpha activity was due to product. The sample port at 8-3 gave 100 mr/hr. at 1" distance.

3. 222-T Building:

A routine H.I. survey found two tables in the lunch room that gave respectively 70,000 dis/min. and more than 130,000 dis/min. on Pluto. The contamination was presumably due to product, in which case the integrated amount on the first table was probably 1-2 μg Pu and on the second 4-8 μg. The tables are being cleaned immediately and a more complete schedule of Pluto checks is to be instituted. 222-T Supervision plans to carry much of the load of such routine checks, supplemented by spot checks by H.I. It should be noted that smear tests of these tables gave very low readings.

4. 224-T Building:

The highest Pluto readings this week were 48,000 dis/min. on vessel F-1, and 28,000 dis/min. on the floor. This was after a known spill. The area is being cleaned up. The initial decontamination was not good, and more study might be given to such problems.

5. 291-T Building:

The high-spot reading in the fan duct has fallen from 93 mr/hr. to 65 mr/hr. in one week. It is believed that small additions to the activity have been made and that the half life is in fact 8 days due to the iodine activity.

6. 292-T Building:

The Xenon chamber contamination indicates a half life of 8 days. The iodine chamber is still badly contaminated. To date, a solution of sodium carbonate has been the most effective decontaminating agent. (25 per cent decontamination)

7. 200 N Area:

Six more casks were checked for leaks. One was found to give a reading of 220 mr/hr. at the surface. The cask will be repaired.

8. General:

The immediate problems for this group are -

(1) To get a useful set of alpha counting equipment in the T Area.
(2) To develop interpretations of smear or Pluto data to give consistent action on different degrees of contamination.

The handling of product contamination measurements is still qualitative. General policy of the H.I. Section is governed by CN-H-1892 "Status of Product Monitoring", by H. M. Parker. In brief, it is felt that product contamination should be removed whenever it can be detected by the most sensitive instrument available. In cases where full decontamination can not be achieved by ordinary procedures, a mutually satisfactory disposition of the problem should be reached by Operations and the H.I. representative. It is felt that this will ultimately be more advantageous than the arbitrary definition of numerical limits at this time.

Pluto is not an entirely satisfactory instrument for testing benches, tools, or hands, because the sensitivity is rather low. One can measure, at best, a deflection of about 2 or 3 microamps, which represents 3000 dis/min. in the average Pluto. This is about 0.02 μg in an area of 80 cm^2. The instrument is frequently very jumpy. A table top might carry 2 μg Pu without giving a

reliable Pluto reading at any spot. A factor of 10 in sensitivity would improve the situation immeasurably. This is easily achieved by electrometer methods and such a system has been tested this week by H.I. and will be installed next week in 224-T Building. Such equipment may offer a more stable alternative to alpha counting equipment for tools and hands in other areas.

GROUP B - 231 Building - J. W. Morris:

1. Smear Surveys:

Smear counts of about 100 to 200 dis/min. have been commonly found on the casks (inner transfer vessels) before and after emptying in the greenhouse. One cask gave 15,000 dis/min. at one spot on receipt from 224; another gave 25,000 dis/min. on removal. The contamination was successfully and carefully removed by solution in conc. nitric acid.

2. Air Sampling:

Precipitron tests have been made in the greenhouse door and around the greenhouse during operation of batch B-5-A. A limited number of samples was obtained in the analytical and technical laboratories. No significant concentration has been found.

The "little suckers", a cheap filter paper collection device modified from Site C practice, are now available.

A test of filter A of cell 1 by precipitron methods during pre-reduction of batch B-5-A in tank P1 showed a product transmission of ~0.1%, in very good agreement with Plant Assistance measurements by methylene blue. It is of note that about 300 μg Pu was precipitated on the filter in this 4 hour sampling period.

H.I. is consulting with Operations on proposals for Special Work Permits for submission for approval by the Special Hazards Committee. It is recognized that the general rules are not well adapted for this area.

GROUP C - Site Survey - P. E. Lindvig:

A quart sample of water from each of 74 wells on the reservation has been obtained. A portion will be tested for activity and the remainder kept for future reference. Some wells are currently dry and others flooded by surface water. In particular, the so-called "wet" dry well in 200 W is temporarily dry.

The Instrument Department reports that they do not have equipment for the Integron stations in Benton City, Kennewick, 200 E Area and one of the 100 F locations. Atmospheric radiation south of the reservation is therefore only being sampled at Pasco. Re-allocation of integrons from one of the 100 Areas to 200 E, Kennewick and Benton City might be in order.

11

7-1115

7-119

General:

The Pencil situation has taken a decided turn for the better in the 200 Area. It was found that a broken spring in one minometer had been causing off-scale readings. This was not picked up immediately because it coincided with the time when second class pencils first had to be used. All pencils are now in good condition.

There has been no reading either on pencils or badges which this observer considers to be significant.

A simplified system of recording and filing hand count data will be submitted shortly.

H. M. Parker

H. M. Parker
Chief Supervisor
Health Instrument

HMP:o'h

FM-2 REV. 1

DU PONT

ESTABLISHED 1802

E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED

P. O. Box 100 RICHLAND

EXPLOSIVES DEPARTMENT—TNX

Copy #1 - W. C. Kay - K. W. Millett
#2 -F. B. Vaughan, 200 W
#3 - J. E. Cole, 200 W
#4 - L. L. Larson, 200 W
#5 - L. Squires, 3706 Bldg.
#6 - S. T. Cantril - H.I. File
#7 - H. M. Parker - C.C.Gamertsfelder
#8 - C. M. Patterson, 3706 Bldg.
#9 - 700 Area File
#10 - 300 Area File
#11 - Pink copy
#12 - Yellow copy

This Document consists of [redacted]

January 27, 1945

W. C. KAY, SUPERINTENDENT
S DEPARTMENT

3 H.I. REPORT FOR 200 AREA AND ENVIRONS FOR WEEK ENDING JANUARY 26, 1945

GROUP A - 200 Area Survey Group - F. P. Seymour:

1. Statistics:

Surveys for special work permits	168
5 Point Fan Duct Surveys	42
21 Point Fan Duct Surveys	7
Other routine and special surveys	156
Tools counted for contamination	225
Gloves counted	~ 200 pairs
Rubbers counted	~ 150 pairs
Smears taken for alpha checks	~ 200 pairs

2. The T Plant Process Building (221-T):

A sample of precipitate from the effluent line of #16-2 centrifuge, previously found to give high readings on the alpha-particle detection meter (Pluto) was analyzed by the Technical Department. It contained 42 μg of product per gram of precipitate. The hazard of product contamination in this building will require greater attention.

The sampler plug from #8-3 sampler gave 4250 mrep/hour at 1/2", chiefly due to beta radiation. After cleaning, the dosage-rate was reduced to 200 mrep/hour.

3. The T Plant Sample Preparation Building (222-T):

The Technical Department now has a man employed full time on checking the laboratory with an alpha-particle detection meter (Pluto). Greater control of casual spots of contamination is being achieved.

[redacted]

7-1115

4. The T Plant Purification Building (224-T):

Smears of the vessels used for transfers between this building and the Concentration Building (231) indicate random degrees of contamination up to 28,000 dis/min.

A spot on the floor of Cell C under the vent line from C-4 gave an off-scale reading with the alpha particle detection meter (Pluto). This indicates the presence of at least 1 μg of product.

5. The T Plant Waste Disposal Building (241-T):

The dosage-rate in the vicinity of one of the empty retention ponds was 4.5 mr/hr. It is hoped that procedures will be set up soon to eliminate the disposal of other than minimally contaminated water by this disposal system.

6. The T Plant Fan House (291-T):

The inspection plate on the #2 fan was removed for sampling by the Technical Department. The inside of the plate read 600 mrep/hr. of beta and gamma radiation, and 32 mr/hr. of gamma radiation.

The current reading on the fan duct is 46 mr/hr. Either further additions to the activity are still being made or the half life of the deposit is considerably greater than the expected 8 days. The "effective" half life is about 15 days.

7. The T Plant Exit Air Monitor Building (202-T):

The ring-balance and rotameters have been recalibrated.

The iodine chamber has been successfully decontaminated by means of soda-ash solution.

GROUP B - The Concentration Building (231) Group - J. W. Morris:

1. Equipment:

The alpha-particle counting equipment has been limited both as to total numbers and to the consistency of available instruments. Within these limitations, hand counting, smear tests and precipitron tests have been made to afford at least minimum coverage.

A revised precipitron with 25 cfm flow is now available. Present philosophy on the old controversy of precipitron versus filtration methods of product dust collection leans towards favoring filter methods for most routine tests

7-1115

and to high-flow precipitrons for special tests of short duration.

Three Plutos have been mounted side by side on a cart to scan large floor areas.

2. Surveys:

A schedule of routine surveys will be issued separately.

The high spots this week were:

Cell 1:	Contaminated glove	5000 dis/min (Pluto)
Analytical:	Equipment smear tests	up to 100 dis/min.
Technical:	Apparatus smear in hood	1000 dis/min.

The general contamination has been satisfactorily low throughout.

Forty air samples were taken. The highest concentration recorded was about 3 x 10-11 μg/cc in Cell 1 and again in Room 34 (Analytical).

GROUP C - Site Survey Group - P. E. Lindvig:

No activity went up the stack. Detachable condenser type chambers for gamma ray measurements (Type X-22) were placed near the open ditches in the T Plant to integrate the dose from the surface disposal system. No results are available yet.

A method of exchanging information with the Meteorology Group is being set up.

GENERAL:

There has been no reading on pencils or badges believed to be significant.

ERRATA:

1. In the previous report (7-1179 page 3, Section B 2, para. 3) of this series, the transmission of a Cell 1 filter by direct product measurements by precipitron was given as ~0.1%. This should have been ~0.01%, which is therefore less than the transmission estimated for methylene blue smoke.

2. An equipment piece was referred to as a "greenhouse". This should have read "glass-enclosed process hood, 26 feet long". (7-1179, page 3, Section B 1).

H. M. Parker

H. M. Parker
Chief Supervisor
Health Instrument

2951

Copy #1 - W. C. Kay - K. W. Billett
#2 - F. B. Vaughan
#3 - J. E. Cole
#4 - L. L. Larson
#5 - L. Squires
#6 - S. T. Cantril - H.I. file
#7 - H. M. Parker - C.C.Gamertsfelder
#8 - C. M. Patterson
#9 - 700 Area file
#10 - 300 Area file
#11 - Yellow copy
#12 - Pink copy

7-1115

February 3, 1945

W. C. KAY, SUPERINTENDENT
S DEPARTMENT

#4 H.I. REPORT FOR 200 AREA AND ENVIRONS FOR WEEK ENDING FEBRUARY 2, 1945

GROUP A - 200 Area Survey Group - F. P. Seymour:

1. Statistics:

Surveys for special work permits	99
5 Point Fan Duct Surveys	42
21 Point Fan Duct Surveys	7
Other routine and special surveys	139
Tools counted	~ 150
Gloves counted	~ 150 pairs
Rubbers counted	~ 150 pairs
Smears taken fr alpha checks	~ 310
Precipitator samples	18

2. The T Plant Process Building (221-T):

A general survey of Sections 8-R and 13-R was made in preparation for repairs to hydraulic lines on the centrifuges 8-2 and 13-2. The data were taken after the cells had been hosed down, and indicate some apparent limitations of the hosing procedures. The readings were made with a Beckman portable survey meter, which implies that the gamma-ray dosage-rates will be substantially correct, while the beta-ray dosage-rates may be low by a factor of 2 or 3, especially for readings from pipes, flanges, etc.

Location	Beta & Gamma Dosage-rate mrep/hour	Gamma-ray dosage-rate mr/hour
Deck Level at 8-R	6	5
Manhold cover of 8-3 at 1"	320	56
Topside of 8-3 nearest to 8-2 at 1"	450	100
Process lines to 8-2 at 1"	200	60
Effluent line from 8-2 at 1"	> 2000	260
Base of 8-2 at 6"	500	100
Top of 8-2 at 6"	1000	110
Deck Level at 13-R	7	5
Manhole cover of 13-3 at 1"	160	55
Top of 13-3 at 1"	260	190
Top & bottom of 13-2 nearest 13-3 at 1"	100	70
Effluent line from 13-2 at	800	300

The work on decontamination of the sampler plugs is proceeding satisfactorily.

3. The T Plant Sample Preparation Building (222-T):

No hot readings have turned up in this building. Two precipitron runs for product dust sampling gave background results. (See A 4).

4. The T Plant Purification Building (224-T):

A spot on the floor of Cell C described in the previous report has proven unusually difficult to clear up, and readings still indicate the presence of more than 0.5 μg of product.

Product contamination in Cell F and F-10 is receiving special attention. Two bad spots have been located this week, one on the north wall of the room F-10 and the other on the sill of the F-10 enclosure. The former gives an off-scale reading on the alpha-particle detection meter (pluto) and is of unknown origin. The latter came from a leaky coupling.

Eleven transfer containers have given smear test readings in excess of 1000 dis/min., and more work is to be done to eliminate this condition. Sixteen precipitron runs for product dust sampling were made in Cell F, with results at the present limit of experimental error (i.e., about 10^{-11} μg/cc). One run at the Cell F samplers gave 7×10^{-11} μg/cc.

5. The T Plant Waste Disposal Building (241-T):

No new results were obtained except that detachable condenser chambers (Type X 22) set near the drainage ditch gave readings comparable with the background. 0.005 mr/hr. would have been detected.

6. The T Plant Fan House (291-T):

The fan duct readings have hovered in the region of 50 mr/hr. this week. An unofficial report on the Technical Department analysis of the activity indicates that about one-half is due to the expected volatile components, iodine and ruthenium, and the rest due to assorted fission products. This confirms the suggestions made in the last report. No evidence of other than iodine contamination has turned up in the exit air monitor equipment as yet.

7. The T Plant Exit Air Monitor Building (292-T):

The equipment seemed to be in good operating condition for the new cycle of dissolving. The chemical feed system appears to prevent or at least greatly reduce the contamination of the system. Quantitative results await a more authoritative calibration.

8. 200 N Area:

Defective casks used for the transfer of material from the lag storage area to the T Plant have been discussed before. Such casks have now been dissected by the Maintenance Department. The entire bottom of one cask was found to be hollow. Two others were found with large hollow regions. Any other plant shielding equipment made up of metal shells purporting to be filled with lead should be critically inspected for blow holes or shrinkage.

GROUP B - The Concentration Building (231) Group - J. W. Morris:

1. Equipment:

Very little progress has been made with alpha hand counters. The troubles are mainly associated with microphonics so that it is not altogether straightforward to build equipment to an established design. Alternative methods being developed by H.I. show promise.

The revised precipitron has a measured flow of 6 cfm as against the 25 cfm indicated on delivery. There is no clear indication of why such a violent disagreement should arise. Nevertheless, since the quoted product dust concentrations are inversely proportional to the air flow, it seems that a careful study of such flow rates would be in order.

2. Surveys:

The general condition of the operating areas and the laboratories continues to be good, although low levels of contamination which may later be supplemented have appeared in areas that were perhaps thought to be contamination-proof. Salient features of the surveys were: -

(a) Rubber gloves in the technical laboratories gave alpha counts up to 10,000 dis/min. The system of decontamination in the special glove room of the laundry has apparently not yet gone into effect.

(b) Two contaminated pipettes were found outside of hoods in the technical laboratories.

(c) Areas inside the process control laboratory hoods thought to be contamination-proof already give Pluto readings representing about 2 µg Pu per sq. foot. This is perhaps a hazard trend rather than a current hazard.

(d) Low but definite smear counts - (30-60 dis/min) arose from the door knob and telephone in the technical section office.

(e) No evidence of contaminated floors in the building has been found at levels of Pluto sensitivity.

(f) Twenty-four precipitron samples were taken with experimental conditions limiting the detectable minimum to ~10^{-11} g/cc. No reading significantly above this occurred.

(g) Filter papers exposed in the "Little Sucker" air filter equipment gave product concentrations also estimated to be about 10^{-11} g/cc, although the effective limit is not yet well known.

(h). Contamination on the product solution containers frequently is due to an isolated spot which can be visually detected.

(i) One container of final material was checked before removal from the building. No positive readings were found by Pluto. The highest smear count was 50 dis/min. from inside the iron container jacket. A Lauritsen electroscope recorded 1.5 mr/hr. against the iron jacket. This reading is surprisingly high.

(j) One hand count of 250 checks made gave a count equivalent to 2500 dis/min. after repeated washing. The count had disappeared by the following day.

3. Special Survey of Process Hood:

A general smear survey of the stainless steel process hood floor, plenum chambers and air ducts were made, with the following major results: -

(a) The floor was contaminated especially at the west end. Approximately 1 g Pu per sq. foot was wiped off the floor.

(b) The plenum chambers leading to filters #1 and #2 were contaminated. Smears gave 12,000 dis/min. Several micrograms of product must be lodged in the ducts.

(c) The other plenum chamber - duct systems were only weakly contaminated (up to 400 dis/min.)

(d) Very little contamination was picked up on the safety dampers between room and duct (~30 dis/min.)

GROUP C - Site Survey Group - P. E. Lindvig:

The stack discharge which began on 2/1/45, has again produced measurable activity on the ground or the S.E. side of the stack. Beta-ray chambers gave an average level of 0.1 to 0.2 mrep/hour. The gamma -ray activity was very low.

No results were obtained with portable GM tube survey meters due to poor technique. The temperature was 10°C. which necessitated resetting the counter operating voltage. A counter reading of 0.05 mrep/hour was obtained

[redacted]

HW-7-1115

DECLASSIFIED

near one of the T Plant buildings. Adverse weather conditions prevented the pursuit of the brown nitrous fumes beyond five miles from the stack. In this region no radiation was recorded on Lauritsen electroscopes or Beckman portable meters.

Special equipment for the sensitive detection of radioactive xenon in the air has been borrowed from another location and will shortly be available to determine dilution values by comparison with the exit air monitoring equipment.

GENERAL:

There has been no significant film badge reading. Several sets of pencil readings dated 1/26/45 were known to be due to an error in operating technique, which should now be finally eliminated. In accordance with H.I. policy all such events are nevertheless investigated to confirm that no hazard condition existed in the regions in which the pencils were worn.

COPY

H. M. Parker
Chief Supervisor
Health Instrument

HMP:o'h

1124065

20

7-127

Copy #1 - W. C. Kay - H. W. Millett
#2 - F. B. Vaughan
#3 - J. E. Cole
#4 - L. L. Larson
#5 - L. Squires
#6 - S. T. Cantril - H. I. file
#7 - H. M. Parker - C.C.Gamertsfelder
#8 - C. M. Patterson
#9 - 700 Area file
#10- 300 Area file
#11 -Yellow copy
#12 -Pink copy

7-115

W. C. KAY, SUPERINTENDENT
S DEPARTMENT

February 12, 1945

#5 H.I. REPORT FOR 200 AREA AND ENVIRONS FOR WEEK ENDING FEBRUARY 9, 1945

GROUP A - 200 Area Survey Group - F. F. Seymour:

1. Statistics:

Surveys for special work permits	126
Fan Duct Surveys	49
Other routine and special surveys	144
Smears taken for alpha checks	224
Precipitator samples	12

2. The T Plant Process Building (221-T):

The replacement of hydraulic connectors on the centrifuges in Sections 8 and 13 was completed without undue hazard. A lead-covered platform to be lowered into the cells helped to extend the safe working time to about 45 minutes.

A smear sample from the wall of 8-2 was too active to be counted without subdivision. It gave also 59 dis/min due to product.

3. The T Plant Sample Preparation Building (222-T):

A survey of this area showed four product-contaminated spots:-

Sink	3000 dis/min
Hot Plate	10,000 dis/min
Floor (12"x12" spot)	6,000 dis/min (Total spill=$\sim$0.5μg)
Centrifuge	10,000 dis/min

A contaminated waste carton in the sample storage room gave 100 mrep/hr. A small box inside the carton gave 360 mrep/hr. in contact. The surface activity was reduced to 8 mrep/hr. by additional shielding with heavy waterproof paper.

It was noted that smears taken in the lunch room and the general working areas gave no significant product counts.

4. The U Plant Sample Preparation Building (222-U):

Training work has begun in this building with dilute product solution. Fission product activity will be encountered later. A four fold beta hand counter has been installed, together with suitable survey meters.

Additional checks will be made by H.I., although no provision has yet been contemplated for alpha hand counting in this area.

5. The T Plant Purification Building (224-T):

A complete survey of the building is now in progress. Cell E has been found to be in good condition throughout. Cell C still has the floor spot previously described. Also a hazard has been detected arising from a drain connecting the incoming process pipe trench with the C-4 tank. The drain functions as a vent to the C-4 tank and currently reads 80,000 dis/min. The venting action is to be corrected by the installation of a seal.

The contamination from a leaky coupling on the F-10 enclosure has been checked and the residual spill cleaned up.

Eight outgoing product containers were tested by smear methods. Four gave readings in excess of 1000 dis/min. with a maximum value of 18,000 dis/min. The containers are shipped out with no attempt to remove contamination below about 3000 dis/min. since at the present time no facilities exist in this building for the immediate interpretation of smear samples.

No concentration of product dust in the air in excess of instrumental error, ($\sim 10^{-11}$ µg/cc) was found.

The samplers from all cells were found to be free from product contamination with the exception of the Cell-F sampler, which has shown about 3000 dis/min.

About 65% of all surveys in the T Plant were made in this building. It is understood that some design changes in equipment are contemplated, which may lead to a reduction in the number of special surveys, and possibly to a revision in the rules pertaining to the wearing of gas masks. Some effort is being made to find masks that will be efficient against dusts without being so uncomfortable as the present type.

6. The T-Plant Waste Disposal Building (241-T):

The activity of the concrete of the retention basin registered 8 mrep/hr. At ground level the reading was < 1 mrep/hr.

7. The T Plant Fan House (291-T):

The fume line jets from the dissolver gave readings lower by a factor of 3 in the recent dissolving cycle than on previous occasions, for reasons unknown.

The alleged analysis of the deposit in the fan duct given last week is now found to refer to a sample collected from a canyon cell in the T Plant Process Building (221-T). The fan duct sample was almost free from iodine and ruthenium. The principal activity was due to mixed fission products (notably rare earths, barium and strontium). Some product activity (4 alphas per gamma in the standard sampling procedure) was observed. It may be necessary to determine the total product emission from the stack.

That the fan duct deposit was not due to iodine could be inferred from the observation that the fan duct activity continued to decrease during the dissolving cycles, and did not increase until the process operations reached Section 8 in

the Process Building. This should have been apparent in the previous series, HW-7-1115 The standard testing position at the #2 fan now registers 73 mr/hr. as compared with an almost steady value of 50 mr/hr. prior to the new cycle.

8. The T Plant Exit Air Monitor Building (292-T):

A.B.Hamilton's work on the prevention of contamination in the iodine and xenon measuring systems has proven successful, and the interpretations of the exit air activities can now be made with relatively little ambiguity. Further improvements are anticipated.

Background expressed as equivalent activity:

	Iodine System curie/ccx10"	Xenon System curie/ccx10"
Background before dissolving cycle	2	2.5
Background after 3 runs	4	4
Background after 6 runs	8	5
Percentage of peak activity	23%	42%

The background of the xenon chamber rose rather sharply after the second series of runs. This may have been due to saturation of the filter which is now being analyzed.

The iodine system has been recalibrated through the cooperation of the 222-T Building personnel. The new Factor F in the relation, 5 Amps X F = curie/cc is 1.1×10^5, in good agreement with a figure of 1.0×10^5 previously derived by W. H. Sullivan. The value of F is, however, 500 times that used in the earlier dissolvings. This is somewhat beyond the range of the suspected error of 10 times in the original results.

The writer is of the opinion that the present calibrations are not in error by a factor of more than 2. From the report 3-811 (Dreher to Squires) the expected activity per ton of metal prepared at 1100°F and cooled for 46 days would be 100 curies Xe and 255 curies I_2. Approximate integrations of the exit air activity curves, assuming air flow of 60,000 cfm are:

Run	Xe/ton	I_2/ton
T-5-02-B1	48 curies	77 curies
-B2	52 "	not measured
-B3	48 "	83 curies
-B4	48 "	122 "
-B5	50 "	193 "
-B6	48 "	133 "

Runs B1, B2, B3 are said to contain some older metal, which may account for the reduced iodine content. The explanation is not satisfying inasmuch as the xenon content should have changed even more. If one considers only runs B4, B5 and B6 of uniform age 46 days, the measured activity is about one-half of the calculated values. It seems that most of the available iodine is released in the H.E.W. solution process.

The plot of xenon concentration was remarkably consistent in the 6 runs, the peak activity being about 1.2×10^{-10} curie/cc. The iodine plots showed twin peaks, coinciding with the initial reaction and with the subsequent sparging. The peak activity was 3.4×10^{-10} curie/cc in run B5. The iodine comes off essentially at the same time as the xenon, and the plots are quite unlike those obtained at Site X.

9. 200 N Area:

The exit pumps from the Lag Storage Building (212-R) were pumped dry and proved free from activity.

GROUP B - The Concentration Building (231) Group - J. W. Morris:

1. Hand Counting

The first Handee unit built by the Instrument Maintenance Dept. has now been installed. Initial performance is better than that of the Site X model. The geometry factor of 6.4% is rather low, and this may be improved by modifications to the screen. It is expected that the recording of all hand counts will be facilitated when the new printed cards and racks are available.

2. Air sampling:

35 precipitron samples were taken, One in the analytical section gave 2×10^{-11} μg/cc. All others were at or below the instrumental limit for a 120 c.f. sample ($\sim 10^{-11}$ μg/cc).

4 "Little Sucker" filter paper collection devices recorded no concentration in excess of 5×10^{-12} μg/cc. It should be noted that all dust concentration figures refer to the average value over the collection period. No reading is being currently made of instantaneous concentrations, nor is such a reading required.

3. Surveys:

No contamination at levels detectable by the alpha-particle detection meter (Pluto) has been observed outside of hoods. Smear samples of 200 dis/min or more have occurred in the Technical Section. Occasional contaminated spots are found on the transfer vessels coming from the process hood. Such spots are amenable to easy removal. Process hood cleaning has been reasonably effective. The situation in this area seems to be under good control.

GROUP C - Site Survey Group - P. E. Lindvig:

No measurement of gaseous activity was obtained at ground level. The instruments used would have indicated 0.05 mrep/hr. The dosage-rate at the stack at peak concentration would have been about 200 mrep/hr. Hence the dilution factor at this time at the places where observers were situated was 4000 or more. The Health Instrument Section is more concerned with the integrated dose over an extended period than with an instantaneous dosage-rate or dilution factor. Therefore the main body of results collected by this section is of no direct value for correlation with meteorological forecasts.

If the dilution factors prevailing at the present time could be considered representative, then the activity of the metal and the cooling period could safely be adjusted to increase the iodine activity by a factor of 10. Under the worst conditions suppose that all the stack gas from run B5 came to the ground with a dilution of only 100. The concentration would have been 2×10^{-12} curie/cc maintained for 8 hours. The accepted tolerance concentration is 2.6×10^{-13} curie/cc for 8 hour exposure per day repeated indefinitely. The single exposure postulated above would be less damaging than this. In fact, the quoted tolerance concentration for a single 8 hour exposure is 2.8×10^{-10} curie/cc. It should be clearly appreciated that the "tolerance concentration" is not the highest permissible concentration. Furthermore, the accepted value is a theoretical figure based on an assumed retention of 100% in the lungs, and a 20% transfer to the thyroid gland. Recent animal experimentation tends to reduce both figures, but the results are not necessarily applicable to man. The fundamental limit is that the deposition of iodine in the thyroid shall not yield more than 1 r per day in that organ. This can be readily measured by external means, and such measurements will constitute the final H.I. reference for iodine tolerance.

The collected sage brush samples are being analyzed for iodine and ruthenium and also for product. The ground activity is entirely associated with the vegetation, not with the sand or soil.

GENERAL:

There is nothing significant to report with respect to pencils and badges and the special laundry.

H. M. Parker
Chief Supervisor
Health Instruments

HMP:SWC

25

7-1115

Copy #1 - W. C. Kay - K. W. Millett
#2 - F. B. Vaughan
#3 - J. E. Cole
#4 - L. L. Larson
#5 - L. Squires
~~#6 - S. T. Cantril~~ - H. I. File
#7 - H. M. Parker - C.C.Gamertsfelde
~~#8 - C. M. Patterson~~
#9 - 700 Area file
#10 - 300 Area file
#11 - Yellow copy
#12 - Pink copy

February 17, 1945

W. C. KAY, SUPERINTENDENT
S DEPARTMENT

#6 H. I. REPORT FOR 200 AREA AND ENVIRONS FOR WEEK ENDING FEBRUARY 16, 1945

GROUP A - 200 Area Survey Group - F. P. Seymour

1. Statistics:

Surveys for special work permits	129
Fan duct Surveys	49
Other routine and special Surveys	256
Smear samples for alpha checks	325
Precipitator samples	5

2. The T Plant Canyon Building (221-T):

The centrifuge in 1-R from Section 16 has been adequately cleaned and can be re-assembled when the cell floor has been cleaned. The sample riser at 8-4 has been contaminated again. The present activity is 76 mrep/hr. A scrap of absorbent paper found near the Section 8 samplers gave 110 mrep/hr.

3. The T Plant Control Laboratory (222-T):

The ventilating system has been investigated for product contamination. Only low levels of contamination (10 to 30 dis/min) were found. One hood gave a smear count of 100 dis/min.

A box for contaminated waste in the sample room gave 280 mrep/hr, of which 24 mr/hr was due to gamma radiation. Although the handling of waste in this building is in general very satisfactory, there is still the need for repeated checks. Two contaminated equipment pieces were found in use, the highest dosage-rate being 40 mrep/hr on the base of the holder of a bayonet type sampler.

Two pairs of shoes have been found to be quite contaminated. The level of contamination that calls for replacement of shoes has been set rather arbitrarily as follows:-

(1) On the inside, if the estimated dosage-rate to the foot is 8 mrep/hr.
(2) On the outside, if the contact dosage-rate exceeds 40 mrep/hr.

The readings will be made by probe counters.
In both cases, the activity should be measured after removal of as much contamination as possible by wiping. Under regulated working conditions, it should be impossible for such contamination to occur, except in recognized

accidents. The above rules are considered to be very liberal, and assume that the problem of contaminated shoes will soon be eliminated at source.

4. The T Plant Concentration Building (224-T):

The samplers in Cells A, C, D and E are now contaminated with product (up to 12,000 dis/min). This is a reversal of last week's report, and indicates the need for frequent checking until representative behaviour is known.

The general contamination in and around the F-10 enclosure has shown little change. If the residual contamination cannot be removed by washing it would appear to be acceptable to tie it down by painting the surfaces. This would be undesirable if a paint of better adhesive qualities than the present kind cannot be obtained.

Leaky flanges and jets in Cells A, C, D and E, previously causing product spills, have been repaired.

A laundered pair of gloves was found to give smear tests of 8 dis/min outside, and 22 dis/min inside. Before an extensive program of additional glove monitoring is instituted, it should be remembered that the laundry is monitoring gloves by the Pluto alpha particle detection meter, and that contamination considerably higher than these figures could easily pass through. Changes in the alpha monitoring system await the construction of suitable instruments.

5. The T Plant Waste Disposal Building (241-T):

The activity of the concrete of the retention basin is now 6 mrep/hr.

6. The T Plant Fan House; Process Stack Building (291-T):

The fan duct activity stayed constant at 70 mr/hr from 2.9.45 to 2.12.45, and then jumped to 100 mr/hr at which level it again stabilized. There is as yet no obvious correlation of these bursts with particular process steps.

There is no contamination outside the fan housings and ducts.

7. The T Plant Stack Monitor Building (292-T):

Attempts to further improve the decontamination in the iodine and xenon measuring systems are being made. Also, equipment to measure the product output is contemplated.

8. 200 N Area:

Transfers from the 100-B Area were made to the R Plant Metal Storage Basin (212-R). The water in one cask was found to be quite active ($\sim$ 3000 counts/min.). This is the first indication of a defect in a slug jacket.

GROUP B - The Isolation Building (231) Group - J. W. Morris:

1. Hand Counting.

600 hand counts were registered. 45 exceeded the "warning value" equivalent to 500 dis/min. In most cases, followed up, additional cleansing by soap and water led to decontamination.

2. Air Sampling.

Of 20 precipitron samples, 2 gave 3×10^{-11} [redacted] g/cc outside the process hood in Cell 1;

[redacted]

one gave 2×10^{-11} µg/cc from the Analytical Section; the rest gave 10^{-11} µg/cc or less.

The Little Sucker filter paper collection devices were allowed to operate to a total air flow of 300 to 400 c.f. None showed concentrations in excess of 5×10^{-12} µg/cc average.

3. Surveys:

Six Transfer vessels were monitored. Two gave Fluto readings of 5000 dis/min and were cleaned. One vessel gave a gamma ray reading of 4.6 mr/hr in contact with the container. Only about one-fifth of this activity should have been due to product gamma-ray emission.

Regular surveys have proceeded on schedule with no positive findings.

Investigation of high hand counts on analytical counting room personnel led to the findings of sharp contaminated tweezers and contaminated sample holders. The tweezers, which carried about 0.2 µg Pu, were a particularly dangerous hazard in view of the risk of skin puncture. Such tweezers have now been eliminated. Some contaminated pipette controls have been found in the Analytical Section.

4. Gamma radiation from product:

The final vessel consists of a steel shell 1/4" thick in an iron carrying case 5/32" thick. The final preparation occupies a volume of about 85 ml. which fills the hemispherical base of the vessel to a depth of 1". The material essentially contains (1 gm Pu + 1 gm H_2O) per ml, as regards radiation absorption. A gamma ray measurement was made obliquely at 11" from the center of the vessel, giving 0.7 mr/hr.

Under such conditions, the average filter can be taken as(11 gm Fe + 2 gm Pu +2 gm H_2O).

Only the energetic gamma ray need be considered. The product emits 1 γ of 0.4 MEV energy per 10^4 alpha disintegrations.

Using μ/ρ (Fe) = 0.1, μ/ρ (Pu) = .5, μ/ρ (H_2O) = .1

it follows from standard formulae that the estimated dosage-rate at the measuring point should be 0.3 mr/hr or less.

The provisional result is therefore that the hard gamma contamination of the final material is equal to the natural hard gamma radiation of the product.

GROUP C - Site Survey Group - P.E.Lindvig:

The activity of sage brush samples decays with a half-life of 8 days. Chemical separation of the suspected iodine contamination has not been done.

The ditch from the T Plant Waste Disposal Building (241-T) gives low readings at the inlet, and up to 1.5 mrep/hr 200 yards downstream. The continued contamination of this disposal system is considered unsatisfactory.

GENERAL:

There is nothing significant to report about pencils and badges. The Laundry work is limited by available instruments and available [redacted]

DECLASSIFIED

The nomenclature in this report follows the new official standards, and is different from that used in previous reports. The occasional reader who does not use the building code numbers should note especially that in previous reports the Concentration Building referred to the 231 Building in which the final process steps are taken. It now refers to the 224 Building in which the intermediate purification is done. There should be no confusion with the other building names.

H. M. Parker
Chief Supervisor
Health Instrument

HMP:swc

29

HW-1329

Copy #1 - W. C. Kay - K. H. Millett
#2 - F. B. Vaughan
#3 - J. E. Cole
#4 - L. L. Larson
#5 - L. Squires
#6 - S. T. Cantril - H.I.File
#7 - H. M. Parker-C.C.Gamertsfelder
#8 - C. M. Patterson
~~#9 - 700 Area File~~
→ #10 - D. M. Smith - 300 Area file
~~#11 - Yellow copy~~
#12 - Pink copy

7-1115

February 24, 1945.

W. C. KAY, SUPERINTENDENT
S DEPARTMENT

#7 - H. I. REPORT FOR 200 AREA AND ENVIRONS FOR WEEK ENDING FEBRUARY 23, 1945

GROUP A - 200 Area Survey Group - F. P. Seymour

1. Statistics:

Surveys for special work permits	119
Other routine and special surveys	274
Precipitator samples	2
Smear samples for alpha checks	245

2. The T Plant Canyon Building (221-T):

On 2-17-45, the jet in Section 8-L from 8-1 to 8-2 became plugged. With two cover blocks removed from the section, the dosage-rate at the deck level was 500 mr/hr. At this stage, the relevant process vessels were nominally empty, but had not been washed out. The jet assembly was removed by remote control, and was placed in Section 11-R. The dosage-rate around the assembly was as high as 500 mr/hr at the bottom of the standpipe. The jet itself read 40 mr/hr. It has been suggested that such equipment be transferred to a large tank in some available cell for the first stage of decontamination.

3. The T Plant Control Laboratory (222-T):

The weekly checks revealed several spots of product contamination varying between 4000 and 24,000 dis/min.

Plans have been made to initiate routine thyroid checks.

The air in Rooms 6 and 7 has been sampled for product contamination. No significant readings have been obtained.

During the week, a girl cleaning contaminated equipment with acid splashed a small drop into the mouth. The acid was found to give 11,500 β counts/min-ml. There

was no product activity. As the acid caused a minor burn, a similar occurrence with product-contaminated acid might have been a mode of introduction of product to the body comparable with an open wound. Presumably, such operations will in future be done with a plastic face shield. 7-1115

No contamination has been found in the U-Plant Control Laboratory.

4. The T-Plant Concentration Building (224-T):

The concrete wall below the doors of the F-10 enclosure were painted after the applied cleaning methods failed to remove the product contamination. It is understood that the fluosilicate method that was found to be effective on concrete at Site X was not used.

Recycle containers have been found to have moderately high contamination (up to 42,000 dis/min) when received in this building.

Cell C has several small areas of contamination.

e.g. (1)	Pipe Trench Drain	35,000 dis/min
(2)	Flange on jet from C-4 to A-1	780,000 dis/min

The conditions in Cell F and F 10 are said to be notably improved.

An air sample over a hamper of dirty clothes indicated 4×10^{-11} µg Pu/cc. A check outside the F-10 enclosure during a recycle operation gave 7×10^{-11} µg Pu/cc.

It is clear that the air in general in Cell F will not contain hazardous concentrations of product, and that the wearing of gas masks at all times is perhaps overcautious. It is posaible to use testing equipment that will detect rapidly a concentration of 50 or more times the continuously tolerable level. This could be used to monitor special operations, leading to the elimination of masks except for prolonged work in a confined region.

5. The T Plant Fan House (291-T):

The fan duct readings reached a maximum of 130 mr/hr on 2-18-45, and have fallen to 90 mr/hr on 2-23-45. Survey work on the ducts is to be materially reduced, since the established distribution pattern can be followed from a few points.

GROUP B - The Isolation Building (231) Group - J. W. Morris:

1. Hand Counting.

The card system of recording hand counts has been instituted. The cards will be filed by the Hand Count Group along with pencil and badge results, after the relevant information has been studied by the 231 Group. It is the responsibility of the H. I. Section to draw the attention of Operations Supervision to any significant data from the cards.

7-1115

2. Air Sampling

30 precipitron samples were made. The maximum average concentration was 8×10^{-11} µg Pu/cc.

12 Little Sucker filters were processed. All showed concentrations below 10^{-11} µg Pu/cc.

3. Surveys

Very few untoward circumstances were found in the surveys. An exposed pipette in the Operating zone gave 80,000 dis/min on Pluto, and a sample holder in the Process Control zone gave 4000 dis/min. Of 444 smear tests outside process hoods, 17 gave readings in excess of 100 dis/min.

The transfer vessels continue to show local contamination according to the general pattern of previous reports.

GROUP C - Site Survey Group - P. E. Lindvig

The ditch from the 241-T Retention Basin formerly debouched its contents into a roughly circular basin, some 200 feet across. Without outside interference, the ditch has found itself a new outlet thus creating a second slough some distance away. The first basin has now dried up, creating the hazard conditions that were previously anticipated; namely, there is now a large area of dry ground that is contaminated. This contamination may now be blown at random to any part of the area. The levels found are currently about 1.1 mr/hr gamma radiation, and up to 6.5 mrep/hr beta radiation. It is quite surprising that such high levels should occur at this early stage with the amounts of waste that are supposed to have been released by this channel. Product contamination, which undoubtedly exists, has not yet been measured. Steps to expedite alternative disposal schemes previously agreed upon would seem to be in order.

No activity has yet been found in below-ground water samples.

GENERAL:

No significant pencil or badge readings were reported.

H. M. Parker
Chief Supervisor
Health Instrument

HMP:swc

1124077

32

7-136;
7-1115

Copy #1 - W. C. Kay - K.W.Millett
#2 - F. B. Vaughan
#3 - J. E. Cole
#4 - L.L.Larson
#5 - L. Squires
#6 - S.T.Cantril - H.I.File
~~#7 - H.M.Parker~~ -C.C.Gamertsfelder
→ #8 - C.M.Patterson
~~#9 - 700 Area File~~
#10 - 300 Area File -D.M.Smith
#11 - Yellow copy
#12 - Pink copy

March 3, 1945.

W. C. KAY, SUPERINTENDENT
S DEPARTMENT

#8 - H. I. REPORT FOR 200 AREA AND ENVIRONS FOR WEEK ENDING MARCH 2, 1945

GROUP A - 200 Area Survey Group - F. P. Seymour

1. Statistics:

Surveys for special work permits	118
Other routine and special surveys	314
Smear samples for alpha checks	460

2. The T Plant Canyon Building (221-T):

No significant observations to be reported.

3. The T Plant Control Laboratory

Six spots of product activity, reading up to 1000 dis/min by smear tests were found: -

1. A lunch room table
2. A sink
3.-4. Two hoods
5.-6. Two tables in the counting room.

The appearance of further contamination in the lunch room is somewhat puzzling. With this exception, the general conditions seem to be good. In particular, the spots described in the previous report have been thoroughly cleaned. A sample tray in Room 7 gave 90,000 dis/min, and a hot plate in the same room gave 15,000 dis/min. No beta or gamma radiation of significance was found.

1124078

[redacted]

4w7-1115

DECLASSIFIED

4. The T Plant Concentration Building (224-T):

A contaminated crescent wrench (5000 dis/min) and a product container (20,000 dis/min) were found outside the F-10 enclosure. With careful handling, it would seem to be possible to keep the area around this enclosure permanently free from contamination. Of 13 Recycle containers returned from the Isolation Building, seven were contaminated at levels between 3000 dis/min and 90,000 dis/min. The favorite location for contamination was in the cup, which suggests that the trouble is due to spills during transit. However, of four empty product vessels returned, two were contaminated (70,000 dis/min).

The contamination under the jet from C-4 to A-1 in Cell C has been reduced from >80,000 dis/min to 14,000. By an obvious typographical error, this appeared last week as 780,000 dis/min.

Very slight product contamination is observed in the lunch room. Alpha hand counting equipment has now been installed in this building.

5. The T Plant Retention Basin (241-T):

The area around the end of the ditch has been restricted. The soil contamination reported last week has been found to be very superficial. It is proposed to hold possible dust down, either by deliberate wetting or by covering with dirt.

6. The T Plant Fan House (291-T): and Stack Monitor (292-T):

The fan duct reading has fallen from 90 mrep/hr to 86 mrep/hr. The dosage-rate inside the building at the duct to the steam fan is 9 mr/hr.

The xenon chamber is not adequately decontaminated, and has been replaced by the one from 292-U. A sample of water from the iodine scrubber showed alpha activity corresponding to 3×10^{-9} µg Pu/cc stack gas, as reported by the Technical Department. This sample was taken at a time when the expected product escape was at a minimum.

Filter sampling equipment is being installed for direct tests of stack content of product.

7. 200 N Area:

Active water in a transfer cask was reported two weeks ago. The H.I.Section seemed to lose contact with this problem. It is now reported as being due to a contaminated bucket. However, the need for better checking for possible slug rupture at the time of discharge still persists.

GROUP B - The Isolation Building (231) Group - J.W.Morris

1. Hand Counting

The Handee device, in spite of its obvious imperfections, seems to give adequate control of hand contamination, and has led to the tracing of sources of contamination quite frequently. In some cases, the source has not been traced. At the present time, the Analytical Group presents the greatest number of counts. The group is very active in eliminating causes where found

[redacted]

1120479

and in cleaning up existing contamination.

2. Air Sampling.

34 precipitron samples were taken. 8 samples ranged between 10^{-11} and 5×10^{-11} μg/cc. The remaining 26 samples were below 10^{-11} μg/cc.

Twelve Little Sucker filter samples showed results not above 2×10^{-11} μg/cc.

3. Surveys:

Contamination was found by Pluto readings as follows:-

Operations:	Sampling equipment	>70,000 dis/min
Technical:	Outside of a hood door	28,000 dis/min
Analytical:	Ring stand	>90,000
	Equipment for return to 300-Area	20,000
	Tweezers	10,000 dis/min
	Sample Container	25,000 dis/min
	Hood Ledge	20,000 dis/min
Smear Tests:	172 taken in hoods - 36 gave readings over 100 dis/min.	
	464 taken elsewhere - 26 readings over 100 dis/min.	

The significant counts were equally divided between the zones, except that the offices, shop, janitor's closet and H.I. laboratory were clean.

25 transfer vessels were monitored into and out of the process hood. 9 outgoing vessels gave high Pluto readings, and some others gave high smear counts. Such vessels were cleaned by Operations and rechecked. Rather more contamination has been found on vessels returned to the Concentration Building.

A study of product concentration on the outlet side of the filters was not sensitive enough to give good values of filter efficiency. The maximum concentration found was 4×10^{-11} μg Pu/cc.

GROUP C - Site Survey Group - P.E.Lindvig

20 representative ground wter samples are being taken each week. No activity

(alpha, beta or gamma) has been detected to date. Ionization chambers overlooking the Laundry (2723) ditch, and the T-Plant head end ditch gave background readings. The 241-T ditch is unchanged from last week (see A-5).

No atmospheric radiation was observed this week.

GENERAL:

One double event (> 200 mr) occurs in the pencils for every 4000 readings. The frequency in the 100-Areas is one in 13,000. The frequency of readings between 100 mr and 200 mr is also one in 4000 in 200-W, and one in 13,000 in the 100-Areas. It is believed that the difference is not due to radiation exposure, and that in fact all these readings are artifacts. The poorer statistics in this area have not been explained. They may be due to some simple effect such as banging around in coveralls, changing pencils from street clothes to coveralls, etc.

No badge reading in excess of 300 mr. in one week has been found.

H. M. Parker

H. M. Parker
Chief Supervisor
Health Instrument

HMP:swc

36

Copy #1 - W. C. Kay - K. W. Millett
#2 - F. B. Vaughan
#3 - J. E. Cole
#4 - L. L. Larson
#5 - L. Squires
#6 - S. T. Cantril - H.I. File
#7 - H. M. Parker - C.C.Gamertsfelder
#8 - C. M. Patterson
#9 - 700 Area File
#10 - D. M. Smith - 300 Area File
#11 - Yellow copy
#12 - Pink copy

9-1397
7-1115

March 12, 1945

W. C. KAY, SUPERINTENDENT
S DEPARTMENT

#9 H. I. REPORT ON 200 AREA AND ENVIRONS FOR WEEK ENDING MARCH 9, 1945

GROUP A - 200 AREA SURVEY GROUP - F. P. Seymour:

1. Statistics:

Surveys for special work permits	75
Other routine and special surveys	285
Smear samples for alpha checks	235
Precipitron samples	24

2. The T Plant Canyon Building (221 T):

All cask cars are now surveyed before they leave the Canyon Building. They are taken to the 200 N Area for a check on water activity before being released to the 100 Area. Mechanical trouble with canyon equipment was corrected in the presence of the following contamination:

Yoke	64 mrep/hr.	
Impact wrench guides	10 mrep/hr.	4,000 dis/min.
Sledge hammer used on yoke	3 mrep/hr.	> 90,000 dis/min.

Surveys of the canyon and craneway were made during the new dissolving cycle.

Conditions	Dosage-rate
At head height in craneway, Cell 4 L open two buckets in 4 - 5 L	35 mr/hr
Total dose on crane for loading 4 buckets	2,500 mr
Activity at Section 8 samplers	20 mrep/hr. beta
	10 mr/hr. gamma

[redacted]

HW-7-1115

DECLASSIFIED

3. The T Plant Control Laboratory (222 T):

General conditions in the building were good. Some deviations from perfect hazard protection, such as smoking in the laboratory, and the use of beakers in the lunch room will probably be steadily eliminated. Only one spot of product contamination (5000 dis/min.) was found.

A program to obtain further information on finger exposure by means of film packets has been started.

4. The T Plant Concentration Building (224 T):

Location	Product Contamination
Pipe trough from 221 T to Cell C	10,000 dis/min.
Floor of Cell C north of overflow from C-4	6,000 dis/min.
Floor of Cell E against West wall (leaky flange)	15,000 dis/min.

5. The T Plant Fan House (291 T):

The fan duct reading fell to low of 70 mr/hr. on March 8, 1945, and rose slightly when new operations began.

6. The T Plant Stack Monitor (292 T):

Three charges were dissolved during the week. The iodine evolution on the third run was about 40 per cent higher than the others, both in total amount, and at peak activity. It has been pointed out that the iodine evolution stops when heating is stopped, and that the additional heating period of the third run may explain this difference. However, this does not seem to be a ready explanation for the increased peak activity. Total activity emitted has not yet been computed.

	Maximum Iodine Concentration	Maximum Xenon Concentration
1st run	4.7×10^{-10} curie/cc	1.0×10^{-10} curie/cc
2nd run	5.0×10^{-10} " "	1.2×10^{-10} " "
3rd run	7.6×10^{-10} " "	1.0×10^{-10} " "
Background	- - -	- - -
Before	3×10^{-11} curie/cc	2×10^{-11} curie/cc
After 3 runs	8×10^{-11} " "	3.8×10^{-11} " "

Measurements of product activity in the stack are being made.

[redacted]

GROUP B - The Isolation Building (231) Group - J. W. Morris:

1. Hand Counting:

Fewer cases of grossly contaminated hands have been recorded, partly due to decreased work load. It is planned to institute a controlled test of about four proposed methods of hand decontamination. If the men who contaminate their hands will cooperate by writing down all readings of hand counts during this period, the best mechanism for decontamination will be found much more quickly than by the present method of private experimentation. Other factors than the amount of product removed have to be considered. Abrasion by the frequent use of harsh soaps is obviously undesirable, but some reagents may affect the penetrability of the skin, in such a manner that a subsequent contamination might pass readily into the tissues.

2. Air Sampling:

Thirty-five precipitron samples were taken. Three read between 1×10^{-11} and 3×10^{-11} μg Pu/cc. The remainder were below 10^{-11} μg Pu/cc. The precipitron built by the Instrument Department has stood up well. The MSA models continue to give service trouble. The revised filter equipment developed by the Metallurgical Laboratory has still not been received. If this persists for a few more months, it would have proved expedient to have one built here.

Twenty readings were obtained with the Little Sucker filter devices. None gave a concentration in excess of 10^{-11} μg Pu/cc.

A final sample can was tested for "breathing" after drying. It was cooled for two hours and then warmed to room temperature. No measurable concentration of product was found.

3. Surveys:

Analytical:	Pan for glassware	5,000 dis/min.
	Pan for glassware	> 70,000 dis/min.
	Forceps	8,000 dis/min.
	Contaminated sample holders outside designated hood	
Operations, Technical, H.I., General	none	
Smear tests:	204 in hoods - 36 readings over 100 dis/min.	
	645 elsewhere - 40 readings over 100 dis/min.	

Eight re-cycle vessels were monitored out of the process hood. Two had Pluto readings (up to 10,000 dis/min.). Forty-one smears were taken, one gave more than 1,000 dis/min. and seven more than 100 dis/min.

[redacted]

HW-7-1115

Two final sample containers were released. One gave considerable trouble in decontamination. The gamma ray dosage-rate was 1.8 mr/hr., one inch from the vessel in each case.

GROUP C - Site Survey Group - P. E. Lindvig:

The gamma ray dosage-rate near the 241 T ditch is 0.11 mr/hr. Near the 2723 Building Laundry ditch it is 0.03 mr/hr.

Depth distribution of activity has not been studied, because the best sampling location was reflooded before samples were obtained.

There was no ground contamination from the three dissolver runs, and the atmospheric radiation was just slightly above background.

The sensitive Xenon measuring equipment is now installed and operating.

General:

No pencil or badge records of known significance were recorded. It is planned to start pencils in the 200 E Area on March 15, 1945, to obtain a one month run at zero activity.

H. M. Parker

H. M. Parker
Chief Supervisor
Health Instrument

HMP:o'h

[redacted]

7-1413

Copy #1 - W.C.Kay - K.W.Millett
#2 - F.B.Vaughan
#3 - J.E.Cole 7-1115
#4 - L.L.Larson
#5 - L.Squires
#6 - S.T.Cantril - H.I.File
~~#7 - H.M.Parker-C.C.Gamertsfelder~~
→ #8 - C.M.Patterson
~~#9 - 700 Area File~~
#10 - D.M.Smith - 300 Area File
#11 - Yellow copy
#12 - Pink copy

March 19, 1945.

W. C. KAY, SUPERINTENDENT
S DEPARTMENT

#10

H. I. REPORT ON 200 AREA AND ENVIRONS FOR WEEK ENDING MARCH 16, 1945

GROUP A - 200 Area Survey Group - F.P.Seymour

1. Statistics:

Surveys for Special Work Permits	101
Other routine and special surveys	225
Smear Samples for Alpha Checks	560
Precipitron samples	31

2. The T Plant Canyon building (221 T):

A suckback in the steam line to the jet between the Section 9 precipitator and the line to the retention basin gave readings up to 5000 mr/hr in the pipe gallery at Section 9 (this included 700 mr/hr of hard gamma radiation). Active material was also carried into the steam gauge line in the operating gallery (200 mr/hr). The reading was reduced to 16 mr/hr after steam was blown through the line for 18 hours. The dosage-rate at the front of the panel board was then about 0.5 mr/hr. The activity was first detected by the fixed G.E. monitor chamber. A regular survey of the pipe gallery is to be started, and some changes in existing danger zone requirments may be needed.

The bucket yoke read about 75 mrep/hr. approximately the same as last week. A sample plug at Section 8 again read 1630 mrep/hr (beta and gamma) and 70 mr/hr (gamma).

A smear from a pipe brace in Cell TB read 12,000 dis/min product contamination.

1124086

[redacted]

DECLASSIFIED

HW-7-1115

3. The T Plant Control Laboratory (222 T):

A spill in Room 7 was mopped up and measured some time later by H. I. men. A reading of 25 mrep/hr. persisted near the floor over an area of 6 square feet. After cleaning the dosage-rate was reduced to 3 mrep/hr. At this time, Pluto readings showed 5000 dis/min, or about 2.5 μg Pu on the floor.

Conditions generally in the building were good, although there has been no significant decrease in the density of beaker distribution in the lunch room.

4. The T Plant Concentration Building (224 T):

Location	Product Contamination	
	Initial	Final
Sampler line entering Cell E precipitator	$>$130,000 dis/min	$<$1000
Cell C Sampler cover plates	35,000	
Jet from F1 to F2 (flange opened for maintenance)	35,000	repeated

The first item is said to be due to pinholes in a weld in a new line. Other pinholes have developed, and the line will be replaced.

No significant concentrations of product in the air have been found.

Nine recycle containers back from Bldg. 231 showed no contamination.

5. The T Plant Fan House (291 T): and Stack Monitor (292 T):

Reference point readings rose from 80 mr/hr to 140 mr/hr and levelled off. In future, swings of this reading between 50 and 200 mr/hr which seem to be well understood will not be reported.

Xenon and iodine data for the recent Runs 5 and 6 were lost due to equipment failure. Results from the first four runs were not at all consistent with the previous set.

Run	Iodine Emission	Xenon Emission
1	120 curies	23 curies
2	145 curies	24 curies
3	230 curies	21 curies
4	175 curies	21 curies

The average iodine emission is essentially the same as before, whereas the Xenon has fallen to 50% of the previous value. Increased power level should have increased both readings by about 80%. Identical cooling periods in the two cases should also have given a constant Iodine/Xenon ratio.

7-1413
7-1115

Measurements of fission products and product going up the stack are being made throughout the present operation cycles. A correlation with specific steps should be available next week.

GROUP B - The Isolation Building (231) Group - J. W. Morris

1. Hand Counting:

Strong potassium permanganate solution followed by a reducing agent is the preferred decontamination procedure at present. It has been observed that the product is apparently removed from the hands in the reduction step.

2. Air Sampling:

Thirty-five precipitron samples were taken. The highest reading was 7×10^{-11} μg. Pu/cc directly outside a laboratory hood. Fourteen "Little Sucker" readings were all at or about background.

3. Surveys:

Zone	Location		Contamination
Operations:	Inside Sampling Box		> 70,000 dis/min
Analytical:	Ring stand clamp		> 70,000 dis/min
Technical:	Water valve handle		10,000
	Centrifuge lid handle		> 70,000
	Inside hood before clean-up		8000 to > 70,000
Smear Tests:	231 in hoods - 22 readings	over	100 dis/min
	811 elsewhere- 26 "	over	100 dis/min

One recycle vessel was found to have a small leak, which contaminated both the vessel and its jacket. Samples of mud from the 231 Bldg. ditch have been shown to be free from product activity.

