

# Westinghouse Hanford Company ALARA Year-End Report Calendar Year 1994

## Radiological Engineering and ALARA

Prepared for the U.S. Department of Energy  
Office of Environment, Safety and Health



Westinghouse  
Hanford Company Richland, Washington

Hanford Operations and Engineering Contractor for the  
U.S. Department of Energy under Contract DE-AC06-87RL10930

*DISTRIBUTION OF THIS DOCUMENT IS UNLIMITED*

Approved for Public Release

**LEGAL DISCLAIMER**

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

This report has been reproduced from the best available copy.  
Available in paper copy and microfiche.

Available to the U.S. Department of Energy  
and its contractors from  
Office of Scientific and Technical Information  
P.O. Box 62  
Oak Ridge, TN 37831  
(615) 576-8401

Available to the public from the U.S. Department of Commerce  
National Technical Information Service  
5285 Port Royal Road  
Springfield, VA 22161  
(703) 487-4650

Printed in the United States of America

**DISCLM-1.CHP (1-91)**

## **DISCLAIMER**

**Portions of this document may be illegible  
in electronic image products. Images are  
produced from the best available original  
document.**

# Westinghouse Hanford Company

## ALARA Year-End Report

### Calendar Year 1994

#### Radiological Engineering and ALARA

O. D. Berglund

Date Published  
June 1995

Prepared for the U.S. Department of Energy  
Office of Environment, Safety and Health



Westinghouse  
Hanford Company

P.O Box 1970  
Richland, Washington

Hanford Operations and Engineering Contractor for the  
U.S. Department of Energy under Contract DE-AC06-87RL10930

DISTRIBUTION OF THIS DOCUMENT IS UNLIMITED

Approved for Public Release

MASTER

## RELEASE AUTHORIZATION

Document Number: WHC-SP-0671-3A

Document Title: Westinghouse Hanford Company ALARA Year-End Report

Release Date: June 5, 1995

This document was reviewed following the  
procedures described in WHC-CM-3-4 and is:

**APPROVED FOR PUBLIC RELEASE**

WHC Information Release Administration Specialist:

V.L. Birkland

V.L. Birkland

June 5, 1995

WESTINGHOUSE HANFORD COMPANY  
ALARA YEAR-END STATUS REPORT  
Calendar Year 1994  
Revision 3A

Prepared by:

O. D. Berglund  
O. D. Berglund, Coordinator  
WHC ALARA/CCID Program

6-2-95  
Date

Reviewed by:

Terry D. Merkling  
T. D. Merkling, Manager  
Radiological Engineering and ALARA

6/8/95  
Date

Submitted by:

D. J. Newland  
D. J. Newland, Director  
Radiological Control

6-8-95  
Date

This page intentionally left blank

## TABLE OF CONTENTS

Section	Subject	Page
	Table of Contents	III
1.0	Introduction/Summary	1
1.1	ALARA Goals Verification and Validation	3
2.0	Implementation of 10 CFR 835	4
2.1	Administrative Control Level Changes	6
3.0	CY 1994 Sitewide WHC ALARA Goals	7
4.0	Analytical Services	14
4.1	B Plant/Waste Encapsulation and Storage Facility (WESF)	20
4.2	Fast Flux Test Facilities	21
4.3	K Basins Operations	30
4.4	Plutonium Finishing Plant (PFP)	34
4.5	Plutonium-Uranium Extraction (PUREX) Plant and Uranium Oxide ( $UO_3$ )	42
4.6	Solid Waste Disposal/T Plant	46
4.7	Solid Waste Management (SWM)	49
4.8	Tanks Waste Remediation Systems (TWRS)	52
4.9	306 E Laboratories	59
	Distribution	61

This page intentionally left blank

1.0INTRODUCTION/SUMMARY

It has long been the U. S. Department of Energy's (DOE's) Policy that radiation doses should be maintained as far below the dose limits as is reasonably achievable. This policy, known as the "ALARA Principle of radiation protection," maintains that radiation exposures should be maintained as low as reasonably achievable, taking into account social, technical, economic, practical, and public policy considerations.

The ALARA Principle is based on the hypothesis that even very low radiation doses carry some risk. As a result, it is not enough to maintain doses at/or slightly below limits; the lower the doses, the lower the risks. Because it is not possible to reduce all doses at DOE facilities to zero, economic and social factors must be considered to determine the optimal level of radiation doses. According to the ALARA Principle, if doses are too high, resources should be well spent to reduce them. At some point, the resources being spent to maintain low doses are exactly balanced by the risks avoided. Reducing doses below this point results in a misallocation of resources; the resources could be spent elsewhere and have a greater positive impact on health and safety.

The objective of the Westinghouse Hanford Company (WHC) ALARA/Contamination Control Improvement Project (CCIP) Program is to manage and control exposures (both individual and collective) to the work force, the general public, and the environment to levels as low as is reasonable using the aforementioned ALARA Principle.

The ALARA Principle contains a basic philosophy to be incorporated into the daily work activities of each employee. To assist facility/organizational management in applying this philosophy to the work force, the ALARA/CCIP Program Office provides the guidance and tools necessary for implementation, while ensuring the health and safety of workers. The ALARA/CCIP Program Office recognized that ALARA goals must be included in and be consistent with facility/organizational operation funding in order to be successful.

In principle, ALARA goals are intended as a measure of progress and should be used as tools to assist management in focusing their priorities and attention. In practice, however, goals are required to assist in assuring that ALARA is achieved. The ALARA goals are developed, statused quarterly in the WHC Health & Safety Performance Report, and reported annually to the U. S. Department of Energy, Richland Operations (RL), via this report.

The WHC ALARA sitewide goals were developed by the WHC ALARA Council and the ALARA/CCIP Program Office, whereas the facility/organizational level ALARA goals were developed by the facility/organizational ALARA committees. Goal statuses have been approved by facility management or their representative. These goals reflect a commitment by management to ensure a quality ALARA program driven by an emphasis on safety, the health of workers, and the protection of the environment. The final status, performance, and lessons learned of ALARA goals developed for Calendar Year (CY) 1994, are provided in this report.

One hundred and fifty-five combined sitewide and facility specific ALARA goals were established for completion during CY 1994. Progress on the implementation of the ALARA program at WHC is evidenced in part by the development and achievement of ALARA goals by the facility/organization ALARA committees. Listed below is a synopsis of the final status of these goals:

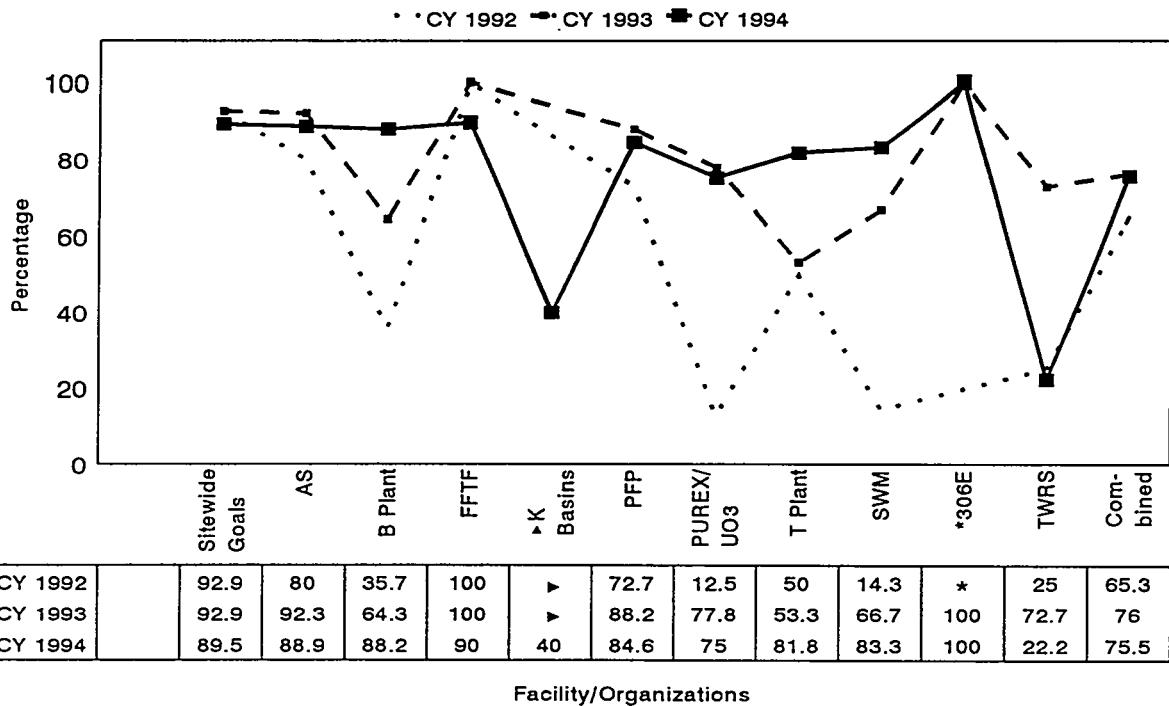
- \* One hundred and seventeen goals were completed by December 31, 1994,
- \* Five goals were "Carried Over to Fiscal Year (FY) 1995" for completion,
- \* Seventeen goals were "Canceled" due to organizational restructuring, changes in work scope, programmatic changes, and/or budget constraints,
- \* Sixteen goals were "Not Attained," or were incomplete due to other factors.

Final disposition for the CY 1994 goals demonstrates over a 75 percent completion rate. It is important to note that seventeen ALARA goals were "Canceled" due to measures beyond facility management's control. If these goals are not used in calculating the completion ratio, WHC would have completed nearly 85 percent of the goals scheduled for CY 1994.

One of the areas that has shown an overall improvement in the application of ALARA are the increased quality of facility ALARA goals. Evidence shows this to be attributed to enhanced ownership of goals and the goal process by the ALARA Committees and line management and greater involvement by the ALARA/CCIP Program Office in administrating the WHC ALARA/CCIP goal program.

The following graph provides a comparison of the percentage of goals completed by the facility/organization ALARA Committees from CY 1992 to CY 1994.

### Percentage of Completed ALARA Goals CY 1992 through CY 1994



\* Committee established in CY 1993.

► Committee established in CY 1994.

1.1ALARAGOALS VERIFICATION AND VALIDATION

Title 10, Code of Federal Regulations, Part 835.101 directs, "The content of each Radiation Protection Plan (RPP) shall be commensurate with the nature of the activities performed and shall include formal plans and measures for applying the as low as reasonably achievable (ALARA) process to occupational exposure."

Under the enforcement of Title 10, Code of Federal Regulations, Part 820, the submittal of incorrect or incomplete information may subject the company to civil penalties, and may also subject individuals, who make material false statements, to criminal prosecution.

In an effort to comply with the requirements of the RPP, the ALARA/CCIP Program Office performed field verification on 47 percent (56 of the 117) of the ALARA goals that were reported as "Complete" for CY 1994.

The results of this verification process indicated that over 98 percent (55 of 56) of the ALARA goals verified were complete as indicated. Due to manpower restrictions and budgeting considerations, it is currently not practical to perform a verification and validation on each of the ALARA goals submitted by the facilities/organizations.

2.0IMPLEMENTATION OF 10 CFR 835

Title 10, Code of Federal Regulations, Part 835/B2, Implementation Guide for use with 10 CFR 835, "Occupational ALARA Program" states, "Management should establish radiological performance goals at least annually to focus and direct the attention of all levels of management and workers toward areas of performance requiring improvement." In CY 1994, during the implementation phase of G-10 CFR 835/B2, Revision 1, September 1994, "Occupational ALARA Program", the ALARA/CCIP Program Office monitored the progress of the Radiological Performance Goals suggested by this regulation. Listed below is a synopsis of the performance in these goal areas.

