

A-1 (P. I.)

CLINTON LABORATORIES
CENTRAL FILES NUMBER

47-10 39

Date October 1, 1947

Subject 706-D Area Report

Week Ending Sept. 27, 1947

To L. B. Emlet

From E. J. Witkowski / per

H. Blauer - W. Y. Gissel

File No. _____

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706-D AREA REPORT
Report for Week Ending
September 27, 1947

Exposure

No exposure reports were received by 706-D personnel for the week.

Barium (Ba¹⁴⁰ - 12.5d)

The pre-run check for Barium Run #21 was finished and all solutions for the run were made up. The check showed that difficulty in jettings might be experienced due to the lower operating steam pressure of the temporary power house.

Maintenance work was of a minor nature and consisted of replacing the gasket on the overflow line to T-7, cleaning the lines and strainers to jets used during a run, painting four product carrier, replacing the mirror in one large periscope and welding legs on the gutter guards on the 3rd level.

Men were loaned part time to the radioisotope development group to carry on their work on shift.

Radioisotope carriers and building hot spots were decontaminated as they were located.

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706-D Area Report
Weekly Reports

By Authority Of _____
By RAM Date Aug 25 1971

A simulated coating removal was made on Hanford slugs to determine the practicality of their use in the 706-D process. The results were gratifying.

Process and safety meetings were held on shifts as time permitted.

Iodine (I131 - 8d)

Five 100 gram runs were made this week. The original product contained approximately 640 mc with a T.S. content of 33 mg/ml. The T.S. were high due to the large quantity of NaOH added to bring the pH to 8 after the last run was completed. At the present time, no reason can be given for the high concentration of acid during the last group of distillations. The above solution was redistilled twice endeavouring to reduce the acid contents, thereby, lowering the T.S. to specification. As a result of these redistillations, a final product containing only 240 mc with a T.S. content of 3.1 mg/ml was produced.

Phosphorus (P32 - 14.3d)

Only one P32 run was made this week due in part to maintenance work in replacing a heater on the extract receiver vessel. This run produced only 200 mc.

Carbon (C14 - 5100y)

No runs were made this week.

Shipments

I131	559 mc	16 shipments
P32	343 mc	11 shipments
S35	2 mc *	1 shipment
S89,90	100 mc	1 shipment
UX ₁	53 mc	1 shipment
B10	150 gms	2 shipments

*Foreign Shipment

706-D Area Report
Weekly Reports

Tank Farm and Burial Ground

Week Ending September 27, 1947

Operations

Approximately 17 curies were discharged from the Settling Basin during the week. The average activity of discharge was 199 beta counts/min/ml with a high and low of 538 and 55.

Approximately 46,000 gallons were discharged from the Retention Pond during the week. The average activity of discharge was 5 beta counts/min/ml with a high and low of 21 and 2.

During the week, 105 red cans of contaminated material from the restricted area (4,200#, 100 mr/hr--1,500 mr/hr) were buried in the open beta and gamma trench at the burial ground.

Two shipments of alpha contaminated material from Dayton consisting of three large boxes and 36 drums (8,000#, 500 mr/hr, greater than 60,000 alpha disintegrations per minute) were buried in the alpha trench 120' to 135' west by 100' to 120' south and covered with concrete.

Maintenance

General painting was done throughout the Tank Farm and aeroplane cable was installed replacing the worn cables on the Tank floats.

TANK INVENTORY

<u>Tank</u>	<u>Capacity Gals.</u>	<u>Gallons in</u>	<u>Gallons out</u>	<u>Gallons of Free Space</u>
W-1	4,400	3,200	3,200	4,400
W-2	4,400	6,800	6,800	4,400
W-3	41,300	0	0	10,000
W-4	41,200	0	0	2,400
W-5	170,000	12,000	0	50,000
W-6	170,000	0	0	55,000
W-7	166,800	0	0	0
W-8	170,000	0	15,000	66,000
W-9	165,100	0	0	88,250
W-10	170,000	0	0	0

10-1-47

706-D Area Report
Weekly Reports

Activity of Wastes Discharged from Clinton Laboratories

For Week Ending September 27, 1947

	<u>9-21</u>	<u>9-22</u>	<u>9-23</u>	<u>9-24</u>	<u>9-25</u>	<u>9-26</u>	<u>9-27</u>	<u>TOTAL</u>
Flow from the Settling Basin (Thousands of Gallons/day)	950	950	950	950	950	950	950	6,650
Average Activity of Discharge from Settling Basin beta counts/min/ml	203	154	126	80	374	306	201	
Approximate Curies Discharge from Settling Basin	2.4	1.8	1.5	0.9	4.4	3.6	2.4	17.0

Average Electroscope Readings (mr/hr)

Readings are taken three times a week at each location.