4. Gamma Radiation From Product:

The gamma radiation from a final vessel has been remeasured under somewhat better conditions and found to give 1.8 mr/hr very reproducibly at a given reference point. Correction of the calculation given 2/16/45 for revised distance and absence of outer carrying case gives:

$$\frac{0.3 \times (11)^2}{(5.5)^2 \times 0.64} = 1.9 \text{ mr/hr.}$$

1124088

The precision of such a calculation is not high, but the agreement between it and direct measurement confirms laboratory evidence for the high degree of decontamination currently reached. If the present decontamination were reduced by a factor of 5, there would be no stage in the Hanford Operations at which serious additional hazard could be introduced.

GROUP C - Site Survey Group - P. E. Lindvig:

No significant data.

General:

A pencil program has been started in 200-E to give a "background" of false off-scale readings.

The H. I. service in the area has been augmented by the addition of inspectors who will assist the engineers. Confusion will be avoided if it is universally realized that the inspectors' duties are limited to the accumulation of specific data for the engineers. Questions concerning tolerances or proper hazard procedure should always be referred to the shift engineer or to higher H. I. Supervision.

One instance of apparent failure to report a hazard accident to H. I. was at least partly due to non-clarification of this point by H. I. Supervision. However, there has been a general tendency in some locations to avoid reporting such anticipated mishaps as spills, hand contamination, etc. The discharge of H. I. obligations for hazard protection is thereby rendered more difficult, and the free interchange of new methods of decontamination, etc. greatly impeded.

H. M. Parker
Chief Supervisor
Health Instrument

HMP:swc

7-1443

Copy #1 - W. C. Kay - K. W. Millett
#2 - F. B. Vaughan
#3 - J. E. Cole
#4 - L. L. Larson
#5 - L. Squires
#6 - S. T. Cantril - H.I.File
#7 - H. M. Parker - C.C.Gamertsfelder
#8 - C. M. Patterson
#9 - 700 Area File
#10 - D. M. Smith - 300 Area File
#11 - Yellow copy
#12 - Pink copy

7-1115

March 26, 1945

W. C. KAY, SUPERINTENDENT
S DEPARTMENT

THIS DOCUMENT CONSISTS OF 6 PAGES
No. 1 OF 12 COPIES, SERIES A

#11

H. I. REPORT ON 200 AREA AND ENVIRONS FOR WEEK ENDING MARCH 23, 1945

GROUP A - 200 Area Survey Group - F.P.Seymour:

1. Statistics:

Surveys for Special Work Permits	107
Other routine and Special Surveys	292
Smear Samples for Alpha Checks	455
Precipitron Samples	16

2. The T Plant Canyon Building (221-T):

The dosage-rate near the strainers #2 and #40 at Section 9 in the pipe gallery involved in the suckback described last week has fallen by about 15% in the course of one week. An empirical rule indicates that the effective half life of mixed fission products is approximately equal to the total cooling time. This would give a 12% fall. Hence, it seems probable that the activity is not undergoing further transference, but is decaying in situ. Since the hard gamma radiation is relatively intense (~ 550 mr/hr) this should be a convenient location to check the decay for application to disposal or spill problems.

Work on the Section 8 samplers to reduce the hazard of the sampling operation is proceeding but has not yet completely succeeded. An initial wash of the riser plug in acid reduces the reading from 70 mr/hr to 40 or 50 mr/hr, but subsequent washings remove no more activity. A lead shell under one of the plugs reduced the reading to 20 mr/hr.

A clean-up of the train tunnel revealed a wooden ladder with three small regions of contamination by an alpha-particle emitter (~ 5000 dis/min.).

There is no available history of the ladder, and no present differentiation as to whether the activity is due to product or to metal.

The 10-ton hook of the 75-ton crane has been used to remove piping from contaminated cells, and the back of the hook now gives a reading of 55 mrep/hr.

3. The Control Laboratories (222-T, U, B):

Surveys of the "222-T" Building located no appreciably active spots. A smear sample from the lunch room table gave 100 dis/min. It has been suggested that this was caused either by feet on the table or by a person sitting on the table. However, the latter is quite unlikely since contaminated clothing is not worn in the lunch room, and the former would be caused by a second order transference from a spill on the floor to the soles of shoes to the table. This could only arise from a rather hot spill that would have been reported. Although the levels of product contamination on the lunch room tables are low, they are repetitive (Reports: 1/19/45 and 3/2/45), and their cause should be found and eliminated.

No contamination has been found in the 222-U Building. With the addition of fission product work to the curriculum, a four-fold beta hand counter has been provided.

Plans are being made to provide H.I. assistance to the 222-B program beginning 3/26/45. A four-fold hand counter will be available and precipitron and smear sampling equipment will be set up in the "B" Plant.

4. The T Plant Concentration Building:

Pin holes in welds in the line at the E-1 Vessel still cause contamination up to 30,000 dis/min.

Repair of the bad jet from F-1 to F-2 is held up pending the fabrication of a new line and jet. The present equipment is mopped up after each run to prevent continued buildup of activity.

All precipitron readings were at the background level of less than 10^{-11} g Pu/cc. The equipment was out of action for repairs three days. Also, the "Handee" Alpha Hand Counter has been continuously out of commission.

The dosage-rate outside the C-4 tank was about 25 mr/hr whenever a batch was transferred from 221-T.

The outgoing product containers read 4 to 5 mr/hr. About half of the recycle vessels returned from 231 Building give 30,000 dis/min from the cup.

5. The T-Plant Retention Basin (241-T):

Work has been started on tapping a waste line from Section 9 of the Canyon to the underground storage tanks. The line is to be tapped near the 361 tanks. Disposal from Section 9 will be by the 361 tanks to the dry well for contaminated wastes, not hot enough to merit permanent tank storage. Some hazard is involved in the pipe work, because the seven waste lines are close together, and radiate the region around the clean pipe to be tapped. The dosage-rate is about 280 mr/hr through the 6 inches of dirt that can be left over the active pipes.

6. The T-Plant Stack Monitor (292-T):

Solid particle contamination escaping by the stack has been monitored since 3/13/45, using 1 part in 80,000 of the stack air. The highest rate of emission was 10 mc/hr during centrifugation in Section 14. As several processes were going on at once in the Canyon, it has not yet been possible to assign the escape of material uniquely to a given process. This should be possible as the last batch leaves the Canyon.

The highest product emission was about 700 μg/hour. This was apparently connected with operations in 224-Building. In this case, greater air activity than has been reported might be expected at some stages of the operation.

The activity of the fission product samples has a present half life of about 50 to 60 days.

GROUP B - The Isolation Building (231) Group - J. W. Morris:

1. Hand Counting

No improvement on the potassium-permanganate-sodium-bisulphite decontamination technique has yet been found. Increased cooperation in the reporting of high counts has led to at least 3 useful locations of the source of trouble in the Analytical Section.

2. Air Sampling

37 Precipitron Samples were taken; none read higher than 2×10^{-11} μg Pu/cc. 12 "Little Sucker" readings were at or below 10^{-11} μg Pu/cc. A modified "Big Sucker" was operated on the non-filtered exhaust ducts from the hooded sink. It indicated less than 10^{-11} μg Pu/cc. Long-time samples are being taken from the filtered air of the hood exhaust system.

3. Surveys

Zone	Location	Contamination
Operations	Bottom of center hood (Room 6-C)	35,000 dis/min.
Technical	Large Area on bottom of hood (Rm. 41)	5,000 " "
	Outside various bottles, Rm 44.	>70,000 " "
Analytical, H.I.)		
General Building	None	

Smear Tests: 209 in hoods - 25 readings over 100 dis/min.
697 elsewhere - 17 readings over 100 dis/min.

Transfer Vessels:

	No.	Pluto Readings	Smears Taken	Smear Values > 1000	Smear Values 100-1000
RCs into hood	19	1. 3000 on top	70	1	5
Out of Hood	20	0	83	1	13
PRs into Hood	3	1. > 70,000 on rim 2. 3,000 on closure	13	0	1
Out of Hood	3	1. > 70,000 on top	16	1	5

Contamination measurable by Pluto was cleaned up by Operations. The Recycle data is not consistent with that found in 224-T, - indicating considerable splashing enroute.

A recycle vessel previously reported to be defective has neither been repaired nor discarded.

A sample vessel returned from the customer was found to be quite contaminated. Pluto readings above 70,000 dis/min were obtained on the lower part, and about 30,000 dis/min on the upper part.

One hundred canvas gloves returned from the special laundry were checked on a Handee counter, with the following distribution:-

No. of Gloves	81	10	6	1	1	1
dis/min.	200	200-700	700-1300	2700	4500	5000

The only equipment available for alpha tests in the laundry is a Pluto, the lower limit of which is about 5000 dis/min. The above results are therefore quite compatible with good use of the available apparatus.

GROUP C - Site Survey Group - P. E. Lindvig

1. Air Monitoring

The integron distribution planned last July has finally been completed this week. There are 29 instruments located outside plant buildings. It is the opinion of the observers that none of these has shown a reading other than those due to mechanical faults. The condition of the instruments is not entirely satisfactory. Frequent repairs are necessary, and when repairs have been made the radiation calibration is often wrong by as much as 30% to 40%.

The integron program as a whole is time consuming for the Instrument Maintenance Department and for the H. I. Calibration Group.

A system of stands for the X-22, M-22 and S-22 detachable ionization chambers has been installed in the 200-E Area. The Beta ray chambers do not tolerate desert conditions. The soft aluminum foil is eventually abraded. Nylon sheet would be a preferable material, but there is difficulty in obtaining an adequate supply.

The sage brush contaminated in the first series of dissolvings has now been analyzed for product. It contains approximately 10^{-6} μg Pu/gm of sage brush.

2. Waste Monitoring

The dosage-rates in the vicinity of the swamp from the 241-T ditch continue to range up to 3 mr/hr.

About 28 wells and rivers are sampled each week. Some counts thought to be positive were probably not above statistical fluctuations of the poor counting technique used.

GENERAL

A. Considerable improvement in H. I. Instrumentation in the 200-Area is required. Present status is:-

1. Pluto is quite erratic for readings below 5000 dis/min, and becomes worse with age. The Zeus instrument devised at Chicago is much more stable. A new version known as Super-Zuto is also more sensitive (5000 dis/min full scale). One such unit has been ordered for test.

Electrometer methods developed here gave comparable sensitivity but greater inconvenience in operation makes them non-competitive with the Zuto possibilities.

2. Handee has decided limitations - low geometry, suitability for palms primarily, microphonics and general service troubles.

The proportional counter model has not yet arrived. Zuto also opens up possibilities of making a simple 4-fold Alpha hand counter of comparable sensitivity. A 4-fold electrometer type for extra-refined work is also being made here.

3. An overall increase in the number of Alpha counting pieces is required.

4. More quantitative interpretation of smear tests is needed.

B. No significant pencil or badge reading has occurred in the 200-W Area. The pencil program in the 200-E Area is being operated solely for statistical purposes; no reports are being submitted on the apparent high readings as they cannot be checked by badge results. Use of hot material in the area was not anticipated prior to the established date of starting the badge program.

7-1115

C. The card system for recording hand counts seems to be satisfactory, and it is being steadily extended. Suggestions for improvement would be well received before the system becomes too stabilized.

H M Parker

H. M. Parker
Chief Supvr.
Health Instrument Dept.

HMP:swc

1472

by #1 - W. C. Kay - K. W. Millett
#2 - F. B. Vaughan
#3 - J. E. Cole 7-1115
#4 - L. L. Larson
#5 - L. Squires
#6 - S. T. Cantril - H. I. File
#7 - H.M.Parker -C.C.Gamertsfelder
#8 - C. M. Patterson
~~#9 - 700 Area File~~
→ #10 - D. M. Smith - 300 Area File
~~#11 - Yellow copy~~
~~#12 - Pink Copy~~

April 2, 1945.

THIS DOCUMENT CONSISTS OF # PAGES
No. 10 OF 12 COPIES, SERIES A

W. C. KAY, SUPERINTENDENT
S DEPARTMENT

#12 H. I. REPORT ON 200 AREA AND ENVIRONS FOR WEEK ENDING MARCH 30, 1945

GROUP A - 200 Area Survey Group - F.P.Seymour:

1. Statistics

Surveys for Special Work Permits	126
Other routine and Special Surveys	273
Smear Samples for Alpha Checks	525
Precipitron Samples	32

2. The T Plant Canyon Building (222-T):

The residual contamination near the strainers #2 and #40 at Section 9 has been followed more carefully. The gamma activity decays with a half life of 23 ±3 days. From the data in THX7 it can be shown that the effective half life of the gamma component at 55 days average cooling is 25 days. It is interesting to observe that the effective beta half life should be 40 days. The ratio of $\frac{\text{gamma decay rate}}{\text{beta decay rate}}$ and their separate values are specific to a given cooling time. It also depends on the operating time, which will tend to be constant. Measurement of these values could be used to trace unexpected contamination back to its source of origin, provided that the material was essentially free from metal.

An attempt was made to replace hydraulic connectors in Section 9-R. When the section cover blocks were removed, the radiation at deck level was 1150 mr/hr, rising to2000 mr/hr two feet below the deck. Two nitric acid washes and one fluosilicate wash reduced the intensity by a factor of 4. Entry to the cell was abandoned on this evidence.

1124096

7-1115

5. The Control Laboratories:

222-B began active work this week. Equipment for beta hand counting and contamination was made available. No contamination has been found in 222-U.

No unduly hazardous conditions were found in the H. I. Surveys in 222-T. Laboratory glassware has been removed from the lunch room, and an attempt made to isolate and eradicate the cause of the contamination on the tables.

Erratum

In the report 7-1413, for the week ending March 16, Sandy readings resulting from the spill in Room 7 were translated into product contamination (2.5 mg Pu). It is now pointed out that the spill arose from a metal waste solution containing very small quantities of product. The Sandy reading was of course due to alpha radiation from the metal. There is no convenient means of differentiation short of separation. Arrangements have been made to inform H. I. of the occurrence and nature of all future spills so that such misunderstanding should not recur.

4. The T-Plant Concentration Building (224-T):

The jet from F1 to F2 has not yet been repaired. Mopping up has held the contamination to 10,000 dis/min. Spots in cells D, E and F where lines are welded to tanks have been found. Contamination due to faulty welds seems to be widespread. It should be known whether this is due to breakdown of previously sound welds, or to realization of the cause of previous contamination.

A leaky flange on Vessel C-4 gives contamination of about 18,000 dis/min.

Five outgoing process vessels presumed to contain equal amounts of product gave gamma ray dosage-rate of 6, 5.5, 4.5, 4.0 and 3.0 mr/hr at a standard reference point. If the differences are due to variations in decontamination, the changes in readings on the final vessels will be useful in estimating behaviour with poorer decontamination.

No measurable product concentration in the air was found.

5. The T-Plant Retention Basin (241-T):

The job of diverting the #1 waste line to the 361-tank was completed. Radiation was held to 55 mr/hr by additional lead shielding. During the testing of the line, two maintenance men, not operating under Special work permit, removed a flange from a vent pipe on this "clean" line. They were sprayed with water. Alert operating supervision referred the men to H. I. who measured contamination as follows:-

Coveralls	8 mrep/hr
Shoes (inside after cleaning)	1800 c/min
Stockings	12,000 c/min
Jackets (spots)	8,000 c/min
Pants	600 c/min

The men's bodies after showers were free from activity. The ground sprayed in the incident read 9 mrep/hr. This dirt was used to fill the hole around the pipes. Although no harm was caused by the accident, it should be a sober reminder of the hazards of working without monitoring control on any item concerned with the separation process.

6. The T-Plant Stack Monitor (292-T):

Between 3/13/45 and 3/26/45, about 50 mg of product and 400 mc of fission products (other than iodine, xenon and other volatile or gaseous components) escaped from the stack. A separate report is to be submitted to Operations with detailed analysis.

GROUP B - The Isolation Building (231) Group - J. W. Morris:

1. Hand Counting

The permanganate-bisulfite treatment successfully decontaminates most cases. It is essential to use freshly made bisulfite solution as it does not keep well. Frequently changed solution is also desirable since the product is removed in this stage and a buildup of activity in the solution could occur.

2. Air Sampling

32 precipitron samples were taken. None showed more than 2×10^{-11} µg Pu/cc.

15 Little Sucker samples all read 5×10^{-12} µg Pu/cc or less.

The Big Sucker monitor was used on the ducts from each of the 4 hooded sinks and on the filtered air in the hood exhaust system. All concentrations were below 10^{-12} µg Pu/cc.

3. Surveys

3 areas of the floor in Room 34 were contaminated. Sandy* readings exceeded 150,000 dis/min.

Smear tests: 89 in hoods - 19 readings over 100 dis/min

660 elsewhere - 39 readings over 100 dis/min

---

* The alpha particle detection meter previously known as Pluto is now required to be called Sandy.

7-1115

Transfer Vessels

Vessels Monitored	No.	Sandy Readings	Smears Taken	Smear Values >1000	Smear Values 100-1000 d/m
RCs into hood	27	--	150	2	16
RCs out of hood	28	1. > 70,000	130	1	13
RCs returned to 224-T	12	--		3	3
PRs into hood	3	1. > 70,000 in cup 2. 12,000 on closure	18	1	3
PRs out of hood	3	--	15	0	4

The defective RC vessel previously described was buried, and its jacket cleaned by Operations.

GROUP C - Site Survey Group - P. E. Lindvig:

1. Air Monitoring

90% of all Integrons in the area have shown a high reading in the month of March. None of these is believed to be due to radiation. In future, each integron station will carry badge film as an additional check. Adhesive paper is being exposed in the field to see if air-borne active particles can be collected.

GENERAL

Pencil reports in the 200 Area continue to be significantly worse than elsewhere on the plant. The stock of pencils has been interchanged between areas, and for the next month exchange of supervision will be tried. Badge readings prove that all high pencil readings are spurious. It is understood throughout that pencils and badges will both be worn at all times on the plant.

H. M. Parker
H. M. Parker
Chief Supvr.
Health Instrument Dept.

HMP:swc

1129099

Copy #1 - W. C. Kay - K. W. Millett
#2 - F. B. Vaughan
#3 - J. E. Cole
#4 - L. L. Larson
#5 - L. Squires
#6 - S. T. Cantril - H. I. File
#7 - H. M. Parker-C.C.Gamertsfelder
#8 - C. M. Patterson
#9 - 700 Area file
#10 - D. M. Smith - 300 Area file
#11 - Yellow copy
#12 - Pink copy

April 9, 1945.

To: W. C. KAY, SUPERINTENDENT
S DEPARTMENT

THIS DOCUMENT CONSISTS OF 5 PAGES
No. 1 OF 12 COPIES, SERIES A

#13 H. I. REPORT FOR 200 AREA AND ENVIRONS FOR WEEK ENDING APRIL 6th, 1945.

GROUP A -B, T and U Plants - Survey Group:

1. Statistics (T-Plant):

Surveys for Special Work Permits	111
Other routine and special surveys	272
Smear samples for Alpha checks	259
Precipitron samples	17

2. The T Plant Canyon Building (221-T):

Surveys in connection with routine maintenance occupied most of the time. Measurements were made throughout the train tunnel when the dissolver was fully charged and the Section 4L cell covers were off. All readings were below 1 mr/hr. It is therefore feasible to replace empty cars by full ones under these conditions with consequent reduction of operating time.

3. The Control Laboratories (222, B, T, U):

The weekly checks in 222-T showed only one spot of alpha contamination and that was inside a hood. Several cleaned plastic pipette tips in the sample storage room gave 15 mr/hr each at close range.
Two contaminated hot-plates (10,000 dis/min and 2000 dis/min were found in 222-B.

4. The T-Plant Concentration Building (224-T):

A defective flange in a new line from the F10 enclosure to the E-4 tank caused the biggest product spill to date. Active solution spattered over

the F7 tank, dropped down [illegible] floor. More than 200 g of product was involved. Extensive cleaning operations for four days reduced the Sandy readings to less than 1000 dis/min. Air samples during the process gave negative results, and the cleaning procedure seems to have been free from unregulated hazard. 7-1175

Cells A, C, D and E have been thoroughly cleaned and are essentially contamination-free.

Five smear samples on each of nine recycle containers gave the following results:

	One Smear as received Before recycling				Four Smears, Empty After recycling		
Can No.	≥0 < 100 dis/min	>100 <1000	>1000		≥0 <100	>100 <1000	>1000
9		1 in cup			3	1 on top	
10			13,000 in cup		2	1 in cup	1800 on top
11	1				4		
15		1 in cup			1	1 on bottom 1 on side	2800 on top
28		1 in cup			3	1 in cup	
33		1 in cup			3	1 on top	
34	1				4		
36	1				4		
100			9300 in cup		1	1 on top 1 in cup 1 on bottom	

Presumably the contamination after the vessels have been emptied is due to spills, but these have not been directly observed. The data given do not prove that contamination outside the cup did not exist before recycling. This was apparently taken for granted on the basis of previous experience. All vessels were cleaned before issue.

Smear Samples - 210

Number below 100 dis/min	= 179
Number between 100 and 1000 dis/min	= 22
Number between 1000 and 10,000 dis/min	= 7
Number greater than 10,000 dis/min	= 2

The 9 high smears occurred as follows:-

1000 to 10,000 dis/min	(Recycle containers	3
	(F-7 tank after spill	3
	(Flange of C-4 tank	1
>10,000 dis/min	(F-7 tank (26,600 dis/min)	
	(Recycle container (13,000 dis/min)	

No air sample in the T Plant indicated more than 10^{-11} µg Pu/cc.

5. The T-Plant Retention Basin)
T-Plant Fan House)
T-Plant Stack Monitor) Nothing to report

6. 200 North Area - - - - - - - - " " "

GROUP B - The Isolation Building (231) Group:

1. Hand Counting

Proportional counter equipment from Clinton Laboratories has still not arrived, and the Zuto adaptation is not sufficiently advanced for plant use. Therefore, the original order for 6 Handee units has recently been increased to 10, as a stop-gap measure. The proposed distribution will allocate 3 units to the 231 Bldg. and not more than one to any other building. (To clarify the record on Handee orders, the first four were ordered on 12/27/45, the remaining two on 1/17/45. The latter order has not yet been completed. Priority lists drawn up jointly by W. P. Overbeck and the writer had these units at the top).

2. Air Monitoring

Instrument	Location	No. of Samples	Readings
Little Sucker	Laboratories	12	All $< 10^{-11}$ µg Pu/cc
Big Sucker	Filtered air from hoods	3	All $< 3 \times 10^{-13}$ "
Precipitron	Throughout the building	59	52 were $< 10^{-11}$ "
			5 were 10^{-11} "
			1 was 2×10^{-11} "
			1 was 5×10^{-11} " *

* This was a short exposure; accuracy limit was 2×10^{-11} µg Pu/cc.

Four Pfanstiehl type air samplers will be available by April 20.

A report from Clinton Laboratories confirms the previous suggestion that better collection is obtained on aluminum foil than on paper in precipitrons. The average factor is reported as high as 2.5. All future runs will be on metal foil.

3. Surveys

SANDY READINGS (Values inside hoods are not included)

Department	Location	dis/min.
Operations	Floor, Laboratory 6A	up to 30,000
Analytical	Pipettes in storage drawer.	3000 to 8000
	Spots on floor, Room 35	12,000, 22,000 and > 70,000.
Technical	Porcelain pan on bench	4,000

Smears: 200 Inside hoods - 20 readings above 100 dis/min
1135 elsewhere - 74 readings above 100 dis/min

Floor contamination has been troublesome only in the last two weeks. The general condition of the building continues to be very good, due to small number of spills, etc., and the effective cooperation in eliminating contamination when found.

Transfer Vessels	No.	Sandy Readings	Smears Taken	Smear Values 100-1000	Smear Values >1000
RCs into process hood	9	0	59	3	0
RCs out of process hood	10	0	51	7	0
PRs into process hood	1	2000 sides 20,000 closure	5	1	0
PRs out of process hood	1	5000 rim and sides	5	2	1

Sample Cans

Condition as released		
Lauritsen Electroscope Reading. Case of Model 2 against can at level of sample	2.8 mr/hr	2.4 mr/hr
Maximum smear value on can	36 dis/min	34 dis/min

[redacted]

Coveralls

HW-7-1115

20 coveralls from 231 Bldg. were found in the special laundry to have measurable beta and gamma contamination with no product contamination sufficient to affect Sandy. A recheck in 231 showed that materials generously contaminated with the product solutions gave no beta count. A possible explanation is that one batch of coveralls was accidentally processed in the "beta washing" equipment and was reprocessed down to background levels before issue. The coveralls returned with counts of about twice background and this appeared unusual on 231 Bldg. garments. The accuracy of laundry work is not required to differentiate levels so close to background.

A special shipment to Chicago was adequately monitored.

GROUP C - Site Survey Group - P. E. Lindvig:

Water sampling of the wells has been placed on a more vigorous basis. The present sensitivity of the sampling procedure is about 5×10^{-5} μc/liter limit. No count has been obtained in excess of this value.

Dust samples collected on oiled paper near the T-Plant Swamp showed no product contamination.

The integrons in the 614 Bldgs continue to misbehave. In future, both film packets and ionization chambers will be used to supplement the record.

The special Xenon detection apparatus is still inoperable due to lack of nitrogen valves with approved safety features.

GENERAL

Group A report is compiled by F.P.Seymour from the reports of C. R. E. Merkle, Jr. in the T and U Plants, and C. G. Lewis in the B Plant and 200-N Areas.

Group B report is prepared by J. W. Morris; and Group C by P. E. Lindvig.

Further weekly acknowledgment of these sources will be discontinued. Groups A, B and C have been amalgamated in the H. I. Organization to enable more direct contact with Operations Supervision to be made.

No significant pencil or badge readings have been reported.

H. M. Parker

H. M. Parker sc
Chief Supvr.
Health Instrument Dept.

HMP:swo

2-1543

Copy #1 - W. C. Kay - K. W. Millett 7-1115
#2 - F. B. Vaughan
#3 - J. E. Cole
#4 - L. L. Larson
#5 - L. Squires
#6 - S. T. Cantril - H. I. File
#7 - H. M. Parker-C.C.Gamertsfelder
#8 - C. M. Patterson
#9 - 700 Area file
#10 - D. M. Smith - 300 Area file
#11 - Yellow copy
#12 - Pink copy

April 16, 1945.

THIS DOCUMENT CONSISTS OF 6 PAGES.
No. 1 OF 12 COPIES, SERIES A

To: W. C. KAY, SUPERINTENDENT
S DEPARTMENT

#14 H. I. REPORT FOR 200-AREA AND ENVIRONS FOR WEEK ENDING APRIL 13, 1945.

AREA A - The T Plant

1. Statistics

Surveys for Special Work Permits	96
Other routine and Special Surveys	142
Smear samples for Alpha checks	274
Precipitron samples	37

2. The Canyon Building (221-T):

A leaky gasket on the steam line to the dissolver had to be replaced while the dissolver was loaded. The entire jet assembly was removed by remote control and placed in Section 1R. The dosage-rate was 12,000 mrep/hr near the process discharge line and 1500 mrep/hr at the steam line. A shield of 1/4" lead over the process line reduced the radiation at the steam line to 100 mr/hr at the side of the connector and 300 mr/hr at the face. The gasket was replaced in 16 minutes and no over-exposure occurred.

The auxiliary 10 ton hook on the main crane was replaced for process reasons. The hook had contamination giving dosage-rate of 45 mrep/hr at ocntact. It was stored in Section 1R.

With the cell blocks removed from Section 9L during normal operations there, the dosage-rate at the crane located above the section was 76 mr/hr. Limited work could be done on the crane during such operations.

The maximum reading in the train tunnel during the unloading of the slug buckets was 150 mr/hr. (See B-Plant data).

1124105

3. The Control Laboratory (222-T):

Several spots of product activity were located on the benches and hoods (max. Sandy reading 15,000 dis/min). The maximum beta-gamma activity was 20 mrep/hr at the sampler window. Both conditions were immediately improved.

4. The Concentration Building (224-T):

The C, D and E cells and sampler cubicles and the C and D centrifuge balconies have been painted. No residual alpha counts were found. Localized spots of contamination, notably on the E-1 tank cover and the weld on the line from D3 to D1, persist. These are not hazardous provided contact with them is restricted.

The building is reported to be in very good condition from the product hazard aspect.

37 Precipitron samples were taken in the building. 36 of them showed less than 10^{-11} μg Pu/cc. The remaining sample showed 2×10^{-11} μg Pu/cc. This was taken in the F10 room near the door from office #3.

5. The Retention Basin (241-T):

A spot check on the basin gave a smear reading of 124 dis/min. The activity was most probably due to product.

[redacted] B - The U Plant

1. The Control Laboratory (222-U):

This laboratory now shows some product* contamination.

Sandy readings above 23,000 dis/min were found on asbestos base plates for standard samples.

64 Smear samples were taken in the building. Only six gave counts in excess of 100 dis/min, and none was higher than 400 dis/min.

2. Equipment:

Handees and smear sampling equipment have been promised for the U Plant on 4/21/45.

---

* Sandy readings are always ascribed to product unless it is definitely known that there has been a metal waste spill in the region. Occasional incorrect assignments are to be expected.

GROUP C - The B Plant

1. Statistics

Surveys for Special Work Permits (3 days)	70
Other routine and Special Surveys	46

2. The Canyon Building (221-B):

The radiation in the train tunnel was measured while a loaded bucket was suspended over the tank car. The results are shown in Fig. 1. The radiation fell off with distance considerably more rapidly than as the inverse square. This must be partly due to the scattered radiation available at near points, which is collimated out at larger distances. With the present activity, there would be no difficulty in saving operating time by having the engine retreat about 100 feet down the tunnel during bucket removal, instead of clearing the engine outside the T Plant fence, as at present.

The first sample taken from vessel 4-8 involved a spill that gave a reading of 200 mrep/hr over the sampler plug. The residual reading after water and nitric acid washes was 12 mrep/hr, which was apparently then all due to gamma radiation and probably came from material normally in the sample riser.

3. The Fan House (291-B): and Stack Monitor (292-B):

The dosage-rates near the fans were comparable with the analogous readings in the early T Plant runs.

The reading six inches from the 45-L jet line was 1800 mr/hr.

The stack monitoring equipment is not in operating condition.

4. The Control Laboratory (222-B):

No contamination.

GROUP D - The Isolation Building (231):

1. Hand Counting:

The analytical group has allocated additional time to the location of possible sources of hand contamination. One source in connection with a dilution technique has been found.

The permanganate-bisulfite treatment continues to be usually successful in removing contamination. The use of citric acid to acidify sodium sulphite solution is perhaps questionable.

It has been reported that product solutions complexed with citric acid are much more readily transmitted through cuts. Although the hands of laboratory personnel would have no large cut there is always a possibility of a small skin break being overlooked.

2. Air Monitoring:

All twelve Little Sucker samples read less than 10^{-11} µg Pu/cc. in the laboratories. Both Big Sucker readings on the filtered air from hoods indicated less than 2×10^{-13} µg Pu/cc.

43 spot checks with precipitrons were distributed as follows:

39	less than	10^{-11} µg Pu/cc
2	read	10^{-11}
1	"	2×10^{-11}
1	"	10^{-10}

The 'high' reading was taken from the sump tank pit after steam was accidentally allowed to escape from the tank into the pit.

3. Surveys;

Sandy Readings:-

Area	Location	dis/min.
Operations	Front of hood, Room 6A	30,000
	Plastic Sampler stored in 6A	>80,000
Technical	Porcelain pan on bench	4,000
	Rubber glove	12,000
All others	None	

Smear Tests: 210 inside hoods — 30 readings ≥ 100 dis/min
783 elsewhere — 29 readings > 100 dis/min

Transfer Vessels:-

Vessels monitored	No.	Sandy Readings	Smears Taken	Smear Values 100-1000	Smear Values >1000
RCs into hood	16	6000 dis/min on rim	94	8	2
RCs out of hood	17*	6000 dis/min on top	76	10	0
PRs into hood	1	2000 on sides			
		20,000 closure bar	7	0	0
PRs out of hood	1	5000 top rim			
		30,000 sides	5	2	1

* The consistent reader of this series will observe that each week the number of Recycle Vessels removed from the hood exceeds by one the number introduced. The writer is informed that there is some natural explanation of this phenomenon.

One final sample can was monitored and released:-

Lauritsen reading at standard position.	2.0 mr/hr
Maximum smear reading	24 dis/min.

Some instances have occurred lately of improper disposal of contaminated waste. The situation is apparently now well controlled.

GROUP E - Site Survey

Very little activity was detected at ground level as a result of the first batch of dissolvings in the T Plant this week. The second batch caused some trouble. Counter readings up to 600 c/min were obtained in the 200-W Area shops and laundry. Ground contamination occurred at the chamber station 1200 feet SE from the stack. Counter readings up to 950 c/min were found NE of the stack about the same time.

Ground contamination (up to 2.5 mrep/hr) covered an ellipse with major axis SE from the stack, and about 3 miles long. The width was about 600 feet. As before, the sand was only slightly contaminated and the sage brush was quite active, especially on high bushes. On the final dissolving a guard reported persistent fumes in his tower for two hours. He was not exposed to significant external radiation hazards, and a check of the thyroid gland showed no accumulation of radioactive iodine. Nevertheless the present procedure for measurement of either nitrons fumes or iodine at ground level is not entirely satisfactory, and will be radically revised at an early date.

Twelve dust samples collected on sticky paper gave low and possibly insignificant counts. Highest readings were reported as (4 ± 1.5) beta counts/min, and 1 ± 1 alpha count/min.

No activity was found in underground wells.

GENERAL

No significant pencil or badge readings were reported.

H. M. Parker
H. M. Parker
Chief Supvr.
Health Instrument Dept.

HMP:swo

A-1115

FIG.1. RADIATION IN TRAIN TUNNEL

DECLASSIFIED

7-1115

7 1558

W. C. Kay - F. W. Millett
#2 - F. B. Vaughan
#3 - J. E. Cole
#4 - L. L. Larson
#5 - L. Squires
#6 - S. T. Cantril - H. I. File
#7 - H. M. Parker -C.C.Gamertsfelder
#8 - C. M. Patterson
#9 - P. W. Crane - 700 Area File
#10- D. M. Smith - 300 Area File
#11- Yellow copy
#12- Pink copy

April 23, 1945.

THIS DOCUMENT CONSISTS OF 7 PAGES
No. 10 OF 12 COPIES, SERIES A

INV. 9-47

To: W. C. KAY, SUPERINTENDENT
S DEPARTMENT

#15-

H. I. REPORT FOR 200-AREA AND ENVIRONS FOR WEEK ENDING APRIL 20, 1945.

A - The T Plant

1. Statistics

Surveys for Special Work Permits	121
Other routine and Special Surveys	101
Smear samples for Alpha Counts	377
Precipitron Samples	44

2. The Canyon Building (221-T):

An accident occurred during the taking of an 8-3-WS (Waste solution) sample, whereby the rubber stopper blew out of the sampling riser when the air pressure was applied. About 2 or 3 ml of solution were sprayed over the Beckman survey meter and the adjoining area. The sampling personnel was fortunately not sprayed and they retreated from the area before any significant exposure was received. It was subsequently found that the dosage-rate in the immediate vicinity of the sampler was 9000 mrep/hr. The Beckman survey meter itself read 4000 mrep/hr. This instrument had been prepared against contamination by wrapping in cellophane and tape. When this was removed the residual reading was 80 mrep/hr. Although the instrument can probably be cleaned down to an acceptable level, the current mortality due to contamination is rather high, and there is real need for improved protective covers.

1124111

DECLASSIFIED

The contaminated zone in the above case was effectively cleaned and normal sampling was resumed 24 hours late at the location.

The effective half life of the gamma activity from the pipe gallery suck back of the week ending 3/16/45 has now increased to ~40 days.

3. The Control Laboratory (222-T):

The highest beta ray dosage-rate found in the weekly check was 9 mrep/hr at the sample shelves in Room 1. The highest Sandy reading was 10,000 dis/min on the floor opposite the sample receiving window. Forty smear samples throughout the laboratories showed remarkably little contamination. None exceeded 75 dis/min.

A waste solution spill set up floor contamination giving 200 mrep/hr. It was cleaned to 5 mrep/hr by acid washes, soap and water. An application of "Tax-ite",a paint and varnish remover, completely cleaned the area. This may be a generally useful procedure for product or fission product spills on waxed or varnished floors.

4. The Concentration Building (224-T):

The F-10 Room and G cell sumps were redirected into the 361 tank. In the change, the broken sewer pipe flanges were not blanked off. An updraft of air was discovered from the open pipe, and this gave product contamination measurable on Sandy and giving a smear sample of over 90,000 dis/min. The pipe opening was plugged with paper and a precipitron was set up. A similar condition was found in the G cell pipe. The pipe openings were blanked off as soon as possible. The highest precipitron reading obtained averaged 18 x 10^{-10} μg Pu/cc. This run covered the period of blanking off, so that the initial concentration must have been considerably higher. The value fell to $< 10^{-11}$ μg/cc, one hour later.

It is estimated that concentrations above tolerance existed for 12 hours before detection. No-one was exposed to the concentration without proper protection.

A reading of 140 mr/hr was obtained outside the C-4 tank when filled with batch B3A. This was apparently due to inadequate precipitation of by-products in Sect. 17.

140 smear tests were made on Recycle vessels; viz:

0	-	100 dis/min	109
100	-	1000 dis/min	27
1000	-	10,000 dis/min	4

5. The Fan House (291-T):

The dosage-rate at reference point #3 rose from 165 mr/hr to 275 mr/hr, due to more frequent processing and reduced cooling time. No further reference will be made until the index exceeds 500 mr/hr/

B - The U Plant

1. The Control Laboratory (222-U):

Isolated spots of product contamination were found.

e.g.: Glass Plate		47,000 dis/min	(Sandy)
Other plates	up to	4,200 dis/min	(Smears)
Bench top		1,400 dis/min	Smear.

Smear distribution - 82 total:

0 - 100 dis/min	73
100 - 1000 dis/min	6
>1000 dis/min	3

C - The B Plant

1. Statistics

Surveys for Special Work Permits	186
Other routine and Special Surveys	163

2. The Canyon Building (221-B):

Typical examples of canyon contamination are:-

Sampler plug at 4-8	1250 mrep/hr
Lift bar of tank cover on cask car	23 mrep/hr
Bucket yoke	230 mrep/hr
Sample riser	200 mrep/hr

3. The Control Laboratory (222-B):

Status of contamination:-

Waste receiver on bench	110 mr/hr
Sample shelf, Rm 7	8000 dis/min.
Sample handling tongs	12,000 dis/min.

In handling a trombone in the laboratory a drop of solution spilled on to the 'doorstop' and gave a reading of 2000 mrep/hr. It turned out that the pipette was still in the trombone. Reference to the monitoring figures in the Canyon indicated that the check reading on the trombone after the operation to transfer the pipette to the doorstop was 235 mrep/hr. This was sufficiently high to have suggested that the pipette might be still in the trombone. The spill in the laboratory was cleaned up without excessive exposure.

A Handee counter was installed.

4. The Concentration Building (224-B):

The H.I. work in the area began on 4/19/45. The reading outside C-4 tank when fully charged was 28 mr/hr.

D - The Isolation Building (231)

1. Hand Counting

A summary of the hand count data for one month shows:-

Number of cases (separate hands) at warning limit or above = 290
Number with inadequate decontamination data = 60

METHOD	NUMBER OF CASES	DECONTAMINATION FACTOR (Average)
Lanokleen first recorded use	149	2.9
Lanokleen second or subsequent trials	55	1.3
Pot.Permang. + reducing agent	147	2.5
Titanium dioxide preparation	5	1.4

The tabulation is misleading without the following data:-

1. The hands were always washed before the initial count.
2. There are some duplications, and the permanganate treatment shows to poor advantage because it was frequently used on cases already found resistant to the Lanokleen method. However, the decontamination factor in general was discouragingly low.

2. Air Monitoring

12 Little Sucker samples of 48 hours duration all showed average concentrations of 4×10^{-12} µg Pu/cc or less in the laboratories.

Continuous samples of the filtered hood air showed less than 2×10^{-13} µg/cc.

32 Precipitron samples were distributed as follows:-

18	$< 10^{-11}$ µg/cc.
12	10^{-11} to 2×10^{-11} µg/cc.
2	2×10^{-11} to 5×10^{-11} µg/cc.

One sample with the Big Sucker in the sump tank pit indicated 3.5×10^{-11} µg/cc.

The Pfanstiehl collector, which is a cylindrical filter paper and holder with suction provided by a "filter Queen" vacuum cleaner, has been tried this week. For brevity the device will be known as Queenie. First impressions are very favorable, as regards collection rate and instrumental convenience.

3. Surveys

Zone	Location	Sandy readings dis/min
Operations:	Several spots on floor of Cell 1	>70,000 3 readings 20,000
Analytical:	Plastic sample holder	20,000
Technical:	Stirring rods in bench drawer	35,000

Smears: 347 in hoods - 30 readings >100 dis/min.
840 elsewhere - 8 readings >100 dis/min.

Transfer Vessels:

Vessels	None	Sandy readings (before cleaning)	SMEARS - (dis/min) <100	100-1000	>1000
RCs into process hood	3	None	15	4	0
RCs out	8	None	25	6	0
Prs in	2	25,000 top	3	1	1
Prs out	2	40,000 side 80,000 top	16	5	0

4. Equipment

A "Poppy" proportional counter type probe survey meter was received from Site X. Early experience with the instrument was disappointing.

1. The geometry was 6% rather than the expected 20%.
2. The background was undesirably high for a period, although it was eventually reduced to 10 pops/min.
3. The probe broke due to defective aluminum solder work.
4. There was no rate meter on the instrument so that high contamination can only be measured by the expedient of introducing additional screens.

The instrument would be useful as is, but it is felt that considerable improvement can be made.

E - Site Survey

1. Water and Waste Monitoring

The test dry well (241-T -361) remains dry, and no satisfactory measurement of possible contamination has been made. No activity has been found in any source of potable water.

An extensive survey of the 200-T ditch and swamp was made without alarming findings. A maximum reading of 2.5 mr/hr was found on a rock at the inlet end of the ditch. The highest reading on the swamp was 1.0 mr/hr. Oiled paper exposed near the swamp picked up contamination equivalent to 8 beta counts/min/cm^2 paper. The intention was to collect possible active dust from the swamp. It seems more probable that iodine vapor from the stack was collected, but this has not yet been tested.

2. Air Monitoring

The unreliability of the integrons makes it troublesome to ascribe specific readings to radiation cause. However, the integron at the S.W. corner of the 200-E Area registered 5 mr per 8 hour period several times on the days of 4/15/45 through 4/17/45. when dissolving occurred in the 200-W Area. It is supposed that these were genuine readings due to radiation. Arrangements have been made to convert all integrons in the 614 Monitor Buildings to beta measuring instruments. This should be a more useful record of the type of activity that is now anticipated.

3. Ground Contamination

A contaminated patch has been set up S.E. of the 200-B Stack analogous with the familiar patch in the T Plant. This one is approximately a circle 2000 ft. diameter and about 800 ft. closest approach to the stack. Dosage-rate in the area does not yet exceed 0.5 mrep/hr.

The contaminated area S.E. of the 200-T Stack continues to receive contributions of radioactive iodine. Dosage-rate in the region is now up to 6.5 mrep/hr. It is planned to initiate measurements of the concentration of iodine in the air in this region. Further instances of personnel complaining of nitrons fumes at ground level have occurred.

A survey of the guard tower that is in the preferred direction indicated dosage-rates inside and outside the tower of about 1 mrep/hr. Sage brush in the vicinity gave readings of 2.75 mrep/hr.

If the ground contamination continues to increase it will be necessary to know whether appreciable vaporization could occur in hot weather. The hazard to patrolmen of eating lunch in such a contaminated area has been pointed out to supervision concerned.

F. [redacted] General

No significant pencil or badge reading has been reported.

H. M. Parker
Chief Supvr.
Health Instrument Section

HMP:Swc

72

[redacted]

7-1115

DECLASSIFIED

Copy #1 - W. C. Kay - K. W. Millett
#2 - F. B. Vaughan
#3 - J. F. Cole
#4 - L. L. Larson
#5 - L. Squires
#6 - S. T. Cantril - H. I. File
#7 - H. M. Parker -C.C.Gamertsfelder
#8 - C. M. Patterson
~~#9 - P. W. Crane - 700 Area file~~
#10 - D. M. Smith - 300 Area file
~~#11 - Yellow Copy~~
#12 - Pink copy

April 30, 1945.

To: W. C. KAY, SUPERINTENDENT
S DEPARTMENT

THIS DOCUMENT CONSISTS [redacted]

#16

H. I. REPORT FOR 200-AREA AND ENVIRONS FOR WEEK ENDING APRIL 27, 1945.

INV. 9-47

A - The T Plant

1. Statistics:

Surveys for Special Work Permits	107
Other Routine and Special Surveys	75
Smear samples for alpha counts	750
Precipitron samples	13

2. The Canyon Building (221-T):

Activity was discovered at Section 4 of the pipe gallery where a dosage-rate of 120 mr/hr was measured. Improper installation had resulted in a slight syphon effect which is being corrected. All similar installations will be inspected.

3. The Control Laboratory (222-T):

The weekly check indicated a maximum gamma ray dosage-rate of 15 mr/hr on the sample shelves. A minor spot of alpha particle contamination (20,000 dis/min) was located on the sample bench. One spill in the laboratory splashed active liquid on a man's coveralls. The clean-up was immediate and very thorough.

69 smears in the laboratory all gave readings below 150 dis/min, reflecting the continued freedom from contamination in this area.

1124118

[redacted]

4. Concentration Building (224-T):

A reading of 200 mr/hr was obtained outside the C-4 tank. The maximum reading on a PR container was 39 mr/hr. Such levels call for increased consideration of the hazards of penetrating radiation in this area.

5. Stack Monitor (292-T):

The calibration of the Xenon chamber previously used has been found to be incompatible with the energetics of the case. Quoted activities prior to this date should be increased by a factor of 2.8.

Typical current readings are:-

	Xe^{133}	I_2^{131}
Maximum stack concentration	7×10^{-10} curie/cc	3×10^{-9} curie/cc
Average emission per ton of metal	453 curies	700 curies

The calculated emission of this metal was 460 curies Xe, and 1130 curies I_2 per ton.

B - The U Plant

No measurements were made this week.

C - The B Plant

1. Statistics:

Surveys for Special Work Permits	198
Other routine and Special Surveys	112
Smear Samples for alpha counts	55
Precipitron samples	8

2. The Canyon Building (221-B):

The general condition of the samplers with respect to radiation hazard has remained good. Contamination of the samplers is recorded in terms of the dosage-rate observed with a Beckman survey meter one inch from the sampler plug. On this basis all samplers except one read 15 mrep/hr or less. The remaining sampler read 100 mrep/hr. It is currently being cleaned. The bucket yoke became contaminated (reading 300 mrep/hr) but it was easily cleaned with dilute nitric acid.

[redacted]

In order to determine whether sampling could reasonably be performed in the canyon with certain cell covers off, observations were made with various changes in Equipment piece 4-5L with the two cover blocks off of Cell 4L. With six buckets of metal in the cell, the dosage-rates were:

At Section 5	= 40 mr/hr
At Section 6	= 12 mr/hr
At Section 8	= 3 mr/hr

Sampling could very safely be done at Section 6 or any further point under like conditions.

By coincidence, contamination was found independently in the copper steam gauge line at Strainer #2 in Section 4 of the pipe gallery, exactly as in the T Plant. In this case the maximum dosage-rate was 2.5 mr/hr. The origin of the contamination was presumably the same as found in the T Plant.

5. The Control Laboratory (222-B):

A large container for the individual waste containers in the sample storage room (#1) gave 300 mrep/hr in contact with the side. A re-arrangement of the inner containers reduced the reading to 40 mrep/hr. Modified plans for storage will presumably be applied. Gamma ray dosage-rate in the same room from samples on the lead lined shelves was 16 mr/hr.

The dosage-rate at the benches in front of the two covered stainless steel 'hot' sinks is rather consistently 5 mr/hr.

An isolated spot of product contamination (34,000 dis/min) was found on sample handling tongs.

4. The Concentration Building (224-B):

Readings against the tank C-4 are taken routinely for the Technical Department. They have some H.I. interest in anticipating possible gamma ray hazards in the building. Readings at a standard reference point were:-

Batch 1.P	28 mr/hr
B-1	150 mr/hr
B-2	145 mr/hr
B-3	77 mr/hr

A leak at the flange on the exhaust side of the D-3 to D-1 jet gave Sandy readings $>$ 60,000 dis/min. Cleaning reduced the reading to 11,000 dis/min. Another leak in the A-2 to A-3 effluent line indicated $>$ 100,000 dis/min.

The gamma-ray dosage-rate around a typical PR vessel (Batch B-1 material) was 8 mr/hr.

7-1115

5. Waste Disposal System (Z41-B):

Daily surveys of the risers from the underground storage tanks are being made until it becomes convenient for S Dept. personnel to make the tests.

A concrete plug removed from the tank 361 was uncontaminated.

D - 200-N Areas

Contamination not presenting any current health problems was found on miscellaneous items in the 212P and R Buildings,

e.g. Wrench socket for cask lids, slug grabber, funnel on Counting Rate meter, Mercoid switch on same, floor drain.

The highest recorded dosage-rate was 0.8 mrep/hr

E - The Isolation Building (231)

1. Air Monitoring

11 Little Sucker samples of 48 hours duration all showed average concentrations of 4×10^{-12} µg Pu/cc or less in the laboratories, 3 continuous samples of the filtered hood air showed less than 4×10^{-13} µg Pu/cc.

14 Precipitron samples all indicated concentrations of 4×10^{-11} µg/cc or less.

26 Cueenie samples were distributed:

14	$= 10^{-11}$ µg/cc
9	10^{-11} to 2×10^{-11} µg/cc
3	2×10^{-11} to 5×10^{-11} µg/cc

2. Surveys

ZONE	LOCATION	SANDY OR POPPY READINGS (Dis/min)
Operations:	None	None
Analytical:	Valve handle	5000
Technical:	4 items of laboratory equipment	10,000 each
	floor spot	15,000

Smears: 192 in hoods - 22 readings >100 dis/min
518 elsewhere - 13 readings >100 dis/min

Transfer Vessels:

Vessels	No.	Surface Contamination dis/min	SMEARS -(dis/min) <100	100-1000	>1000
RCs into process hood	19	None	113	12	0
RCs out	20	10,000 top	93	14	3
PRs in	5	15,000 cross bar 6,000 inside rim	23	13	3
PRs out	5	8,000 top	21	3	1

3. Equipment

The cable on Poppy has been shortened to 8 feet. In this form the instrument is very stable, has 15% geometry and is extremely versatile.

F - Site Survey

1. Water and Waste Monitoring

No significant change.

2. Air Monitoring

Integrons in the 200 Areas show average readings of 0.35 mr/hr. In the 100 Areas the average is 0.10 mr/hr. The difference may be real and representative of stack gas irradiation in the 200 Area.

Sage brush in the active ground ellipse (T Plant) contains 0.02 μc I_2/gm.

Exposed paper surfaces collect 4×10^{-4} μc I_2/cm^2.

Smear counts up to 1000 counts/min. at estimated 100% geometry have been obtained from the group of buildings close to the 200-W gate. Oiled paper in the same region gave 10,000 counts/min.

G - General

No apparent pencil reading was confirmed by a badge reading. No badge reading over 100 mrep occurred in the area.

H. M. Parker

H. M. Parker, Chief Supvr.
Health Instrument Section.

HMP:swc

Copy #1 - W. C. Kay - K. W. Millett
#2 - F. B. Vaughan
#3 - J. E. Cole
#4 - L. L. Larson
#5 - L. Squires
#6 - S. T. Cantril - H.I.File
#7 - H. M. Parker
#8 - C. M. Patterson
~~#9 - P. W. Crane - 700 Area file~~
#10 - D. M. Smith - 300 Area file
~~#11 - Yellow copy~~
#12 - Pink copy

To: W. C. KAY, SUPERINTENDENT
S DEPARTMENT

May 8, 1945.

#17

H. I. REPORT FOR 200-AREA AND ENVIRONS FOR

WEEK ENDING MAY 4, 1945.

A - General Statistics

	T-Plant	U-Plant	B-Plant
Surveys for special work permits	64	0	193
Other routine and special surveys	122	1	173
Smear samples for Alpha counts	771	104	95
Air monitoring samples *	18	1	12

B - The T Plant

1. Canyon Building (221-T):

Measurements of the activity at standard reference points in the pipe gallery have been made since March to study the effective half life of the contamination there. The readings rose slightly this week and then jumped sharply. It was suspected that slight additional suckbacks were occurring, and this was confirmed by the sharp rise later. This effect and the type of suckback described last week are being analyzed by Operations.

Contamination giving a dosage rate of 500 mrep/hr was found on a bucket yoke after charging.

2. Control Laboratory (222-T):

Contaminated spots inside hoods contained about 1 μg and 3 μg of product respectively. A sampling bench had 0.3 μg, and a laboratory bench the barely detectable amount of 0.03 μg. A sampling trombone was contaminated

* All measured concentrations were below 10^{-11} μg Pu/cc.

1124123

with 0.3 µg Pu. (all alpha contamination was assumed due to product). Plans were made to modify the handling of waste containers in Room 1, when it was found that dosage rates up to 750 mrep/hr could be observed around them.

A sampling spill on the hands of a technician furnished good evidence of the efficacy of the present decontamination methods. Fission product activity was removed first by the titanium dioxide paste, and then the high product activity was removed by the permanganate method (decontamination factor was 300).

3. Concentration Building (224-T):

All cells were in good condition with the usual quota of minor spots of product contamination. Standard readings against the C-4 tank were:-

Batch	Reading mr/hr
B-8	55
D-9	72
D-10	185
D-11	190

The maximum readings, up to 260 mr/hr occur at the lower part of the tank.

Dosage rates around PR containers were:-

PR No.	Batch	Sides	Bottom
5	B-7	14 mr/hr	30 mr/hr
5	BR-1	4 mr/hr	7 mr/hr
3	B-8	15 mr/hr	not read
2	D-9	27 mr/hr	52 mr/hr

Smear results were:-

	SMEAR READINGS (dis/min)			
	$<10^2$	10^2-10^3	10^3-10^4	10^4-10^5
PR vessels in	11	1	--	--
PR vessels out	6	10	3	1
RC vessels in	117	38	14	1
RC vessels out	128	43	6	--

4. Fan House (291-T):

The dosage rate at the reference point rose to 530 mr/hr. The reporting index will be raised to 1000 mr/hr.

7-1115

C - The U Plant

1. Control Laboratory (222-U):

The laboratory was free from product contamination. The highest dosage-rate was 42 mrep/hr near a carton of contaminated waste.

D - The B Plant

1. Canyon Building (221-B):

The samplers caused some concern, by giving readings up to 120 mr/hr. Cleaning of the sampler plugs normally reduced the reading by about one half. Further contamination in the pipe gallery was caused through the steam gauge lines. Connectors #44 and #83 in Section 3 were found to be active although Section 3 cells have not been used.

2. Control Laboratory (222-B):

Doorstops in the sample storage room gave readings of 18 mr/hr. A contaminated waste container gave 800 mrep/hr. As in the T Plant, the handling of such containers is to be revised. The dosage rate in front of the covered sinks in Room 7 where cleaning of sampling equipment is done ranges between 30 and 50 mr/hr. Only minor spots of product contamination were located.

3. Concentration Building (224-B):

The building in general showed the familiar pattern of local spots of contamination, however, a spill at the F-1 tank spread about 50 µg of product over the tank and floor. The contamination was removed, except for small spots that are still being treated.

4. Waste Disposal System (241-B):

Surveys of the risers and test wells in the disposal area showed readings up to 9 mr/hr on a Victoreen Survey Meter, close to the flanges at the top of the pipes. Beckman meters and Lauritsen electroscopes gave no reading. Such risers and wells are favorably situated to become strongly magnetized in this latitude, and this was demonstrated to be the cause of the apparent reading. The behavior of any instrument with a moving coil meter has to be watched carefully under such conditions. In general a Lauritsen electroscope would be the preferred instrument in like areas.

E - The Isolation Building (231)

1. Air Monitoring

12 Little Sucker samples of 48 hours duration indicated average concentrations not exceeding 10^{-11} µg Pu/cc. Filtered hood air samples read

1124125

up to 1.4 x 10^{-12} µg Pu/cc, a significant increase over all previous reports.

Spot samples were distributed:-

29	$<10^{-11}$ µg/cc
20	10^{-11} to 5×10^{-11} µg/cc
1	10^{-10} µg/cc

2. Surface Contamination Surveys

The Operations zone had seven items contaminated with amounts up to 0.6 µg Pu. A lead tray and a sample holder were similarly contaminated in the Analytical zone, and a sink and pipettes were contaminated in the Technical zone.

Smears: 81 in hoods - 7 readings above 100 dis/min
1155 elsewhere - 72 readings above 100 dis/min

The transfer vessels monitoring is entirely routine and it will not be reported in detail unless significant changes occur.

3. Gamma Radiation

Dosage rates at a fixed reference point with respect to sample cans were:-

Can No.	66	37	8	99	33	14	12	45	56
Mr/hr.	4	5	6	10	4	5	3.5	7	4

Readings on PR cans are in good agreement with the values initiated in the 224 Buildings:-

PR No.	2	5	3	5	1	3	4	2	2
Run No.	T504B6	TB7	BB2	TBR1	BB3	TB8	BB4	TD9	BB5
Mr./hr.	16	16	5	4	21	15	17	30	18

In Cell #3, the dosage rate outside the glass enclosure was usually in the range 4 to 7 mr/hr.

