

**Idaho National Engineering and  
Environmental Laboratory  
Radiological Control Performance Indicator Report**

**Third Quarter  
Calendar Year 1998**

**Published November 1998**

**Idaho National Engineering and Environmental Laboratory  
Radiological Control  
Lockheed Martin Idaho Technologies Company  
Idaho Falls, Idaho 83415**

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## **Radiological Control Performance Indicator Purpose**

The INEEL Radiological Control Performance Indicator Report is provided quarterly, in accordance with Article 133 of the INEEL Radiological Control Manual. Indicators are used to measure performance of the Radiological Control Program and as a motivation for improvement, not as goals in themselves. These indicators should be used by management as tools to focus priorities, attention, and adherence to As-Low-As-Reasonably-Achievable (ALARA) practices.

The ALARA Committees establish ALARA goals for the INEEL based on forecasts and goals provided by each facility organizational manager or supervisor.

Performance goals are realistic and measurable. Stringent goals are set at least annually to reflect expected workloads and improvement of radiological performance. Goals higher than previous goals may occasionally be set due to changes in work scope or mission.

The INEEL Radiological Control Performance Indicators consist of:

- Collective dose in person-rem.
- Average worker dose, maximum dose to a worker, and maximum neutron dose equivalent to a worker.
- Number of skin and clothing contaminations, including the number of contaminated wounds and facial contaminations that are greater than the OR criteria.
- Number of radioactive material intakes resulting in a dose assessment of 10 mrem or more.
- Area of Contamination, High Contamination, and Airborne Radioactivity Areas, in square feet.
- Airborne radioactivity events and spills that are greater than the OR criteria.

These indicators also provide tracking and trending for the previous three years.

Other Radiological Control indicators suggested in the Radiological Control Manual are tracked and trended in other reports.

- The Environmental Management Operations Support Department reports the volume and radioactivity content of radioactive waste in the INEEL Radioactive Waste Management Annual Report and on the Radioactive Waste Management Information System (RWMIS).
- Releases of liquid and airborne radioactivity discharges are reported by the Environmental Affairs Branch in the INEEL Environmental Monitoring Report and the INEEL National Emission Standard for Hazardous Pollutants ( NESHAPs) - Radionuclide Annual Report.

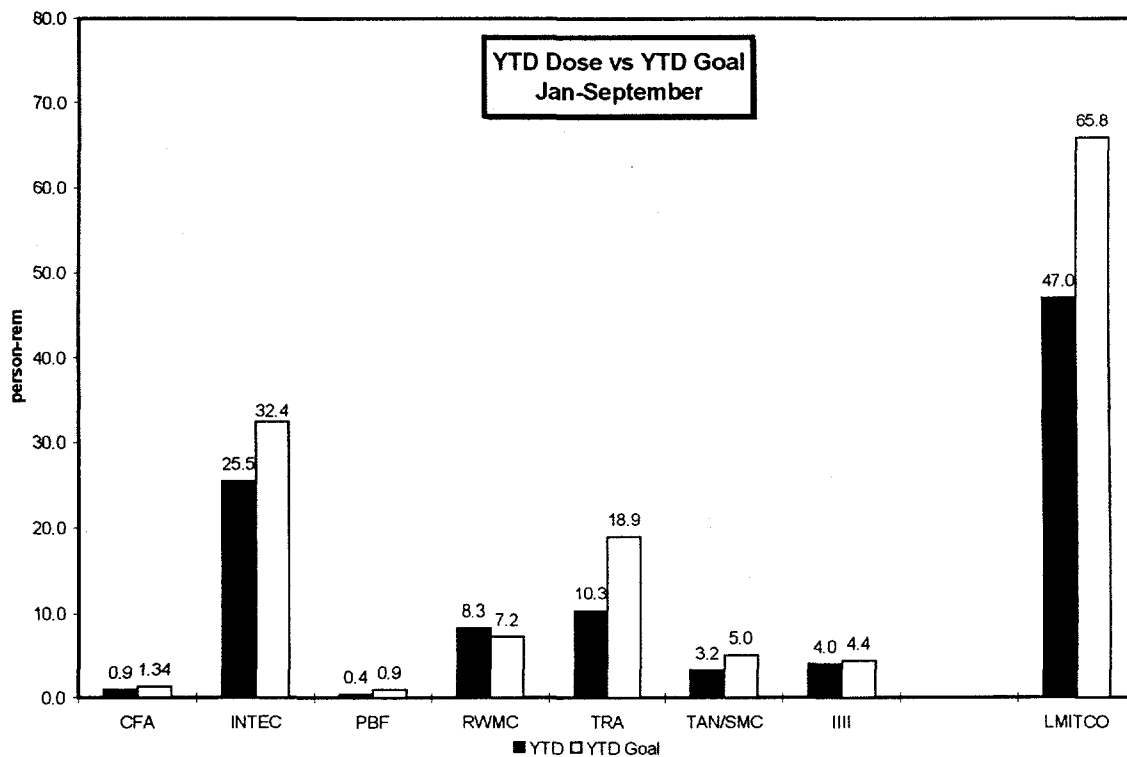
## Executive Summary

### Radiological Control Performance Indicator Report

#### Third Quarter 1998

This document provides a report and an analysis of the Radiological Control Program through the third quarter of Calendar Year 1998 (CY-98) for Lockheed Martin Idaho Technologies Company (LMITCO). This Performance Indicator Report is provided in accordance with Article 133 of the INEEL Radiological Control Manual.

The LMITCO collective occupational radiation deep dose is 47.0 person-rem year to date, compared to a year to date goal of 65.8 person-rem. The site dose goal has been reduced due to work scope reductions at the Idaho Nuclear Technologies and Engineering Center (INTEC). Reductions in exposure resulted from NWCF turnaround operations rescheduling, valve box B-9 work in lower exposure areas and deletions of work resulting from the Maintenance Stand Down. More detail is shown on page 25 of this report. INTEC's annual goal was reduced to 38.8 person-rem, and LMITCO's annual goal was adjusted to 83.1.



International Isotopes Idaho Inc. (IIII) is a privatized organization responsible for the TRA Hot Cell operation. Since they are not part of LMITCO, their totals are not carried in the INEEL totals. The IIII data is for information only.

Beginning in CY-98, a numeric Radiological Performance Index (RPI) is being used to compare radiological performance. The RPI takes into consideration frequency and severity of events such as skin contaminations, clothing contaminations, spills, exposures to radiation exceeding limits, and positive internal dose. The RPI measures the cost of these events in cents per hour of radiological work performed.

The RPI is calculated as follows:

$$RPI = 100 \frac{[(1,000,000 * D) + (500,000 * ROE) + (200,000 * AOE) + (25,000 * SCE) + (25,000 * UR) + (10,000 * AEE) + (5,000 * CCE) + (2,000 * PB)]}{F}$$

Variable	Description	Cost Coefficient
D	Number of deaths due to acute radiation exposure	1,000,000
ROE	Number of regulatory unplanned over exposures (>5 rem TEDE)	500,000
AOE	Number of administrative over exposures (>2 rem TEDE)	200,000
SCE	Number of skin contamination events	25,000
UR	Number of uncontrolled releases of radioactive material or radioactive contamination outside of radiologically controlled areas	25,000
AEE	Number of exposures above expected exposures by >100 mrem (TEDE)	10,000
CCE	Number of clothing contamination events	5,000
PB	Number of positive bioassays	2,000
F	Radiological Work Permit (RWP) hours = Total hours worked on RWPs	RWP hours

In the "F" section of the calculation, Radiological Work Permit (RWP) hours have not been available until CY-98, and are one of the products of the Radiological Control Information Management System (RCIMS) implemented this year. During the third quarter there were 221,490 RWP hours logged on the system. There may be revisions to the RWP hour logging based on access control and work assigned to the RWPs. This is a pilot program at this time.

To make the RPI meaningful, tables have been prepared to show the facility that contributes to the values used in the formula above. The data is compared on a quarterly basis to the prior year to show measurable performance.

The values for CY-98 and CY-97 are shown in the tables on the next page, as well as a chart to be used to establish a baseline from the performance indicators and RWP hours.



The following tables provide the year to date values used in the RPI calculation and the facility contributing to those values. CY-97 values for the comparable period are provided as a comparison.

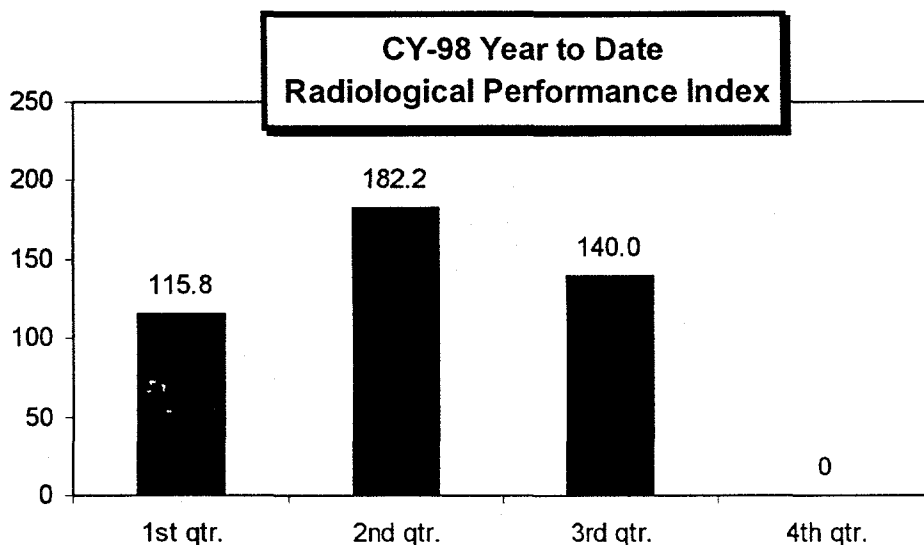
CY-98 Third quarter Contributors

	CFA	INTEC/CPP	PBF/WROC	RWMC	TRA	TAN/SMC
D	0	0	0	0	0	0
ROE	0	0	0	0	0	0
AOE	0	0	0	0	0	0
SCE	0	4	1	0	0	0
UR	0	3	1	0	0	1
AEE	0	0	0	0	0	0
CCE	0	7	1	0	4	0
PB	0	0	0	0	0	0

CY-97 Third quarter Contributors

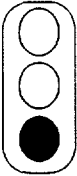
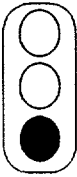
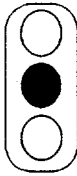

	CFA	ICPP	PBF/WROC	RWMC	TRA	TAN/SMC
D	0	0	0	0	0	0
ROE	0	0	0	0	0	0
AOE	0	0	0	0	0	0
SCE	0	5	1	0	4	1
UR	0	4	0	0	1	0
AEE	0	0	0	0	0	0
CCE	0	11	0	0	7	0
PB	0	0	0	0	0	2

The following chart will be used to compare quarterly data during this year as a baseline is established. A comparison of contributors for the same time period in the tables above show this year's third quarter as being an improvement over the previous year's values.



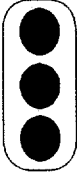
Using the CY-97 third quarter performance values, and the same RWP hours, we have postulated an index of 223.0 for 97 compared to the 139.96 for this year's third quarter. The RPI provides a good comparison since it is valued based on hours worked in radiological environments (i.e. RWP hours)

INEEL Radiological Control Performance Indicator Overview  
Third Quarter 1998

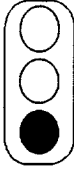
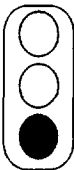

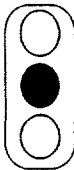
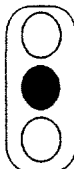
		<u>Actual</u>	<u>Goal or Average</u>
Collective Year-to-Date Penetrating Radiation Dose		47.002 person-rem	83.070 person-rem (Goal)
Year-to-Date Average Worker Dose		0.049 rem	0.116 rem (3 Year Average)
Maximum Year-to-Date Penetrating Dose to a Worker		0.699 rem	1.500 rem (Goal)
Maximum Year-to-Date Neutron Dose to a Worker		0.082 rem	0.110 rem (3 Year Average)

Skin contaminations are included in the performance index on page 5 and will no longer be shown in this area.

Legend

Needs Attention		Compared to 3 year average or goal.
OK		
Good		

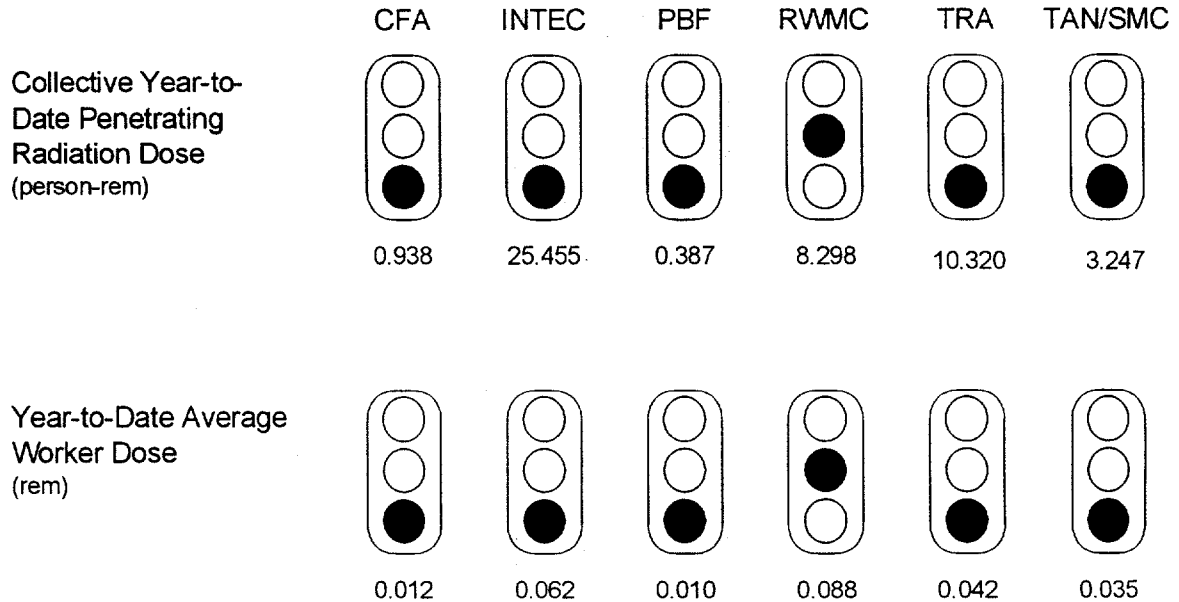
Year-to-Date clothing contaminations are shown in the RPI on page 5 and will no longer be shown on this page.

		<u>Actual</u>	<u>Goal or Average</u>
Year-to-Date Airborne Events > 10% DAC		0	0 (3 Year Average)
Year-to-Date Radioactive Material Intakes $\geq$ 10 mrem CEDE		0	12 (3 Year Average)
Contamination Area		193,427 ft <sup>2</sup>	193,218 ft <sup>2</sup> (3 Year Average)
High Contamination Area		290,065 ft <sup>2</sup>	297,767 ft <sup>2</sup> (3 Year Average)
Airborne Radioactivity Area		80,172 ft <sup>2</sup>	84,837 ft <sup>2</sup> (3 Year Average)

Year-To-Date spills are shown in the RPI on page 5 and will no longer be shown on this page.

# INEEL Facility Radiological Control Performance Indicator Overview

## Third Quarter 1998

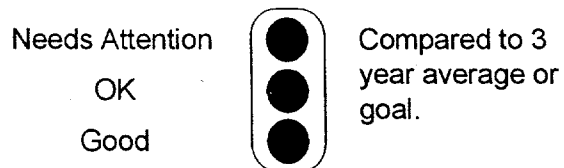


Maximum Year-to-Date penetrating dose to workers is redundant to facility reports and is not repeated in this report.






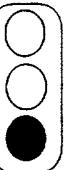

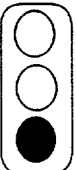
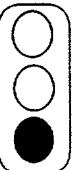
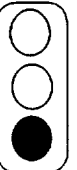
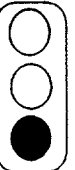

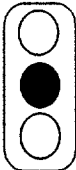
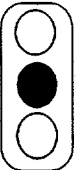

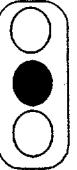
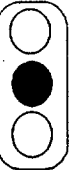
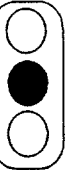
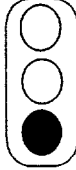
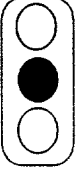
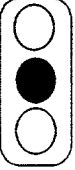
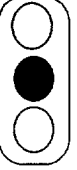








Maximum Year-to-Date neutron dose is no longer reported for facilities in this report.

Year to date skin contaminations are included in the performance index on page 5, and will no longer be shown on this page.

### Legend



Year to date clothing contaminations are included in the performance index on page five, and will no longer appear on this page.

	CFA	INTEC	PBF	RWMC	TRA	TAN/SMC
Year-to-Date Airborne Events > 10% DAC	 0	 0	 0	 0	 0	 0
Year-to-Date Radioactive Material Intakes > 10 mrem CEDE	 0	 0	 0	 0	 0	 0
Contamination Area - ft <sup>2</sup>	 14,105	 64,432	 7,378	 3,508	 49,978	 54,026
High Contamination Area - ft <sup>2</sup>	 0	 244,701	 2,288	 29,525	 2,025	 11,526
Airborne Radioactivity Area - ft <sup>2</sup>	 0	 78,172	 2,000	 0	 0	 0

Year to date spills are included in the performance index on page five and will no longer be shown on this page.

## **Radiological Control Performance Indicator Report Criteria**

The INEEL Radiological Control Performance Indicator Report is comprised of a description of the indicator and the criteria used for measurement. Table 1-1 of the INEEL RCM is the source for the indicators used.

### **Collective Radiation Dose -**

The INEEL collective total penetrating radiation exposure received and the associated quarterly and annual ALARA goals.

### **Average Worker Radiation Dose -**

The average penetrating radiation dose based on collective dose and the total number of personnel receiving measured radiation exposure.

### **Maximum Radiation Dose to a Worker -**

The highest penetrating radiation dose received by a worker at the INEEL.

### **Maximum Neutron Dose to a Worker -**

This indicator reports the highest neutron radiation dose equivalent received by a worker.

### **Number of Skin Contaminations -**

The total number of radioactive skin contaminations and the number of those contaminations resulting in an Occurrence Report, the number of facial contaminations, and the number of contaminated wounds.

### **Number of Clothing Contaminations -**

The total number of radioactive clothing contaminations and the number of those contaminations resulting in an Occurrence Report.

### **Airborne Events -**

The number of occupied facility areas not posted as Airborne Radioactivity Areas that exceed 10% Derived Air Concentrations (DAC). The value is based on posting criteria from Table 2-4 in the INEEL RCM.

### **Total Year-to-Date Intakes -**

The number of positive bioassays that indicate an intake of radioactive material resulting in a dose assessment of 10 mrem or more from an INEEL occupational exposure. The total number of positive bioassays that resulted in an Occurrence Report are also tracked and trended. *Note: For the RPI all bioassays > 0 are tracked, independent of statistical reliabilities.*

**Contamination Area -**

The total inside area in square feet that falls within the description of a Contamination Area as defined in Table 2-4 of the INEEL Radiological Control Manual.

**High Contamination Area -**

The total inside area in square feet that falls within the description of a High Contamination Area as defined in Table 2-4 of the INEEL Radiological Control Manual.

**Airborne Radioactivity Area -**

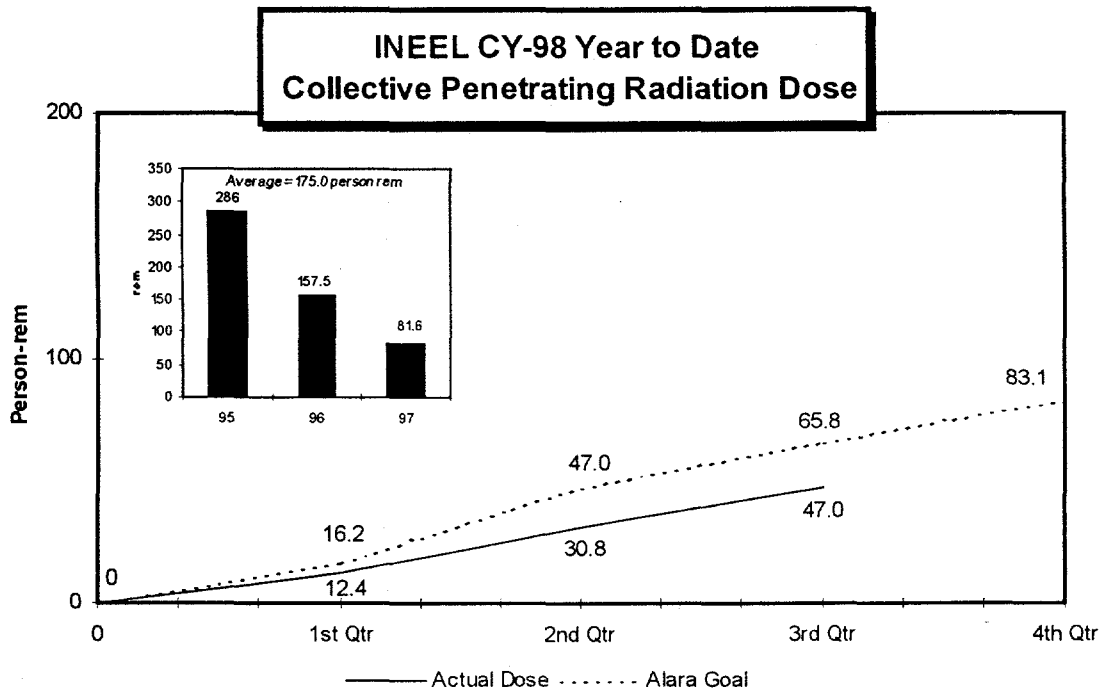
The total area in square feet that falls within the description of an Airborne Radioactivity Area as defined in Table 2-4 of the INEEL Radiological Control Manual.

**Radioactive Spills -**

The total number of radioactive spills at the INEEL that meet reporting criteria. A spill is considered an inadvertent loss or release of radioactive contamination outside a Radiologically Controlled Area.

The INEEL Performance Indicators are designed to reflect a challenging, yet positive control of occupational radiological work.

This chart and the charts on the following pages continue to provide an indication of how well LMITCO is performing as a company. Following the company charts are charts showing the six specific facility areas and their performance in selected indicators.

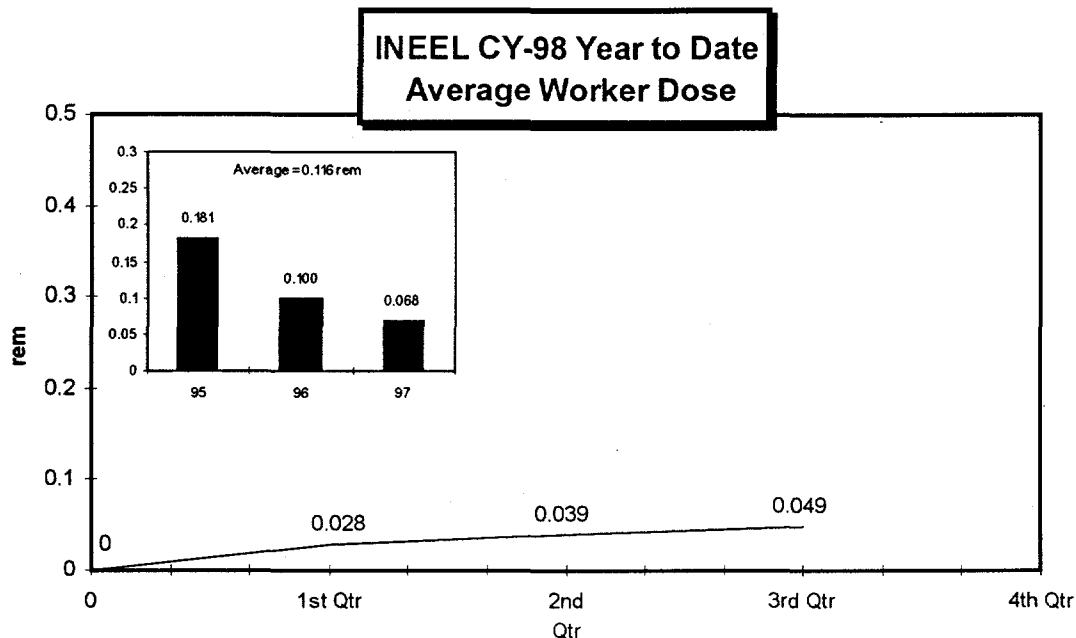


DOE and LMITCO policy is to maintain occupational radiation exposure as low as reasonably achievable (ALARA). The above chart provides a comparison of the INEEL goal and the total year to date collective penetrating radiation dose.

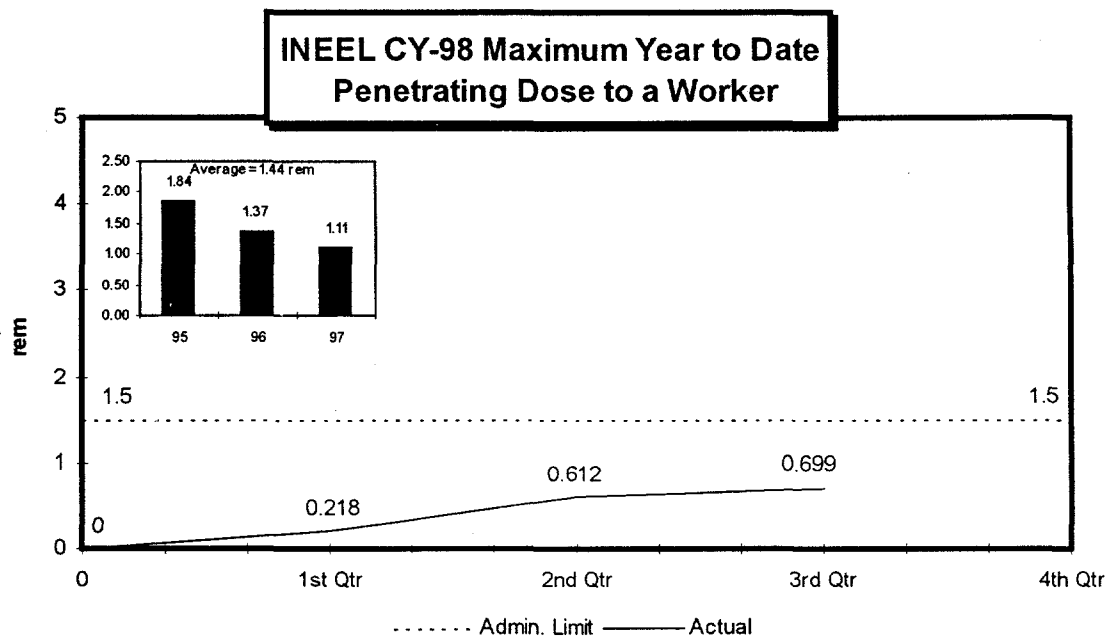
The CY-98 ALARA goal has been decreased to 83.1 person-rem to accommodate a goal revision at INTEC. INTEC reduced their goal from 56.5 person-rem to 38.8 person-rem. The decrease is based on work scope changes from NWCF turnaround operations, valve box B-9 work and deletions of work resulting from the Maintenance Stand Down. The LMITCO year to date total is 47.0 person-rem.