Settling Basin

Diversion Box	2
North Walk West	8
North Walk Center	10
North Walk East	11
South Walk West	5
South Walk Center	4
South Walk East	4.5

Off-gas System for 706-C and 706-D

2" Line at Ground Level	12
Jet Platform	2.4

R.I.

CLINTON LABORATORIES

GENERAL FILES NUMBER

47-10 274

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Date 8/25/71

A-1



Date October 15, 1947

Subject 706-D Area Report

Week Ending October 11, 1947

File No. _____

To L. B. Emlet

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From E. J. Witkowski / per

H. Blauer - W. Y. Gissel

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EJW 10/23/47

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706-D AREA REPORT
Report for Week Ending
October 11, 1947

Exposure

Thirty exposure reports were received this week covering a period from 9-6-47 to 9-30-47. Fourteen of these reports showed a low reading, indicating exposures which were above 50 mr/day but below 90 mr/day on the open window film of the film badge. There were five reports which indicated that the film meters were contaminated while the pocket meter readings were very low. There were nine reports for high hand and shoe counts. These counts were attributed to work on hot glassware and on hot spots in Cell 5 which have since been cleaned up. The contaminated hands and shoes were all cleaned to a below tolerance level. One report showed evidence of improperly charged or dropped pocket meters since both meters were very much above tolerance for the one day and the shielded portion of the film meter gave no indication of such exposure. One report showed an overexposure on the unshielded portion of the film meter and was attributed to work on the isotope equipment in Cell 5.

Barium (Ba140 - 12.5d)

Barium Run #21 was begun on October 5, 1947, at 8:00 a.m. 844 slugs were loaded and dissolvings were made in twelve batches. It was not necessary to use the usual 900 slugs since the product content of the slugs discharged from the pile was much greater than usual. This was accomplished by assigning rows of slugs in a higher neutron flux in the pile to the 706-D Operation.

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The metal waste samples in A8 were omitted from the first five batches of this run in order to eliminate exposure to the chemists who analyze these samples. These wastes, however, were sampled in A6 after the second settling and decantation from A11 to A6. Each of these wastes contained very little product.

In an attempt to determine the cause of the usual high losses in the first decantation from A9 to A8, the time for rinsing the slugs after coating removal was increased. Subsequent samples of the metal waste in A8 from the 6th, 7th and 9th batches indicated low losses ranging from 11 to 55 curies. These were the lowest losses experienced at this stage of operation since the fourth run made in this building.

The only difficulty of major importance experienced thus far has been the high air contamination around the plant caused by a reverse neutralization of metal waste in A6 which was necessitated by the failure of the A6-A5 jet. This failure is due to the lack of adequate steam pressure on the plant at the present time. This reverse neutralization caused a build-up of pressure on the vessel which in turn forced activity into the cell ventilation system which discharges into the low 706-D stack. The situation was further aggravated by unfavorable weather conditions.

To avoid a repetition of this situation, all metal wastes from the last several batches were neutralized at the tank farm in tank W-9 between the hours of 4:30 p.m. and 8:00 a.m. when only a small number of personnel is present at the plant.

General

Approximately 20 man-hours were loaned to the radioisotope development group to carry their work across the shifts.

Maintenance work of a minor nature was accomplished and several much needed repairs were made.

Iodine (I^{131} - 8d)

Four 100 gram runs were processed this week. The final product contained approximately 825 mc with a T.S. content of 5.40 mg/ml. During the week the equipment was completely decontaminated and dismantled. The new 2" lead shielding was installed. A new trap type receiver was installed which increased our product recovery about 10%.