F - Site Survey

1. Water and Waste Monitoring

No significant change.

2. Air Monitoring

The activity in gas clouds at the ground has been about 1000 counts/min. on a portable scaler. An attempt to estimate stack gas dilution is to be made from such data. Stack gas activity has been measured by means of M22 chambers at distances up to 10 miles from the stack.

A typical coning condition that brought stack gas to the ground over virgin territory enabled a plot to be made of the characteristic pattern

of ground contamination. This proved to be very similar to the area SE of the T Plant Stack. It is probable that the activity there was mainly produced by coning at night rather than by the visible day looping.

3. Ground Contamination

This was not appreciably altered during the week, except by normal decay of the deposited iodine.

G - General

No apparent pencil reading was confirmed by a badge reading. No significant badge reading occurred.

H. M. Parker
Chief Supervisor
Health Instrument Section

HMP:swc

Copy #1. - W. C. Kay - K.W.Millett
#2. - F. B. Vaughan
#3. - J. E. Cole
#4. - L. L. Larson
#5. - L. Squires
#6. - S.T.Cantril - H. I. File
#7. - C.C.Gamertsfelder-H.M.Parker
#8. - C. M. Patterson
~~#9. - R. W. Crane - 700 Area file~~
#10. - D. M. Smith - 300 Area file
~~#11. - Yellow copy~~
#12. - Pink copy

7-1115

May 12, 1945.

TO: W. C. KAY, SUPERINTENDENT
S DEPARTMENT

#18

H. I. REPORT FOR 200-AREA AND ENVIRONS

FOR WEEK ENDING MAY 11, 1945.

A. GENERAL STATISTICS

	T	U	B
Surveys for special work permits	57	0	182
Other routine and special surveys	194	2	170
Smear samples for α counts	634	66	85
Smear samples for B, γ counts	61	66	--
Air monitoring samples (*)	19	1	13

B. THE T PLANT

1. Canyon Building (221-T)

Additional suckbacks from 9-1 to 241 jet have occurred which spread contamination through the bleeder line from the gang manifold to the operating gallery. The open end of the bleeder read 125 mrep/hr. and the wall behind the panel board read 100 mrep/hr. Smear readings indicated all B, γ contamination with no product.

Readings taken in Section 9 of the pipe gallery showed slight changes during the week, dropping about 6% from a level of about 50 mrep/hr.

Sampler 8-4 in the canyon was checked and gave 1000 mrep/hr. This was cleaned up. The other samplers were less than 200 mrep/hr.

* All less than 10^{-11} μg Pu/cc except one at 5×10^{-11} μg Pu/cc from F cell balcony in the T Area.

1124128

2. Control Laboratory (222-T)

The sample shelves had a maximum of 8 mr/hr. 59 smears had less than 100 dis/min., one smear on an electric furnace had 120 dis/min., and one from the incoming sample bench had 337 dis/min.

3. Concentration Building (224-T)

The flanges of the PR line from F-2 to F-10 were highly contaminated as was the PR line trough. About 1 mg was found on one flange. These are being cleaned.

The floor in front of the F-10 room enclosure has one large spot with about 50 mg of product. This is being cleaned by Operations. Repainting of the floor here will probably be necessary.

The maximum reading on a PR container was 52 mr/hr. on container #4 containing batch T-504-B1.

The maximum reading on the C-4 tank at the standard position was 165 mr/hr. after batch 3-3.

C. THE U PLANT

1. Control Laboratory (222-U)

About one half of a solution containing 100 milligrams of products was spilled. Fortunately it was spilled in a hood in Rm. 7 and the greater part of it was on a glass plate, which facilitated the clean-up job. A "Little Sucker" had been set in front of this hood the day before, and it showed no abnormal concentration of product in the air.

D. THE B PLANT

1. Canyon Building (221-B)

Measurements were made which showed that the greater part of the radiation from the samplers came from the underside of the sampler caps. New lead caps with about 1 inch of lead on top are being made to replace the 3/8 inch ones now used.

Connector 31 section 8 in the pipe gallery is contaminated although it is not being used.

2. Control Laboratory (222-B)

A bayonet sampler gave 30 mrep/hr.

The stainless steel covered sinks in room 7 gave a reading of 50 mr/hr.

A shelf for prepared samples gave 28 mr/hr.

No product contamination was found.

DECLASSIFIED

7-1115

3. Concentration Bldg. (224-B)

The maximum reading on a PR container was 49 mr/hr.

The top of tank C-4 is badly contaminated with product. The amount is undetermined but is on the order of several μg.

The flanges on the F-1 to F-2 line are contaminated.

4. Waste Disposal System (241-B)

On 5/6/45, a reading of 18 mrep/hr was obtained at the vent from the 107 tank. Visible fumes were coming from the vent.

5. Fan House (291-B)

Readings on the center fan have risen to 550 mr/hr.

E. THE ISOLATION BUILDING (231)

1. Air Monitoring

12 Little Sucker samples taken in the laboratories showed no concentrations greater than 8×10^{-12} μg Pu/cc.

The hood exhaust showed readings up to 4.9×10^{-12} μg Pu/cc. Highest previously reported was 1.4×10^{-12} μg Pu/cc, last week.

Spot samples were:

47	$< 10^{-11}$ μg Pu/cc
8	10^{-11} to 5×10^{-11} μg Pu/cc
4	$> 5 \times 10^{-11}$ μg Pu/cc. These were 8×10^{-11} over contaminated floor in cell 4 and 6×10^{-11} during cleanup of this floor, and 1.1×10^{-10} at center of cell 3, with 1.1×10^{-9} at sampling location in cell 3.

2. Surface Contamination Surveys

A notebook, a valve handle, and a metal file found in desk drawers in the Operations zone were contaminated. The floor, bench sink, and table in cell 4 are very highly contaminated in several places. The Analytical zone had contaminated cork and plastic stoppers, sample holders. 4 contaminated pipettes in storage, stirrers and a beaker in a cabinet were found in the Technical zone.

Smears: 27 in hoods - 6 above 100 dis/min.
828 elsewhere - 62 above 100 dis/min.

4 pair of shoes were found to be contaminated after a spill in the Analytical section was found to have contaminated a larger area than at first supposed.

7-1115

3. Gamma Radiation

Dosage-rates at fixed reference point on sample cans were:-

Can no.	57	58	69	60	61
Mr/hr.	9	7	7	8	6

Readings on PR cans were:-

Run no.	B-504-D6	TD-10	TBD-2	TD-11	BD-7	BD-8	TD-12
Mr/hr.	23	22	4	24	24	18	14

Run no.	BD-9	T-505-B-1	B-505-B-1	T-505-B-2
Mr/hr.	13	24	16	18

4. Assault Mask Filters

Three cannisters exposed in the 244-T Building were dismantled. About 1/3 of the total of each filter was counted. Each filter consists of two sections in series. Results were:-

Cannister No.	First Section	Second Section
1	114 dis/min.	0 ± 1 dis/min.
2	480 dis/min.	0 ± 1 dis/min.
3	52 dis/min.	0 ± 1 dis/min.

This seems to indicate a rather efficient filter.

F. SITE SURVEY

1. Water and Waste Monitoring

No significant change.

2. Air Monitoring

No measurements indicating active air near the ground were obtained.

3. Ground Contamination

Ground contamination has diminished, the highest reading found was 1.25 mr/hr. southeast of the T-Plant stack. Readings of 0.1 mr/hr. were found southeast of the B-Plant stack.

G. GENERAL

No apparent pencil reading was confirmed by a badge reading. No significant badge reading occurred.

C.C. Gamertsfelder

C.C.Gamertsfelder, Sr. Supv.
Special Studies - H.I.Section

CCG:swc

1124131

Copy #1 - W. C. Kay - K. W. Millett
#2 - F. B. Vaughan
#3 - J. E. Cole
#4 - L. L. Larson
#5 - L. Squires
#6 - S. T. Cantril - H. I. File
#7 - C.C.Gamertsfelder-H.M.Parker
#8 - C. M. Patterson
#9 - P. W. Crane - 700 Area file
#10- D. M. Smith - 300 Area file
#11 - Yellow copy
#12 - Pink copy

May 21, 1945.

TO: W. C. KAY, SUPERINTENDENT
S DEPARTMENT

#19-

H. I. REPORT FOR 200 AREAS AND ENVIRONS

FOR WEEK ENDING MAY 18, 1945

A. GENERAL STATISTICS

	T	U	B
Surveys for Special Work Permits	85	0	195
Other surveys	137	2	208
Smear samples for α counts	500	80	301
Smear samples for B, γ counts	130	80	---
Air Monitoring Samples *	12	8	8

B. THE T PLANT

1. Canyon Building (221-T)

Contamination was found in Section twelve in the operating gallery. A reading of 40 mr/hr was obtained at the bleeder line from the gang valve manifold which supplies steam to the 12-8 to 12-7 jet. This jet has not been used but the process valve was found to be open.

The 14-1 to 14-2 jet assembly was moved from 14 R to 11 R so that an obstruction in the jet could be removed. A maximum reading of 400 mr/hr was obtained on the discharge side of the jet.

* All samples less than 10^{-11} μg Pu/cc except one at 3×10^{-11} in front of F-10 in the 224-B

2. Control Laboratory (222-T)

The sample receiving bench gave 12 mrep/hr. One spot on this bench, about one inch square had 10,000 dis/min.

A sampler wiper, a brass ring stand, a pair of tongs and a pair of tweezers had between 10,000 and 40,000 dis/min.

Each of 69 smears had less than 100 dis/min.

3. Concentration Building (224-T)

39 RC chambers were checked. All outgoing containers had less than 2000 dis/min.

The checking of all process containers is being taken over by Operations.

Dosage-rates on the C-4 tank and PR containers were:-

Batch No.	C-4 tank	PR No.	Side (PR)	Bottom (PR)
B-3	165 mr/hr	5	5 mr/hr	15 mr/hr
B-4	70 mr/hr	4	15 mr/hr	30 mr/hr
B-5	120 mr/hr	1	9 mr/hr	15 mr/hr
D-6	120 mr/hr	3	27 mr/hr	50 mr/hr
D-7	110 mr/hr	1	20 mr/hr	40 mr/hr
BR-1	--	5	4 mr/hr	8 mr/hr

4. Stack Monitor (292-T)

A reading of 290 mr/hr was found at the base of the gas filter. The activity of this filter has built up quite rapidly during recent runs, so that frequent changes are necessary.

241-T

A reading of 11 mr/hr was obtained over the 101 tank thermometer well during the installation of a new thermometer.

C. THE U PLANT

1. Control Laboratory (222-U)

The sample shelves in room 1 read 30 mr/hr. In room 6, a pair of tweezers had 5000 dis/min. and a flask had 30,000 dis/min.

An opening in a lead shield in room 3 gave 76 mrep/hr.

D. THE B PLANT

1. Canyon Building (221-B)

The general level of radiation from samplers was quite low. One contaminated spot near the 9-1 sampler was found, it gave 32 mrep/hr at a distance of four

inches. This spot was cleaned, using Bon Ami, so that no contamination was detectable.

2. Control Laboratory (222-B)

A tray of rubber gloves on the sample receiving bench in room 7 read 5 mrep/hr.

The end of a pair of tongs had a reading of 20,000 dis/min.

One minor injury occurred with very slight contamination of the glove which was worn at the time.

3. Concentration Building (224-B)

Product contamination was found on the exhaust side flange of the A-1 to A-2 jet. Indications are that the gasket leaks have been found so the gasket is to be replaced. Numerous small spots of product contamination are being found.

E. 200 NORTH AREA

1. 212-P

Three empty slug buckets on the operating platform were found to be contaminated. The highest readings, found near the bottom of the buckets, were:-

Bucket No.	Reading
151	66 mrep/hr
244	12 mrep/hr
294	60 mrep/hr

F. THE ISOLATION BUILDING (231)

1. Air Monitoring

16 Little Sucker samples taken in the laboratories indicated average concentrations not exceeding 4×10^{-12} μg Pu/cc.

2 Little Sucker samples taken in the cells showed concentrations of 4×10^{-11} and 2×10^{-11} μg Pu/cc.

The highest value obtained on the filtered air hood samples was 7×10^{-13} μg Pu/cc.

Other samples taken at other places in the exhaust system had values (in μg Pu/cc):-

3-E outlet	4-E outlet	Cell 1 Bank	6-B outlet	6-C outlet	6-C centrifuge
5×10^{-11}	8×10^{-12}	Less than 10^{-12}	3×10^{-12}	10^{-12}	5×10^{-12}

Rm 41-outlet
7×10^{-12}

Spot samples were distributed:-

45	less than 10^{-11} µg Pu/cc
26	10^{-11} to 5×10^{-11} µg Pu/cc
1	1.3×10^{-11} µg Pu/cc
1	5×10^{-10} µg Pu/cc (taken in cell 4)

2. Surface Contamination Surveys

Smears: 52 in hoods - 5 readings above 100 dis/min.
538 elsewhere - 20 readings above 100 dis/min

Sandy and Poppy Readings:

Zone	Dis/min.	Location
Operations	10,000	Rubber bulb
	10,000	Sample carrier base
	5000 to 10,000	Four floor spots.
	7,000	Sample hole area
	30,000	Sample hoist
Analytical	25,000	Floor spot
	30,000	Floor spot
	5,000	Floor spot in office (room 29)
Technical	Taken with Poppy	Porcelain tray Rubber dropper

3. Gamma Radiation

Readings on all PR containers were less than 30 mr/hr. The sample cans gave dosage-rates between 4 and 8 mr/hr.

G. SITE SURVEY

1. Water and Waste Monitoring

Some slight indications of activity were found in the test holes in the 241-T tank farm. The air condensers and standpipes gave readings of 20 mrep/hr and 15 mrep/hr.

2. Air Monitoring

No significant changes.

3. Ground Contamination

Following the rainstorm during the dissolving in the T Plant on the 8-12 shift on May 12, there were several brown colored puddles of water which gave up to 1 mrep/hr. Some of this water was taken near the 221-Building, was evaporated and counted. This water contained about 10^{-6} curies/cc.

A smear survey was made on the meteorology tower with the following results on a beta counter:-

Tower level		
50 ft.	20	counts/min
100 ft.	387	"
175 ft.	440	"
200 ft.	1109	"
250 ft.	790	"
300 ft.	503	"
350 ft.	1175	"

H. GENERAL

No apparent pencil reading was confirmed by a badge reading.

No significant badge reading occurred.

C. C. Gamertsfelder

C. C. Gamertsfelder
Sr. Supervisor
Health Instrument Section

CCG:swc

1124136

91

2-169#

Copy #1 - W. C. Kay - K. W. Millett
#2 - F. B. Vaughan
#3 - J. E. Cole
#4 - J. J. Urban
#5 - L. Squires
#6 - S. T. Cantril - H. I. file
#7 - H. M. Parker
#8 - C. M. Patterson
~~#9 - P. W. Crane - 700 Area file~~
#10 - D. M. Smith - 300 Area file
~~#11 - Yellow copy~~
#12 - Pink copy

7-1115

May 28, 1945.

TO: W. C. KAY, SUPERINTENDENT
S DEPARTMENT

THIS DOCUMENT CONSISTS OF 6 PAGES
No. 10 OF 12 COPIES, SERIES A

#20 - H. I. REPORT FOR 200 AREAS AND ENVIRONS

FOR WEEK ENDING MAY 25, 1945

INV. 1-47

A. GENERAL STATISTICS

	T	U	B
Surveys for Special Work Permits	113	0	224
Other routine and Special Surveys	119	1	~~203~~
Smear samples for alpha counts	450	50	~~161~~
Smear samples for beta counts	322	50	--
Air Monitoring Samples	20 *	4 *	8

B. THE T PLANT

1. Canyon Building (221-T)

In taking a sample from the 13-3 sampling port a blow occurred when the air valve was turned on. The canyon deck and the survey instrument were contaminated to an original dosage-rate of 750 mrep/hr. This was cleaned down to 40 mrep/hr.

A survey of the sampling ports at the arbitrary distance of 1" gave the following readings:-

Port	Beta + Gamma Dosage-Rate (mrep/hr)	Gamma Dosage-rate (mr/hr)
8-1	54	30
8-3	17	5
8-4	20	5
12-7	3	2.5
13-3	44	1.5
13-4	110	28
15-7	2.5	<1

* All showed less than 10^{-11} μg Pu/cc

1124137

A bucket yoke gave readings of 750 mrep/hr., of which 150 mr/hr was due to gamma radiation.

2. Control Laboratory (222-T)

A dosage-rate of 800 mrep/hr (beta + gamma) and 52 mr/hr (gamma) was observed outside a cardboard waste carton.

Product contamination of 41,000 dis/min was found on a cleaned bayonet sampler and 10 spots of minor contamination were located on "candle snuffers". A revised method of decontamination of such items is being prepared by the laboratory supervision.

In Room 6 about 0.5 γg Pu was located on blotting paper on a bench top, and a like amount on an equipment tray.

The sample receiving bench gave a maximum Sandy reading of 40,000 dis/min.

Of 96 smears taken in the laboratory, only one indicated more than 100 dis/min. product contamination and only two gave more than 100 beta counts per min.

A spill occurred at the primary solution bench when a 10 ml. flask containing 8-1 MR sample solution at 100:1 dilution escaped from the sample holder. The chemist concerned received splashes on his coveralls and shoes, but was found to be free from personal contamination. The spill on the floor originally registered 500 mrep/hr. It was cleaned to satisfactory levels with the exception of one inaccessible spot that was covered by a wooden block. Such a method is considered acceptable provided that the added piece is distinctively colored to indicate that it is serving as a radiation shield.

3. Concentration Building (224-T)

The gamma radiation around PR#3 on batch B-8 was measured as follows:

Location	DOSAGE-RATE AT Contact	1-Foot	2-Feet	6-Feet
Side of container	94 mr/hr	26 mr/hr	13 mr/hr	2.5 mr/hr
Bottom of container	156	55	28	not read
Side of jacket	42	17.5	10	2.5

Typical dosage-rates in the cells were:-

Date	Location	mr/hr
5/22/45	C-4 tank	100
	A-4 tank	26
5/23/45	C-4 tank	28
	A-4 tank	100
5/24/45	F-2 centrifuge	18
	C-4 tank	24
5/25/45	D-4 tank	28

No unusual spots of product contamination have been reported.

C. THE U PLANT

1. Control Laboratory (222-U)

No product contamination detectable by means of Sandy was observed. Of 50 smears, 9 read more than 100 dis/min, and none read more than 1000 dis/min. No significant beta counts were found by smears. A dosage-rate of 11 mr/hr was found at the sample shelves in Room 1. A sample in a hood in Room 7 gave 70 mrep/hr at 1" distance.

D. THE B PLANT

1. Canyon Building (221-B)

Thicker lead caps on the samplers were found to decrease the dosage-rate by a factor of 2. No trouble was experienced in the canyon other than the radiation in the vicinity of the samplers, which was as high as 55 mr/hr (gamma) in one case.

2. Control Laboratory (222-B)

The general condition of the laboratory was very good with only a few spots of product contamination (up to 18,000 dis/min) located. The dosage-rate at the sample shelves in Room 1 was 15 mr/hr.

3. Concentration Building (224-B)

The contamination reported last week on the exhaust side of the A-1 to A-2 jet was removed after the gasket had been replaced. The following contamination was noted:-

Location	Extent	Sandy Reading	Total
Floor between A-1 and overflow line	100 sq.in.	18,000 dis/min	1 μg
Top of D-1	--	46,000	--
Door of F-10	spot	8,000	0.06 μg.
Door of F-10.	spot	20,000	0.14 μg.
Flanges F-1 to F-2 line (after cleaning)	spot	7,000	0.05 μg.

Gamma ray readings in the building have increased, but not to levels that cause immediate concern. The dosage-rate near the F-2 tank was 7 mr/hr, and at the base of the D-4 tank it was 28 mr/hr. The maximum reading on the bottom of a transfer vessel was 153 mr/hr. Two precipitron samples were taken over the clothes hampers in the F-10 room. One read 2×10^{-11} μg Pu/cc and the other 2.1×10^{-10} μg Pu/cc. All other air samples indicated less than 10^{-11} μg/cc.

4. Waste Disposal System (241-B)

At tank #101, the gamma ray dosage-rate was 14 mr/hr near the reflux condenser tubes. Fumes were detected at the opening of the T-vent at

tank #107, and a dosage-rate of 22 mrep/hr was measured there, presumably due to activity carried in the fumes.

E. 200-NORTH AREA

1. Metal Storage Basin (212-P)

The dosage-rate was not greater than 1 mrep/hr at any measured point.

2. Metal Storage Basin (212-R)

Empty slug buckets #49 and #87 gave respectively 54 and 400 mrep/hr.

F. THE ISOLATION BUILDING (231)

1. Air Monitoring

15 Little Sucker samples taken in the laboratories indicated average concentrations not exceeding 4×10^{-12} µg Pu/cc, with one exception that read 3×10^{-11} µg/cc.

8 samples in the Cells all registered less than 4×10^{-12} µg/cc.

4 tests on the 903 Fan Inlet gave a maximum reading of 10^{-12} µg/cc.

62 spot samples in the Cells and laboratories indicated no average concentration in excess of 10^{-11} µg/cc.

21 spot samples on the filtered air system showed no value in excess of 9×10^{-11} µg/cc. This was again on the 3E filter outlet.

2. Surface Contamination Surveys

A very high level spill was discovered during a routine survey of Room 34 (analytical control laboratory) on the 4-12 shift on 5/21/45. The floor in an aisle between two hoods was highly contaminated and a stool showed visible liquid droplets as well as off-scale Sandy readings. The contamination had been tracked about Rooms 33, 34 and 35. Shoes of men on the 4-12 shift gave readings between 50,000 and 100,000 dis/min. Similar levels were then found on the shoes of the 8-4 shift and none on other shoes. Evidently the spill had occurred on the 8-4 shift on 5/21/45. However, no explanation of the spill has been found as the 8-4 shift observed no circumstances likely to cause such an incident. No unusual hand contamination was recorded despite the contamination on the floor and rather surprising amounts on the valve handles at the analytical group's hand and glove decontamination station.

This occurrence is the most disturbing since the inception of the 231 Building program. If such spills can occur without the knowledge of the men concerned the existing concept of safe practices will have to be completely revised. It would only be possible to ensure safe operation if each man at all times wore a positive pressure mask and complete clothing protection.

7-1685

7-1115

Sandy or Poppy readings were as follows:-

Zone	Location		dis/min
Operations	Cell 3 - sampling area		2000
	Cell 4 - sampling device		100000
	bench, light switch		10,000-30,000
	stopper, rubber gloves		
	Room 6C - 2 tools		20,000
	bottle		5,000
Analytical	Room 31	floor	20,000
		edge of hood	10,000
	Room 34	floor, stool	>100,000
	Room 35	granite bench sink	>100,000
		tweezers	>100,000
	Room 33	Valve handle at sink	75,000
Technical	Stirring rod, pipette beaker, sample holder, rubber glove, leather glove bottles		2,000 to 5,000
Solution Prep.	3 bottles		2000 to 5000
Corridors	C corridor		9,000

Smear tests: 15 in hoods - 3 readings above 100 dis/min.
1305 elsewhere - 219 readings above 100 dis/min.

3. Gamma Radiation

Dosage-rates at the side of the PR vessels were:

Run	mr/hr	
T-505 D7	21	
B-505 D9	29	
B-505 B10	85	
B-505 B11	80	
T-505 B8	120	(Lauritsen reading, probably high)

The maximum readings in the cells (against the process hood) were 17 mr/hr in P-1, and 28 mr/hr in AT.

Sample containers read as follows at the reference point:-

No.	84	85	67	86	88	89	19	20	23
mr/hr	10.1	5.2	11.0	6.8	7.3	8.7	9.0	7.0	5.0

The dosage-rate on #88 fell from 10.1 to 7.3 mr/hr in 2.3 days, from which it can be deduced that approximately one-half the original activity was due to Np.

G. SITE SURVEYS

1. Water and Waste Monitoring

Analysis of the weekly samples has not been completed due to delay in equipment replacement. The report will be available next week.

Readings in the various ditches have shown little change except for an increase to 0.65 mrep/hr in the 200-R ditch.

2. Air Monitoring

The measuring stations continue to be moved farther and farther from the stacks, but at each location the reading is due to ground contamination by deposited iodine rather than to atmospheric radintion. A station 3.5 miles S.E. of the 221-B stack has shown an increase from 0.02 to 0.20 mrep/hr during the week. The increase at a point 8 miles S.E. of the stack was from 0.01 to 0.04 mrep/hr. A concentration of $\sim 10^{-16}$ μc/cc of I_2 was observed in Richland. All air filters on air conditioning systems act as collectors for the iodine in the air, and activity has been observed on all the filters tested. This hazard deserves more study, although the security aspects are obviously troublesome.

Rain fell during one dissolving, and samples were collected at distances up to 2500 feet from the stack. The maximum concentration of radioactive iodine was found to be $\sim 1.3 \times 10^{-5}$ μc/cc.

3. Ground Contamination

The contaminated zone in the 200-W Area extends between a line N 30° E and a line S 30° E from the stack. The maximum activity is in the direction S 45° E. The total ground activity is estimated to be ~ 50 curies I_2. There has been no significant change in the levels of ground contamination.

H. GENERAL

No apparent pencil reading was confirmed by a badge reading, and no significant badge readings occurred. Many badges in the area are contaminated, probably by iodine deposition in many cases, but at present the direct effect on the film is negligible.

H. M. Parker oc
H.M.Parker, Chief Supv.
Health Instrument Section

HMP:swc

7-1711

Copy #1 - W. C. Kay - K. W. Millett
#2 - F. B. Vaughan
#3 - J. E. Cole 7-1115
#4 - J. J. Urban
#5 - L. Squires
#6 - S. T. Cantril - H.I.File
#7 - H. M. Parker
#8 - C. M. Patterson
~~#9 - P. W. Crane~~ - 700 Area file
#10 - D. M. Smith - 300 Area file
~~#11 - Yellow copy~~
#12 - Pink copy

June 5, 1945.

TO: W. C. KAY, SUPERINTENDENT
S DEPARTMENT

THIS DOCUMENT CONSISTS OF 6 PAGES
No. 10 OF 12 COPIES, SERIES A

#21 - H. I. REPORT FOR 200 AREAS AND ENVIRONS

FOR WEEK ENDING JUNE 1, 1945

A. GENERAL STATISTICS

	T	U	B
Surveys for Special Work Permits	92	2	136
Other routine and Special Surveys	177	1	208
Smear samples for alpha counts	495	30	54
Smear samples for beta counts	320	30	-
Air Monitoring Samples	21	4	17

B. THE T PLANT

1. Canyon Building (221-T)

Dosage-rates near the sampling ports were:-

Port	Gamma Radiation	Beta + Gamma
8-1	42.0 mr/hr	100.0 mrep/hr
8-3	7.0	22.0
8-4	7.5	9.0
12-7	3.0	3.5
13-3	1.5	54.0
13-4	27.0	114.0
15-7	1	3.5
16-4	1	3.5

A survey of the Canyon roof with a bucket of metal suspended over Cell 4-L indicated no dosage-rate higher than 1 mr/hr.

In the crane cabway, with Cell 4-L open, the dosage-rate was 100 mr/hr, opposite Section 4, and 5 mr/hr over the railroad tunnel. With the crane in the latter position, the highest reading on the crane bridge was 17.5 mr/hr. The 25-r pencil was installed on the crane under these conditions.

2. Control Laboratory (222-T)

Five small spots of product contamination were detected and suitably handled. Of 80 smears taken, only 5 showed significant alpha contamination, and no high beta counts were recorded. 17 air samples all showed concentrations below 10^{-11} g Pu/cc, the limit of resolution of the method.

A waste carton producing a dosage-rate of 60 mr/hr was safely removed.

3. Concentration Building (224-T)

The F cell tanks and flanges were found to be considerably contaminated this week. Several smears each containing 0.5 g Pu were obtained.

The dosage-rate outside PR containers ranged between 50 and 85 mr/hr at the side, and 100 to 160 mr/hr at the bottom.

4. Waste Disposal Area (241-T)

There was no significant change in the activity in and around the Retention Basin. A dosage-rate of 30 mr/hr was observed at the base of the #1 condenser on the #101 tank.

5. Fan House (291-T)

The dosage-rate at the reference point #3 exceed the reporting limit of 1000 mr/hr. There seems to be no point to further records of this activity, provided that access to the Area is properly restricted.

C. THE U PLANT

1. Control Laboratory (222-U)

The maximum gamma ray reading was 6 mr/hr at the sample shelves. Two small spots of product contamination were noted. No significant activity, either beta or alpha, was found on the 94 smears taken.

D. THE B PLANT

1. Canyon Building (221-B)

The maximum radiation from the capped samplers was 40 mr/hr at the 13-4 sampler. A waste can at Section 3 of the Canyon registered 60 mr/hr.

2. Control Laboratory (222-B)

No product contamination was found in the weekly H.I.survey, due to careful removal of the small spills located by laboratory personnel. No high gamma ray activity was reported.

3. Concentration Building (224-B)

The region around the agitator shaft on D-1 was contaminated to off-scale Sandy readings. Cleaning reduced the level to about 30,000 dis/min. The E-1 tank became similarly contaminated. The flange on the exhaust side of the F-1 to F-2 jet remained contaminated at a level of 10,000 dis/min. A spot containing about 3 ~~/~~g. of product was found on the F-10 sill. It was completely removed. Dosage-rates at the bottom of PR cans were 180 and 210 mr/hr. Atmospheric concentration over the F-10 clothes hamper was 1.6×10^{-11} ~~/~~g Pu/cc.

4. Waste Disposal Area (241-B)

Ammonia fumes were again detected at the T vent of tank #107. The dosage-rate in the fumes was 30 mrep/hr. Radiation from the condenser tubes on tank #101 was 8 mr/hr.

E. 200-N AREA

1. Metal Storage Basin (212-P)

No dosage-rate in excess of 1 mrep/hr was recorded.

2. Metal Storage Basin (212-R)

There was no radiation above 1 mrep/hr except during the special transfer of 60 buckets of stainless steel slugs from the storage pit to the truck trailer. The dosage-rate was about 8 mr/hr at the working distance of 4 feet from the buckets.

F. THE ISOLATION BUILDING (231)

1. Air Monitoring

Sporadic air contamination of moderate degree occasionally found could not be related to specific cause.

The 903 fan inlet again gave definite contamination that has not yet been positively traced to its origin, although the filters 3E and 4E were the probable offenders.

Thirteen Little Sucker samples in the laboratories read 5×10^{-12} ~~/~~g Pu/cc or less. Of 11 cell samples, one in Cell 4 gave a low positive value (1.3×10^{-11} ~~/~~g/cc.).

Spot Samples were:-

56	$< 10^{-11}$ ~~/~~g/cc.
3	10^{-11} to 2×10^{-11}
1	6×10^{-11}
1	1.3×10^{-10}

The single high value occurred in Cell 4 in the period included in the single positive Little Sucker sample.

7-1115

2. Surface Contamination Surveys

The number of contaminated spots increased greatly in all parts of the building. The increase was due to heavier loads, and not to any relaxation of hazard control on the part of the various groups. Specific locations will no longer be reported in this series. The primary record is of course submitted to appropriate supervision daily.

Zone	Number of Checks	Readings above 5000 dis/min
Operations	950	22
Analytical	1700	75
Technical	1150	59
Miscellaneous	307 + floors	9

Smears:- None in hoods
565 Elsewhere - 36 above 100 dis/min.

3. Hand Contamination

No major changes have occurred. The performance of the Handee instruments has fallen off, due to breakdown probably caused by increased building humidity and hand moisture. Corrective measures such as local drying or preferably the addition of nylon screens have been discussed with the Instrument Department.

An employee recently released from guided work contaminated the hands, and after decontamination was found to have minor abrasions. In view of the short time involved and the not very high degree of contamination, it was felt that product absorption through the abrasion would be minimal.

4. Gamma Radiation

The maximum dosage-rates outside the process hoods have been 26 mr/hr at P-1, and 38 mr/hr at AT. Integron readings at 4 feet from P-1 have averaged 1 mr/hr.

The radiation outside PR containers was:-

Run	T-9	B-12	B-13	B-14	T-10	T-11	TER-3	B-15	B-16
mr/hr	87	80	64	58	67	34	10	130	85

The radiation at the sample can reference point was:-

Can No.	82	21	24	65	26	27	50	28	2	3	11
mr/hr	37	5	30	33	22	24	13	16	18	29	10

A very crude absorption measurement indicated that the linear absorption coefficient in lead was ~3 cm^{-1} corresponding with an average energy of 0.4 Mev.

5. Waste Disposal

The new trench system was placed in operation. The temporary pit was to be filled in and fenced off.

G. SITE SURVEY

1. Water and Waste Monitoring

No significant change.

2. Air Monitoring

Sudden wind changes brought active fumes to the ground within the plant areas on the day shifts on 5/27/45 and 5/30/45. The concentration of radioactive iodine was not accurately measured, but it was approximately 100 times the continuously tolerable value, and probably occurred with a dilution factor from the direct stack gas of between 100 and 200.

The atmospheric activity rapidly dispersed, but wherever the fumes had been, a coating of active iodine was left. Ground contamination of 0.8 mrep/hr and 2.5 mrep/hr was caused in the respective incidents. The fumes were sucked into the buildings 221 and 222 and indoor contamination was widespread. In the Control Laboratory, 222-T, the background on the four-fold hand counter rose to 17 registers from the normal of 3 to 4. The filters on all air conditioning systems functioned as iodine collectors, and became strongly active ($\sim$28 mrep/hr). Dry filters as in Room 19, 222-T, were inefficient collectors and the indoor contamination in such areas was consequently higher.

In the B-Plant, the clothing of many employees became contaminated, but no garment was found to give a contact dosage-rate in excess of 1.5 mrep/hr. This was almost the same as the plant permissible level of hand contamination (one-third of the tolerable value 4.17 mrep/hr = 1.4 mrep/hr.). As the clothing was worn 16 hours a day against 24 hours for the hands, it was considered unnecessary to withdraw the personal clothing. Activity on the hands and face was readily removed by washing.

The most probable hazards from such depositions of radioactive iodine would be those of ingestion or inhalation, both of which send iodine to the thyroid. The tolerance dosage for such effects is known better than that for any other fission product, due to its prior use in therapy. The limiting dose gives a reading of about 2000 counts per minute on the special thyroid counters provided. To date no reading in excess of 20 counts per minute has been recorded, and this was probably partially due to contaminated clothing. Nevertheless, a regular program of thyroid checks has been developed.

This special incident was largely handled by the T and B plant H. I. personnel, and has been reported under this section for summary convenience.

3. Ground Contamination

The above incident caused ground contamination as noted above. The "winter ellipses" of contamination have decayed to levels of about 1 mrep/hr.

[redacted]

7-1115

Sage brush samples were taken at every mile of every road on the Reservation. The maximum values were found between the 200-W and 200-E Areas near the Meteorology Station (480 c/m from a standard sample). A series of high counts (150 c/m) was also found north of the 200-Areas. The activity at the 100 Areas was 35 c/m, - and Richland gave also 35 c/m; with only 25 c/m at the 300 Area.

H. GENERAL

No apparent pencil reading was confirmed by a badge reading. There was no significant badge reading.

H. M. Parker sc

H. M. Parker, Chief Supervisor
HEALTH INSTRUMENT SECTION

HMP:swo

103

Copy #1 - W. C. Kay - K. W. Millett
#2 - F. B. Vaughan
#3 - J. E. Cole
#4 - J. J. Urban
#5 - L. Squires
#6 - S. T. Cantril - H. I. file
#7 - H. M. Parker
#8 - C. M. Patterson
~~#9 - P. W. Crane - 700 Area file~~
#10 - D. M. Smith - 300 Area file
~~#11 - Yellow copy~~
#12 - Pink copy

7-1115

June 11, 1945.

TO: W. C. KAY, SUPERINTENDENT
S DEPARTMENT

THIS DOCUMENT CONSISTS OF 5 PAGES
No. 10 OF 12 COPIES, SERIES A

#22 - H. I. REPORT FOR 200 AREAS AND ENVIRONS

FOR WEEK ENDING JUNE 9, 1945

A. GENERAL STATISTICS

	T	U	B
Surveys for Special Work Permits	86	0	157
Other routine and Special Surveys	150	2	188
Smear samples for alpha counts	484	74	192
Smear samples for beta counts	326	74	--
Air Monitoring samples	14	4	12

B. THE T PLANT

1. Canyon Building (221-T)

Dosage-rates near the sampling ports ranged up to 150 mrep/hr.

A small portable crane hook which gave a contact-dosage-rate of 1000 mrep/hr, including 150 mr/hr of gamma activity, was broken in attempting to straighten it. The hook was stored in Cell 1R pending further disposition. The integrated doses on the crane bridge during recent charging operations have been:

Date	Dose
5/2/45	7.0 r
5/5/45	8.0 r
5/25/45	6.3 r
5/28/45	16.0 r
5/31/45	7.2 r
6/5/45	5.5 r

If the purpose of these readings, which were made on request, is to integrate the dose that will eventually discolor the periscope lenses some simpler procedure might be discussed. Optical equipment that has been exposed to higher doses than this for ten years is still unchanged.

2. Control Laboratory (222-T)

Alpha particle contamination as measured by smears was very low and only one equipment piece gave a Sandy reading. Beta activity outside waste containers was excessively high in two cases.

3. Concentration Building (224-T)

Contamination of about 0.5 μg was found on the F-1 and F-7 samplers. Less than 0.1 μg was found on a valve handle of the F-10 enclosure, F-2 discharge flange, the E-2 centrifuge and the C-4 sampler cubicle cover. Additional contamination was located on the blanked-off PR line flange in F cell. An air sample in the vicinity indicated 5×10^{-11} μg Pu/cc. The condition was corrected by replacing the blank between the lines by a blank flange.

198 Smears in the building gave 129 results below 100 dis/min; 52 between 100 and 1000; and 17 between 1000 and 10,000 dis/min. No high beta activity was found on smears.

All air monitoring samples other than the one mentioned were at background levels.

Maximum dosage-rates at the sides and bottom of PR vessels were respectively 46 and 138 mr/hr.

4. Waste Disposal Area (241-T)

A dosage-rate of 26 mrep/hr was observed at the base of the #101 tank reflux condenser.

Buckets of steel slugs giving 250 mr/hr were safely committed to the burial ground.

C. THE U PLANT

1. Control Laboratory (222-U)

The hazards were under good control.

D. THE B PLANT

1. Canyon Building (221-B)

Part of a sample was spilled on to the absorbent paper near the 8-1 sampler, producing a dosage-rate of 2000 mrep/hr at a distance of 10". The location was readily cleaned to a reading of 32 mrep/hr at 2". Radiation close to the samplers was 56 mrep/hr at the high point, with 32 mr/hr. of gamma radiation.

2. Control Laboratory (222-B)

Alpha particle contamination measured by smears was very low. Minor contamination was measured by Sandy. Gamma radiation did not exceed tolerable values except close to sample shelves.

3. Concentration Building (224-B)

No new product contamination was detected in Cells A, C, D and E.

Some contamination was found around the F-2 centrifuge shaft and the F-1 agitator shaft. Contamination totalling several micrograms was found on the floor around the F-10 enclosure, and was readily cleaned up.

The maximum dosage-rate from a PR container was 250 mr/hr against the bottom.

4. Waste Disposal Area (241-B)

The reading against the #101 tank reflux condenser was 10 mr/hr. The active fumes from the vent of the 107 tank read between 15 and 30 mrep/hr at various times.

The activity of the retention ditch was nowhere above 0.15 mrep/hr.

E. 200-W AREA

No significant activity was located.

F. THE ISOLATION BUILDING (231)

1. Air Monitoring

The activity of the filtered hood air was low ($< 3 \times 10^{-12}$ μg/cc).

14 Little Sucker samples in the laboratories gave 13 background results and a top reading of 1.4×10^{-11} μg/cc.

16 Little Sucker readings in the cells were all close to the observational limit of 4×10^{-12} μg/cc.

56 spot checks of air contamination throughout the building showed only two readings above 10^{-11} μg/cc. These were 3×10^{-11} μg/cc in Room 40 and 6×10^{-10} μg/cc in Cell 4. This latter concentration was of unknown origin and has occurred here once before.

2. Surface Contamination Surveys

Zone	Number of checks	Readings above 5000 dis/min
Operations	1500	9
Analytical	600	14
Technical	800	25
Miscellaneous	392	0

7-1115

Smears: 15 in hoods - None above 100 dis/min
777 elsewhere - 42 above 100 dis/min

32 of the positive smear counts were on items suspected to be contaminated. Only 10 unexpected positive smears were found.

The general picture of surface contamination in the building shows very few highly contaminated areas, with a tendency towards more items incompletely cleaned in storage, desk drawers, etc. Recurrent floor spots of uncertain origin are also troublesome.

3. Gamma Radiation

The highest dosage-rate in the cells was 28 mr/hr against the hood at the AT tank.

The radiation outside PR containers was:

Run	T-12	TR-4	T-13	T-14	T-15
mr/hr	95	8	40	46	28

The radiation at the sample can reference point was:

Can No.	78	4	83	6	8	9	37	1	35	42
mr/hr	2.5•	10	11	32	42	32	30	23	25	16

4. Waste Disposal

A crude analysis of mud from the "clean" ditch indicated an activity of ~3000 dis/min/gm at the entry to the ditch, and 300 dis/min/gm, 20 feet down the ditch. The activity was presumably rather superficial, but depth samples have not yet been made.

G. SITE SURVEY

1. Water and Waste Monitoring

Measurements of water samples were not completed due to contamination in the sample preparation laboratory.

There was no significant change in the activity of the various ditches.

2. Air Monitoring

Looping of stack discharge gases was observed three times in the T Plant and once in the B Plant. An estimate of the iodine concentration of ~6×10^{-12} curie/cc was made on one occasion from a GM tube observation.

3. Ground Contamination

The "winter ellipses", which are also presumably affected by summer dissolvings during relatively stable night conditions, increased in activity to 7 mrep/hr and 4 mrep/hr in the West and East areas respectively.

• Small sample, about one-tenth normal strength

1124132

[redacted] 7-1115

Readings up to 1.8 mrep/hr could be found outside the plant fences.

Smear surveys of office buildings in the Areas gave beta counts of the order of 100 counts/min.

H. GENERAL

No apparent pencil reading was confirmed by a badge reading. There was no significant badge reading.

H. M. Parker

H. M. Parker, Chief Supervisor
HEALTH INSTRUMENT SECTION

HMP:swc

108 7 1806

Copy #1 - W. C. Kay - K. F. Hillett
2 - F. B. Vaughan
3 - J. H. Cole
#4 - J. J. Urban
5 - L. Squires
#6 - S. T. Cantril - H.I.file
#7 - H. M. Parker
#8 - C. N. Patterson
~~#9 - R. H. Craze - 700 Area file~~
#10 - D. N. Smith - 300 Area file
~~#11 - Yellow copy~~
#12 - Pink copy

7-1115

DECLASSIFIED

June 18, 1945

TO: W. C. KAY,
S DEPARTMENT SUPERINTENDENT

THIS DOCUMENT CONSISTS OF 6 PAGES
No. 10 OF 12 COPIES, SERIES A

#23, - H. I. REPORT FOR 200 AREAS AND ENVIRONS

FOR WEEK ENDING JUNE 16, 1945

INV. 9-47

A. GENERAL STATISTICS

	T	U	B
Surveys for Special Work Permits	100	0	146
Other Routine and Special Surveys	142	1	137
Smear samples for Alpha Counts	467	66	227
Smear samples for Beta Counts	135	66	4
Air Monitoring Samples	21	3	12

B. THE T PLANT

1. Canyon Building (221-T)

A contaminated cap was found on the S-1 sampling port to give 2200 mrep/hr, including 150 mr/hr gamma radiation. It was cleaned down to 70 mrep/hr and 36 mr/hr.

Several spots of contamination were found on the canyon deck at Section 3 where dosage-rates up to 15 mrep/hr were observed. It was assumed that the spots resulted from dripping from the loading buckets returning from the dissolver to the cask car. Although the canyon has remained relatively free from contamination except at the samplers, such occurrences encourage the wearing of canvas overshoes, at least at the head end of the canyon. It is understood that this change will be made as soon as the covers become available.

The 5-6 tank thermohm was removed from Cell 5L for inspection. The inspection was safely performed with the instrument giving a contact dosage-rate of 200 mrep/hr including only 20 mr/hr.gamma radiation.

1124154 DECLASSIFIED

2. Control Laboratory (222-T)

Alpha particle contamination was held to reasonable levels. Gamma radiation in the sample storage room was high enough to require time restrictions in the room.

3. Concentration Building (224-T)

Product contamination was reported as follows:

F-1 sampler	>70,000 dis/min
F-1 splash ring	14,000 dis/min
A-1 tank around shaft	>70,000 dis/min
D-1 tank around shaft	>70,000 dis/min
E-1 tank around shaft	>70,000 dis/min
Z-7 sampler	30,000 dis/min

Dosage-rates around PR transfer containers were:

Batch	Side	Bottom
T-6-06-B-1	110 mr/hr	176 mr/hr
B-2	90 "	160 "
B-3	58 "	125 "
B-4	46 "	100 "
B-5	72 "	150 "

4. Fan House (291-T)

A very crude field analysis of the radiation from the fan house indicated approximately equal components of about 0.8 MEV and 2.0 MEV gamma radiation. This should be sufficiently accurate for the calculation of concrete wall thickness for shielding, if safety cannot be maintained by a fenced area.

C. THE U PLANT

1. Control Laboratories (222-U)

Hazards were under good control.

D. THE B PLANT

1. Canyon Building (221-B)

The agitator was removed from S-1 and placed in Cell 2-B for cleaning prior to maintenance work. The reading at deck level over the opened Cell S-L was 7800 mrep/hr. The dosage-rate at 4" from the removed agitator was 12,000 mrep/hr. Two connectors removed from the cell gave a contact dosage-rate of 1000 mrep/hr. They were roped off at a radius to give 1 mrep/hr. The agitator was submerged in the water in Cell 2-B, except for the motor. The dosage-rate at this stage was 1560 mrep/hr. A stainless steel disc 1-1/2" in diameter has been suspended over tank 15-B for 18 days to measure the pickup of activity. The disc read 3.5 mrep/hr at 1" distance. A Sandy zeroed with a piece of paper between the disc and the meter read 18,000 dis/min nominally with the paper

removed. This was probably due in part to additional soft beta radiation. The test was made to get an order of magnitude. It can be refined to find the microcuries of fission product and micrograms of product laid down per square centimeter of surface.

2. Control Laboratory (222-S)

Product contamination was held to satisfactory levels. Gamma radiation in the sample storage room went up to 20 mr/hr.

3. Concentration Building (224-B)

A minor spot of product contamination (~ 9000 dis/min) was found inside the gate of the chained area in the F-10 room. About 1 µg. of product was cleaned from the F-1 tank.

Cells A, B, C, D and E had no contamination detectable at Sandy levels (~ 25 dis/min per cm^2 surface for general contamination, or ~ 2000 dis/min in a spot).

The atmospheric concentration of product was 2.7×10^{-11} µg/cc over the clothes hamper in the F-10 room on 6/7/45, and was 1.4×10^{-11} µg/cc North of the F-10 enclosure on the following day. All other samples read less than 10^{-11} µg/cc.

E. 200-W AREA

Empty buckets on which numbers were being painted gave contact readings up to 150 mrep/hr.

F. THE ISOLATION BUILDING (231)

1. Air Monitoring

8 Little Sunker samples in the laboratories showed concentrations of product at the lower limit of observation (~ 4×10^{-12} µg Pu/cc). 8 samples in the cells gave no reading in excess of 10^{-11} µg/cc. The average activity of the filtered hood air did not exceed 10^{-12} µg/cc.

Two large volume samples were taken in the vacuum return air at the entrance to the 90S fan system. Both readings were at the limit of 2×10^{-12} µg/cc or less.

87 spot samples were taken with Queenie. No average concentration exceeded 10^{-11} µg Pu/cc.

2. Surface Contamination Surveys

Zone	Number of Checks	Readings above 5000 dis/min
Operations	1386	13
Analytical	900	26
Technical	1000	40
Miscellaneous	415	85

541 smears were taken outside hoods. 39 read >100 dis/min.

7-1115

3. Gamma Radiation

The maximum reading against the process hood was 29 mr/hr at A7 containing B17.

The dosage-rates against the 5% vessels ranged from 40 to 110 mr/hr. Readings at the reference point on sample cans were between 15 and 40 mr/hr.

4. Hand Contamination

It had been hoped to increase the permissible residue of product on the hands above the present value of 300 dis/min on such surface when new information on the amount of product tolerable in the body, and the transmission, if any, through the skin became available. At the present time, the plant permissible level for product fixed in the bone can be taken as 0.5 μg. The permissible level of atmospheric concentration can lead to a deposit of 0.64 μg per year in the lung, of which 25% might end up in the skeleton. This would give 0.16 μg per year and one would not wish to accept a total of more than $\sim$0.25 μg per year until more definite tolerance information becomes available. If the contribution by ingestion is ignored, this leaves $\sim$0.09 μg to enter through cuts, etc. or by absorption through skin.

Assume an absorption of 1% per day. Then for four hand surfaces each at 500 dis/min every day, the yearly absorption would be

$$\frac{4 \times 500 \times .01 \times 365}{140{,}000} \mu g = 0.05 \mu g.$$

This would leave a low margin for introduction by cuts. The change in the warning level therefore hinges at present on whether the absorption is appreciably above or below 1% per day. Experiments at present under way are not sensitive to much smaller changes than this. Moreover, when a product solution is applied to the skin about 20% of the activity immediately disappears. It is not certain yet whether this is entirely due to self absorption in unimportant superficial layers of the skin.

Although the daily level cannot be increased at present (the main value would be to shorten the observation time) discretion in interpretation can be used. If an employee has an occasional high count that does not reduce to the "permissible level" short of drastic cleaning procedures, it might be better to leave the residue of product than to abrade the hands unduly. It is highly desirable that such instances be handled through the H. I. representatives until broader experience has been obtained.

It is also clear that deviations from established decontamination methods may be hazardous, not only by possibly producing dermatitis but also by increasing the absorption of product.

An operator this week touched a pipe in the process hood and collected about 1.5 to 2 micrograms of product on his wrist and forearm. Two thorough treatments by the permanganate-bisulfite method reduced the contamination to acceptable levels.

1120157

G. SITE SURVEY

1. Water and Waste Monitoring

No pollution was found in well waters, including back samples previously held up.

The present condition of subsidiary waste disposal outlets is:

Location	Maximum Reading	General Level	Remarks
200-B Retention basin outlet	< 0.05 mrep/hr	Same	Water level high
200-T Retention basin outlet	0.2 mrep/hr at entrance to swamp	0.1 mrep/hr	Water level norm
212-P Ditch and Swamp	0.2 mrep/hr (entrance)	0.1 mrep/hr	Level normal
212-R Ditch and swamp	0.4 mrep/hr (entrance)	0.2 mrep/hr	Level normal
200-W Laundry Ditch	< 0.05 mrep/hr	Same	-

2. Air Monitoring

Integrons in the 614 Monitoring stations showed no deflection attributable to radiation, and there was no positive reading on film packets in the stations.

Fumes came to the ground in the B Plant on the day dissolving on 6/9/45, and a spot concentration of $\sim 3 \times 10^{-12}$ curie I_2 /cc was observed.

The S-22 chambers have been temporarily withdrawn for inspection and overhaul during the proposed dissolving lull. At the time of removal representative contamination was:

All stations North of the 200-Areas	0.01 mrep/hr or less
Between 200-W and 200-E Areas	0.13 mrep/hr
Stations more than 5 miles S.E. of the stacks	0.05 mrep/hr or less
2-1/2 miles S.E. of stacks	0.40 "
8 miles N. of stack	0.05 "

When the schedule is renewed, C-22 chambers will be used in the 614 Buildings. These are chambers of the series K-22, M-22, S-22, but made from standard ice cream cartons. The sensitivity is comparable with that of the M-22, but the wall transmits one-third of the iodine beta radiation. The special advantage is that if the chamber becomes contaminated, the can may be replaced at negligible cost and trouble.

3. Ground Contamination

The winter ellipses decreased in activity to about 4 mrep/hr and 2.5 mrep/hr in the West and East Areas respectively. The high reading outside the fenced area was 0.9 mrep/hr. The inner gate house at the B Plant was sufficiently contaminated to give 1200 counts/min on a portable counter. The analogous reading in the T Plant was 230 counts/min.

[redacted]

7-1115

H.H. Parker
to
W.C. Kay

H. GENERAL

No apparent pencil reading was confirmed by a badge reading.

There was no significant badge reading.

H. M. Parker

H. H. Parker, Chief Supervisor
H. L. SECTION

HHP:smc

Copy #1 - W. C. Kay - K. W. Villett
#2 - F. B. Vaughan
#3 - J. E. Cole
#4 - J. J. Urban
#5 - L. Squires
#6 - S. T. Cantril - H.I.file - 700
#7 - H. M. Parker
#8 - C. M. Patterson
~~#9 - P. W. Crane~~ - 700 Area file
#10 - D. M. Smith - 300 Area file
~~#11 - Yellow copy~~
#12 - Pink copy

June 23, 1945.

THIS DOCUMENT CONSISTS OF 6 PAGES
No. 10 OF 12 COPIES, SERIES A

TO: W. C. KAY
S DEPARTMENT SUPERINTENDENT

#24. H. I. REPORT FOR 200 AREAS AND ENVIRONS

FOR WEEK ENDING JUNE 22, 1945

A. GENERAL STATISTICS

	T	U	B
Surveys for Special Work Permits	103	0	166
Other routine and Special Surveys	95	1	157
Smear samples for alpha counts	316	69	212
Smear samples for beta counts	122	69	--
Air Monitoring samples	31*	3*	33**

B. THE T PLANT

1. Canyon Building (221-T)

The 9-1 to 241 jet piping and gang valve were replaced in the pipe and operating galleries during the week. A maximum of 100 mrep/hr was found on an open flange of the gang valve after removal. In replacing the piping between connectors #2 and #40 in the Pipe Gallery the maximum dosage-rates encountered were 4500 mrep/hr at connector #2 and 12,500 mrep/hr at a distance of 6" from wall connector #40. The operation was constantly monitored to ensure that no personnel would be overexposed.

After the installation of new piping, the dosage-rate at connector #2 was reduced to < 1.0 mr/hr and to 650 mr/hr at connector #40. Use of lead shielding at connector #40 further reduced the dosage-rate at that point to 250 mr/hr.

All less than 10^{-11} µg Pu/cc.

** All less than 10^{-11} µg/cc except one reading of 4.5×10^{-11} µg/cc in the F-10 room.

The highest readings in the vicinity of samplers were at 13-4, where the Beckman survey meter read 100 mrep/hr including 30 mr/hr due to gamma radiation.

2. Control Laboratory (222-T)

The contamination as indicated by Pandy surveys and smear tests was under good general control. Some pieces of sampling equipment gave moderately high positive values.

3. Concentration Building (224-T)

Product contamination was reported as follows:

Location	Estimated total (/ug)
C-4 tank on top	16 (spread over 3 sq. ft.)
C sampler	0.01
D-2 tank on top	0.13
E-2 tank on top	0.13
F-10 enclosure on sill	0.005
F-1 tank on top	1.0 (spread over 3 sc. ft.)

The dosage-rate around PR transfer vessel with batch T-5-06-D-6 was 42 mr/hr and 115 mr/hr at the side and bottom respectively. It has been shown that the average dose received by the operator's body for each container issued is about 10 mr with the present levels of activity.

C. THE U PLANT

1. Control Laboratories (222-U)

Excellent conditions prevailed.

D. THE B PLANT

1. Canyon Building (221-B)

Connector #37 was removed from cell 14-L to replace the gaskets. This required maintenance men to work with their hands about 2" from the pipe. The following dosage-rates were observed at this distance:

	Beta + Gamma	Gamma
Dip tube	2100 mrep/hr	200 mr/hr
Jet outlet pipe	1500 " "	100 " "
End of jet outlet	110 " "	10 " "

Finger film packets worn by the men concerned have not yet been processed.

The pipe trench in the canyon was opened at Sections 4 through 6, to enable Operations to inspect for leaking flanges. A maximum reading of 500 mrep/hr was found at the edge of Section 4.

Cell 17-L was opened for the installation of the thermohm on connector #41. Gamma radiation in the cell was relatively low (top reading 18 mr/hr). Rather extensive alpha particle contamination, giving off scale Sandy readings, was found over the tanks 17-1 and 17-4.

Decontamination of the sampler risers and plugs gave the following typical results:

Sampler	Location	Initial Dosage-Rate	Final Dosage-Rate
8-1	(Over cap	24 mrep/hr	11 mrep/hr
	(Bottom of cap	975 " "	23 " "
13-4	(Over cap	43 " "	10 " "
	(Bottom of cap	1010 " "	24 " "

2. Control Laboratory (222-B)

The hazards of product contamination and of direct radiation by beta or gamma rays were adequately controlled.