The collective exposure is well below the goal primarily due to implementation of ALARA protective measures at INTEC such as filling, soaking and rinsing the calciner vessel, identifying and eliminating hot spots through use of a remote Gamma Cam™, remote grouting at the WCF, etc. More detail of INTEC's efforts to reduce personnel dose is contained on the INTEC summary, page 25.

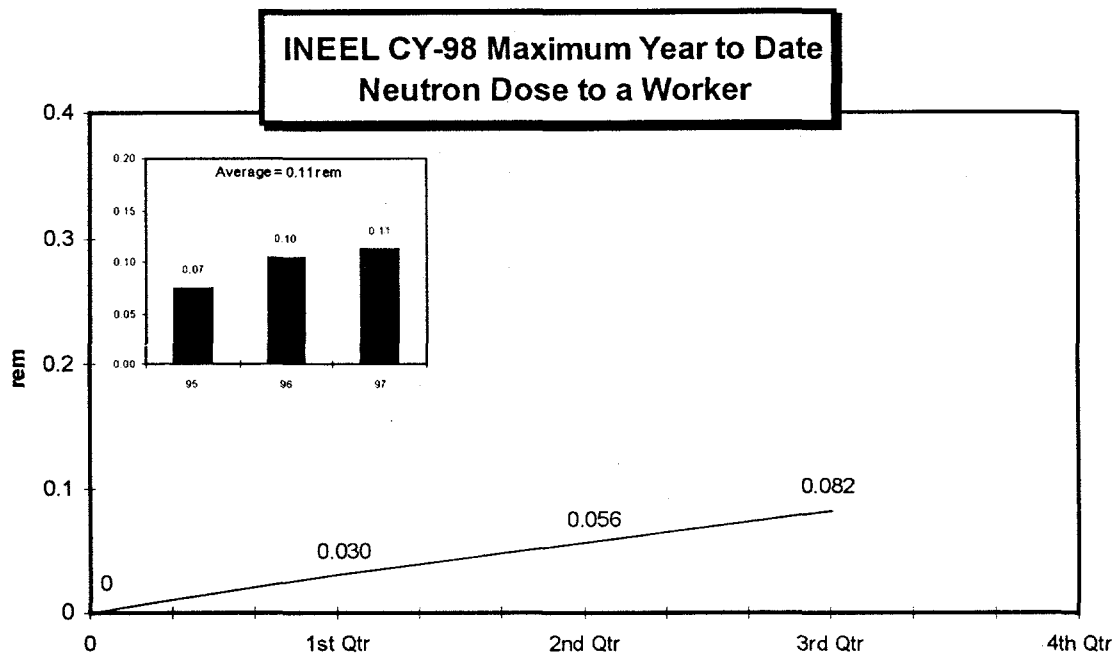




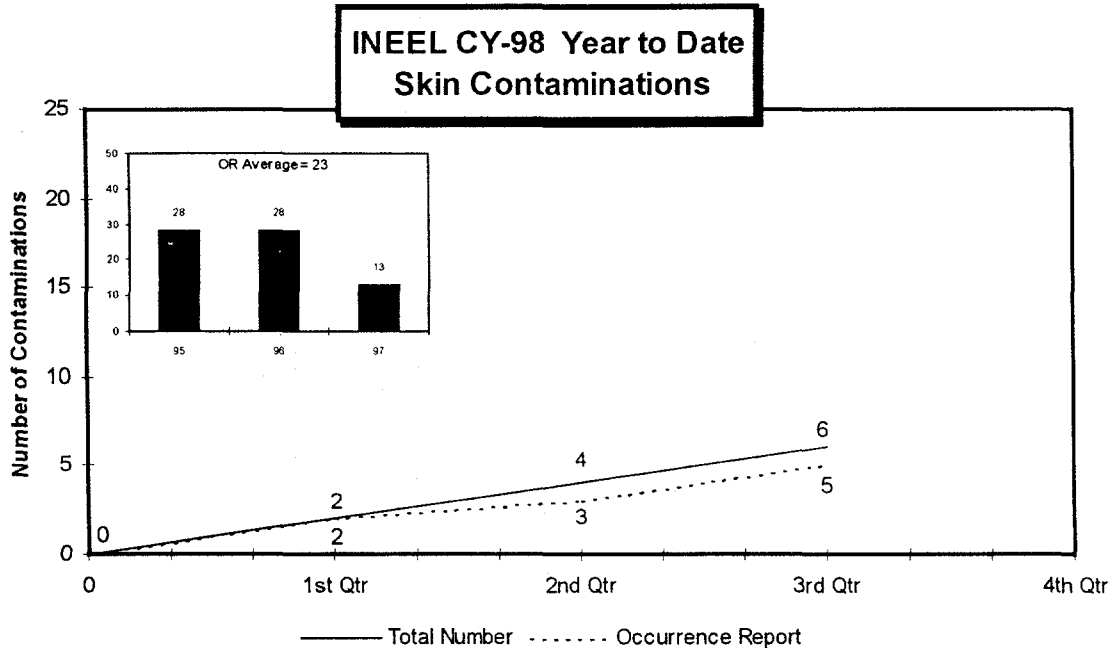
The Average Occupational radiation dose for INEEL workers through the end of the third quarter was 0.049 rem based on 959 workers who received dose greater than 10 mrem. There has been a total of 221,490 Radiation Work Permit hours so far year to date.



The Maximum penetrating radiation dose to a worker through the end of the third quarter was .699 rem. The dose resulted from activities associated with INTEC.

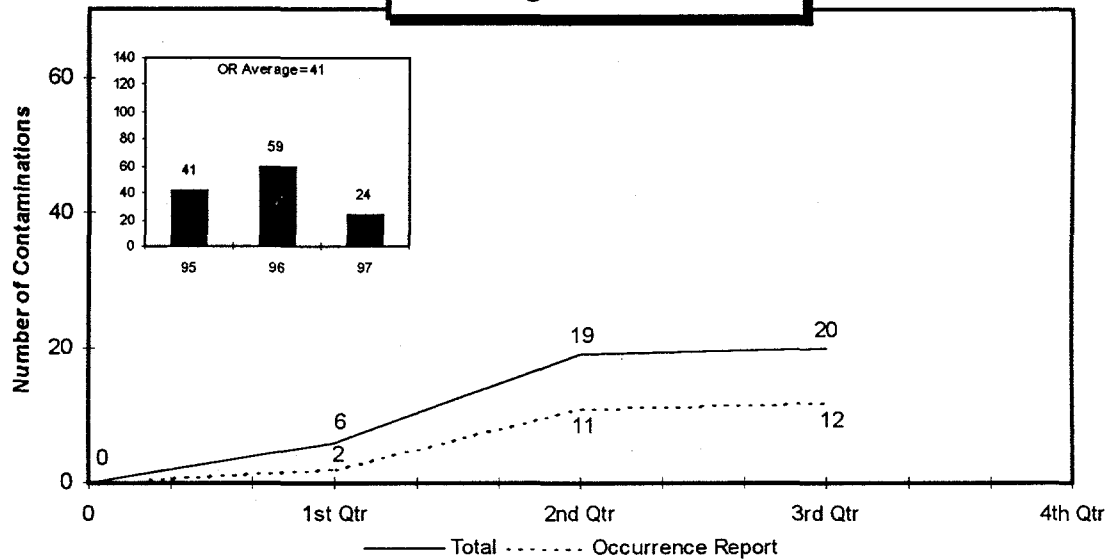


Neutron dose is included in the total penetrating radiation dose. It is shown here as a separate indicator to identify the maximum neutron dose to a worker. Through the end of the third quarter the maximum neutron dose is 0.082 rem. A worker associated with the IRC received this dose during source movements.



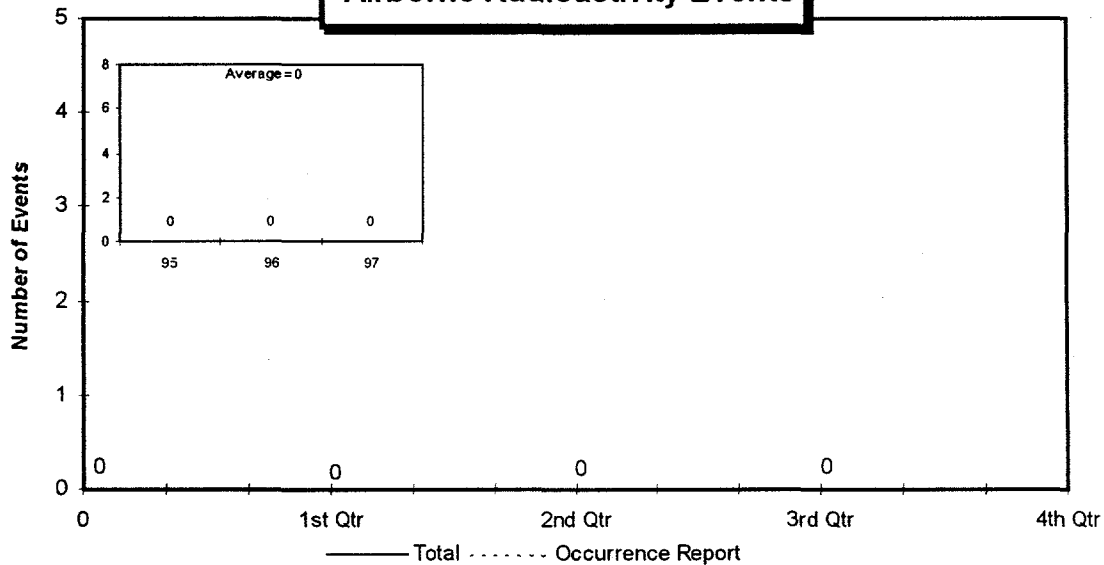
There were two reportable skin contaminations at the INEEL during the third quarter at the INTEC. There were no facial contaminations or contaminated wounds.

### INEEL CY-98 Year to Date Clothing Contaminations



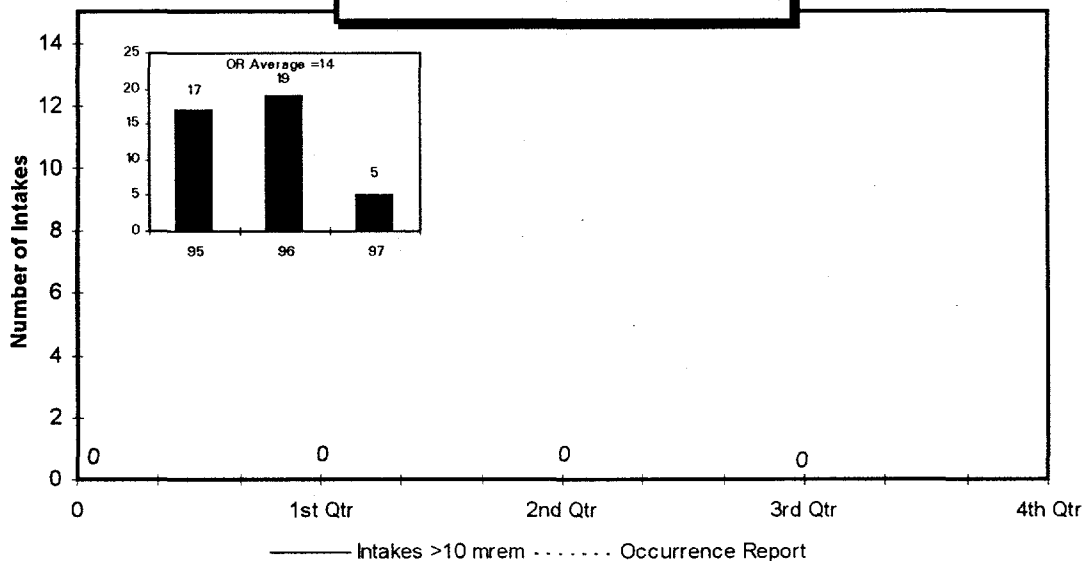
There was one clothing contamination at the INEEL during the third quarter. It occurred at the ATR. Detail is on OR ID-LITC-ATR-1998-0022

### INEEL CY-98 Year to Date Airborne Radioactivity Events



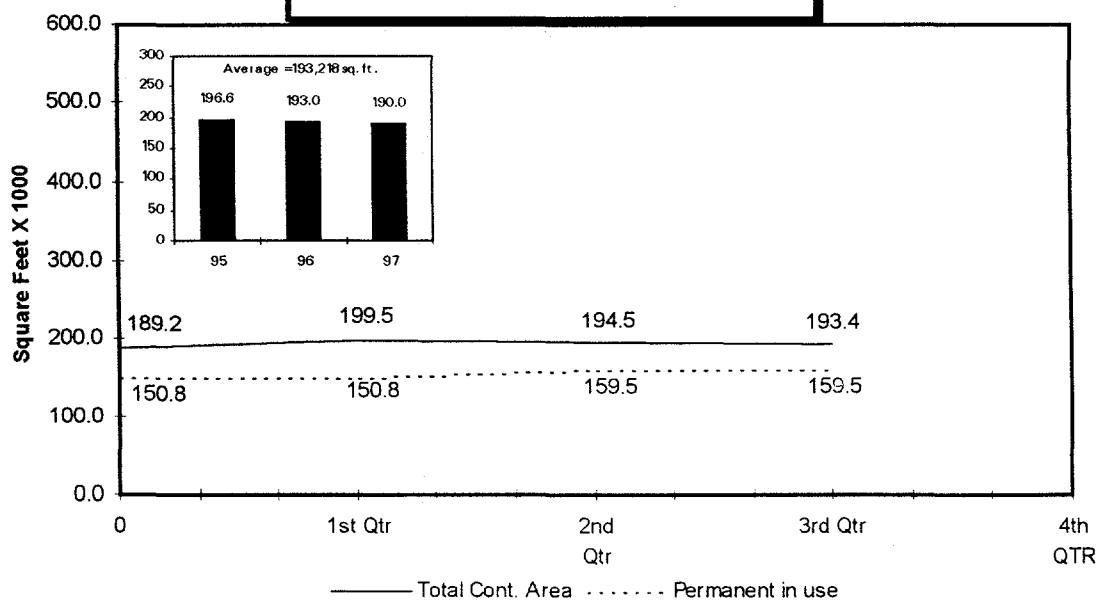
There have been no airborne radioactivity events during the third quarter.

### INEEL CY-98 Year to Date Radioactive Material Intakes

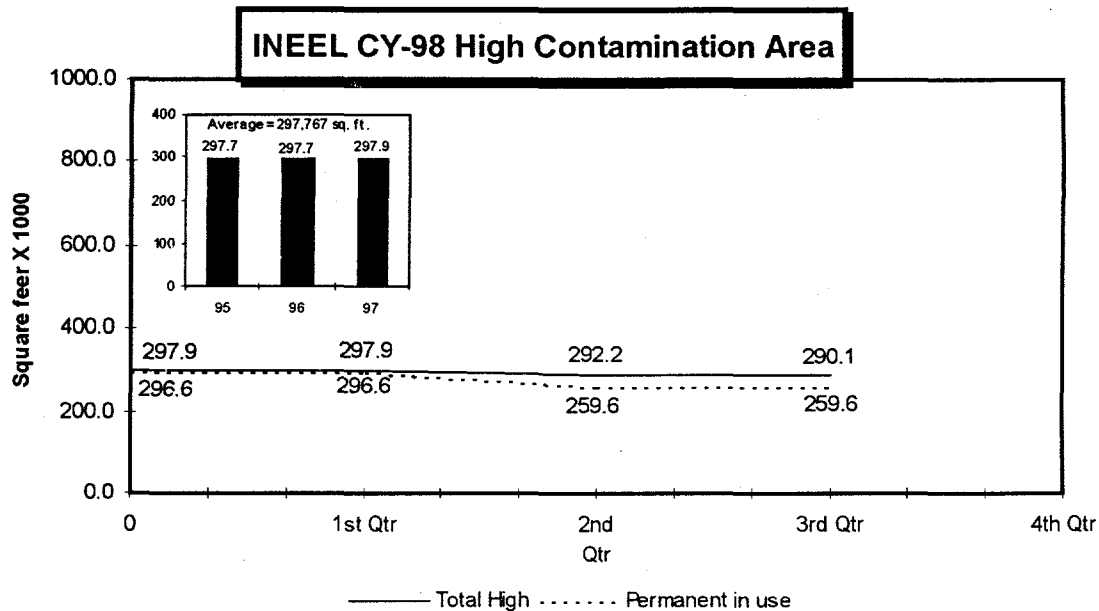


Radioactive material intakes depict the number of positive bioassays that result in a dose assessment of 10 mrem or greater. So far year to date there have been none. Six routine bioassays are pending final evaluation from the TAN/SMC area.

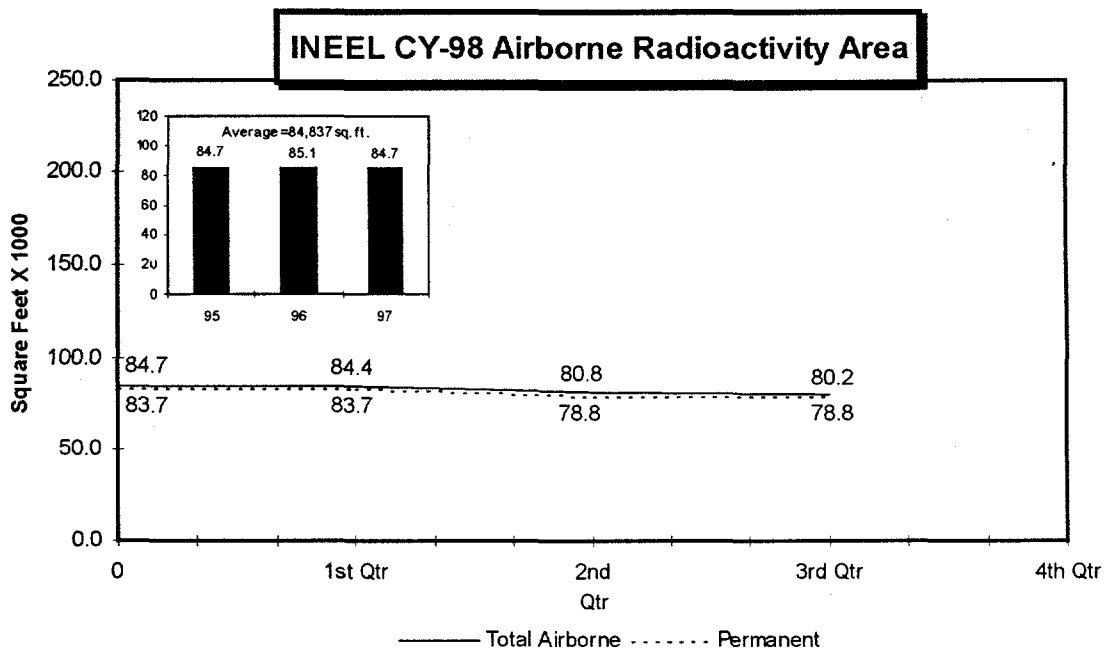
### INEEL CY-98 Contamination Area



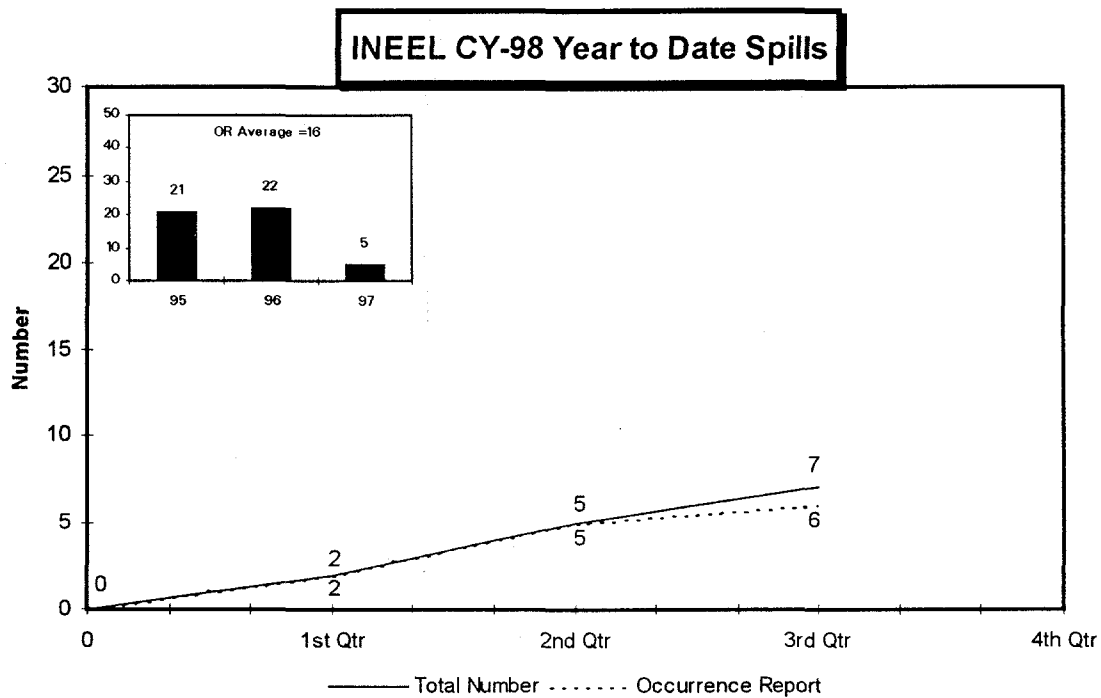
The total area designated as Contamination Area at the end of the third quarter was 193,427 square feet. The decrease is from grouting at INTEC. 159,483 square feet is designated as permanent and in use.



Total High Contamination Area at the end of the third quarter was 290,065 square feet. 259,600 square feet is designated as permanent or in use, such as the sizing facility at WERF and areas slated for D&D. Reductions are from INTEC.



The total Airborne Radioactivity Area at the INEEL at the end of the third quarter was 80,172 square feet. 78,822 square feet is designated as permanent and in use. The reduction is from work clean up at the INTEC.



There were two spills during the third quarter. One was considered to be a loss of control of radioactive material. Both spills were from INTEC. The OR is ID-LITC-LANDLORD-1998-0022.

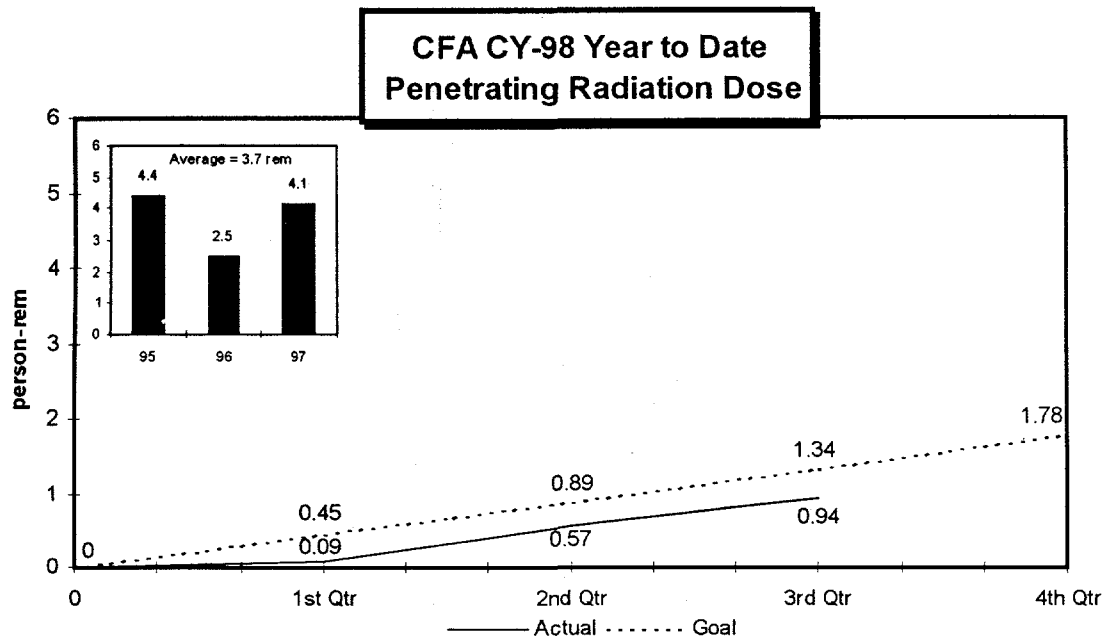
The three-year average noted on this chart represents only those spills that were reportable as ORs in prior report years.

# Central Facilities Area

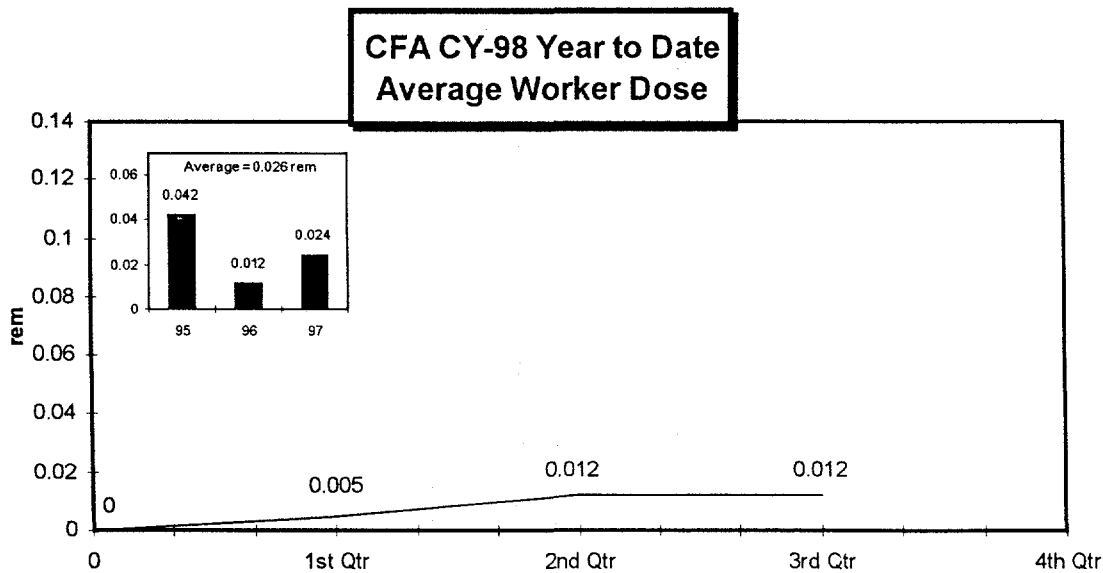
The CFA Facility report also includes  
other outlying area information

## Summary

1. The major activities contributing to radiological exposure so far this year have been Decontamination and Decommissioning, Environmental Restoration, sampling, and facility maintenance.
2. Work scope at the CFA is basically similar to that of last year. A complete vehicle survey is taking place, and so far, year to date, no vehicles have been found contaminated.