Phosphorus (P³² - 14.3d)

Two extractions were made this week. These extractions were low by a factor of three which we are unable to explain at the present time. On processing these extracted products through the glassware, we were unable to produce any carrier free product as the phosphorus remained in the evaporator in a basic solution. However, by adding carrier we were able to recover our product.

Carbon (C¹⁴ - 5100y)

No runs were made this week.

Strontium (Sr^{89,90} - 55d-25y)

No runs were made this week.

Shipments

I ¹³¹	716 mc	12 shipments
p ³²	538 mc	12 shipments
C ¹⁴	10 mc	4 shipments
Sr ^{89,90}	25 mc	1 shipment

Tank Farm and Burial Ground

Week Ending October 11, 1947

Operations

Approximately 8 curies were discharged from the Settling Basin during the week. The average activity of discharge was 91 beta counts/min/ml with a high and low of 397 and 25.

Approximately 45,000 gallons were discharged from the Retention Pond during the week. The average activity of discharge was 10 beta counts/min/ml with a high and low of 17 and 1.

During the week, 68 red cans of contaminated material from the restricted area (3,300#, 100 mr/hr to 1,000 mr/hr) and some canvas and scrap pipe from the semi-works (700#, 500 mr/hr) were buried in the open beta and gamma trench at the burial ground.

A shipment of alpha contaminated material from Dayton consisting of two large boxes, four small crates and 18 thirty-five gallon drums (6,000#, 100 mr/hr and greater than 60,000 alpha disintegrations per minute) was buried in the alpha trench 20' to 30' south by 135' to 145' west and covered with concrete.

10-15-47

706-D Area Report
Weekly Reports

Maintenance

Maintenance worked on the W-11 alarm system making it more audible.

TANK INVENTORY

<u>Tank</u>	<u>Capacity Gals.</u>	<u>Gallons in</u>	<u>Gallons out</u>	<u>Gallons of Free Space</u>
W-1	4,400	10,300	10,300	4,400
W-2	4,400	6,400	6,400	4,400
W-3	41,300	0	0	17,000
W-4	41,200	0	0	15,000
W-5	170,000	36,000	0	64,000
W-6	170,000	0	0	40,000
W-7	166,800	0	0	0
W-8	170,000	0	0	32,000
W-9	165,100	4,200	0	84,050
W-10	170,000	0	0	0

Activity of Wastes Discharged from Clinton Laboratories

For Week Ending October 11, 1947

	<u>10-5</u>	<u>10-6</u>	<u>10-7</u>	<u>10-8</u>	<u>10-9</u>	<u>10-10</u>	<u>10-11</u>	<u>TOTAL</u>
Flow from the Settling Basin (Thousands of Gallons/day)	950	950	950	995	950	950	950	6,695
Average Activity of Discharge from Settling Basin beta counts/min/ml	136	106	67	52	35	32	212	
Approximate Curies Discharge from Settling Basin	1.6	1.2	0.8	0.6	0.4	0.4	2.5	7.5

10-15-47

706-D Area Report
Weekly Reports

Average Electroscope Readings (mr/hr)

Readings are taken three times a week at each location.

Settling Basin

Diversion Box	3
North Walk West	12
North Walk Center	10
North Walk East	18
South Walk West	5
South Walk Center	6
South Walk East	6

Off-gas System for 706-C and 706-D

2" Line at Ground Level	33
Jet Platform	23

A-1

R.I.

CLINTON LABORATORIES
CENTRAL FILES NUMBER
48-1-150

Date January 14, 1948

Subject 706-D Area Report - week
Ending January 10, 1948

To L. B. Emlet

From E. J. Witkowski - per

H. Blauer / W. Y. Gissel

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706-D AREA REPORT
Report for Week Ending
January 10, 1948

CLASSIFICATION CANCELLED

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Exposures:

There were no over-exposure reports received this week.

Investigation of the strontium radiation problem this week showed that the personal film meter is 3-1/2 times more sensitive to strontium type radiation than are any of the present detection instruments. This problem is being followed in an effort to get more sensitive survey instruments for separations involving such low M.E.V. radiation.

Barium (Ba¹⁴⁰ - 12.5d)

Work in Cell A neared completion this week, as many smaller jobs were finished. A gasket was replaced on the A5 motor to prevent loss of lubricating oil. A pressure oiling system was installed to the A5 motor reducer. Numbered, metal signs were attached to all lines on A9 to facilitate future tank removals for repair.