\* **NOTE:** The exposure figures listed in this Section of the report do not include personnel exposure calculations from off site sources. In this Section if the source of information is not identified, the information was obtained from the WHC Health and Safety Performance Report, WHC-SP-0564-36.

**ANNUAL COLLECTIVE DOSE FOR THE SITE:** Based on previous years' statistical information and scheduled 1994 work activities, a WHC radiological occupational exposure goal was established. The CY 1994 cumulative radiological exposure goal for radiation workers (monitored with a multipurpose dosimeter) was established at 140 person-rem. The actual exposure received throughout CY 1994, as reported by WHC Safety Awareness and Performance (SAP), to occupational radiological workers was 153 person-rem. The transitioning of employees from WHC to ICF Kaiser Hanford (ICF KH), an increase in radiological workers at WHC, and the increase in work activities were contributing factors in not attaining this goal. It should be noted that ICF KH did not participate in the WHC ALARA goal setting process for CY 1994. According to figures released by SAP, ICF KH personnel accounted for 32.218 person-rem of exposure.

**ANNUAL COLLECTIVE DOSE FOR THE MAJOR DEPARTMENTS INVOLVED IN RADIOLOGICAL WORK:** During the ALARA goals setting process it was suggested that all major departments (facility/organization ALARA Committees) create an annual collective dose goal. Not all of the major departments established an ALARA goal under this criterion for CY 1994. In an effort to achieve support for this ALARA goal, each facility/organization ALARA Committee was requested to establish a goal under this criteria for FY 1995.

**AVERAGE WORKER DOSE:** The average dose for compliance workers during CY 1994, as reported by WHC Safety Awareness and Performance, was 11.81 mrem. Included in this average are the personnel expected to receive somewhat higher doses (those assigned a dosimeter with a monthly dosimeter exchange frequency) which accounted for an average of 77 mrem.

**MAXIMUM DOSE TO A WORKER:** The maximum whole body dose a WHC employee received during CY 1994, as reported by SAP, exclusive of internal effective dose equivalent, was 1230 mrem.

**NUMBER OF UNPLANNED EXPOSURES RESULTING IN DOSES GREATER THAN THE ADMINISTRATIVE CONTROL LEVEL:** During CY 1994, there were three unplanned exposures that resulted in a dose greater than their assigned administrative control level.

**NUMBER OF POSITIVE BIOASSAYS:** During CY 1994, there were two confirmed intakes of radioactive material with assessed committed effective dose equivalent (CEDE) greater than or equal to 100 mrem. Both intakes were by inhalation. The fifty-year CEDE doses of 910 and 310 mrem were assessed for an assumed intake of insoluble uranium on February 8, 1994, at the 333 Fuels Production Building in the 300 Area. This intake was detected by routine bioassay, long after completion of the work. The two workers, a ICF KH sheetmetal worker and a WHC metal operator, were removing ducting which contained uranium fines from sawing and machining uranium fuel rods. These exposures were reported as an off-normal event per DOE Order 5000.3B requirements.

**NUMBER OF CONTAMINATIONS OF THE SKIN AND CLOTHING OF PERSONNEL PER MAN-HOUR WORKED IN THE RADIOLOGICAL AREAS:** During CY 1994, there were 27 skin contaminations reported occurring in WHC-managed facilities/operations. When comparing the number of skin contaminations by facility between CY 1993 and CY 1994, no significant trends were evident. There was an overall increase from 24 skin contaminations in CY 1993 to 27 in CY 1994. A slight increase in the overall number of clothing contaminations from 60 in CY 1993 to 66 in CY 1994, can be attributed to substantial increase in work scope. The data to provide the number of skin/clothing contaminations per hour worked in the radiological areas were not available for CY 1994.

**NUMBER OF REPORTS OF RADIOLOGICAL OCCURRENCES:** A total of 1020 Radiation Problem Reports (RPR) were written on radiological deficiencies during CY 1994. Of those written, 690 were reported for various radiation contamination situations, which is 68 percent of the total written. Of those issued for radiological situations, 395 (57 percent) were listed as unknown causes for the source of the radiological contamination, and personnel error accounted for 28 percent of the total.

## 2.1

ADMINISTRATIVE CONTROL LEVEL CHANGES

Title 10, Code of Federal Regulations, Part 835/B2, Implementation Guide for use with 10 CFR 835, "Occupational ALARA Program," suggests that "this annual ALARA report should include the number of individuals exceeding administrative control levels and a summary of the justification for the approval to exceed these levels." Table 1.1 provides a synopsis of the 113 "Administrative Control Level Change Approvals" submitted in CY 1994. This table includes the justifications to exceed the administrative control levels (ACL), the number of administrative control level change approvals that were approved under each justification, and the number of individuals that exceeded the 500 mrem Administrative Control Level.

Table 1.1

Justification	Number Approved	Number >500 mrem ACL
To maintain job continuity	61	10
To facilitate International Atomic Energy Agency (IAEA) inspections	17	0
Installation of 105KE isolation barrier doors	12	0
Limited personnel with this expertise are available	8	2
To assure safety and DOE requirements are maintained	7	5
Project W320, cleaning and decontaminating Tank 241-C-106 pits	6	0
Pre WHC employment exposure	1	1
PFP sludge stabilization	1	0

\* NOTE: Under the "Number Approved" category there may be multiple approvals listed per individual. In these cases, only one entry would be made in the "Number >500 mrem ACL" column.

3.0ALARA SITEWIDE GOALS

Compiled by: O. D. Berglund

Approved by: T. D. Merkling

Terry D. Merkling

Goals Scheduled	19
Goals Complete	17
Goals Not Attained	2

The WHC ALARA Council developed sitewide goals in accordance with the guidelines from the ALARA/CCIP Program Office and WHC-CM-4-11, "ALARA Program Manual." The CY 1994 year-end status of these goals is contained in this section.

**Goal 1:** Evaluate and revise where necessary the WHC-CM-4-11, "ALARA Program Manual," to reflect the enhanced ALARA philosophy of including non-radiological and radiological issues in the ALARA process. Ensure compliance with DOE policies, standards, and guidelines that pertain to ALARA, health, and safety requirements.

**Status:** Not Attained

**Analysis of Performance:** The ALARA Program Manual, WHC-CM-4-11, has undergone a complete revision during CY 1994; however, due to revisions in the Implementation Guide for Occupational ALARA Programs, the publishing of the manual will be delayed until June 1995. The rewrite has been completed with the focus on 10 CFR 835/B2, "Implementation Guide for Occupational ALARA Programs," and will be completed in the form of an internal publication (WHC-IP-1043). The change of the ALARA Program Manual from a Controlled Manual (CM) to an Internal Publication (IP) was due to the recommendations from the Document Control organization.

**Goal 2:** The ALARA/CCIP Program Office will provide quarterly ALARA training, utilizing the hands-on instruction approach, as applicable, for ALARA Council and ALARA Committee members. This training will focus on radiological and non-radiological ALARA issues in an effort to expand the awareness of WHC employees to ALARA Principles.

**Status:** Complete

**Analysis of Performance:** Efforts to raise ALARA Awareness, with a focus on reducing exposures (radiological and non-radiological) through training, were a primary objective of the ALARA/CCIP Program Office in CY 1994. The following quarterly "hands-on" training sessions were provided for WHC employees in an effort to expand their awareness of ALARA principles:

- First Quarter Training - Hazardous Materials Chemistry for the Non-Chemist. This session was provided to 38 participants at the Columbia Basin Community College Science Laboratory. This "active demonstration" training course provided information for an effective understanding of chemicals and their effects on health and the environment. It focused on individuals working with, or having responsibility for, compliance with Occupational Safety and Health Administration (OSHA) health and safety standards relating to hazardous waste regulations. This course heightens hazard recognition, laboratory safety and chemical spill response, and promotes

the "24-hour safety" profile. The course was brought back due to its success last year during third quarter ALARA training.

- Second/Third Quarter Training - Ventilation as an Engineered Control. During the ALARA self-assessment, completed early in CY 1994, it was found that very few facilities were using portable HEPA filtered ventilation systems to assist in controlling the spread of contamination. Most facilities over-dressed their personnel in personal protective equipments (PPEs) and had them wear respirators instead of using some form of engineered control to remove the source of the radioactive contamination. Several new ventilation systems have been purchased and other facilities removed their HEPA filtered units from storage. A training class was taught by an expert instructor on the use of HEPA filtered ventilation. These training sessions were attended by 54 Hanford employees. This class will be rescheduled periodically, as practical.
- Fourth Quarter Training - Household Hazardous Waste. This informative training was provided by the Benton County Regional Moderate Risk Waste Facility. This facility promotes the "Reduction, Reuse, and Recycling" principles, as applicable to household hazardous products that are common both at home and the work environment. There were over 60 Hanford employees who attended this training, including representatives from PNL, ICF KH, and WHC.

**Goal 3:** Implement an electronic database system to document and compile examples of corrective actions and lessons learned utilizing ALARA Program documentation. This database will be available to share between WHC organizations in order to assist in ALARA reviews and work-plan preparation.

**Status:** Complete

**Analysis of Performance:** The ALARA/CCIP Program Office identified the Search Hanford Accessible Reports Electronically (SHARE) database to accomplish the task of re-distributing lessons learned and corrective actions from completed job reviews. ALARA users are currently utilizing this database in creating new work packages and enhancing pre-job meetings. Due to the success of this database, inquiries have been made from other contractors regarding the potential of their utilization of this type of database. Efforts are being made to integrate this system for their use.

**Goal 4:** Develop a course to instruct cognizant engineers, persons-in-charge (PIC), planners, schedulers, and/or personnel completing ALARA documentation in applications of ALARA methodology.

**Status:** Complete

**Analysis of Performance:** The ALARA/CCIP Program Office and Technical Training combined their efforts in designing the necessary curriculum for this course. Mr. C. P. Lesperance was assigned the lead in this project. The final lesson plan for this course was approved in December 1994. The standards listed in the Radiological Control Manual, DOE/EH-0256T, Article 652, were used as the technical basis in the creation of this training course.

**Goal 5:** Evaluate the feasibility of integrating the ALARA Program with other existing safety programs, i.e., Accident Prevention Council, Safety Observer, and Waste Minimization. Conduct meetings with each applicable facility/organization to review and evaluate the utilization of this integrated approach.

**Status:** Complete

**Analysis of Performance:** The ALARA and CCIP programs were integrated into one program with the focus on improving implementation of both programs. Seven facility specific ALARA Committees integrated other safety programs into their ALARA Committees. The integration of several existing safety programs into one group has been very beneficial. The ALARA Committee chairpersons have been encouraged to evaluate this integration for possible benefit.

**Goal 6:** Redesign the ALARA recognition program to provide accomplishment awards for exceptional ALARA performance by personnel, organizations, and/or committees. Integrate this revision, as applicable, into the WHC-CM-4-11, "ALARA Program Manual," rewrite.

**Status:** Complete

**Analysis of Performance:** The ALARA Recognition Program has been redesigned to include merit based recognition awards for personnel that demonstrate commitment to the ALARA process in meeting the objective of managing and controlling exposures to the work force and to the general public.

**Goal 7:** Perform, complete, and compile biannual ALARA Self-Assessments. Evaluate non-radiological and radiological issues during the assessment cycle. These assessments will be completed and the results published in the first and third quarter WHC Health & Safety Performance Report.

**Revised:** Perform, complete, and compile ALARA Self-Assessments. Evaluate non-radiological and radiological issues during this assessment. This assessment will be completed and the results published in the first quarter WHC Health & Safety Performance Report.

**Status:** Complete

**Analysis of Performance:** The ALARA Program Office completed assessments of the ALARA Program sitewide for WHC. Comments, recommendations, and recommended improvements were provided to the ALARA point of contact for each area. The ALARA self-assessments will be replaced with the rewrite of the ALARA Program Manual and be formalized as a section titled, "Internal ALARA Program Reviews and Radiological Work Practice Assessments." ALARA Assessments were completed on the radiological work practices throughout WHC. As a part of these assessments, detailed suggestions highlighting various methods to improve the field implementation of ALARA were distributed.