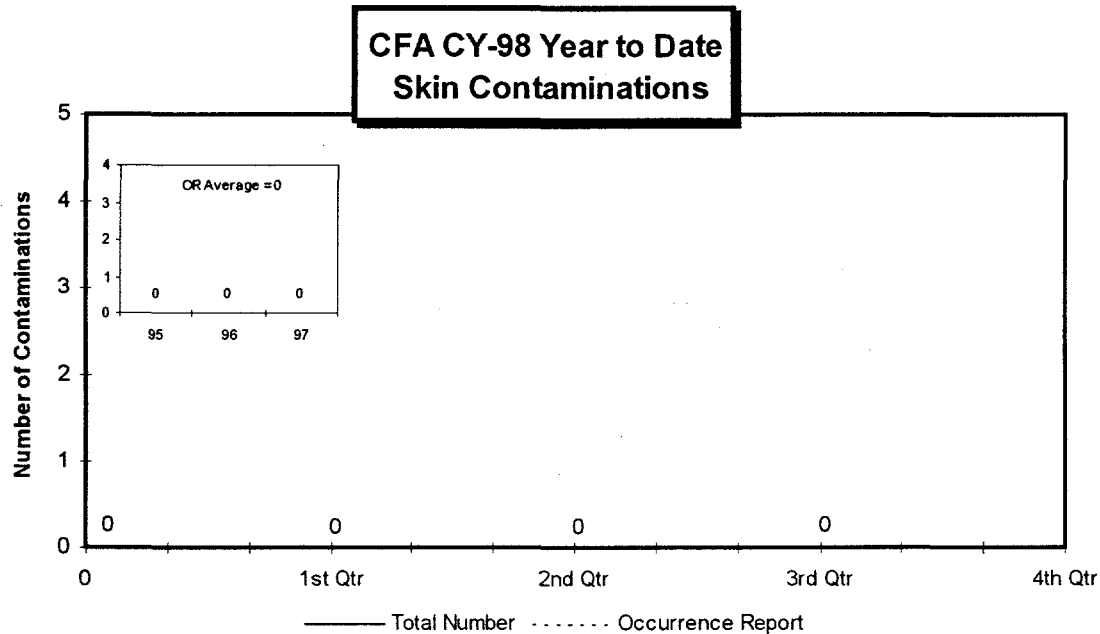


The collective penetrating occupational radiation exposure at CFA through the end of the third quarter is 0.938 person-rem. D&D activities, environmental restoration/monitoring and maintenance activities have been the major contributors to CFA dose.

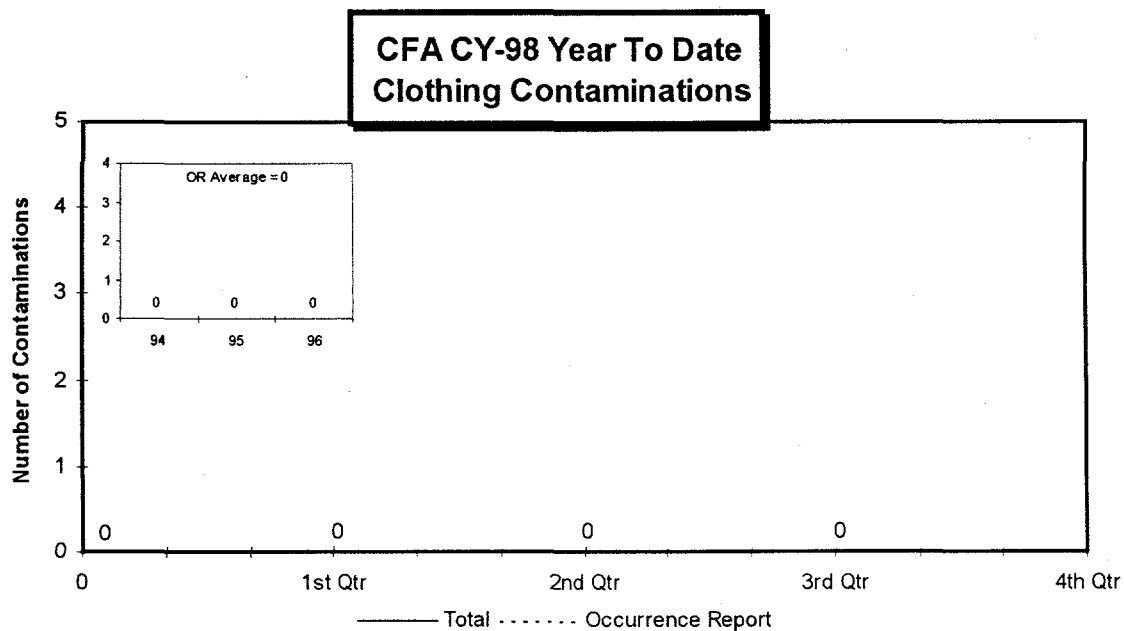


The CFA average worker dose through the end of the third quarter was 0.012 rem evaluating dose from 79 workers with dose greater than 10 mrem.

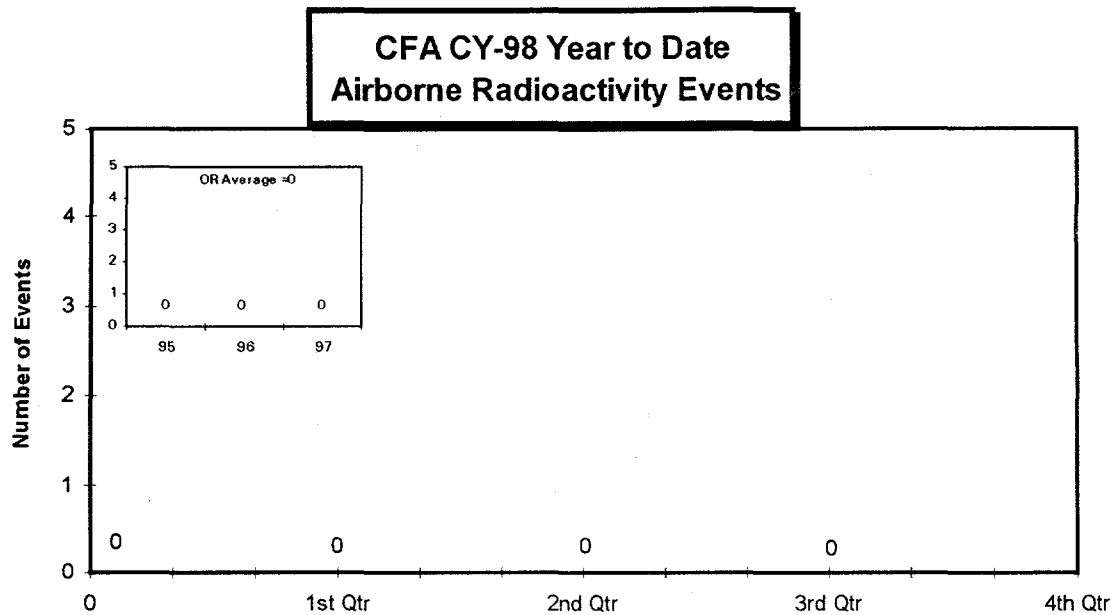




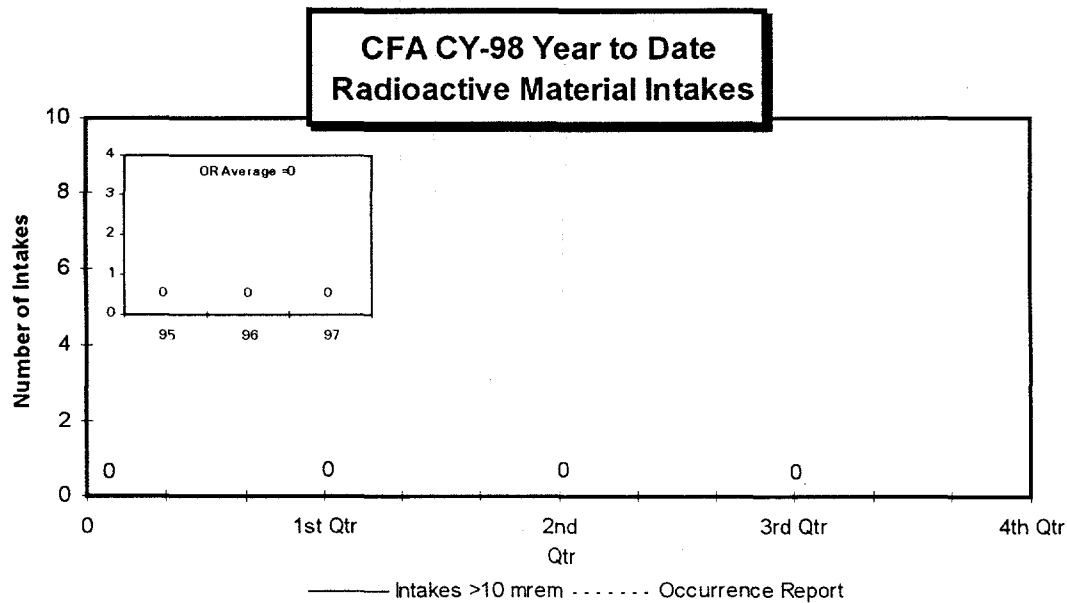
There were no skin contaminations at CFA areas through the end of the third quarter.



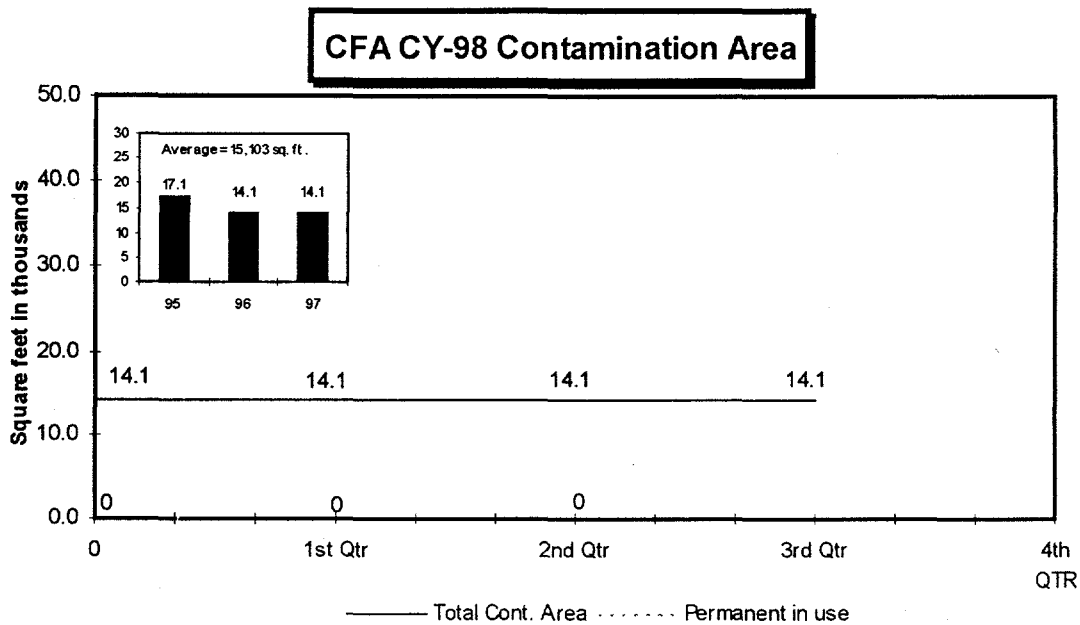
There were no clothing contaminations at CFA areas through the end of the third quarter.



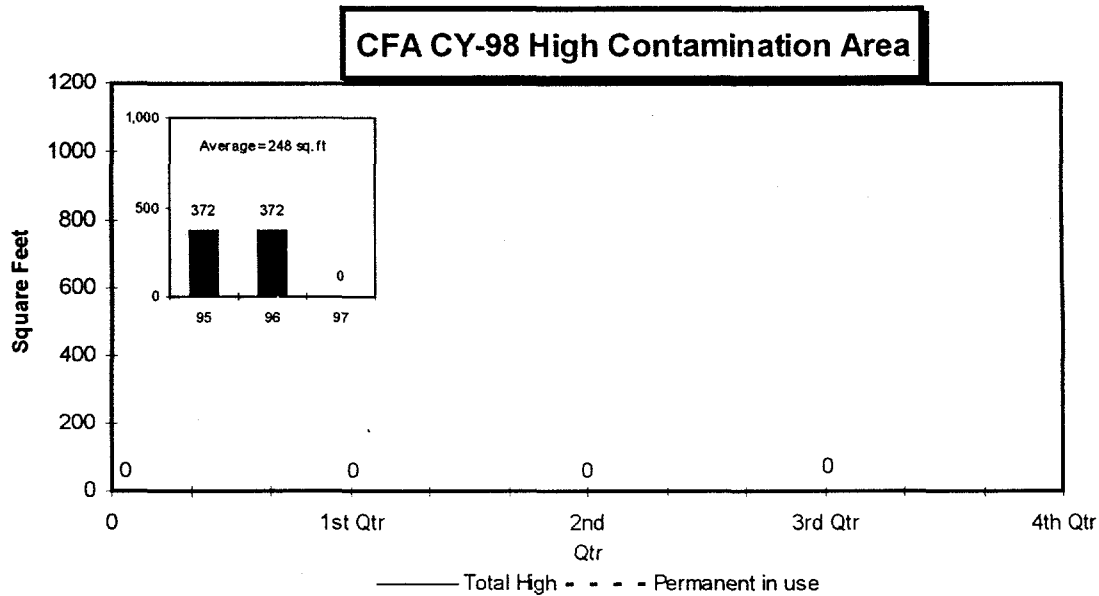
There has been no airborne radioactivity detected that was greater than 10 % DAC at CFA areas through the end of the third quarter.



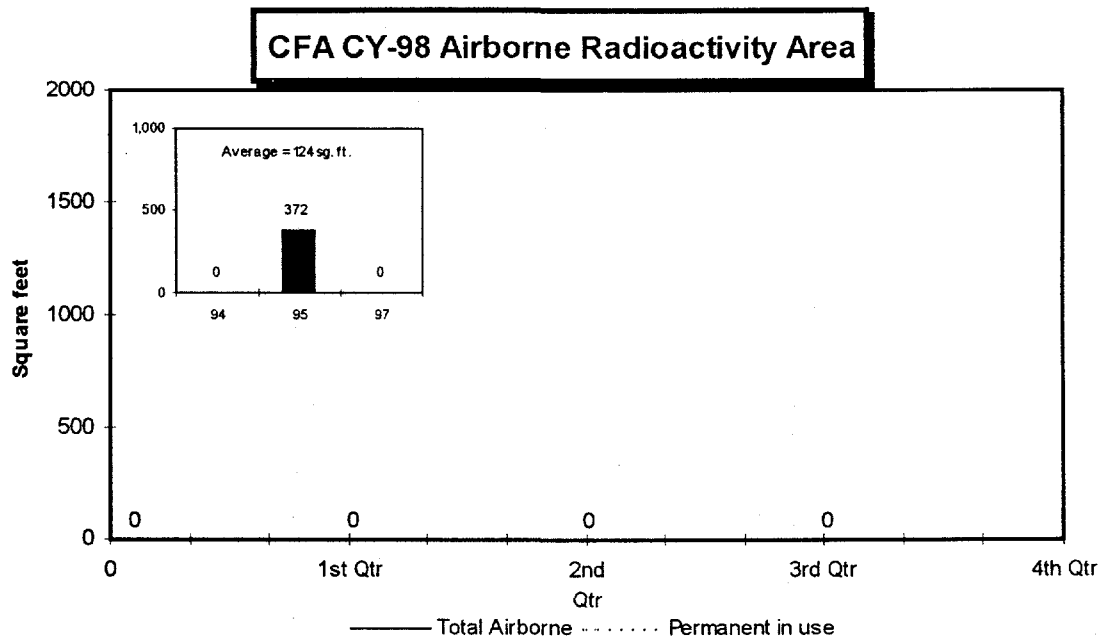
There were no positive bioassays indicating a radioactive material intake that resulted in a dose assessment of 10 mrem or greater at CFA through the end of the third quarter.



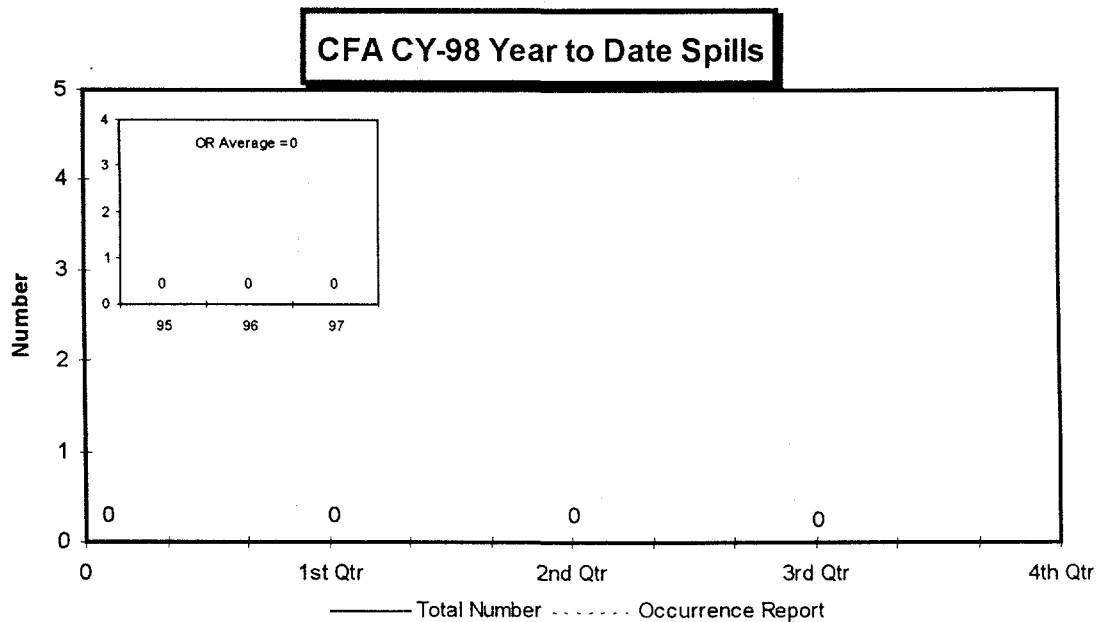
The total Contamination Area at CFA at the end of the third quarter was 14,105 square feet. None of this area was designated as permanent and in use.



There are no High Contamination Areas in the area controlled by CFA personnel through the end of the third quarter.



Currently, there are no Airborne Radioactivity Areas in CFA facility areas.

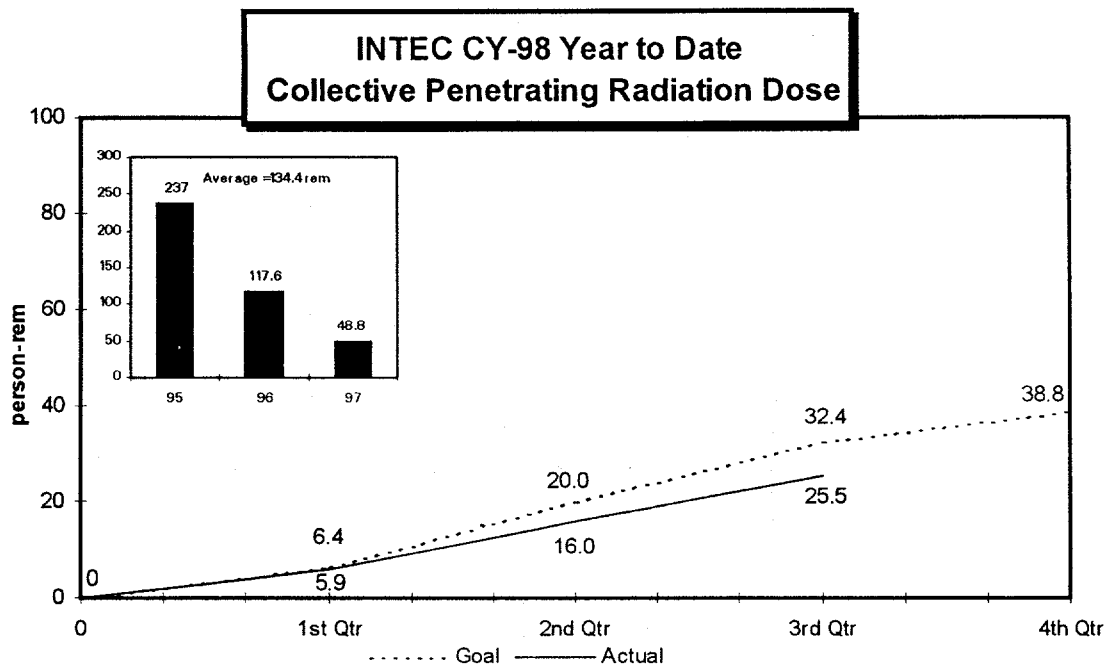


CFA has had no radioactive spills or loss of control of radioactive material during the third quarter. Vehicle surveys have produced no contamination year to date.

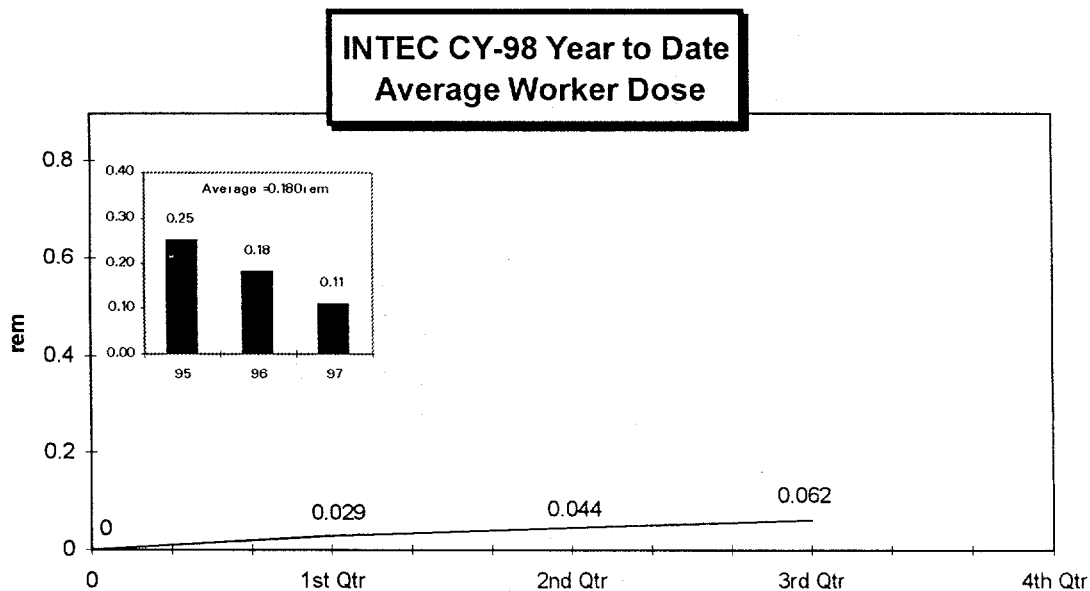
# Idaho Nuclear Technology And Engineering Center

## INTEC SUMMARY

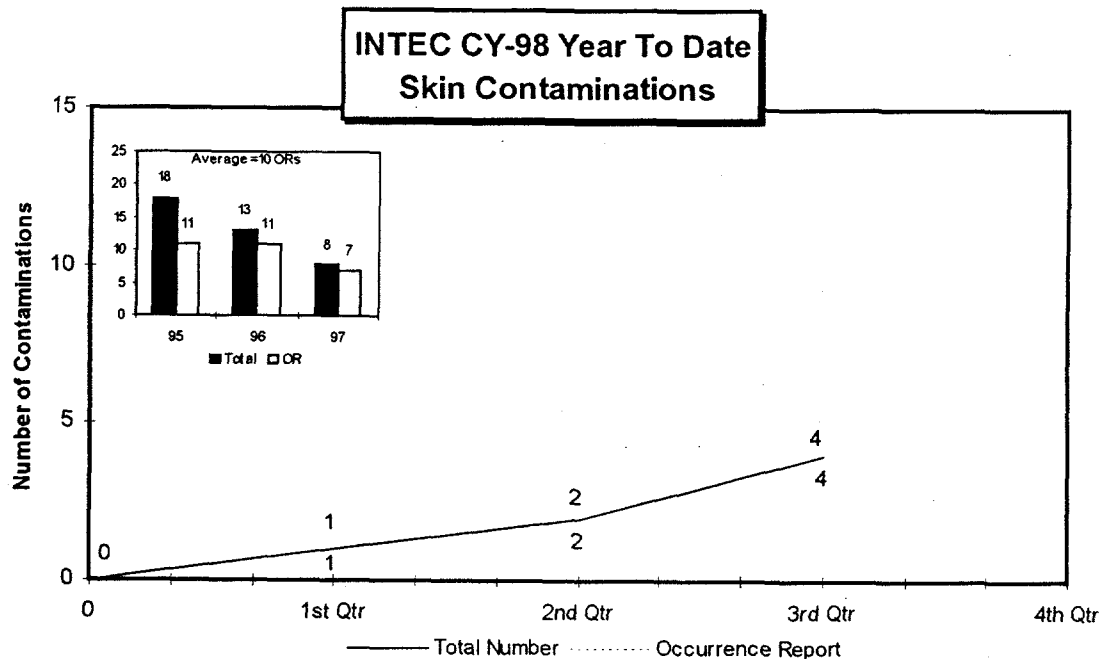
1. Major contributors to third quarter occupational radiation exposure were activities related to fuel movement and storage at CPP 603 and CPP 666, Tank Farm B-9 valve box upgrade, WCF RCRA closure activities and NWCF turnaround activities. Major dose reductions were achieved through use of APMs. Work scope changes resulted in an ALARA goal reduction to 38.81 rem, based, in part, on NWCF turnaround operations rescheduling, valve box B-9 work in lower exposure areas and deletions of work resulting from the Maintenance Stand Down. Additional factors include the following:
  - Use of the gamma-camera at the NWCF in the second quarter identified areas of higher radiation in the calciner cell and permitted concentrated decontamination of these areas, thereby achieving a significant reduction in cell radiation fields. Credit is taken for this achievement through re-evaluated exposure projections for the work that remained in-cell.
  - Remote systems were and are being utilized in the NWCF cells to a much greater extent than originally anticipated, reducing the amount of time personnel are required to be in radiation fields.
  - Once access was permitted in tank farm valve box B-9, it was discovered that the radiation levels were much less than anticipated. Therefore, the exposure estimate for this work has been revised.
2. There were two reportable skin contaminations during the third quarter. OR ID-LITC-WASTEMNGT-1998-0013 and ID-LITC-PHASEOUT-1998-003 contain the details. There were no facial or wound contaminations.
3. There were no reportable clothing contaminations during the third quarter.
4. There was one reportable spill during the third quarter. Detail is contained in OR ID-LITC-LANDLORD-1998-0022. A bag of contaminated material was marked as cold waste.
5. An ingestion resulted in a dose of < 1mrem CEDE from work performed in a fume hood. OR ID-LITC-LANDLORD-1998-0027 contains the details.