3. Concentration Building (224-B)

6 μg of product or more were found on the A-1 windage ring. The ring was cleaned to levels below Sandy sensitivity.

About 11 μg of product was removed from the Cell F floor in front of tanks F7, F-8 and F-9. Contamination ($\sim$ 0.5 μg) was found on top of the F-1 to F-2 jet flange, and a similar amount on the bottom of the line between the flanges. A spot of $\sim$ 0.3 μg was cleaned from the floor opposite G-2.

A blow back in the recycle jet to E-4 inside the F-10 cage spread contamination (at least 16 μg) throughout the enclosure. A floor spot of about 0.5 μg was also located in the chained-off area. All contamination was adequately removed.

Permanent facilities for continuous monitoring of the air by Little Suckers have been installed. 27 spot checks in the building showed no significant air concentrations, despite the rather extensive surface contamination this week.

E. 200-W AREA

A cask entering Metal Storage Basin 212-R from the 100 Areas gave a reading of 48 mr/hr near the side. Elsewhere there was no significant chance of personnel exposure.

F. THE ISOLATION BUILDING (231)

1. Air Monitoring

16 Little Sucker samples in the laboratories and 12 in the cells indicated

7-1115

no concentration in excess of 1.4×10^{-11} µg Pu/cc. The activity of the filtered hood air (by Big Sucker) was less than 2×10^{-13} µg/cc on two occasions, and respectively 1.2×10^{-12} and 3.4×10^{-12} µg/cc on the remaining two runs. A spot sample on the same air system by means of a Little Sucker motivated by a better pump than usual gave not more than 4×10^{-13} µg/cc, the observational limit by this method. Activity in the vacuum system outlet was 1.8×10^{-12} µg/cc.

83 spot checks were made by Queenie. 72 readings were at background level. The highest value found was only 3×10^{-11} µg/cc.

2. Surface Contamination Surveys

Zone	Number of Checks	Readings Above 5000 dis/min
Operations	520	10
Analytical	1100	18
Technical	550	14

535 smears were taken, of which 25 read more than 100 dis/min.
460 smears on miscellaneous small items checked by request and expected to be contaminated gave 108 readings above 100 dis/min.

Minor floor contamination was found and eliminated in Cell 6-B and Room 34.

Approximately 260 shoes were checked. 17 had product contamination in excess of 1000 dis/min, but only 3 exceeded 5000 dis/min. Of these one was a shoe holding ~1 µg that has not been used since a previous check of its condition.

3. Hand Contamination

One worker contaminated a thumb and forefinger with solution containing several milligrams of product. About 20 permanganate-bisulfite treatments extending over an hour were required to reduce the hand contamination to acceptable levels. Fortunately the skin of the hand was initially in good condition so that the absorption would not exceed the approximate 20% observed as the initial disappearance.

The controlled tests on skin absorption have been complicated by the observation that the fixed product liberally disappears when the wearer perspires. It has not been conclusively shown yet whether the material is washed off or whether it is given a chance to penetrate the skin at such times.

4. Gamma Radiation

The maximum reading against the process hood was 16 mr/hr.

The dosage-rates against the PR vessels ranged from 40 to 50 mr/hr. Readings at the reference point on sample cans were between 15 and 42 mr/hr.

G. SITE SURVEY

1. Water and Waste Monitoring

No significant pollution in well waters, ascribable to contamination from

[redacted]

1-1115

the 200 Area was found.

The general condition of subsidiary disposal outlets was unchanged.

2. Air Monitoring

No significant result.

3. Ground Contamination

No important change in status.

H. GENERAL

No apparent pencil reading was confirmed by a badge reading. There was no significant badge reading.

H. M. Parker, Chief Supervisor
H. I. Section

19

DECLASSIFIED

copy #1 - W. C. Kay - K. W. Millett
#2 - F. B. Vaughan
#3 - J. E. Cole
#4 - J. J. Urban
#5 - L. Squires
#6 - S.T.Cantril - H.I.file - 700 Area
~~#7 - H.M.Parker~~
#8 - C. M. Patterson
~~#9 - P. W. Crane~~ - 700 Area file
#10 - D. M. Smith - 300 Area file
#11 - Yellow copy
#12 - Pink copy

7-1115

INV. 9-47

July 2, 1945.

THIS DOCUMENT CONSISTS OF 4 PAGES
No. 8 OF 12 COPIES, SERIES A

TO: W. C. KAY
S DEPARTMENT SUPERINTENDENT

#25. H. I. REPORT FOR 200 AREAS AND ENVIRONS

FOR WEEK ENDING JUNE 29, 1945

A. GENERAL STATISTICS

	T	U	B
Surveys for Special Work Permits	92	0	191
Other routine and Special surveys	70	1	134
Smear samples for alpha counts	85	65	95
Smear samples for beta counts	115	65	-
Air Monitoring Samples	46	3	57

B. THE T PLANT

1. Canyon Building (221-T)

Contamination was found in the solution addition line to the 13-1 tank in cell 13-L in two separate locations, in the operating and pipe galleries respectively. A dosage-rate of 30 mr/hr was observed at the valve controlling the solution addition funnel in the operating gallery. The dosage-rate at connector #34 in the same line in the pipe gallery was 10 mr/hr. No satisfactory explanation of the occurrence, other than the possible condensation of active vapors from the 13-1 tank, has been proposed. On this postulate the line must also have been contaminated, and possibly cleaned during the addition of solution. Decontamination by addition of nitric acid has so far only reduced the dosage-rate at the valve to 12 mr/hr.

Suspected insulation defects on the 15-8 agitator circuit necessitated entrance into Cell 15-R for visual inspection. A top reading of 750 mr/hr was observed, and the dosage-rate at the inspection point was 500 mr/hr. Access was restricted

to a period of five minutes. Further checking led to the removal of connector #68 by remote handling. During this operation the atmospheric concentration of product was checked and found to be less than 10^{-11} µg Pu/cc.

Maintenance work on the 17-2 centrifuge was performed with a maximum exposure of 70 mr in a radiation field of 160 mr/hr.

2. Control Laboratory (222-T)

Product contamination was very thoroughly controlled. Some points of possible exposure to beta or gamma radiation were noted and corrected.

3. Concentration Building (224-T)

Contamination on the C-4 tank reported last week has been reduced to ~ 3 µg Pu and is still being treated. In each of the cells A, D and E, there was about 5 µg of product on top of the tanks A-1, D-1 and E-1 near the shaft. Apparently this condition has persisted for some weeks.

Twenty air samples in the building all read less than 10^{-11} µg Pu/cc.

C. THE U PLANT

1. Control Laboratories (222-U)

Hazard control was good. 65 smears gave no positive alpha count, and quite small beta counts. The maximum gamma dosage-rate in the laboratory was 5 mr/hr. Product concentration in the air was less than 10^{-11} µg Pu/cc.

D. THE B PLANT

1. Canyon Building (221-B)

Operations continued the inspection of the pipe trench in the canyon. Sections 13 through 20 gave no reading in excess of 10 mr/hr. Sections 11 and 12 gave a maximum reading of 12,500 mr/hr. A contaminated pan found at the 8-1 sampler indicated 500 mrep/hr at 2". The highest-dosage-rate from the samplers was 66 mrep/hr. In all other respects the canyon was in good condition. Finger film worn by maintenance men working on connector #37 as described last week registered doses below 30 mrep.

2. Control Laboratory (222-B)

Product contamination was well controlled. Potential gamma ray hazards existed in Rooms 1 and 2 with top values of 58 mr/hr and 62 mr/hr respectively.

3. Concentration Building (224-B)

Contamination amounting to 18 µg Pu was located on the top ledge and inside edge of the F cell decontamination tank. About 3 µg was found on the outside of the F-2 centrifuge. This was thoroughly removed.

42 checks of the atmospheric concentration gave 41 readings at the background limit of 10^{-11} µg/cc, and one reading of 2×10^{-11} µg Pu/cc.

4. Waste Disposal Area

Samples of the fumes from the tank #107 were collected on eight occasions when jetting to the tanks was taking place. The highest activity collected was 100 counts per minute, too low for satisfactory radioactive analysis. In view of the high activity near the tanks at such times it is clear that the activity is carried by droplets, which condense in the sampling can before transfer to the gas tight G.M tube sampler.

E. 200-N AREA

The general level of activity around the 212-P and R metal storage basins was less than 1 mrep/hr. Buckets that were being scraped and repainted read 70 mrep/hr. The dosage-rate at the outlet from the pit at the end of the culvert was 26 mr/hr. It is believed that the activity comes from previous paint scrapings. The water itself was not active.

F. THE ISOLATION BUILDING (231)

1. Air Monitoring

15 Little Sucker samples in the laboratories and 12 in the cells indicated no concentration in excess of 1.4×10^{-11} µg Pu/cc. The activity of the filtered hood air was less than 1.5×10^{-12} µg Pu/cc in each of 3 runs.

47 spot checks of product concentration in the air were made. 42 readings were at the background level of 10^{-11} µg Pu/cc. The highest value found was 6×10^{-11} µg Pu/cc. Specially sensitive tests on the filter outlet systems gave 3 readings below 5×10^{-13} µg/cc.

2. Surface Contamination Surveys

Zone	Number of Checks	Readings above 5000 dis/min
Operations	1150	45
Analytical	1000	23
Technical	125	1
Miscellaneous	205	1

315 smear tests showed only five positive results.

Floor contamination occurred as follows:

Location	Maximum Sandylux reading	Estimated total quantity
Room 6-B	>100,000 dis/min	>2 µg
Cell 3	Several spots 10,000 dis/min	~1 µg
Cell 4	>100,000 dis/min	10 - 100 µg
Room 35	50,000 dis/min	0.5 µg

The condition in Room 6-B was due to a leaky sink, now temporarily withdrawn from service. The spills in Cells 3 and 4 came from cleaning prior to maintenance work on valves and unions. The discovery of such extensive contamination on the floor

7-1115

of cell 4 has led to proposed changes in the special work permit procedure in this area. It is interesting that the average concentration of product in the cell during this episode was low. Early fears about the hazards of product dust in the air seem fortunately to have been unnecessary.

Shoe contamination, prior to the cell 4 incident, was not excessive. 15 results greater than 1000 dis/min occurred in 192 checks.

3. Gamma Radiation

The maximum dosage-rate in the process area was 2 mr/hr. The single PR vessel registered 5 mr/hr, and a sample can read 4.5 mr/hr.

G. SITE SURVEY

1. Water and Waste Monitoring

No pollution of well water referrable to the 200 Area process was observed.

The condition of subsidiary disposal outlets was unchanged except in the 200-N Area, which has been described above.

2. Air Monitoring

Fumes came to the ground in the T Plant in 3 out of 5 dissolvings. A maximum reading of 1000 counts per minute was observed on a portable sealer. Fumes came to the ground twice in the B Plant but no activity was observed. Integrons and films in the Integron buildings gave no significant reading. The S-22 chambers gave very low values north of the 200 Areas. South of the stacks readings between 0.02 and 0.04 mrep/hr were common. A dosage-rate of 0.38 mrep/hr was observed on Route 4S Milepost 6, which is 3 miles S.E. of the B Plant stack. An off scale reading was noted at the Meteorology tower, where the ground also became contaminated.

3. Ground Contamination

The highest dosage-rate on the ground was 5 mrep/hr in the west area, and 1.5 mrep/hr in the east area.

A patrol tower in the west area read 3 mrep/hr. Sage brush activity at the south end of the reservation was:

In Richland	140 counts/min
On Route 10	60 counts/min
On Route 4-S	600 counts/min

H. GENERAL

No apparent pencil reading was confirmed by a badge reading. There was no significant badge reading.

H.M. Parker
H. M. Parker, Chief Supervisor
", I. Section

HMP:swc

1124168

7 1949

Copy #1 - W. C. Kay - J. E. Cole
#2 - F. B. Vaughan
#3 - J. D. Ellett
#4 - J. J. Urban
#5 - M. F. Acken
#6 - S. T. Cantril - HI file - 700
#7 - H. M. Parker
~~#8 - C. M. Patterson~~
~~#9 - L. Squires - 700 Area file~~
#10 - G. W. Struthers - 300 Area file
~~#11 - Yellow copy~~
~~#12 - Pink copy~~

THIS DOCUMENT CONSISTS OF 5 PAGES
No. 10 OF 12 COPIES, SERIES B

TO: W. C. KAY
S Department Superintendent

July 7, 1945

#26. H. I. REPORT FOR 200 AREAS AND ENVIRONS

FOR THE WEEK ENDING JULY 6, 1945

GENERAL STATISTICS

	T	U	B
Surveys for Special Work Permits	80	0	109
Other routine and Special Surveys	100	1	120
Smear samples for alpha counts	130	76	123
Smear samples for beta counts	82	76	-
Air Monitoring samples	80	3	32
Thyroid checks	109	0	76

THE T PLANT

Canyon Building (221-T)

During the maintenance inspection and repair of the skimmer on the 17-2 centrifuge mentioned last week, two air monitoring samples were taken in or near the open cell. One reading at the edge of the cell was 6.2×10^{-10} µg Pu/cc. The other reading directly over the centrifuge was 2.4×10^{-11} µg Pu/cc. These values are close to the permissible limit for continuous exposure, and therefore justify the maintenance of the present rigid standards of protection against product contamination of the air near the cells.

1124169

Two sample risers on vent lines from 4-5L and 3-5R, outside the canyon building were found to give a maximum reading of 22 mr/hr. It was probable that the dosage-rate would be appreciably higher during dissolving. The risers have been adequately shielded by sections of tile filled with sand.

Radiation around the samplers in the canyon was not excessive, being 100 mrep/hr at the highest point (13-4).

Control Laboratory (222-T)

Some deviation from absolute control of the hazards was observed. Two active smears were noted, and contaminated equipment carrying ~0.4 μg Pu was stored in the men's dressing room. A waste carton gave a dosage-rate of 100 mrep/hr at contact. Atmospheric contamination of ~10^{-10} μg Pu/cc was recorded.

Concentration Building (224-T)

Miscellaneous spots of product contamination were noted as follows:

Location	Estimated Contamination
F-2 centrifuge splash ring	~0.25 μg
Spots in front of F-10 enclosure	17 μg
C-4 sampler assembly	0.5 μg
Socket wrench)	0.2 μg
Screw driver) Cell C	0.05 μg
Blank and bolts)	0.4 μg

49 air samples all indicated concentrations less than 10^{-11} μg Pu/cc.

Fan House (291-T)

For comparison with previous figures the present state of the fan-house activity at standard reference points is:

	6/9/45	7/6/45
Point #1	56 mr/hr	50 mr/hr
" #2	1440	1250
" #3	1430	1200
" #4	295	205
" #5	26	20

THE U PLANT

Control Laboratory (222-U)

Control of the product hazard was good. Gamma-ray activity up to 68 mr/hr was reported.

THE B PLANT

Canyon Building (221-B)

Radiation from the samplers was low, the highest value being 33 mrep/hr at the 13-4 sampler. A dosage-rate of 63 mrep/hr was noted on the canyon deck.

-x-

Apparently the activity arose from a crevice between a cell cover block and the deck at a point where the original surface spill had been cleaned off.

Cell 15-R was opened in order to wash down the tanks. The dosage-rate at the edge of the cell was 420 mrep/hr.

The dosage-rate near the 4-5L riser outside the canyon building had previously been reported as high as 230 mr/hr. It is now 90 mr/hr, with 8 mr/hr near the 3-5R riser. Shielding by sand and tile as in the T Plant should reduce these values by a factor of 30 or more, due to a combination of absorption and distance of approach.

Control Laboratory (222-B)

Radiation hazards were well controlled.

Concentration Building (224-B)

About 0.5 μg of product was successfully removed from the bottom of the outlet flange of F-7 to the C-8 jet assembly. High, but quantitatively undetermined, product activity occurred on the inner surface above the solution level in the F-cell decontamination tank. Such contamination will probably persist as the unit is used repeatedly for tool and equipment cleaning.

Approximately 50 μg of product were detected on top of the C-4 tank and partially removed to date.

Three floor spots were found on the Cell F floor, near the F-1 tank, indicating respectively 5, 0.4 and ~15 μg. The grating of the floor sump in the F-10 room had 0.2 μg product that was adequately removed. About 2 μg of contamination was spread over the top of the F-1 tank. Another spot on the F-2 centrifuge indicated about 0.5 μg. Despite the relatively liberal disposition of product contamination in the F area, there was no significant concentration of product in the air, and therefore no immediate hazard other than the possibility of direct contact with contaminated equipment. 27 air samples were taken with no value in excess of 10^{-11} μg Pu/cc.

200-N AREA

A bucket in the Metal Storage Basin (212-P) gave a contact dosage-rate of 94 mrep/hr of which only 5 mr/hr was due to gamma radiation. The highest bucket reading in Metal Storage Basin (212-R) was 16 mrep/hr. Seven pairs of gloves were quite highly contaminated.

THE ISOLATION BUILDING (231)

Air Monitoring

18 Little Sucker samples in the laboratories and 16 in the Cells showed only one value in excess of 8×10^{-12} μg Pu/cc. This single value of 10^{-10} μg/cc was observed in Cell 4 at a time of high surface contamination there. Spot samples taken within the 48 hours covered by the Sucker sample showed 6×10^{-11} μg/cc. It would seem that a rather high concentration must

have existed during part of the long run. The average concentration was well below the tolerable limit. The activity of the filtered hood air was always less than 10^{-12} µg Pu/cc in 3 runs.

46 spot checks of product concentration in the air were made. Only 5 readings exceeded 10^{-11} µg/cc. Two of these came from Cell 4 as described above, and one each from Cell 6, Analytical Laboratories and Technical Laboratories at the level of about 4 x 10^{-11} µg/cc.

Surface Contamination Surveys

Zone	Number of Checks	READINGS ABOVE 1000 dis/min	5000 dis/min	25,000 dis/min
Operations	925	36	19	1
Analytical	450	13	10	4
Other Technical	380	9	3	0
H. I.	63	0	-	-
Miscellaneous	75	0	-	-

366 smear tests showed 9 positive results.

Floor contamination occurred as follows:

Location	Maximum Sandylux Reading	Estimated Total Quantity
Corridor outside Cell 4	10,000 dis/min	0.1 µg
Room 34	50,000 dis/min	0.3 µg
Corridor outside Room 35	off scale	1 - 5 µg
Room 34	off scale	~ 100 µg

The latter two spills were detected and immediately removed by the technical personnel.

176 shoes were monitored. 19 gave readings above 1000 dis/min, including 10 above 5000 dis/min, of which two gave about 50,000 dis/min.

750 miscellaneous small items were checked by instruments and 50 items were checked by 275 smears.

Gamma Radiation

The maximum dosage-rate was 30 mr/hr near the process hood at the AT tank. The maximum reading on PR containers was 74 mr/hr. Sample cans gave dosage-rates up to 46 mr/hr.

SITE SURVEY

Water and Waste Monitoring

No pollution of well waters referrable to the 200 Area process was observed. There was no significant change in the condition of the subsidiary disposal outlets.

H M Parker
to
W C Kay

DECLASSIFIED

7/7/45 7-1115

Air Monitoring

Fumes came to the ground during two dissolvings, but no significant gaseous activity was noted. Integron readings were low in all locations. Atmospheric radiation measured by other means was low at all points except on Route 4S - Milepost 6, where the dosage-rate was 0.16 mrep/hr, and at the Meteorology tower where it was 0.47 mrep/hr. Rather surprisingly, the maximum smear count on the tower was only 24 counts per minute, and this occurred at a height of 176 feet. The contamination on the water tower in the C Plant was 26 counts per minute at 50 feet up.

Ground Contamination

The top dosage-rate on the ground in the 200-W Area was 1.5 mrep/hr at a point 1200 feet north of the badge house. Outside the area, the top reading was 0.4 mrep/hr, at one half mile east of the badge house.

In the 200-E Area, the highest dosage-rate due to ground contamination was 1 mrep/hr, 5000 feet SE of the stack.

GENERAL

No apparent pencil reading was confirmed by a badge reading, and there was no high badge reading.

As indicated above, the 200-W badge house is in the zone frequently contaminated by stack gases. Of the 185 thyroid checks recorded this week, the only one of much significance was a count of 75 counts per minute on an H.I. employee in this badge house. Such an activity, of course, was entirely harmless, being 1.5% of the permanently tolerable concentration.

H. M. Parker

H. M. Parker, Chief Supv.
H. I. Section

HMP:swc

DECLASSIFIED

1124173

Copy #1 - W. C. Kay - J. E. Cole
#2 - F. B. Vaughan
#3 - J. D. Ellett
#4 - J. J. Urban
#5 - M. F. Acken
#6 - S. T. Cantril - HI file - 700 Area
#7 - H. M. Parker
#8 - C. M. Patterson
#9 - L. Squires - 700 Area file
#10- G. W. Struthers - 300 Area file
#11- Yellow copy
#12 -Pink copy

7-1115

THIS DOCUMENT CONSISTS OF 6 PAGES
No. 1 OF 12 COPIES, SERIES A

July 14, 1945

TO: W. C. KAY
S Department Superintendent

#27. H. I. REPORT FOR 200 AREAS AND ENVIRONS

FOR THE WEEK ENDING JULY 13, 1945

GENERAL STATISTICS

	T	U	B
Surveys for Special Work Permits	74	10	124
Other routine and Special Surveys	42	1	168
Smear samples for alpha counts	114	86	139
Smear samples for beta counts	67	86	-
Air Monitoring samples	64	3	30
Thyroid checks	120	-	100

THE T PLANT

Canyon Building (221-T)

Air samples taken when Cell 17 was open for inspection read as follows:

Location	Concentration (μg Pu/cc)
Over centrifuge 17-2 near men's faces	10.9×10^{-10}
On deck at 16-R	1.5×10^{-10}
On deck at 18LA with blocks on Cell 17	3.0×10^{-11}
Over 17R block (Cell closed)	1.7×10^{-11} and 1.3×10^{-11}
Five other samples in adjacent areas	all $< 10^{-11}$

The work done around the cell was of course carried out with proper mask protection. The highest of the above results is only twice the plant permissible level for prolonged exposure and this level is now known to be somewhat conservative. It follows that none of the men concerned in such work would have been over-exposed without masks, Although it would be foolhardy to work without masks under such conditions, it is quite encouraging to be certain that no harm would be done if a mask were temporarily ill-fitting, or in any other manner defective.

Dosage-rates at 2 inches from the samplers were:

Sample	Beta and Gamma	Gamma
8-1	100 mrep/hr	48 mr/hr
8-3	50	10
8-4	15	10
13-3	22	1
13-4	210	40
15-7	2	low
16-4	2	low

The general level throughout the canyon excluding regions within 3 feet of the samplers was less than 1 mr/hr. The hazard at the samplers is that of some body exposure and rather high dosage-rate to the hands. The local effect to the hands is not accurately shown by Beckman meter readings such as the above. The true rate can be expected to be about 3 times higher. Actual exposures to these rates are momentary only, and a clear picture of the overall hazard is not completely given by figures as above. On-the-spot readings and finger film readings have been and will be used to monitor the hazard in each case. This will therefore be the last detailed report on sampler activity, unless radical changes in the canyon conditions occur.

Control Laboratory (222-T)

The amount of product contamination was very low, and there was no significant beta or gamma ray hazard. Atmospheric concentration was always below the tolerance level.

Concentration Building (224-T)

Surface contamination showed:

Location	Estimated Product in µg.
F-8 tank slinger ring	0.2
F-2 to F-10 jet	0.9
Top of F-2 centrifuge	0.25

Air monitoring samples showed three positive readings out of 21 taken. These were:

Location	
Above rubbers in soiled rubber hamper	4.5×10^{-9} µg/cc
Entrance to F-10 (doors open)	2.6×10^{-9} " "
Over gloves in hamper	2.1×10^{-9} " "

H M Parker
to
W C Kay

DECLASSIFIED

7/14/45

7-111 S

THE U PLANT

Control Laboratory (222-U)

No appreciable product contamination was found on equipment or in the air. There was one isolated zone of possible gamma exposure.

THE B PLANT

Canyon Building (221-B)

Two spots of contamination were found on the canyon deck at Section 8. Contact readings were initially 40 mrep/hr and 220 mrep/hr respectively. Cleaning was successful. The waste container at Section 7 gave a contact gamma rate of 250 mr/hr.

A reading of 9 mrep/hr was obtained over the 3-5L sampler. Inasmuch as dissolver 3-5L has not yet been used, the cause of the activity was not immediately obvious.

In order to recheck on the feasibility of working in Sections 8 through 20 in the canyon during the charging of the dissolver, tests were made with a normal bucket of slugs suspended over the tunnel (2L) and over the dissolver cell 4L. Dosage-rates between Sections 7 and 8 were respectively 190 mr/hr and 500 mr/hr. These were at distances of 260 feet and 150 respectively from the source. The calculated dosage-rate at 1 foot would be 11,250 r/hr and 12,800 r/hr, with a mean of about 12,000 r/hr. The value calculated by C.W.Wende for metal of this exposure and cooling period is 9000 r/hr. Such agreement is considered very good indeed.

Practical problems of safety in the canyon can be evaluated from this base figure. For example, if 50 mr is to be the accepted exposure, a one-hour job could be done at a distance defined by $\frac{1.2 \times 10^7}{D^2}$ mr/hr $\simeq$ 50 mr/hr, or D $\simeq$ 490 feet.

Similarly a half-hour job would be safe at 350 feet.

The emergency evacuation meter (0 to 4000 r/hr) was checked by placing it near a bucket of slugs, and observing the deflection by periscope from a safe point of vantage. At 2 inches from the bucket wall the dosage-rate was 3000 r/hr. At 16 inches it was 1400 r/hr. The calculated exposure at this point, which was subject to rather large geometrical errors was about 3000 r/hr. The agreement was quite adequate in view of the nature of the problem.

Paper in a sampling equipment tray carried by the samplers between 221-B and 222-B gave a contact dosage-rate of 440 mrep/hr (uncorrected Beckman meter reading). The tray was in the hallway of the Control Laboratory when observed by H.I., and had been in this condition for an indeterminate length of time.

Control Laboratory (222-B)

Product contamination was reasonably low on equipment and in the air. High beta and gamma activity, up to 440 mrep/hr, was observed outside two waste containers.

Concentration Building (224-B)

Smears were taken on the blades of the exhaust fans used for venting air from the cells through the roof of the building. Results were:

Cell	Standard Smear	Paper Towel Wipe (Sandy Reading)
A	1300 dis/min	<2000 dis/min
B	1200 " "	3000 " "
C	2800 " "	6000 " "
D	1300 " "	2000 " "
E	700 " "	4000 " "

1124176

DECLASSIFIED

Cell	Standard Smear	Paper Towel Wipe (Sandy Reading)
F	50 dis/min	< 2000 dis/min
G	20 " "	< 2000 " "

Cell B has so far been used for water distillation only. The general contamination is therefore surprising. Further investigations along these lines will be made. Surface contamination was:

Location	Estimated product (μg)
Cell F floor between precipitator and decontamination tank	90
Side of precipitator F-1	45
F-1 to F-2 jet flanges	0.5
Top of waste tank C-8	3
Manhole cover on C-4 tank	7
Splash ring on precipitator D-1	1
Top of E-1	10
Miscellaneous spots around F-10 enclosure	0.05, 0.1 and 0.5

The contamination was adequately removed in all cases.

Product concentration in the air shown by 24 samples was always below 10^{-11} μg/cc.

200-N AREA

The only possible hazard was the repainting of buckets giving contact dosage-rates nominally up to 350 mrep/hr.

THE ISOLATION BUILDING (231)

Air Monitoring

10 Little Sucker samples in the cells, and 14 in the laboratories all gave values below 10^{-11} μg/cc. Samples on the filtered hood air system showed no average concentration above 10^{-12} μg/cc. 45 spot samples throughout the building gave no value above 10^{-11} μg/cc.

Surface Contamination

Zone	Items or Locations checked	Contamination found (dis/min) >1000	>5000	>25,000	Smears >100 Taken	dis/min
Operations	1244	76	40	10	83	7
Technical	900	53	18	6	53	1
Miscellaneous	43	0	-	-	120	0

Floor contamination was:

Location	Maximum Intensity	Total Quantity Pu
6-B	5,000 dis/min	0.1 μg
5	>100,000 " "	0.7 "
35	10,000 " "	0.2 "
34-35-29	16 spots >100,000 dis/min Very many small spots	~20 - 40 μg

The last item was the third occurrence of a rather large spill of undetermined origin. The time of occurrence was known to within one hour but it was still impossible to ascertain the cause despite diligent effort on the part of all concerned.

188 shoes were checked with 24 readings above 1000 dis/min including 8 above 5000 dis/min.

242 miscellaneous checks were made, involving 68 rejects for further cleaning. 363 smears on all these items had 64 positive values.

Gamma Radiation

The maximum dosage-rate in the process area was 25 mr/hr at the hood next to the AT tank.

Maximum readings on PR vessels and SC containers were respectively 70 and 40 mr/hr.

SITE SURVEY

Water and Waste Monitoring

No pollution of well waters referrable to the 200 Area process was observed. The present status of subsidiary disposal outlets is:

Location	Maximum Reading	General Level	Remarks
200-T Retention Outlet	0.1 mrep/hr	0.1 mrep/hr	Normal water level
200-W Laundry Ditch	< 0.05 mrep/hr	< 0.05 mrep/hr	3 inches water
200-B Retention Outlet	0.2 mrep/hr		low water level
	1000' below entrance	< 0.05 mrep/hr	Swamp dry
200-N)	0.4 mrep/hr	0.2 mrep/hr	1 foot water
P Ditch)	at entrance		
200-N)	3 mrep/hr	< 0.05 mrep/hr	8 inches water
R Ditch)	2.5 mr/hr		

Air Monitoring

Dust samples collected in the 200-W Area were free from alpha particle contamination.

All S-22 ionization chamber stations, with the exception of those South and East of the stacks showed dosage-rates less than 0.02 mrep/hr. This includes residual natural ionization (about 0.016 mrep/hr) and chamber leakage. Some previously reported values inadvertently had the chamber leakage subtracted. This could be criticized on the grounds that deflections assigned by the H. I. Section to insulator leakage could have been due to radiation or contamination at the base station where leakage tests are run.

H M Parker
to
W C Kay

7/14/45

7-1115

Average readings South and East of the 200-W Area were:

		Mrep/hr
Route 1	Mile 1	0.04
	Mile 3	0.02
	Mile 5	0.02
Route 4-S	Mile 6	0.11
	Mile 10	0.03
300 Area		0.02
Meteorology Tower		0.22

An air conditioning filter checked in the Administration Building in Richland gave low but positive readings (0.02 mrep/hr) from the surface of the filter, presumably due to radioactive iodine.

Fumes came to the ground on two occasions and the highest activity at the ground was about 5×10^{-12} curie I_2/cc.

Integron readings were as follows:

Area	Average Daily Dose (24-hr.day)
100 Areas	2.9 mr
200-E	6.9 mr
200-W	3.3 mr
Outlying Areas	0.3 mr

Some high readings in the 100 and 200-E Areas included in the record were not confirmed by film readings and were definitely not radiation effects.

Ground Contamination

The top dosage-rate on the ground in the 200-W Area fell to 0.7 mrep/hr, representing decay from previous values without significant additions. In the 200-E Area, the high value fell in the same manner from 1.0 to 0.5 mrep/hr in one week.

GENERAL

There was no reading of note in the pencil and badge systems.

No high thyroid count was observed, and the one reported last week fell rapidly to 10 counts/min. The rate of fall was considerably higher than the anticipated value for cause not yet determined.

H. M. Parker
H. M. Parker, Chief Supervisor
H. I. Section

HMP:swc

1124179

DECLASSIFIED

124

#1 - W. C. Kay - J. S. Cole
#2 - F. B. Vaughan
#3 - J. D. Ellett
#4 - J. J. Urban
#5 - M. F. Acken
#6 - S. T. Cantril - HI file - 700 Area
#7 - H. M. Parker
#8 - C. M. Patterson
~~#9 - L. Squires - 700 Area file~~
#10 - G. W. Struthers - 300 Area file
~~#11 - Yellow copy~~
#12 - Pink copy

THIS DOCUMENT CONSISTS OF 6 PAGES
No. 10 OF 12 COPIES, SERIES A

July 21, 1945.

TO: W. C. Kay
S Department Superintendent

#28 - H. I. REPORT FOR 200 AREAS AND ENVIRONS

FOR THE WEEK ENDING JULY 20, 1945

INV. 9-47

General Statistics

	T	U	B
Surveys for Special Work Permits	68	0	145
Other routine and Special Surveys	78	4	162
Smear samples for alpha counts	251	28	282
Smear samples for beta counts	213	28	-
Air Monitoring samples	88	10	18
Thyroid checks	106	-	52

The T Plant

Canyon Building (221-T)

Twenty air samples were taken in the Canyon during the week, and 14 showed values at the observational limit of 10^{-11} μg Pu/cc. The highest concentration noted was 10^{-10} μg Pu/cc near the 8-1 sampler.

Control Laboratory (222-T)

There was no significant change in the hazard condition of this laboratory.

Fifty air samples were taken in the laboratories showing two locations with concentrations above the permanently permissible value. Both of these were measured at 6 inches from a known contaminated floor area.

1124180

DECLASSIFIED

Concentration Building (224-T)

Surface contamination measurements showed 12 regions of product contamination, of which the major ones were 0.5 μg on the flange of the F-8 tank; 0.9 μg on the top of this same tank, 2.6 μg on top of the F-1 tank, and 12 μg on the F-2 centrifuge splash ring.

Eighteen air monitoring samples were taken, and these showed three high values as follows:

Location		
F-10 air lock	6.8×10^{-10}	μg/cc
Rm. 3 - over a clothes hamper	1.9×10^{-9}	"
Rm. 3 - on the bottom of an empty hamper	2.3×10^{-9}	"

The contaminated hamper was removed from the building.

The U Plant

Control Laboratory (222-U)

No significant product contamination was found in this laboratory. There was again one instance of possible gamma ray exposure.

The B Plant

Canyon Building (221-B)

It was necessary to remove the jet assembly between the 14-1 precipitator to the 14-2 centrifuge from the cell 14L. The maximum dosage-rates from this assembly was 1250 mrep/hr including 105 mr/hr of gamma radiation. However, it was possible to restrict access at all times to regions no more intense than 105 mrep/hr including 20 mr/hr gamma. There was consequently no particular exposure hazard.

An air sample taken over the open cell 14L indicated an average concentration of 10^{-10} μg Pu/cc. Another air measurement near the 17-4 sampler showed a concentration of 6×10^{-11} μg Pu/cc.

32 smears in the Canyon showed only one positive value.

Control Laboratory (222-B)

Product contamination was satisfactorily limited, and there was no serious indication of possible gamma ray hazard.

Concentration Building (224-B)

Two assault masks were found to have product contamination on the outside surface. The amounts were respectively 0.2 μg and 0.4 μg. In each case the contamination was found on and around the right eye piece. The origin of such contamination has not yet been specified.

Surface contamination was measured in six locations, of which the most significant were 0.5 μg on a jet flange in Cell F, 2.5 μg on top of the F-1 precipitator, and 80 μg sprayed over an area of 20 square feet on the floor of Cell F adjacent to the F-1 tank. The last item was cleaned to a point where 8 μg of the material were left over an extensive area. Further cleaning is in progress.

205 smears were taken in the building, and these showed four positive readings, of which only one was in excess of 1000 dis/min.

8 air samples taken in the building showed a top concentration of 3×10^{-11} μg Pu/cc near the chain in front of the F-10 enclosure.

A rubber glove from a batch of washed gloves returned from the Laundry was found to have 0.3 μg of product on one of the fingers. The addition of a Poppy unit to the Laundry monitoring equipment should help to reduce materially the possible degree of contamination on items processed by the Laundry. However, it should be noted that limitations of time and effort will always preclude the possibility of inspecting every square inch of such items as gloves, and that occasional spots may be left on the processed articles.

Correction

In report #27, it was suggested that the activity on the roof fan blades should be a direct function of the cell air activity. It has been pointed out that the cells are not completely enclosed, and that air near the roof may be a mixture of air from all cells. This would be consistent with the observed pattern of contamination.

200-N Area

There was no hazard situation except during the repainting of numbers on buckets which was controlled by the Special Work Permit procedure.

The Isolation Building (231)

Air Monitoring

14 Little Sucker samples in the cells and 20 in the laboratories gave values below 5×10^{-12} μg Pu/cc with the exception of one reading of 3×10^{-11} μg Pu/cc in cell 6-B. Samples on the filtered hood air system showed no average concentration above 5×10^{-12} μg/cc. Groups of filters are being tested to ascertain if the higher than average values in this series could be traced to a single source. 47 spot samples throughout the building gave 43 readings at the background level of observation, and a maximum reading of 2×10^{-11} μg/cc.

It was reported that female personnel had been observed resting inside dirty clothes hampers in the women's locker room. Attention was directed to the high values of air contamination that had been reported in the immediate vicinity of such hampers as in the T Plant report for this week. Suitable steps have been taken to provide more normal accommodation in the locker room.

H M Parker
to
W C Kay

DECLASSIFIED

7-115

7/21/45

Surface Contamination

Zone	Items or Locations checked	Contamination found (dis/min) >1000	>5000	>25,000	Maximum Values dis/min
Operations	860 outside hoods	45	20	5	50,000
	inside hoods	30	20	4	50,000
Technical	1475 outside hoods	48	18	5	>100,000
	inside hoods	40	32	9	50,000
General Bldg.	500	0	-	-	

76 smears were taken. Only one positive value was found. One smear of about 500 dis/min was found on a ceiling lamp reflector in an Operations Laboratory. An extensive survey of similar high equipment was made and the results indicated that the single high reading was not due to a general deposition of active dust on such articles, but rather due to a direct transfer of contamination to one particular reflector.

220 miscellaneous small items were checked by means of Poppy and 48 instances of surface contamination were located and referred back for additional cleaning. 113 smears taken to supplement Poppy readings on inaccessible surfaces included 23 positive values.

Floor contamination was:

Location	Maximum Intensity dis/min	Total Quantity γg Pu
Cell 4	2,000	0.01
34 (Process control laboratory)	22,000	0.15
Lunchroom)	35,000	
)	15,000	0.3

Two small spots located in the lunchroom were possibly due to an oversight in the entry of work shoes or shoe covers to the lunchroom. The finding of this floor contamination initiated a very complete survey of the floor and all equipment in the lunchroom. No other contamination was found. 218 shoes were checked with 32 readings above 1000 dis/min including 11 above 5000 dis/min and one shoe with 75,000 dis/min.

Gamma Radiation

The maximum dosage-rate in the process area was 8 mr/hr at the usual location. Maximum readings on PR vessels and SC containers were respectively 40 and 26 mr/hr.

Site Survey

Water and Waste Monitoring

No pollution of well waters referrable to the 200 Area process was observed. The activity of subsidiary disposal outlets diminished slightly from the values reported last week.

H M Parker
to
W C Kay

7/21/45

7-1115

Air Monitoring

Dust samples were collected in the 200-W Area near the office buildings and in the vicinity of the T Plant swamp. None of these samples showed a positive count. S-22 ionization chamber stations showed no values above 0.025 mr/hr other than in the quadrant south and east of the stacks. Average readings south and east of the 200 Areas were:

Location	mrep/hr
Route 10	
1 mile south of the former 1-A barricade	.05
3 miles " " " " " "	.08
5 miles " " " " " "	.05
Route 4-S	
Mile 6	.14
" 10	.08
" 16	.02
" 22 (300 Area)	.02

Presumably these dosage-rates were made up partly of atmospheric activity and partly of local ground contamination. Measurements are now being made which will accurately differentiate between these two phenomena.

Integron readings were as follows:

Location	Average Dose in 24-hours
100 Areas	1.5 mr
200-E	6.6 mr
200-W	4.4 mr
Outlying Areas	background

None of the apparent exposures on the integrons was confirmed by film readings or by special beta chambers maintained in the 614 buildings.

Ground Contamination

The maximum dosage-rate on the ground in the 200-W Area was 0.5 mrep/hr at a point 2300 ft. S.E. of the T Plant stack. The highest reading outside the 200-W fenced area was 0.4 mrep/hr about 200 to 700 feet from the badge house. In the direction of the Meteorology Tower the maximum reading of 0.2 mrep/hr was found midway between the tower and the 200-W Area. The highest activity associated with a guard house in the 200-W Area was on the east side with a reading of 0.1 mrep/hr. Inside the badge house in the 200-W Area a smear count of 40 c/m came from a table top in the pencil laboratory. The average of 16 smears in this laboratory was 13 counts per minute. This survey was made as a result of apparent observation of low but positive thyroid counts in an employee stationed here. Activity of the order of magnitude observed could have been introduced by means of contaminated pencils or badges returned to the gatehouse, but it was more probably sucked in by fans during the recent hot weather. This is the only gatehouse in which the pencil equipment is not protected by the use of air conditioning equipment with filters which is just now being installed.

H M Parker
to
W. Kay

7/21/45

7-1115

In the 200-E Area, the maximum reading was 0.4 mrep/hr at 5500 feet S.E. of the B Plant stack.

A survey of activity associated with sagebrush gave results as follows:

Rt. 4-S Mile 5	120 [± 30]	c/m.
Rt. 10 Mile 10	16 [± 16]	c/m.
Rt. 4-S Mile 22	15 [± 16]	c/m.
Richland	0 [± 9]	c/m.

These samples were not counted long enough to be sure of the apparent contamination near the 300 Area. The Richland sample was counted for a longer period and with fair confidence there would seem to be no present contamination. However, in view of the morale implications of vegetation contamination in the residential areas, even longer runs will be reported in future. Evidence of such contamination given in a previous report should be discarded as it was found that the statement was made on the basis of inadequate counting times.

General

There was no reading of note in the pencil and badge systems except on one employee who has shown five double off-scale readings on pencils in the period 7/5/45 - 7/17/45. None of these readings was confirmed by the badge film, and an investigation has been initiated to locate and rectify a probable mechanical work habit that would produce high pencil readings.

No thyroid count above 50 c/m was observed.

H.M. Parker cc

H. M. Parker, Chief Supervisor
H. I. Section

HMP:pwc

7-2096

Copy #1 - W. C. Kay - J.L.Cole
#2 - F.B.Vaughan
#3 - J.D.Ellett 7-1115
#4 - J.J.Urban
#5 - M.F.Acken
#6 - S.T.Cantril - 700 Area
#7 - H.M.Parker
#8 - C.M.Patterson
~~#9 - L.Squires - 700 Area file~~
#10- G.W.Struthers-300 Area file
~~#11 - Yellow copy~~
#12 - Pink copy

July 31, 1945.

TO: W. C. KAY
S Department Superintendent

THIS DOCUMENT CONSISTS OF 6 PAGES
NO. 10 OF 12 COPIES, SERIES A

#29 - H. I. REPORT FOR 200 AREAS AND ENVIRONS

FOR THE WEEK ENDING JULY 27, 1945

General Statistics

	T	U	B
Surveys for Special Work Permits	117	6	128
Other routine and Special Surveys	39	2	136
Smear samples for alpha counts	120	86	257
Smear samples for beta counts	101	86	0
Air Monitoring samples	72	21	51
Thyroid checks	77	-	35

The T Plant

Canyon Building (221-T)

Cell 16L, 17L and 17R were opened for equipment inspection during the week. Cell 16L was inspected from the canyon deck where the maximum dosage-rate was 10 mr/hr. The maximum rate in the other cells was 5 mr/hr on top of the tanks. Air monitoring samples taken in and near the cells during this week gave thirteen readings below the tolerable concentration, and one high value of 4×10^{-9} µg Pu/cc close to the precipitator in cell 17L. The 17L cell blocks were inadvertently placed on the canyon deck and gave product contamination amounting to about 3 µg. The area was adequately cleaned.

Control Laboratory (222-T)

59 contaminated pieces of equipment were found in the laboratory, although the amount on each was small. 62 smears throughout the building showed no positive value. Twenty air samples all gave values less than 10^{-11} µg Pu/cc.

1124186

7/31/45

Concentration Building (224-T)

Considerable maintenance work was done in the cells during this week and additional time was devoted to the supervised checking of hand counts. 8 high counts were found and the contamination was successfully removed in all cases.

Thirty air samples were taken with a top reading of 1.1×10^{-10} µg/cc.

The U Plant

Control Laboratory (222-U)

Product contamination was found in small amounts on seven pieces of equipment. 86 smears gave only 1 positive value. 21 air samples all indicated atmospheric concentrations of product below 10^{-11} µg/cc.

The B Plant

Canyon Building (221-B)

The activity as measured at 2 inches from the bucket yoke at the time of Operations dimension check was as follows:

Bucket Yoke Number	mrep/hr	mr/hr
#1	125	107
#2	550	395
#3	68	60

Control Laboratory (222-B)

Product contamination was located in four cases. The general condition of the laboratory as shown by smear tests and air monitoring samples was good.

Concentration Building (224-B)

Another assault mask was found to be contaminated with approximately 0.15 µg of product. Although full protective clothing including assault masks is normally worn during work in the cells some special operations have been permitted without such protection. Cell F was not operated between 7/21/45 and 7/25/45, and a thorough cleanup was done when the last material left the cell. Special maintenance work was permitted without masks. During this time three small spots of contamination were found as follows:

On the floor west of the F-9 tank	0.2 µg
F-2 centrifuge windage ring	0.15 "
Floor of the F-2 balcony	0.9 "

The spots were discovered during a program offrequent checking, and were cleaned up immediately. Five air samples taken during this special work indicated no atmospheric concentration as high as 10^{-11} µg/cc.

The Isolation Building (231)

Air Monitoring

Seven "Little Sucker" samples in the cells and fifteen in the laboratories gave values

below 10^{-11} μg Pu/cc. Samples on the filtered hood air system showed no average concentration above 10^{-12} μg/cc. Special 24-hour samples in the 903 filtered hood air system read as follows:

Location	Concentration (μg/cc)
Cell 3 header	2.6×10^{-11}
Cell 3 header	6×10^{-12}
Cell 5 header	2×10^{-12}
Cell 6 header	$< 10^{-12}$
Laboratory header, all lab. filters except 35-3, 31, 32	$< 10^{-12}$
Laboratory header, filters 42, 43, 44, 45	$< 10^{-12}$
Laboratory header, filters 38, 41	1×10^{-12}

The limiting sensitivity of these tests was close to 10^{-12} μg/cc. Evidently, Cell 3 header has been responsible for positive values found before. Fifty-five spot samples throughout the building gave 51 readings at the background level of observation and a maximum reading of 2×10^{-11} g/cc. Three of the background level samples came from empty clothes hampers.

Surface Contamination

Zone	Items or Locations checked	Contamination found (dis/min) >1000	>5000	>25,000	Maximum Values dis/min
Operations	1930	38	19	15	>100,000
Technical	1740 inside hoods	50	25	6	>100,000
	outside hoods	43	13	5	>100,000
H.I.	150	3	1	1	50,000
General Bldg.	465	0	-	-	

206 smears were taken and showed only two positive values.

251 miscellaneous small items were checked by means of Poppy and 58 instances of surface contamination were located and referred back for additional cleaning. 274 smears on inaccessible surfaces of these items included 847 positive values.

Floor contamination was:

Location	Maximum Intensity dis/min	Total Quantity μg Pu
Corridor	10,000	0.1
Cell 3	>100,000	1 - 2

250 shoes were checked with four readings above 1000 dis/min, and a top value of 5000 dis/min. These shoe checks do not include those occurring at the time of a floor spill such as the one in cell 3, where the shoes are immediately disposed of in the approved manner.

Gamma Radiation

The maximum dosage-rate in the process area was 8 mr/hr at the usual location. Maximum readings on PR vessels and SC containers were respectively 40 and 21 mr/hr.

H M Parker
to
W C Kay

7/31/45

7-1115

Site Survey

ater and Waste Monitoring

Contaminated water from the well at Ranch #13 which is north of the 200 Areas and S.E. of the 100-B Area had an activity of 1.3×10^{-4} μc/liter. It is not known whether this represents true contamination of the underground water table or whether it has come from a surface contamination by fume deposition in this area. Active water at Spring #13 on Honey Hill did occur immediately following exposure of this region to the stack fumes. The present disposition of activity in the subsidiary outlets is as follows:

Location	Maximum Reading	General Level	Remarks
200 "T" Retention Outlet (Swamp)	0.05 mrep/hr	< 0.05 mrep/hr	Normal water
200 "W" Laundry Ditch	< 0.05 " "	< 0.05 " "	4 in. water
241 "T" Tank farm			
(101 condenser)	30 mr/hr	2 mr/hr	No test hole
(#107 tank)	16 mr/hr	(near hot tanks)	checks
241 "B" Tank farm			
(101 condenser)	12 mr/hr		No test hole
(#107 Vent)	32 mrep/hr	< 0.05 mrep/hr	checks
200 "B" Retention Outlet (Ditch)	0.2 mrep/hr	0.1 mrep/hr (ditch) 0.05 mrep/hr (swamp)	Swamp was dry
200-N "P" Ditch (Entrance)	0.2 mrep/hr	0.1 mrep/hr (ditch) < 0.05 mrep/hr (swamp)	Water level 6 in.
200-N "R" Ditch (Entrance)	0.5 mrep/hr	0.05 mrep/hr	Swamp was dry

Air Monitoring

No alpha particle activity has been collected in dust samples from the 200-W Area. The S-22 ionization chamber stations showed high readings on 7/24/45 and 7/25/45. This was probably caused by activity brought to the ground during the looping of the west and northwest winds on these days.

Location	Dosage-Rates for 7/24/45, 7/25/45 (Average)
Route #10 - Mile 10	0.06 mrep/hr
Route #4 Mile 10	0.06 " "
Mile 6	0.15 " "
Mile 4	0.05 " "
Route #11 Mile 6	0.06 " "
Route #2 Mile 4	0.05 " "
Meteorology Tower	0.49 " "

The average dosage-rates for the week ending 7/26/45 were as follows:

Location	mrep/hr
Route #10 Mile 1	0.04
Mile 3	0.04
Mile 5	0.02

1124189

7/31/45

7-1115

Location		mrep/hr
Route #1	Mile 8	0.02
Route 4-S	Mile 10	0.04
	Mile 6	0.12
South of 1A - 4 miles		0.04
	300 Area	0.02
Route #11	Mile 6	0.05
	Mile 13	0.04
Route #2	Mile 4	0.03
	100-D	0.02
	100-F	0.02
Meteorology Tower		0.32

Previous contamination of the air conditioning units in the Administration Building in Richland now seems to have diminished below the measurable level.

Integron readings were as follows:

Location	Average Dose in 24-hrs
100 Areas	1.8 mr
200-E	1.3 mr
200-W	3.6 mr

None of the apparent exposures on the integrons was confirmed by film readings or by special beta chambers maintained in the integron monitoring stations.

Ground Contamination

The maximum dosage-rate on the ground in the 200-W Area was 0.8 mrep/hr at a point 3000 feet S.E. of the T Plant stack. The highest reading outside the fenced area was 0.1 mrep/hr east of the main badge house. The highest activity in the 200-E Area was 0.9 mrep/hr at a point 4500 feet S.E. of the stack. The highest reading outside this area was 0.2 mrep/hr on Route 4-S, at Milepost #5. The highest reading on the guard towers in the West Area was 0.1 mrep/hr at Tower #10 near the Meteorology Tower. The maximum activity was 0.1 mrep/hr 150 feet south of the tower. Smears from the Meteorology Building gave a count of 200 c/m outside and 14 c/m from points inside the building.

Samples of sage brush from Richland were counted long enough to give reliable indication of minimal contamination. 1.5 gms of plant spread on a watch glass below a mica window G.M. tube read 9 [$\pm$ 3] c/m at 8 percent geometry.

General

The repeated off-scale readings on pencils on one employee as reported last week has been found to be due to an ultimately successful attempt to stimulate the H. I. Section to begin an investigation. The same reason was found for a second case with less frequent repetition of high readings. Neither of these men was an S Department employee, and both belonged to the same servicing department.

For the first time since this series of reports was begun, a clear cut case of over-exposure recorded by the pencils and confirmed by the badge occurred in the 200 Areas.

[redacted]

...arker
to
W C Kay

DECLASSIFIED

7/31/45 7-1115

The pencil readings were just off-scale, and the badge confirmation indicated 180 mr which is reasonably good agreement. The exposure occurred on an H. I. man who in surveying the area around an open cell allowed his chest and hence the pencils and badge to come within the radiation beam from the cell at a time when the measuring instrument was held at a lower level outside the main beam.

No thyroid count above 50 c/m was observed.

H. M. Parker

H. M. Parker, Chief Supv.
H. I. Section

HMP:swc

DECLASSIFIED

1124191

[redacted]

'46

Copy #1 - W.C.Kay - J.E.Cole
#2 ~~- P.B.Vaughan~~ 7-1115
#3 - J.J.Urban
#4 - S.T.Cantril - 700 Area
#5 - H.M.Parker
#6 - G.M.Patterson
#7 - L.Squires-M.H.Smith - 700 Area file
#8 - G.W.Struthers-M.F.Acken-300 Area file
#9 - Yellow copy
#10- Pink copy

August 8, 1945.

TO: W. C. KAY
S Department Superintendent

THIS DOCUMENT CONSISTS OF 12 PAGES
No. 1 OF 10 COPIES, SERIES A

#30 - H. I. REPORT FOR 200 AREAS AND ENVIRONS

FOR THE WEEK ENDING AUGUST 3, 1945

General Statistics

	T	U	B
Surveys for Special Work Permits	116	7	87
Other routine and Special Surveys	66	1	123
Smear Samples for alpha counts	175	90	218
Smear Samples for beta counts	95	90	0
Air Monitoring samples	99	5	48
Thyroid checks	76	-	62

The T Plant

Canyon Building (221-T)

The 4-7 to 8-1 jet assembly was removed to permit access to a defective gasket. A reading of 10,000 mrep/hr was obtained 3 inches from the open face of the connector. The assembly was suspended in cell 1R where the job was finished. A special sample was taken from the 4-7 tank. Readings of 1000 mrep/hr including 500 mr/hr of gamma radiation were obtained 1/2 inch from the trombone.

Control Laboratory (222-T)

65 pieces of equipment were found with product contamination. None of 50 smears had more than 20 d/m. Twenty-four air samples were all less than 10^{-10} g Pu/cc. The highest gamma ray reading was 11 mr/hr near sample shelves in Room 1.

C.C.Gamertsfelder
to
W. C. Kay

3-2994
8/8/45
7-1115

Concentration Building (224-T)

Thorough surveys of all cells showed the following conditions:

A Cells:	top of A-1 tank	8.6 μg Pu
	flange on A-1 tank	.36 "
C Cell :	top of C-4 tank	5.2 "
	flanges on C-4 tank	0.02 "
D Cell :	D-1 tank on manhole cover	16 "
	top of D-3 tank	0.15 "
E Cell :	E-1 tank on manhole cover	16 "
	top of E-1 tank	1.3 "

F and G Cells: Considerable contamination due to work on F-2 centrifuge. About 330 μg Pu were spread over the entire floor area of these cells. There was about 40 μg Pu on various pieces of equipment. The highest values were 13 μg Pu on top of F-1 and 13 μg Pu on the old F-2 centrifuge. A large amount of this contamination was removed before work was continued.

Of 68 air samples the following were above the tolerance level of 5×10^{-10} μg Pu/cc.

Date	Location	μg Pu/cc
7/26/45	Top of F-2 centrifuge	1.9×10^{-9}
7/26/45	Top of F-2 centrifuge	3.3×10^{-9}
7/26/45	Top of F-2 centriguge	1.7×10^{-9}
7/28/45	Near F-8 tank	1.4×10^{-9}

Protective clothing worn during work in this cell presented a considerable problem in decontamination. An air sample taken at breathing height for the person checking these items had a concentration of 4.1×10^{-9} μg Pu/cc. After laundering a reading of 1.4×10^{-10} μg Pu/cc was found. Over a hamper of laundered articles 8.5×10^{-10} μg Pu/cc was measured.

The U Plant

Control Laboratory (222-U)

No contamination of any importance was found. Only five air samples were taken due to large amount of work in 224-T. All of these were less than 10^{-11} μg Pu/cc.

The B Plant

Canyon Building (221-B)

A waste can at Section 11 read 125 mr/hr.

1124193

C.C.Gamertsfelder
to
W. C. Kay

8/8/45 7-1115

A bolt from the 8-3 sampler cap was removed after it was dropped into the sampler. Tools used in removing it gave a reading of 710 mrep/hr. During this operation there were two small spills. These were adequately cleaned. A survey was made of the pipe trench with covers removed; readings taken at edge of the trench were:

Section	4	520 mr/hr
	6	27 "
	7	220 "
	8	420 "
	9	260 "

The integron in section 13 of the operating gallery gave a supposedly valid reading. Investigation showed small readings; about 2 mr/hr were observed at the bleeder line from the 13-1 spray gang valve and the gang valve for the 15-7 to 15-8 jet. A reading of 0.6 mr/hr was found on the 4-8 to 4-7 gang valves. Some more readings were taken with a bucket of slugs suspended 5 feet above the deck level over the 4-5L dissolver. Readings obtained were:

Distance	Reading	Reading at 1 foot (calc.)
157 ft.	590	14,500 r/hr
178	380	12,000 "
199	300	11,800 "
388	43	6,200 "
409	37	6,100 "
430	31	5,700 "
514	17	4,500 "
535	12	3,500 "
619	6	2,300 "

If the corrected readings are plotted against the amount of air present as an absorber the value for zero absorber can be obtained by extrapolation, in this case it turns out to be about 35,000 r/hr at one foot. This value is about three times larger than one, previously calculated for a similar circumstance. In order for the radiation to be absorbed as much as indicated in the table it is necessary to postulate an energy of about .25 MEV which is much lower than the energy of the Lanthanum gamma which should make up the greater part of the energy emitted.