**Goal 8:** Promote the reduction of radiological areas at WHC by 4,280,000 square feet in support of CCIP.

**Revised:** Promote the reduction of radiological areas at WHC by 8,570,503 square feet in support of the CCIP.

**Status:** Complete

**Analysis of Performance:** During CY 1994, 10,494,988 square feet of contaminated or radiological area reduction/downgrading was documented by WHC managed facilities sitewide. The process for contaminated area reduction via the ALARA/CCIP Program Office and the facility ALARA Committees followed the goal formation process as defined in Section 8 of the "ALARA Program Manual," WHC-CM-4-11. Each ALARA Committee, as a part of their yearly goal package, developed reduction targets for outdoor and/or indoor contaminated areas to be reported in square footage. The facility targets were either a reduction in severity, such as downposting a Surface Contamination Area (SCA) to a Radiological Control Area (RCA), or a reduction in size, such as free releasing a RCA or other posted area. The facility ALARA Committee goals were then compiled to form a WHC sitewide ALARA/CCIP contaminated area reduction goal for this reporting year.

**Lessons Learned:** CY 1994 was the first time a sitewide radiological area reduction goal had been attempted by WHC and the following lessons learned resulted:

- a) The majority of the facility ALARA Committees formed their reduction goals on a calendar year basis while a few formed their reduction goals on a fiscal year basis. This led to some challenges in both the planning and reporting of the sitewide reduction goal. The ALARA/CCIP Program Office has addressed these challenges by implementing fiscal year planning for ALARA goals via the rewrite to the ALARA Program Manual.
- b) The CCIP data collection and reporting processes have been solely a Health Physics function up to this point. Using the ALARA Committees to establish reduction goals made it evident that the CCIP point of contact at each facility should be part of the facility specific ALARA Committees. This has also been addressed in the ALARA Program Manual revision.

**Goal 9:** Develop functions, qualification standards, and training requirements for ALARA Committee chairpersons.

**Status:** Complete

**Analysis of Performance:** The criteria has been established and is currently available. Facility/organizational management is responsible for determining the specific responsibilities of their ALARA Committee chairperson. However, guidance is provided by the ALARA/CCIP Program Office and will be included in the ALARA Program Manual revision.

**Goal 10:** Prepare and issue a sitewide listing of tools developed and used to implement the ALARA Program at WHC. This listing shall include, but not be limited to items such as signs, training aids, postings, equipment, etc.).

**Status:** Complete

**Analysis of Performance:** The ALARA/CCIP Program Office prepared a list of "tools and practices" that can be used to reduce radiation exposure and limit the spread of contamination. This listing is available to all facilities, organizations, and companies sitewide and upgraded periodically. Included in this listing are sketches of containments that are available through "stores", lists of vendors by the products/services they offer, and detailed information on engineered controls for radiological work.

**Goal 11:** Promote the completion of "Facility Condition Update Reports" to support compiling asbestos inventories per the Hanford Site Asbestos Abatement Plan (WHC-EP-0390, Revision 1) through the use of facility-specific ALARA Committees. Status accomplishment in the Health & Safety Performance Report quarterly.

**Revised:** Promote the completion of "Facility Condition Update Report" to support compiling asbestos inventories per the Hanford Site Asbestos Abatement Plan (WHC-EP-0390 Revision 1) through the use of facility-specific ALARA Committees. Status the accomplishments in the Fourth Quarter Health & Safety Performance Report.

**Status:** Complete

**Analysis of Performance:** The assistance of the facility/organizational specific ALARA Committees proved to be a very valuable tool in the coordination of data for the asbestos abatement reports. The Facility Condition Update Report was compiled and completed during CY 1994 and submitted as scheduled.

**Goal 12:** Provide monthly "ALARA/CCIP Accomplishment" articles to the Hanford Reach promoting non-radiological and radiological elements of the ALARA/CCIP Program. The ALARA/CCIP Program Office will compile examples submitted by the committees and select appropriate topics to be submitted to the Hanford Reach.

**Status:** Complete

**Analysis of Performance:** During CY 1994, there were 34 "ALARA/CCIP sponsored" articles published in the Hanford Reach. These articles promoted management and control of exposures through applied ALARA principles and practices across the site. Included in the articles was information on ALARA/CCIP integration, new ALARA/CCIP methodologies and techniques, as well as information on ALARA sponsored vendor demonstrations.

**Goal 13:** Demonstrate that WHC is actively managing personnel radiological exposure by formally documenting the results of exposure investigations from the "ALARA Tracking and Management System" in the WHC Quarterly Health & Safety Performance Report.

**Status:** Complete

**Analysis of Performance:** The ALARA Tracking and Management System (ATAMS) provides information relating to the exposure anomalies of WHC personnel. The investigations were used to explain the nature of the exposure, list the ALARA protective measures that were applied, determine if other ALARA protective measures are necessary, and increase employee/management awareness of personnel exposure levels. This investigation information was included each quarter in the WHC Quarterly Health & Safety Performance Report.

**Goal 14:** Establish, status, and communicate timely completions of company-level and facility/organizational CY 1994 ALARA goals. Performance indicators relative to these goals will be published quarterly in the ALARA section of the WHC Quarterly Health & Safety Performance Report.

**Status:** Complete

**Analysis of Performance:** This goal was completed as designed. The ALARA/CCIP Program Office provided detailed information relating to ALARA goals during quarterly interface meetings held with RL, at the monthly ALARA Council meetings, and in the WHC Quarterly Health & Safety Performance Report.

**Goal 15:** Provide "ALARA Accomplishment" information for distribution on the Health & Safety Bulletin Board on a quarterly basis.

**Status:** Complete

**Analysis of Performance:** Information was submitted to the Health & Safety Bulletin Board on a quarterly basis throughout CY 1994. It is anticipated that this will be a common practice based on the amount of information relating to the Radiological Control organization that is generated from the WHC ALARA/CCIP Program.

**Goal 16:** Compile and issue to RL the fiscal year (FY) 1995 ALARA Goals Report.

**Status:** Complete

**Analysis of Performance:** This goal was completed on November 22, 1994, a week ahead of schedule. At the request of RL, and the revision of 10 CFR 835 Implementation Guide B2, "Occupational ALARA Program," the initial facility/organization specific ALARA goals submitted will be revised to include more "qualitative and/or quantitative" features.

**Goal 17:** New: Maintain the number of skin contamination at 0 significant (<50,000 dpm), and not more than 28 cumulative skin contaminations occurring in WHC-managed facilities/operations.

**Status:** Complete

**Analysis of Performance:** Throughout CY 1994, there were "0 significant" and "27 cumulative" skin contaminations that occurred in WHC-managed facilities and operations. The 27 skin contaminations include any skin contaminations that were detected by release instrumentation. During the fourth quarter of CY 1994, analyses were initiated to identify possible trends in skin contaminations. These evaluations and analyses of skin contamination will be performed on a quarterly basis throughout FY 1995. This process will help identify possible trends, reduce the number of skin contaminations, and increase employee awareness.

**Goal 18: New:** Maintain the CY 1994 annual cumulative radiological exposure goal for radiation workers (monitored with a multipurpose dosimeter) in WHC-managed facilities/operations at less than 140 person-rem.

**Status:** Not Attained

**Analysis of Performance:** This goal was not achieved. The annual cumulative exposure for radiological workers for CY 1994 was 153 person-rem. The inclusion of exposure to ICF KH personnel and an increase in radiological work activities, mainly at PFP, were contributing factors in not attaining this goal. ICF KH accounted for 39.76 person-rem of exposure.

**Goal 19: New:** Maintain the number of personal clothing contaminations occurring in WHC-managed facilities/operations for CY 1994 at less than 73.

**Status:** Complete

**Analysis of Performance:** Throughout CY 1994, there were 66 personal clothing contaminations that occurred in WHC-managed facilities and operations. Due to the relatively short time WHC has been tracking clothing contamination (since 1993), it is difficult to establish effective goals in this area. During the fourth quarter of CY 1994, analyses were initiated to identify possible trends in clothing contaminations. Evaluations of clothing contamination will be performed on a quarterly basis throughout FY 1995 to help identify possible trends, reduce the number of clothing contaminations, and increase employee awareness.

4.0ANALYTICAL SERVICES

Compiled by: M. D. Nuzum

Approved by: M. L. Bell

  
M. L. Bell, FOR

Goals Scheduled	18
Goals Complete	16
Goals Not Attained	2 (1 Carried over to FY 1995 ALARA Goal)

SCOPE Analytical Services provides analytical chemistry excellence to all facets of the Westinghouse Hanford Company. Major activities include supporting on-site and off-site contractors with analytical chemistry services, providing data measurements, demonstrating compliance with state and federal environmental regulations, collection of field samples and support of WHC programs.

**Goal 1:** Conclude chemical monitoring evaluation of the Hazardous Waste Storage Room. If continued monitoring is warranted, develop an action plan.

Status: Complete

**Analysis of Performance and Lessons Learned:**

Sampling by the Hanford Environmental Health Foundation (HEHF) using charcoal canisters was concluded during January. Data from HEHF tests indicated maximum concentrations of 0.1 parts per million xylene and <0.1 parts per billion of all other constituents.

Industrial Hygiene performed Total Volatiles using a photo-ionization detector to determine maximum concentration when the doors on the cabinets containing unknown organics cabinets were opened. Results indicated a maximum concentration of 100 ppm when cabinets are first opened. Concentrations within the cabinet dissipate to <15 ppm within two minutes of the doors being opened.

**Goal 2:** Maintain zero skin contaminations utilizing criteria set forth in DOE Order 5000.3B, "Occurrence Reporting and Processing of Operations Information."

**Revised:** Reduce skin contaminations by 25 percent utilizing criteria set forth in DOE 5000.3B, "Occurrence Reporting and Processing of Operations Information."

Status: Complete

**Analysis of Performance and Lessons Learned:**

During the three-year period of CY 1991 through CY 1993, the facility averaged four skin contaminations per year. The facility revised its goal, in the first quarter update, to reduce its skin contamination rate by 25 percent based on the three year average.

The 222-S Laboratory experienced three skin contaminations during CY 1994 (WHC-ANALLAB-1994-0005/0007/0013). Waste Sampling and Characterization Facility (WSCF) recorded zero skin contaminations.

**Goal 3:** Maintain zero personal clothing contaminations utilizing criteria set forth in DOE 5000.3B, "Occurrence Reporting and Processing of Operations Information."

**Revised:** Reduce personal clothing contaminations by 25 percent utilizing criteria set forth in DOE 5000.3B, "Occurrence Reporting and Processing of Operations Information."

**Status:** Not Attained.

**Analysis of Performance and Lessons Learned:**

Personal clothing contaminations have been tracked for two years, during that period of time the laboratory has averaged four contaminations per year. The facility revised its goal, in the first quarter update, to reduce contaminations by 25 percent based on the two-year average.

The 222-S Laboratory experienced six personal clothing contaminations (WHC-ANALLAB-1994-0007/0008/0014/0015/022/023) during CY 1994. This exceeds our revised goal by three. Waste Sampling and Characterization Facility (WSCF) recorded zero clothing contaminations.

**Goal 4:** Evaluate the impacts of expanding existing bar-coding to include 222-S Complex laboratory waste and if feasible, develop a schedule for implementation.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

Supporting Document WHC-SD-WM-269, Revision A, was released February 28, 1994, from Automation and Simulation Engineering as a work plan for the Waste Information and Control System.

**Goal 5:** Maintain collective Analytical Services facilities dose exposure below 15 person-rem for CY 1994.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

Collective Analytical Services personnel dose for CY 1994 was 7.1 person-rem. Project W-087, Phase II, which ended prematurely due to unforeseeable engineering problems and funding, would have added considerable dose.