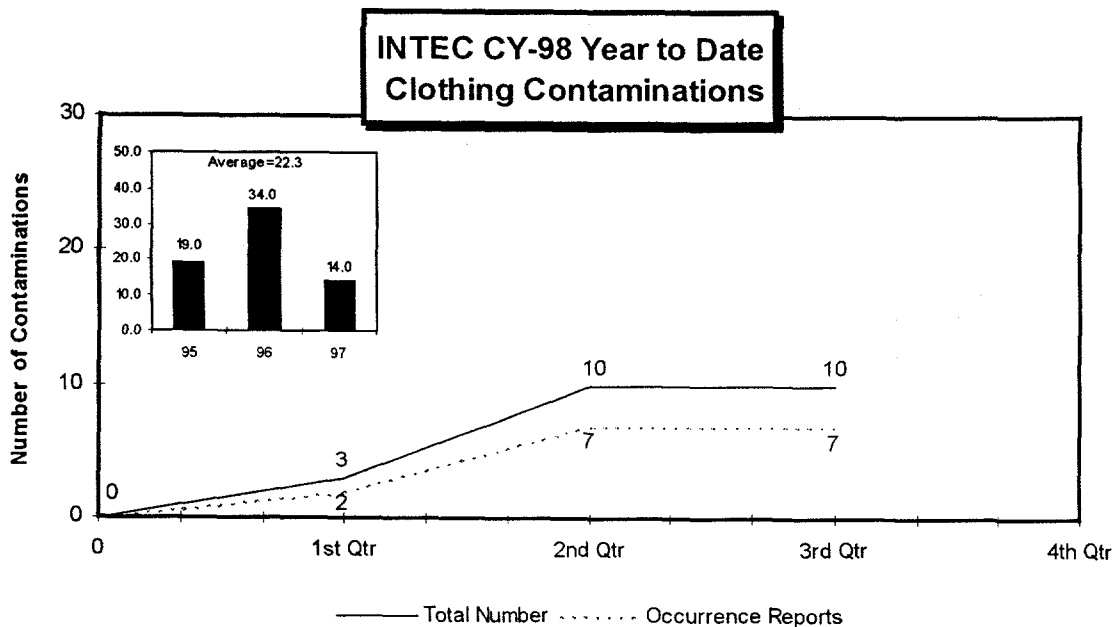
The INTEC collective penetrating occupational radiation exposure through the end of the third quarter was 24.455 person-rem. Work scope at the INTEC is much less this year than in years past. Reductions in work scope resulted in an ALARA goal revision to 38.81 rem. Application of ALARA Protective Measures (APMs) in planning and working jobs have significantly reduced employee exposure. See the summary on page 25 for the work scope changes resulting in the ALARA goal revision.



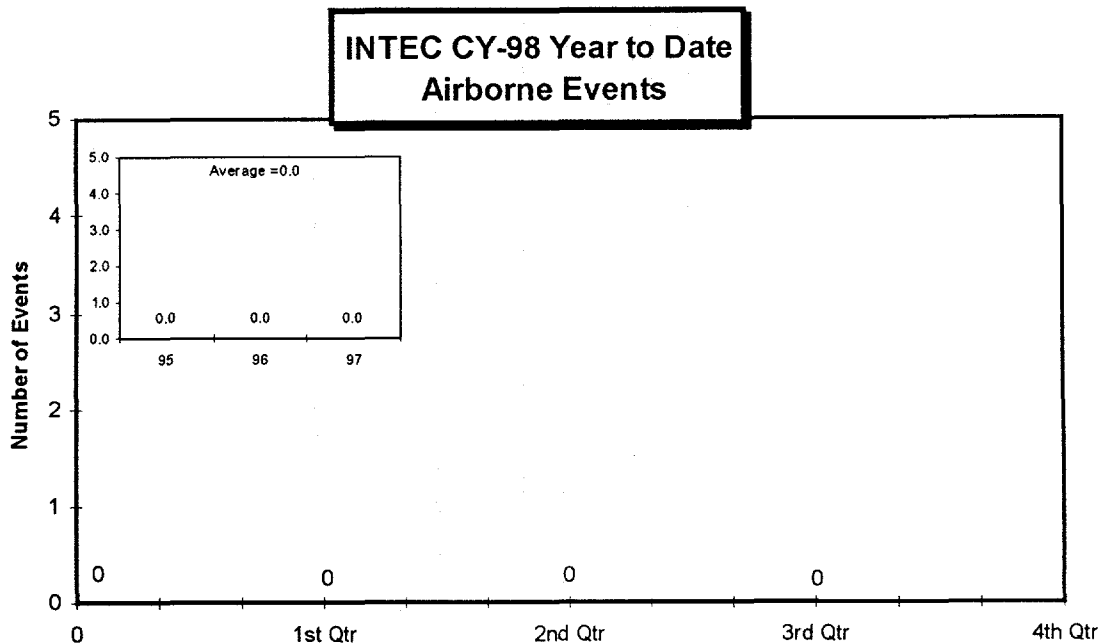
The average worker dose for the INTEC through the end of the third quarter was 0.062 rem resulting from 413 workers receiving dose greater than 10 mrem.



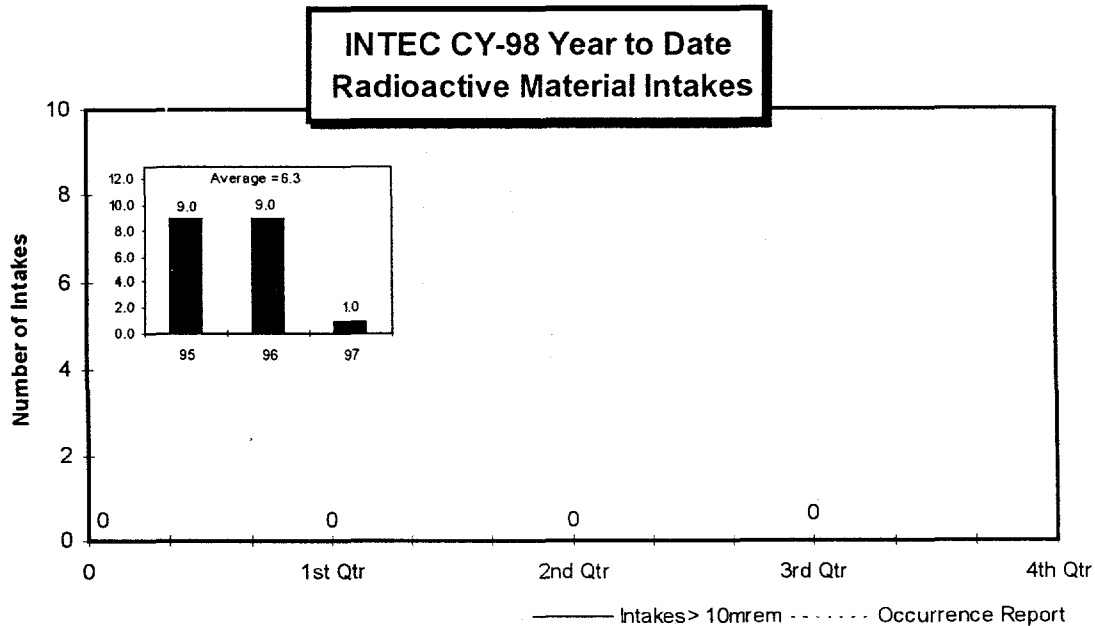
The INTEC had two-reportable skin contaminations during the third quarter. There were no facial contaminations or contaminated wounds. Details are on OR ID-LITC-PHASEOUT-1998-0003 and ID-LITC-WASTEMNGT-1998-0013.



There were no clothing contaminations during the third quarter at the INTEC. This shows significant improvement over the second quarter performance.

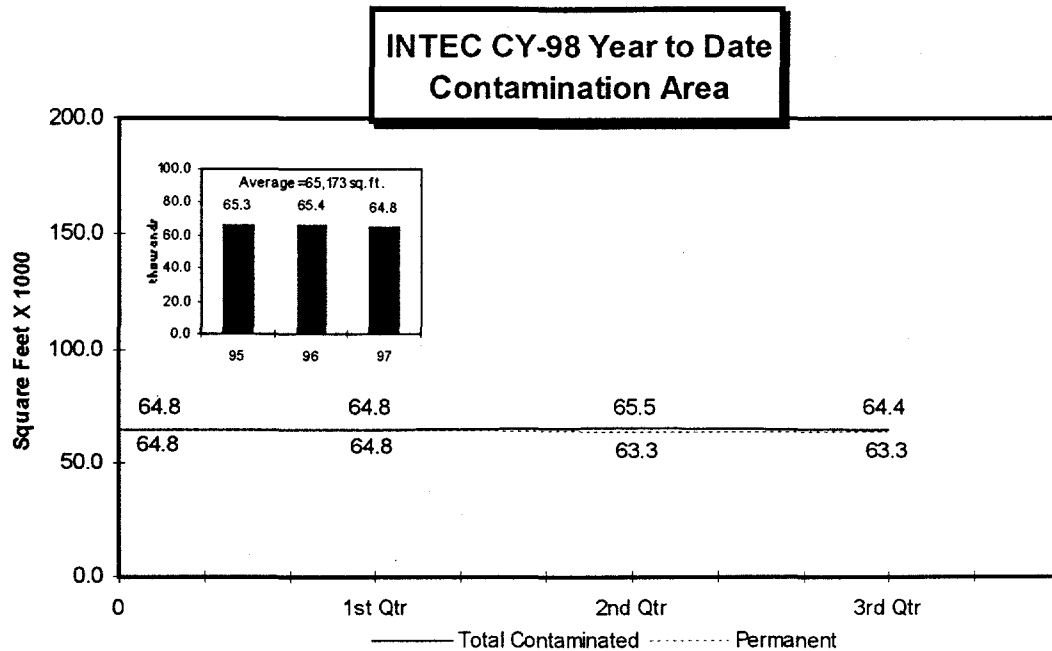


No airborne activity greater than 10 % DAC in unposted areas was detected in INTEC areas during the third quarter.

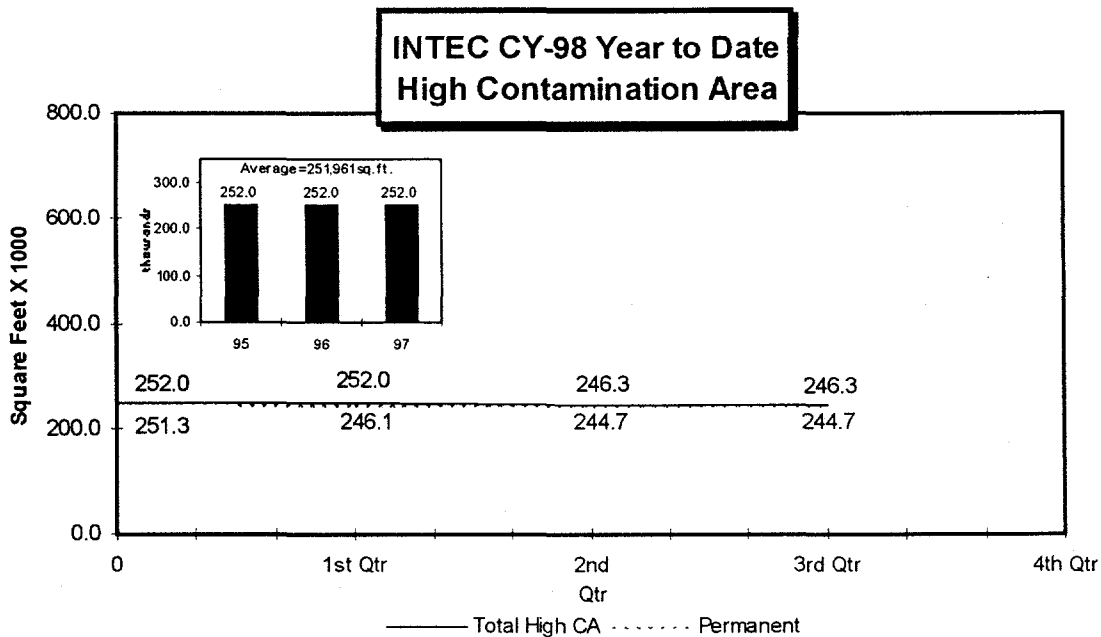


There have been no dose assessments greater than 10 mrem CEDE for the third quarter.

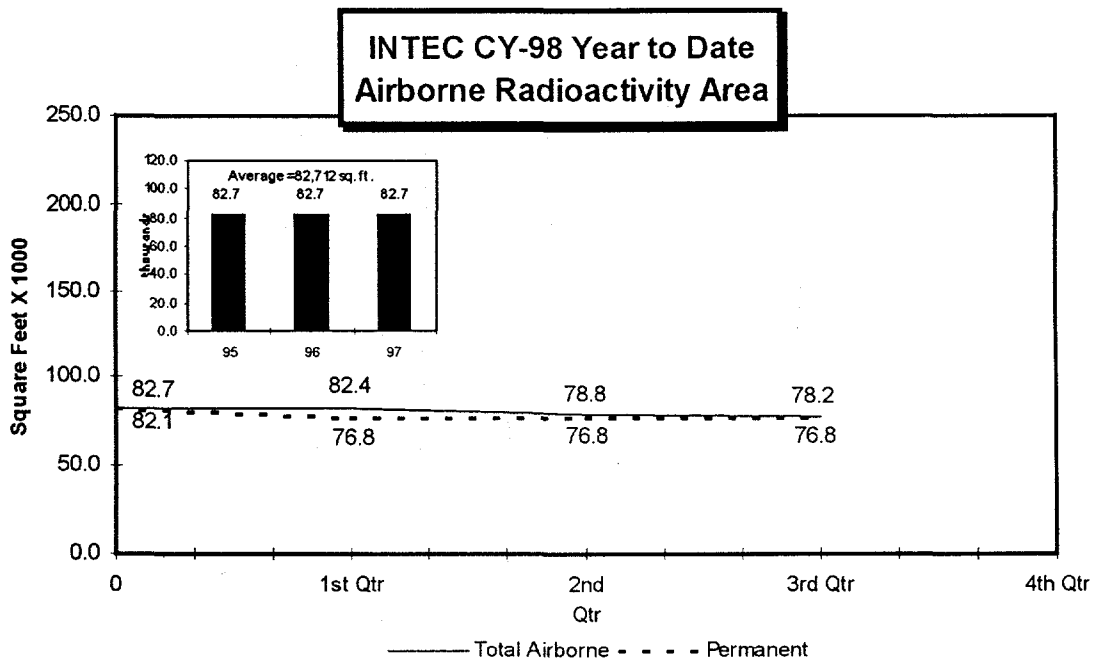




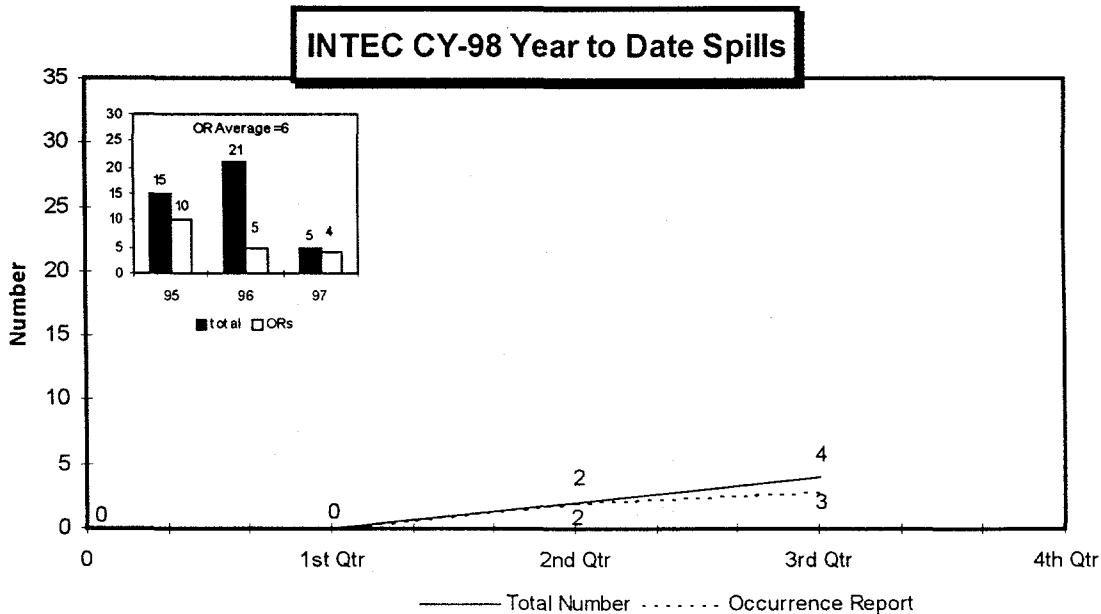
Total Contamination Area at the INTEC at the end of the third quarter decreased to 64,432 square feet due to RCRA closure activities at the WCF. 63,320 square feet is permanent.



The total High Contamination Area at the INTEC is 246,284 square feet. 244,701 square feet are designated as permanent and in-use.



Total Airborne Radioactivity Area at the INTEC at the end of the third quarter was reduced to 78,172 square feet due to grouting at the WCF. 76,822 square feet remains as permanent.



There were two spills or loss of control of radioactive material during the third quarter. One reportable was for a bag of contaminated material found at the landfill marked as cold waste. OR ID-LITC-LANDLORD-1998-0022 contains the detail.

# Power Burst Facility

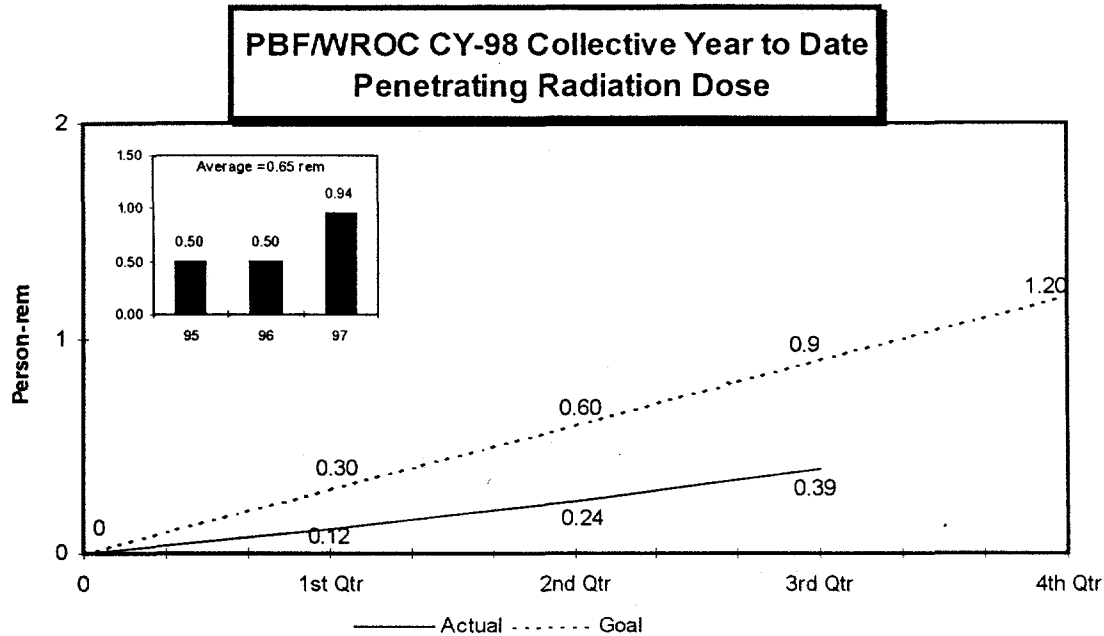
## Waste Reduction Operations Complex

### Waste Experimental Reduction Facility

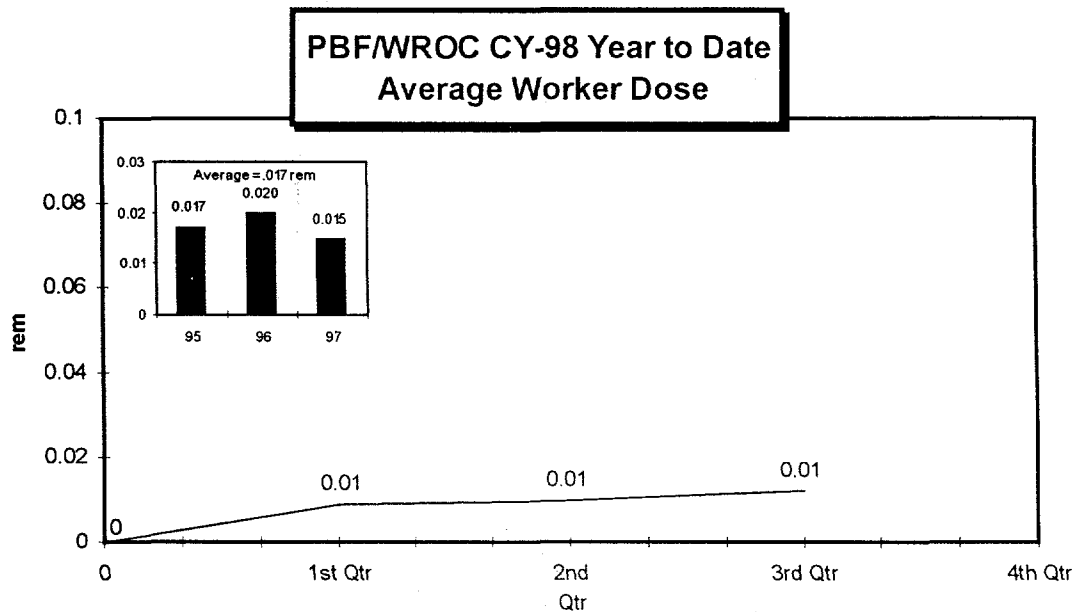
(PBF/WROC)

#### Summary

1. Major contributors to the third quarter occupational radiation exposure in the PBF/WROC reporting area were working with mixed waste, sizing and compaction of low level waste, incineration, routines, and instrument calibrations.
2. There were no reportable skin contaminations during the third quarter.
3. There were no clothing contaminations or spills during the third quarter.

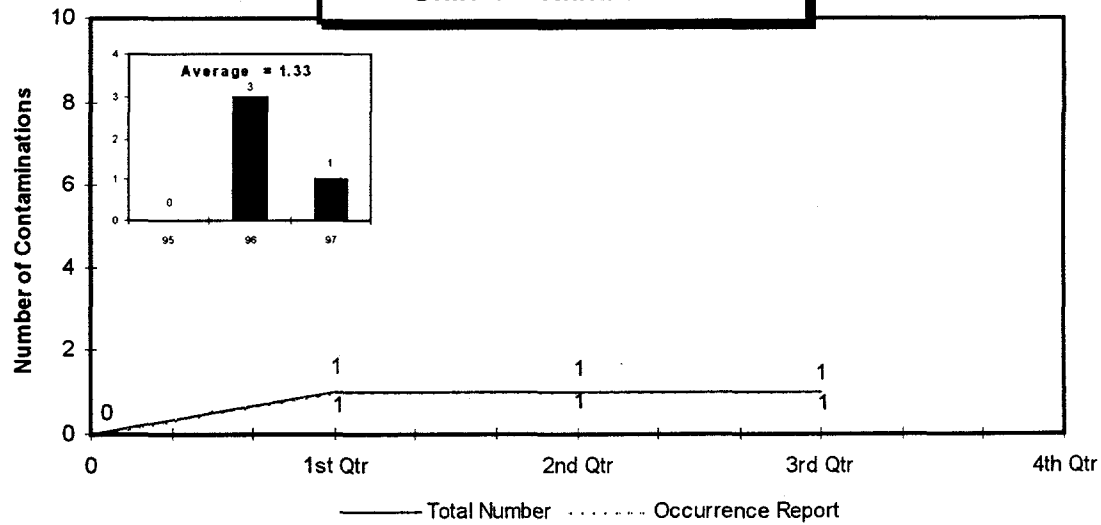


PBF/WROC collective penetrating radiation exposure through the end of the third quarter was 0.387 person rem.



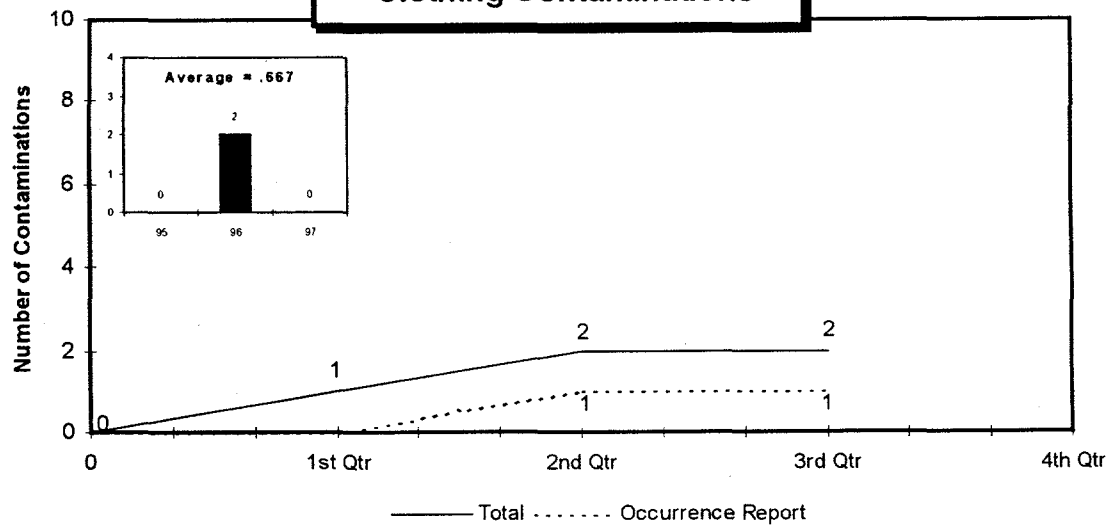
The PBF/WROC average worker dose through the end of the third quarter was 0.012 rem. Average dose is based on a comparison of workers who receive measurable dose (33 workers).