Investigation of the vacuum loss in the A4-205 off-gas system proved that the Tank A1 head gasket had corroded out in many spots. A koroseal gasket clamped by a tightly fitting stainless steel band stopped the leaks around the tank head and special koroseal gaskets fitted to the tank head bolts stopped the leaks through the bolt holes.

The A-16 fan was assembled only to find the shaft was 1/16" out of alignment. The shaft is being straightened and the fan should be back in service next week before the run starts.

The east vacuum pump was overhauled and the worn parts replaced.

The A-12 tank project at the tank farm is 25% complete. The tank has been set and piping is being installed.

The next run is scheduled to start on January 14, 1948.



1/14/48

706-D Area Report
Weekly Reports

Iodine (I¹³¹ - 8d)

Eight cans were processed during the week. These cans were processed in the normal manner but in two different series.

The first four cans, which were processed early in the week, yielded approximately 554 mc with T.S. of 3.4 mg/ml.

The second four cans yielded approximately 352 mc with T.S. content of 3.0 mg/ml.

Phosphorous (P³² - 14.3d)

Two sulfur cans were processed this week to yield approximately 600 mc.

Two extractions were made on this sulfur with the product being decanted from the solid sulfur in the extraction vessel. This method is necessary as maintenance has been unable to replace the teflon insulators on the separating electrodes.

It has been noted that approximately 50% less product is obtained by decanting, than from the normal hot separation method.

Strontium (Sr^{89,90} - 55D-30Y)

No runs were made.

Carbon (C¹⁴ - 5100y)

Two runs were made this week using 100 cans of Ca(NO₃)₂ in each run. No results are available at the present time.

Shipments

	MC	Shipments
I ¹³¹	737	19
P ³²	662	12
C ¹⁴	11	7
C ¹⁴ (methanol)	1	1
C ¹⁴ (CO ₂)	5	1
S ³⁵	20	2

Tank Farm and burial Ground

Operations:

In order to obtain additional capacity in the W-3 and W-4 metal waste system for an expected influx of wastes from the hot pilot plant, 22,200 gallons of metal waste containing an average of 0.007% uranium were decanted from W-4 to W-5 tank. Samples taken at discharge into W-5 analyzed between 0.005% and 0.010% uranium.

1/14/48

706-D Area Report
Weekly Reports

Next week the metal waste supernatant liquor, which has settled for a long time in W-3, will be decanted on to W-4. The suction line on both these tanks were lengthened to take full advantage of the long settling periods which the solution experienced.

Approximately 105 gallons of metal waste solution containing 21.8 # of metal, were transferred from the hot pilot plant to W-3 tank.

Three liters of uranium solution from K-25 area, containing 1.0 # of metal were discharged into W-2 metal waste tank.

Approximately 5 curies were discharged from the Settling Basin. The average activity of discharge was 60 beta counts/min/ml with a high and low of 119 and 25.

Approximately 67,000 gallons were discharged from the retention pond. The average activity of discharge was 25 beta counts/min/ml with a high and low of 251 and 5.

One hundred and twelve red cans of contaminated material from the restricted area (3,000 #, 30-500 mr/hr) were buried in the open beta and gamma trench at the burial ground.

A shipment of alpha contaminated material from Dayton consisting of three boxes and twenty six 35 gallon drums (10,000 #, 200 mr/hr and greater than 60,000 alpha disintegration/min) was buried in the same alpha trench as the last week's shipment.

Maintenance

1. Work is continuing in the W-12 installation. The tank has been installed and it is expected to be piped up after the run is over.
2. The installation of the ruthenium project is completed.
3. The back-hoe at the burial ground is out of service with a broken scoop. A new scoop is being obtained.