**Goal 6:** Evaluate fissionable material inventory needs for Material Balance Areas 233 and 235. Prepare a disposal plan for fissionable materials that are no longer essential.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

A walk-through of fissionable material inventory has been completed. Safeguards and Security has put the disposal of non-essential material on hold. They feel that this material is within the boundaries of what is considered "good" material. Safeguards and Security is requesting that Analytical Services get DOE approval for disposal based on WHC-IP-0565, Section 3.1, Safeguards Desk Procedure.

**Goal 7:** Remove promethium concrete pad at 222-S Facility.

**Status:** Not Attained.

**Analysis of Performance and Lessons Learned:**

Rolled over to FY 1995 Goals. Removal of pad is part of a combined package to also remove the Nitric Acid Tank. Plant Forces Work Review has been received and indicates that this work will be completed by plant forces, which will delay completion due to plant forces availability.

**Goal 8:** Remove existing slurp lines that serviced hoods 5 and 6 Room 2B.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

Slurp lines were removed during March 1994. Associated work resulted in an ICF KH employee being contaminated to 10,000 dpm beta/gamma to his right hand (WHC-ANALLAB-1994-005).

The root cause of this incident was inattention to detail while performing task by the Health Physics Technician. A contributing cause of the event was a communications problem between the Health Physics Technician and the ICF KH employee.

**Goal 9:** Evaluate the feasibility of reducing the "shine" emanating through the T-7/8 escape hatch located at the Northeast side of 222-S Facility.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

Project W-087, 222-S Radioactive Waste Line Replacement, should eliminate the "shine" emanating through hatch. Decontamination on the three-inch drain line commenced on August 11, 1994. A chemical circulation system designed by Safety and Ecology Consultants Incorporated was used. The system pressurized above the expected head pressure and caused an overflow into the 1E-1 Hotcell. Approximately 1 Ci of material was removed from the line prior to shutdown of decontamination effort due to the overflow problem. Planning is continuing on a second decontamination effort including alternative methods. ICF KH has prepared a document "Report on the

Best Available Technology for Decontamination Effort for W-087". This document was released January 1995.

Five million dollars has since been withdrawn from Project W-087, Phase II for FY 1995. Hence, no decontamination efforts will take place during FY 1995. Resumption of Phase II efforts are expected to take place during January 1996.

**Goal 10:** Eliminate the Surface Contamination Area located under the equipment platform located in S2A of the 222-S Facility.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

Approximately 2550 square feet of the 2600 square feet has been downgraded as an RCA. The remaining 50 square feet will be posted as an RCA when asbestos encapsulation is complete. Intent of goal was met.

**Goal 11:** Sponsor ALARA Awareness Activity each quarter and status these activities to the ALARA Program Office.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

The ALARA Awareness Activities were sponsored each quarter. The ALARA Program Office provided ALARA philosophy training to approximately forty personnel at WSCF on October 20, 1994. This training provided insight to ensure the proper respect for and understanding of radiation. The current ALARA Work Documentation process was also provided to personnel.

**Goal 12:** Perform quarterly evaluation of Post ALARA Review (PAR) reports to determine lessons learned from completed jobs.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

Quarterly evaluations of the completed Post ALARA Reviews were performed. During the fourth quarter CY 1994 Post ALARA Reviews for radiological work which resulted in failures were documented through formal critiques. This process allows the facility to quickly establish facts in a chronological order so that the underlying cause can be well understood.

**Goal 13:** The ALARA Chairperson will provide refresher training on ALARA requirements to personnel involved with job package preparation on an annual basis.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

The ALARA Work Documentation Training was presented on September 28, 1994, at the 222-S Laboratory. At this time, it is not anticipated that WSCF pre-job reviews will be triggered through the ALARA format.

**Goal 14:** Evaluate feasibility of creating a video tape version of "222-S Facility Orientation."

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

Facility Orientation is currently under evaluation to be transferred from Radiological Control to Analytical Services Training. Although the initial evaluation indicated a video tape would provide presentation consistency, we feel this could also be achieved through the use of trained presenters while keeping the training interactive.

**Goal 15:** Evaluate the need to revise the current criteria used to establish a dose anomaly for the ALARA Tracking and Management System Investigation Process.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

The ALARA Committee agreed that changes to current criteria were not warranted.

**Goal 16:** Evaluate applicability of WHC-CM-1-6, Article 414, WHC Addendum, "Temporary Outdoor Storage of Radioactive Material." If applicable the facility shall prepare plans for reducing outdoor storage of radioactive material. Reduction plans shall consider disposal and the construction or transfer to indoor storage facilities.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

A portable 10' X 16' structure will be purchased to encompass the 219-S outlet valve, transfer pump, and related equipment. This area is currently posted as an outdoor Surface Contamination Area.

**Goal 17:** Installation of slow speed, high torque, rotary shear type shredder for waste volume reduction.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

Shredder is operational and the facility is achieving a 2 to 1 waste reduction ratio.

**Goal 18: Install model 400 Non-Destructive Cleaning facility on a trial basis to evaluate performance.**

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

Operation of the Model 400 Non-Destructive Cleaning Facility has gone very smoothly. Some 4,700 cubic feet of previously contaminated material has been released.

4.1 B PLANT/WASTE ENCAPSULATION AND STORAGE FACILITY (WESF)

Compiled by: H. G. Oglesbee

Approved by: R. E. Heineman, Jr.

Goals Scheduled 17  
 Goals Complete 15  
 Goals Not Attained 2 (Carried over as a FY 1995 ALARA Goal)

*R.E. Heineman*

**SCOPE** The B Plant complex contains operating non-processing facilities and is currently waiting for transition to deactivation. The current mission is the safe storage of all isotopic inventories which includes the WESF Cesium 137 and Strontium 90 capsules.

**Goal 1:** Experience zero employee exposures to friable asbestos at B Plant during CY 1994.

Status: Complete

**Analysis of Performance and Lessons Learned:**

The monitoring program results have verified that zero employee exposures at B Plant/WESF were met for CY 1994. Other sample analysis were also completed to support the 271B supply air ventilation duct cleaning and fixative coating. This goal was completed due to the need to protect personnel from future asbestos exposure. The asbestos/transite problems exist in old facilities which could cause a migratable personnel safety problem. The monitoring was completed by using some of the latest methods and technology available to assure positive results.

**Goal 2:** Maintain annual occupational effective dose equivalent at less than .5 person-rem for all B Plant radiation workers.

Status: Complete

**Analysis of Performance and Lessons Learned:**

An exposure checklist is currently a requirement prior to entering the canyon. There were no employees who exceeded 0.5 rem. The canyon entry process was evaluated. A checklist was developed which requires the person-in-charge to check all the exposures to ensure that the dose is shared equally. This has proven to be a very workable plan.

**Goal 3:** Develop a plan that will provide surface area stabilization to the contaminated areas surrounding the 291B Area.

Status: Complete

**Analysis of Performance and Lessons Learned:**

The plan has been developed and stabilization is 99.9 percent complete with the exception of one small surface contamination area. Due to funding priorities, attention to detail became a precedent for many individual employees who, in addition to their regular work assignments, voluntarily worked towards the stabilization of this contaminated area. The steady progress necessary to achieve the elimination of this historical contaminated surface area, subsequently reduced the possibility for personnel and environmental radiological exposure.

**Goal 4:** Reduce hazardous products being used at B Plant from 1103 to less than 400.

**Status:** Not Attained

**Analysis of Performance and Lessons Learned:**

B Plant achieved a nearly 60 percent reduction in the materials used but fell short of the goal of 400 hazardous products. There are now 455 various hazardous materials in use, and of these materials, about 35 will be excessed as product or disposed of as waste. To maintain the control and use of hazardous material it is necessary to maintain a current and comprehensive inventory and control the purchase of all hazardous material procurement. B Plant has both in place.

**Goal 5:** Develop a list of alternative products for those materials with high health hazards.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

B Plant follows Procedure WHC-CM-5-6, Section 11.2, "Controlling the Procurement of Hazardous Materials." B Plant has a procurement control procedure that requires that the hazards of a material being purchased are disclosed by the purchaser prior to procurement. In addition, all purchases must be approved by the Hazardous Material Coordinator prior to the procurement. The control required in this procedure will ensure that high health hazard materials are not used unless prior knowledge and controls are developed before use of the product is allowed.

**Goal 6:** Reduce the carcinogenic products used at B Plant by 20 percent. Currently there are 154 identified carcinogenic products being utilized. Reduce this to 124 identified carcinogenic products.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

There are 95 carcinogenic products being used at B Plant/WESF. Therefore, we have completed our goal of a reduction in use by 20 percent. The same explanations for this reduction are described in B Plant ALARA goal number 4 of this status. The B Plant Hazardous Materials Coordinator has accepted the responsibility for personal ownership to achieve this ALARA accomplishment. He has consistently demonstrated his "stick to it" attention to details required to complete this goal.

**Goal 7:** Coordinate with Industrial Hygiene and Safety to evaluate the safe use of at least 50 percent of the carcinogenic products currently being used and all future procurement at the B Plant complex.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

One hundred percent of the materials being used at B Plant and those purchased during 1994 were evaluated to determine if they are carcinogenic. All those materials identified as containing cancer causing agents greater than 0.1 percent were evaluated for potential risk of cancer. No material being used at B Plant was determined to be a high risk. Sixty-five percent were determined to be a medium risk, and the remaining materials were either low or not a risk. Medium risk means that the material used per the manufacturers requirements should not cause an increase in personnel risk of cancer. It is necessary to control the purchase and use of carcinogen materials to ensure that personnel are not subjected to excessive risk of cancer causing chemicals. B Plant has a Carcinogen Control Program in place and a procedure for control of material purchases.

**Goal 8:** Develop a written carcinogen control program for the B Plant complex.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

The program was approved in December 1994, and training will begin in January 1995. It is necessary to control the purchase and use of carcinogen materials to ensure that personnel are not subjected to excessive risk of cancer causing chemicals. B Plant has in place a Carcinogen Control Program and a procedure for control of material purchases.

**Goal 9:** Consolidate the organics in Tanks 26-1, 27-3, 27-4, 28-3, 28-4, 29-4, and 30-3. This will reduce the potential for a hazardous chemical leak and better prepare B Plant for moving the organics to a final storage location.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

Completion of this goal concludes the RL Milestone, FOP-94-0354, "Complete B Plant Organic Consolidation," 40 days before the milestone scheduled completion date of January 31, 1995. This is a significant accomplishment for B Plant because of the age of the existing equipment; the equipment failures; and this type of activity hasn't been done at B Plant before. The completion of consolidation supports the ultimate objective of dispositioning the legacy organic inventory prior to the Plant turnover to Decontamination and Decommissioning. This work also completes one of the recommendations of the Tomsk-7 team which was to separate the organic and aqueous phase. This work was done so the organic phase could be decontaminated in order to obtain a sample of the organic for final characterization and disposition. Decontamination will be followed by sampling both phases, characterizing the phases (proposed Milestone TPA-M32-T05), and an engineering study which includes interim storage for and the disposition of the Organics. Tank Farms, PUREX, and B Plant are all currently faced with the disposition of similar organic waste. Many advantages and cost savings may be realized if efforts are combined by the three organizations. There are currently no plans or programs in place to accomplish this.

**Goal 10:** Reduce the skin contamination ratio for B Plant radiological area entries from 1 skin contamination per every 2,127 entries to 1 skin contamination per every 3,250 area entries.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

A radiological area entry could either be a canyon entry or simply working in the SWP lobby. It is difficult to distinguish by the current WRAM system of "area entries." The system does not allow the distinction according to the risk. The tracking process does not allow for distinction of the various types of radiological areas.