### PBF/WROC CY-98 Year to Date Skin Contaminations

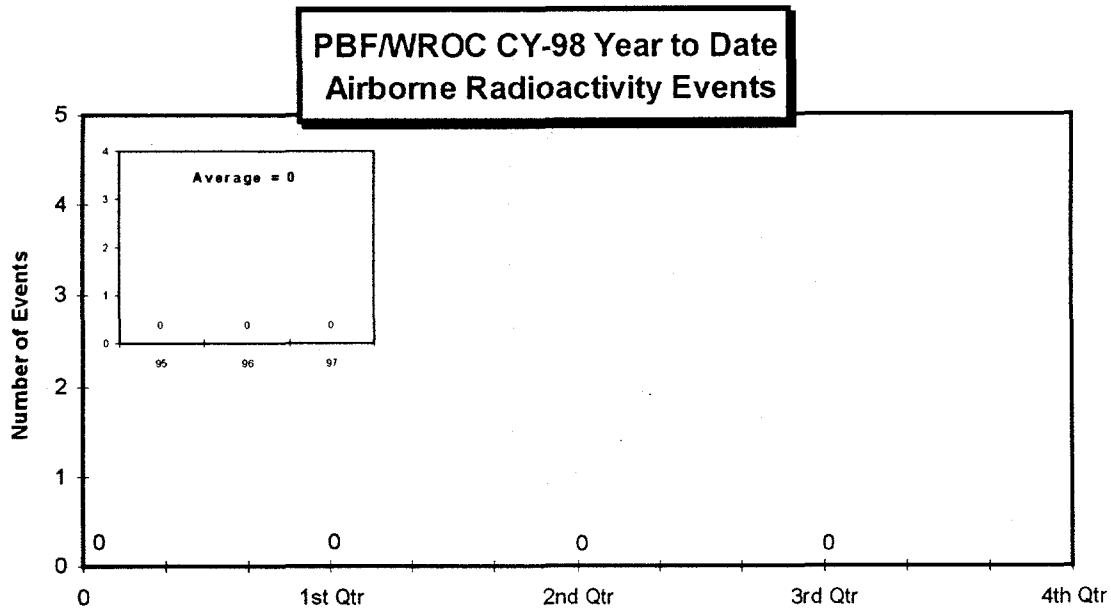


There were no skin contaminations at the PBF/WROC area during the third quarter.

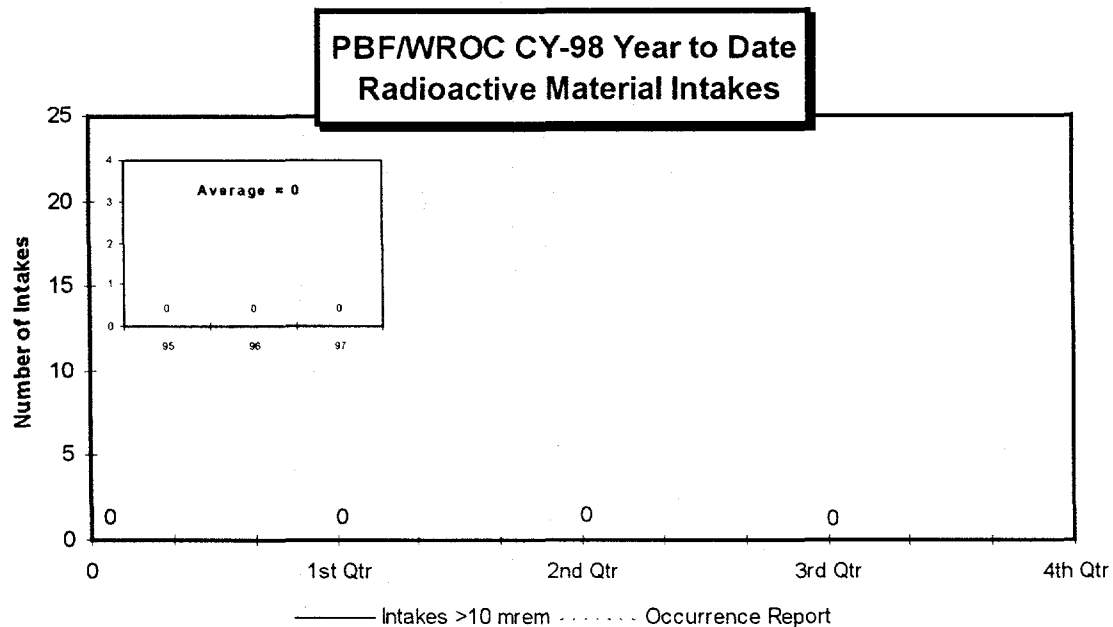
### PBF/WROC CY-98 Year to Date Clothing Contaminations



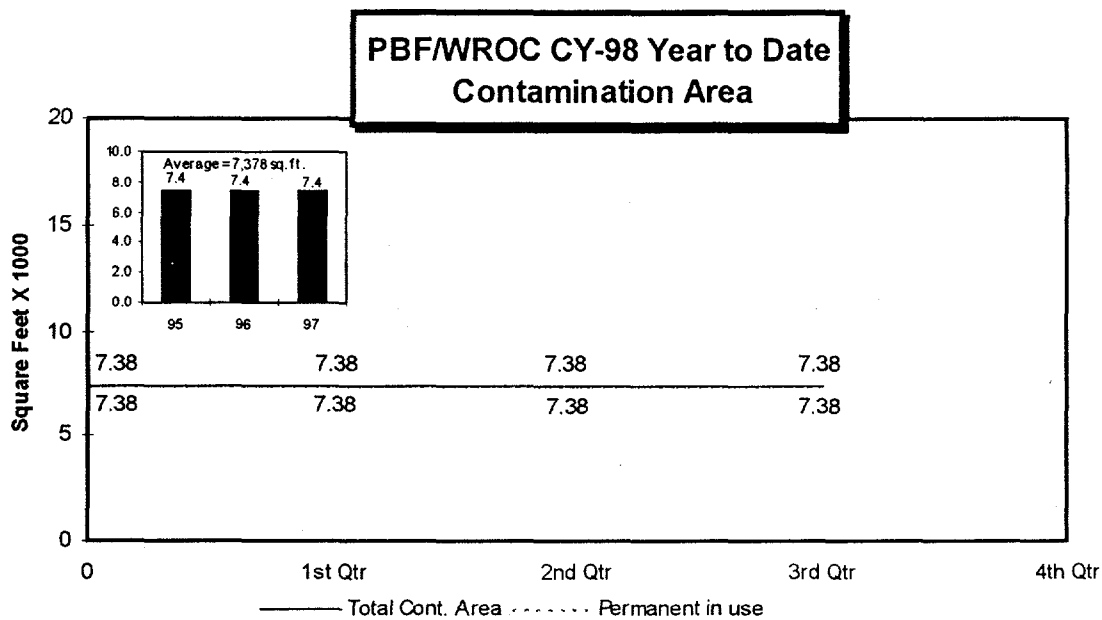
There were no reportable clothing contaminations at the PBF/WROC area during the third quarter.



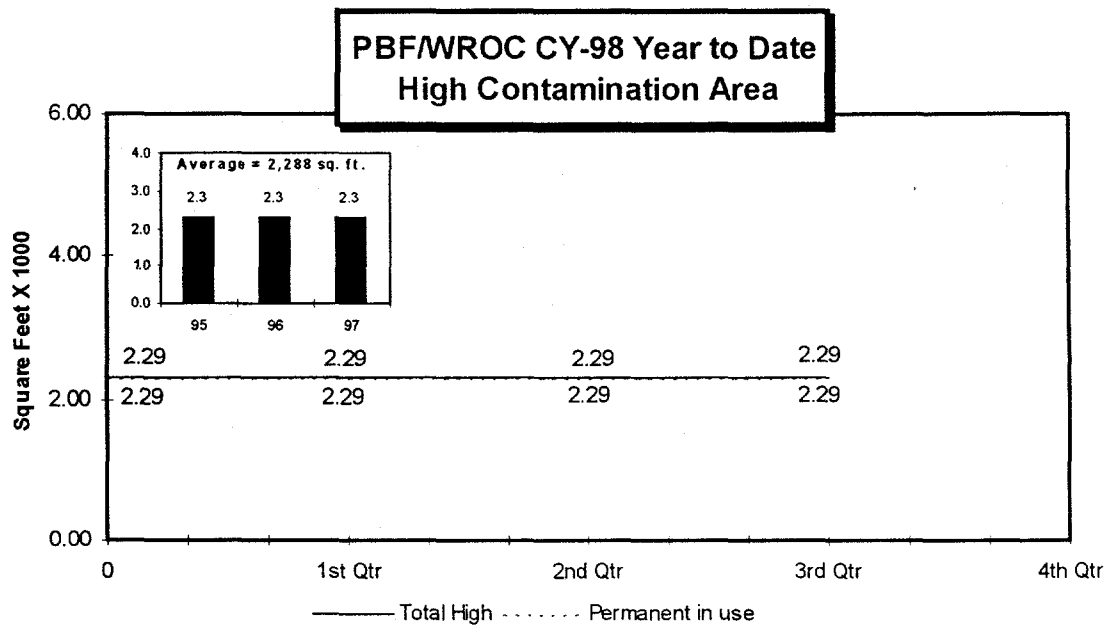
There have been no airborne activity events greater than 10 % DAC detected at the PBF/WROC area through the third quarter.



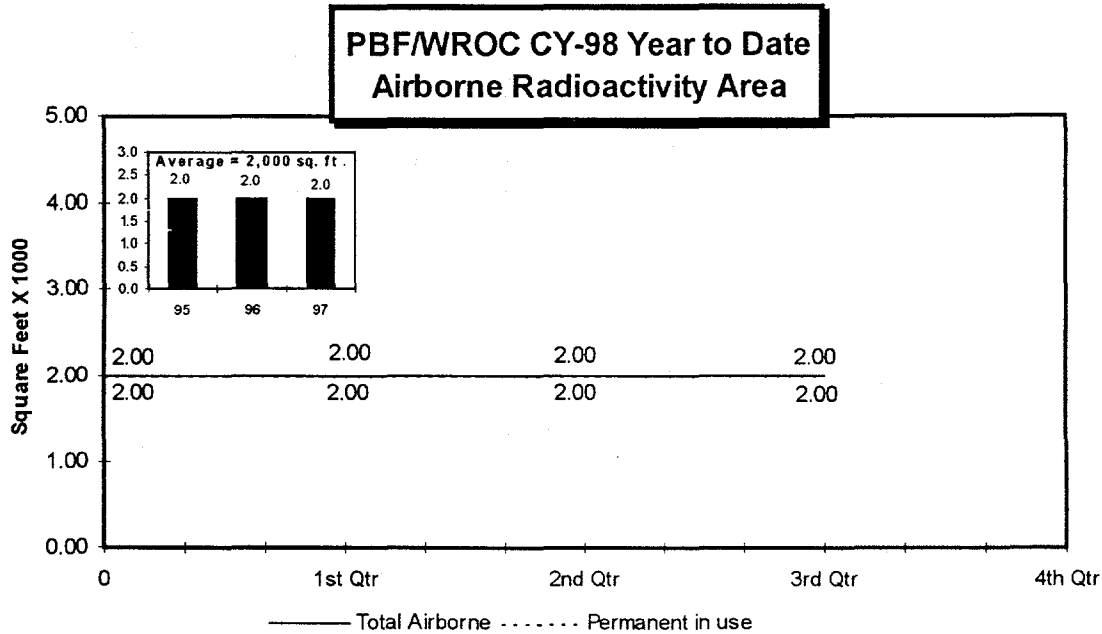
There were no positive bioassays indicating radioactive material intakes that resulted in a dose assessment of 10 mrem or greater in the PBF/WROC area during the third quarter.



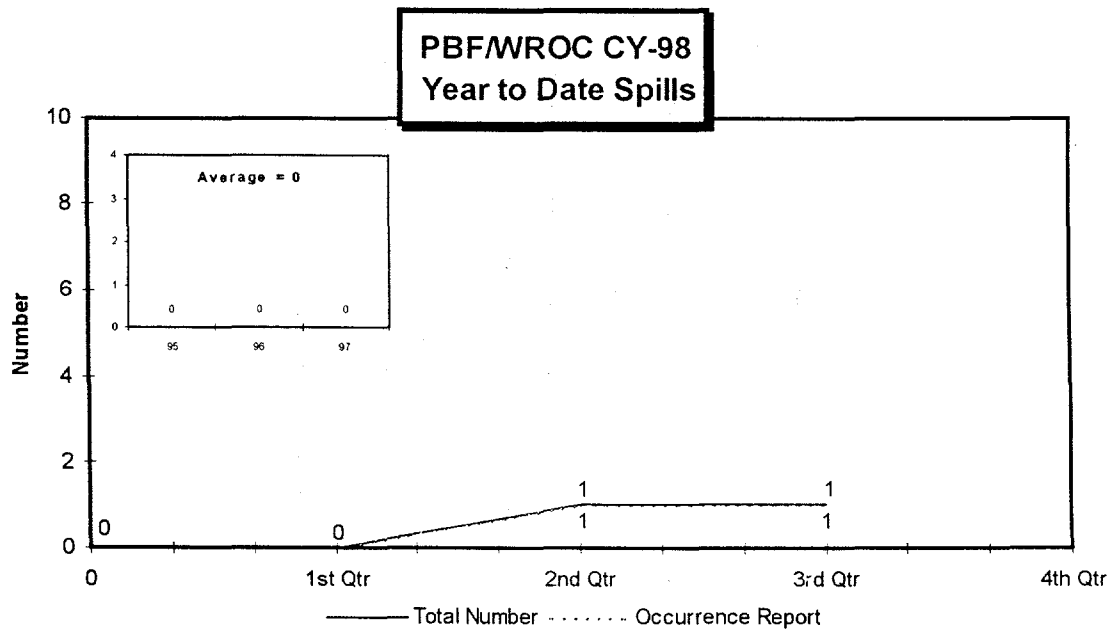
The third quarter Contamination Area for the PBF/WROC area remains at 7,378 square feet. All of this is considered permanent and in-use.



The total High Contamination Area through the end of the third quarter at the PBF/WROC area remains at 2,288 square feet. All of this is considered permanent and in use.



The total Airborne Radioactivity Area at PBF/WROC at the end of the third quarter remained at 2000 square feet. All of this area is designated as permanent and in-use.



There were no incidents considered to be a loss of control of radioactive material during the third quarter.

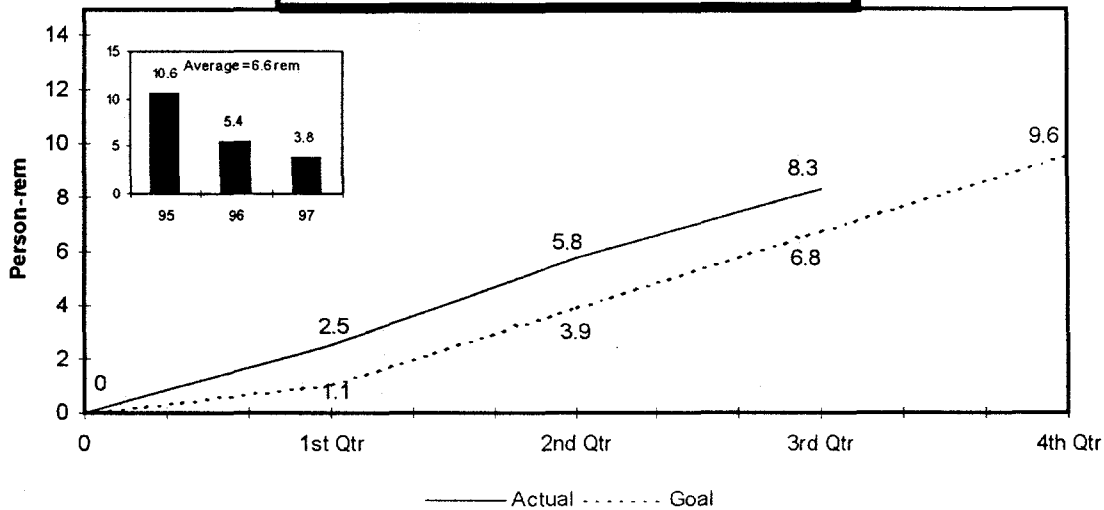


# Radioactive Waste Management Complex

## Summary

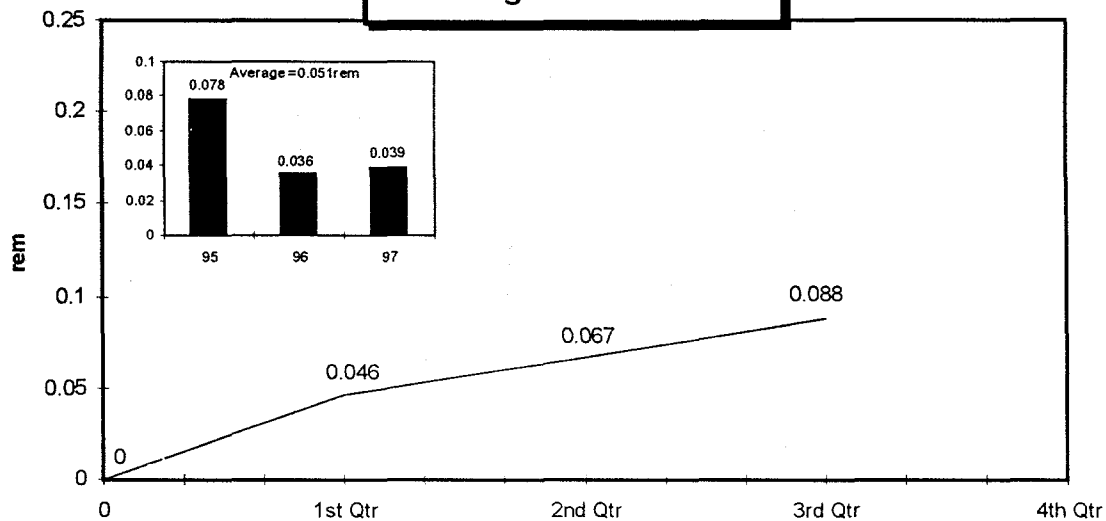
1. Major contributors to the third quarter RWMC occupational radiation exposure have been from waste disposal in the SDA, Drum re-configuration, SWEPP Operations, and drum and box surveys in the storage modules.
2. The HCA area at the RWMC is under a protective tarp covering the waste stack at the TSA-RE. This area will remain a permanent HCA until retrieval operations begin in that area.
3. Sandia waste boxes in storage modules remain contaminated at the end of the third quarter.

### RWMC CY-98 Collective Year to Date Penetrating Radiation Dose

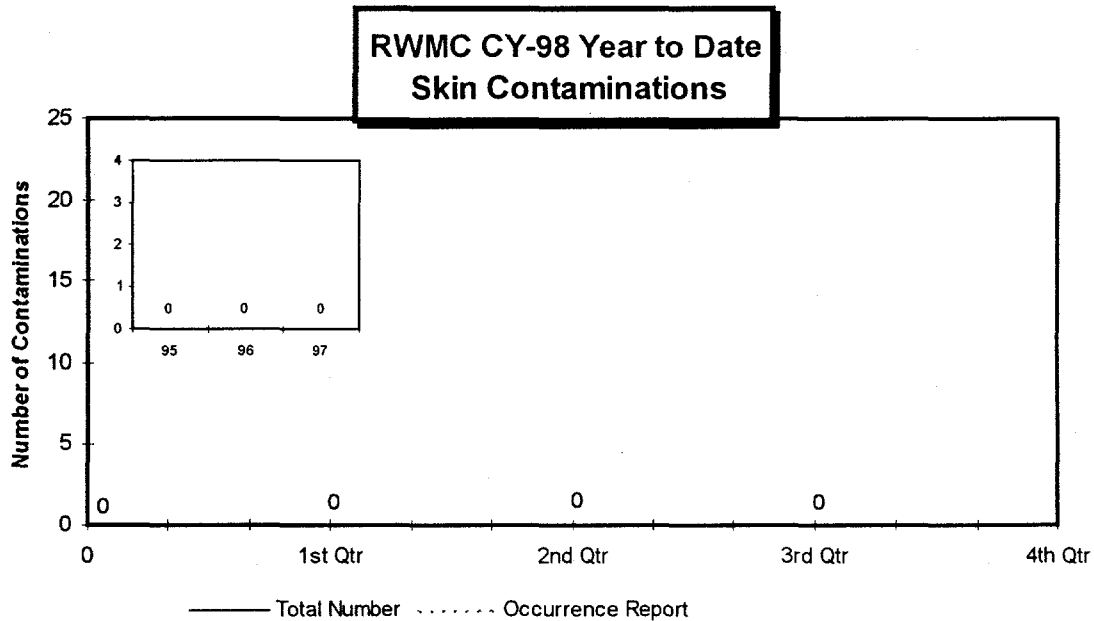


The RWMC collective penetrating radiation exposure through the end of the third quarter was 8.298 person-rem.

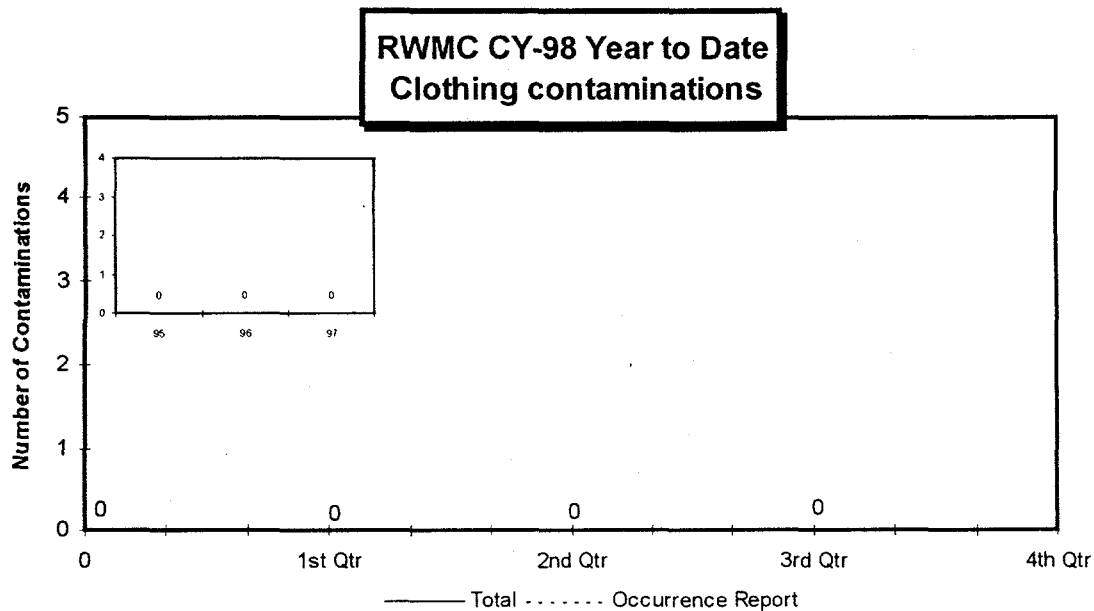
### RWMC CY-98 Year to Date Average Worker Dose



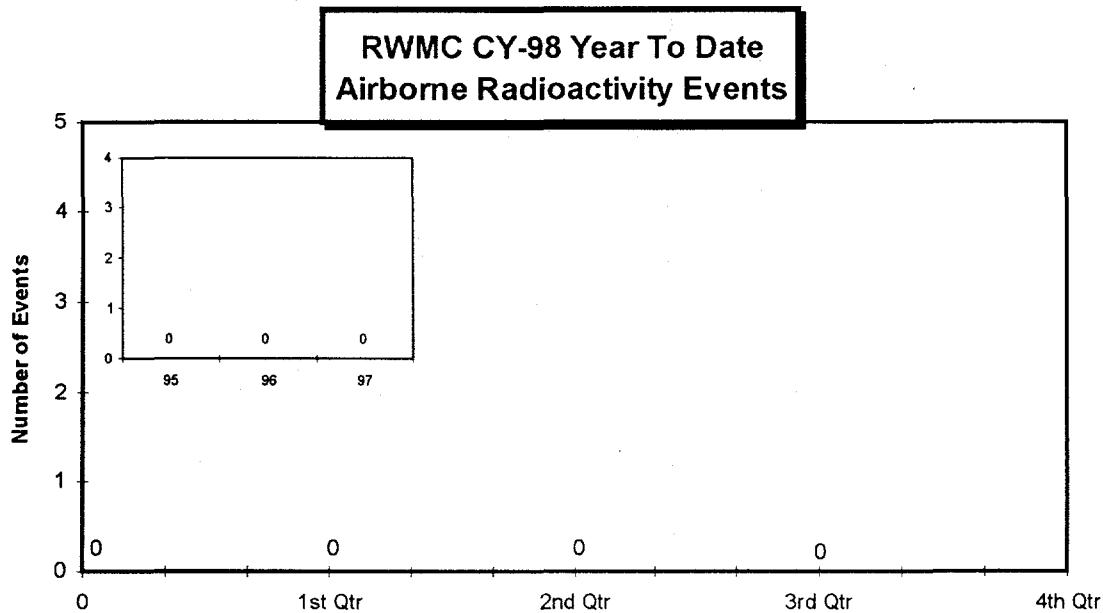
The average worker dose at the RWMC through the end of the third quarter was 0.088 rem from 94 workers who received dose.