TANK INVENTORY

<u>Tank</u>	<u>Capacity Gals.</u>	<u>Gallons in</u>	<u>Gallons out</u>	<u>Gallons of Free Space</u>
W-1	4,400	15,000	15,000	4,400
W-2	4,400	11,000	11,000	4,400
W-3	41,300	105	0	13,715

706-D Area Report
Weekly Reports

1/14/48

<u>Tank</u>	<u>Capacity Gals.</u>	<u>Gallons in</u>	<u>Gallons out-</u>	<u>Gallons of free Space</u>
W-4	41,200	0	22,200	29,200
W-5	170,000	43,000	0	26,000
W-6	170,000	0	0	129,000
W-7	166,800	0	0	0
W-8	170,000	0	35,000	50,000
W-9	165,100	0	0	34,000
W-10	170,000	0	0	0

Activity of Wastes Discharged from Clinton Laboratories
For the week-ending January 10, 1948

	<u>1/4</u>	<u>1/5</u>	<u>1/6</u>	<u>1/7</u>	<u>1/8</u>	<u>1/9</u>	<u>1/10</u>	<u>Total</u>
Flow from the Settling Basin (Thousands of gal/day)	975	950	950	975	995	950	950	6,795
Average Activity of discharge from Settling Basin beta counts min/ml	38	39	73	31	65	93	81	
Approximate Curies Discharged from Settling Basin	0.5	0.5	0.9	0.4	0.8	1.1	1.0	5.2

Average Electroscope Readings (mr/hr)

Readings are taken three times a week at each location.

Settling Basin

Diversion Box	3
North walk west	17
North walk Center	20
North walk East	21
South walk west	3.5
South walk Center	3.5
South walk East	4

Off-Gas System for 706-C and 706-D

2" Line at Ground Level	20
Jet Platform	5

A-1

OAK RIDGE NATIONAL LABORATORIES
CENTRAL FILES NUMBER
48-4-237

Date April 13, 1948

Subject 706-D Area Report - Week
Ending April 10, 1948

To L. B. Emlet

From E. J. Witkowski - per

H. Blauer, E. M. King and P. B. Orr

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DECLASSIFICATION OFFICER
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706-D AREA REPORT
Report for Week Ending
April 10, 1948

Exposures

There were seven possible over-exposures received for the week ending April 3, 1948. Once again the exposures were indicated on the sensitive open window of the film badge but not on the pencil meters or the shielded portion of the film badge.

General

Approximately 112 manhours were loaned to the Isotope Development Group in carrying their work on Ruthenium, ^{131}I , and resin columns across the shifts.

Barium (Ba^{140} - 12.5d)

All major repairs in Cell B were completed. The following jobs were performed during the week:

1. Installation of stainless steel braces under tanks B1 and B6.
2. Repairs to B-12 probe.
3. Straightening of product plug hook.
4. Installation of new floodlights and globes.
5. Painting of Cell B.
6. Fabrication of a new draw-off line for cubicle I.
7. Rewiring of tank B-12.
8. Welding of stops on B-19 dolly to prevent slipping.
9. Installation of a new plug with removable light to view the dolly.

The glassware and Tygon in the cubicles have been completely replaced with the exception of the crud filter in Cell IV. This work will be completed next week

Cell B will be completely tested before the next run is started.

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4/13/48

Ruthenium (Ru¹⁰⁶ - 1 yr)

Seven runs were made this week by the Isotope Development Group to test the new equipment. 706-D assumed responsibility on April 9, 1948 and will operate the equipment unless further revisions are necessary.

Iodine (I¹³¹ - 8d)

Eight cans of Te were processed to yield approximately 1190 mc. The product was within specifications.

Phosphorous (P³² - 14.3d)

Two cans of sulfur were processed in one run to yield approximately 1400 mc of P³².

A shielded hood has been installed to reduce the radiation and air contamination during loading of the sulfur cans into the melter. All indications are that air contamination has been stopped; however, further tests are being made.

Strontium (Sr^{89,90} - 55d, 30y)

No runs were made.

Carbon (C¹⁴ - 5100y)

No runs were made.

Production Summary

Isotope	gms/can	No. of Cans	File Exposure Time Weeks	mc Isolated	mc/can	mc shipped	No. of Shipments
I ¹³¹	75	8	7	1190	149	1034	25
P ³²	2000	2	11	1400	700	756	17

Other Shipments

	MC	Shipments
C ¹⁴	0.5	1
Sr ⁸⁹	20	1
Bi ¹⁰	310 grams	2
Ru ¹⁰⁶	60.2	1

Tank Farm and Burial Ground

Operations

Approximately 63,600 gallons of chemical waste were transferred from W5 to W6 tank. After about six hours, the jet from W6 to the Settling Basin was turned on and about 3,600 gallons of waste was transferred to the Settling Basin. It was found that the activity of this waste was higher than normal, due to a precipitate in the liquid.