**Goal 11:** A) Reduce the square footage of radiological areas at the B Plant complex from 668,625 square feet to 534,900 square feet during CY 1994. This is a 133,725 square feet reduction of RCAs.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

The radiological area reduction from January to March 1994, totaled 166,633 square feet which achieves this goal. One of the contributing factors which allowed the early closure of the original goal was due to employee(s) who assumed personal ownership responsibility for this ALARA task. The challenge to accomplish the early closure of this endeavor seemed to encourage significant radiological area reductions.

B) Continue to reduce the square footage of radiological areas at the B Plant complex.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

The first portion of this goal was completed early in the year; but, it was determined by the B Plant ALARA Committee that continuation of the radiological area reduction should be reflected in this goal. A radiological area reduction goal has been incorporated in the FY 1995 goals. This goal has also been officially recorded as completed in January 1995. The Committee made the decision that the FY 1995 radiological area reduction goal will be continued and statused throughout the year. B Plant has exceeded its CY 1994 goal ahead of schedule. Initially, cleanup activities were resource loaded with one Operator and one Health Physics Technician (HPT) (two full-time employees) for the entire 12-month period. A conscious decision was made by management to "compress" the schedule and resources. This allowed four Operators and four HPTs (still two full-time employees) to accomplish the same work in three months versus 12 months. This was primarily due to competition with other scheduled tasks and by consistently competing for the same resources during the 12-month period. This eliminated the need for a critical resource for the remaining 9 months to support other critical activities. If the PICs properly resource load the schedule against the activity, the cleanup goals can be met.

**Goal 12:** Develop a plan to complete an ergonomic survey of appropriate work stations at B Plant.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

B Plant completed the ergonomic evaluations for computer users who were at their stations approximately 50 percent of the time. During these evaluations, the most common element needing correction was the height of the computer monitor. The top corner of the monitor should be level with the middle of the eye. In addition, other common elements needing corrective action were sitting positions, and placing the mouse, keyboard, and telephone within an arm's reach. Individuals noticed a significant decrease in neck, hands, arms, and back strain per the tangible ergonomic changes.

**Goal 13:** Evaluate and review techniques to reduce noise pollution exposure to the B Plant complex personnel. Identify areas of risk for possible application of noise suppression techniques.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

A schedule has been completed to measure noise pollution. An HEHF survey analysis report indicated the pool cell area to be of particular concern. Engineering is drafting a procedure to systematically shut down each pool cell recirculation pump to determine the noise levels. Industrial Hygiene has been contacted and is willing to provide assistance in determining the best techniques for reducing the noise levels in this area. Noise reduction has become a safety awareness responsibility for personnel at B Plant due to the risks that were surveyed and identified.

**Goal 14:** Identify potential source reduction action items for prioritization in B Plant's fiscal year work plan, (e.g., sources of radiological contamination such as the hood in the Hot Manipulator Shop and the R-3 berm surface contamination).

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

The cleanup activities have been outlined in the FY work plan as follows:

- 1KB103II02: Self-Assessment of Radiological Control Records
- 1KB203FF: Perform Quarterly Radiological Drills
- 1KB203II05: Perform Review of Radioactive Material Areas
- 1KB203II05: Perform Review of Radiological Work Permits
- 1KB203II04: Implement Monthly Radiological Performance Indicators
- 1KB103II03: Self-Assessment of Radiological Control Practices
- 1KB203II06: Self-Assessment of Radioactive Sources
- 1KB203CC04: Implementation of 10 CFR 835/HSRCM
- 1KB203CC02: Radiological Area Reduction, 80,000 Square Feet
- 1KB203CC0406: Perform Review of Work Place Air Sampling

No creativity is required when looking for areas that need ALARA improvement; nor does a facility have to accept the fact that everything is going to have to be cleaned up. Several "High Contamination" areas that require no entrance by personnel are not being decontaminated. If these areas were to be cleaned, the personnel risk and exposure do not outweigh the benefit of contamination reduction.

**Goal 15:** Heighten ALARA Awareness at B Plant by:

- A) Increasing the attendance of the B Plant ALARA Committee members at monthly meetings.
- B) Assign individual Champions to ALARA issues raised during CY 1994 to provide status, tracking, and closure information.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

A) The plan to rotate and recruit new ALARA Committee members has been accomplished. Two ALARA Committee meetings were scheduled this quarter with the site ALARA Program Office Administrators and an RL representative. The purpose of these presentations to the Committee members was to acquaint them with the new ALARA concept structure and to give the members an opportunity to ask questions that pertained to the ALARA Program. Intermingling with other safety groups and organizations continues. The ALARA principles and practices are being promoted: 1) by recognizing an ALARA Employee(s) of the Month accomplishment(s) and 2) by the development and promotion of ideas in support of the new ALARA concept.

B) B Plant ALARA Committee Champions willingly volunteered to track specific ALARA goals, concerns, and action items to closure for the purpose of planning and reporting improved applications, preparation, and processes.

The value of the ALARA program continues to be recognized by dedicated individuals as being a very important and effective radiological and safety resource which is evidenced by their desire to be included as a member of the B Plant ALARA Committee. This past quarter, many volunteer Champions elected to overview the status of a particular goal through completion which is a very commendable transition accomplishment.

**Goal 16:** Incorporate appropriate Post ALARA Review (PAR) lessons learned for major work activities designated within Review Class 1 and Class 2 categories.

**Status:** Not Attained

**Analysis of Performance and Lessons Learned:**

The process is ongoing. (Carried over to the FY 1995 Goals)

**Goal 17:** Establish and implement a self-survey program at B Plant.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

The establishment and implementation of the self-survey program at B Plant has been completed. The equipment is in place and functional. The transition steadily progressed due to committed personnel who contributed their time and initiative to assure that the program remains effective. Personal ownership responsibilities were initiated and implemented in the best interests of the desired culture change at Hanford. This commitment was evidenced by the observation of dedicated individuals who support the self-survey program.

4.2FAST FLUX TEST FACILITY (FFT)

Compiled by: W. H. Taylor

Approved by: J. C. MidgettE + John for

Goals Scheduled	10
Goals Complete	9
Goals Canceled	1

**SCOPE** FFTF's current mission is to off-load fuel and drain the primary and secondary sodium systems for shut down of the plant.

**Goal 1:** Maintain collective dose at less than 1.5 person-rem (total) for all FFTF plant radiation workers.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

All FFTF radiation workers are on quarterly dosimetry. Monthly exposure monitoring is done via the WRAM system. The CY 1994 dosimetry shows a total collective dose of .936 person-rem for radiation workers at FFTF.

**Goal 2:** Maintain skin/personnel effects contaminations at zero-significant (<50,000 dpm), and a 50 percent reduction in detectable minor skin/personnel effects contaminations.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

FFTF had NO contaminations (significant or detectable) during CY 1994. Pre-job briefs and attention to detail when working in Surface Contaminated Areas is essential.

**Goal 3:** Perform radiological area reductions at FFTF and MASF of approximately 900 square feet.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

A total of 824 square feet changed from ARA to SCA, which represents a downgrade in radiological hazard. A total of 450 square feet changed from SCA to RCA. The total radiological area was reduced by 1,274 square feet.

**Goal 4:** Reduce the number of Priority-3 Personnel Safety upgrades in the Job Control System (JCS) prior to January 1, 1993, by 10 percent.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

Thirty-nine percent of the Priority-3 Personnel Safety upgrades have been reduced. Success of this task was made possible by having a representative of the Work Control Center on the ALARA Committee who could track the progress of Priority-3 Personnel Safety upgrades. The challenge of this goal was to carefully review all work packages that were candidates and base the percentage on what can be successfully completed. This is important because the ALARA Committee had very little control over the engineering and craft resources required to complete the field work.

**Goal 5:** Promote the completion of "Facility Condition Update Reports" to support the compiling asbestos inventories per the Hanford Site Asbestos Abatement Plan (WHC-EP0390, Revision 1). Reduce the amount of asbestos in the plant by 10 percent.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

Total amount has been reduced by 10 percent. A second, qualified asbestos inspector for FFTF has been certified. The WHC is looking at the FFTF as a pilot program for the site in regards to asbestos inspection. Adding the FFTF asbestos qualified engineer as a permanent member of the FFTF ALARA Committee has helped in solving asbestos related concerns.

**Goal 6:** Develop a topic for the FFTF Plant ALARA Committee display modules to be shared with other ALARA committees throughout the Hanford Site.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

One suggestion on fall protection was developed for submittal to the ALARA Program Office. The FFTF ALARA Committee took the lead on submitting suggestions for this year's topic.

**Goal 7:** Promote and provide assistance to other facilities to use the "Hazcom Pursuit" board game as a training aide.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

An exhibit was set up at the WBEAA picnic. The FFTF training person on our ALARA Committee provided information and assistance to other facilities who were interested. There were lots of questions and most people were positive about the exhibit.

**Goal 8:** Develop and institute a program to have all 300 and 400 area Radiological Work Permits (RWPs) placed on a HLAN network common computer drive.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

A 400 Area Health Physics Analyst initiated the program with some assistance from End User Computer support. The Health Physics Analyst worked with 100K to initiate their program. Having the RWPs on the common network computer drive has significantly improved the speed at which the RWPs reach the field and has made revision much easier. This system has also made it much easier to verify that the correct RWP is in use. The ALARA Management Worksheet (AMW) being attached with the associated RWP on the drive has also helped speed up work package preparation and made access to the AMW easier.

**Goal 9:** Color code 25 percent of all chemical spray containers so they can be readily identified prior to use to help limit mixed waste.

**Status:** Canceled

**Analysis of Performance and Lessons Learned:**

Members of the FFTF ALARA Committee members decided to post all Surface Contaminated Areas with signs stating that Waste Minimization should be contacted prior to taking any chemicals into a radiological area that are not already identified in an approved procedure. Acceptance Services for waste designator on chemicals said they should be contacted prior to any chemicals being disposed in radiological areas for the current designator. Color coding all chemicals to show which are allowed in radiological areas was determined to be nonproductive since the chemical designator can change quickly. This can lead to having chemicals on the shelf that are labeled incorrectly.

**Goal 10:** Reduce the amount of radiological waste by having the Health Physics Technicians do more characterization surveys, logging radiological area materials, and job specific training.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

Approximately 130 cubic feet have been reduced.

4.3K BASINS OPERATIONS

Compiled by: D. W. Humphrys, II

Approved by: T. B. Veneziano

Goals Scheduled	10
Goals Complete	4
Goals Canceled	1
Goals Not Attained	5 (2 Carried over as a FY 1995 ALARA Goals)

SCOPE The following ALARA goals were developed to support planned and ongoing activities within the K Basins Operations organization. An attempt was made to not only address radiological issues, but also those concerning industrial safety and waste reduction.

**Goal 1:** Employ the ALARA program and controls listed in WHC-CM-4-11, ALARA Program Manual, to achieve a 10 percent reduction of the 128 person-rem identified as being needed for the 105 K East (KE) encapsulation program.

**Status:** Canceled

**Status of Performance and Lessons Learned:**

The encapsulation program has been canceled. This item will be reopened once a path forward for removal of fuel in the K Basins has been finalized.

**Goal 2:** Reduce the dose rate in Room 3 of the 105 KE building (currently 35 mrem/hr) by at least 25 percent through the use of additional shielding and/or equipment removal in the heat exchanger, weasel pit, and technical view pit.

**Status:** Not Attained

**Analysis of Performance and Lessons Learned:**

A design for portable roll-around shield panels has been selected to reduce the dose rate in Room 3. Resources are not available to proceed with this goal at this time. This goal will be moved to the FY 1995 K Basins ALARA goals.

**Goal 3:** Employ the ALARA program and controls listed in the WHC-CM-4-11 to achieve a 25 percent reduction of the 22.9 person-rem identified as being needed for the installation of the Seismic Barrier Isolation Doors at 105 KE and 105 K West (KW).