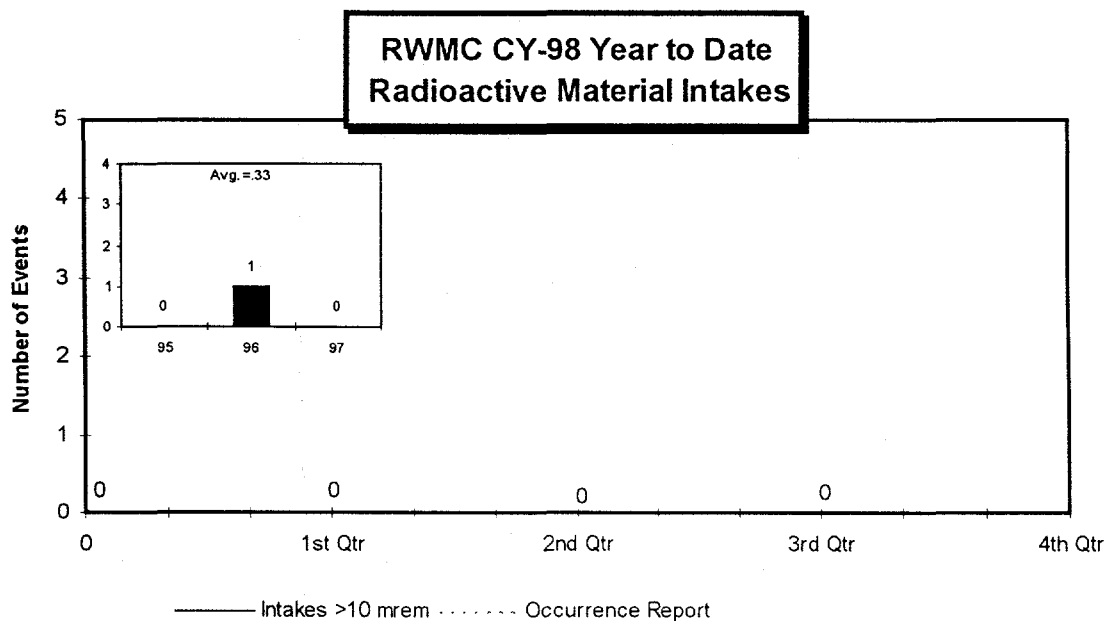
RWMC year to date skin contaminations remain at zero through the end of the third quarter.



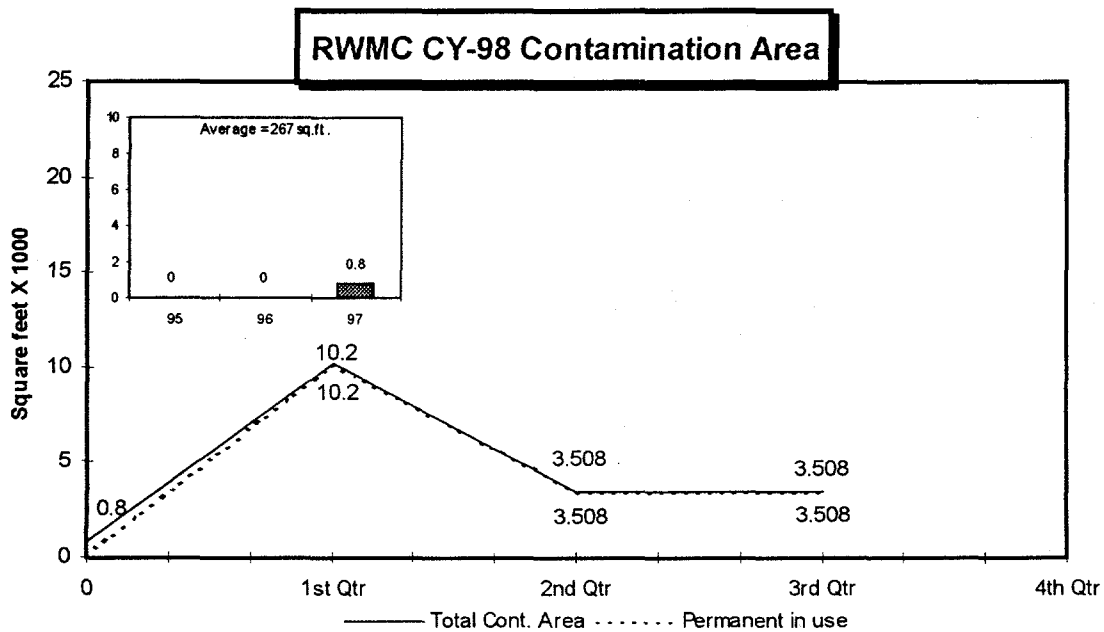
There were no clothing contaminations at the RWMC through the end of the CY-98 third quarter.



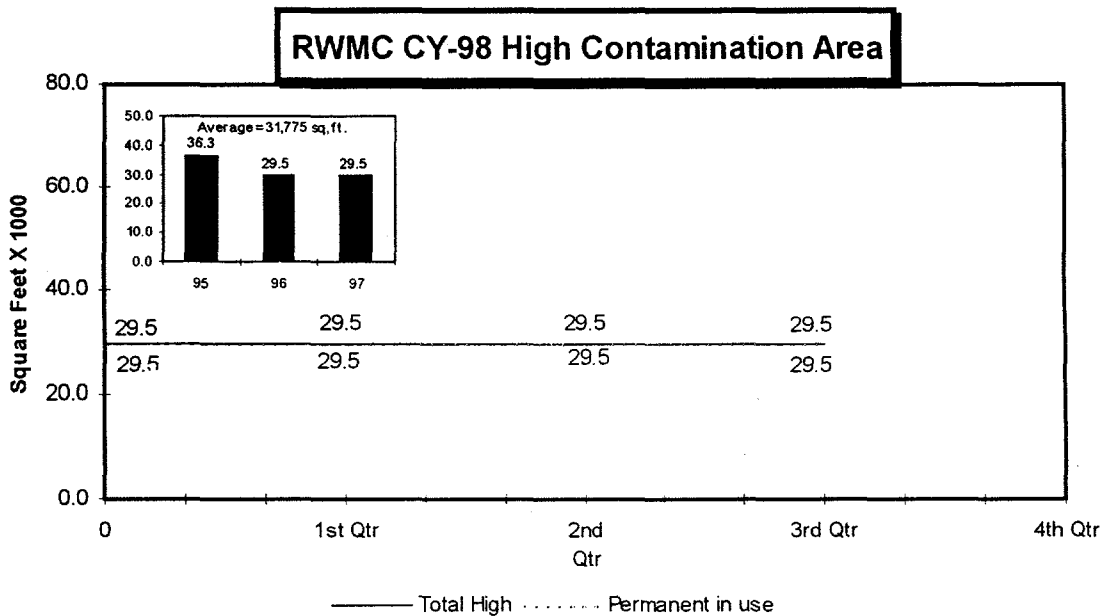
No airborne activity greater than 10 % DAC was detected at RWMC in areas not posted as Airborne Radioactivity Areas through the third quarter.



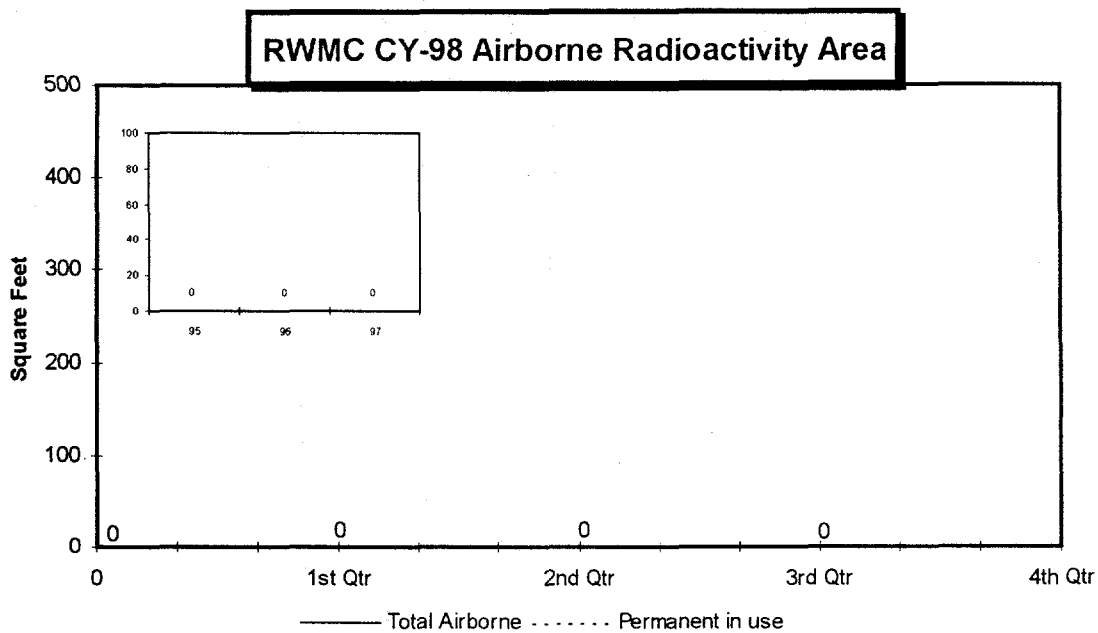
There have been no positive bioassays year to date indicating an intake of radioactive material that resulted in a dose assessment of 10 mrem or greater.



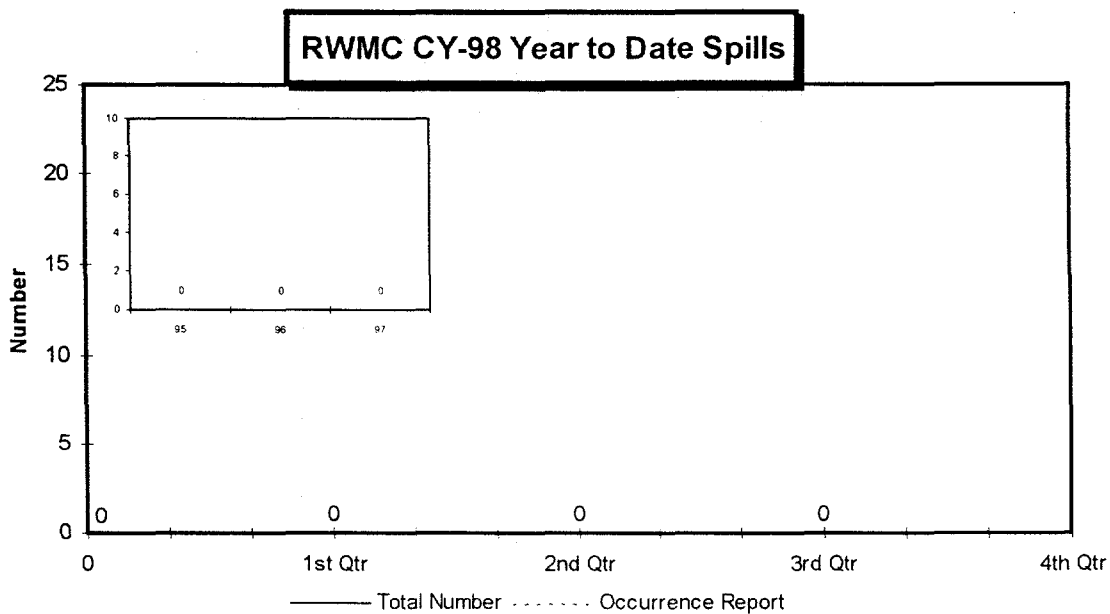
The total Contamination Area at the RWMC through the end of the third quarter decreased to 3,508 square feet, which is the area of Sandia waste boxes in storage containers at the RWMC.



The total High Contamination Area at the RWMC through the end of the third quarter was 29,525 square feet. All of this area is designated as permanent and in-use.



The total Airborne Radioactivity Area at the RWMC at the end of the third quarter remains at zero square feet.

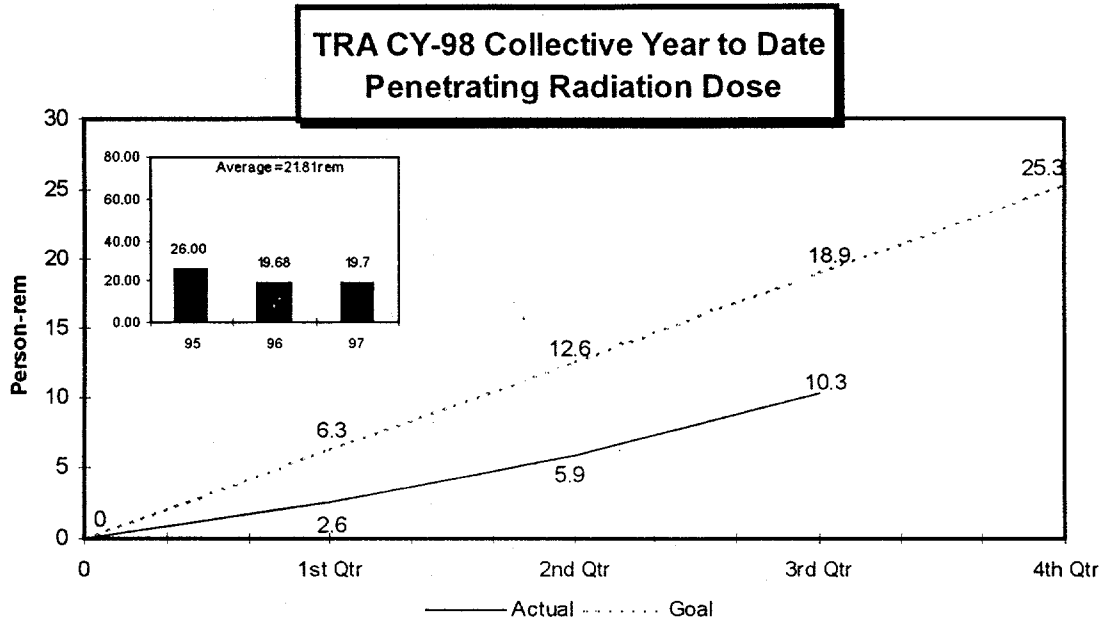


There were no spills or loss of control of radioactive material during the third quarter at the RWMC.

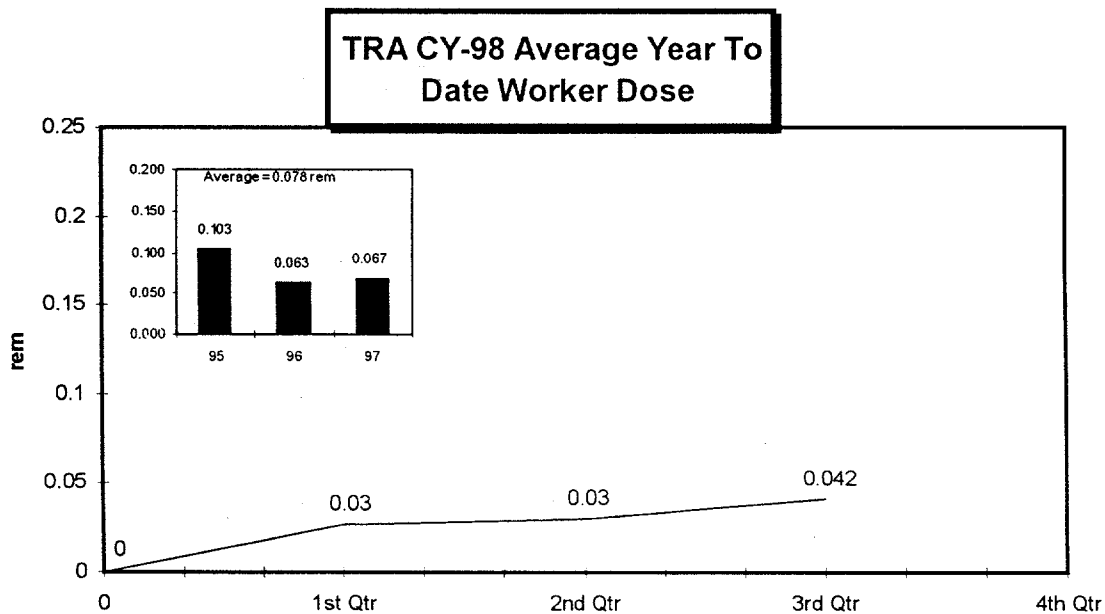
# Test Reactor Area

## Summary

1. Outages at the Advance Test Reactor within the Test Reactor Area are responsible for the major portions of dose during the third quarter. Total Penetrating dose for the report is 10.320 person-rem year to date.
2. There was one reportable clothing contamination at the ATR during this quarter. Detail is on OR ID-LITC-ATR-1998-0022.
3. There were no skin contaminations during the quarter.

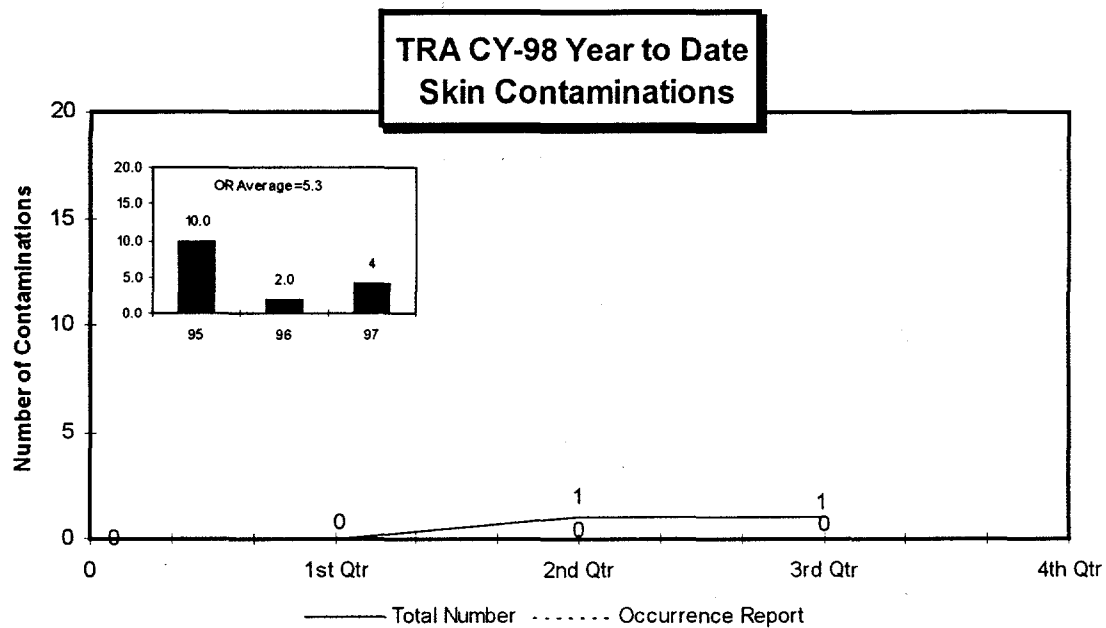


TRA collective penetrating radiation dose through the end of the third quarter was 10.320 person-rem.

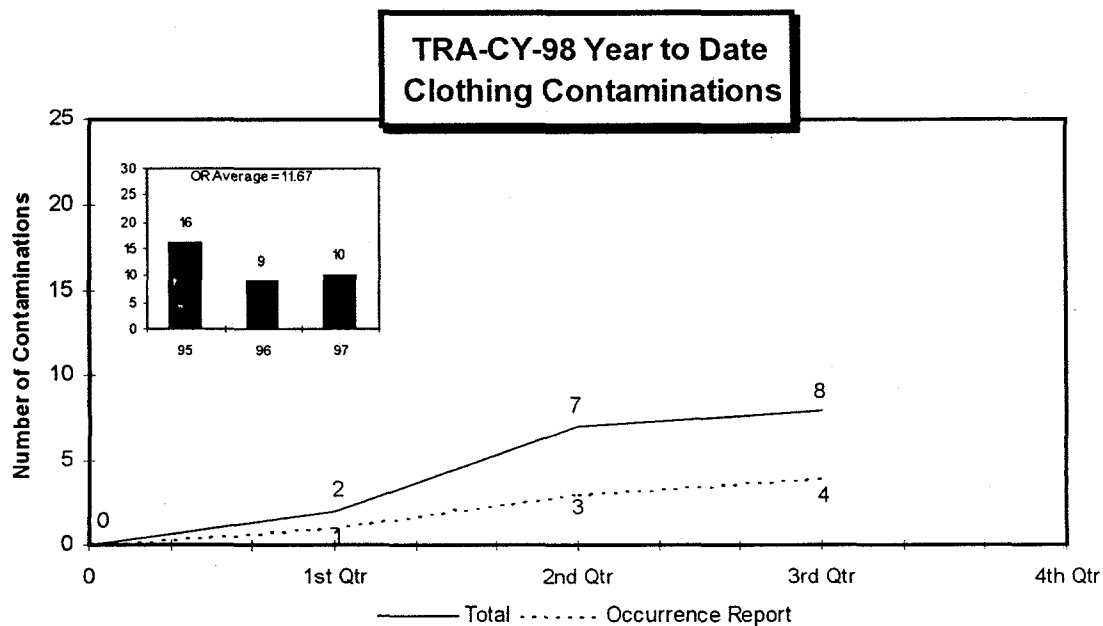


The average worker dose at the TRA through the end of the third quarter was 0.042 rem based on 248 workers with dose greater than 10 mrem.

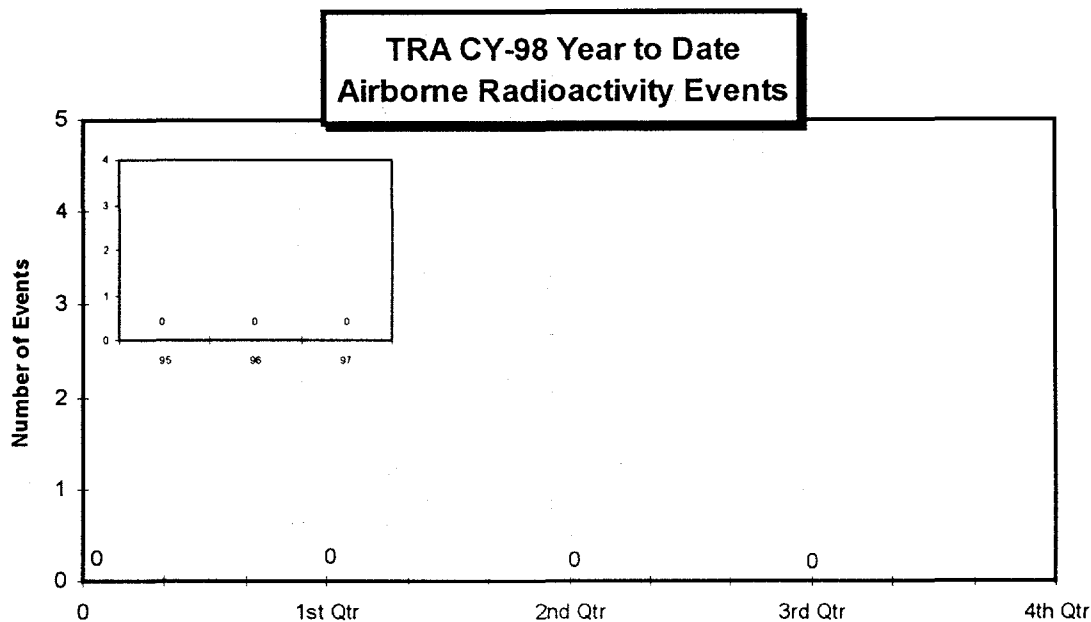




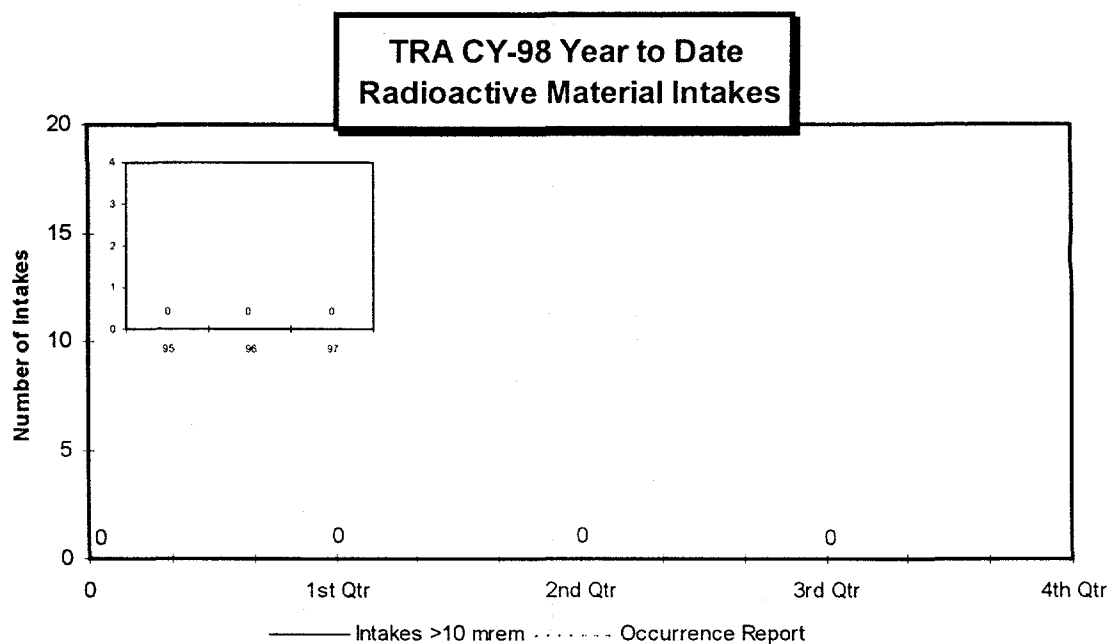
There were no skin contaminations at the TRA during the third quarter. There were no contaminated wounds or facial contaminations.