Control Laboratory (222-B)

Sampling equipment pieces had contamination up to 0.5 μgm Pu. The aspirator of the sample transfer apparatus gave 40 mrep/hr. Other contamination was relatively small.

Concentration Building (224-B)

The air conditioner filters gave 2 mrep/hr. An assault mask was found to be contaminated with 0.11 μg Pu. There were eight locations of surface contamination. All were adequately cleaned. The largest was a spot containing 3 μg over an area of 100 sq.in.

Waste Disposal (241-B)

A sample was taken from the 107 waste tank. When placed in a stainless steel beaker a reading of 590 mr/hr was obtained. It was transferred to the 300 Area in a lead shield.

C.C.Gamertsfelder
to
W. C. Kay

8/8/45

7-1115

Fan Building (291-B)

During installation of thermocouples in the fan and motor bearings three men were exposed for short lengths of time in a radiation field of up to 1600 mr/hr. The pencil readings of these men indicated exposures of from 30 to 55 mr.

200-N Area

Certain articles of protective clothing were found to be contaminated. Readings up to 2.5 mrep/hr were found on rubber gloves and on some dirty rags.

The Isolation Building (231)

Air Monitoring

41 spot samples were taken. 37 were less than 10^{-11} μg Pu/cc; the rest were less than 2×10^{-11} μg Pu/cc. Continuous sampling with "Little Suckers" gave ten readings all less than 8×10^{-10} μgm Pu/cc. Nine other samples in the 903 filtered hood air system with Big Suckers were all less than 10^{-12} μg Pu/cc.

Surface Contamination

Zone	Items or Locations checked	Contamination found (dis/min) >1000	>5000	>25,000	Maximum Values dis/min
Operations	796	35	15	7	100,000
Technical	1556	102	42	11	100,000
H. I.	130	3	1	1	50,000
General Building	172	-	-	-	-

339 smears were taken. 23 of these were above 100 dis/min. 348 small items were checked with "Poppy", and about 80 of these were sent back for further cleaning. 276 smears were also taken on small items with 24 showing more than 1000 dis/min.

Floor contamination was located in seven places. The largest spot in cell 4 was estimated to have about 1 μgm Pu. The others ranged from 0.1 to 0.5 μgm Pu.

131 pairs of shoes were checked. 14 were above 1000 dis/min, 3 above 5000 dis/min. The top value was 20,000 dis/min.

Gamma Radiation

Process Area	Maximum	12 mr/hr at process hood
PR containers	"	52 mr/hr at side B
SC containers	"	20 mr/hr at side L

Site Survey

Water and Waste Monitoring

Ranch 13 is contaminated with 3.8×10^{-4} μc/liter. Spring 13 is contaminated with 5.0×10^{-4} μc/liter. The source of this contamination is not known. The activity seems to have a half life of about five days which at present cannot be explained.

C.C.Gamertsfelder
to
W. C. Kay

8/8/45

7-1115

Waste Surveys

Location	Maximum Reading	General Level	Remarks
200 "T" Retention Outlet (Swamp)	0.1 mrep/hr	0.05 mrep/hr	Water level was high
200 W Laundry Ditch	< 0.05 mrep/hr	< 0.05 mrep/hr	5 in. water
241 "T" Tank farm (101 condenser)	18 mr/hr (101 tk)	1.7 mrep/hr	
(107 tank)		2.0 mrep/hr	
241 "B" Tank farm (107 vent)	26 mrep/hr		
(101 condenser)		18 mrep/hr	
(101 tank)		24 mrep/hr	
200 "B" Retention Outlet (Swamp and Ditch)	0.1 mrep/hr	< 0.05 mrep/hr	Swamp is dry
200-N "R" Ditch (Entrance)	1.7 mrep/hr	0.2 mrep/hr	Water normal
200-N "P" Ditch (Ditch and Swamp)	0.3 mrep/hr	0.3 mrep/hr	Water normal

Air Monitoring

The average dosage-rates for the week were :

Location	mrep/hr
Route #10 - Mile 1	0.042
Mile 3	0.045
Mile 5	0.032
Route #1 - Mile 8	0.018
Route #4-S- Mile 10	0.076
Mile 6	0.334
4 Mi. S. of 1-A	0.039
300 Area	0.024
Route 11-A- Mile 6	0.034
Mile 13	0.028
Route #2-S- Mile 4	0.036
Route #2-N- 100-D	0.022
100-F	0.020
Meteorology Tower	0.255

All readings include Natural Background.

Integron readings were as follows:

Location	Average Dose in 24-hours
100 Areas	1.4 mr
200-E	1.7
200-W	2.1
Outlying Areas	Background

Ground Contamination

The highest ground contamination found was 0.5 mrep/hr in the areas S.E. of the stacks in both the East and West Areas. A reading of 0.8 mrep/hr was found on guard tower #10 in the West Area. Contamination of 50 - 4 c/m at 8 percent geometry was found on 1.1 gms. of vegetation obtained at Van Giesen and Perkins in Richland.

7-1115

C.C.Gamertsfelder
to
W. C. Kay

8/8/45

General

No high pencil readings were confirmed by a badge reading, and no high badge readings were found.

No thyroid count above 50 c/m was observed.

C. C. Gamertsfelder
C. C. Gamertsfelder
Acting Chief Supervisor
H. I. Section

CCG:swc

DECLASSIFIED

152

3-3011

7-1115

#1 - W. C. Kay - J. E. Cole
#2 - F. B. Vaughan
#3 - J. J. Urban
#4 - S. T. Cantril - 700 area
#5 - H. M. Parker
#6 - C. M. Patterson
#7 - L. Squires - M. H. Smith - 700 Area file
#8 - G. W. Struthers - M. F. Acken - 300 file
#9 - Yellow copy
#10- Pink copy

August 11, 1945.

TO: W. C. KAY
S Department Superintendent

THIS DOCUMENT CONSISTS OF 5 PAGES
No. 1 OF 10 COPIES, SERIES A

INV 9-47

#31. - H. I. REPORT FOR 200 AREAS AND ENVIRONS

FOR THE WEEK ENDING AUGUST 10, 1945

General Statistics

	T	U	B
Surveys for Special Work Permits	63	3	108
Other routine and Special Surveys	74	1	169
Smear Samples for alpha counts	175	-	151
Smear Samples for beta counts	100	-	-
Air Monitoring Samples	103	-	44
Thyroid checks	117	-	50

The T Plant

Canyon Building (221-T)

An operations sampler had 58 mrep/hr including 6 mr/hr on his shoes. He had been sampling the 4-7 tank which is not covered by an extended Special Work Permit and he had not been wearing rubbers. The source of the contamination was not found.

A barrel of contaminated waste giving readings of 200 mrep/hr and 38 mr/hr was removed and taken to the burial grounds.

Control Laboratory (222-T)

The majority of contamination found was on sampling equipment. The rest of the building is quite clean. The highest gamma ray reading was 19 mr/hr at the sample shelves. A waste carton with a reading of 650 mrep/hr was taken to the burial ground. All of 30 air samples indicated less than 10^{-11} μg Pu/cc.

3-30

C C Gamertsfelder
to
W C Kay

DECLASSIFIED

8/11/45

Concentration Building (224-T)

The floor of the F cell balcony had a total of about 1200 μg Pu spread over about 250 square feet. The F cell ventilators each had 7 μg Pu on the interior surfaces.

62 air samples were taken. 44 of these were less than 10^{-11} μg Pu/cc. The highest reading observed was 3.6×10^{-10} μg Pu/cc at the F-10 door, Room 3, on 8/6/45. Contamination was detected on 28 assault masks used during the week, one had 0.08 μg Pu and the others had about 0.02 μg Pu.

The U Plant

Control Laboratory (222-U)

No significant hazard was found in this laboratory.

The B Plant

Canyon Building (221-B)

Two blocks were removed from cell 8L while air sparging was taking place in the 8-1 precipitator. As the blocks were removed a cloud of fumes was observed to rise to the ceiling. Later a general level of 1 mrep/hr was observed in the canyon. Contamination was found in the crane cab gallery giving readings as high as 8 mrep/hr on the concrete wall at section 17. A reading of 2 mrep/hr was obtained in the crane cab ventilation duct. Men in the cab at the time were found to have clothing contamination to the extent of 3000 c/m. Smears taken in the cab indicated slight general contamination. Contamination in the canyon was found on walls and floors and in the stairwells ranging from 2 mrep/hr in section 19 to 28 mrep/hr in section 13 stairwell. This high reading point was taken as a reference point and decay data on the activity was taken. Preliminary results indicate a half life of 7.5 days which is presumably due to 8 day iodine. However, results obtained from some of the smears indicate a half life of about 4 days of as yet unknown origin. No alpha contamination was found on the smears. The extended work permits for work in the canyon were withdrawn until contamination decays are cleaned up.

The original 8-1 precipitator agitator assembly was lifted from storage in cell 11R. The maximum reading obtained was 16,000 mrep/hr on the shaft. The equipment is still in no condition to allow work to be done on it.

Control Laboratory (222-B)

Product contamination was found in small amounts in Room 7. Other rooms were not contaminated. One shield on the sample storage shelves gave a reading of 24 mr/hr. One air sample in the storage room read 1.3×10^{-11} μg Pu/cc.

Concentration Building (224-B)

Product contamination was found in 17 locations. The largest amount was 45 μg Pu over an area of 10 square feet on top of the F-1 tank. 26 μg Pu was found on a spot 4 feet square before the door to F-10 in G cell. The other spots were much lower. All except one of these spots was cleaned so that a Sandy reading of less than 2000 d/m could be obtained. The spot which was not cleaned was on the rim of the decontamination tank with about 5 μg Pu over an area of 1 square foot. This spot was covered with masking tape during maintenance work on F-22. An air sample reading 5×10^{-11} μg Pu/cc was taken in the locker room. No known source for this contamination was found.

1124199

DECLASSIFIED

C C Hamertsfelder
to
W C Kay

DECLASSIFIED

8/11/45

3-30 11

7-1115

Fan Building (291-B)

Maximum radiation level to which personnel were exposed was 66 mr/hr. The reading at the fence was 8 mr/hr.

200-N Area

No unusual conditions were observed in either 212-R or 212-P.

The Isolation Building (231)

Air Monitoring

24 Little Sucker air samples were taken. All except one read less than 5×10^{-12} µg Pu per cc. The other read 7×10^{-11} µg Pu/cc. Readings in the filtered hood air system were 10^{-12} µg Pu/cc or less. 59 spot samples were taken; 56 were 2×10^{-11} µg Pu/cc or less, the other three were 13×10^{-11} µg Pu/cc, 16×10^{-11} µg Pu/cc and 5×10^{-11} µg Pu/cc, - all taken in cell 4 during a period of high surface contamination.

Surface Contamination

Zone	Items or Locations checked	Contamination found (dis/min) ≥1000	≥5000	≥25,000	Maximum Values dis/min
Operations	1474	29	14	8	>100,000
Technical	1237	35	23	6	50,000
H. I.	50	4	1	0	5,000
General Building	75	0	0	0	-

364 smears were taken, 7 of these had more than 100 dis/min. 273 small items were checked with instruments, and 21 were rejected. 165 smears were taken to supplement the instrument readings, and 18 of these were above 100 dis/min.

Floor Contamination was:

Location	Maximum Intensity dis/min	Total Quantity g Pu
34	25,000 (3 small spots)	0.3
35	30,000	0.2
6C	>100,000	1
Cell 4	>100,000 after maintenance	1
Cell 4 *	>>100,000 source unknown	700

Gamma Radiation

141 pairs of shoes were checked with 6 readings greater than 1000 dis/min and 2 greater than 5,000 dis/min. There were none as large as 25,000 dis/min.

P R Container,	maximum at side	54 mr/hr
Process Area,	maximum at process hood	9 mr/hr
SC Vessel,	maximum at sides	15 mr/hr

* Mostly in east end of process hood near AT tank sample point.

1124200

DECLASSIFIED

C C Gamertsfelder
to
W C Kay

3-3016

8/11/45

7-1115

Site Survey

Water and Waste Monitoring

Waste Surveys

Location	Maximum Level	General Level	Remarks
200 "T" Retention Outlet (entrance)	0.05 mrep/hr	< 0.05 mrep/hr	Water level normal
200 W Laundry Ditch	< 0.05 mrep/hr	< 0.05 mrep/hr	Water level 6 in.
241 "T" Tank farm #107 Sampling port	40 mrep/hr	2 mrep/hr	(Test Holes) No Count above background was obtained (7/31/45)
241 "B" Tank Farm #101 Condenser	17 mrep/hr	1 mrep/hr	No survey was made of the Test Holes in "B"
200 "B" Retention Outlet (500 ft. below entrance)	0.15 mrep/hr	0.05 mrep/hr	Water level high
200 North "R" Ditch	3.0 mrep/hr	< 0.30 mrep/hr	Water level 12 in.
200 North "P" Ditch (200 ft.below entrance)	0.25 mrep/hr	0.10 mrep/hr	Water level 10 in.

Air Monitoring

Readings at all chamber stations are lower this week, probably due to the fact that fumes from the dissolving stayed aloft very well during most of the week. The average dosage-rates for the week were:

Location	mrep/hr
Route #10 - Mile 1	0.042
Mile 3	0.034
Mile 5	0.029
Route #1 - Mile 8	0.018
Route #4 - Mile 6	0.212
Mile 10	0.069
4 Mi. S. of 1-A	0.029
300 Area	0.027
Route #11 - Mile 6	0.030
Mile 13	0.026
Route #2 - Mile 4	0.031
100-D	0.018
100-F	0.020
Meteorology Tower	0.160

All the above readings include Natural Background.

1124201

C C Gamertsfelder
to
W C Kay

8/11/45

Integron readings were:

Location	Average Dose in 24-hours
100 Areas	1.4 mr
200 E	0.5 "
200 W	0.14 "
Outlying Areas	Background

Ground Contamination

The maximum dosage-rate of 0.4 mrep/hr at a point 2500 feet south east of the T Plant stack. The maximum in 200 E was 0.4 mrep/hr, 5000 feet south east of the B-Plant stack. Samples of vegetation in Richland have again shown slight traces of activity. The highest value obtained was 51 ± 3 c/m on 8 percent geometry from 1.5 gm sample from the south part of Richland. A sample from Milepost 10 on Route #4-S read 66 ± 7 c/m.

GENERAL

There was one high badge reading of 2300 mr which was on an Operations employee. There were no high pencil readings on this man during the period. One other badge which was read because of high pencil readings gave 100 mr as the exposure.

No thyroid count above 50 c/m was observed.

C C Gamertsfelder

C. C. Gamertsfelder,
Acting Chief Supervisor
H. I. Section

CCG:swc

August 18, 1945

TO: W. C. KAY
S Department Superintendent

#32. - H. I. REPORT FOR THE 200 AREAS AND ENVIRONS

FOR THE WEEK ENDING AUGUST 17, 1945

General Statistics

	T	U	B
Surveys for Special Work Permits	75	5	83
Other routine and Special Surveys	54	1	95
Smear samples for alpha counts	146	11	118
Smear samples for beta counts	40	11	-
Air monitoring samples	84	6	51
Thyroid checks	40	-	25

The T Plant

Canyon Building (221-T)

An Operations sampler reported a high hand count after taking an 8-3 W.S. sample on August 13, 1945. The count was reduced after many repeated applications of various cleaners. A contaminated spot at the 8-3 sample port about two feet square gave a reading of 80 mrep/hr. The source of this contamination could not be explained. A reading of 1500 mrep/hr was obtained from a trombone used in taking a sample from the 4-7 tank, the doorstop gave a reading of 105 mr/hr. A carton of contaminated waste reading 2000 mrep/hr including 450 mr/hr was sent to the burial grounds. Operations discovered this waste during a routine survey. The source of this waste was unknown.

Control Laboratory (222-T)

Rooms and equipment in the laboratory are quite free from contamination with the exception of the sampling equipment. A reading of 20 mrep/hr was obtained from supposedly clean samplers equipment in the hallway. 34 air samples were taken, and 28 of these were less than 10^{-11} µg Pu/cc. One sample over the lunchroom sink gave 5.2×10^{-11} µg Pu/cc, the rest were 3.6×10^{-11} µg Pu/cc or less.

There was a minor injury with a possibility of product contamination.

Concentration Building (224-T)

Contamination is very widely spread in the F and G cells. A large number of items have been wrapped in paper and taken to the burial grounds. On August 13, a flange on the F-2 to F-10 jet was found to be leaking at a time when painters were working in the vicinity. The rubbers worn by the painters were found to be contaminated with more than 50,000 dis/min. After work on the flange was completed, the entire floor was measured. It was estimated that there were about 500 μg Pu on the entire floor surface. The flanges on F-2 and the G.E. chamber and conduit were very badly contaminated. Contamination was still wide spread on August 17.

Several air filter face masks were found to be contaminated with up to 5 μg Pu on the face piece. Ten cannisters from assault masks were removed and checked. The outer filter in all had from 2.2×10^{-3} μg Pu to 0.3 μg Pu. The inner filter had no contamination in any of those tested. 37 of 50 air samples were less than 10^{-11} μg Pu/cc, 10 were less than 8.1×10^{-11} μg Pu/cc. The other three were - 2.4×10^{-10} μg Pu/cc over a hamper of rubbers, 2.0×10^{-10} μg Pu/cc on roof at air duct from cell E, and 21.8×10^{-10} μg Pu/cc on roof at air duct from cell D. This latter value is above the tolerance level.

Fan House (291-T)

Installation of thermocouples has continued with all personnel receiving a calculated dose of less than 100 mr. The fence perimeter has been extended to a point where the reading is less than 1 mr/hr.

The U Plant

Control Laboratory (222-U)

All hazard is well controlled in this laboratory. One spot on the floor after spilling of sample discs read 62,000 dis/min. The spot was cleaned immediately to less than 1000 dis/min. Six air samples gave less than 10^{-11} μg Pu/cc.

The B Plant

Canyon Building (221-B)

The contamination on the wall has continued to decay with an 8-day half life. The highest reading now obtainable is at the reference point which gave 6 mrep/hr on August 17. The floor averages about 2 mrep/hr, and the walls average 3 mrep/hr.

An air sample taken near the 17-4 sampler showed 1.2×10^{-11} μg Pu/cc.

Control Laboratory (222-B)

Each of several bayonets had more than 1 μg Pu. Other pieces of equipment had small amounts of contamination. A smear from a table in Room #7 gave 2250 dis/min. Gamma and beta ray hazard was low.

Concentration Building (224-B)

Contamination was found in 13 locations. The largest amounts were about 20 μg Pu on the manhole cover on F-1 and 1.5 μg Pu on the manhole cover of the A-1 precipitator. The other spots had less than 0.4 μg Pu. An air sample taken near a hamper of dirty coveralls in F-10 read 1.1×10^{-10} μg Pu/cc.

C C Gamertsfelder - W C Kay

7-1115

8/18/45

The Isolation Building (231)

Air Monitoring

21 Little Sucker air samples all read 1.3×10^{-11} μg Pu/cc or less. The filtered hood air system were 2.3×10^{-12} μg Pu/cc or less. 61 spot samples were taken, the highest of which were 2×10^{-11} μg Pu/cc.

Surface Contamination

Zone	Items or Locations checked	Contamination found (dis/min) >1000	>5000	>25,000	Maximum Values dis/min
Processing	1850	51	38	17	800,000
Laboratory	1547	80	48	30	>100,000
General	209	1	0	0	1,000

372 smears were taken, 15 showing more than 100 dis/min. 539 miscellaneous small items were checked with instruments. 87 were returned for further cleaning. 296 smears taken to supplement the instrument readings gave 38 which had more than 100 dis/min.

Only one small spot on the floor of cell 1 was found which had about 0.2 μgm Pu. 132 pairs of shoes were checked. Four shoes had about 500 dis/min each, and one shoe had 1,000 dis/min. Both of these last two items constitute a record low.

Gamma Radiation

P R container,	maximum	at side	40 mr/hr
Process Hood,	"	" surface	16 mr/hr
S C Vessel,	"	" side	31 mr/hr

Site Survey

Water and Waste Monitoring

Waste Survey

Location	Maximum Level	General Level	Remarks
241 "T" Tank Farm	44 mr/hr (101 condenser)	< 1.0 mr/hr	101 and 107 tanks gave low readings
200 W Laundry Ditch	< 0.05 mrep/hr	< 0.05 mrep/hr	Normal water level
200 "T" Retention Outlet (entrance)	0.1 mrep/hr	0.05 mrep/hr	" " "
200 "B" Retention Pond	< 0.05 mrep/hr	< 0.05 mrep/hr	Swamp dry
241 "B" Tank Farm	21 mr/hr (101 condenser)	< 1.0 mr/hr	Low readings were obtained at 101 and 107 tanks
200 North Ditch "P"	0.9 mrep/hr (NE edge of swamp)	0.4 mrep/hr	Water level low.
200 North Ditch "R"	1.4 mrep/hr (entrance)	0.05 mrep/hr	Water level normal.

Spring #13 gave 1.4 x 10^{-4} μc/liter, and Ranch #13 gave 2.9 x 10^{-4} μc/liter.

7-1115

Air Monitoring

The average dosage-rates for the week ending 8/16/45 were :

Location	mrep/hr
Route #10 - Mile 1	0.06
Mile 3	0.05
Mile 5	0.03
Route #1 - Mile 8	0.02
Route #4-S- Mile 6	0.23
Mile 10	0.08
4 mi. S. of 1-A	0.05
300 Area	0.03
Route #11 -Mile 6	0.03
Mile 13	0.02
Route #2 - Mile 4	0.06
100-D	0.02
100-F	0.02
Meteorology Tower	0.12

All the above readings include Natural Background.

Integron readings were:

Location	Average Dose in 24-hours
100 Areas	1.8 mr
200-E	2.0 mr
200-W	1.0 mr
Outlying Areas	2.0 mr

No contamination of the air conditioners in the Administration Building (703) in Richland was detectable.

Ground Contamination

Maximum dosage-rate in the 200-West Area was 0.5 mrep/hr 2300 feet east-southeast of the stack. The maximum reading outside the fenced area was 0.5 mrep/hr 800 feet east of 200-West on Route #3. Guard tower #10 had 0.6 mrep/hr on the NW hand rail. The maximum reading in 200-East was 0.4 mrep/hr at a point 2000 feet southeast of the stack. The maximum contamination found in Richland was 3.4 x 10^{-4} μc on a 1.5 gm sample of vegetation. The general level is 1.7 x 10^{-4} μc on similar samples. Values are not corrected for counting errors due to absorption in the sample.

GENERAL

There were no high pencil readings or badge readings. No thyroid count above 50 c/m was observed.

C. C. Gamertsfelder

C. C. Gamertsfelder, Acting Chief Supv.
H. I. Section

CCG:swc

7-1115

Copy #1 - W.C.Kay - J.E.Cole
#2 - F.B.Vaughan
#3 - J.D.Ellett
#4 - J.M.Urban
#5 - S.T.Cantril
#6 - H.M.Parker
#7 - G.M.Patterson
#8 - L.Squires-M.H.Smith-700 Area file
#9 - G.W.Struthers-M.F.Acken-300 Area fil
#10- yellow copy
#11- pink copy

TO: W. C. Kay
S Department Superintendent

August 25, 1945.

#33. - H. I. REPORT FOR THE 200 AREAS AND ENVIRONS FOR THE WEEK ENDING AUGUST 24, 1945

General Statistics

	T	U	B
Surveys for Special Work Permits	90	5	101
other routine and special surveys	72	4	111
Smear samples for alpha counts	151	132	156
Smear samples for beta counts	66	156	34
Air monitoring samples	96	3	65
Thyroid checks	124	-	75

The T Plant

Canyon Building (221-T)

An Operations sampler had contamination on his right hand which jammed the four-fold counter. The count was successfully reduced but no cause for the contamination was found. The highest reading obtained at the sampling ports was 1750 mrep/hr near the 8-3 plug. This was cleaned so that the reading was 80 mrep/hr.

Control Laboratory (222-T)

74 smears taken during the week with no readings of more than 100 dis/min. 40 air samples were taken, 38 of these were less than 4.0×10^{-11} µg Pu/cc. The others were : one near the north vent pipe of the dry well had 24×10^{-11} µg Pu/cc, and one taken near the bayonet box in room #1 had 7.7×10^{-11} µg Pu/cc. There were several boxes of contaminated waste with readings between 60 mrep/hr and 500 mrep/hr.

Concentration Building (224-T)

Contamination is still widely spread throughout the F cell. A large part of this contamination, 300 μg Pu, was found on the F-2 centrifuge and the process piping. There is about 400 μg Pu on the floor surfaces around the F-2 centrifuge. Some contaminated areas which were painted still give high readings on the portable instruments, but do not give any smear reading at all. The F-10 room has about 1300 μg Pu spread over the entire floor surface. 54 air samples were taken with a high reading of 7.2×10^{-11} μg Pu/cc.

Fan House (291-T)

The maximum reading at the inspection plates of the #1 fan housing was 3000 mr/hr.

The U Plant

Control Laboratory (222-U)

A large amount of work was done here in the process of getting equipment ready for the shutdown of the building. 600 items were checked with instruments for alpha contamination. Thirty doorstops were checked, the highest reading obtained was 75 mr/hr. 3 air samples all gave less than 10^{-11} μg Pu/cc.

The B Plant

Canyon Building (221-B)

The extended work permits have been reinstated as contamination on the walls and floor is now at a low level, about 1 to 2 mr/hr. The crane operator on the 4-12 shift on August 19 had contamination on his face and head. The crane cab was slightly contaminated presumably because one of the sections of cell 8 was opened on the preceding shift. The cell which was opened was not being operated, but the adjoining section 8 cell was being used and there is an open pipe which connects the two cells.

Control Laboratory (222-B)

Alpha contamination was very low. A reading of 34 mr/hr was found near the sample shelves in room #1 and a waste container read 24 mr/hr.

Concentration Building (224-B)

Contamination was found in the following locations:

	Amount	Area
1. Floor outside F-10 unit	5.1 μg Pu	10 sq. ft.
2. F-2 centrifuge windage ring, smear	0.07 "	-
3. F-2 centrifuge shaft, smear	0.03 "	-
4. Manhole cover on F-1 precipitator	18 "	4 sq. ft.
5. F-1 windage ring	0.3 "	1/2 sq. ft.
6. Flanges on F-1 to F-2 jet	0.03 "	10 sq. in.
7. Flange on lubrication line at F-1	0.5 "	5 sq. in.

At the time of this report, all except items 4 and 5 had been cleaned.

C C Gamertsfelder - W C Kay

8/25/45
7-2324
7-1115

Maintenance Shop (272-B)

A stainless steel container from 224-B which was free from exterior contamination was sent to the shop with instructions that it should not be opened. The can was to have some shielding fitted to it. The can was opened however, and some liquid (cleaning solution) was spilled on the floor. One smear taken read 190 dis/min. The spot was cleaned and then no loose product could be found with smears.

Fan Building (291-B)

The highest reading obtainable at the fence now that the earth barricade has been finished is less than 1 mr/hr. The highest reading in the building is 60 mr/hr.

The Isolation Building (231)

Air Monitoring

18 Little Sucker air samples gave readings of 5×10^{-12} μg Pu/cc or less. The filtered hood air system had 8×10^{-13} μg Pu/cc. 71 spot samples were taken, the two highest of 4×10^{-11} μg Pu/cc and 11×10^{-11} μg Pu/cc were obtained in cell 4. The rest were 2×10^{-11} μg Pu/cc or less.

Surface Contamination

Zone	Items or Locations checked	Contamination found (dis/min) >1000	>5000	>25,000	Maximum Value dis/min
Processing	1787	53	24	13	100,000
Laboratory	1572	67	38	13	100,000
H. I.	150	2	0	0	-
General	35	-	-	-	-

339 smears were taken. Nine of these had more than 100 dis/min, and three had more than 1000 dis/min.

Special checks for contamination:

	INSTRUMENT Number	INSTRUMENT Rejected(> 500 dis/min)	SMEAR No.	SMEAR >100 d/m	SMEAR >1000 d/m
SC's for release	20	10	226	15	0
Returned SC's	60	33	193	75	24
Decontaminated items	82	21	0	-	-
Miscellaneous	228	9	106	2	-

A spot on the floor in cell 3 had 0.5 μg Pu. Seven other spots had from 0.02 to 0.05 μg Pu. 150 pairs of shoes were checked, one shoe had 10,000 dis/min, 3 shoes had between 1000 and 3000 dis/min.

Gamma Radiation

PR vessels	110 mr/hr
Process hood	17 "
SC vessel	26 "

Miscellaneous

On August 22, one of the process control personnel suffered a small acid burn from a high level product solution. The whole finger was rather highly contaminated with more than 100,000 dis/min. The decontamination was done under the direction of Dr. S. T. Cantril.

Site Survey

Water and Waste Monitoring

Waste Survey

Location	Maximum Level	General Level	Remarks
200 T Retention Outlet	< 0.05 mrep/hr	< 0.05 mrep/hr	Water level very high-due to flushing
200 W Laundry Ditch	< 0.05 mrep/hr	< 0.05 mrep/hr	Water level normal
241 T Tank farm	34 mr/hr (#101 condenser)	0.1 mrep/hr	No test hole checks by Operation
241 B Tank farm	40 mrep/hr (#101 tank-sampling port)	< 0.05 mrep/hr	
200 B Retention Outlet	< 0.05 mrep/hr	< 0.05 mrep/hr	Swamp dry
200 North "P" Ditch	0.4 mrep/hr (Swamp)	0.2 mrep/hr	Water level 6 in.
200 North "R" Ditch	1.4 mrep/hr (Entrance)	0.1 mrep/hr	Ditch water level normal. Swamp dry.

Ranch 13 had 2.9 x 10^{-4} μc/liter, and Spring 13 had 3.4 x 10^{-4} μc/liter.
A value of 1.3 x 10^{-4} μc/liter was found in the Columbia River at Hanford.

Air Monitoring

The average dosage-rates for the week ending 8/23/45 were :

Location	mrep/hr	Location	mrep/hr
Route #10-Mi. 1	0.08	Route 11A-Mi.6	0.03
Mi. 3	0.07	Mi.13	0.02
Mi. 5	0.05	Route 2-S-Mi.4	0.04
Route #1 Mi. 8	0.02	Route 2N- 100-D	0.02
Route 4-S-Mi.10	0.08	100-F	0.02
Mi. 6	0.23	Meteorology Area	0.12
4 Mi.S of 1-A	0.06		
300 Area	0.04		

All the above readings include Natural Background.

C C Gamertsfelder - W C Kay

8/25/4[redacted]

HW-7-1115

Integron readings were:

Location	Average dose in 24 hours
100 Areas	1.0 mr
200-E	2.4 mr
200-W	3.1 mr
Outlying	2.4 mr

The east center integron in 200-E gave an average of 5.7 mr/24 hours. This was checked by a film reading in the same location.

The Xe sampling apparatus is now in working order, and a dummy run was made near the Yakima Barricade.

Ground Contamination

The general areas of contamination still remain in the same place. The maximum in the T Plant is 0.7 mrep/hr, 2200 feet SE of the stack. A value of 0.8 mrep/hr was found at guard tower #10. The maximum in 200-E is 0.5 mrep/hr, 3500 feet SE of the stack. Contamination on Richland vegetation is a little higher than last week at 3.6×10^{-4} μc/gm.

GENERAL

There were no high pencil or badge readings. All thyroid counts were less than 50 c/m.

C. C. Gamertsfelder sc

C. C. Gamertsfelder, Acting Chief Supv.
H. I. Section

CCG:swc

[redacted]

Copy #1 - W.C.Kay - J.E.Cole
#2 - F.B. Vaughan
#3 - J.D. Ellett
#4 - J.J.Urban
#5 - S.T.Cantril
#6 - H.M.Parker
#7 - C.M.Patterson
#8 - L.Squires-M.H.Smith-700 Area fi
#9 - G.W.Struthers,M.F.Acken-300 Area
#10-Yellow copy
#11-Pink copy

September 10, 1945.

TO: W. C. KAY
S Department Superintendent

THIS DOCUMENT CONSISTS OF 4 PAGES
No. 1 OF 11 COPIES. SERIES R

#34. H. I. REPORT ON THE 200 AREAS AND ENVIRONS FOR THE WEEK ENDING AUGUST 31, 1945.

INV. 9-47

General Statistics

	T	U	B
Surveys for Special Work Permits	106	4	89
Other routine and Special Surveys	138	7	87
Smears for alpha counts	136	50	190
Smears for beta counts	136	50	24
Air samples	85	-	72
Thyroid checks	95	-	37

The T Plant

Canyon Building (221-T)

Readings up to 150 mrep/hr were found at the south edge of cell 2-R. This contamination was probable due to drippings from the loading bucket. The area involved was cleaned by Operations. The 14-1 to 14-2 jet in cell 14-L was removed for inspection under constant monitoring. The highest reading was 300 mr/hr on the jet. The reading at the railing of the open cell was 100 mr/hr. Contamination in the crane cabway was found after cell 6-L had been opened to allow a check on the cell equipment. Because contamination has been the source of several high hand counts the extended work permits for the cabway have been temporarily voided, and work is now being done with special work permits which specify protective clothing. The contamination may be due to fumes from cell 6 or to the conditioner filters.

Control Laboratory (222-T)

Sampling equipment had a total of about 9 μg Pu. Air samples taken in a box containing contaminated bayonets read 2.2×10^{-10} μg Pu/cc, and 5.5×10^{-10} μg Pu/cc. A waste carton read 100 mrep/hr.

7-1115

Concentration Building (224-T)

The floors of F cell and F-10 room have been painted, covering the contaminated spots with apparent success. There is still about 8 μg Pu uncovered spread over 11 small spots in the F cell and about 0.5 μg Pu in 3 spots in F-10. The decontamination of the equipment is proceeding slowly due to a lack of a suitable agent. 49 air samples were taken, the highest were: 7.1×10^{-11} μg Pu/cc taken over some clean gloves in room 3; 4.8×10^{-11} μg Pu/cc in the F-10 to F cell air duct, and 5×10^{-11} μg Pu/cc over dirty clothes in room 3. The rest of the samples had less than 3.4×10^{-11} μg Pu/cc.

Fan House (291-T)

The reading at the inspection plate of the fan housings was 3200 mr/hr. Since maintenance in this spot may be necessary methods of reducing this contamination are being studied by the Project Engineering group.

The U Plant

Control Laboratory (222-U)

All equipment has been removed and the building is closed down. 50 smears were taken in a final survey, and no positive results were found. There were no radiation hazards.

The B Plant

Canyon Building (221-B)

Both cells in Section 8 were opened in order to replace the 8-1 agitator. Although no operations were being done in this cell, contamination was spread around the canyon. The highest reading was 26 mrep/hr at the wall in back cell 8-L. Highest reading elsewhere was 4.5 mrep/hr at Section 11. Readings in the crane gallery at Section 7 were 5 mrep/hr on the wall and 2.5 mrep/hr on the floor. The crane cab gave 1.5 mrep/hr. Shortly after the cell blocks were removed persons working in the cab were found to have high hand counts which were reduced by washing.

Control Laboratories (222-B)

Contamination with product was found in several places in rooms #7 and #9. Gamma ray hazard was quite low. Sampling trombones with corrosion of the plain steel parts are sent to the maintenance shop to replace these parts with stainless steel. Screw caps are on the ends of the stainless steel capillary tube of each unit before it leaves the laboratory and the outside is checked with smears and instruments. The caps are not removed until the trombones are returned from the shop. All air samples had less than 2×10^{-11} μg Pu/cc.

Concentration Building (224-B)

About 50 μg Pu was found spread over equipment and floors in 13 different locations. The largest amounts were on the equipment of F-1 where about 14 μg Pu was found on the manhole cover, and about 10 μg Pu on the F-1 to F-2 jet, and about 10 μg Pu on the F-1 to F-22 jet assembly. Most of these spots were adequately cleaned. The manhole cover still has 7 μg Pu. Thirty air samples were taken and none of these showed more than 10^{-11} μg Pu/cc.

Fan Building (291-B)

A reading of 5.5 mr/hr was obtained at the south fence. The maximum inside the building and outside of the brick wall was 70 mr/hr. A series of 18 smears taken at the fans and in the building showed no product contamination and very little fission product contamination.

Waste Disposal (241-B)

During the taking of inventory the hands and shirt cuff of one person were contaminated. The hands were cleaned and the shirt was held for decontamination.

The Isolation Building (231)

Air Monitoring

24 Little Sucker air samples all read 5 x 10^{-11} μg Pu/cc or less. The filtered hood air system was 1.6 x 10^{-12} μg Pu/cc or less. The highest of 75 spot samples indicated 3 x 10^{-11} μg Pu/cc.

Surface Contamination

Zone	Items or Location Checked	Contamination Found (dis/min) >1000	>5000	>25,000	Maximum Values dis/min
Processing	1478	45	28	10	>100,000
Laboratory	1163	56	28	19	100,000
H. I.	150	1	0	0	-
General	23	0	0	0	-

497 smears were taken, 13 of which had more than 100 dis/min. 165 special checks on pieces of equipment were made, 49 of the pieces were rejected. 360 smears were taken to supplement the instrument readings, and 31 of these had more than 100 dis/min. One small spot of more than 1 μg Pu was found on the floor in room 35. It was cleaned by removing the paper on the floor. 142 pairs of shoes were checked and 4 of them had more than 1000 dis/min. The highest value was 5000 dis/min.

Gamma Radiation

PR container, maximum at side	50 mr/hr
Process hood	19 mr/hr
SC container, maximum at side	31 mr/hr

Site Survey

Water and Waste Monitoring

Waste Survey

Location	Maximum Level	General Level	Remarks
200 T Retention Outlet	< 0.05 mrep/hr	< 0.05 mrep/hr	Water level of swamp was high.
200 W Laundry Ditch	< 0.05 mrep/hr	< 0.05 mrep/hr	Water level 2 in.
241 T Tank farm	150 mr/hr at #101 condenser	0.05 mrep/hr	No charge placed in 101 tank since last survey (34 mr/h

1124214

Waste Survey (continued)

Location	Maximum Level	General Level	Remarks
200 B Retention Outlet	0.1 mrep/hr	0.05 mrep/hr	Swamp was dry
241 B Tank farm	21 mr/hr (#101 condenser)	< 0.1 mrep/hr	
200 North "P" Ditch	0.2 mrep/hr (Entrance)	0.1 mrep/hr	Water level 6 in.
200 North "R" Ditch	1.2 mrep/hr (Entrance)	0.2 mrep/hr	Water level 4 in.

Spring #13 had 4.5×10^{-4} μc/liter, and Ranch #13 had 9×10^{-5} μc/liter. The 361 dry well had no detectable contamination.

Air Monitoring

The average dosage-rates for the week were:

Location	mrep/hr	Location	mrep/hr
Route #10-Mi.1	0.05	Route 11-Mi.6	0.03
Mi.3	0.04	Mi.13	0.02
Mi.5	0.03	Route 2 -Mi.4	0.05
Route #1- Mi.8	0.02	100-D	0.02
Route 4- Mi.6	0.27	100-F	0.03
Mi.10	0.06	Meteorology Area	0.12
4 Mi.S. of 1-A	0.04		
300 Area	0.03		

All the above readings include Natural Background.

Integron readings were:

Location	Average dose in 24 hours
100 Areas	1.0 mr
200-E	1.5 mr
200-W	3.2 mr
Outlying Areas	1.7 mr

Ground Contamination

The highest readings on the ground were 0.6 mrep/hr 2300 feet SE of the T Plant stack, and 0.4 mrep/hr 6500 feet SE of the B Plant stack. Patrol tower #10 had a reading of 0.4 mrep/hr. The highest contamination in Richland was 1.4×10^{-4} μc/gm from vegetation in the north part of town. Slight positive indications of activity were found in the air conditioner filters in the 703 building, the highest reading was 0.02 mrep/hr.

GENERAL

There were no high pencil or badge readings. No thyroid count above 50 c/m was observed.

C.C. Gamertsfelder

C.C.Gamertsfelder, Acting Chief Supv.
H. T. Section

CCG:swc

7-2355
7-1115

#1 - W.C.Kay - J.D.Cole
#2 - F.B.Vaughan
#3 - J.D.Ellett
#4 - J. J. Urban
#5 - S. T. Cantril
#6 - H. H. Parker
#7 - C. M. Patterson
~~#8 - Acquires - W.L.Smith-700 Area file~~
#9 - O.H.Struthers-A.F.Jackon-300 Area file
~~#10 - Yellow copy~~
#11- Pink copy

September 12, 1945.

TO: W. C. KAY
S Department Superintendent

THIS DOCUMENT CONSISTS OF 5 PAGES
No. 9 OF 11 COPIES, SERIES A

#35. - H. I. REPORT FOR THE 200 AREAS AND ENVIRONS
FOR THE WEEK ENDING SEPTEMBER 7, 1945

General Statistics

	T	B
Surveys for Special Work Permits	117	66
Other routine and special surveys	69	80
Smear samples for alpha counts	50	181
Smear samples for beta counts	100	14
Air monitoring samples	67	50
Thyroid checks	63	48

The T Plant

Canyon Building (221-T)

The contamination reported last week seems to be confined between sections 3 and 9 indicating the source as section 6, which was mentioned as a possible source.

A general survey of the canyon on September 5 resulted in the discovery of 25 spots on the deck reading from 10 to 225 mrep/hr. These spots formed a path across 38 and 34 cell blocks and were probably caused by drippings from the buckets during the loading of the section 4 dissolver. These spots were all cleaned so that they gave less than 1 mrep/hr.

A reading of 160 mr/hr was found at connector #83 at section 15 in the pipe gallery.

1124216

  9/12/45 7-2355 7-1115

Control Laboratory (222-T)

Sampling equipment remains contaminated with product and other active materials. Readings up to 24 mrep/hr were obtained on sampling equipment. The contaminated waste cartons are being removed before high readings are built up.

Twenty-five air samples all indicated less than 10^{-11} µg Pu/cc.

Concentration Building (224-T)

A total 70 µg Pu was found in cells A, C, D and E. The tops of the tanks and the manhole covers had the largest amounts. About 32 µg Pu was found on the cover and top of tank C-4.

A survey of F cell on September 6 showed about 1500 µg Pu spread over the floors of the cell and balcony. This may have been caused by a leak in the F-2 centrifuge where two loose cover bolts were found. The decontamination of the F cell equipment might have helped to spread the contamination. 32 air samples were taken; 25 of them had less than 10^{-11} µg Pu/cc, and 7 had from 1.3×10^{-11} and 12.8×10^{-11} µg Pu/cc. The latter value was obtained over the mask table in room 3.

Fan House (291-T)

The reading on the inspection plate was 4500 mr/hr on September 7.

The steam driven emergency fan inside the building read 220 mr/hr directly after a dissolving. nitric treatment in extraction

Waste Disposal (241-T)

A reading of 16 mrep/hr was found on the racks at the basin inlet to the ditch on September 2. The normal level at this spot is 1.5 mrep/hr. The reading was due to the jetting of water from section 6 after removing the blank from the jet. The blank has been re-installed and only jacket cooling water will enter the ponds.

The B Plant

Canyon Building (221-B)

The contamination in the canyon due to the opening of section 8 cells is from 2 to 5 mrep/hr on the floors and walls. The contamination does not rub off easily and is gradually being reduced by natural decay or vaporization.

Control Laboratory (222-B)

Some product contamination was found on sampling equipment and on a sink. The beta and gamma ray hazard was quite low.

Concentration Building (224-B)

Contamination was found in 11 locations, totaling 18 µg Pu.

The B-2 centrifuge was opened to repair the skimmer. The floors were covered with paper and rubber gloves were checked as the work progressed and the contaminated

ones were removed from use. Four assault masks were contaminated with up to 0.1 μg Pu. Five small amounts of product totaling about 1 μg were found on and near E-2 after completion of the job.

The Isolation Building (231)

Air Monitoring

20 Little Sucker air samples were all less than 4×10^{-12} μg Pu/cc. Three samples of the filtered hood air system were 2×10^{-12} μg Pu/cc or less. 61 spot samples were taken; 59 were 3×10^{-11} μg Pu/cc or less, and 2 samples had 1.2×10^{-10} x 2.4×10^{-10} μg Pu/cc. These last two values are not believed to be true readings because when it was in use in the process control section bits of tissue paper and cotton were put into the sample inlet of the Filter Queen assembly causing dust from the inside of the hose to be knocked loose.

Surface Contamination

Zone	Items or Locations Checked	Contamination found (dis/min) ≥1000	>5000	>25,000	Maximum Values dis/min
Processing	1450	36	28	12	100,000
Laboratory	987	40	27	16	>100,000
H. I.	55	6	4	-	>100,000
General	264	1	0	-	-

312 smears were taken and only 5 had more than 100 dis/min.

Special Checks

	Checks	Rejects	Smears Items	>100	>1000
SC for release	6	1	93	18	2
Returned SC's	13	11	90	13	4
Decontaminated items	11	3	0	0	0
Miscellaneous	258	9	12	0	0

Two spots containing 2 μg Pu and 10 μg Pu were found in cell 3 near the floor drain at the NW corner of the process hood. Spots have been found in this location previously but no cause has yet been determined.

The SC hoist hooks and rods in the operating cells are badly contaminated. This contamination can be spread to other regions with ease. Close contact with these hooks is necessary during surveys of the SC's.

Gamma Radiation

F R container, at side	44 mr/hr
Process hood B	21 mr/hr
S C container, at side	28 mr/hr

C C Gamertsfelder- H C Kay 9/12/45 7-23

DECLASSIFIED 7-1115

Site Survey

Water and Waste Monitoring

Waste Survey

Location	Maximum Level	General Level	Remarks
200 "T" Retention Outlet	16.0 mrep/hr 5.0 mr/hr (entrance)	1.5 mrep/hr (ditch) 0.7 mrep/hr (swamp)	-Water level of swamp was normal. -Ditch water level was low
200 W Laundry Ditch (entrance)	0.05 mrep/hr	<0.05 mrep/hr	Water level was 3 in.
241 "T" Tank farm	140 mr/hr (#101 condenser)	<1.0 mrep/hr	No test hole results
200 "B" Retention Outlet	0.1 mrep/hr (entrance)	0.05 mrep/hr	-6 in. of water in ditch. -Swamp dry
241 "B" tank farm	35 mr/hr (#101 condenser)	< 0.15 mrep/hr	No test hole counts made for six weeks
200 North "F" Ditch	0.3 mrep/hr (swamp)	0.2 mrep/hr	Water level 10 in.
200 North "E" Ditch	2.5 mrep/hr (entrance)	0.3 mrep/hr	-Ditch water level 6 in. -Swamp was dry

Air Monitoring

The average dosage-rates for the week ending 9/7/45 were:

Location	mrep/hr	Location	mrep/hr
Route 10 - Mi.1	0.08	Route 11-A - Mi.6	0.04
Mi.3	0.07	Mi.13	0.02
Mi.5	0.04	Route 2-S - Mi.4	0.05
Route 1 - Mi. 8	0.02	Route 2-W - 100-D	0.02
Route 4-S- Mi.10	0.07	100-F	0.03
Mi. 6	0.43	Meteorology Area	0.22
4 Mi. So. of 1-A	0.05		
300 Area	0.05		

All above readings include Natural Background.

Integron readings were:

Location	Average Dose in 24-hours
100 Areas	0.6 mr
200 East	1.4 mr
200 West	1.0 mr
300	6.3 mr
Outlying Areas	2.2 mr

The relatively high reading in the 300 Area was checked with a film which read 4.3 mr per 24 hours.

1124219

DECLASSIFIED

C C Gamertsfelder - W C Kay

9/12/45

Ground Contamination

Maximum in 200 West was 1.4 mrep/hr, 2200 feet SE of the stack. Patrol tower #10 read 2.2 mrep/hr. The maximum in 200 East was 0.8 mrep/hr, 5000 feet SE of the stack.

Vegetation on the north side of Richland had 2.6×10^{-4} μc/gm, and on the south side 1.1×10^{-4} μc/gm.

GENERAL

There were no high pencil readings confirmed by a badge reading, and no high badge readings were found. No thyroid count above 50 c/m was observed.

C C Gamertsfelder

C.C.Gamertsfelder, Acting Asst. Chief Supv.
H. I. Section

CCG:swc

175

Copy #1 - W.C.Kay - J.E.Cole
#2 - ~~F.B.Vaughan~~
#3 - J.D.Ellett
#4 - J.J.Urban
#5 - S.T.Cantril
#6 - H.M.Parker
#7 - C.M.Patterson
#8 - L.Squires-M.H.Smith-700 Area file
#9 - G.W.Struthers,M.F.Acken-300 Area f
#10- Yellow copy
#11- Pink Copy

TO: W. C. KAY
S Department Superintendent

September 15, 1945

THIS DOCUMENT CONSISTS OF 4 PAGES
No. 1 OF 11 COPIES, SERIES A

#36 - H. I. REPORT ON THE 200 AREAS AND ENVIRONS FOR THE WEEK ENDING SEPTEMBER 14, 1945

General Statistics

	T	B
Surveys for Special Work Permits	113	78
Other routine and special surveys	70	109
Smear samples for alpha counts	90	229
Smear samples for beta counts	90	-
Air monitoring samples	80	65
Thyroid checks	75	34

The T Plant

Canyon Building (221-T)

The contamination in the crane cab way is decaying in such a manner as to indicate a mixture of fission products. Readings at a reference point at section 5 were 1.4 mrep/hr on September 1, and 0.8 mrep/hr on September 12. Canvas shoe covers worn in the cabway counted 4000 c/m and 2800 c/m on the above dates.

The lead block for the 13-4 sampler was removed for inspection. Readings of about 600 mrep/hr were obtained at the top level of the sampler pit. All work done on the sampler was constantly monitored.

The copper gauge line to connector 83, in the pipe gallery, which was broken to prevent a syphoning effect previously noted at section 4 was not plugged on the connector side so that liquid could spill onto the water pipe and floor where readings of 150 mrep/hr and 1.5 mrep/hr were noted respectively. The gauge line was plugged and the contaminated spots were cleaned so that all readings were less than 1 mrep/hr.

1124221

9/15/45

7-1115

Control Laboratory (222-T)

Most contamination is still found on sampling equipment. Other contaminated spots and equipment are cleaned soon after they are found. The highest readings on air samples were on those taken near the bayonet boxes. The highest was 7.2×10^{-11} µg Pu/cc. A waste carton had a reading of 490 mrep/hr.

Concentration Building (224-T)

A large part of the contamination reported in the F and G cells has been cleaned up. There are still spots near the F-2 centrifuge and in front of the stairway to the balcony with a total of 150 µg Pu. A total of 175 µg was found on the F-2 centrifuge. Another 72 µg Pu was found on the jets, flanges and A frame of the F-2 centrifuge.

The B Plant

Canyon Building (221-B)

Two beakers on the deck at section 10 read 15 and 42 mrep/hr. Some tongs at section 1 read 18 mrep/hr and tools at section 1 read 15 mrep/hr.

Air samples taken at samplers 14-4, 17-4 and 18-4 all read 2×10^{-11} µg Pu/cc. An air sample taken near cell 8-L while it was open read 3.3×10^{-10} µg Pu/cc.

Control Laboratory (222-B)

Three sinks in room 7 had contamination with amounts of 3, 2.5 and 0.5 µg Pu. No contamination was found in other rooms. The decontamination hood in room 7 had a reading of 40 mr/hr. Other gamma radiation hazard was quite small.

Concentration Building (224-B)

Product contamination was relatively low. The top of D-1 had 5 µg Pu, the floor in front of F-10 had 1 µg Pu. There were two spots of 0.05 µg Pu each on the floor of F-10. All these spots were satisfactorily cleaned.

The air conditioner filters read 2 mrep/hr.

200 N Area

The funnel of the water monitor at 212-N had a reading of 5 mrep/hr. Other conditions were normal.

The Isolation Building (231)

Air Monitoring

29 Little Sucker air samples were taken, 28 of them read less than 4×10^{-12} µg Pu/cc. The other had 7.5×10^{-12} µg Pu/cc, this was taken in cell 3. The filtered hood air system read 5×10^{-13} µg Pu/cc or less.

57 spot samples were taken. One of these from cell 3 had 6.5×10^{-11} µg Pu/cc; the rest were all 2×10^{-11} µg Pu/cc or less.

C C Gamertsfelder - W C Kay

9/15/45

Surface Contamination

Zone	Items or Location Checked	Contamination found (dis/min) >1000	>5000	>25,000	Maximum Values dis/min
Processing	1213	68	47	15	>100,000
Laboratory	1315	79	50	11	>100,000
H. I.	75	-	-	-	-
General	376	2	-	-	2,000

SPECIAL CHECKS

	INSTRUMENT Checks	Rejects	SMEARS Number	Number > 100 dis/min
SC's for release	20	3	224	15
Returned SC's	5	2	35	4
Decontaminated items	7	1	-	-
Miscellaneous	114	8	30	1

Floor contamination in cell 4 included 22 spots with a total of about 5 μg Pu. There was one spot in room 35 with 1 μg Pu. After discovery of the spots in cell 4, the shoe check located 4 shoes with 1000 to 2000 dis/min, and one shoe with more than 100,000 dis/min. One other shoe found during the week had 25,000 dis/min.

Gamma Radiation

PR container, maximum at side	90 mr/hr
Process hood, maximum	10 mr/hr
SC container, maximum at side	28 mr/hr

Site Survey

Water and Waste Monitoring

For the week ending September 7, activity in the water at Ranch 13 had increased to 18×10^{-4} μc/liter. Spring 13 has 1.1×10^{-4} μc/liter. No data on waste is available this week.

Air Monitoring

The average dosage-rates for the week were:

Location	mrep/hr	Location	mrep/hr
Route #10 - Mi.1	0.08	Route 11A-Mi.6	0.03
Mi.3	0.07	Mi.1	0.03
Mi.5	0.04	Mi.13	0.02
Route 1 - Mi.8	0.02	Route 2N - 100 D	0.02
Route 4 - Mi.10	0.07	100 F	0.02
Mi. 6	0.39	Route 2S - Mi.4	0.08
4 Mi.So. of 1-A	0.05		
300 Area	0.03	Meteorology Area	0.13

All the above readings include Natural Background.

1124223

[redacted]

C C Gamertsfelder - W C Kay

9/15/45 7-1115

Integron readings were :

Location	Average dose in 24-hours
100 Areas	0.04 mr
200 E	Not obtained
200 W	0.86 mr
700	1.0 mr
Outlying Areas	Not obtained

Readings were obtained in the Integron houses with new Chambers made from ice cream cartons. These gave the following average readings:

Location	Average dose in 24-hours
100 Areas	0.35 mrep
200 E	0.95 mrep
200 W	0.35 mrep

Ground Contamination

Contamination up to 4.5 mrep/hr was found 2500 feet southeast of the T Plant stack. Guard tower #10 read 0.8 mrep/hr. The maximum in the 200-E Area was 0.4 mrep/hr about 3000 feet southeast of the stack. Vegetation at Van Giesen and George Washington Way had 1.8×10^{-4} μc/gm. The average level in Richland was 1.1×10^{-4} μc/gm.

General

There were no high pencil readings confirmed by badge readings. Two badges in the 200 West Area read 240 and 160 mrep. These readings are presumed to be due to fogged film and not to radiation received on the plant, because the open window could not be distinguished from the shielded portion as should be the case when the reading is due to radiation.

No thyroid count above 50 c/m was observed.

C.C. Gamertsfelder sc

C.C.Gamertsfelder, Acting Asst.Chief Supv.
H. I. Section

CCG:swc

7-1115

Copy #1 - W.C.May - J.L.Cole
#2 - F.H.Vaughan
#3 - J.D.Ballett
#4 - J.J.Urban
#5 - S.T.Cantril
#6 - H.E.Parker
#7 - C.H.Patterson
#8 - Inquiries-E.H.Smith-700 Area file
#9 - G.W.Struthers, M.F.Acken-300 Area file
#10- Yellow copy
#11- Pink copy

TO: W. C. MAY
S Department Superintendent

September 24, 1945.

THIS DOCUMENT CONSISTS OF 5 PAGES.
No. 7 OF 11 COPIES, SERIES A

#37 - H. I. REPORT ON THE 200 AREAS AND ENVIRONS
FOR THE WEEK ENDING SEPTEMBER 21, 1945

General Statistics

	T	B	TOTAL
Surveys for Special Work Permits	83	97	180
Other routine and special surveys	72	94	166
Smear samples for alpha counts	215	164	379
Smear samples for beta counts	101	-	101
Air monitoring samples	97	89	186
Thyroid checks	66	34	100

The T PLANT

Canyon Building (221-T)

The only exposure problems this week were again concerned with the sampling procedure. The maximum readings at the sampling ports were 500 mrep/hr including 56 mr/hr of gamma radiation at the 8-3 sampler, and 170 mrep/hr including 80 mr/hr of gamma radiation at 13-4 sampler. Both these ports were adequately decontaminated.