4/13/48

As a result, 6.19 curies of beta activity was discharged to the White Oak Creek on April 7, 1948. In an attempt to keep the amount of activity going out of the Settling Basin down below 5 curies per day, the dilution water was diverted through the east pond until the hot precipitate had a chance to settle out in the basin.. Approximately 1.3 curies of activity were discharged through the east pond.

706-C transferred about 1500 gallons of metal waste to W9 tank. This contained 31.47 kg. of uranium; plus the uranium which was already charged to the Tank Farm when the original inventory estimates were made several months ago.

The hot Pilot Plant transferred 33.48 kg. of uranium to W4 tank.

Separation of ruthenium, from precipitated metal supernatant, was resumed this week. Approximately 4800 gallons of supernatant were used, containing about .008% uranium

Five drums and four pots were received from Chicago this week. The pots contained fission products only. Four of the drums contained hexone and were put through the still at W10. The fifth drum contained oil. The drum and oil were buried.

The Settling Basin discharged 3,914,000 gallons of water to the White Oak Creek carrying 21.9 curies of beta activity. The average was 527 beta c/min/ml, with a high of 1372 and a low of 61.

The Retention Pond discharged 116,600 gallons carrying .05 curies of beta activity. The average count was 35 c/min/ml. The high was 103 and the low 14.

Ninety three red cans of contaminated trash from the Restricted Area were placed in the beta-gamma trench. These measured from 10 mr/hr to 7000 mr/hr.

Three loads of gravel and dirt, one load of scrap lumber, and a drum of oil from Chicago were also put in the beta-gamma trench.

A shipment of alpha contaminated material from Dayton was buried 205' to 220' west by 90' to 120' south. This shipment consisted of thirty drums, two boxes, and two tarpaulins.

Maintenance

1. No progress was made on the pole replacement program.
2. The automatic jet was installed on W-12. This project is finished.
3. The inlet diversion box to W1 and W2 has been completed.

- A concrete ramp was poured at W4 tank. It will be ready for the first trucks during the early part of the coming week.

TANK INVENTORY

<u>Tank</u>	<u>Capacity Gals.</u>	<u>Gallons in</u>	<u>Gallons out</u>	<u>Gallons of Free Space</u>
W-1	4,400	35,846	35,846	4,400
W-2	4,400	37,100	37,100	4,400
W-3	41,300	0	0	39,664
W-4	41,200	296	0	5,328
W-5	170,000	30,000	63,600	94,800
W-6	170,000	72,000	3,600	38,400
W-7	166,800	0	4,800	24,000
W-8	170,000	0	0	18,000
W-9	165,000	3,600	0	66,600
W-10	170,000	0	0	11,750

Activity of Wastes Discharged from Oak Ridge
National Laboratory for the Week
Ending April 10, 1948

	4/4	4/5	4/6	4/7	4/8	4/9	4/10	Total
Flow from the Settling Basin (Thousands of gal/day)	890	899	855	390	220	227	433	3914
Average Activity of Discharge from Settling Basin beta counts min/ml	341	137	376	1313	673	478	364	
Approximate Curies Discharged from Settling Basin	4.10	1.66	4.33	6.19	2.0	1.49	2.13	21.9

4/14/48

706-D Area Report
Weekly Reports

East Pond

	4/4	4/5	4/6	4/7	4/8	4/9	4/10	Total
Flow from the East Pond (Thousands of Gal/day)				388	583	551		1,522
Average Activity of Discharge from the East Pond beta counts min/ml				67	68	57		
Approximate Curies Discharged from the East Pond				.35	.53	.42		1.3

Average Electroscope Readings (mr/hr)

Readings taken three times a week at each location

Settling Basin

Diversion Box	3.5
North Walk East	61.7
North Walk Center	86.3
North Walk West	82.7
South Walk East	27.8
South Walk Center	12.0
South Walk West	16.7

Off-Gas System for 706-C and 706-D

2" line at Ground Level	14.3
Jet Platform	9.0