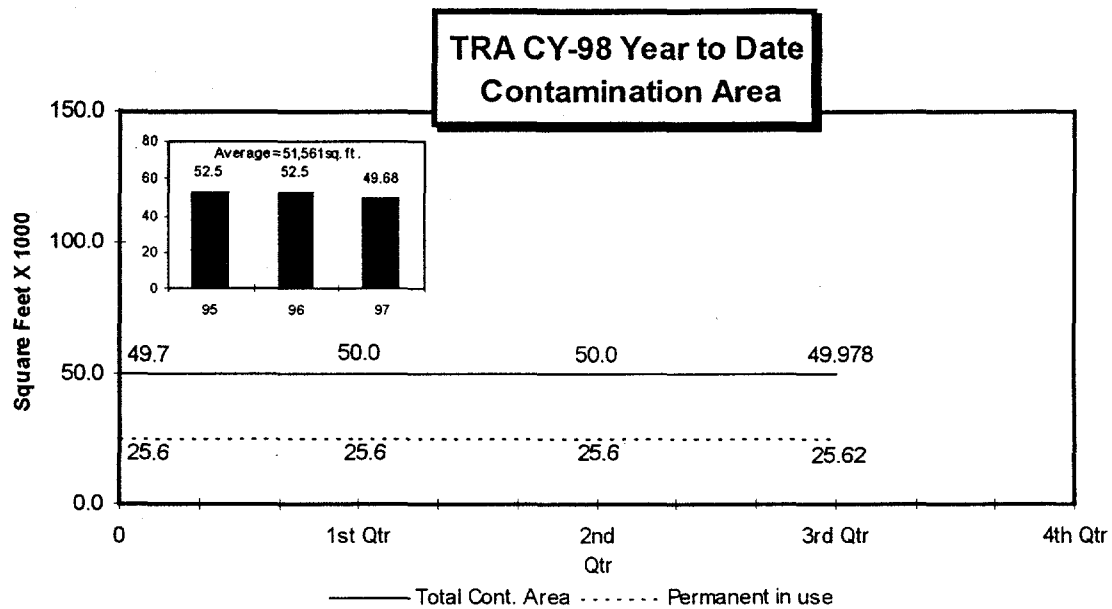
There was one reportable clothing contamination at the ATR during the third quarter. Detail is on OR ID-LITC-ATR-1998-0022



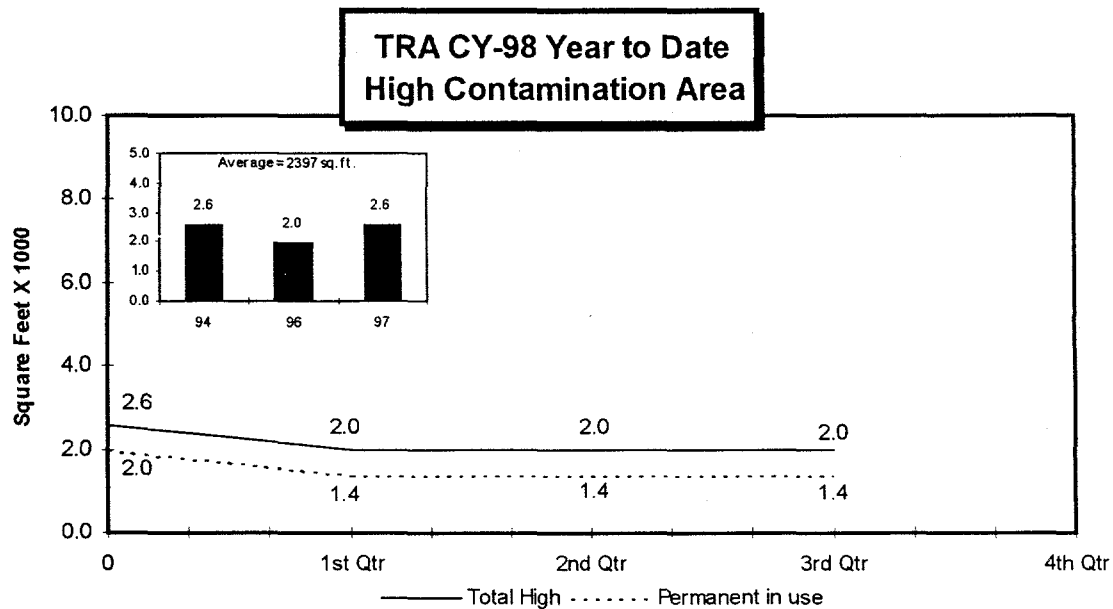
No airborne activity greater than 10 % DAC was detected at the TRA in areas not already posted as Airborne Radioactivity Areas during the third quarter.



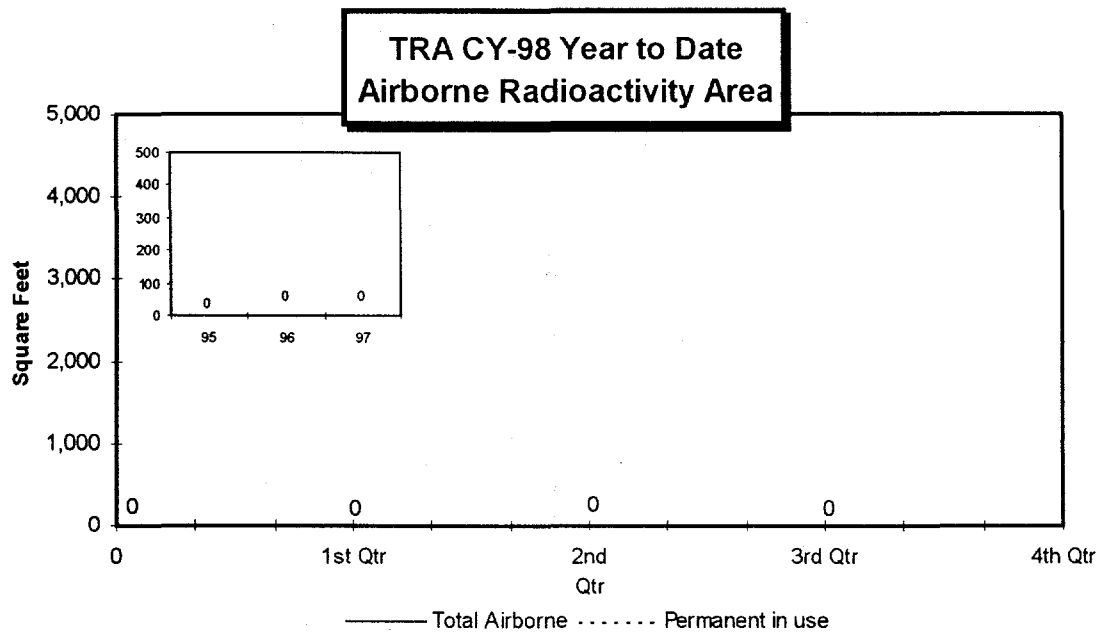
There were no positive bioassays indicating an intake of radioactive material that resulted in a dose assessment of 10 mrem or greater at the TRA during the third quarter.



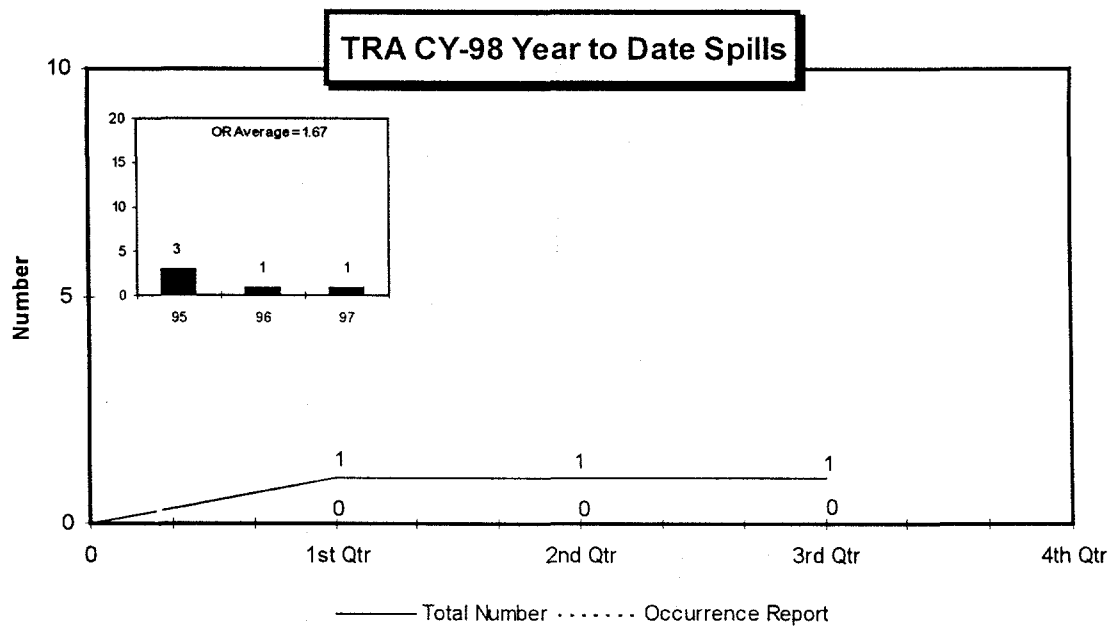
Total indoor Contamination Area for the TRA is 49,978 square feet square feet. 25,619 square feet is designated as permanent and in-use.



Total High Contamination Area for the TRA at the end of the third quarter remains at 2,025 square feet. 1,400 square feet of this area is designated as permanent and in-use. The chart shows rounded values.



Total Airborne Radioactivity Area at the TRA at the end of the third quarter remains at zero square feet.



There were no reportable spills or loss of control of radioactive material at the TRA during the third quarter.

# International Isotopes Idaho Inc. (III)

## Formerly MAC-ISOTOPES

### TRA HOT CELL

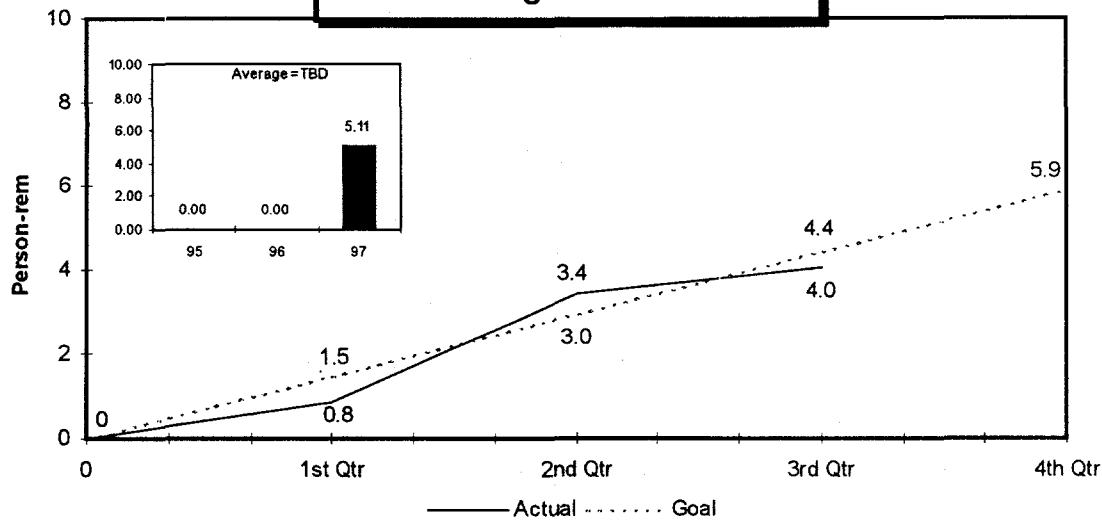
#### Summary

The TRA Hot Cell, III, formerly MAC-I is a privatized contractor and is being tracked here since LMITCO provides much of the associated labor support. International Isotopes Inc., of Denton, Texas acquired MAC-I on April 27, 1998.

Activities include isotope separation work and associated source activities. The data on the following pages is not added to LMITCO totals.

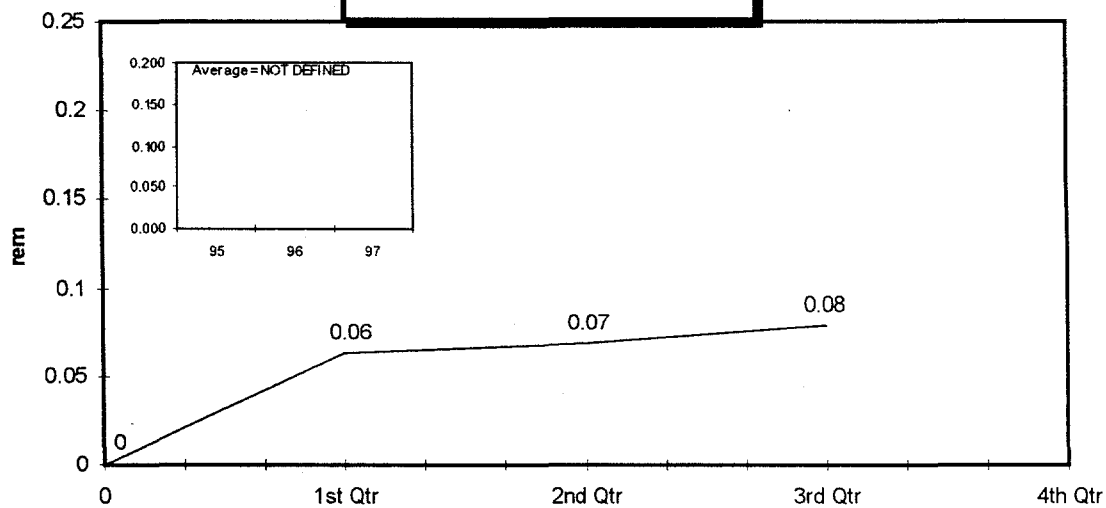
There was no reportable incidents at the III this quarter.

### III CY-98 Collective Year to Date Penetrating Radiation Dose

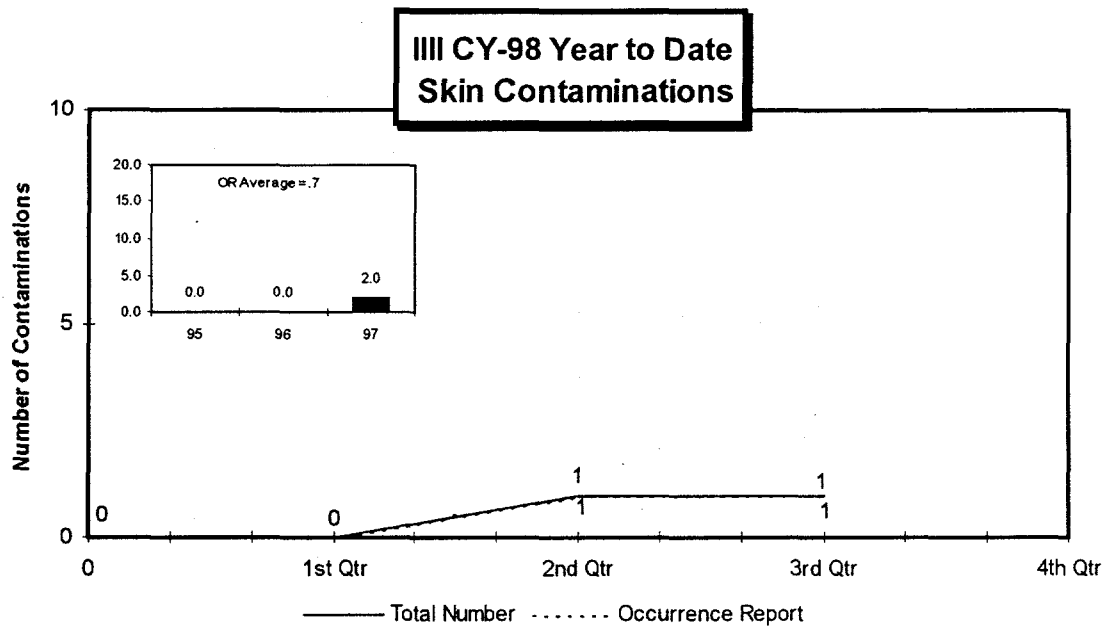


Year to date dose is 4.024 person-rem and the year to date goal is 4.4 person-rem

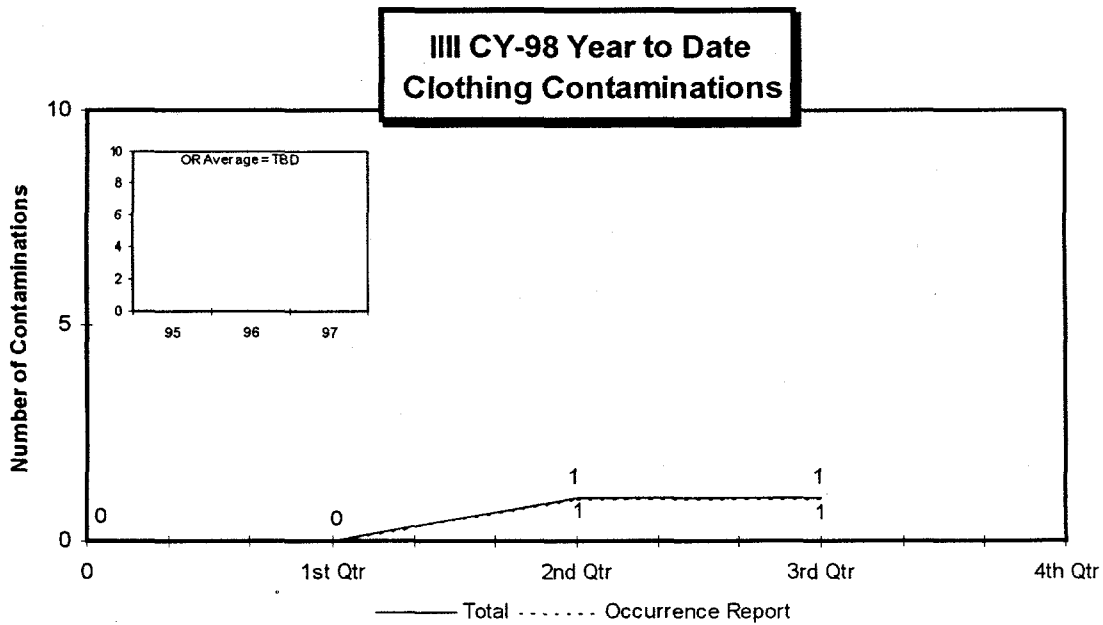
### III CY-98 Average Year To Date Worker Dose



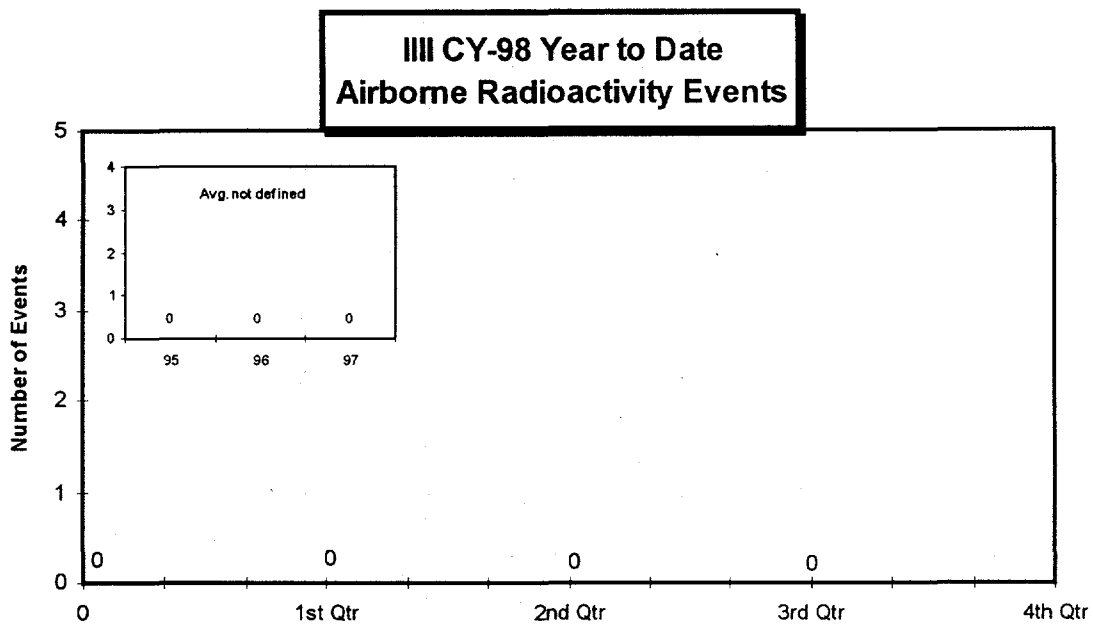
Average year to date is 0.08 rem based on 32 workers at the III facility



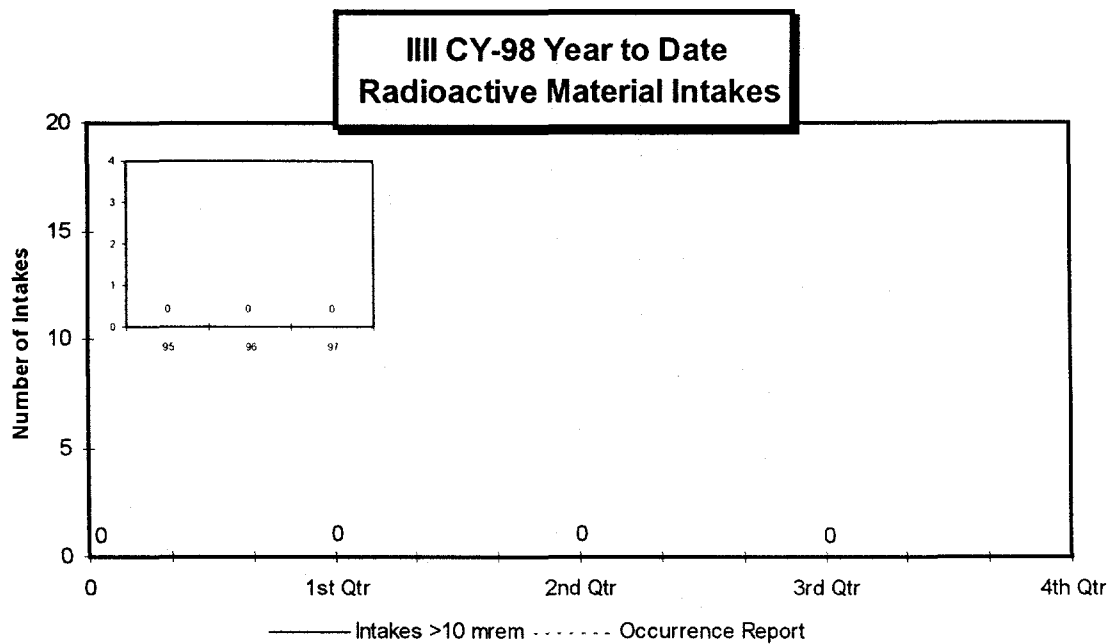
There were no skin contamination events at the Hot Cell facility during the third quarter. The average is based on an event at the beginning of CY-97



III has had one reportable clothing contamination event year to date. The event is not in the TRA total or the INEEL total since III is considered to be a sub-contractor.

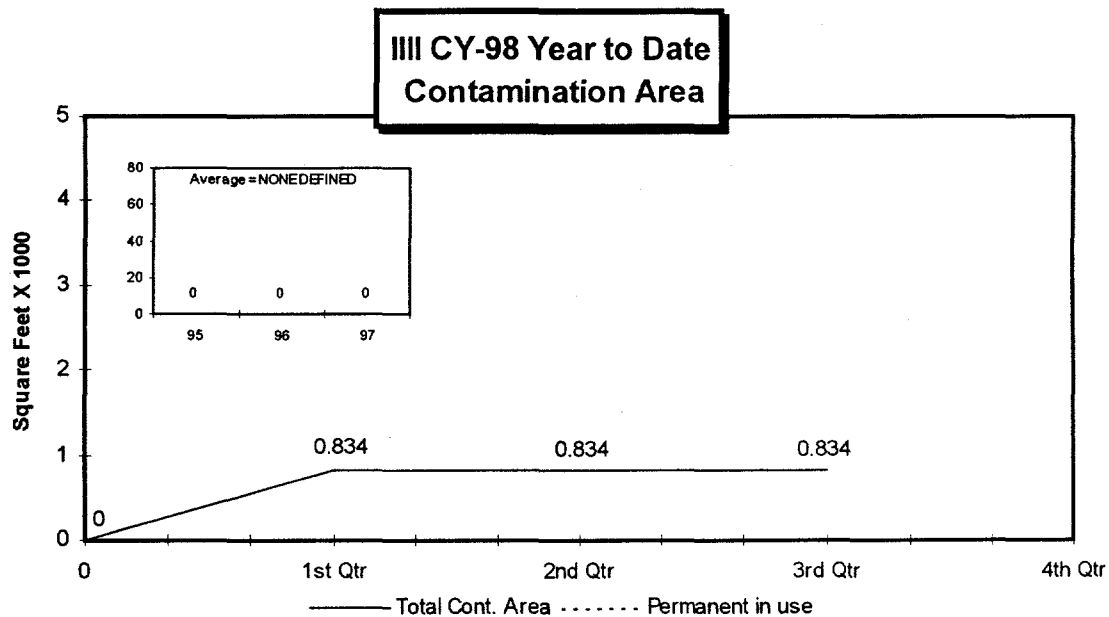


There have been no events greater than 10% DAC year to date.

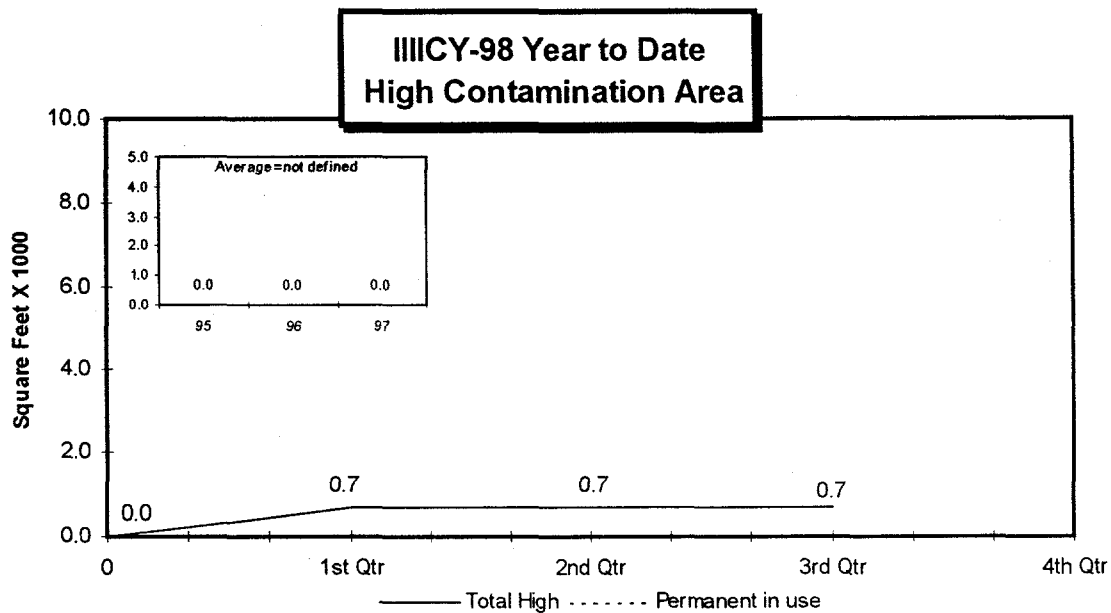


There have been no internal doses greater than 10 mrem CEDE confirmed from III operations year to date.