Control Laboratory (222-T)

A total of 20 surveys was made during the week with approximately 350 separate items checked and reported to the Laboratory supervision for proper disposition. The sampling equipment continued to show generalized alpha particle contamination. It should be noted that some of this activity will undoubtedly be caused by Uranium rather than Plutonium, although for safety in these reports alpha contamination is ascribed to the more offensive cause unless Plutonium is specifically known to be absent in a given case. A study of the sampling equipment has been planned to see to what extent a general separation could be applied routinely.

Concentration Building (224-T)

Good progress has been made during the week in the removal of the floor contamination. About 30 µg remains of the 150 µg total reported last week. However, the equipment pieces, especially the F-1 tank and F-2 centrifuge, still showed considerable contamination in an easily removable form as evidenced by the very high smear counts obtained in the building. F-7, F-8 and F-9 also showed surface contamination to a lesser extent. The floor of the F-10 room has been cleaned to a satisfactory standard.

A survey of the A cell after an equipment cleanup showed the region to be in good condition with the exception of an area around the motor shaft of the A-1 tank and the A-1-C flange where Sandy readings in excess of 120,000 dis/min were observed.

37 air samples were taken during the week with 16 positive results, ranging between 10^{-11} and 2.3×10^{-10} µg Pu/cc. The higher values were found at the F-10 air lock with the F-10 door open and by the decontamination tank in the F cell.

Fan House (291-T)

The maximum reading near the inspection plates of the fan housing was 4,600 mr/hr. The methods of reducing the radiation hazard in this vicinity are under discussion elsewhere. In the meantime a small wooden fence is being erected around the outside fan housings extending between the 291 and 292 buildings and thus relocating walkways at a safer distance from the source.

The B Plant

Canyon Building (221-B)

In removing the material from the 14-1 to 14-2 jet, which had been removed from the cell and placed on the canyon deck, a small amount of acid drained from the jet assembly and created a spill on the floor which registered 200 mrep/hr contact dosage-rate. This spill was adequately cleaned, but the incident recurred to cause a spill registering 50 mrep/hr on the 14-4 cell covers. Again the contamination was adequately removed.

20 air monitoring samples in the canyon included four positive values of the order of 3×10^{-11} µg/cc. Three of the readings arose near section 14, and the remaining one near section 8.

Control Laboratory (222-B)

The contamination was observed in the usual distribution on the sampling equipment. In all other respects, the hazard was well controlled.

Concentration Building (224-B)

11 small spots of product contamination were noted, of which the strongest was a spill of 2 µg on the flange of the decontamination tank. Of 33 air monitoring samples taken in the building only one gave a positive value which was a reading of 2×10^{-11} µg Pu/cc in the change room.

Fan House (291-B)

The maximum dosage-rate inside the building was 77 mr/hr outside the concrete block shield around the fan. The highest reading at the reference points on the fan housing was 2,300 mr/hr.

200-E Area

There was no unusual condition to report.

The Isolation Building (231)

Air Monitoring

14 Little Sucker air samples were taken, of which 12 were at the background limit of less than 4×10^{-12} µg/cc. The positive readings were 8×10^{-12} µg/cc and 9×10^{-12} µg/cc, taken in cell 4 and cell 3 respectively. The filtered hood air system read 4×10^{-13} µg/cc on two samples, and 1.3×10^{-12} µg/cc on the remaining samples.

58 spot samples were taken, of which the highest values were only 3×10^{-11} µg/cc in room 6A and again in room 35.

Surface Contamination

Zone	Items or Location checked	Contamination found (dis/min) >1000	>5000	>25,000	Maximum Values dis/min
Processing	2227	133	75	32	100,000
Laboratory	562	71	22	13	100,000
General & H.I.	75	0	0	0	-

In addition, 317 smears were taken in the building with only 3 positive values.

121 miscellaneous small items were also checked by instruments and smears with 9 being returned for further decontamination.

Low order floor contamination was found in cell 1, cell 4 and cell 3, although in the latter case the contamination was general over most of the floor area which was thereupon cleaned by an acid wash.

214 shoes were checked on a routine basis and only 6 were found to be contaminated.

Gamma radiation was as follows:

PR container, maximum at side	66 mr/hr
Process hood, maximum	20 mr/hr
SC container, maximum at side	48 mr/hr

Parker - Kay

9/24/45

7-1115

Site Survey

Water and Waste Monitoring

The water activities at Spring 13 and Ranch 13 were respectively 2.7 x 10^{-4} µc/liter and 2.3 x 10^{-4} µc/liter. No further progress has been made in determining the origin or the chemical nature of this contamination.

Surveys of the subsidiary waste disposal outlets were as follows:

Location	Maximum Reading	General Level	Remarks
241-T Tank farm	100 mr/hr (#101 condenser)	< 1.0 mr/hr	#101 and #107 tanks gave low readings
200 W Laundry ditch	0.05 mrep/hr	0.05 mrep/hr	Normal water level
200-T Retention Outlet	6.0 mrep/hr Entrance to ditch on rocks	0.5 to 2.0 mrep/hr	Normal water level
200-B Retention Outlet	0.1 mrep/hr Entrance to ditch	0.05 mrep/hr	Low level in ditch. Swamp dry
241-B Tank farm	#107-T vent 44 mrep/hr #101 condenser 39 mr/hr	< 1.0 mr/hr	Low reading on #101 tank
200-North Ditch "P"	0.1 mrep/hr Inlet to ditch	0.05 mrep/hr	Water level Normal
200-North Ditch "A"	1.2 mrep/hr Inlet to ditch	0.1 mrep/hr	Water level Normal

No explanation of the high reading at the #101 condenser has been forthcoming.

Air Monitoring

The average dosage-rates for the week were:

Location		mrep/hr	Location		mrep/hr
Route #10 -	Mi.1	0.12	Route 11A -	Mi.6	0.03
	Mi.3	0.09		Mi.1	0.06
	Mi.5	0.06		Mi.13	0.02
Route #1 -	Mi.8	0.02	Route 2N -	at 100 D	0.02
	Mi.5	0.03		at 100 F	0.02
Route 4-S -	Mi.10	0.12	Route 2S -	Mi.4	0.08
	Mi.6	0.37			
	4 Mi.So. of 1-A	0.05	Meteorology Area		0.18
	At 300 Area	0.05			

All the above readings include Natural Background.

Parker - Kay

DECLASSIFIED

9/24/45

7-1115

Records from the 614 Monitoring Stations indicate:

	Average Dose in 24 hours	
	Integrons Gamma Readings	Type C Chambers (Beta and Gamma) readings
100 Areas	1.9 mr	0.35 mrep
200 East	1.7 mr	1.7 mrep
200 West	1.6 mr	0.3 mrep

Ground Contamination

In the 200-W Area, contamination on the ground decreased slightly to a maximum of 3.5 mrep/hr at 2800 feet SE of the T Plant stack. The principal area of contamination (above 0.5 mrep/hr) extends from 1200 to 3500 feet SE of the stack with a width of approximately 1000 feet. Surveys of the Guard towers #9 and #10, which are SE of the stack, gave maximum readings 0.3 and 0.6 mrep/hr respectively on the outside surfaces. The outside of the Meteorology Building also registered 0.3 mrep/hr.

In the 200-E Area, the contamination increased to 1.3 mrep/hr at a point 4000 feet SE of the stack. In this area, the contamination extended from 1500 to 7000 feet SE of the stack with a width of approximately 2000 feet.

The highest activity found in Richland was 2.2×10^{-4} μc/gm of vegetation near the Kadlec Hospital. The average of five Richland samples was 1.2×10^{-4} μc/gm.

GENERAL

There was no high pencil reading confirmed by badge readings, and no separate high badge reading except six films from the 200-E Area, which were obviously fogged and not exposed to radiation while in the silver shield of the badges. Also, no thyroid count above 50 c/m was observed.

H. M. Parker se

H. M. Parker, Chief Supervisor
H. I. Section

HMP:swc

1124229

DECLASSIFIED

7-1115

Copy #1 - W.C.Kay-J.B.Cole
#2 - F.B.Vaughan
#3 - J.D.Ellett
#4 - J.J.Urban
#5 - S.T.Cantril
#6 - H.M.Parker
~~#7 - C.M.Patterson~~
#8 - L.Squires-~~H.H.Smith-700~~ 300 Area file
~~#9 - C.W.Struthers~~, H.F.Acken-300 Area fi
#10- Yellow copy
#11- Pink copy

October 3, 1945

TO: W. C. KAY
S Department Superintendent

THIS DOCUMENT CONSISTS OF 4 PAGES
No. 8 OF 11 COPIES, SERIES A

#38 - H. I. REPORT ON THE 200 AREAS AND ENVIRONS
FOR THE WEEK ENDING SEPTEMBER 28, 1945

General Statistics

	T	B	TOTAL
Surveys for Special Work Permits	97	89	186
Other routine and special surveys	62	87	149
Smear samples for alpha counts	100	114	214
Smear samples for beta counts	50	-	50
Air monitoring samples	87	89	176
Thyroid checks	61	33	94

THE T PLANT

Canyon Building (221-T)

Six sampling ports read an average of 160 mrep/hr. The maximum was 220 mrep/hr, which included 140 mr/hr. Most of this radiation comes from contaminated plugs.

A reading of 1.5 mrep/hr was obtained near the carrier unit air filters on September 22, 1945. The reading at this spot was 1.25 mrep/hr on September 28,1945.

The crane cabway walls now read 0.5 mrep/hr. Shoe covers worn on September 28,1945 were slightly contaminated.

Control Laboratory (222-T)

Product contamination was rather widespread. Most bayonets have about 0.5 μg Pu. A waste carton read 350 mrep/hr. 41 air samples were taken. The highest reading was 4.2×10^{-10} μg Pu/cc taken over a waste carton. A sample taken near a small centrifuge had 4.9×10^{-11} μg Pu/cc. The rest all had less than 2.2×10^{-11} μg Pu/cc.

1124230

CCGeneralfelder
[redacted]
to
W C Kay

DECLASSIFIED

10/3/45 1-1115

Concentration Building (224-B)

Product hazard is under better control. There is one small area near the air lock with about 0.1 γg Pu.

46 air samples were taken, the maximum was 5.6×10^{-11} γg Pu/cc near the F-10 door in room 3. 34 of the samples had less than 10^{-11} γg Pu/cc.

Fan House (291-T)

The maximum reading at the inspection plates of the fan housings was 5600 mr/hr on September 28, 1945.

THE B PLANT

Canyon Building (221-B)

Material was spilled from the 14-1 to 14-2 jet when it was on the deck to be unplugged. The spill was immediately hosed into the cell. A reading of about 2000 mrep/hr at four feet was obtained before the spot was hosed. The spot was later completely cleaned.

The H.M Chamber at section 13 indicated some radiation which investigation showed came from the strainer on connector 41 where a reading of 65 mr was obtained.

Air conditioner filters read 2 mrep/hr, indicating a stack gas downdraft during the week.

18 air samples were taken, three of them read 2×10^{-11} γg Pu/cc, and the rest were 10^{-11} γg Pu/cc or less.

Control Laboratory (222-B)

Product contamination of sampling equipment is large. The benches and equipment in room 7 show rather widespread minor contamination.

There were 26 air samples taken. The maximum was 4×10^{-11} γg Pu/cc near the bayonet rack, all the rest were less than 10^{-11} γg Pu/cc.

Concentration Building (224-B)

Product contamination in amounts between 0.2 and 12 γg Pu was found in six locations, all of which were adequately cleaned with the exception of a spot with 0.8 γg Pu on a step-ladder in cell F which was covered with masking tape.

45 air samples all had less than 10^{-11} γg Pu/cc. The air conditioner filters read 4 mrep/hr.

Fan House (291-B)

Maximum reading outside concrete blocks around fan was 92 mr/hr.

DECLASSIFIED

1124231

CCGamertsfelder
to
H C Kay

180

-X-

10/3/45

7-1115

The Isolation Building (231)

Air Monitoring

20 Little Sucker air samples were all less than 4×10^{-12} μg Pu/cc. One filtered hood air sample read 2×10^{-12} μg Pu/cc, two others were less than 10^{-12} μg Pu/cc. 50 spot samples were taken, the highest was 6×10^{-11} μg Pu/cc taken in cell 3 on September 23, 1945, the rest were 10^{-11} μg Pu/cc or less.

Surface Contamination

Zone	Items or Location Checked	Contamination found (dis/min) >1000	>5000	>25000	Maximum Values dis/min
Processing	2011	66	43	18	>100,000
Laboratory	1317	119	56	24	>100,000
General Bldg.& H.I.	127	4	2	-	-
Miscellaneous	445	51	27	10	-
Total	3900	240	128	52	

692 items were checked with smears, 14 of which had more than 100 dis/min.

There were two major spills in the Process Control and one in cell 3. The largest spill had more than 100 μg Pu in about 60 spots spread over rooms 29, 33, 34, 35, 36 and 37.

195 shoes were checked on a routine and 11 of these had from 1000 to 7000 dis/min. Other shoes checked because of the spills gave the following results: 52 shoes had from 1000 to 5000 dis/min, 2 shoes had 50,000 dis/min, and 7 shoes had more than 100,000 dis/min.

Gamma radiation was as follows:

PR container, maximum at side	110 mr/hr
Process Hood	17 mr/hr
SC Container, maximum at side	19 mr/hr

Site Survey

Water and Waste Monitoring

Waste Surveys

Location	Maximum Reading	General Level	Remarks
241 "T" Area (#101 condenser)	(200 mrep/hr (60 mr/hr	< 1.0 mrep/hr	#107 vent- (120 mrep/hr (50 mr/hr
200 W Laundry Ditch	0.05 mrep/hr (entrance)	< 0.05 mrep/hr	6" water level

1124232

-7-

T-1145

Waste Surveys (Continued)

Location	Maximum Reading	General Level	Remarks
200 T Area Retention Outlet	0.8 mrep/hr (entrance)	0.2 mrep/hr	Water level was high. Shielding entrance contamination
200 B Retention outlet	0.05 mrep/hr (entrance)	< 0.05 mrep/hr	1½ ft. water level
241 B Area #101 condenser #107 vent	54 mr/hr 34 mrep/hr	< 1.0 mrep/hr	
200 North P Ditch (swamp and ditch)	1.3 mrep/hr	0.5 mrep/hr	Water level low
200 North R Ditch (entrance)	1.2 mrep/hr	0.3 mrep/hr	Water level low

Spring #13 had 3.6×10^{-4} μc/liter and Branch #13 had 2.3×10^{-4} μc/liter.

Air Monitoring

The average dosage-rates for the week were:

Location	mrep/hr	Location	mrep/hr
Route #10 - Mi.1	0.08	Route 11A - Mi.6	0.12
Mi.3	0.09	Mi.1	0.09
Mi.5	(not adequate data)	Mi.13	0.05
Route #1 - Mi.8	0.02	Route 2N - 100-D	0.03
Mi.5	0.03	100-F	0.03
Route 4S - Mi.10	0.12	Route 2-S- Mi. 4	0.11
Mi.6	0.41	Meteorology Area	0.48
4 Mi.S of 1A	0.04		
300 Area	0.07		

All the above readings include Natural Background.

Records from the 614 Monitoring Stations indicate:

	Average Dose in 24 hours	
	Integrons Gamma Readings	Type C Chambers (Beta and Gamma) Readings
100-B Area	5.7 mr	0.2 mrep
100-D Area	6.7 mr	0.3 mrep
100-F Area	0.8 mr	0.3 mrep
200-East Area	3.4 mr	1.7 mrep
200-West Area	2.2 mr	0.5 mrep
Outlying Areas	0.4 mr	-

Ground Contamination

The maximum ground contamination in the 200-W Area has decreased to 1.2 mrep/hr at a point 2500 feet SE of the stack. The highest reading in the 200-E Area is 0.8 mrep/hr, 2500 feet SE of the stack. Guard tower #10 in 200-W Area had 0.6 mrep/hr. A reading of 1.4×10^{-4} μc/gm was obtained on vegetation from the SE part of Richland.

General

There were no high pencil readings confirmed by badge readings. There were no high badge readings. There were no thyroid counts above 50 c/m.

C C Gamertsfelder

C.C.Gamertsfelder, acting Asst.Chief Supv. H. I. Section

CCG:swc

7-2951

7-1115

#1 - J.L.Cole
#2 - F.B.Vaughan
#3 - J.D.Ellett
#4 - J.J.Urban
#5 - S.T.Cantril
#6 - H.M.Parker
#7 - C.M.Patterson
~~#8 - B.Squires-W.H.Smith-M.Hare-700 Area file~~
#9 - G.W.Struthers-M.F.Acken-300 Area file
~~#10 - Yellow copy~~
#11 - Pink copy

TO: W. C. RAY
S Department Superintendent

October 8, 1945

THIS DOCUMENT CONSISTS OF 6 PAGES
No. 9 OF 11 COPIES, SERIES A

#39 - H. I. REPORT ON THE 200 AREAS AND ENVIRONS

FOR THE WEEK ENDING OCTOBER 3, 1945

The reporting date for this report has been changed because of the introduction of the 40-hour week. Hereafter the report will cover the work from one Wednesday to the next.

J.W.
9-47

General Statistics

	T	B	Total
Surveys for Special Work Permits	83	51	134
Other routine and special surveys	41	68	109
Smear samples for alpha counts	43	103	146
Smear samples for beta counts	39	-	39
Air monitoring samples	52	81	133
Thyroid checks	60	16	76

THE T PLANT

Canyon Building (221-T)

Connector 15 in cell 13-L was removed and examined for gasket defects because of a water leak. A reading of 2000 mrep/hr including 500 mr/hr was obtained 2 inches from the connector. The examination was continued with continuous monitoring. The pipe leading into the connector was covered with a brownish dust which gave a reading of 400 mrep/hr on a smear. Connector 10 was then removed because it was a possible source for the leak and replaced with a spare from the U Plant. The old piping was left in 13-L for storage. The leak has not yet been found.

Contaminated paper was found near the 12-7 sampling port where a reading of 250 mrep/hr was obtained. A spot near 3-H read 500 mrep/hr.

1124234

Control Laboratory (222-T)

The sampling equipment had the usual contamination. Other radiation hazards were well controlled. The highest readings were 150 and 200 mrep/hr against two waste containers.

There were 27 air samples, 10 of which had more than 10^{-11} µg Pu/cc. The highest were about 10^{-10} µg Pu/cc near a waste container and over a primary sampler.

Concentration Building (224-T)

Alpha contamination was reported in 7 locations. The floor near the F-8 tank had a total of about 1 µg Pu. The other contamination was not very large.

24 air samples were taken, 7 of them had more than 10^{-11} µg Pu/cc. The highest reading of 6×10^{-11} was found over a hamper and another of 5.8×10^{-11} µg Pu/cc was taken over some rubbers.

Fan House (291-T)

The work on installing thermocouples and oil overflow lines on the fan bearings has been done with continuous monitoring. The maximum dosage-rate to which the men were exposed was 4000 mrep/hr. No high pencil readings resulted from this work.

THE B PLANT

Canyon Building (221-B)

A 16-4 waste sample was dropped in the section 11 stairwell and part of the sample was spilled on the first landing. The spill read 15 mrep/hr at a distance of 2 inches. The spot was cleaned so that there was less than 1 mrep/hr.

A bag of waste at section 1 gave 128 mrep/hr including 18 mr/hr. A spot reading 27 mrep/hr was found just east of the 3-5b sampler. It was probably due to drippings from empty sling bucket during dissolver charging.

All of 14 air samples indicated less than 10^{-11} µg Pu/cc.

Control Laboratory (222-B)

Smears indicated slight contamination on equipment in room 7. Other rooms and equipment other than sampling equipment were quite clean. An air sample near the sampling equipment had 1.1×10^{-10} µg Pu/cc. Another sample near the center of the room had 2×10^{-11} µg Pu/cc. 27 other samples were all less than 10^{-11} µg Pu/cc. The highest reading on a waste carton was 90 mrep/hr. The sample shelves were 26 mr/hr.

Concentration Building (224-B)

The F-1 manhole cover had more than 15 µg Pu over an area of 3 square feet. The rim of the decontamination tank had 0.8 µg Pu. The outlet flange of the F-1 to F-2 jet and the jet itself had 0.1 and 0.03 µg Pu respectively.

Fan House (291-B)

Maximum reading inside the building and outside the concrete shield was 95 mr/hr.

7-2570
7-1115

DECLASSIFIED

The Isolation Building (231)

Air Monitoring

	No. of Samples	Reading
Little Sucker samples in laboratories	8	All $< 4 \times 10^{-12}$ µg Pu/cc.
Little Sucker samples in processing area	6	All $< 4 \times 10^{-12}$ µg " "
Filtered hood air by Big Sucker	2	Both 6×10^{-13} µg " "

	No. of Samples			
Spot samples	$\leq 10^{-11}$	About 10^{-11}	About 3×10^{-11}	Higher
Processing	23	2	2	4.8×10^{-11}
Laboratories	5	-	-	in cell 6-B
General Building	3	1	-	

Surface Contamination

Zone	Items or Location checked	Contamination found (dis/min) >1000	>5000	>25,000	Maximum Values dis/min
Processing	1636	82	60	15	>100,000
Laboratory	1143	97	99	25	>100,000
General Bldg.&M.I.	555	2	-	-	
Miscellaneous	245	25	21	9	-

245 items were checked with smears, and 6 of these had more than 100 dis/min. There were six minor cases of floor contamination involving a total of one µg of product. 254 pairs of shoes were checked, and 18 of these had from 1000 to 5000 dis/min, and 2 had from 5000 to 50,000 dis/min.

Gamma radiation was as follows:

PR container, maximum at side	110 mr/hr
Process hood, maximum	27 mr/hr
SC container, maximum at side	36 mr/hr

Site Survey

Water and Waste Monitoring

Surveys of the subsidiary waste disposal outlets were as follows:

Location	Maximum Reading	General Level	Remarks
241 T Tank farm	(#101 condenser) 150 mr/hr (#107 tank) 50 mrep/hr	<1.0 mrep/hr	
200 W Laundry Ditch (entrance)	< 0.05 mrep/hr	< 0.05 mrep/hr	Water level low
200 T Retention Outlet (entrance)	7.5 mrep/hr	0.2 mrep/hr	Water level low
200 B Retention Outlet	0.05 mrep/hr	< 0.05 mrep/hr	Water level high (Ditch), low (swamp)

1124236

DECLASSIFIED

10/8/45

Continued from Page 3:

Location	Maximum Reading	General Level	Remarks
241 B Tank farm (#101 condenser)	42 mr/hr		
(#107 vent)	34 mrep/hr	1.0 mrep/hr	
200 North "F" ditch (entrance)	0.2 mrep/hr	0.1 mrep/hr	Water level high
200 North "E" ditch (entrance)	2.1 mrep/hr	0.3 mrep/hr	Water level normal
200 North "B" ditch (entrance)	0.3 mrep/hr	0.1 mrep/hr	Water level low

Air Monitoring

The average dosage-rates for the week were:

Location	mrep/hr	Location	mrep/hr
Route #10 - Mi.1	0.24	Route 11A- Mi.6	[illegible]
Mi.3	0.10	Mi.1	0.07
Mi.5	0.08	Mi.13	0.04
Route #1 - Mi.8	0.04	Route 2-N - 100 D	0.04
Intersection Rt.1 & Rt.4N	0.04	Route 2-S - Mi.4	0.18
Route 4-S Mi.10	0.28	Route 2-N - 100-F	0.04
Mi.6	0.50		
Mi.14	0.12		
300 Area	0.06		
Route 3 -Meteorology	0.43		
200-West - SE	0.02	100-D - SE	-
SW	0.02	NE	-
NW	0.02	SW	-
NE	0.03	100-B - NE	0.01
200-East - SE	0.12	SE	0.01
NE	0.03	SW	0.01
NW	0.03	100-F - SE	0.02
SW	0.07	NW	0.02
		SW	0.02
300 Area	0.03		

All the above readings include Natural Background.

Records from the 614 Monitoring Stations indicate:

Average Dose in 24 hours	Integrons Gamma Readings
100-B	1.8 mr
100-D	2.6 mr
100-F	0.4 mr
200-E	5.3 mr
200-W	2.7 mr
Outlying Areas	1.0 mr

192 7-1115

CCGamertsfelder-W.C.Kay 10/8/45

Ground Contamination

The maximum in 200-West was 1.2 mrep/hr, 2000 feet SE of the Stack. The Meteorology Area read 0.7 mrep/hr. The maximum in 200-East was 0.8 mrep/hr 2500 feet NE of the Stack.

Vegetation samples from various locations were:

100-B	7×10^{-4}	μc/gm
100-D	1.9×10^{-4}	
100-F	1.7×10^{-4}	
300	1.3×10^{-4}	
Richland Hospital	2.3×10^{-4}	
Richland Bus Terminal	3.1×10^{-4}	
Richland average	1.3×10^{-4}	
Y Junction	5.3×10^{-5}	
Kennewick MK	1.5×10^{-4}	
Pasco MK	1.2×10^{-4}	

GENERAL

There were no high pencil readings confirmed by badge readings. There were no high badge readings. There were no thyroid counts above 50 c/m.

C. C. Gamertsfelder,
Acting Asst. Chief Supv.
H. I. Section

 193

7-1115

#2 - E.A.MacCready
#3 - J.D.Allett
#4 - J.J.Urban
#5 - S.T.Cantril
#6 - H.M.Parker
#7 - C.M.Patterson
~~#8 - L.Squires-W.H.Smith-K.Mare-700 Area file~~
#9 - G.H.Struthers-W.F.Acken-300 Area file
~~#10 - Yellow copy~~
#11 - Pink copy

TO: B. C. Kay
S Department Superintendent

October 12, 1945.

THIS DOCUMENT CONSISTS OF 5 PAGES
No. 9 OF 11 COPIES, SERIES A

#40. - H. I. REPORT ON THE 200 AREAS AND LAUNDRIES

FOR THE WEEK ENDING OCTOBER 10, 1945

General Statistics

	T	B	Total
Surveys for Special Work Permits	68	61	129
Other routine and special surveys	56	81	137
Smear samples for alpha counts	61	95	156
Smear samples for beta counts	86	126	212
Air Monitoring samples	85	126	211
Thyroid checks	96	40	136

THE T PLANT

Canyon Building (221-T)

No new contamination of the canyon deck was found. The spot mentioned last week at section 3 was cleaned so that it now reads 60 mrep/hr. It originally read 500 mrep/hr. Three spots at section 12 have been reduced to 18, 40 and 60 mrep/hr. Sampler ports 6-1, 8-1 and 13-4 gave 110, 150 and 180 mrep/hr, respectively. Cell 13-4 was again checked for a water leak. The reading at the edge of the cell was 2000 mr/hr. All work was done with constant monitoring and there was no overexposure.

Six air samples were taken in 221-T and 271-T, and four of these had less than 10^{-11} μg Pu/cc. Two samples taken in the H. I. office room, 211, read 4.3 x 10^{-11} μg Pu/cc, and 2.0 x 10^{-11} μg Pu/cc. The cause of these readings is not known.

Control Laboratory (222-T)

Most product contamination was found on sampling equipment. All smears in the laboratory had less than 100 dis/min.

1124239

41 air samples were taken; 3 of these taken near a drying hood and primary sampler in room 7 and near the bayonet rack in room 1 read 5.5×10^{-11}, 5.0×10^{-11}, and 4.6×10^{-11} μg Pu/cc, respectively. 38 samples had 2×10^{-11} μg Pu/cc, or less.

The highest reading on a waste container was 170 mrep/hr.

Concentration Building (224-T)

There were 7 spots with product contamination with 0.05 to 0.3 μg Pu. An area of 50 square feet on the floor, north of F-2, had a total of 5 μg Pu.

There were 36 air samples taken, 35 of which had less than 2×10^{-11} μg Pu/cc. The highest reading was 3.8×10^{-11} μg Pu/cc, taken by the F-10 door in room 3.

THE B PLANT

Canyon Building (221-B)

The strainer at connector 41 in section 13 which read 90 mr/hr was replaced with a new one which now reads 7 mr/hr. Cell 16-4 was opened for inspection of the 16-1 tank. A maximum of 74 mr/hr was observed at the top of the cell and personnel were exposed to this for 30 minutes. A spot just south of the 9-4 sampler read 16 mrep/hr, and another spot east of the 3-5-4 sampler read 36 mrep/hr. The maximum reading on a sample port was 105 mrep/hr at 13-1. This was later reduced to 70 mrep/hr.

Control Laboratory (222-B)

Product contamination was found in 7 locations with amounts ranging from 0.1 to 2.0 μg Pu. The maximum value was found on the ledge of a stainless steel sink in room 7. 65 smear checks of other locations were made, and only 3 of these had more than 100 dis/min; the maximum was 138 dis/min.

There were 46 air samples and only one was as high as 2.1×10^{-11} μg Pu/cc. 40 of the samples had less than 10^{-11} μg Pu/cc.

The maximum reading on a waste container was 52 mrep/hr.

Concentration Building (224-B)

Surface contamination was found in 3 locations with a total of about 2 μg Pu. All of these were being cleaned at the time of this report.

52 air samples had less than 10^{-11} μg Pu/cc. 8 other samples had up to 5.3×10^{-11} μg Pu/cc. This highest value was found near the wash basin in F-10 room.

THE ISOLATION BUILDING (231)

Air Monitoring

	No. of Samples	Reading
Little Sucker samples in laboratories	12	All $< 4 \times 10^{-12}$ μg Pu/cc.
Little Sucker samples in processing area	12	(9) $< 4 \times 10^{-12}$ "
		(3) 6.6×10^{-12} "
Filtered Hood air samples -processing area	3	(2) $< 2 \times 10^{-13}$ "
		(1) 5×10^{-13} "

Spot samples	$\leq 10^{-11}$	About 10^{-11}	2×10^{-11}	Higher
Processing	24	4	4	6.5×10^{-11} in cell 3
Laboratories	4	-	1	3.2×10^{-11} in cell 4
General Building	1	-	-	--

Surface Contamination

Zone	Items or Location checked	Contamination found (dis/min) >1000	>5000	$>25,000$	Maximum Values (dis/min)
Processing	1745	114	86	33 *	$>100,000$
Laboratory	1380	64	50	13	$>100,000$
Gen.Bldg. & H.I.	50	-	-	-	
Miscellaneous	99	12	8	4	

* Eight of these were caused by leaking unions in steam jet lines which have apparently sucked back contamination.

585 items were checked with smears and 21 of these had more than 100 dis/min. 23 shoes were checked; 11 had between 1000 and 5000 dis/min, and two shoes had 10,000 dis/min.

There was one major spill involving about 80,000 μg Pu. The clothing and ankles of one of the personnel were grossly contaminated. The clothing was sent to the burial ground. There were three major spots of contamination left on the ankles after the first clean-up treatment, which were reduced with considerable difficulty. Three other small spills involving a total of 0.17 μg Pu were found.

Gamma radiation was as follows:

PR container, maximum at side	52 mr/hr
Process Hood, maximum	11 mr/hr
SC container, maximum at side	17 mr/hr

SITE SURVEY

Water and Waste Monitoring

Surveys of the subsidiary waste disposal outlets were as follows:

Location	Maximum Reading	General Level	Remarks
241 T Tank farm (#101 sampling port) (#101 condenser)	230 mrep/hr 8 mr/hr 130 mr/hr	$<$ 0.1 mrep/hr	#101 sampling port showed high beta activity due to a spill on top of sampling port
200 W Laundry Ditch	$<$ 0.05 mrep/hr	$<$ 0.05 mrep/hr	Water level was normal.

7-1115

Waste Disposal Survey-cont'd from 194

Location	Maximum Reading	General Level	Remarks
200 T Retention Outlet (entrance)	8.5 mrep/hr 6.5 mr/hr	0.05 mrep/hr	Water level norm Rocks at entranc gave high readin
200 B Retention Outlet (2000-ft below Inlet)	0.1 mrep/hr	<0.05 mrep/hr	Ditch water level low-Swamp dry.
241 B Area	-	-	
200 North "F" Ditch (entrance)	0.2 mrep/hr	0.1 mrep/hr	Water level normal- Several feet of wate
200 North "A" Ditch (entrance)	4.0 mrep/hr	0.3 mrep/hr	Ditch blocked by brush-high reading from brush
200 North "H" Ditch (50-ft.below entrance)	1.1 mrep/hr	0.5 mrep/hr	Ditch empty-except for first 50-feet

Ranch 13 and Spring 13 had 1.4×10^{-4} μc/liter and 1.1×10^{-3} μc/liter, respectively. The first sample from the B-y well located 2 miles west of Hanford had 1.4×10^{-3} μc/liter. Readings on the wells at Columbia Camp, Pistol Range and White Bluffs were not confirmed by this weeks results.

Air Monitoring

The average dosage-rates for the week were:

Location	mrep/hr	Location		mrep/hr
Route #10 - Mi.1	0.27	200-West	NE	0.02
Mi.3	0.09	200-West	SW	0.02
Route #1 - Mi.8	0.03		NW	0.02
Intersection Rt.1 and Rt. 4-N	0.03		NE	0.03
Route 4-S - Mi.10	0.23	200-East	SE	0.10
Mi. 6	0.30		NE	0.02
Mi.14	0.11		NW	0.02
300 Area	0.07		SW	0.06
Route 3 - Meteorology	0.27	100-D -	SE	0.02
Route 11-A - Mi.1	0.04		NE	0.02
Mi.6	0.07		SW	0.02
Route 2-W - 100 D	0.03	100-B -	NE	0.02
100-F	0.03		SE	0.01
Route 2-S - Mi. 4	0.08		SE	0.02
		100-F -	SE	0.02
			NW	0.02
			SW	0.02

All the above readings include Natural Background.

The 614 monitoring stations indicate:

	Average Dose in 24 hours	
	Integrons (gamma)	Type C Chambers (beta and gamma)
100-B	0.8 mr	0.5 mrep
100-D	2.0 mr	0.5 mrep
100-F	1.1 mr	0.5 mrep
200-E	1.1 mr	0.5 mrep
200-W	2.0 mr	1.2 mrep
Outlying areas	Not available	--

Ground Contamination

The maximum in 200 West was 0.7 mrep/hr, 2000 feet SE of the stack. The maximum in 200 East was 0.6 mrep/hr, 2000 feet SE of the stack.

No vegetation samples were obtained this week.

GENERAL

There were no high pencil readings confirmed by badge readings, and no high badge readings. All thyroid counts were less than 50 c/m.

C. C. Gamertsfelder
C. C. Gamertsfelder,
Acting Asst. Chief Supervisor
H. I. Section

CCG:mwc

 ay-F.S.Vaughan

7-2035

#2 - F.K.MacCready

7-1115

#3 - J.D.Allett
#4 - J.J.Urban
#5 - S.T.Cantril
#6 - H.M.Parker
#7 - C.M.Patterson
~~#8 - M.Squires-M.H.Smith-H.Hare-700 Area file~~
#9 - G.E.Struthers-M.F.Acken-300 Area file
~~#10 - Yellow copy~~
#11 - Pink copy

October 19, 1945.

TO: W. C. KAY
S Department Superintendent

#41. - H. I. REPORT ON THE 200 AREAS AND ENVIRONS

FOR THE WEEK ENDING OCTOBER 17, 1945

General Statistics

	T	B	
Surveys for Special Work Permits	74	59	133
Other routine and special surveys	69	155	274
Smear samples for alpha counts	266	125	391
Smear samples for beta counts	266	130	296
Air monitoring samples	89	119	208
Thyroid checks	60	69	129

THE T PLANT

Canyon Building (221-T)

The contamination at section 12 has been reduced so that the maximum reading is 15 mrep/hr. A spot at section 11 near the west wall read 1000 mrep/hr at one inch. This has been reduced to 300 mrep/hr. The cause of this spot is not known. A survey was made in the Canyon with the blocks off the 3-R dissolver so that the radiation levels to which the samplers would be exposed could be determined. The readings were taken at head height in the center of the sections named. The dissolver contained eight buckets of metal at the time the readings were taken.

Section	Dissolver Lid On	Dissolver Lid Off
4 ft. from 3-R	460 mr/hr	not taken
4-L	63 "	200 mr/hr
4-R	19 "	42 "
5-L	8 "	20 "
5-R	5 "	10 "
6-L	3 "	7 "
All from 7 to 19	< 1 "	< 1 "

1124244

CCG-WCKay

10/19/43 7-111 5

Control Laboratory (222-T)

The usual contamination of sampling equipment was observed. The highest reading on a waste carton was 120 mrep/hr. A stainless steel sink gave 40 mrep/hr. 37 air samples were taken, the maximum was 1.1×10^{-9} µg Pu/cc taken inside the bayonet locker. 26 of the samples had less than 10^{-11} µg Pu/cc.

Concentration Building (224-T)

A broken skimmer tube in centrifuge A-2 was replaced, and about 60 µg Pu was spread around the top of the centrifuge, and on the balcony floor during the operation. The contamination control in F-cell has improved; there is now a total of only 18 µg Pu, about 12 µg Pu of the total is present over about 150 sq. ft. of floor and is fixed in the paint.

Thirty-eight air samples were taken; 25 had less than 10^{-11} µg Pu/cc, and 7 had up to 3×10^{-11} µg Pu/cc. The six highest were:

Location	Amount
Room 3, over dirty clothes hamper	6.2×10^{-11} µg Pu/cc
" 3, air lock door	1.1×10^{-10} "
" 3, by mask rack	7.6×10^{-11} "
" 3, near F-10 door during recycle	6.1×10^{-11} "
F-10, center of PA enclosure	1.7×10^{-10} "
A-2 centrifuge balcony before cleaning	4.3×10^{-10} "

One man suffered a minor injury during work on the A-2 centrifuge. Small amounts of contamination were present so Dr. S. T. Cantril was consulted.

THE B PLANT

Canyon Building (221-B)

A reading of 60 mrep/hr was found at the open end of condensate line from the 13-1 spray gang valve in the operating gallery where contamination is being blown into the drain trench directly below the panel board. The contamination originates from the 13-1 gang valve having settled there following the suckback at the 13-1 spray jet in the pipe gallery.

A reading of 36 mrep/hr was found on the S.E. corner of the 3-H key-block and 220 mrep/hr on a spot near the 3-5 L sampler. The maximum reading on a sampling port was 305 mrep/hr at the 7-3 port. This was reduced to 98 mrep/hr.

Cell 16-A was opened and surveyed in anticipation of possible electrical work on the overload switches of the 16-2 centrifuge. The maximum was 1150 mr/hr on the west side of the centrifuge. Smears of the motor mounting had 4000 dis/min of alpha contamination. An air sample at this point had less than 10^{-11} µg Pu/cc.

Twenty-two air samples were all less than 1.5×10^{-11} µg Pu/cc.

Control Laboratory (222-B)

Sampling equipment was contaminated as much as usual. 110 smears were taken with only one high value of 4000 dis/min of alpha activity taken on the pipette rack in

Room 1. A waste carton read 80 mrep/hr. Decontamination sinks averaged 20 mrep/hr, with a high of 74 mrep/hr. Two pair of tongs had 23 and 34 mrep/hr. 44 air samples were taken, 35 of which had less than 10^{-11} µg Pu/cc. The highest was 3.2×10^{-11} µg Pu/cc.

Concentration Building (224-B)

Surface contamination was very low, a total of about 1.5 µg Pu being found in 9 places.

There was a down-draft of stack fumes which contaminated the air conditioner filter so that it read 11 mrep/hr. At the same time, the filter in the 271 building read 4 mrep/hr. The backgrounds on the four-fold hand counters were also increased for this same reason.

53 air samples were taken; 45 of which had less than 10^{-11} µg Pu/cc. The highest value of 4×10^{-11} µg Pu/cc was found in the lunchroom.

Fan House (291-B)

The maximum near the lubrication line connections was 115 mr/hr. Readings in the stack pit near the 3-5 L and 4-5 L vent lines were 3200 and 1900 mr/hr, respectively.

200-E Area

All areas were surveyed and the following readings were found. Rubber gloves in all areas are contaminated with the maximum reading of 5 mrep/hr occurring in 212-R. A reading of 30 mrep/hr was found at the bottom of one side of car #243 at 212-R.

[illegible] ISOLATION BUILDING (231)

Air Monitoring

	No. of Samples	Reading
Little Sucker samples in laboratories	11	All $< 4 \times 10^{-12}$ µg Pu/cc
Little Sucker samples in processing area	9	All $< 4 \times 10^{-12}$ "
Filtered hood air samples	4	(2) $< 2 \times 10^{-13}$ µg Pu/cc (4) $< 6.7 \times 10^{-13}$ "

Spot Samples

Location	$< 10^{-11}$ µg Pu/cc	About 10^{-11} µg Pu/cc	About 2×10^{-11} µg Pu/cc	High
Processing	23	2	1	0
Laboratories	5	2	0	0
General Building	2	0	0	0

Surface Contamination

Zone	Items or Locations checked	Contamination Found (dis/min >1000	>5000	>25,000	Maximum values (dis/min
Processing	1318	32	30	30	>100,000
Laboratory	1341	31	31	17	>100,000
Gen. Bldg. & H. I.	288	9	4	0	--
Miscellaneous	561	34	7	3	100,000

A great number of small spots of contamination on the floors was found due probably to people walking over a few badly contaminated spots before they were located. Altogether, there were 43 spots with a total of about 4 μg Pu.

Gamma radiation was as follows:

PR container, maximum at side	90 mr/hr
Process hood, maximum	29 mr/hr
SC container, maximum at side	41 mr/hr

SITE SURVEY

Water and Waste Monitoring

Surveys of the subsidiary waste disposal outlets were as follows:

Location	Maximum Reading	General Level	Remarks
241 T Tank farm	(#101 condensor) 140 mrep/hr 130 mr/hr (#101 sampling port) 230 mrep/hr	< 1.0 mrep/hr	Test hole checks showed no count above background
200 W Laundry Ditch	< 0.05 mrep/hr	< 0.05 mrep/hr	Water level normal
200 T Retention Outlet	1.0 mrep/hr (entrance) 0.8 mr/hr	0.5 mrep/hr	Water level high
200 B Retention Outlet	(entrance) 0.1 mrep/hr	0.05 mrep/hr	Water level normal
241 B Area	(#101 condenser) Base 100 mr/hr Top outlet 250 mrep/hr (#101 valve) 170 mrep/hr 2 mr/hr	< 1.0 mrep/hr	Test hole checks showed no count above background.
200 North "P" Ditch	0.5 mrep/hr (entrance to swamp)	0.2 mrep/hr	Water level normal
200 North "R" Ditch	1.0 mrep/hr (entrance to ditch)	0.5 mrep/hr	Water level high
200 North "U" Ditch	5.0 mrep/hr (entrance to ditch	0.5 mrep/hr	Water level low

Spring #13 dropped almost to background value this week. Ranch #13 had 4 x 10^{-4} μc per liter, and the B-Y well had 1.1 x 10^{-4} μc per liter. The well on Benson Ranch has a positive value of 1.4 x 10^{-4} μc per liter. This well has been sampled on a monthly basis, and will be sampled weekly.

202
-X

10/19/45

7-1115

CCG-MCKay

Air Monitoring

The average dosage-rates for the week were:

Location	mrep/hr	Location	mrep/hr
Route #10 - Mi.1	0.12	Route 11-A - Mi.6	0.04
Mi.3	0.30	Mi.1	0.05
Route #1 - Mi.8	0.04	Route 2-N - 100-D	0.04
Intersection Mi.#1 and Rt.4-N	0.03	100-F	0.04
Route 4-S - Mi.10	0.14	Route 2-S - Mi.4	0.08
Mi. 6	0.36		
Mi.14	0.06		
300 Area	0.06		
Route #3 Meteorology	0.22		

All the above readings include Natural Background.

The 614 monitoring stations gave the following results :

Average Dose in 24-hours

	Integrons (gamma)	Type C Chambers (beta and gamma)
100-B	1.2 mr	0.5 mrep
100-D	1.0 mr	0.5 mrep
100-F	0.5 mr	0.6 mrep
200-E	1.1 mr	1.0 mrep
200-W	1.4 mr	0.5 mrep
Outlying Areas	1.6 mr	--

Ground Contamination

The maximum in 200-West was 0.6 mrep/hr, 2500 feet SE of the stack. The maximum in 200-East was 0.5 mrep/hr, 2800 feet SE of the stack.

Vegetation samples taken in various locations showed the following contaminations:

100-B	2.9×10^{-4}	μc/gm	Kadlec Hospital	2.3×10^{-4} μc/gm
100-D	5.0×10^{-4}	"		
100-F	2.4×10^{-4}	"	Richland X	1.4×10^{-4} "
300 Area	2.7×10^{-4}	"	Kennewick	1.0×10^{-4} "
Richland NE	3.5×10^{-4}	"	Pasco	1.9×10^{-4} "
SE	2.0×10^{-4}	"		
SW	1.8×10^{-4}	"		
NW	3.1×10^{-4}	"		

GENERAL

There were no high pencil readings confirmed by badge readings. The badge of one Technical man in the 200-W Area read 150 mr for the week, and the total of his pencil readings for the week was 125 mr. All thyroid counts were less than 50 c/m.

C.C.Gamertsfelder

C.C.Gamertsfelder, Acting Chief Supv.
H. I. Section

CCG:sms

7-2577

7-111 S

1 - W.C.Kay - F.B.Vaughan
2 - W.K.MacCready
3 - J.D.Ellett
4 - J.J.Urban
5 - S.T.Cantril
6 - H.M.Parker
7 - C.M.Patterson
~~8 - L.Squires-H.H.Smith-A.Hare-700 Area~~
9 - G.W.Struthers-W.F.Acken-300 Area fil
~~10 - Yellow copy~~
11 - Pink copy

TO: W. C. KAY
S Department Superintendent

October 26, 1945

THIS DOCUMENT CONSISTS OF 5 PAGES
No. 9 OF 11 COPIES, SERIES A

#42. - H. I. REPORT ON THE 200 AREAS AND ENVIRONS

FOR THE WEEK ENDING OCTOBER 24, 1945

General Statistics

	T	B	Total
Surveys for Special Work Permits	85	104	189
Other routine and special surveys	77	105	182
Smear samples for alpha counts	68	102	170
Smear samples for beta counts	42	25	67
Air monitoring samples	72	106	178
Thyroid checks	58	51	109

THE T PLANT

Canyon Building (221-T)

The contaminated spot in the crack by the 12-7 sampler still reads 15 mrep/hr. New spots were found on the floor at sections 11 and 13. The maximum reading was 1000 mrep/hr at a distance of one inch. The source of this contamination was steam hose, the contaminated end of which was cut off.

The inlet vent to the 75-ton cab read 2.5 mrep/hr at a distance of one inch. The entire crane-way from the head end to section 19 was checked and no positive readings were found on the wall opposite to the air vents. A smear of the 10-ton cab had 170 c/m.

Cask cars gave readings as high as 24 mrep/hr at a distance of one inch.

Control Laboratory (222-T)

Sampling equipment had a total of about 3.7 γg Pu, and other equipment had about 3 γg Pu. A box of waste gave a reading of 270 mrep/hr, which included only 7 mr/hr. A reading of 720 mrep/hr was found in front of a stainless steel hood.

1124249

Thirty-three air samples were taken of which 18 had less than 10^{-11} µg Pu/cc. One sample taken by a bayonet rack had 6.3×10^{-10} µg Pu/cc. The other samples had up to 7.5×10^{-11} µg Pu/cc.

Concentration Building (224-T)

The contamination on the E-2 centrifuge balcony has been reduced to about 20 µg Pu spread over 12 square feet. The contamination on the floor in F cell has been reduced to 3 µg Pu on about 10 square feet. The F-1 and F-8 tank tops have a total of about 50 µg Pu.

Thirty-eight air samples were taken. Twenty-nine of these had less than 10^{-11} µg Pu/cc. The maximum value was 2.6×10^{-11} µg Pu/cc.

Plant Laundry (2723)

An air sample taken in the laundry had 2.7×10^{-11} µg Pu/cc.

THE B PLANT

Canyon Building (221-B)

Radiation levels at section 13 after reseating the valves and replacing the 13-1 spray and sparger exhaust lines are 6 mr/hr one inch from the gang valve, and 30 mrep/hr one inch from the drain trench. Contamination of the Key block at 3-A has been reduced to 20 mrep/hr.

Cell 18-A was opened for inspection to allow planning for work to be done later in Cell 7-A. The floor, walls and tanks gave maximum levels of 250, 56 and 15 mrep/hr, respectively. The work of installing a thermocouple on the 7-1 tank in 7-A was done with constant monitoring. The maximum reading over the edge of the open cell was 12,000 mrep/hr. The maximum to which personnel were exposed was 40 mrep/hr.

The "A" jets in cells 14-A and 16-A were removed for inspection and cleaning. The maximum radiation level in each case was 100 and 40 mrep/hr, respectively.

The lead shield was removed from the 7-1 sampling port with constant radiation monitoring. The maximum reading over the open port was 400 mrep/hr. The highest reading on a sampling port was 210 mrep/hr at port 6-1.

Twenty-one air samples were taken, and they all had less than 10^{-11} µg Pu/cc.

Control Laboratory (222-B)

8 Candle Snuffers had a total of about 4 µg Pu. Other surface contamination was quite low. The highest radiation level observed was 28 mr/hr on the sample shelves in room 1.

38 air samples were taken, none of which had more than 2×10^{-11} µg Pu/cc, - while 34 of the samples had less than 10^{-11} µg Pu/cc.

Concentration Building (224-B)

The F-1 manhole cover had about 1.8 µg Pu. The F-1 to F-2 jet had 0.7 µg Pu, and the G.E. tube casing at F-1 had 0.2 µg Pu. The hooks on container yoke and a crescent wrench in F-10 had 0.03 and 0.1 µg Pu, respectively.

205

2-2647

7-1115

The reading on the Buffalo air conditioning unit was 2 mrep/hr.

There were 47 air samples, and 42 of these had less than 10^{-11} µg Pu/cc. The maximum was 3.3×10^{-11} µg Pu, and it was taken in the lunch room.

Fan House (291-B)

The maximum reading near the lubrication line connectors was 125 mr/hr. A G.M. tube was installed under the duct leading to the #1 fan with constant monitoring.

200 North Area

Contaminated paint removed from the inside of a cask car in 212-N without a Special Work Permit gave a reading of 1300 mr/hr.

A reading of 100 mrep/hr was found south of the drain in the pit.

ISOLATION BUILDING (231)

Air Monitoring

	No. of Samples	Reading
Little Sucker samples in laboratories	12	All $< 4 \times 10^{-12}$ µg Pu/cc
" " " " process areas	6	All $< 4 \times 10^{-12}$ "
" " " " " "	2	6.7×10^{-12} "
" " " " " "	1	1.9×10^{-11} "
Filtered Hood Air by Big Sucker	1	$< 2 \times 10^{-13}$ "
" " " " "	1	6.8×10^{-13} "
" " " " "	1	2.5×10^{-12} "

Spot Samples	10^{-11} µg Pu/cc	About 10^{-11} µg Pu/cc	About 2×10^{-11} µg Pu/cc	Higher Pu/
Processing	19	10	2	3.4×10^{-11} µg
Laboratories	7	-	1	3.7×10^{-11} "
General Building	2	-	-	

Surface Contamination

Zone	Items or Location checked	Contamination found (dis/min) >1000	>5000	>25,000	Maximum Values (dis/min)
Processing	1953	85	55	15	>100,000
Laboratory	699	43	31	17	>100,000
General Bldg. & M.I.	79	3	1	-	-
Miscellaneous	205	29	9	4	-

563 other items were checked with smears, and six of these had more than 100 dis/min. There were two spills in the Process control area. The first involving more than 30 µg Pu was in room 35, on the 8-4 shift on October 22, 1945. There seemed to be two very contaminated spots within a larger area of 4 square feet. The second spill on October 23, 1945 involved 5 to 10 µg Pu, and was caused by dropping a micro pipette. The coveralls and forearm of the person who dropped the pipette were also contaminated. The forearm was decontaminated without difficulty.

110 pairs of shoes were checked, 17 had >1000 dis/min, 4 had >5000 dis/min, and 2 had 50,000 dis/min.

Gamma radiation was as follows:

PA container, maximum at side	75 mr/hr
Process Hood, maximum	18 mr/hr
SC container, maximum at side	21 mr/hr

SITE SURVEI

Water and Waste Monitoring

Surveys of the subsidiary waste disposal outlets were as follows:

Location	Maximum Reading	General Level	Remarks
241 T Tank farm (#101 condenser)	250 mrep/hr 230 mr/hr	< 1.0 mrep/hr	-
200 W Laundry Ditch	0.05 mrep/hr (entrance)	< 0.05 mrep/hr	Water level normal
200 T Retention Outlet (entrance)	2.0 mrep/hr	0.2 mrep/hr	Water level very high.
200 B Retention Outlet (500 ft. below Inlet)	0.2 mrep/hr	< 0.05 mrep/hr	Water level low.
241 B Area (#101 condenser)	80 mr/hr	< 1.0 mrep/hr	
200 North "P" Ditch (swamp)	0.7 mrep/hr	0.3 mrep/hr	Water level high.
200 North "A" Ditch (100 to 300 ft. below entrance)	1.0 mrep/hr	0.5 mrep/hr	Water level normal.
200 North "B" Ditch (6 ft. below Inlet)	4.5 mrep/hr	< 0.2 mrep/hr	Water level normal.
231 Waste Ditch	< 0.05 mrep/hr	< 0.05 mrep/hr	Water level 1'

Small amounts of alpha and beta activity were found in water samples from the 231 and Laundry ditches in the 200-East Area. Spring #13 had 1.2×10^{-4} μc/liter. White Bluffs had 1.4×10^{-4}, Columbia Camp has 1.2×10^{-4}, Ranch #13 and the B-I Wells dropped to less than 10^{-4} μc/liter.

Air Monitoring

The average dosage-rates for the week were:

Location	mrep/hr.	Location	mrep/hr.
Route #10, Mi. 1	0.25	Rt.3 Meteorology	0.20
Mi. 3	0.19	Rt.11-A, Mi. 6	0.06
Route #1, Mi. 8	0.04	Mi. 1	0.06
Intersection Rt.#1 & Rt.#3	0.04	Rt. 2-W 100-D	0.05
Route #4-3, Mi. 10	0.12	100-F	0.04
Mi. 6	0.34		
Mi. 14	0.07	Rt. 2-S Mi. 4	0.09
300 Area	0.06		

All the above readings include Natural Background.

CCG-MCKay

207
-A

10/26/45

1-1115

The 614 monitoring stations gave the following results:

	Average Dose in 24 hours	
	Interrons (Gamma)	Type C Chambers (beta and gamma)
100-B	-	0.4 mrep
100-D	-	0.5 mrep
100-F	2.3 mr	0.5 mrep
200-E	1.3 mr	1.1 mrep
200-W	-	0.5 mrep
Outlying Areas	0.1 mr	-

Ground Contamination

The maximum in 200 West was 0.6 mrep/hr, 2500 feet SE of the stack. The maximum in 200 East was 0.55 mrep/hr, 4500 feet SE of the stack.

Vegetation samples:

		gm/gm
Northern section:	100-B Area	2.5×10^{-4}
	100-D "	4.6×10^{-4}
	100-F "	2.5×10^{-4}
Central section:	Rt.#3 - Mi. 3	4.1×10^{-3}
	Rt. 4 - Mi. 4	2.4×10^{-3}
	Mi. 6	6.7×10^{-3}
	Mi. 8	1.9×10^{-3}
	Rt. 10 - Mi.2	5.5×10^{-4}
	Mi.6	2.7×10^{-4}
	Mi.11	1.3×10^{-4}
Southern section:	Rt. 43 -(300 Area)	1.7×10^{-4}
	Rt. 43 - Mi. 26	4.2×10^{-4}
	Richland SE	1.7×10^{-4}
	NE	1.3×10^{-4}
	SW	9.7×10^{-5}
	NW	1.7×10^{-4}
	Central	1.5×10^{-4}
	Pasco	4.4×10^{-4}
	Kennewick	1.6×10^{-4}

GENERAL

There were no high pencil readings confirmed by badge readings. There was one badge reading of 140 mr, which was due to a fogged film. This badge had not been worn during the week.

C C Gamertsfelder

C. C. Gamertsfelder,
Ass't. Chief Supv. (Acting)
H. I. Section

CCG:swc

2270 4

#2 - W.K.MacCready
#3 - J.D.Ellett
#4 - J.J.Urban
#5 - S.T.Cantril
~~#6 - H.M.Parker~~
#7 - C.C.Patterson
~~#8 - [illegible] H.Smith- R.Hare-700 Are~~
#9 - G.N.Struthers-A.F.Acken-300 Area fil
#10- Yellow copy
#11- Pink copy

7-1115

TO: W. G. KAY
S Department Superintendent

November 1, 1945

THIS DOCUMENT CONSISTS OF 4 PAGES
No. 7 OF 11 COPIES, SERIES A

INV. 9-47

#43. - H. I. REPORT ON THE 200 AREAS AND ENVIRONS

FOR THE WEEK ENDING OCTOBER 31, 1945

General Statistics

	T	B	Total
Surveys for Special Work Permits	74	109	183
Other routine and special surveys	69	139	208
Smear samples for alpha counts	141	198	339
Smear samples for beta counts	147	20	167
Air monitoring samples	88	119	207
Thyroid checks	68	58	126

THE T PLANT

Canyon Building

Contamination on the Canyon deck was maintained under good control, by removing the paper at 3-SR after spots on it were found which gave 120 mrep/hr. The spots at sections 11 and 13 which were reported last week have been reduced to about 22 mrep/hr. Sampler risers 6-1, 8-1, and 13-4, gave readings over 100 mrep/hr at a distance of two inches; the maximum was 175 mrep/hr at 6-1.