**Status:** Not Attained

**Analysis of Performance and Lessons Learned:**

Installation of the Seismic Barrier Isolation Doors is still in progress, and has carried over into CY 1995. Some 6.2 person-rem has been expended on installation of the Seismic Barrier Isolation Doors to date. The time estimates used for the exposure calculations were significantly underestimated due to the expedited manner in which the project commenced. Mock-ups were not performed before actual initiation of the work. This severely hampered the dose estimate. The total dose received for Seismic Barrier Isolation Doors installation is expected to be significantly larger than the estimated 22.9 person-Rem. The ALARA measures outlined in K-94-013 and K-94-014 have been implemented. The measures will reduce the total exposure received for Seismic Barrier Door installation and associated activities by at least 25 percent. The most conservative calculation of the Cost Benefit Analysis indicates a 29 percent reduction in general area dose rates in the work area. The present shielding configuration should result in approximately a 50 percent reduction in overall exposure received, compared to the job being performed without the shielding. Experience, tools, and training gained in the installation of the KW Seismic Barrier Isolation Doors have yielded additional dose reductions measures. K Basins ALARA Committee Internal Memo, KALAR-001-95, details suggestions and lessons learned during ALARA and plant management reviews of the KW activities. ALARA monitoring and application activities will be continued until completion of the Seismic Barrier Isolation Doors installation.

**Goal 4:** Develop a plan and procedures for the removal and disposal of 2,000 empty fuel canisters from the 105 KE fuel storage basin.

**Status:** Not Attained

**Analysis of Performance and Lessons Learned:**

This activity has been turned over to Spent Nuclear Fuels Project Engineering. This item has not progressed to the point of final selection of a disposal method or estimated implementation date. Once a method of disposal, a plan for implementation, and path forward have been established, this item will be reopened. The project will undergo a formal ALARA review and assessment before implementation.

**Goal 5:** Reduce the Radiologically Controlled Areas (RCAs) associated with lay-down yards at 100 KW and 100 KE by 700 square feet

**Status:** Not Attained

**Analysis of Performance and Lessons Learned:**

The RCAs have been reduced by approximately 100 square feet.

**Goal 6:** Decontaminate the 105 KW Chiller pad to a level which would allow it's downgrading from a Surface Contamination Area (SCA) to an RCA.

**Status:** Not Attained

**Analysis of Performance and Lessons Learned:**

Materials for this project have been procured. The Seismic Barrier Isolation Door and upcoming Fuel Sampling and Characterization project has K Basins resource limited. This task will be moved into the FY 1995 ALARA goals and performed when resource loading allows.

**Goal 7:** Work to achieve less than 1.5 skin contaminations per 1,000 radiological area entries. The status of this activity will be reported quarterly. The rate will be analyzed on a monthly basis to ensure that present radiation work practices result in this being a realistic goal.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

K Basins controlled the skin contamination rate at 0.28 skin contaminations per 1,000 radiological entry ratio during CY 1994.

**Goal 8:** The K Basins ALARA Committee will develop field procedures whereby all work packages will have ALARA considerations integrated into their development and make these procedures available to the organizations tasked with the responsibility for such development. Additionally, those individuals who are identified as being responsible for performing this integration will be provided with training in ALARA Good Practices. The ALARA Committee will also institute a mechanism to provide periodic performance checks on the work package development process in order to ensure that ALARA principles are being adhered to.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

The K Basins Radiological Control (RC) organization reviews all technical work documents and work packages for the inclusion of radiological controls. Those documents requiring insertion of radiological controls are marked up with required changes. The draft copy of the document is then returned to the author for insertion of radiological controls. The finalized draft is then once again routed through the RC organization for a final check. This final review is to ensure that the required changes were made, and that changes required by other reviewers do not have an adverse radiological impact. The WHC-IP-1028, K Basins ALARA Program, issued May 3, 1994, details the responsibilities, requirements, and procedures of the K Basins ALARA Program.

The individuals primarily responsible for package review have an extensive radiological controls background, training, and experience. Their expertise is utilized during the development and review of projects as they are written. A formal, documented ALARA review is required prior to the commencement of any project at K Basins. The adequacy of the assessment, radiological controls implemented, and conclusions reached, are then subjected to a plant management readiness review prior to the start of all major tasks.

**Goal 9:** Excess or dispose of the accumulated miscellaneous waste and equipment occupying approximately 4,000 square feet of space in the lay-down yards within the 100 K area.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

This goal has been accomplished. The lay-down yard by 183 KW has been reduced by 1750 square feet. The 190 KW lay-down yard has been reduced by 12,000 square feet. A total of 13,750 square feet has been reduced. The 190 KW lay-down yard was not included in the original area estimate.

**Goal 10:** Experience one or fewer lost work days per 200,000 person-hours worked.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

This goal has been accomplished. K Basins worked over 400,000 person-hours without a lost work day.

4.4PLUTONIUM FINISHING PLANT (PFP)

Compiled by: R. H. Smith, Jr.

Approved by: E. C. Vogt



Goals Scheduled	26
Goals Complete	22
Goals Canceled	2
Goals Not Attained	2 (1 Carried over as a FY 1995 ALARA Goal)

SCOPE The mission of the Plutonium Finishing Plant (PFP) is to provide long-term storage of plutonium bearing materials and to safely stabilize plutonium bearing materials in an environmentally sound manner. Principally this includes the following:

- \* Operation preparedness and maintenance activities associated with the scrap stabilization activities in gloveboxes throughout the facility, and the downloading and safe disposal of process solutions.
- \* Shipping, receiving, and storage of Special Nuclear Material, the stabilization of reactive scrap, and the packaging and handling of solid waste to ensure compliance with environmental regulations.

**Goal 1:** Evaluate the effectiveness of implementing barcoding and special security procedures in place of visual inspections of materials in vaults and storage areas. This includes a reduction in exposure through the use of barcode readers in the inventory of waste drums and radioactive material stored in gloveboxes, as well.

Status: Complete

**Analysis of Performance and Lessons Learned:**

It was determined that more research on the system was needed. There are some problems associated with the ABCASH barcoding system that need to be resolved before these measures are implemented.

**Goal 2:** Complete baseline analysis of noise, lighting, chemical handling, and radio frequency (RF) exposures. The completion of chemical handling activities will depend on the facility's operating status and scope of work. Noise, lighting, and RF wave evaluations will be completed independent of the Plutonium Reclamation Facility's start up activities.

Status: Complete

**Analysis of Performance and Lessons Learned:**

Noise, RF frequency, and lighting baseline analysis has been completed. Ongoing Industrial Health analysis will be continued on an as needed, and/or identified, basis.

**Goal 3:** Establish a Dosimetry Subcommittee to evaluate, test, monitor and implement improvements to the PFP dosimetry program. This includes, but is not limited to, the evaluation of a neutron reading pencil, real time gamma reading device (gamma-con), and/or neutron bubble dosimeters.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

A Dosimetry Subcommittee on exposure has been formed, primarily to deal with the International Atomic Energy Agency (IAEA) inspections.

**Goal 4:** Reduce worker exposure through the use of improved dose tracking and investigation methods. This includes the use of a notification letter to managers when individual exposure records reveal a potential trend toward "select worker utilization," which may indicate the manager relies too heavily on a specific individual or select group of individuals to accomplish high dose rate work. In addition, the ALARA Chairperson will require greater assurance that work is being properly rotated among personnel prior to granting approval on the "Facility ALARA review" section of the Administrative Control Level Change Request.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

The PFP ALARA Chairpersons require justification from immediate manager prior to signature concurrence on the Administrative Control Level Change Request. In addition, an explanation of what steps are being taken to monitor and reduce the individuals exposure are required on the Administrative Control Level Change Request prior to the ALARA concurrence.

**Goal 5:** Complete cost benefit analysis of exposure reduction in front side electrical shop.

**Status:** Canceled

**Analysis of Performance and Lessons Learned:**

Due to the shielding efforts implemented during the first fiscal quarter, exposures in this area have been reduced below the level of concern. No formal cost benefit analysis is needed or warranted.

**Goal 6:** Create a catalog of plastic containment devices and containment tents, (greenhouses) for distribution site wide.

**Status:** Canceled

**Analysis of Performance and Lessons Learned:**

The plastic shop has received recognition through site wide news articles and WHC ALARA Council meetings. The PFP cannot currently keep up with the orders already being received even without the distribution of the catalog. Manpower resources have impacted the development of the catalog, and due to budget constraints and resource allocations in FY 1995, we will not continue this effort in the 1995 Goals.

**Goal 7:** Perform an ALARA Committee evaluation of Class 1 or 2 radiological work, or high risk chemical handling activities, at least once quarterly. The purpose and scope of the evaluation will be to attend a pre-job safety briefing, review all work package information and observe major activities until completion.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

Full scale evaluations of activities are in place on greater than a once a quarter basis due to the reorganization of the work force into project teams. This has allowed ALARA representation to be present during all aspects of the planning cycle, including pre-job safety meetings, work activity progression and lessons learned evaluations.

**Goal 8:** Improve communication of ALARA goals and objectives to plant personnel through the following activities:

- A) Use of centrally located ALARA Display Boards with safety awareness posters, 1994 ALARA Goal status including quarterly updates, and a ALARA Committee Membership Roster,
- B) Create a safety meeting topic list for facility personnel to utilize during monthly safety meetings. This list will include ALARA recommended videos, hand outs, and speakers. In addition, ALARA Committee members will be required to request their group to utilize one of the available items or topics at their group's safety meeting, at least once per quarter.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

Safety meeting topics and films are now the responsibility of the Accident Prevention Council, who sends out a recommended and mandatory list of safety topics to each manager on a three month rotational basis. In addition, ALARA displays have been placed throughout the facility to highlight the concerns and successes of ALARA implementation at PFP.

**Goal 9:** Measure the effectiveness of adequate planning and preparation on work packages by comparing the amount of jobs initiated versus the amount interrupted for various reasons. Share the analysis of reasons for work interruption with facility managers at monthly plant performance meetings.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

Work Control is keeping track of work interruptions to indicate why work is not progressing, or is being stopped. This information is shared with facility management on a monthly basis.

**Goal 10:** Measure the effectiveness of ALARA implementation on Class 1 and 2 radiological activities by comparing the actual dose with the collective estimated dose. Summarize the results for monthly plant performance meeting.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

Estimated doses and actual doses are compared on all jobs to ensure the estimates are reasonable and the measures taken to reduce dose are effective.

**Goal 11:** Evaluate the effectiveness and practicality of using a "Dose Budget" for groups within the facility, and the potential benefit of utilizing "Dose Credits" between working groups. Publish results at monthly plant performance meetings.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

The PFP ALARA Committee evaluated the applicability of the dose budget and determined it would not be beneficial to the facility, as the doses and exposure are currently limited to a small groups of individuals and groups.

**Goal 12:** Improve safety awareness and emergency preparedness of plant personnel by conducting a minimum of two drill scenarios, as follows:

A) Response to Hazardous Material/Waste Spills

B) Loss of containment/internal deposition response

C) Loss of containment/glove rupture in Plutonium Reclamation Facility/RMC/ZB

In order to simulate real life experiences, drills will be conducted on shift as well as during day shift.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

Drills were performed by the Accident Prevention and Emergency Preparedness groups in relation to the Master Safety Improvement Plan for PFP.

**Goal 13:** Provide ALARA Checklist and Awareness Training to PFP Engineering (Design and Process).

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

In addition to the ALARA checklists and forms used during the Person In Charge (PIC) Training (which was attended by engineers and PICs), Engineers also attended a special session on the creation and implementation of the Engineering Design Guidance (EDG) computer system developed by PNL and WHC Pollution Prevention. Training for the EDG was started on June 15, 1994.

**Goal 14:** Place ALARA Low Dose Stay Area signs throughout facility, in addition to establishing initial and periodic reviews for ensuring these areas are posted with current status in HPT facility log.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

Low Dose Area signs have been placed within targeted Surface Contamination and Radiological High Dose Rate areas within the facility. In addition, the signs are part of the facility orientation training given to all employees and visitors.