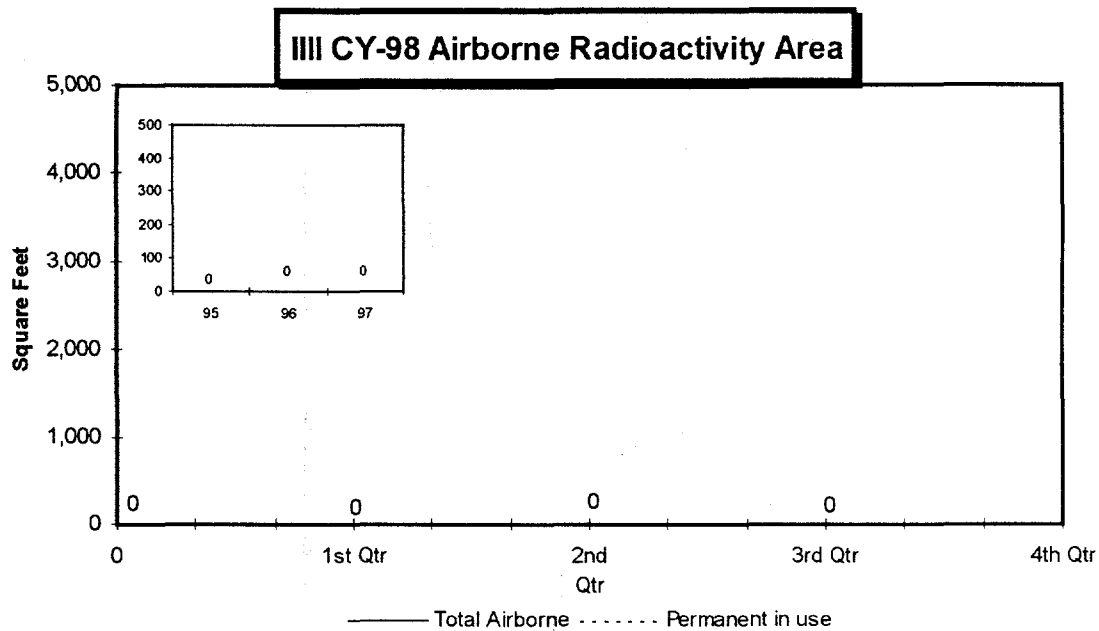




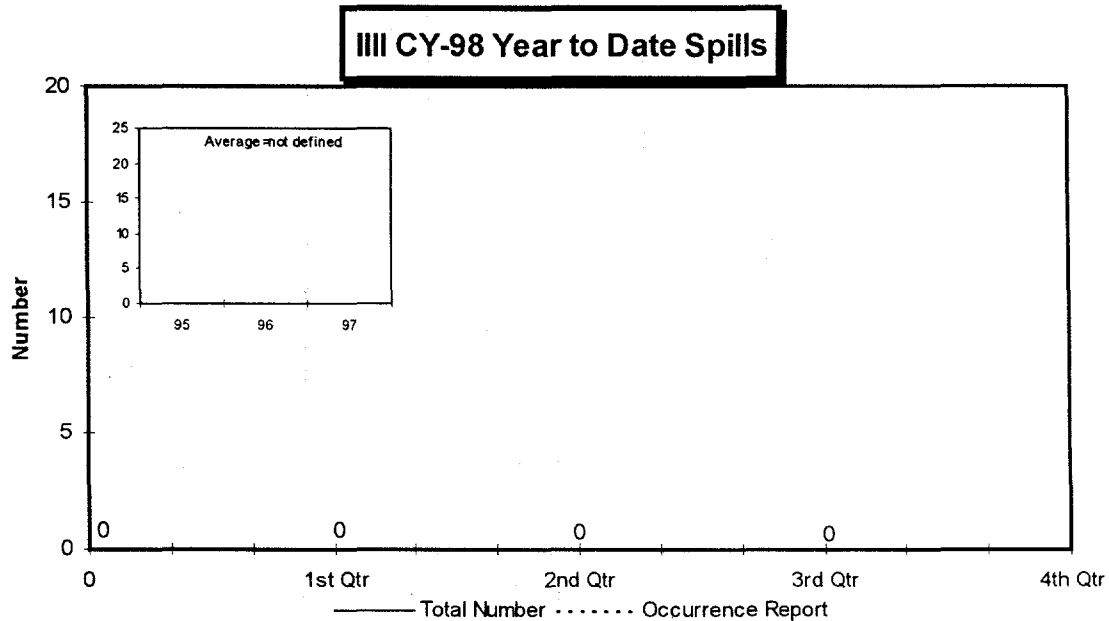
Contamination areas total 834 square feet at the Hot Cell at TRA



Trending data is just being established for III. Year to date High Contamination is 680 square feet.



There has been no airborne events year to date at the III.

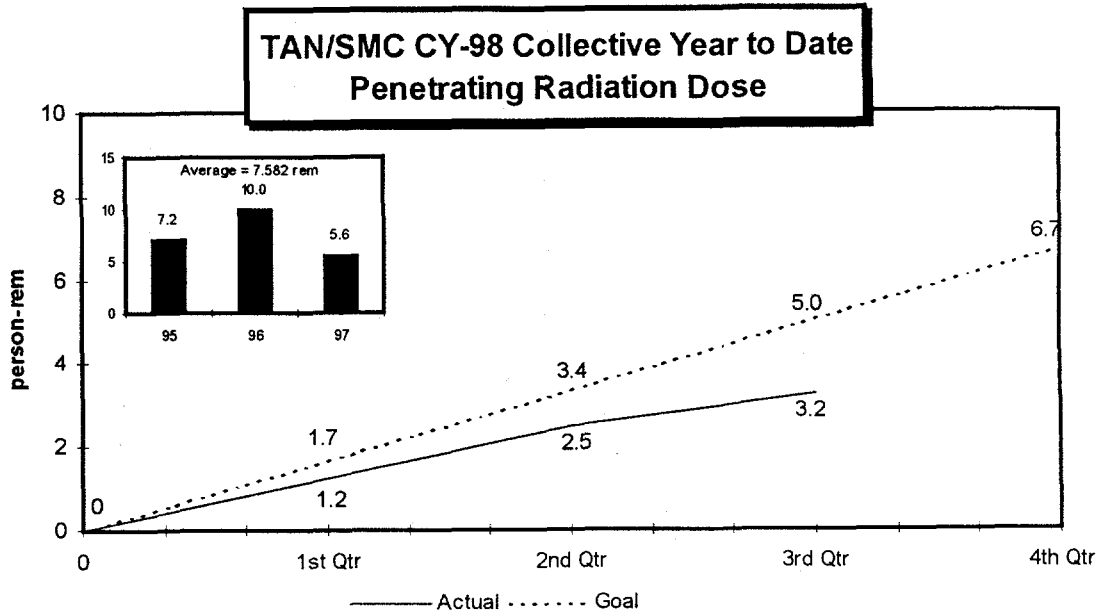


No Spills have occurred at the TRA Hot Cells year to date.

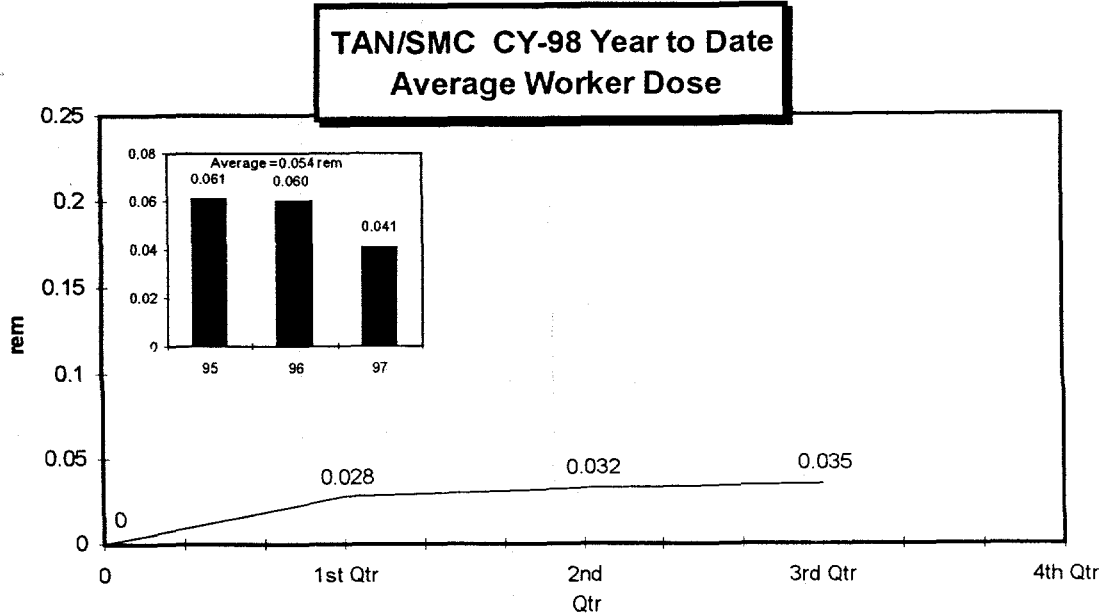
# Test Area North & Specific Manufacturing Capability

## Summary

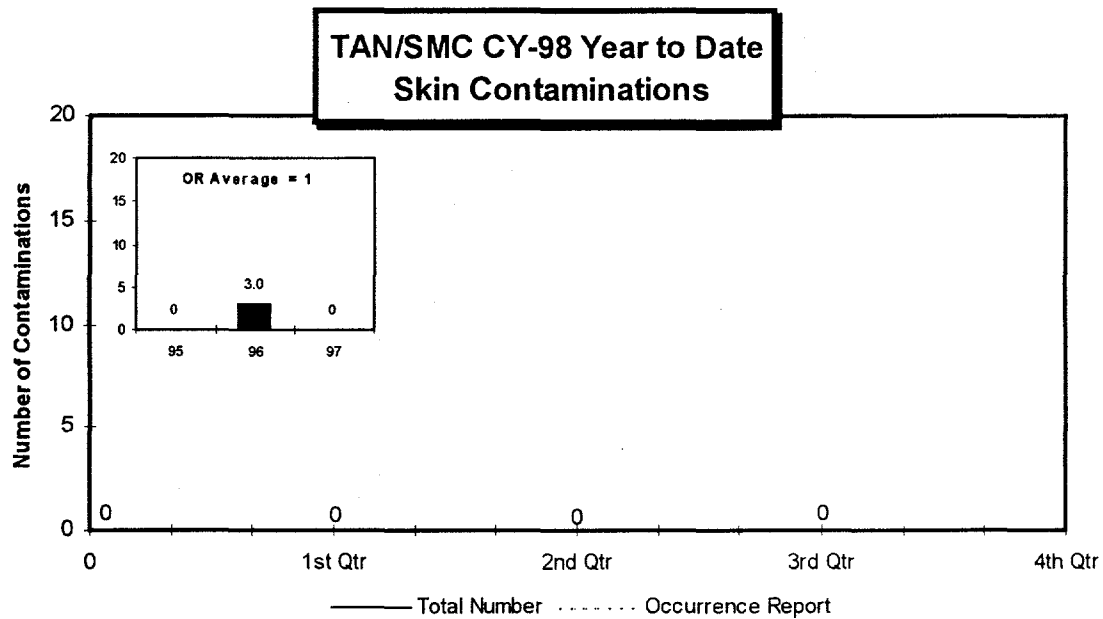
1. TAN hot shop work, handling repackaging and shipment of hot waste, fuel movements, canister dewatering, cask disassembly, ER remediation activities, decontamination, and pool cleaning and vacuuming account for dose at TAN Ops.
2. For SMC, routine armor manufacturing, routines, and D&D activities account for the dose contribution.
3. The only spill year to date is the one that occurred in the first quarter at TAN 666 as a result of back-flow from the number three holding tank up through floor sumps.



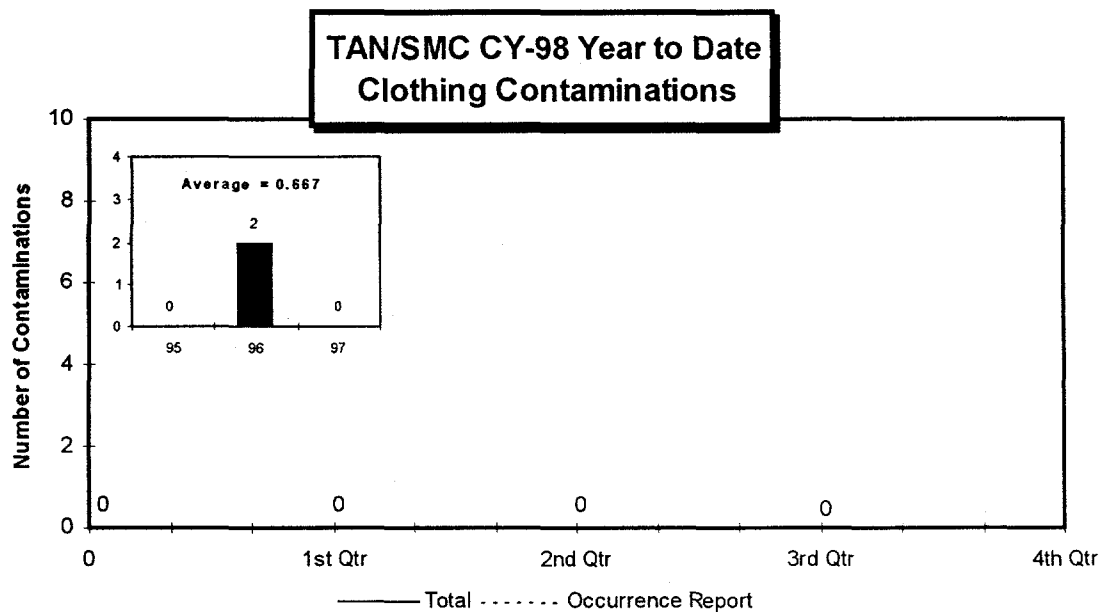
TAN and SMC collective penetrating radiation dose through the end of the third quarter was 3.247 person-rem. Work scope is consistent with that of past years.



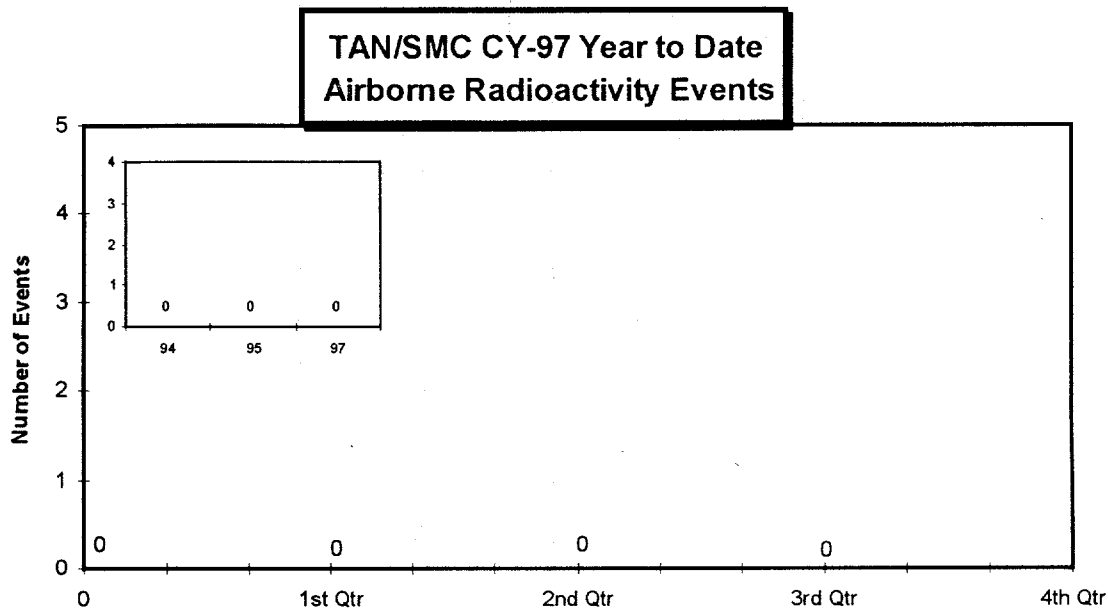
The average worker dose at the TAN/SMC through the end of the third quarter was 0.035 rem based on 92 workers who received dose greater than 10 mrem.



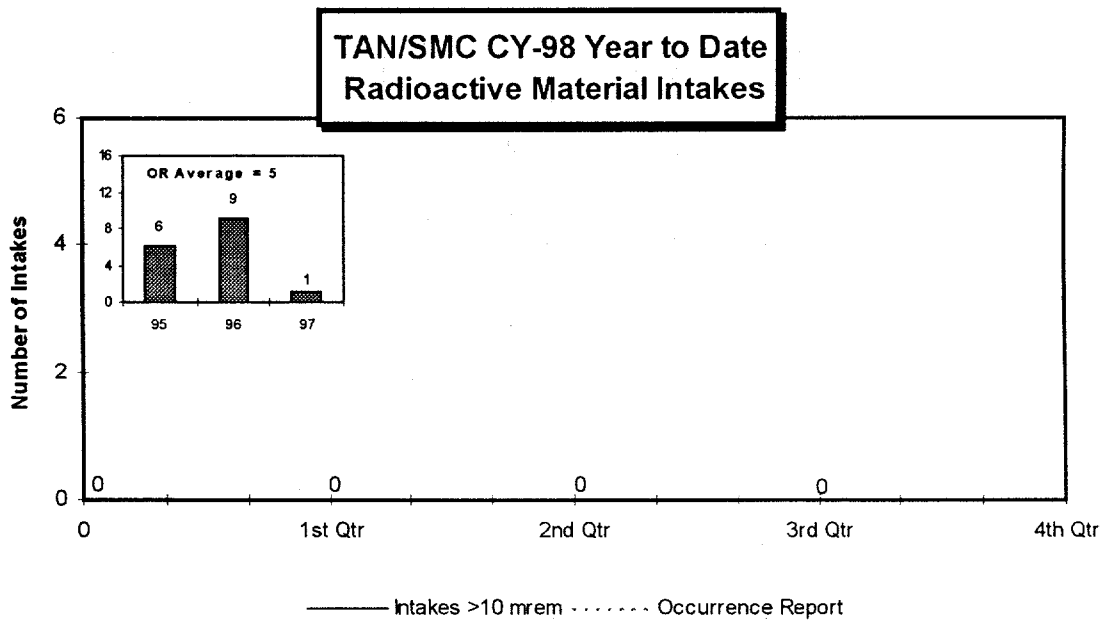
There were no skin contaminations at TAN/SMC during the third quarter. There were no facial or wound contaminations during the quarter.



There was no contamination that occurred at TAN/SMC during the third quarter.

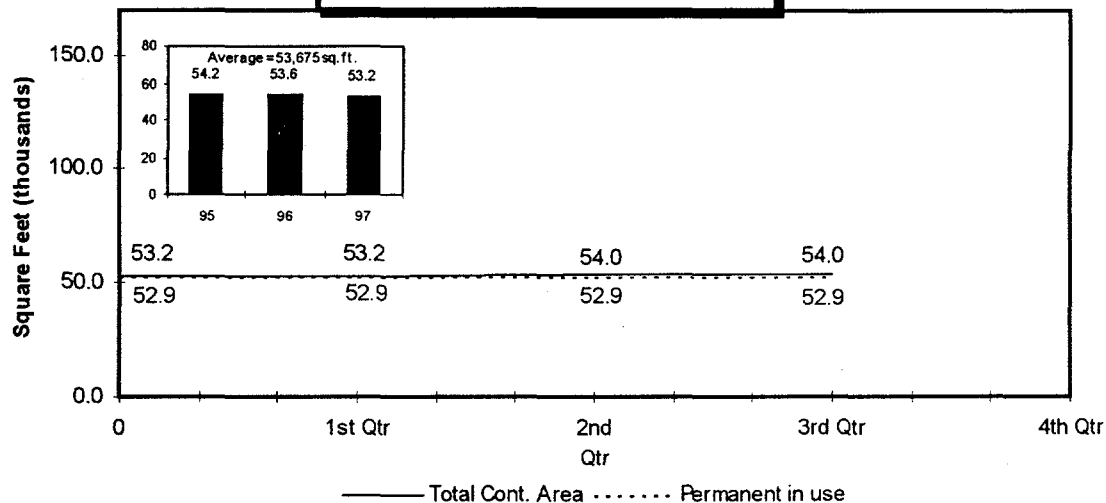


No airborne activity event greater than 10 % DAC was detected at TAN/SMC in areas not posted as Airborne Radioactivity Areas during the third quarter.



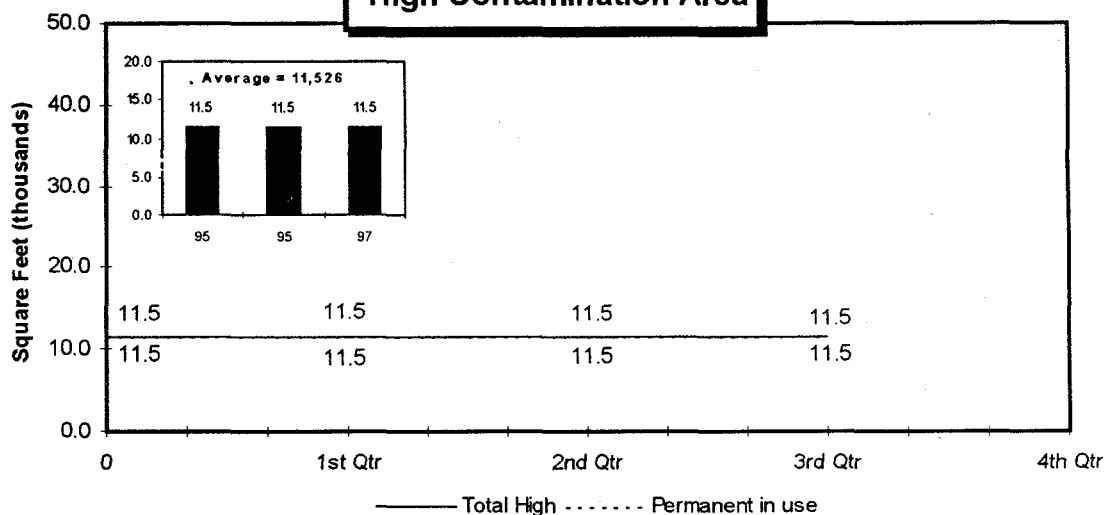
No internal uptakes have occurred at TAN/SMC, year to date. Six routine bioassays are being evaluated for final dose determination, if any.

### TAN/SMC CY-98 Year to Date Contamination Area

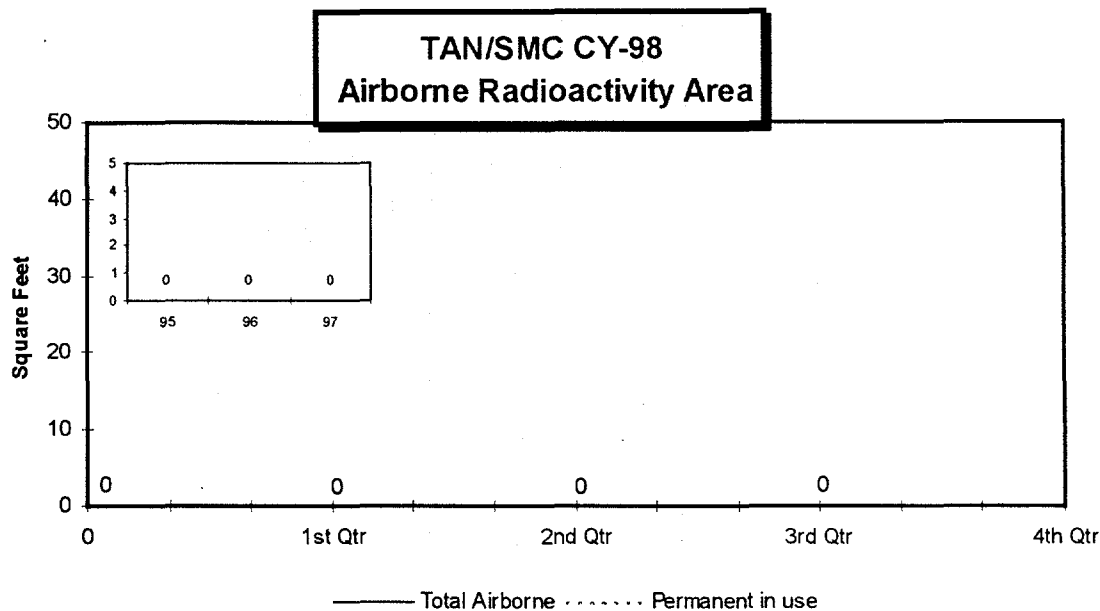


The total Contamination Area at TAN/SMC at the end of the third quarter was 54,026 square feet. 52,926 square feet was designated as permanent and in-use.

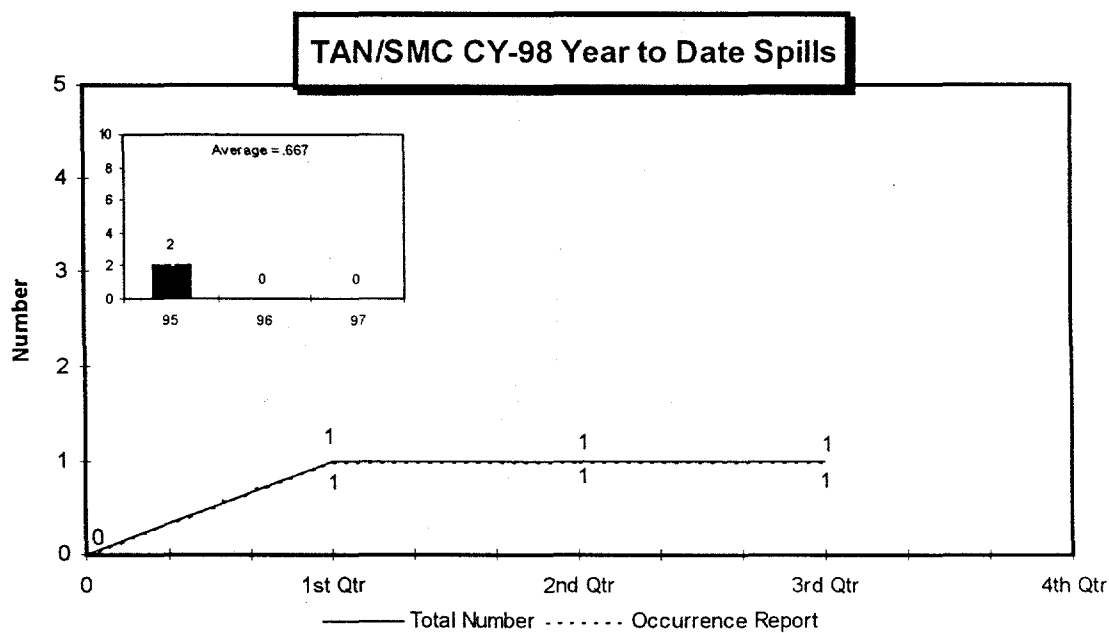
### TAN/SMC CY-98 High Contamination Area



The total High Contamination Area at TAN/SMC at the end of the third quarter remains constant at 11,526 square feet. All of this area is designated as permanent and in-use. The area includes the waste evaporator building (TAN 616) which is currently locked and inaccessible. The building is slated for D & D.



Total Airborne Radioactivity Area at TAN/SMC remains at zero through the end of the third quarter.



One spill occurred at TAN 666 as a result of back-flow from the number three holding tank up through floor sumps in the first quarter. There have been no spills this quarter.