Two air samples were taken in the Canyon, both of which had less than 10^{-11} μg Pu/cc. An air sample from the closet in room 211 had 1.7×10^{-11} μg Pu/cc.

Control Laboratory

Five bayonets had a total of 1.8 μg Pu, and five candle-snuffers had 1.6 μg Pu. The maximum dosage-rate from a waste container was 100 mrep/hr. 36 air samples were taken, 30 of which had less than 10^{-11} μg Pu/cc. The maximum was 7.8×10^{-11} μg Pu/cc.

1124254

Concentration Building

Product contamination was found in F-cell as follows:

Location	Area	µg Pu
F-1 tank	50 sq. ft.	108
F-2	19 sq. ft.	144
F-7	40 sq. ft.	12
F-8	26 sq. ft.	27
F Balcony floor	230 sq. ft.	203

46 air samples were taken, the maximum was 6.4×10^{-11} µg Pu/cc, in F cell between F-1 and F-7. The other samples were all less than 3.7×10^{-11} µg Pu/cc, and 33 samples had less than 10^{-11} µg Pu/cc.

THE B PLANT

Canyon Building

Thirty-one areas of contamination were found between the tunnel and the dissolving cells, with readings between 4 and 80 mrep/hr. More contamination was found between sections 7-8 and 8-1 and in the stairwell 15; the readings were 170 and 20 mrep/hr, respectively. Sampling ports 6-1, 7-3, 13-1 and 13-4 gave dosage-rates in excess of 100 mrep/hr, - the maximum was 210 mrep/hr one inch from the 6-1 port. A bag of contaminated waste at section 1 had a reading of 210 mrep/hr.

23 air samples were taken. Two samples taken near sampling ports 16-4 and 19-4 had 1.3×10^{-11} µg Pu/cc. All the other samples had less than 10^{-11} µg Pu/cc.

Control Laboratory

Surface contamination was quite low; none of a total of 93 smears had more than 100 dis/min of alpha activity. The maximum reading on a waste carton was 100 mrep/hr.

43 air samples were taken, 39 of which had less than 10^{-11} µg Pu/cc; the maximum value was 2×10^{-11} µg Pu/cc.

Concentration Building

Product contamination was maintained at a very low level. 58 smears taken during the week all had less than 100 dis/min. 32 of the smears were taken in the lunch room to try to find the cause of the positive air sample taken in the lunch room last week. The maximum reading on an air sample was 2.2×10^{-11} µg Pu/cc near the center of the change room. 52 other samples all had less than 10^{-11} µg Pu/cc.

ISOLATION BUILDING

Air Monitoring

	No. of samples	Reading (µg Pu/cc)
Little Sucker samples in laboratories	9	All $< 4 \times 10^{-12}$
" " " " process areas	7	All $< 4 \times 10^{-12}$
" " " " " " cell 4	1	1.3×10^{-11}
" " " " " " cell 4	1	2.0×10^{-10}
Filtered Hood air by Big Sucker	1	$< 2 \times 10^{-13}$
" " " " " "	1	6×10^{-13}
" " " " " "	1	1.8×10^{-12}

CCGamertsfelder-HCKay

11/1/45

7-1115

Spot Samples	< 10^{-11} μg Pu/cc	About 10^{-11} μg Pu/cc	About 2 x 10^{-11} μg Pu/cc	Higher (μg Pu/cc
Processing	36	5	1	0
Laboratories	10	0	1	0
General Building	3	0	0	0

Surface Contamination

Zone	Items or Locations Checked	Contamination Found (dis/min) ≧1000	≧5000	≧25,000	Maximum Values (dis/min)
Processing	1645	78	41	14	>100,000
Laboratory	1332	129	80	28	>100,000
General Bldg. & H.I.	223	2	0	0	-
Miscellaneous	205	24	11	1	-

608 other items were checked with smears, and 12 of these had more than 100 dis/min. 24 spots containing about 6 μg Pu were found in the process control section. Two spots with about 0.5 μg Pu were found in cell 4. One person had four areas of body contamination ranging from 500 to 1000 dis/min. The contamination occurred during recovery of samples in room 31.

46 pairs of shoes were checked; 13 had 1000 dis/min or more, 5 of them had about 5000 dis/min.

Gamma radiation was as follows:

	mr/hr
PR container, maximum at side	40
Process hood, maximum	12.5
SC container, maximum at side	20

SITE SURVEY

Water and Waste Monitoring

Surveys of the subsidiary waste disposal outlets were as follows:

Location	Maximum Reading	General Level	Remarks
241 T Area (#101 condenser) (#101 sampling port)	480 mr/hr >2000 mrep/hr (34 mr/hr)	<1.0 mrep/hr	The top of condenser 101 was >200 mrep/hr
200 W Laundry ditch	< 0.05 mrep/hr	< 0.05 mrep/hr	Water level normal.
200 T Retention Outlet (entrance)	0.4 mrep/hr	0.1 mrep/hr	Water level very high
200 B Retention Outlet (entrance to swamp)	0.1 mrep/hr	< 0.05 mrep/hr	Water level very high
241 B Area (At the flange of 101 tank riser vent) (#101 condenser) (#107 vent)	1250 mrep/hr 100 mr/hr 750 mrep/hr 15 mr/hr	< 1.0 mrep/hr	
200 N "P" Ditch (Entrance)	0.1 mrep/hr	< 0.05 mrep/hr	Water level very high

1124256

CCGamertsfelder-[illegible]

11/1/43

7-1115

Waste survey - continued from page 3.

Location	Maximum Reading	General Level	Remarks
200-N "R" Ditch (entrance)	7.0 mrep/hr 4.0 mr/hr	0.5 mrep/hr	Water level normal.
200-N "N" Ditch (entrance)	9.0 mrep/hr 7.0 mr/hr	1.0 mrep/hr	Water very low

Ranch #13 had 2.6×10^{-3} μc/liter, and the B-y Well, 1.7×10^{-3} μc/liter. All other wells had less than 10^{-4} μc/liter.

Air Monitoring

The average dosage-rates for the week were:

Location	mrep/hr	Location	mrep/hr
Route #10, Mi.1	0.14	Route #11-A, Mi.6	0.07
Mi. 3	0.12	Mi.1	0.05
Route #1, Mi. 8	0.03	Route #2-N 100-D	0.03
Intersection Rt.#1 and Rt. 4-N	0.03	100-F	0.07
Route #4-S, Mi. 10	0.13		
Mi. 6	0.25	Route #2-S, Mi. 4	0.08
Mi.14	0.07		
300 Area	0.08		
Route #3 Meteorology	0.17		

All the above readings include natural background.

The 614 monitoring stations gave the following results:

	Average Dose in 24 hours	
	Integrons (gamma) mr/hr	Type C Chambers (beta and gamma) mrep
100-B	0.5	0.4
100-D	1.1	0.5
100-F	1.9	0.5
200-E	0.7	1.0
200-W	0.9	0.4
Outlying Areas	0.9	-

Ground Contamination

Vegetation Samples (μc/gm)

100-B	1.9×10^{-4}	Rt.#10, Mi.2	5.1×10^{-4}
100-D	4.2×10^{-4}	" " Mi.6	1.6×10^{-4}
100-F	2.2×10^{-4}	" " Mi.11	1.4×10^{-4}
Rt.3 Mi.3	9.8×10^{-3}	Richland SE	3.1×10^{-4}
Rt.4-S Mi.4	1.8×10^{-3}	Kennewick	2.0×10^{-4}
Mi.6	1.7×10^{-3}	Pasco	6.3×10^{-4}
Mi.14	1.1×10^{-3}	Wallula	1.4×10^{-4}
300 Area	3.9×10^{-4}	Connell	3.4×10^{-5}
		Benton City	2.1×10^{-4}

GENERAL:

There were no high pencil readings confirmed by badge readings. There was one badge reading of 145 mrep; the pencils for this [illegible] indicated no exposure at all. Five other badge films gave positive readings which were due to an accident whereby they were light struck. Th[illegible] pencils for these people also gave no indications of exposure greater than 1[illegible]

C Gamertsfelder cc

C.Gamertsfelder, Asst.Chief Supv. (H.I.)

212

7-1115

7-273

Copy #1 - H.C.Kay - E.B.Vaughan
#2 - W.K.MacCready
#3 - J.D.Elliott
#4 - J.J.Urban
#5 - S.T.Cantril
#6 - H.M.Parker-C.C.Gamertsfelder
#7 - C.M.Patterson-J.W.Healy
#8 - F.P.Seymour
#9 - C.H.E.Merkle, Jr.
#10- M.L.Nickelson
#11- H.A.Moulthrop
~~#12- L.Squires-M.H.Smith-R.Hare-~~
700 Area file
#13 - G.W.Struthers-M.F.Acken-
300 Area file
~~#14 -Yellow copy~~
#15 -Pink copy

TO: W. C. KAY
S Department Superintendent

November 9, 1945.

#44 - H. I. REPORT ON THE 200 AREAS AND ENVIRONS

FOR THE WEEK ENDING NOVEMBER 7, 1945

General Statistics

	T	B	Total
Surveys for Special Work Permits	77	109	186
Other routine and special surveys	87	84	171
Smear samples for alpha counts	340	160	500
Smear samples for beta counts	218	34	252
Air monitoring samples	85	101	186
Thyroid checks	85	33	118

THE T PLANT

Canyon Building

No new contamination was found on the Canyon deck. The sampler risers 6-1, 8-1, and 13-4 gave readings of 110, 150, and 260 mrep/hr, respectively.

Twenty-three air samples were taken. Those with more than 10^{-11} µg Pu/cc were 1.5×10^{-11} µg Pu/cc between samplers 12-1 and 12-4, 1.2×10^{-11} µg Pu/cc by open cell at Section 11, and 5.6×10^{-11} µg Pu/cc at the center of Section 11-R.

Control Laboratory

Bayonets and candle-snuffers had a total of about 8.9 µg Pu. A series of 191 smears

1124258

CCGamertsfelder-CKay

was taken on some miscellaneous equipment, and none of the smears had more than 300 dis/min. A box of waste gave a reading of 290 mrep/hr. Forty-three air samples were taken, and 35 of these had less than 10^{-11} µg Pu/cc. The maximum was 6.0×10^{-11} µg Pu/cc taken near a fuming hood.

Concentration Building

Decontamination work was confined to the F-cell which has much less contamination than was last reported. The F-1 tank has 49 µg Pu, the F-2 tank has 6.4 µg Pu, the F-2 balcony floor has 11.5 µg Pu. The floor of the F and G cell has 5 µg Pu, and a spot on the floor of F-10 has 0.6 µg Pu.

19 air samples were taken; 14 of which has less than 10^{-11} µg Pu/cc. The maximum value was 2.1×10^{-11} µg Pu/cc.

Fan House

The reading at the inspection plate increased to 8200 mr/hr on October 31, but dropped to 7200 mr/hr on November 7.

THE B PLANT

Canyon Building

Contaminated spots giving readings from 30 to 1000 mrep/hr were found at Sections 7, 8 and 9. These have been cleaned so that the maximum is now about 20 mrep/hr. Sampling ports 6-1, 13-1 and 13-4 gave more than 100 mrep/hr; the maximum was 150 mrep/hr at 6-1. All of 21 air samples had less than 10^{-11} µg Pu/cc.

Control Laboratory

Very little surface contamination was in evidence this week. A reading of 60 mr/hr at the sample shelves was the only unusual radiation measurement. Thirty-five air samples were taken with the maximum value being 1.1×10^{-11} µg Pu/cc.

Concentration Building

The floor by F-8 had about 25 µg Pu over an area of about 380 square inches, and the floor by F-7 had 2.6 µg Pu over 96 square inches. The F-10 enclosure doors had a total of 0.5 µg Pu, which was cleaned successfully. The F-2 centrifuge windage ring had about 0.3 µg Pu which was cleaned. Paper covers on the B-4 and B-1 samplers were contaminated with a total of 0.25 µg Pu.

45 air samples were taken; and 42 of these had less than 10^{-11} µg Pu/cc. The maximum value was 2.7×10^{-11} µg Pu/cc, taken in the locker room by the F-10 door. A positive value of 1.3×10^{-11} µg Pu/cc was found on one of the samples taken in the lunch room.

Fan House

The #1 fan was shut-down for maintenance work. The maximum dosage-rate in the vicinity of the fan is 1300 mr/hr. All work here has been constantly monitored, and finger films have been worn. Six dissolvings have been made with only one fan operating and no increased hazard has been noted as yet.

214

7-1115

CCGamertsfelder-McKay

ISOLATION BUILDING

Air Monitoring

	No. of samples	Reading (μg Pu/cc)
Little Sucker samples in laboratories	10	All $< 4 \times 10^{-12}$
" " " " "	1	8×10^{-12}
" " " " Process areas	7	All $< 4 \times 10^{-12}$
" " " " Process areas	1	5×10^{-12}
" " " " Process areas	1	10^{-11}
Filtered hood air by Big Sucker	1	$< 2 \times 10^{-13}$
" " " " " "	2	About 7×10^{-13}

Spot Samples	μg Pu/cc			
	$< 10^{-11}$	About 10^{-11}	About 2×10^{-11}	Higher
Processing	33	3	4	3×10^{-11}
Laboratories	6	1	0	0
General Building	3	0	0	0

Surface Contamination

Zone	Items or Locations Checked	Contamination Found (dis/min)			Maximum Values (dis/min)
		≥1000	≥5000	≥25,000	
Processing	1609	75	53	25	>100,000
Laboratory	837	78	37	32	50,000
General Bldg. & H. I.	45	1	-	-	-
Miscellaneous	197	19	6	2	-

511 other items were checked with smears, and 21 of these had more than 100 dis/min.

Eight spots with a total of about 1.2 μg Pu were found in Room 34. Three spots with about 0.2 μg Pu total were found in Cells 1 and 4. Sixty-six pairs of shoes were checked, of which 6 pairs had more than 1000 dis/min. The maximum was 10,000 dis/min.

A laboratorian in the Process Control section had some contamination on several parts of her body which supposedly was caused by work during the recovery of AT solution. The contamination was successfully removed.

Gamma radiation was as follows:

	mr/hr
PR container, maximum at side	23
Process hood, maximum	6.5
SC container, maximum at side	8

215

7-1115

CCGamertsfelder-MCKay

11/9/45

SITE SURVEY

Water and Waste Monitoring

Surveys of the subsidiary waste disposal outlets were as follows:

Location	Maximum Reading	General Level	Remarks
241 "T" Area (#101 condenser)	Top - 500 mrep/hr Bottom - 500 mr/hr (#101 sampling port) 1300 mrep/hr (28 mr/hr)	< 1.0 mrep/hr	A test hole check on 10/31/45 showed no counts above background
200 W Laundry ditch	< 0.05 mrep/hr	< 0.05 mrep/hr	Water level low
200 "T" Retention Outlet (entrance)	0.9 mrep/hr	0.3 mrep/hr	Water level normal
200 "B" Retention Outlet (3500 ft. below entrance to Ditch)	0.2 mrep/hr	0.1 mrep/hr	Water level normal
241 "B" Area (#101 condenser) (#101 valve)	500 mr/hr 1000 mrep/hr 13 mr/hr	< 1.0 mrep/hr	No test hole checks were made during the week
200 North "P" Ditch (200-ft. below entrance)	0.3 mrep/hr	0.2 mrep/hr	Water level normal
200 North "K" Ditch (50-ft. below entrance)	0.4 mrep/hr	0.2 mrep/hr	Water level normal
200 North "N" Ditch (10-ft. below entrance)	7.5 mrep/hr	1.5 mrep/hr	Water level low

Spring #13 had 3.9×10^{-4} μc/liter. Ranch #13 had 8.7×10^{-4}, and B-y Well had 2.1×10^{-4} μc/liter. All other wells had less than 10^{-4} μc/liter.

Air Monitoring

The average dosage-rates for the week were:

Location	mrep/hr	Location	mrep/hr
Route #10, Mi.1	0.08	Route 3, Metacrology	0.30
Mi.3	0.07		
Route #1 Mi.8	0.03	Route 11A - Mi. 6	0.10
Intersection Rt.#1 & Rt. 4-N	0.04	Mi. 1	0.06
Route 4-S, Mi. 10	0.09	Route 2-N, 100D	0.04
Mi. 6	0.19	100F	0.05
Mi. 14	0.08		
300 Area	0.06	Route 2-S, Mi. 4	0.08

All the above readings include Natural Background.

216 7-1115

CCGamertsfelder-[illegible] DECLASSIFIED 11/9/45 [illegible]

The 614 monitoring stations gave the following results:

	Average Dose in 24 hours	
	Integrons (gamma) mr/hr	Type C Chambers (beta and gamma) mrep
100-B	0.5	0.5
100-D	0.5	0.5
100-F	0.4	0.5
200-E	0.7	0.8
200-W	0.7	0.5
Outlying Areas	0.4	-

Film packets kept at all 614 Buildings indicated no measurable exposure.

Ground Contamination

The maximum ground contamination in the 200 West Area was 1.0 mrep/hr, 2000 feet SE of the stack. The maximum in the 200 East Area was only 0.2 mrep/hr, 2500 feet SE of the stack. The general contamination in all directions from the stack is 0.05 to 0.1 mrep/hr, which would be expected due to the variable winds which are prevalent now. The gases from the B-Plant stack are being observed with extra care because of the breakdown of one of the fans.

Vegetation Samples ($\mu c/gm$)

100-B		1.5×10^{-4}	300 Area	2.6×10^{-4}
100-D		2.1×10^{-4}	SE Richland	6.0×10^{-4}
100-F		2.5×10^{-4}	Richland Average	2.5×10^{-4}
Rt.4-S,	Mi. 4	2.0×10^{-3}	Benton City	8.5×10^{-5}
	Mi. 6	2.4×10^{-3}	Kennewick	2.6×10^{-4}
	Mi. 8	1.8×10^{-3}	Pasco	3.4×10^{-4}
Rt. 10,	Mi. 2	3.8×10^{-4}		
	Mi. 6	1.0×10^{-4}		
	Mi.11	1.8×10^{-4}		

GENERAL

There were no confirmed high pencil or badge readings.

C C Gamertsfelder

C. C. Gamertsfelder
Ass't. Chief Supv. (Acting)
H. I. Section

CCG:swc

DECLASSIFIED

1124262

7-1115

7-2762

Copy #1 - W.C.Kay - F.B.Vaughan
#2 - W.K.MacCready
#3 - J.D.Ellett
#4 - J.J.Urban
#5 - S.T.Cantril
#6 - H.M.Parker-C.C.Gamertsfelder
#7 - C.M.Patterson-J.W.Healy
#8 - F.P.Seymour
#9 - C.R.E.Merkle, Jr.
#10- M.L.Nickelson
#11- H.A.Moulthrop
#12- L.Squires-M.H.Smith-R.Hare-700 Area
#13- G.W.Struthers-M.F.Acken-300 Area fi
#14- Yellow copy
#15- Pink copy

TO: W. C. KAY
S Department Superintendent

November 15, 1945.

#45 - H. I. REPORT ON THE 200 AREAS AND ENVIRONS

FOR THE WEEK ENDING NOVEMBER 14, 1945

General Statistics

	T	B	Total
Surveys for Special Work Permits	70	81	151
Other routine and special surveys	82	112	194
Smear samples for alpha counts	148	166	314
Smear samples for beta counts	148	20	168
Air monitoring samples	83	113	196
Thyroid checks	93	71	164

THE T PLANT

Canyon Building

The chemical feed funnel, in the operating gallery, to the 12-7 tank was found to be contaminated, giving 15 mrep/hr at a distance of one inch. A smear of the inside of the funnel had 10,000 c/m. The contamination was caused when the valve was left open during jetting from 12-6 to 12-7 allowing vapors to be forced back up the solution line.

A reading of 1000 mrep/hr at a distance of one inch was observed during work releasing the bucket hook from the steel ladder in the railroad tunnel. The work was done with constant monitoring.

Samplers 6-1, 8-1, 8-3, 8-4, and 13-4 gave dosage-rates above 100 mrep/hr. The maximum was 220 mrep/hr at 6-1.

1124263

Sixteen air samples were taken. The maximum value of 2.9×10^{-11} µg Pu/cc was found near the 8-3 sampler. Ten of the samples had less than 10^{-11} µg Pu/cc. Seven other samples taken in the H.I. office were all less than 10^{-11} µg Pu/cc.

Control Laboratory

26 bayonets had a total of 8.5 µg Pu. One smear from a bayonet sheath had 55,000 dis/min. The maximum radiation level was 140 mrep/hr at a distance of one inch from a waste carton.

Forty air samples were taken, of which 23 had less than 10^{-11} µg Pu/cc. The maximum was 1.6×10^{-10} µg Pu/cc taken with the air inlet in a bayonet rack.

Concentration Building

Contamination seems to reappear after cleaning; whether this is due to new contamination or to poor methods of cleaning is not known. The F-1 tank now has a total of 25 µg Pu, and the F-2 centrifuge has 5 µg Pu. The F cell floor, the steps to the F-balcony, and the F-balcony floor has a total of 16 µg Pu. The F-10 room had very little contamination.

Twenty air samples were taken, of which 3 had more than 10^{-11} µg Pu/cc. The maximum was 3.3×10^{-11} µg Pu/cc taken over a dirty clothes hamper.

Fan House

The maximum on the #3 inspection plate has risen from 7200 mr/hr to 7800 mr/hr during this week. The reading at the #2 plate increased from 6000 mrep/hr to 6200 mrep/hr.

THE B PLANT

Canyon Building

A new contaminated area reading 190 mrep/hr at one inch was found at section 3-K. Sampling ports 6-1 and 7-3 gave readings of 150 and 100 mrep/hr, respectively. These were decontaminated to levels of 46 and 30 mrep/hr. Work was done on the 7-1 sampler, which gave 4000 mrep/hr at one inch with the lead block removed. The drain trench in section 13 of the operating gallery gave a maximum reading of 17 mrep/hr.

Twenty-one air samples were taken, and only two values greater than 10^{-11} µg Pu/cc were found. They were about 1.4×10^{-11} µg Pu/cc at samplers 14-4 and 18-4.

Control Laboratory

105 smears were taken, of which 13 had more than 100 dis/min. The maximum value of 4600 dis/min was found on a bayonet cleaner. A waste carton gave a dosage-rate of 200 mrep/hr.

Forty-six air samples were taken, and only 4 had more than 10^{-11} µg Pu/cc. The maximum was 3.7×10^{-11} µg Pu/cc.

CCGamertsfelder-WCKay

11/15/43

Concentration Building

A total of 1 μg Pu was found in 8 locations in the F-10 room. The F-cell had about 0.6 μg Pu in 5 locations. Four spots on the floor of the K sample room had about 2.6 μg Pu, and a door handle had 0.3 μg Pu. Three assault masks were found to be contaminated, nose-pieces had from 4000 to 6000 dis/min, and a cannister had 18,000 dis/min.

Forty-six air samples were taken. The maximum value of 4.7×10^{-11} μg Pu/cc was found in the NE corner of F-10. Forty-two of the samples had less than 10^{-11} μg Pu/cc.

Fan House

The maximum dosage-rate to which men working on the #1 fan were exposed was 1200 mr/hr. The dosage-rate at the inspection plate of the #1 fan has dropped to 1000 mr/hr. The #2 fan now gives 4200 mr/hr.

ISOLATION BUILDING

Air Monitoring	No. of samples	Reading (μg Pu/cc)
Little Sucker samples in laboratories	13	All $< 4 \times 10^{-12}$
" " " " process areas	9	All $< 4 \times 10^{-12}$
Filtered Hood Air by Big Sucker	1	6×10^{-13}
" " " " " "	2	About 8×10^{-13}

	μg Pu/cc			
Spot Samples	$\leq 10^{-11}$	About 10^{-11}	About 2×10^{-11}	Higher
Processing	28	10	1	8×10^{-11} (cell 3)
Laboratories	9	0	0	3×10^{-11}
General Building	7	0	0	-

Surface Contamination

Zone	Items or Locations Checked	Contamination Found (dis/min) ≥1000	≥5000	≥25,000	Maximum Values (dis/min)
Processing	1191	68	27	4	>100,000
Laboratory	1053	78	40	20	>100,000
Gen.Bldg. & H. I.	513	6	2	-	
Miscellaneous	201	11	-	-	

785 other items were checked with smears and only 11 of these had more than 100 dis/min.

Two spots of floor contamination with a total of 0.7 μg Pu were found in room 35. One spot with 0.5 μg Pu was found in room 4, and four spots with a total of 2.9 μg Pu were found in room 3.

92 pairs of shoes were checked, of which 6 had more than 1000 dis/min. The maximum value was 20,000 dis/min on one pair.

1124265

Gamma radiation was as follows:

	mr/hr
PR container, maximum at side	38.5
Process hood, maximum	7.5
SC container, maximum at side	10.0

SITE SURVEY

Water and Waste Monitoring

Waste surveys indicated no unusual conditions. The condensers and other openings in the #101 tanks continue to give high dosage-rates.

No well or spring samples were found with more than 10^{-4} μc/liter except the #2 well in Richland which had 1.4×10^{-4} μc/liter. This value is about the minimum detectable with a 100 cc sample. It will be checked with a larger sample to eliminate possible contamination errors.

Air Monitoring

The average dosage-rates for the week were:

Location	mrep/hr	Location	mrep/hr
Route #10, Mi.1	0.09	Route #3-Meteorology	0.39
Mi.3	0.06		
Route #1, Mi.8	0.03	Route #11A-Mi.6	0.12
Intersection Rt.#1 & Rt.4-N	0.04	Mi.1	0.07
Route #4-S, Mi.10	0.20	Route 2-N - 100-D	0.04
Mi.6	0.27	100-F	0.04
Mi.14	0.06		
300 Area	0.06	Route 2-S, Mi. 4	0.10

All the above readings include natural background.

Air samples were taken with portable sampling equipment in both 200 West and 200 East. The maximum value obtained was 4×10^{-10} μc/cc, east of the B-Plant stack. The minimum detectable is about 3×10^{-10} μc/cc.

The 614 monitoring stations gave the following results:

	Average Dose in 24 hours	
	Integrons (gamma)	Type C Chambers (beta and gamma)
	mr	mrep
100-B	0.8	0.2
100-D	0.8	0.5
100-F	0.4	0.2
200-E	2.2	0.8
200-W	0.6	0.5
Outlying areas	0.1	-

Film collected from all locations except 200 West gave no indication of any exposure.

7-1115

CCGamertsfelder-WCKay 11/15/45

Ground Contamination

The maximum ground contamination in the 200 West Area was 2.5 mrep/hr, 2000 feet SE of the stack. The maximum in the 200 East Area was 1.1 mrep/hr, 3000 feet SE of the stack.

Vegetation Samples (μc/gm)

100-B	2.6×10^{-4}	Rt.4-S, Mi.4	1.4×10^{-3}
100-D	3.0×10^{-4}	Mi.6	1.8×10^{-3}
100-F	3.6×10^{-4}	Mi.24	3.5×10^{-4}
Rt.10, Mi.2	4.3×10^{-4}	Rt.#3, Mi. 2	2.5×10^{-3}
Mi.6	2.3×10^{-4}	300 Area	2.2×10^{-4}
Mi.8	1.6×10^{-3}	Richland N.E.	5.0×10^{-4}
Mi.11	1.9×10^{-4}	Benton City	1.0×10^{-4}
		Kennewick	3.1×10^{-4}
		Pasco	4.0×10^{-4}

GENERAL

There were no high pencil readings confirmed by badge readings. 27 people in the 200 East Area had badge results between 100 and 260 mr for the week ending November 8. Some of these may have been caused by excess heat on the badges, but most of them may be regarded as real inasmuch as the sum of pencil results for this period checks the total exposure in many cases. Most of the readings were for maintenance personnel who probably were exposed during work on the exhaust fan.

C C Gamertsfelder

C. C. Gamertsfelder
Ass't. Chief Supv. (Acting)
H. I. Section

CCG:swc

Copy #1 - W.C.Kay - F.B.Vaughan
#2 - W.K.MacCready
#3 - J.D.Ellett
#4 - J.J.Urban
#5 - S.T.Cantril
#6 - H.M.Parker-C.C.Gamertsfelder
#7 - C.M.Patterson-J.W.Healy
#8 - F.P.Seymour
#9 - C.R.E.Merkle, Jr.
#10 - M.L.Mickelson
#11 - H.A.Moulthrop
~~#12 - L.Squires-M.H.Smith-R.Hare-700 Area File~~
#13 - G.W.Struthers-M.F.Acken-300 Area
~~#14 - Yellow copy~~
#15 - Pink copy

TO: W. C. KAY
S Department Superintendent

November 26, 1945

#46 - H. I. REPORT ON THE 200 AREAS AND ENVIRONS

FOR THE WEEK ENDING NOVEMBER 21, 1945

General Statistics

	T	B	Total
Surveys for Special Work Permits	80	80	160
Other routine and special surveys	78	104	182
Smear samples for alpha counts	148	225	373
Smear samples for beta counts	136	30	166
Air monitoring samples	86	105	191
Thyroid checks	96	53	149

THE T PLANT

Canyon Building

The general condition of the Canyon has been very good. No new contamination was found and no other significant readings were noted.

17 air samples were taken, and all had less than 10^{-11} µg Pu/cc.

Control Laboratory

Very little surface contamination was found during the week. 94 smears were taken, and all had less than 100 dis/min of alpha activity. 68 bayonets had a total of 15 µg Pu. The maximum radiation level was 110 mrep/hr, at a distance of one inch from a waste carton.

41 air samples were taken and only two had more than 10^{-11} µg Pu/cc. The maximum was 3×10^{-11} µg Pu near a bench in room 7.

Concentration Building

The floor of the F-10 room was found to have 12 μg Pu over an area of about 60 square feet. In the F-cell, the F-1 tank had 107 μg Pu over 40 square feet; the F-8 tank had 6 μg Pu over 12 square feet. The floor of the F and G cells had 12 μg Pu over 4 square feet. The D-1 to D-2 jet was found to be quite contaminated, and was immediately cleaned. The clean-up of contaminated surfaces has been improving. Most of the contamination mentioned above was cleaned to an acceptably low level very shortly after it was found.

22 air samples were taken, and each had less than 10^{-11} μg Pu/cc.

Waste Storage

Diversion boxes #151 and #152 were surveyed. At a distance of one foot from the connectors in box #151, a reading of 11,000 mr/hr was obtained, at a distance of six feet the reading was 200 mr/hr. The corresponding readings in box #152 were 1800 mr/hr and 40 mr/hr.

THE B PLANT

Canyon Building

The maximum radiation level at a sampling port was 100 mrep/hr. The sampling ports have been maintained in a much better condition recently. A waste container which gave 875 mrep/hr including 250 mr/hr was found at section 8.

18 air samples were taken during the week, 12 of these had less than 10^{-11} μg Pu/cc. Positive values were found near samplers 14-4, 16-4, 17-4 and 18-4; the maximum was 4.1×10^{-11} μg Pu/cc near the 18-4 sampler.

Control Laboratory

Four smears out of a total of 76 gave positive alpha counts. Other checks with instruments located about 3.3 μg Pu. The maximum radiation level of 110 mr/hr was found on a decontamination sink.

43 air samples were taken and only two had more than 10^{-11} μg Pu/cc. The maximum was 2×10^{-11} μg Pu/cc.

Concentration Building

A total of about 6.5 μg Pu was found on the E-2 centrifuge and its connections. The outer surfaces of the F-10 enclosure had a total of about 0.6 μg Pu. The F-1 to F-2 jet had about 0.1 μg Pu. Four contaminated assault masks had a total of about 0.3 μg Pu.

The radiation levels at the surfaces of tanks in the cells were measured on November 20. The levels found were:

Location	Reading (mr/hr)	Location	Reading (mr/hr)
C-4	280	D-1	14
C-7	4	D-3	< 1
C-8	4	D-4	4
A-1	56	E cell all tanks	< 1
A-3	15	F-1	2
A-4	126	F-2, 7, 8 and 9	< 1

44 air samples were taken, of which only 4 had more than 10^{-11} µg Pu/cc. The maximum value of 4.6×10^{-11} µg Pu/cc was found in the F-10 room at the enclosure chain. A value of 3×10^{-11} µg Pu/cc was found near the E fan in the pipe gallery.

Fan House

The level at the #1 fan has dropped to 850 mr/hr. The #2 fan now has a maximum of 5800 mr/hr.

Waste Storage

The contamination previously reported at the #101 tank riser has been cleaned, dropping the reading from 1500 mrep/hr to 125 mrep/hr. The only other contamination found was on the #102 tank riser which had 13 mrep/hr, and the #107 tank riser which had 2.5 mrep/hr.

200 N Area

The 212-N and 212-R ditches had readings of 18 and 12.5 mrep/hr, respectively. These readings seem to be due to scrapings and sludge from the bottoms of the cask cars.

ISOLATION BUILDING

Air Monitoring	No. of Samples	Reading (µg Pu/cc)
Little Sucker samples in laboratories	11	All $< 4 \times 10^{-12}$
" " " " process areas	7	All $< 4 \times 10^{-12}$
" " " " " "	2	Both 8×10^{-12}
Filtered Hood Air by Big Sucker	2	Both $< 2 \times 10^{-13}$
" " " " " "	1	9×10^{-13}
" " " " " "	1	2×10^{-12}

	µg Pu/cc			
Spot Samples:	$< 10^{-11}$	About 10^{-11}	About 2×10^{-11}	Higher
Processing	31	12	2	3×10^{-11}
Laboratories	6	1	1	-
General Building	39	13	3	3×10^{-11}

Surface Contamination

Zone	Items or Locations checked	Contamination Found (dis/min) ≥1000	≥5000	≥25,000	Maximum Values (dis/min)
Processing	2118	68	45	16	>100,000
Laboratory	773	34	18	10	> 50,000
Gen. Bldg. & H. I.	476	0	0	0	
Miscellaneous	792	53	30	3	

1124270

707 other items were checked with smears, of which 19 had more than 100 dis/min. 7-1115

A spill in cell 3 involved a total of about 100 μg Pu, with more than 100 spots. The spill occurred during the 4-12 shift on November 14, and since it was not discovered until the following 12-8 shift the contamination was tracked over most of the cell. Two spots with less than 0.1 μg Pu each were found in cell 4. One spot with 0.4 μg Pu was found in room 34.

98 pairs of shoes were checked, including 17 done as special checks following spills. 18 pairs of shoes had contamination in excess of 500 dis/min. 3 pairs had a maximum of 5000 dis/min, 2 pairs had 10,000 dis/min, and one pair had 20,000 dis/min.

Gamma radiation was as follows:

	mr/hr
PR container, maximum at side	34
Process hood, maximum	7
SC container, maximum at side	6

SITE SURVEY

Water and Waste Monitoring

None of the water samples from wells and springs gave positive indications of activity.

No unusual conditions were noted in the waste survey except those reported for the 200-N Area.

Air Monitoring

The average dosage-rates for the week were:

Location	mrep/hr	Location	mrep/hr
Route #10, Mi. 1	0.09	Route #3-Meteorology	0.20
Mi. 3	0.08		
Route #1, Mi. 8	0.03	Route #11A-Mi.6	0.05
Intersection Rt.#1 & Rt.4-N	0.04	Mi.1	0.06
Route #4-S, Mi.10	0.14	Route 2-N -100-D	0.05
Mi. 6	0.24	100-F	0.03
Mi.14	0.06		
300 Area	0.05	Route 2-S, Mi. 4	0.06

All the above readings include natural background.

The 614 monitoring stations gave the following results:

	Average Dose in 24 hours	
	Integrons (gamma)	Type C Chambers (beta and gamma)
	mr	mrep
100-B	1.5	0.5
100-D	1.3	0.5
100-F	1.0	0.3
200-E	0.8	0.7
200-W	0.6	0.5
Outlying Areas	0.4	

Film collected from all 614 buildings gave no indications of any exposure.

226

11-26-45 T-2863

T-1115

CCGamertsfelder-WCKay

Ground Contamination

The maximum ground contamination in the 200-West Area was 1.5 mrep/hr, 2200 feet south east of the stack. The maximum in the 200-East Area was 0.4 mrep/hr, 200 feet south east of the stack. The general level in the area is 0.1 mrep/hr.

A vegetation sample survey was made which included samples from a larger territory than has previously been reported; positive values were obtained at all locations, including Walla Walla. Typical results were:

Vegetation Samples (μc/gm)

100-B	2.8×10^{-4}
Rt. 4-S, Mi.6	8.7×10^{-3}
300 Area	2.8×10^{-4}
Richland N.W.	7.5×10^{-4}
Benton City	5.5×10^{-4}
Kennewick	3.4×10^{-5}
Pasco	1.2×10^{-4}
Rattlesnake, 2000 ft.	3.1×10^{-4}
" behind first range, 2000 ft.	1.5×10^{-4}
20 miles SE of Pasco, Rt.410	2.8×10^{-4}
40 " SE " " "	6.3×10^{-5}
Walla Walla N.W.	1.8×10^{-4}
Walla Walla Central	9.1×10^{-5}

GENERAL

There were no high pencil readings confirmed by badge readings. Six Maintenance men in the 200-E Area had badge readings between 105 and 180 mr, for the week ending November 15,1945. The sums of pencil readings of these men for the same period ranged from 140 to 270 mr. There were no thyroid counts above 50 c/m.

C C Gamertsfelder

C. C. Gamertsfelder
Ass't. Chief Supv. (Acting)
H. I. Section

CCG:swc

227

7-2910

DECLASSIFIED

Copy #1 - W.C.Kay-F.B.Vaughan
#2 - W.K.MacCready
#3 - J.D.Ellett
#4 - J.J.Urban
#5 - S.T.Cantril
#6 - H.M.Parker-C.C.Gamertsfelder
#7 - C.M.Patterson-J.W.Healy
#8 - F.P.Seymour
#9 - C.R.E.Merkle, Jr.
#10 - M.L.Mickelson
#11 - H.A.Moulthrop
#12 - ~~L.Squires-M.H.Smith-R.Hare-~~ 700 Area file
#13 - G.W.Struthers-M.F.Acken-300 Area file
~~#14 - Yellow copy~~
#15 - Pink copy

7-1115

TO: W. C. KAY
S Department Superintendent

November 29, 1945.

TH[redacted]
No. 1 [redacted] COPIES, SERIES [redacted]

S-47

#47. - H. I. REPORT ON THE 200 AREAS AND ENVIRONS

FOR THE WEEK ENDING NOVEMBER 28, 1945

General Statistics	T	B	Total
Surveys for Special Work Permits	53	53	106
Other routine and special surveys	61	88	149
Smear samples for alpha counts	86	131	217
Smear samples for beta counts	139	20	159
Air monitoring samples	66	101	167
Thyroid checks	59	36	95

THE T PLANT

Canyon Building

Two spots of contamination, one on the edge of the paper between 3-5L and 3-5R, and one on the wall at 11R, gave about 30 mrep/hr at one inch.

15 air samples were taken, and 13 of these had less than 10^{-11} µg Pu/cc. The two positive values (the maximum of which was 1.5×10^{-11} µg Pu/cc) were taken near the 14-4 sampler.

Control Laboratory

Surface contamination conditions have improved lately. The maximum radiation level was found on a waste carton which gave 350 mrep/hr.

34 air samples were taken, and only 4 of these had more than 10^{-11} µg Pu/cc. The maximum was 1.7×10^{-11} µg Pu/cc.

DECLASSIFIED

CCGamertsfelder-WCKay

Concentration Building

Three spots on the F-10 room floor had a total of 0.4 μg Pu. The inside of the F-10 enclosure had a total of 190 μg Pu over an area of about 40 square feet. The outside surface of the enclosure doors had about 7.7 μg Pu.

A large amount of the product contamination in the F cell is fixed on the surfaces of the tanks and cannot be removed with the standard decontamination procedures. The F-1 tank has about 40 μg Pu, and the F-7 tank has about 0.6 μg Pu. The F-2 balcony is clean except for some spots under the F-2 base and F-2 water line which were found to be contaminated by the use of smears which had about 10,000 dis/min.

17 air samples were taken, and 14 of these had less than 10^{-11} μg Pu/cc. The positive values (of which the maximum was 7×10^{-11} μg Pu/cc) were taken near hampers in room 3.

THE B PLANT

Canyon Building

On November 23, the 6-1 sampling port gave 420 mrep/hr including 66 mr/hr at a distance of two inches from the plug. This was decontaminated to a level of 13 mrep/hr. A bag of contaminated waste at section 1 gave 170 mrep/hr. Contamination giving up to 23 mrep/hr has again been found in the operating gallery at the drain trough under the panel board at section 13.

17 air samples were taken in the Canyon. Three samples, all taken near sampling ports, were the only ones with more than 10^{-11} μg Pu/cc. The maximum value of 2×10^{-11} μg Pu/cc was found at both the 17-4 and 13-4 samplers.

Control Laboratory

Some surface contamination was found in the laboratory by the use of smears. The maximum radiation level found was 120 mrep/hr on a waste carton.

42 air samples were taken, and only 4 of these had more than 10^{-11} μg Pu/cc. The maximum was 5.1×10^{-11} μg Pu/cc.

Concentration Building

A total product contamination of only about 1 μg was found. All of this was in the F-cell and F-10 room.

39 air samples were taken, and only one sample had more than 10^{-11} μg Pu/cc. This sample taken near a laundry hamper in the F-10 room had 1.7×10^{-11} μg Pu/cc.

Fan House

The maximum dosage-rate on the #1 fan has increased a little to a level of 900 mr/hr. The reading on the #2 fan has dropped to 4600 mr/hr.

200 NORTH AREA

The P and R waste ditches had maximum readings of 30 and 12 mrep/hr, respectively. After cleaning, the R Ditch reading was less than 1 mrep/hr. An air sample was taken in each of the buildings, and there were no values above 10^{-11} μg Pu/cc.

CCGamertsfelder-WCKay

11-29-45 I-2910

I-1115

ISOLATION BUILDING

Air Monitoring

	No. of Samples	Reading (μg Pu/cc)
Little Sucker Samples in Laboratories	11	All $< 4 \times 10^{-12}$
" " " " Process Areas	9	All $< 4 \times 10^{-12}$
Filtered hood air by Big Sucker	1	3.4×10^{-13}
" " " " " "	2	About 4.6×10^{-13}

Spot Samples:

	μg Pu/cc				
	$< 10^{-11}$	About 10^{-11}	About 2×10^{-11}	About 3×10^{-11}	About 4×10^{-11}
Processing	21	4	3	1	3
Laboratories	10	0	2	0	0
General Bldg.	1	0	0	0	0

Surface contamination

Zone	Items or Locations Checked	Contamination found (dis/min) ≥1000	≥5000	≥25,000	Maximum Values (dis/min)
Processing	1392	65	45	15	>100,000
Laboratory	1023	80	39	12	>100,000
Gen.Bldg. & H. I.	105	0	0	0	
Miscellaneous	513	17	12	0	

582 other items were checked with smears, and 31 of these had more than 100 dis/min.

There was no floor contamination found during the week.

64 pairs of shoes were checked, and 12 of these had more than 500 dis/min. Three pair had the maximum value of about 10,000 dis/min.

Gamma radiation was as follows:

	mr/hr
PR container, maximum at side	56
Process hood, maximum	7.5
SC container, maximum at side	6

SITE SURVEY

Water and Waste Monitoring

500 cc water samples were taken at all locations. The maximum activity found was about 6×10^{-5} μc/liter in both Ranch 13 well and Spring 13.

No unusual levels were found in the waste surveys.

CCGamertsfelder-McKay

11-29-45 7-2910

Air Monitoring

The average dosage-rates for the week were:

Location	mrep/hr	Location	mrep/hr
Route #10, Mi.1	0.06	Route 3, meteorology	0.24
Mi.3	0.11		
Route #1 Mi.8	0.03	Route 11A- Mi.6	0.20
Intersection Rt.#1 & Rt.4-N	0.03	Mi. 1	0.08
Route 4-S, Mi. 10	0.12	Route 2-N, 100-D	0.03
Mi. 6	0.22	100-F	0.03
Mi.14	0.07		
300 Area	0.05	Route 2-S, Mi. 4	0.04

All the above readings include natural background.

The 614 monitoring stations gave the following results:

	Average Dose in 24 hours	
	Integrons (gamma)	Type C Chambers (beta and gamma)
	mr	mrep
100-B	0.1	0.4
100-D	0.0	0.4
100-F	0.1	0.4
200-E	0.9	0.7
200-W	0.6	0.5
Outlying Areas	0.4	-

Film from all these locations indicated no exposure above background.

Ground Contamination

The maximum ground contamination in the 200-West Area was 0.5 mrep/hr, 2400 feet southeast of the T Plant Stack. The maximum in the 200-East Area was only 0.2 mrep/hr 2100 feet southeast of the B Plant Stack.

Samples of rain water collected during dissolvings in the B Plant had a maximum activity of about 0.8 μc/liter. The activity in the rain was not too high in this case, but the dissolving was stopped for a while and then started when the rain had nearly stopped so that the worst conditions possible were not realized.

Vegetation Samples (μc/gm)

100-B	2.3×10^{-4}	Rt.10, Mi.2	3.2×10^{-4}	Benton City	1.4×10^{-4}
100-D	4.4×10^{-4}	Mi.6	1.4×10^{-4}	Kennewick	1.5×10^{-4}
100-F	3.7×10^{-4}	Mi. 11	9.5×10^{-5}	Pasco	5.7×10^{-5}
Rt. 4-S, Mi.4	4.8×10^{-3}	Rt.3, Mi.2	8.1×10^{-3}		
Mi.6	1.4×10^{-3}	300 Area	1.2×10^{-4}		
Mi.8	1.2×10^{-3}	Richland S.E.	1.8×10^{-4}		

GENERAL

There were no high pencil readings confirmed by badge readings. Several films from the badges were lost in processing but the pencil totals for those people for the week indicated no exposure above 45 mr.

C.C.Gamertsfelder

C.C.Gamertsfelder, Asst.Chief Supv.(Actin
T Section

CCG:swc

Copy #1 - W.C.Kay-F.B.Vaughan
#2 - W.K.MacCready
#3 - J.D.Ellett
#4 - J.J.Urban
#5 - S.T.Cantril
#6 - H.M.Parker-C.C.Gamertsfelder
#7 - C.M.Patterson-J.W.Healy
#8 - F.P.Seymour
#9 - C.R.E.Merkle, Jr.
#10 - N.L.Mickelson
#11 - H.A.Moulthrop
~~#12 - L.Squires-M.H.Smith-K.Hare-700 Area file~~
#13 - G.W.Struthers-M.F.Acken-300 Area file
~~#14 - Yellow copy~~
#15 - Pink copy

TO: W. C. KAY
S Department Superintendent

December 7, 1945.

#48. - H. I. REPORT ON THE 200 AREAS AND ENVIRONS

FOR THE WEEK ENDING DECEMBER 5, 1945

General Statistics	T	B	Total
Surveys for Special Work Permits	64	75	139
Other routine and special surveys	92	110	202
Smear samples for alpha counts	155	175	330
Smear samples for beta counts	143	15	158
Air monitoring samples	94	109	203
Thyroid checks	78	53	131

THE T PLANT

Canyon Building

The paper on the Canyon deck at 3-5 R had a contaminated spot which gave 40 mrep/hr at one inch. Another spot on paper between 2-A and 3-5 L gave 24 mrep/hr. The 8-1 sampler riser gave 2000 mrep/hr including 500 mr/hr at a distance of one inch. The plug in the riser was changed after which the reading was 350 mrep/hr.

Twenty-seven smears were taken on items for release from danger zones. None of these smears gave positive indications of either alpha or beta contamination.

Twenty air samples were taken and none had more than 10^{-11} µg Pu/cc.

Control Laboratory

Contamination with product was as widely spread as usual, but the amount was

appreciably less. A waste carton gave the maximum radiation level of 200 mrep/hr.

55 air samples were taken, and 48 of these had less than 10^{-11} µg Pu/cc. The maximum was 8.3×10^{-11} µg Pu/cc taken with the air inlet in a bayonet box.

Concentration Building

The F-10 Room enclosure had a total of about 8 µg Pu, mostly on the doors and nearby surfaces. The F-2 tank and the connections to it had a total of about 12 µg Pu. The F-1 tank had a total of about 25 µg Pu, most of which seems to be fixed on the surfaces. The F-22 to F-10 jet and flanges had 3.6 µg Pu. The general level of floor contamination in the F Cell is quite low except for a spot at the floor drain which had about 0.8 µg Pu over an area of 36 square inches.

17 air samples were taken, and all except one had less than 10^{-11} µg Pu/cc. The one positive value of 1.4×10^{-11} µg Pu/cc was taken in the center of the lunch room.

Fan House

The radiation levels on the two electrical fans have increased. The maximum levels now are 8200 mr/hr on the #1 fan (nearest the stack), and 6200 mr/hr on the #2 fan.

THE B PLANT

Canyon Building

The maximum reading at a sampling port was 140 mrep/hr at one inch on the 7-3 port. A soda ash bag at Section 1 gave 175 mrep/hr. Four contaminated tools giving from 4 to 38 mrep/hr were found in the Canyon. The operating gallery still has some contamination in the drain trough under the panel board at Section 13 where a reading of 22 mrep/hr was found. Connector 31 in Section 7 of the pipe gallery was found to give 22 mrep/hr at a distance of six inches.

21 air samples were taken, and 5 had more than 10^{-11} µg Pu/cc. These five were all taken near samplers in the Canyon with the maximum of 4.6×10^{-11} µg Pu/cc being taken near the 15-9 sampler on December 1.

Control Laboratory

80 smears were taken in the Laboratory and only 5 had more than 100 dis/min. A total of 1.7 µg Pu was found on benches and equipment in Room 7. The maximum radiation level found was 98 mrep/hr on a waste carton.

44 air samples were taken, and 7 of these had more than 10^{-11} µg Pu/cc. The maximum was 2.6×10^{-11} µg Pu/cc.

Concentration Building

The C-4 manhole cover had about 2 µg Pu. The F-2 tank and fittings had a total of about 1 µg Pu.

The maximum radiation levels observed on PR Cans were 33 mr/hr on the side, and 57 mr/hr on the bottom.

44 air samples were taken; and only 3 had more than 10^{-11} µg Pu/cc. The maximum value of 3.0×10^{-11} µg Pu/cc, and another of 1.3×10^{-11} µg Pu/cc, was obtained in the lunch room. The reasons for positive air samples in the lunch room are not known; no other contamination has been found there.

Fan House

The reading at the inspection plate of the #1 fan has increased slightly to 900 mr/hr. The increase is probably due to radiation from the #2 fan which has increased to a level of 5600 mr/hr.

ISOLATION BUILDING

Air Monitoring

	No. of Samples	Reading (µg Pu/cc)
Little Sucker Samples in Laboratories	11	All $< 4 \times 10^{-12}$
" " " " Process Areas	9	All $< 4 \times 10^{-12}$
Filtered Hood Air by Big Sucker	1	3.8×10^{-13}
" " " " " "	2	About 1.2×10^{-12}
" " " " " "	1	4.5×10^{-12}

Spot Samples:

	µg Pu/cc				
	$\leq 10^{-11}$	About 10^{-11}	About 2×10^{-11}	About 4×10^{-11}	Higher
Processing	37	3	4	1	7×10^{-11} Cell 4
Laboratories	11	0	1	0	-
General Bldg.	2	0	0	0	-

Surface contamination

Zone	Items or Locations Checked	Contamination found (dis/min) ≥1000	≥5000	≥25,000 in hoods	≥25,000 out of hoods
Processing	1959	136	104	35	28
Laboratory	861	57	32	2	10
Gen.Bldg. & H.I.	431	1	0	0	0
miscellaneous	213	4	3	0	0

674 other items were checked with smears, and only 14 of these had more than 100 dis/min.

71 pairs of shoes were checked and only 2 had contamination, but both of these had maximum readings of 20,000 dis/min. The small number of contaminated shoes is probably due to the absence of major spills during the week.

Gamma radiation was as follows:

	mr/hr
PR container, maximum at side	30
Process hood, maximum	7
SC container, maximum at side	4

CCGamertsfelder-WCKay

12/7/45

7-1115

SITE SURVEY

Water and Waste Monitoring

The weekly waste survey did not locate any unusual contamination. The 200-North Area "N" ditch gave 10 mrep/hr, 35 feet below the inlet.

No wells or springs now seem to have more than 5×10^{-5} μc/liter. Six water samples taken, however, gave positive contamination below this level which can be detected with the present larger samples; they were the Richland #12 well with 4.6×10^{-5}, the 300 Area #2 with 3.1×10^{-5}, Columbia Camp, Hanford #4 and Ranch #13 all had 2.7×10^{-5}, and Spring #13 had 3.1×10^{-5} μc/liter.

Air Monitoring

The average dosage-rates for the week were:

Location	mrep/hr	Location	mrep/hr
Route #10, Mi.1	0.08	Route 3, Meteorology	0.12
Mi.3	0.09		
Route #1 Mi. 8	0.03	Route 11A-Mi.6	0.13
Intersection Rt.#1 & Rt.4-N	0.04	Mi.1	0.04
Route 4-S, Mi. 10	0.10	Route 2-N, 100-D	0.03
Mi. 6	0.30	100-F	0.03
Mi. 14	0.06		
300 Area	0.05	Route 2-S, Mi. 4	0.04

All the above readings include natural background.

Chambers placed at the 300-foot level of the Meteorology Tower indicated dosage-rates of 0.08 mrep/hr.

The 614 monitoring stations gave the following results:

	Average Dose in 24 hours	
	Integrons (gamma)	Type C Chambers (beta and gamma)
	mr	mrep
100-B	0.3	0.3
100-D	1.2	0.4
100-F	0.3	0.3
200-E	0.6	0.8
200-W	0.1	0.5
Outlying Areas	0.6	-

Films from the above locations did not show any levels over background.

Ground Contamination

The maximum ground contamination in the 200-West Area was 0.7 mrep/hr, 2600 feet southeast of the T Plant stack. The maximum in the 200-East Area was 0.6 mrep/hr, 2000 feet southeast of the B Plant stack.

1124280

CCGamertsfelder-WCKay

12/7/45

Vegetation Samples (μc/gm)

100-B	5.6×10^{-5}	Rt. 3 - Mi. 2	3.2×10^{-3}
100-D	3.9×10^{-4}	300 Area	1.7×10^{-4}
100-F	3.6×10^{-4}		
Rt. 10, Mi. 2	2.1×10^{-4}	Richland, North End	1.3×10^{-3}
Mi. 6	6.5×10^{-4}	" South End	9×10^{-4}
Mi.11	3.2×10^{-4}	Benton City	4.1×10^{-4}
Rt. 4-S, Mi.4	3.0×10^{-3}	Kennewick	4.3×10^{-3}
Mi.6	4×10^{-3}	Pasco	6.0×10^{-4}
Mi.24	1.6×10^{-4}		

The most unusual feature of this data was the very large increase in the samples taken in Richland and Kennewick. The values last week were 1.8×10^{-4} μc/gm in Richland SE, and 1.5×10^{-4} μc/gm in Kennewick. The increase might have been due to contamination carried down during the recent rains.

GENERAL

There were no high pencil readings confirmed by badge readings. Several badge films gave readings up to 140 mrep, but the reading was due to fogging and not to radiation.

C C Gamertsfelder

C. C. Gamertsfelder,
Asst. Chief Supervisor (Acting)
H. I. Section

CCG:swc

Copy #1. H.C.Kay-F.B.Vaughan
#2. W.K.MacCready
#3. J.D.Ellett
#4. J.J.Urban
#5. S.T.Cantril
#6. H.M.Parker-C.C.Gamertsfelder
#7. C.M.Patterson-J.N.Healy
#8. F.P.Seymour
#9. C.R.E.Merkle, Jr.
#10. M.L.Nickelson
#11. H.A.Moulthrop
#12. L.Squires-M.H.Smith-H.Hare - 700 Area File
#13. G.H.Struthers-M.F.Acken- 300 Area file
#14. Yellow copy
#15. Pink copy

TO: W. C. KAY
S Department Superintendent

THIS DOCUMENT CONSISTS OF 16 PAGES
No. 12 OF 15 COPIES, SERIES B

#49. - H. I. REPORT ON THE 200 AREAS AND ENVIRONS

FOR THE WEEK ENDING DECEMBER 12, 1945

General Statistics	T	B	Total
Surveys for Special Work Permits	76	91	167
Other routine and special surveys	85	148	233
Smear samples for alpha counts	255	285	540
Smear samples for beta counts	247	35	282
Air monitoring samples	89	123	212
Thyroid checks	63	50	113

THE T PLANT

Canyon Building

Samplers gave the following dosage-rates at one inch with the Beckman survey meter:

Sampler	Beta and Gamma (mrep/hr)	Gamma (mr/hr)
6-1	315	40
8-1	340	100
13-4	500	200

A region against the wall at Section 11-K gave a reading of 60 mrep/hr, and a spot on the Deck between 2L and 2K read 65 mrep/hr, both at one inch distance. An inspection of Cell 16-L for connector leaks was done under constant monitoring. The maximum dosage-rate encountered was only 50 mr/hr. A survey was made of Section 13-L on 12/11/45 with two blocks removed at a time when a charge was contained in the 13-4 tank. The following figures may be of value in assessing the potential hazard under

1124282

similar conditions:

Location	mr/hr
At center of 13-K Section	160
Approximately 2 ft. from edge of cell, and 4 ft. above deck	1400
Approximately 2 ft. from edge of cell, and 6 ft. above deck	2200
Over cell edge at height of guard rail top (approximately 5 ft. above deck level)	8800
Over open cell at deck level	> 11,600

Twenty air samples in the Canyon indicated air concentrations of product less than 10^{-11} µg Pu/cc except for a reading of 1.2×10^{-11} µg Pu/cc near 13-4 sampler and 2.5×10^{-11} µg Pu/cc between the 6-1 and 6-4 samplers.