**Goal 15:** Evaluate improvements in the upgrading of personal protective clothing within the facility, especially in the areas of chemical handling and radiochemical activities. This includes evaluating the use of "cuff sealers" as a replacement for masking tape, a variety of nitrile and chemical resistant gloves as a substitute for latex gloves, and upgrading goggles, face shields and torso protective clothing to best prudent industrial standards.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

Nitrile and chemical resistant gloves have been evaluated and approved for use at PFP when using chemicals. In addition, the Accident Prevention Council and ALARA Committee have Industrial Hygiene representation at all meetings in order to consult on proper personal protection issues. Hanford Environmental Health Foundation (HEHF) nurses also attend these meetings to help identify potential personal protective equipment (PPE) concerns.

**Goal 16:** Evaluate the substitution of lead gloves with bismuth erbium oxide gloves for use in high dose rate glovebox areas. This will reduce neutron and gamma exposure by an estimated 18 percent over lead glove reductions, and eliminate a source of transuranic (TRU) mixed lead wastes.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

Information gathered from Savannah River sources and from the vendor, indicates the availability of the leaded gloves no longer exists.

**Goal 17:** Complete removal and sectioning of miscellaneous TRU contaminated filterboxes and ducting stored in the PFP Room 262 and the 308 area.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

All waste has been properly packaged and removed.

**Goal 18:** Complete activities identified on the ALARA/Safety Awareness walk-through evaluation of the PFP Engineering Labs.

**Status:** Not Attained

**Analysis of Performance and Lessons Learned:**

These evaluations are ongoing. A list was compiled of unneeded equipment and/or chemicals based on the changing mission at PFP. The list was reviewed by the Lab Scientist and recommendations were made for disposition of the equipment and chemicals as to excess or future use. Organized teams performed equipment disposal, hood cleanup, chemical, and waste disposal. To date the Labs have disposed of, or excessed approximately 223 pieces of old lab equipment or materials. We have identified approximately 25 liters of used reagents and chemicals for disposal. Those chemicals identified for disposition are currently going through Acceptance Services and PFP Environmental for classification at which time disposal activities will resume. The hood cleanup campaign has been impacted due to ongoing sample runs, maintenance activities, outages and the 232Z USQ resolution. This goal will be made a part of the PFP 1995 ALARA goals.

**Goal 19:** Resolve issues relating to the Exception Report drafted by PFP Safeguards and Security dealing with the requested changes in the frequency of inventories in the 2736-ZB and 192 vaults. This will save an estimated 2,353 person-mrem/year for Health Physics and Safeguards personnel.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

Exception reports have been received for a number of inventories which have helped to reduce the time spent and the amount of entries made into the vault areas.

**Goal 20:** Create ALARA Priority list for tracking the top ten work packages associated with reduction of chemical and radiological exposure to facility personnel. Discuss status at each monthly meeting.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

This activity is being continued through the Accident Prevention Council Safety Improvement Tracking Log, and will not be tracked through the ALARA committee. It was implemented on March 31, 1994.

**Goal 21:** Continue reductions within surface contamination areas (SCAs) by reducing current SCAs by 10 percent over 1993 levels. This is in support of the Contamination Control Improvement Project (CCIP).

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

SCAs have been reduced by over 10,000 square feet in the duct level areas including Rooms 263, 264, 262 and the Tunnels. The RCAs have been reduced by over 2,000 square feet due to the evaluation of office areas front side after shielding projects were completed in the 23S and process areas. Since this last update, approximately 48,000 additional square feet of SCAs has been released to radiologically control areas.

**Goal 22:** Upgrade assay capabilities at PFP for low level, TRU and mixed waste drums, and HEPA Filters. This will eliminate unnecessary repackaging and handling of wastes as well as reduce the amount of waste required to be assayed by Pacific Northwest Labs and the Transuranic Storage and Assay Facility (TRUSA). It will also provide PFP with a greater ability to properly segregate and manage waste at the work site prior to packaging for shipment.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

A NDA system is in place which is used to assay HEPA Filters. A second system, to assay 55 gallon waste barrels below 100 nCi/gram, is scheduled to be delivered the end of January 1995, and is scheduled to be on line by June 1995.

**Goal 23:** Reduce all skin contaminations by 50 percent of the 1993 rate of occurrence.

**Status:** Not Attained

**Analysis of Performance and Lessons Learned:**

The total skin contaminations for 1994 was 6. Although we did not meet this years goal, PFP did reduce the number of occurrences of skin contamination by 25 percent from the CY 1993 total of 8 skin contaminations.

**Goal 24:** Reduce total rem for PFP monthly and quarterly personnel to 50 person-rem (non-operational) or 80 person-rem, (PRF operational status) from the 1993 70 person-rem and 90 person-rem goals, (respectively).

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

The goal for non-operational exposure for the facility has been reevaluated based upon the successful reduction of exposure in CY 1993. The new goal is 35 person-rem for non-operational periods, and 50 person-rem for scrap stabilization runs. The overall actual estimate (awaiting final figures from Dosimetry) total person-rem for PFP monthly and quarterly personnel was 40 person-rem.

**Goal 25:** Establish Shielding and Exposure Reduction Subcommittee which would track, follow, and recommend specific actions for controlling temporary shielding, and installing permanent shielding throughout the facility.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

This activity has been included in the subcommittee activities for dose reductions, and has been assigned to Health Physics for implementation of shielding activities.

**Goal 26:** Reduce high frequency maintenance items when they are not necessary for the safety and integrity of the facility. Review recall system for weekly/monthly items and make recommendations for the reduction in frequency to appropriate maintenance engineering group.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

Maintenance activities on the Component Based Recall System (CBRS) have been reviewed. Activities not necessary for the safety and integrity of the facility have either been reduced in frequency or in some cases deleted from CBRS.

4.5 PLUTONIUM-URANIUM EXTRACTION (PUREX) / URANIUM OXIDE (UO<sub>3</sub>)

Compiled by: D. E. Kammenzind

Approved by: D. G. Hamrick



Goals Scheduled	16
Goals Complete	12
Goals Canceled	1
Goals Not Attained	3

**Goal 1:** Continue activities to reduce plant chemical hazards by removing the chemical heels from the tanks at 211A and excessing bulk chemicals stored at 275-EA.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

The intent of this goal has been met by removing approximately 60 percent of all dry chemicals from the 275-EA storage location at PUREX. Further reductions will occur as deactivation activities continue. Potassium Hydroxide from UO<sub>3</sub> has been taken by Tank Farms. Ninety five percent of the chemical heels have been removed from the tanks at 211A.

**Goal 2:** Maintain skin/personal effects contaminations at 0 -Significant, (50,000 dpm), and not more than 10 detectable minor skin/personal effects contaminations.

**Status:** Not Attained

**Analysis of Performance and Lessons Learned:**

There have been 2 minor skin contaminations at PUREX and 2 minor skin contaminations at UO<sub>3</sub>. There have been 5 personal effects contaminations at PUREX and 2 at UO<sub>3</sub>. The total skin/personal effects contaminations for PUREX/UO<sub>3</sub> was 11.

**Goal 3:** Maintain cumulative, annual occupational collective dose, as determined by TLD readings, to less than 4 rem.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

Cumulative annual occupational collective dose, as reported by Safety Awareness and Performance was 1.2 person-rem.

**Goal 4:** Identify and reduce the current number of hazardous material storage locations throughout PUREX/UO<sub>3</sub>.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

All storage locations at PUREX have been reduced to what is practical for our current status. As areas are deactivated and materials are no longer needed, areas will continue to be reduced. Locations at UO<sub>3</sub> have been eliminated. Most products have been given to other facilities.

**Goal 5:** Reduce radiological areas in PUREX/UO<sub>3</sub> by 200,000 square feet through decontamination and reclassifying radiological and radiologically controlled areas and document in the Contamination Control Improvement Plan (CCIP).

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

Health Physics and Operations performed a reduction/downgrading of 397,752 square feet of radiological area during CY 1994.

**Goal 6:** Continue to show progress in Compliance with Radiation Control Manual by:

- A) Developing a plan. *Complete.*
- B) Providing continuing training for the Radiological Control Manual. *New information continues to be passed on to employees as received by PUREX.*
- C) Monitoring progress through Radiological Problem Reports, audits, etc.. *During the 3rd quarter the number of RPRs written decreased by one third.*

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

Six of seven procedures required for compliance have been written and issued.

**Goal 7:** Complete Self Survey for 70 percent of PUREX/UO<sub>3</sub> employees by January 1, 1994, allowing them to survey out of and perform activities in areas identified as "low risk" areas.

**Status:** Complete

**Goal 8:** Reduce extremity exposure by 10 percent. Track extremity exposure for deactivation projects and publicize the results.

**Status:** Not Attained

**Analysis of Performance and Lessons Learned:**

This goal was not met due to terminal clean-out activities for N-Cell, which involved removing process equipment from gloveboxes with a limited number of certified operators, impeding the distribution of extremity exposure.

**Goal 9:** Start up and operate waste compactor.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

Design problems/repairs are complete and testing for operability is complete. Waste compactor was operational in CY 1994.

**Goal 10:** Begin work to enable recycling of paper waste from the trailers inside the fenced area.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

Recycling is on-going in mobile offices within the double fence. The main 202A building was excluded for the trial period.

**Goal 11:** By the continual effort of radiological area reductions, the waste from clothing and supplies will continue to decrease.

**Status:** Canceled

**Analysis of Performance and Lessons Learned:**

This goal has been canceled because we could not develop a tangible method with which to measure progress.

**Goal 12:** Perform Operation of F11 Concentrator testing.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

Testing was completed in January 1994 and it was determined that the concentrator is operable.

**Goal 13:** Evaluate First Aid Cases identified as target reduction areas.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

Evaluation has been completed. This information will be used to reach our first aid case reduction goal.

**Goal 14:** Reduce First Aid Cases identified as target areas by 50 percent.

**Status:** Not Attained

**Analysis of Performance and Lessons Learned:**

Nineteen strains/sprains accounted for one-third of the total First Aid Cases in CY 1993. During CY 1994, sixteen strains/sprains, were identified. Although the number of cases have not been reduced by 50 percent, the severity of accidents has decreased.

**16 cases**

13 first aid only (miscellaneous)  
1 recordable only (back injury)  
2 lost work days (one knee strain and one wrist)

**Goal 15:** Promote ALARA awareness by providing ALARA update packets to PUREX/UO<sub>3</sub> management for inclusion in monthly staff/safety meetings.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

Accident Prevention Council/ALARA minutes and applicable information provided by the ALARA/CCIP Program Office continues to be provided to managers as received. Various employees have attended training demonstrations/and seminars and found them to be useful.

**Goal 16:** Perform a random survey of ALARA awareness around PUREX/UO<sub>3</sub> and repeat in six months to see if the awareness level has increased.

**Status:** Complete

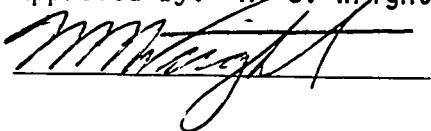
**Analysis of Performance and Lessons Learned:**

Two word search puzzles contest containing ALARA/APC and safety related questions were conducted. Response received showed that people either already knew the information or knew where to find it.

4.6SOLID WASTE DISPOSAL/T PLANT

Compiled by: A. S. Mortensen

Approved by: M. S. Wright



Goals Scheduled	11
Goals Complete	9
Goals Canceled	1
Goals Not Attained	1

SCOPE The primary function of this facility in the 200 West area is to provide radiological and hazardous decontamination services and waste repackaging for the Hanford Site. Equipment decontamination is performed in the 2706-T building for vehicle and large equipment with low levels of radioactive contamination, and in 221-T canyon for equipment with higher levels of contamination. Wastes generated at T Plant include liquid radioactive and mixed waste effluent streams, as well as solid and liquid containerized waste (radioactive, mixed, hazardous and non-hazardous).