Control Laboratory

Many items in the laboratory were found to be contaminated, but the tendency to reduce the separate amounts to levels which may be insignificant has been continued. 145 smears taken during the week gave no value above 100 dis/min. There was also no beta contamination in excess of 100 counts/min. A waste carton again gave a radiation level as high as 180 mrep/hr.

37 spot checks of the air contamination included only 3 positive values of which the highest was 2.5×10^{-11} µg/cc. There was no positive result on seven constant monitoring air samples.

Concentration Building

Product contamination was found on the door of the F-10 enclosure, on the F-2 to F-10 jet, on the seal at the top edge of the F-2 tank, on the F-9 sampler flange, on the F-10 hoist chains, and on the yoke and hooks of the F4 hoist. In all these cases, the degree of contamination was low. 2 µg of product remained on the top of the F-1 tank. These conditions represent a very considerable improvement over the previous report due to a strong clean-up program in this location.

25 air monitoring samples in the building included only one positive value of 2.5×10^{-11} µg Pu/cc obtained near the clothes hampers in Room 3.

Fan House

The radiation levels on the two electrical fans have decreased to 6000 mr/hr and 4600 mr/hr at the inspection plates of the #1 and #2 electrical fans, respectively.

THE B PLANT

Canyon Building

The maximum reading at a sampling port was 80 mrep/hr at two inches from the 13-4 port. This included 50 mr/hr of gamma radiation. The plug was decontaminated until both readings reached 33 mr/hr, presumably indicating that the residual radiation came from an unexposed part. The 7-3 port and 6-1 port were also decontaminated to low levels. The entire drain trench under the Section 13 panel board is still contaminated, with levels ranging from 1 mrep/hr to 35 mrep/hr. Repeated applications of acid have failed to decontaminate this location, and the physical removal of the cement by chipping is being considered. The 13-1 gang valve was replaced this week

with a maximum dosage-rate of 60 mrep/hr at the open valve flange.

More contamination has settled in the connector 41 at Section 13 in the pipe gallery where a reading of 65 mr/hr was observed on 12/8/45. It is believed that this condition was caused by a blowback from the 13-1 tank, and suitable precautionary measures have been taken to prevent its recurrence.

22 air samples in the Canyon all read less than 10^{-11} μg Pu/cc.

Control Laboratory

184 smears taken in the laboratory showed 24 positive readings, with a top value of 1250 dis/min. As in the T Plant laboratory, there is now widespread contamination of relatively low intensity. No high external radiation hazard was found.

49 air samples included only three positive values of which the highest was 3×10^{-11} μg Pu/cc.

Concentration Building

Surface contamination in the F Cell and F-10 enclosure amounted to 11 μg of which 8 was found on the top of the F-1 tank. The possible external radiation hazard reached 280 mr/hr on the A-4 tank and 220 mr/hr on the C-4 tank.

52 air monitoring samples gave only 2 positive values, of which the higher was 2×10^{-11} μg Pu/cc in the pipe gallery between the C and D fans.

Fan House

The dosage-rate on the inspection plate of the #2 electrical fan continued its upward trend from 5600 mr/hr to 7700 mr/hr. The dosage-rate at the reference point of the #1 fan fluctuated between 900 mr/hr and 750 mr/hr.

Stack Monitor Building

The scrubber recirculating pump spread contamination on the floor of this building due to a leaky packing gland. The dosage-rate near the floor was 20 mrep/hr; near the gas rotameter, the dosage-rate was 24 mrep/hr. Extended Work Permits for this building have been suspended until conditions have been corrected.

200-North Area

No outstanding radiation hazard was reported for the week. A reading of 26 mrep/hr at the S.W. corner of the railroad pit in the 212-P Area led to proper corrective measures by Operations. At the present time, hand counting and washing facilities in the North Area appear to be inadequate, and the addition of suitable instrumentation is recommended for this area.

ISOLATION BUILDING

Air Monitoring

	No. of Samples	Reading (μg Pu/cc)
Little Sucker samples in Laboratories	11	All less than 4×10^{-12}
" " " " Process Areas	8	" " " 4×10^{-12}
	1	1.2×10^{-11} (Cell 4)
Filtered Hood Air by Big Sucker	1	1×10^{-12}
" " " " " "		2×10^{-12}

H.M.Parker-W.C.Lacy 12/13/45 7-3018

Spot Samples:

	μg Pu/cc				
	$\leq 10^{-11}$	About 10^{-11}	About 2×10^{-11}	About 3×10^{-11}	Higher
Processing	29	3	1	1	0
Laboratories	8	0	0	0	0
General Bldg.	0	0	0	0	0

Surface Contamination

Zone	Items or Locations Checked	Contamination found (dis/min) ≥1000	≥5000	≥25,000 in hoods	≥25,000 out of hoods
Processing	1711	112	42	8	22
Laboratory	975	50	15	13	5
Gen.Bldg. & H.I.	432	1	0	0	0
Miscellaneous	119	3	1	0	0

680 other items were checked by means of smears, and only 16 of these gave positive results.

For the third consecutive week, no floor spot of significance was detected. This clean condition was also reflected by the low contamination on shoes. Of 60 pairs tested, only 2 pairs showed contamination, and this was of modest extent in each case.

Gamma radiation was as follows:

	mr/hr.
PR container, maximum at side	30
Process hood, maximum	7.5
SC container, maximum at side	7

SITE SURVEY

Water and Waste Monitoring

The weekly waste survey did not locate any unusual contamination although a reading of 160 mr/hr prevailed at the #101 condenser in the T Plant Tank Farm, with a corresponding reading of 58 mr/hr in the B Plant. The 200-North Area "N" Ditch again read more than 10 mrep/hr, 35 feet below the inlet.

The high values of contamination of wells and springs were 9×10^{-5} μc/liter at Ranch #13, and 1×10^{-4} μc/liter at the B-y well. The highest reading in a potential source of drinking water was 3.6×10^{-5} μc/liter at the Hanford well. The highest reading in water sources used on the 24-hour basis was 2.7×10^{-5} μc/liter in the Richland #12 well.

HM Parker-HC Kay

Air Monitoring

The average dosage-rates for the week were:

Location	mrep/hr	Location	mrep/hr
Route #10, Mi.1	0.07	Ht.3, Meteorology	0.13
Mi. 3	0.08		
Route #1, Mi. 8	0.03	Ht.11-A, Mi. 6	0.25
Intersection Ht.#1 & Ht.4-N	0.04	Mi. 1	0.05
Route 4-S, Mi. 10	0.10	Ht. 2-N, 100-D	0.04
Mi. 6	0.43	100-F	0.04
Mi.14	0.06		
300 Area	0.04	Ht. 2-S, Mi. 4	0.05

All the above readings include natural background.

The atmospheric monitoring stations (614 buildings) gave the following results:

	Average Dose in 24 hours	
	Integrons (gamma) mr	Type C Chambers (beta and gamma) mrep
100-B	0.0	0.4
100-D	0.5	0.5
100-F	0.1	0.5
200-E	0.8	0.2
200-W	0.6	0.5
Outlying areas	0.3	-

Films from the above locations did not show any levels over background.

Ground Contamination

The maximum ground contamination in the 200-W Area was 0.5 mrep/hr, 2,500 feet southeast of the T Plant stack. The maximum in the 200-E Area was 0.3 mrep/hr at 3000 feet southeast of the B Plant stack.

The contamination of vegetation by deposited iodine both within the reservation and at points as remote as Walla Walla has recently increased to the point where closer consideration of the actual hazard involved has been required. As a provisional approach, one might logically consider the hazard to livestock such as sheep grazing on contaminated vegetation. It has been computed on admittedly arbitrary data that the tolerable concentration of iodine for this case would lie between 2×10^{-4} μc/gm and 5×10^{-4} μc/gm. For the present, the contamination results presented should be assessed in terms of this limit. The measurements given are based on surface readings of activity, and if inaccurate will necessarily err on the low side due to the self-absorption of the fraction of the iodine that may have entered the plant structure. Chemical recovery of the iodine from the vegetation will shortly be established as a routine to provide more reliable data.

7-1115

12/13/45 [redacted] 3 of 8

HMParker-WCKay

Typical vegetation samples read as follows:

	μc/gm		μc/gm
100-B	3.0×10^{-4}	Benton City	2.4×10^{-4}
100-D	3.2×10^{-4}	Kennewick	3.0×10^{-4}
100-F	4.5×10^{-4}	Pasco	6.2×10^{-4}
Rt. 10, Mi. 2	4.2×10^{-4}	Richland "Y"	1.0×10^{-3}
Mi. 6	1.2×10^{-3}	Yakima barricade	4.5×10^{-4}
Mi. 11	2.9×10^{-4}	Sunnyside	3.4×10^{-5}
Rt. 4-S, Mi. 4	4.9×10^{-3}	5 Mi. East of Sunnyside	3.1×10^{-4}
Mi. 6	1.0×10^{-2}	Grandview	4.0×10^{-5}
Mi. 24	2.3×10^{-4}	5 mi. East of Grandview	2.6×10^{-4}
Rt. 3, Mi. 2	4.6×10^{-3}	Prosser	6.7×10^{-5}
300 Area	2.3×10^{-4}	6 mi. East of Prosser	1.4×10^{-4}
Richland, North end	5.4×10^{-4}	Portland	Less than 10^{-5}
Richland, South end	9.5×10^{-4}	Berkeley	Approximately 10^{-5}

The contamination in Richland, Kennewick and Pasco has remained high. Readings in Sunnyside, Grandview and Prosser were taken to establish the levels South and West of the Plant site. They have turned out to be higher than would have been anticipated. Nevertheless, the background samples obtained in Berkeley and Portland established the fact that low readings are obtained on clean vegetation, and consequently that the results from the area are at least positive, although the magnitude may require further study.

Rainwater samples gave activity up to 0.15 μc/liter. Two samples of snow gave, respectively, 0.11 and 0.44 μc/liter of melted snow. The whole program of measurement of iodine contamination in the atmosphere, and especially at more remote points, is to be augmented with a view to estimating the necessity of reducing these activities by such measures as a required increase in cooling time.

A continuous monitor of iodine concentration in the atmosphere has been installed in the integron monitor station southeast of the B Plant stack. The average concentration over an 8-hour period has ranged between 3×10^{-17} curie/cc and 6×10^{-16} curie/cc. These concentrations are well below the tolerable limit of 3.5×10^{-14} curie/cc, the recently revised value for continuous inhalation. A similar iodine monitor has been installed in the Benton City location, but it has not as yet given satisfactory service.

GENERAL

There was no high pencil reading confirmed by a badge reading. Defective processing was responsible for the loss of seven film records this week. Pencil readings on these seven men were low at all times.

H M Parker

H. M. Parker, Chief Supv.
H. I. Section

HMP:swc

1124287

2U8 7-1115

7-3080

Copy #1. W.C.Kay-F.B.Vaughan
#2. W.K.MacCready
#3. J.D.Ellett
#4. J.J.Urban
#5. S.T.Cantril
#6. H.M.Parker-C.C.Gamertsfelder
#7. C.M.Patterson-J.W.Healy
#8. F.P.Seymour
#9. C.R.E.Merkle, Jr.
#10. M.L.Mickelson
#11. H.A.Moulthrop
~~#12. L.Squires-M.H.Smith-R.Hare-700 Area file~~
#13. G.W.Struthers-M.F.Acken
300 Area file
~~#14. Yellow copy~~
#15. Pink copy

TO: W. C. KAY
S Department Superintendent

December 26, 1945

THIS DOCUMENT CONSISTS OF 5 PAGES
No. 13 OF 15 COPIES, SERIES 2

INV.

#50. - H. I. REPORT ON THE 200 AREAS AND ENVIRONS

FOR THE WEEK ENDING DECEMBER 19, 1945

General Statistics	T	B	Total
Surveys for Special Work Permits	95	80	175
Other routine and special surveys	95	113	208
Smear samples for alpha counts	104	230	334
Smear samples for beta counts	58	87	145
Air monitoring samples	88	112	200
Thyroid checks	60	50	110

THE T PLANT

Canyon Building

Contamination and radiation hazards were maintained at low levels. A tray at Section 3 was found to give 250 mrep/hr at a distance of 2 inches. This was cleaned so that the level was 3 mrep/hr.

21 air samples were taken in the Canyon. The maximum concentration found was 1.3×10^{-11} μg Pu/cc near the 3-5 L sample port. The rest all had less than 10^{-11} μg Pu/cc.

1124288

Control Laboratory

Product contamination of laboratory equipment is still widespread. Seventy-seven smears were taken during the week, and 9 of these had more than 100 dis/min, 5 taken on beyonets had more than 1000 dis/min. The maximum external radiation level was 150 mrep/hr at the surface of a waste carton.

7 Little Sucker air samples were taken, and all had less than 10^{-11} µg Pu/cc. 41 spot samples were taken, and 38 of these had less than 10^{-11} µg Pu/cc. The maximum value was 2.6×10^{-11} µg Pu/cc.

Concentration Building

A blow-back occurred while jetting recycle material from an RC Can to the F-8 tank which resulted in the spread of a considerable amount of contamination. The can was grossly contaminated but was cleaned immediately. The floor of the F-10 enclosure had about 1 µg Pu over 300 square inches, and the floor in front and north of the enclosure had about 6 µg Pu over 144 square inches. The F-2 tank had a total of 2.3 µg Pu, and the F-1 tank had 2 µg Pu. The top step on the north side of the G-2 tank had 1.4 µg Pu over 6 square inches.

19 air samples were taken, and 17 of these had less than 10^{-11} µg Pu/cc. The other 2 had 1.8×10^{-11} µg Pu/cc.

Fan House

The radiation levels at the inspection plates of the electrical fans were 6000 mr/hr for fan #1, and 5000 mr/hr for fan #2.

THE B PLANT

Canyon Building

Dip tubes were replaced on the 17-2 centrifuge. The radiation levels which were encountered were 2.5 mr/hr over the open cell, 5 mr/hr six inches above the 17-2 centrifuge, and 120 mr/hr at the 17-3 tank. Assault masks were worn during the work, and the maximum concentration in an air sample was 10^{-11} µg Pu/cc.

Sampling ports were quite free of contamination, the maximum reading found was 59 mrep/hr which included 46 mr/hr at a distance of two inches from the 13-4 sampler plug.

The drain trench in Section 13 is being decontaminated. The maximum reading observed was 25 mrep/hr.

22 air samples were taken, and only 1 had more than 10^{-11} µg Pu/cc. The maximum value of 2.3×10^{-11} µg Pu/cc was found at the 12-9 sampler.

Control Laboratory

140 smears were taken, and 28 had more than 100 dis/min of alpha activity, and 7 of these had more than 1000 dis/min. Radiation levels were very low, the maximum observed reading was 36 mr/hr on the sample shelves.

45 air samples were taken, and 38 had less than 10^{-11} µg Pu/cc. The maximum value was 3.8×10^{-11} µg Pu/cc.

CCG-WCKay

12/26/45 J-3080

Concentration Building

The F-1 tank had a total of about 1.2 μg Pu. The F-10 enclosure door and sill had a total of about 0.6 μg Pu. Maximum radiation levels on 5K Containers were 57 mr/hr on the bottom of the container, and 33 mr/hr on the side.

45 air samples were taken, and the only value over 10^{-11} μg Pu/cc was 3.7×10^{-11} μg Pu/cc taken in the air conditioner room on 12/13/45.

Fan House

The radiation level of the #1 fan increased to 1400 mr/hr on 12/17/45. The maximum on the #2 fan was 6000 mr/hr.

ISOLATION BUILDING

Air Monitoring	No. of Samples	Reading (μg Pu/cc)
Little Sucker samples in Laboratories	10	$< 4 \times 10^{-12}$
" " " " "	1	8×10^{-12}
" " " " Process Areas	7	$< 4 \times 10^{-12}$
" " " " " "	1	6×10^{-12}
" " " " " "	1	8×10^{-12}
Hood exhaust air samples	1	$< 2 \times 10^{-13}$
" " " "	1	7×10^{-13}
" " " "	1	1.7×10^{-12}

Spot Samples:

	Concentration μg Pu/cc x 10^{-11}			
	< 1	About 1	About 2	Greater than 2
Processing	36	0	1	0
Laboratories	8	1	0	0
General Bldg.	1	0	0	0
Total	45	1	1	0

Surface Contamination

Zone	Items or Locations Checked	Contamination found (dis/min) ≥1000	≥5000	≥25,000 in Hoods	≥25,000 out of Hoods
Processing	1657	158	105	9	40
Laboratory	2559	185	130	22	31
Gen.Bldg. & H. I.	210	0	0	0	0
Miscellaneous	420	49	26	0	17
Total	4846	392	261	31	88

837 other items were checked with smears and 19 of these had more than 100 dis/min.

7-1115

DECLASSIFIED

HCG-McKay

12/26/45 7-3080

There were two spills in the Process Control Section; one involving at least 5 μg Pu occurred during cleaning of equipment in the new decontamination sink. The second spill was particularly hazardous, involving sharp pieces of contaminated glass which were scattered when a pipette slipped from the tongs which were used to hold it. The chemist doing the work had contaminated coveralls, badge, shoes and hands. The floor, walls and furniture were also badly contaminated.

Two other spots containing a total of about 1 μg Pu were found on routine checks in the Process Control Section. Eight spots involving a total of 0.1 μg Pu were found in Cell 3.

74 pairs of shoes were checked, and 7 had more than 500 dis/min. One pair had 20,000 dis/min, and another pair had 80,000 dis/min.

Gamma radiation was as follows:

PR container, maximum at side	80 mr/hr
Process Hood, maximum	19 mr/hr
SC container, maximum at side	40 mr/hr

SITE SURVEY

Water and Waste monitoring

No unusual conditions were noticed during the weekly waste survey. The maximum water contamination was: 7 x 10^{-5} μc/liter at the Benton City well; the Richland #12 well had 6 x 10^{-5} μc/liter; Ranch #13 had 4 x 10^{-5} μc/liter; and Spring #13, Benson Ranch and 300 Area #2 each had 3 x 10^{-5} μc/liter.

Air monitoring

The average dosage-rates for the week were:

Location	mrep/hr	Location	mrep/hr
Rt. #10, Mi.1	0.10	Rt. 3, meteorology	0.25
Mi.3	0.12		
Rt. #1, Mi.8	0.02	Rt.11-A, mi. 6	0.33
Intersection Rt.#1 and Rt 4-N	0.04	Mi. 1	0.16
Rt. 4-S, Mi.10	0.10	Rt. 2-N, 100-D	0.20
Mi. 6	0.40	100-F	0.04
Mi.14	0.07		
300 Area	0.07	Rt.2-S, Mi. 4	0.06

All the above readings include natural background.

The atmospheric monitoring stations (614 buildings) gave the following results:

	Average Dose in 24 hours	
	Integrons (gamma) mr	Type C Chambers (Beta and gamma) mrep
100-B	1.0	0.4
100-D	0.1	0.4
100-F	0.1	0.4

1124291

DECLASSIFIED

	Average dose in 24 hours	
	Intergrons (gamma)	Type C Chambers (Beta and Gamma)
	mr	mrep
200-E	1.0	1.3
200-W	0.6	0.6
Outlying areas	0.5	-

Films from the above locations did not show any levels over background.

Ground Contamination

The maximum ground contamination in the 200-West Area was 1.2 mrep/hr, 3000 feet southeast of the T Plant stack. The maximum in the 200-East Area was 0.3 mrep/hr, 5000 feet southeast of the B Plant stack.

Typical vegetation samples read as follows:

	μc/gm		μc/gm
100-B	2.5×10^{-4}	Richland NW	4.2×10^{-3}
100-D	5.6×10^{-4}	" SE	1.4×10^{-3}
100-F	9.5×10^{-4}	Benton City	2.1×10^{-3}
Rt. 10, Mi. 2	3.3×10^{-3}	Richland Y	9.5×10^{-4}
Mi. 6	1.5×10^{-3}	Kennewick	2.0×10^{-3}
Mi.11	2.2×10^{-3}	Pasco	5.0×10^{-4}
Rt. 3, Mi. 2	1.0×10^{-2}		
Rt. 4-S, Mi. 4	6.8×10^{-3}		
Mi. 8	1.6×10^{-3}		
Mi.24	1.3×10^{-3}		
300 Area	1.1×10^{-3}		

The continuous monitor of iodine concentration in the 200-East Area, SE of the stack, indicated a maximum average concentration of 2×10^{-16} curie/cc. The continuous monitor in Benton City gave no positive results.

GENERAL

There were no high pencil readings confirmed by badge readings. Several badge films were lost, but pencil readings for these cases were low for the entire week.

C C Gamertsfelder

C.C.Gamertsfelder
Asst. Chief Supv. (acting)
H. I. Section

CCG:swc

Copy #1. E.C.Kay-F.B.Vaughan 7-3108
2. E.K.MacCready
3. J.D.Ellett
4. J.J.Urban
5. H.M.Parker-C.C.Gamertsfelder
6. C.M.Patterson-J.W.Healy
7. F.P.Seymour
8. C.R.E.Merkle, Jr.
9. M.L.Nickelson
10. M.L.Nickelson
11. H.A.Coulthrop
12. L.Squires-M.H.Smith-K.Hare-700
13. G.W.Struthers-M.F.Acken-300 Area
14. Yellow copy
15. Pink copy

TO: W. C. KAY
S Department Superintendent

December 28, 1945.

THIS DOCUMENT CONSISTS OF 3 PAGES
No. 13 OF 15 COPIES, SERIES A

#51. - H. I. REPORT ON THE 200 AREAS AND ENVIRONS
FOR THE WEEK ENDING DECEMBER 26, 1945

General Statistics	T	B	Total
Surveys for Special Work Permits	81	57	138
Other routine and special surveys	75	143	218
Smear samples for alpha counts	69	179	248
Smear samples for beta counts	49	120	169
Air monitoring samples	86	104	190
Thyroid checks	62	39	101

THE T PLANT

Canyon Building

Several sampling ports were rather contaminated; the 13-4 sample port gave 750 mrep/hr at a distance of one inch. The 8-1 and 6-1 sample ports gave 195 and 220 mrep/hr, respectively. One spot on the floor near the 3-5 sampler gave 15 mrep/hr at one inch. No other sources of radiation were discovered.

17 air samples were taken, and all had less than 10^{-11} µg Pu/cc.

Control Laboratory

Product contamination of laboratory equipment is at the normal levels. The maximum dosage-rate encountered was 200 mrep/hr on a waste carton.

41 air samples were taken, and the maximum value found was 1.2×10^{-11} µg Pu/cc.

7-1115

Concentration Building

The chain on the R.C. hoist is contaminated, giving readings between 2000 dis/min and 10,000 dis/min over its entire length; the amount was not estimated. A dolly handle had 0.02 μg Pu. The inside of the F-10 enclosure had a total of about 6 μg Pu of which 5 were in the instrument niche. The F-cell had a total of about 2.2 μg Pu spread over several pieces of equipment.

17 air samples were taken, and 16 had less than 10^{-11} μg Pu/cc. The other sample had 2.2×10^{-11} μg Pu/cc.

THE B PLANT

Canyon Building

High readings of 850 and 580 mrep/hr were observed on sample ports 7-3 and 7-1, respectively. The contamination seemed to be mainly on the iron plates.

19 air samples all had less than 10^{-11} μg Pu/cc.

Control Laboratory

95 smears were taken, and 12 of these had more than 100 dis/min of alpha activity; two of the smears had slightly more than 1000 dis/min. A waste carton gave 265 mrep/hr; other levels were quite low.

41 air samples were taken, and only 3 had more than 10^{-11} μg Pu/cc. The maximum was 5.8×10^{-11} μg Pu/cc.

Concentration Building

Surface contamination was maintained at a very low level. The only spot found was 0.1 μg Pu on the right-hand door of the F-10 enclosure.

The maximum radiation level encountered was 127 mr/hr on the bottom of a PR container. The maximum on the side was 58 mr/hr.

44 air samples all had less than 10^{-11} μg Pu/cc, except one which had 2×10^{-11} μg Pu/cc.

Fan House

The dosage-rate on the #1 fan dropped to 590 mr/hr. The rate at the #2 fan was 5500 mr/hr.

200 NORTH AREA

Wells on cask car #40 were cleaned. The maximum radiation levels in the wells were obtained after the bottoms had been drained. The A well read 22 mrep/hr, and the B well read 42 mrep/hr. The sediment removed and taken to the burial ground gave readings of about 100 mrep/hr.

CCG-WCKay 12/28/45 7-3108

THE ISOLATION BUILDING

Air Monitoring	No. of Samples	Reading (μg Pu/cc)
Little Sucker samples in Laboratories	9	< 4×10^{-12}
" " " " "	2	4×10^{-12}
" " " " Process area	8	< 4×10^{-12}
" " " " " "	1	6×10^{-12}
Filtered Hood Air by Big Sucker	1	10^{-12}
" " " " " "	1	3×10^{-12}

Spot Samples:

	Concentration μg Pu/cc x 10^{-11}		
	≤ 1	About 1	Greater than 1
Processing	32	1	0
Laboratories	7	0	0
General Bldg.& H.I.	2	0	0
Total	41	1	0

Surface contamination

Zone	Items or Locations Checked	Contamination found (dis/min) ≥ 1000	≥ 5000	≥ 25,000 In Hoods	≥ 25,000 Out of Hoods
Processing	2594	82	18	18	20
Laboratory	1493	84	37	15	22
Gen. Bldg. & H. I.	539	1	1	0	0
Miscellaneous	354	9	2	0	0
Total	4980	212	122	33	42

426 other items were checked with smears, and 14 of these had more than 100 dis/min. Three floor spots were found in the Process Control Section.

102 pairs of shoes were checked, and 7 were found to be contaminated; the maximum value of 10,000 dis/min was found on two pairs.

Gamma radiation was as follows:

PA container, maximum at side	58 mr/hr
Process hood, maximum	17 mr/hr
SC container, maximum at side	27 mr/hr

SITE SURVEY

Water and Waste Monitoring

No unusual conditions were noticed during the weekly waste survey. The #101

12/28/45

7-3108

CCG-WCKay

sampling part in the T Plant Waste Storage area read 1000 mrep/hr.

Water samples seem to have rapidly varying amounts of contamination, but all levels are quite low. Ranch 13 had the highest value of 4.2×10^{-4} μc/liter. The 300 Area #2 well had 5×10^{-5} μc/liter.

Air Monitoring

The average dosage-rates for the week were

Location	mrep/hr	Location	mrep/hr
Rt.#10, Mi. 1	0.16	Rt.3 -622 Bldg.	0.20
Mi. 3	0.20		0.
Rt. #1, Mi. 8	0.04	Rt.11-A, Mi. 6	0.17
Intersection Rt.#1 & Rt.4-N	0.05	Mi. 1	0.06
Rt.4-S, Mi.10	0.15	Rt. 2-N, 100-D	0.03
Mi. 6	0.33	100-F	0.04
Mi.14	0.13		
300 Area	0.12	Rt. 2-S, Mi. 4	0.07

The above readings include natural background.

The atmospheric monitoring stations (614 buildings) gave the following results :

	Average Dose in 24 hours	
	Integrons (gamma)	Type C Chambers (Beta and Gamma)
	mr	mrep
100-B	0.1	0.4
100-D	0.4	0.4
100-F	0.1	0.4
200-E	0.6	0.8
200-W	0.2	0.6
Outlying areas	0.5	"

Films from the above locations did not show any exposure over background.

Ground contamination

The maximum ground contamination in the 200-West Area was 1.5 mrep/hr, 2000 ft. southeast of the T Plant stack. The maximum in the 200-East area was 0.2 mrep/hr, 5000 ft. southeast of the B Plant stack.

CCG-WCKay

12/28/45

Typical vegetation samples read as follows:

	μc/gm		
100-B	2.4×10^{-4}	300 Area	9×10^{-4}
100-D	10^{-3}	Richland average	2.4×10^{-3}
100-F	5×10^{-4}	Benton City	2×10^{-3}
Rt. 10, Mi. 2	1.8×10^{-3}	Kennewick, maximum	6.9×10^{-3}
Mi. 6	3.6×10^{-3}	" average	5×10^{-3}
Mi. 11	1.1×10^{-3}	Pasco	1.9×10^{-3}
Rt. 3, Mi. 2	1.3×10^{-2}		
Rt. 4-S, Mi. 4	6.9×10^{-3}		
Mi. 8	2.5×10^{-3}		
Mi. 24	1.1×10^{-3}		

The constant iodine monitor in the southeast corner of the 200-East area indicated concentrations between 2.3×10^{-17} curie/cc, and 4.5×10^{-17} curie/cc. Snow samples collected on 12/20/45 and 12/21/45 had a maximum of 2×10^{-3} μc/liter at tower #10 in the 200-West Area. Snow samples from Kennewick had about 5×10^{-4} μc/liter, and in Richland they had 3×10^{-4} μc/liter.

GENERAL

There were no high pencil readings confirmed by badge readings. One badge reading was lost, but the pencil readings on this person for this period were all low.

C C Gamertsfelder

C. C. Gamertsfelder
Asst. Chief Supv. (Acting)
H. I. Section

CCG:swc

1124297

Copy #1 - W.C.Kay-F.B.Vaughan
2 - W.K.MacCready
3 - J.D.Ellett 7-3394
4 - J.J.Urban
5 - H.M.Parker-C.C.Gamertsfelder
6 - C.M.Patterson-J.W.Healy
7 - F.P.Seymour
8 - C.H.E.Merkle, Jr.
9 - M.L.Nickelson
10 - H.A.Moulthrop
11 - P.E.Lindvig
~~12 - L.Squires-M.N.Smith-H.Hare-700 Area file~~
13 - G.W.Struthers-M.F.Acken-300 Area
~~14 - Yellow copy~~
15 - Pink copy

TO: W. C. KAY
S Department Superintendent

February 7, 1946

THIS DOCUMENT CONSISTS OF 5 PAGES
No. 2 OF 15 COPIES, SERIES A

#57. - H.I. REPORT ON THE 200 AREAS AND ENVIRONS

FOR THE WEEK ENDING FEBRUARY 6, 1946

General Statistics

	T	B	Total
Surveys for Special Work Permits	64	62	126
Other routine and special surveys	100	122	222
Smear samples for alpha counts	184	183	367
Smear samples for beta counts	190	35	225
Air monitoring samples	93	97	190
Thyroid checks	77	57	134

Air Samples

T Plant	Total	$\leq 10^{-11}$ μc Pu/cc	Maximum concentration
221	19	19	-
222	44	43	1.3×10^{-11}
224	30	28	1.9×10^{-11}
B Plant			
221	19	19	-
222	39	39	-
224	39	39	-

7-1115

CCG-WCK

2/7/46 7-3394

THE T PLANT

Canyon Building

General conditions in the Canyon were very good. The maximum radiation was, as usual, on the samplers, but the levels were much lower than have been found recently. Only two samplers gave over 50 mrep/hr; the maximum was 110 mrep/hr including 38 mr/hr four inches over the top of the 8-1 sampler.

Control Laboratory

Product contamination was low except on sampling equipment. The maximum radiation level was 490 mrep/hr on a waste carton.

Concentration Building

There was very little product contamination. The inside of the F-10 enclosure had only about 0.6 μg Pu. The floor, door handles and flanges outside the enclosure had about 2.3 μg Pu. There was an area of 950 square inches on the floor of F-Cell which had about 4 μg Pu. A check of all valves, handles, desks and gang valves in the operating gallery revealed no significant contamination. Smears from the bottoms of flanges after blanks were installed on E-1 and E-3 had 20,000 and 6,000 dis/min, respectively. A shoe survey located no contamination in excess of 500 dis/min.

THE B PLANT

Canyon Building

Readings of 1500 mrep/hr and 700 mrep/hr at a distance of 3 inches were obtained on the pipe and connector, respectively, during work on changing a gasket on connector 55 in Cell 14-R. The maximum reading was reduced to 400 mrep/hr by partially shielding the connector with a steel plate.

The 14-2 centrifuge stored in Cell 20 is being measured to determine the decay of its contamination. The reference reading was 300 mr/hr four inches from the side of the centrifuge. The maximum observed reading was 2000 mr/hr, fifteen inches from the effluent line.

There were two areas of floor contamination near the 14-1 sampler which gave 200 mrep/hr and 34 mrep/hr at 4 inches. The maximum reading on a sampling port was 87 mrep/hr four inches from the 13-4 sampler. The maximum reading on a waste container was 95 mr/hr. A bucket yoke on the Canyon deck gave 775 mrep/hr, including 560 mr/hr at a distance of 3 inches.

A 17-4 P sample was dropped in stairwell B-11, spilling about 1000 μg Pu. The maximum radiation level near this spill was 3 mrep/hr at a distance of 4 inches. The spot was immediately cleaned.

1124299

CCG-McKay

2/7/46

Control Laboratory

Product contamination on equipment was well controlled. There were several small spots of floor contamination. Radiation measurements were very low. The maximum was only 19 mrep/hr, near a decontamination sink.

Concentration Building

Radiation and contamination were under very good control during this period. The only contamination reported was about 0.3 µg Pu on equipment in the F-10 enclosure, and 0.8 µg Pu on the F-2 - A frame.

200-N Area

Maximum readings at 4 inches after draining the A and B wells of cask car 36 were 18 and 30 mrep/hr, respectively. After cleaning, the readings were about 2 mrep/hr.

THE ISOLATION BUILDING

Air Monitoring

	No. of Samples	Maximum concentration µg Pu/cc
Little Sucker samples in Laboratories	11	8×10^{-12}
" " " " Process Area	9	8×10^{-12}
Filtered Hood air by Big Sucker	3	2.5×10^{-13}
Spot Samples:		
Process Areas	33	3×10^{-11}
Laboratories	7	$< 10^{-11}$
General Bldg.	3	$< 10^{-11}$

Surface Contamination

116 non-regulated items were found to be contaminated. The degree of contamination on these items was lower this week than it has been recently. There were only 8 items with more than 20,000 dis/min, and only 2 of these had more than 80,000 dis/min. There was one small spot of floor contamination, about 0.02 µg Pu, on the floor near the drain in Room 6-A.

Gamma Radiation

PR container	22 mr/hr
Process Hood	6 mr/hr
S.C.	4 mr/hr

SITE SURVEY

Water and Waste Monitoring

No unusual conditions were noted in the weekly waste survey. Water samples from

2/7/46

CCG-WCKay

the inlet to the Laundry ditch and 100 feet from the inlet had 3×10^{-4} and 10^{-4} μc/liter of beta activity, respectively. Other water samples from other waste ditches had less than 5×10^{-5} μc/liter. The #231 ditch had about 40 dis/min per liter of alpha activity. The regular water samples from wells and springs were extended to take in two new wells just opened near White Bluffs. Samples of the first water from these wells did not show any activity. The samples from Ranch #13 and Benson Ranch had 9×10^{-5} and 5×10^{-5} μc/liter, respectively. Rain samples collected during January 24 and January 29 dissolvings indicated some activity; the results were:

Date	Location	Concentration μc/liter
Jan. 24	Tower 9, 200-W	9×10^{-4}
Jan. 24	10, 200-W	1.2×10^{-3}
Jan. 24	11, 200-W	$< 9 \times 10^{-5}$
Jan. 24	Richland	3×10^{-4}
Jan. 29	Tower 8, 200-W	$< 2 \times 10^{-4}$
Jan. 29	9, 200-W	4×10^{-4}
Jan. 29	10, 200-W	$< 2 \times 10^{-4}$
Jan. 29	11, 200-W	2.4×10^{-3}
	300 feet E. of T Stack	$< 6 \times 10^{-4}$

Air Monitoring

The average dosage-rates for the week were:

Location	mrep/hr	Location	mrep/hr
Rt. 10, Mi. 1	0.05	Meteorology	0.1
Mi. 3	0.09	Rt. 11-A, Mi. 6	0.06
Rt. 1, Mi. 8	0.03	Mi. 1	0.03
Intersection Rt.1 & Rt. 4N	0.02	100-D	0.02
Rt. 4-S, Mi. 10	0.05	Rt. 2-S, Mi. 4	0.05
Mi. 6	0.09	100-F	0.03
Mi. 14	0.05	Meteorology 200 feet Tower	0.2
Mi. 22	0.04		

The atmospheric monitoring stations gave the following results:

	Average Dose in 24 hours	
	Integrons (gamma) mr	Type C Chambers (beta and gamma) mrep
100-B	0.4	0.4
100-D	0.3	0.5
100-F	0.2	0.5
200-E	0.4	0.8
200-W	0.3	0.6
Outlying Areas	0.5	-

Films from the above locations did not show any exposure over normal background.

CCG-WCK 2/7/46 [redacted]

The constant iodine monitors indicated maximum concentrations of 7×10^{-17} c/cc at Benton City, 4×10^{-17} c/cc at the 300 Area, and 3×10^{-17} c/cc at the E.S.E. corner of 200-East. The positive readings were mostly on the 4-12 shift at Benton City, the 12-8 shift in the 300 Area, and they occurred on all shifts in the 200 Area. Small filter units operating in Tower #13 in the 200-East Area and in Richland indicated average concentrations of 6.7×10^{-18} and 7×10^{-19} c/cc, respectively.

Ground Contamination

Maximum levels of ground contamination - about 0.1 mrep/hour in both Areas - are the lowest since the first dissolvings. Most readings in the contaminated areas are only 0.05 mrep/hr.

Vegetation samples have been reported with no correction for the absorption of the radiation in the sample. Recent measurements on the counting rates observed when known amounts were added to samples indicate that the quoted results are low by a factor of three. Henceforth, the results will be quoted with the corrected value. This week's samples were as follows:

μc/gm

Location		Location	
Gable Mt. (Top)	2.3×10^{-3}	Richland Average	4.4×10^{-4}
100-B	3.5×10^{-4}	" S.E.	4.7×10^{-4}
100-D	3.9×10^{-4}	" N.E.	6.3×10^{-4}
100-F	4.4×10^{-4}	" N.W.	3.5×10^{-4}
Rt. 3, Mi. 2	2.3×10^{-3}	" S.W.	3.7×10^{-4}
Rt.4S, Mi. 4	3.4×10^{-3}	Kadlec	2.0×10^{-4}
Mi. 6	5.6×10^{-3}		
Mi. 8	2.1×10^{-3}	Rattlesnake Mt.	
Rt.10, Mi. 2	3.7×10^{-4}	2 Mi. S. Benson range	4.5×10^{-4} (850 ft)
Mi. 6	8.6×10^{-4}	3 Mi. S. " "	3.0×10^{-4} (900 ft)
Rt.4S, Mi. 24	3.5×10^{-4}	4 Mi. S. " "	2.9×10^{-4} (900 ft)
4S, Mi. 26	4.6×10^{-4}	6 Mi. S. " "	3.4×10^{-4} (1000 ft
Richland "Y"	8.6×10^{-4}		
Benton City	1.2×10^{-3}	Badger Mt.	
Kennewick	7.8×10^{-4}	South (900 feet)	2.4×10^{-4}
Pasco	4.2×10^{-4}	S. W. (900 feet)	3.3×10^{-4}
		S. E. (900 feet)	2.0×10^{-4}

GENERAL

There were no high pencil readings confirmed by badge readings. There were no high badge readings.

C C Gamertsfelder

C. C. Gamertsfelder
Chief Supervisor
H. I. Section

CCG:swc

257

7-1115

7-3432

Copy #1 -F.B.Vaughan-J.D.Ellett
~~#2 -W.K.MacCready~~
#3 -R.S.Bell
#4 -J.J.Urban
#5 -H.M.Parker-C.C.Gamertsfelder
#6 -C.M.Patterson-J.W.Healy
#7 -R.P.Seymour
#8 -C.R.E.Merkle, Jr.
#9 -M.L.Mickelson
#10 -H.A.Moulthrop
#11 -P.E.Lindvig
#12 -W.C.Kay-M.H.Smith-R.Hare-
700 Area file
#13 -G.W.Struthers-G.E.Disetti-
300 Area file
#14 -Yellow file
#15 -Pink file

TO: F. B. VAUGHAN
S Department Superintendent

February 14, 1946

[illegible] photos #7-3416 and #7-3427
2-[illegible]-46 2-9-46

#58. - H.I. REPORT ON THE 200 AREAS AND ENVIRONS FOR THE WEEK ENDING FEBRUARY 13, 1946

General Statistics

	T	B	Total
Surveys for Special Work Permits	53	65	118
Other routine and special surveys	103	120	223
Smear samples for alpha counts	175	190	365
Smear samples for beta counts	144	0	144
Air monitoring samples	92	129	221
Thyroid checks	84	59	143

Air Samples

T Plant	Total	$\leq 10^{-11}$ µc Pu/cc	Maximum Concentration
221	20	20	--
222	45	43	1.5×10^{-11}
224	27	27	--
B Plant			
221	22	18	6.0×10^{-11} (15-8 Sampler, 2/5/4
222	54	52	4.0×10^{-11} (Room 7, SW sink
224	53	51	1.3×10^{-11}

258

7-1115

T-3432

2/14/46

CCG-FBVaughan

THE T PLANT

Canyon Building

A pin which was stuck in the 13-4 sampler riser was removed. The maximum dosage-rate to which personnel were exposed during this work was about 200 mrep/hr at a distance of 4 inches from the riser. The weekly survey of the sampling ports did not locate any ports which were more than 30 mrep/hr. A reading of 50 mrep/hr was obtained directly over the top of a woodan barrel.

Gloves worn by Electrical men working on the motors of the fans for the exit air in the pipe gallery were found to be contaminated. Later checks showed that the fans and motors were active. A smear from this location is being studied to determine the decay rate.

Control Laboratory

There was very little product contamination. Radiation hazards have been reduced, but there was one waste carton which gave 500 mrep/hr.

Concentration Building

The outside of the F-10 enclosure was quite clean. There was about 3 μg Pu on the inside within arm reach of the doors. The F Cell had a total of 3.7 μg Pu, mostly on tanks F-1 and F-2 and on the ledge behind the wash tank. The floor of the E-2 balcony was quite contaminated due to a leak in the E-2 centrifuge. Off-scale Sandy readings were obtained over most of the floor, and a complete survey has not yet been finished. The E Cell sampler room had about 1 μg Pu on the floor which probably came from the E-2 balcony. Several masks were found to be contaminated; the maximum reading was about 8000 dis/min.

A reading of 80 mr/hr was obtained six inches over the top of the C-4 tank, and 250 mr/hr was found three inches from the side.

THE B PLANT

Canyon Building

The maximum reading on a sampling port was 60 mrep/hr at 4 inches; most of them gave less than 30 mrep/hr. Several cells were surveyed for inspection purposes. The 16-L and 16-R Cells gave 30 and 70 mr/hr, respectively, with a Beckman meter at the cell edge. Readings of 350 and 26 mr/hr were obtained at the edges of 11-L and 11-R, respectively. Cell 13-R gave 150 mr/hr, 8 feet from the cell edge, and 4 feet above the floor. A probe measurement 2 feet over the edge indicated 10,000 mrep/hr, and closer approach was not tried. There were 11 spots of contamination found near Sections 3, 4 and 13. The maximum reading was 150 mrep/hr at a distance of 4 inches.

CCG-FBV

2/14/46

Control Laboratory

No unusual conditions were observed in the Laboratory. The maximum radiation level was 170 mrep/hr near a waste carton.

Concentration Building

Very little surface contamination was reported. There was a total of about 0.6 μg Pu on F-2 centrifuge and frame. Smears on the F-2 centrifuge windage ring and flange had 10,000 and 50,000 dis/min, respectively.

No unusual radiation hazards were found. The maximum level was 190 mr/hr, 3 inches from the side of the A-4 tank.

Waste Storage

The diversion box 154-B was opened to make connections to lines for the tie-in with the "C" waste tanks. The maximum reading observed was 1000 mr/hr at the top surface of the bottom concrete block. Constant monitoring was maintained during all work.

THE ISOLATION BUILDING

Air Monitoring

	No. of Samples	μg Pu/cc Maximum concentration
Little Sucker samples in Laboratories	11	4×10^{-12}
" " " " Process Area	9	4×10^{-12}
Filtered Hood Air by Big Sucker	3	3.4×10^{-12}
Spot Samples - Laboratories	10	1.2×10^{-11}
" " - Process Area	32	2.7×10^{-11} Cell 3
" " - General Bldg.	0	--

Surface Contamination

233 non-regulated items (145 of which were in Process Areas) were found to be contaminated. There were 16 items with more than 20,000 dis/min, and only 5 of these had more than 80,000 dis/min. Ten smears with more than 20 dis/min were found or obtained in various offices from desk tops and other furniture and equipment. There were 7 small spots of floor contamination; the maximum of which was 0.5 μg Pu in Room 32 under a decontamination sink.

Gamma Radiation

PR container	23 mr/hr
Process Hood	5 mr/hr
S.C.	4 mr/hr

CCG-FBVaughan 2/14/46

SITE SURVEY

Water and Waste Monitoring

Location		Waste Surveys Maximum reading	General Level	Remarks
241 "T"Area	101 cascade	190 mrep/hr Sampler 10 mr/hr		Rain water on pipe top
	107	60 mrep/hr 12 mr/hr	361 tank showed 80 mrep/hr and 12 mrep/hr	
	110	3 mrep/hr		
200 W Laundry Ditch		0.05 mrep/hr	< 0.05	1" water inlet
200 "T" Area Retention Outlet		0.6 mrep/hr	0.4	2" water inlet
200 "B" Area Retention Outlet		0.1 mrep/hr	0.05	6" water inlet
241 "B" Area	101 cascade	280 mrep/hr Sampler 8 mr/hr		
	107	42 mrep/hr 8 mr/hr	361 tank showed 68 mrep/hr and 8 mr/hr	
	110	5 mrep/hr		
200 North "N" Ditch		2.0 mrep/hr 0.6 mr/hr	1.0 mrep/hr	12" water
200 North "P" Ditch		0.2 mrep/hr	0.1	18" water
200 North "R" Ditch		5.0 mrep/hr 2.5 mr/hr	0.3 mrep/hr	24" water

The Richland #16 well had 8 x 10^{-5} μc/liter. All other wells and springs had less than 5 x 10^{-5} μc/liter.

Air Monitoring

The average dosage-rates for the week were:

Location	mrep/hr	Location	mrep/hr
Rt. 10, Mi. 1	0.05	Meteorology	0.1
Mi. 3	0.05	" Bldg. 200 ft.	0.2
Rt. 1, Mi. 8	0.03	Rt. 11-A, Mi. 6	0.1
Intersection Rt.1 & Rt.4-N	0.03	Mi. 1	0.05
Rt. 4-S, Mi. 10	0.05	Rt. 2-S, Mi. 4	0.04
Mi. 6	0.08	100-D	0.02
Mi. 15	0.05	Rt. 2-N, 100-F	0.03
Mi. 22	0.04		

CCG-FBV

2/14/46

The atmospheric monitoring stations gave the following results:

	Average Dose in 24 hours	
	Integrons (gamma) mr	Type G Chambers (beta and gamma) mrep
100-B	0.3	0.3
100-D	0.2	0.3
100-F	0.7	0.3
200-E	1.2	0.7
200-W	0.8	0.4
Outlying Areas	0.3	--

Films from the above locations did not show any exposure over normal background.

Ground contamination

There were a few readings of 0.1 and 0.2 mrep/hr southeast of the T Plant stack. The maximum in the 200-East Area was 0.05 mrep/hr.

Vegetation samples were collected from a number of distant points. The results of this survey are given on the accompanying map. The contamination in the vicinity of Ritzville is about the same as at Pasco. Also included is a chart showing the reduction in ground contamination in Richland, Pasco, Kennewick and the "Y" for the past several weeks. To obtain μc/gm, multiply the chart reading by 10^{-3} and the map reading by 10^{-5}. The minimum detectable is about 4×10^{-5} μc/gm. Vegetation samples on and near the plant were:

	μc/gm		
100-B	7×10^{-4}	Richland Average	2×10^{-4}
100-D	3×10^{-4}	" S.E.	1×10^{-4}
100-F	6×10^{-4}	" N.E.	3×10^{-4}
Rt.10, Mi. 2	8×10^{-4}	" N.W.	2×10^{-4}
Mi. 6	1.1×10^{-3}	" S.W.	5.4×10^{-4}
Mi. 11	6×10^{-4}	Kadlec	3×10^{-5}
Rt.4S, Mi. 4	2.7×10^{-3}	Benton City	7×10^{-4}
Mi. 6	3.3×10^{-3}	Kennewick	1×10^{-4}
Mi. 8	1.7×10^{-3}	Pasco	1×10^{-4}
Mi.24	2.8×10^{-3}	"Y"	6×10^{-5}
Mi.26	2×10^{-4}		
Mi.21	4×10^{-4}		
Rt.3, Mi. 2	1.0×10^{-3}		

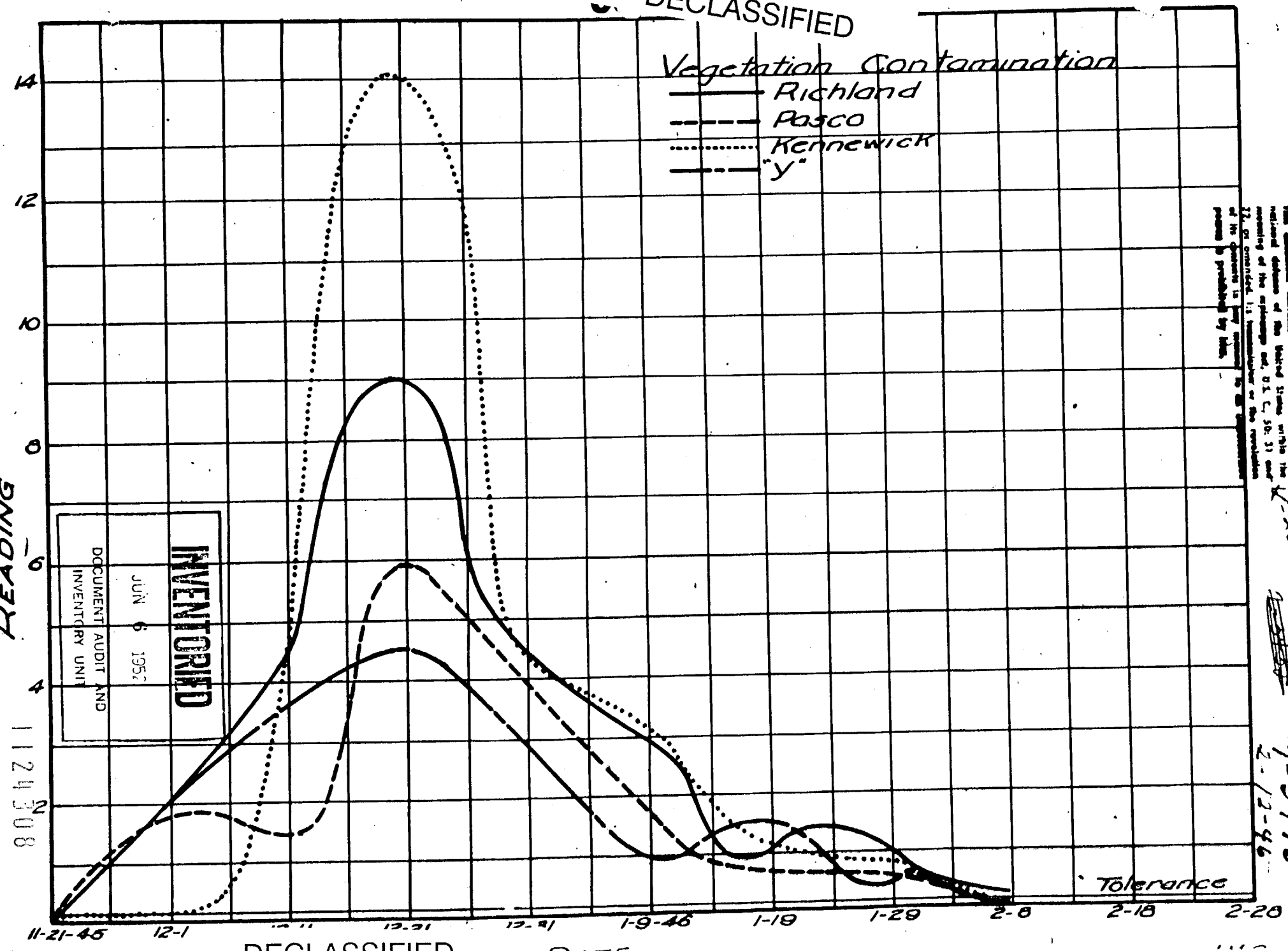
GENERAL

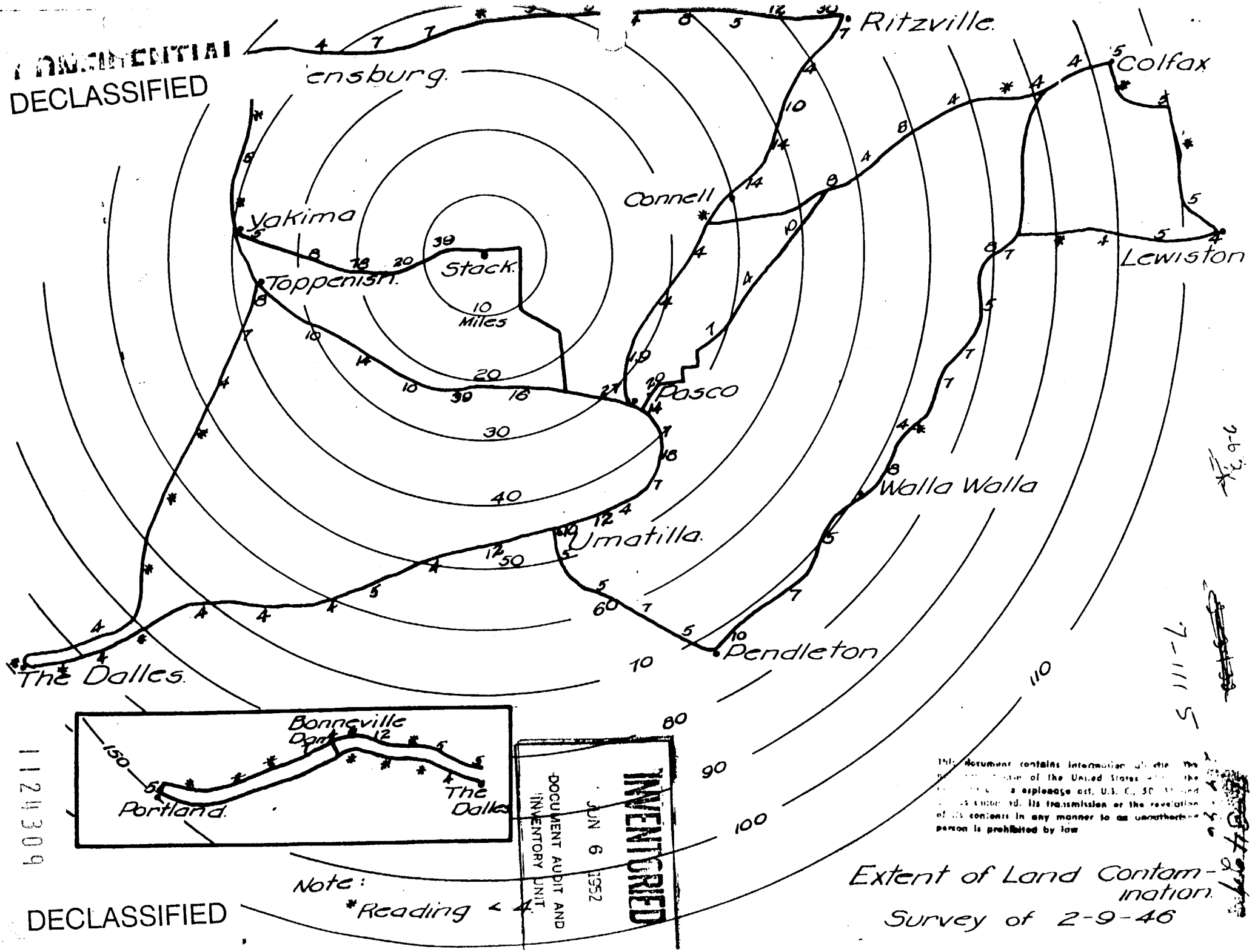
There were no high pencil readings confirmed by badge readings, and there were no high badge readings.

C. C. Gamertsfelder

C. C. Gamertsfelder, Chief Supv.
H. I. Section

CCG:swc





Note:
*Reading < 4.

Extent of Land Contamination.
Survey of 2-9-46