**Goal 1:** Three-day Radiological Control Manual (WHC-CM-1-6) training and implementation of self-survey capability.

Status: Complete

**Analysis of Performance and Lessons Learned:**

This training was conducted and is now a part of the ongoing training for T Plant personnel. The implementation of the self survey has allowed the Health Physics Technicians more time to complete other tasks.

**Goal 2:** Implementation of pre-job planning procedure for all tasks performed at T Plant.

Status: Complete

**Analysis of Performance and Lessons Learned:**

The intent of this goal was to increase the effectiveness of the pre-job planning procedures used at T Plant. This goal was accomplished by increasing employees awareness of the value of pre-job planning while incorporating lessons learned from similar tasks. Even though this goal is complete as a part of "good work practices," this will be an ongoing task.

**Goal 3:** Clean up canyon,

Phase 1: To identify Alpha contaminated equipment

Phase 2: To relocate Alpha contaminated equipment to one area.

Status: Not Attained

**Analysis of Performance and Lessons Learned:**

Ninety percent of the contaminated equipment has been surveyed and identified as either alpha or non-alpha contaminated. The drag-off box liner and segregation areas remain. This will be done in conjunction with the segregation and disposal of the liner and its contents. The alpha contaminated PUREX Towers will begin being cut up and relocated as resources are made available.

**Goal 4:** Preplanning of tank car hydro testing to eliminate/reduce the creation of an additional 15,000 gallons of liquid waste.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

Delivery of a new tank car that doesn't require water hydro will be in January 1995. The new tank car will eliminate the need for creation of waste during hydro testing. The hydro testing of the existing railcar was completed in a manner that eliminated creation of waste.

**Goal 5:** Reduce radiological areas by 10,000 square feet.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

This goal was achieved with over 14,900 square feet of radiological area reduction/downgrading.

**Goal 6:** Procure, install, and implement analytical equipment to perform radiological assessment at T Plant.

**Status:** Canceled

**Analysis of Performance and Lessons Learned:**

Lost funding.

**Goal 7:** PCB-Contamination reduction by flushing of transformers.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

The final two transformer oil samples were analyzed and results indicated that PCB flushing was successful. T Plant has no more PCB contaminated transformers.

**Goal 8:** Implementation of ALARA concepts into the design of the W-259 secondary containment and leak detection project.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

Conceptual design completed by February 1994 and sent to DOE for review.

**Goal 9:** To have three ALARA committee members attend APO quarterly hands on training focusing on radiological and non-radiological ALARA issues.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

T Plant was represented at each of the ALARA quarterly training session by a minimum of three T Plant employees.

**Goal 10:** Conduct monthly meeting with Facility Management on the ALARA accomplishments and implementation on ALARA processes at T Plant. This will be an ongoing goal for CY 1994.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

During the monthly Facility managers meeting, ALARA accomplishments and concepts were included as general topics.

**Goal 11:** Hold quarterly presentation on ALARA issues, to have 50 percent attendance of T Plant personnel. This will be an ongoing goal for CY 1994.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

ALARA issues were addressed as a significant part of the all employee meeting held at T Plant during CY 1994.

4.7SOLID WASTE MANAGEMENT (SWM)

Compiled by: F. D. Schlien

Approved by: P. L. Hapke

Goals Scheduled	6
Goals Complete	5
Goals Canceled	1


  
6/7/95

**SCOPE** Solid Waste Management (SWM) Facilities are located in the 200 West area at Hanford. These facilities are permitted as a Treatment Storage and Disposal Facility for waste generated by generators on and off the Hanford site. The facilities include the Transuranic Storage and Assay Facility (TRUSAF), the 616 Nonradioactive Storage Facility (616), the Central Waste Complex (CWC), the Low Level Burial Ground areas (LLBG), Sodium Storage product storage, the Transuranic-Retrieval Program (TRU) and the W-025 Mixed Waste Landfill.

The mission of SWM is defined as follows:

- Manage the CWC, 616, TRUSAF, LLBG, Sodium Storage, Tru-Retrieval, and the W-025 Mixed Waste Landfill.
- Store and transport radioactive waste.
- Repackage, treat, and dispose of legacy wastes associated with prior operations.
- Ensure the use of latest technology developments and state-of-the-art methodology and equipment for waste management.
- Implement directives and issue operation documentation for waste handling operations.
- Manage low-level waste shipped to Westinghouse Hanford Company.
- Participate in the final disposal of hazardous waste.

SWM operations take place in one of the aforementioned facilities.

**Goal 1:** SWM shall monitor personnel exposure records to ensure that average exposures do not exceed 50 mrem/yr. The average is based on the organization's total exposure. This exposure goal is half of last year's 100 mrem exposure goal.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

The fourth quarter average is 16.2 mrem. This goal was completed well under the 50 mrem/year.

**Goal 2:** Develop a facility history file to address ALARA lessons learned from Pre-job and Post-job review worksheets and TRU Retrieval Operations.

**Status:** Canceled

**Analysis of Performance and Lessons Learned:**

This project was terminated for the balance of 1994. It is scheduled to restart April 1995 if funding is available. Jeff James, the Field Team Leader, notified all personnel involved that \$1.8 million of the \$3.2 million budget for pilot TRU retrieval activities had been redirected. Operations and the Program department evaluated the best course for retrieval operations with the remaining funds and the following actions have been identified. First, unvented TRU retrieval operations have been postponed until FY 1996. Second, vented pilot retrieval activities will be secured until spring to avoid poor weather conditions and maximize efficiency of retrieval operations.

**Goal 3:** Track exposure and health hazards during the random sampling of waste received from site generators using ALARA Management worksheet, Pre-Job reviews and Post-Job reviews to ensure the ALARA concept is maintained.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

This program continues to progress and there were no significant exposures or health hazards during this reporting period.

**Goal 4:** Exposure during Backlog Waste package handling by Solid Waste Operations will be tracked with special attention to ALARA, health and safety considerations. Backlog waste packages are placed in interim storage until all sampling results and waste characterization information are complete.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

This project was completed with no ALARA, health or safety problems, and exposure was held at a minimum. The use of the Permacon portable containment with HEPA filtration significantly aided in this project.

**Goal 5:** SWM commits to release four-million square feet of posted radiation areas to radiation controlled area or clean area in CY 1994.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

This goal was achieved on September 30, 1994, three months ahead of the agreed upon estimated completion date of December 31, 1994. Solid Waste Disposal also exceeded the goal by completing 4,073,740 square feet of radiological area reduction.

**Goal 6:** Purchase and implementation of a Rad Rover to aid in the elimination of radiation areas, radiation clothing and associated waste.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

The Rad Rover was purchased and placed in operation well ahead of the established estimated completion date of December 31, 1994. The Rad Rover has proven to be such a success that it will now be offered, on a fee basis, to other organizations who wish to utilize the equipment in other clean-up efforts. Approximately 1.2 million square feet of radiological area reduction was accomplished in 1 month which was added to our 1995 goal. There is a significant savings in time and labor with the use of this equipment. The equipment was offered to another organization to aid in reducing approximately 350,000 square feet of radiological area reduction/downgrading in one and a half days.

**Westinghouse  
Hanford Company****Internal  
Memo**

From: Tank Farm Transition Projects 77000-95-042-A  
Phone: 373-9372 R2-50  
Date: June 7, 1995  
Subject: CHANGES TO THE 1994 ALARA PROGRAM GOALS FINAL STATUS REPORT

To: T. D. Merkling T7-37

cc: S. L. Bump R2-36  
D. J. Newland T7-37  
J. L. Shelor R2-36  
R. J. Thomas R3-12  
J. E. Truax R2-50  
JLL File/LB

Tank Farm Transition Projects is proposing the following corrections to our 1994 ALARA Program Goals Final Report. In some cases we state that we have met the goal within an acceptable margin of error, we consider 10 percent as an acceptable margin of error. The 10 percent is based on the inherent uncertainty of the Thermoluminescent Dosimeter system and the "moving target" of our assigned work scope.

Goal number one was incorrectly set at 18.13. The reason for this incorrect setting was failure to adjust goal number one as the individual department goals were adjusted through the year and failure to apply a small percentage for other departments which contribute to the total exposure but are not part of the major departments. The addition of the four major department goals yields a total of 20.75 person rem. Adding five percent for the remainder of the plant. With these corrections goal number one should have been set at 21.79 person rem. The discrepancy between the two goals was not discovered until after the original report was sent.

Goal number two was incorrectly reported as 13.2 person millirem in the final report. This goal had been updated to 20 person millirem at the midyear report but was not reported correctly due to administrative oversight. The actual exposure average of 22.94 would indicate that this goal was not met. However, it should be noted that in September 1994, over 300 personnel at Tank Farms turned in their dosimeters and thus, were not counted for purposes of the average exposure, even though they wore dosimeters for 11 of the 12 months. If these personnel were included in the calculation, our actual average exposure would be 17 millirem. The change to the dosimetry program which allowed these personnel to turn in their dosimeters was made after the goal was established and therefore was not taken into account in the goal.

Goal three status should be NOT MET. Two of the four departments were within our acceptable (10%) margin of error, however, Maintenance exceeded their goal by 20 percent and Engineering was under their goal by more than 50% indicating greater planning care is needed.

T. D. Merkling  
Page 2  
June 7, 1995

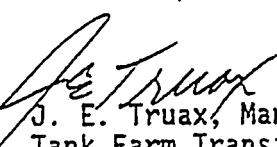
77000-95-042-A

Goal four was MET as stated. It should be noted that one person received 670 millirem prior to coming to Hanford. His Hanford exposure was 121 millirem.

There was some discussion in the RL rejection letter that our justification for canceling goals was not sufficient. It should be noted that the majority of the goals that were canceled, were canceled in response to RLs direction that we concentrate only on radiological control goals for the ALARA Program. The following goals were canceled during the reporting period for the indicated reasons:

- Goals 21 through 25 were canceled because these goals were non-radiological in nature and RL insisted that the ALARA program concentrate on radiological goals only.
- Goals 19 and 20 were canceled for the same reason as 21 through 25. Additionally, it would be non cost effective to develop an ALARA Engineer training program for radiological control only and an internship program for certification was unnecessary when the program will concentrate only on radiological control goals.
- Goal 16 was canceled for the same reason (radiological control only) and the fact that the training department already has several ALARA training courses that deal in radiological control ALARA.
- Goal 14 was canceled as an ALARA Program Goal, because the Environmental Department already had a waste generation awareness program in operation which is reported through the Environmental Department at DOE-RL.
- Goal 26 was canceled when it became clear that the new ALARA Program Manual would not be issued in time to support the accomplishment of this goal during the reporting period.

If you have any questions regarding these changes, please contact S. L. Bump, 373-3661 or J. L. Shelor, 372-2491.

  
J. E. Truax, Manager  
Tank Farm Transition Projects

fs

4.8TANK WASTE REMEDIATION SYSTEM (TWRS)

Compiled by: R. J. Thomas

Approved by: J. E. Truax

Goals Scheduled	18
Goals Complete	4
Goals Not Attained	4
Goals Canceled	10

## Performance Indicators 8

NOTE The goal headings below are the result of a mid-year change in the required format of the ALARA Goal Performance Report, as required by the WHC ALARA Program Office. Development of specific goals in the newly identified areas was not required during the 1994 ALARA Goal development cycle. Consequently, activity in these areas is being reported as PERFORMANCE INDICATORS vice ALARA goals. An asterisk following the goal number indicates that it is one of the sixteen original 1994 goals.

Scope TWRS Plant is responsible for the safe interim storage and stabilization of high level liquid radioactive mixed waste which is contained in a network of underground storage tanks. In the accomplishment of this mission TWRS routinely processes and transfers waste from tank to tank, samples tank contents, monitors tank operating parameters, performs routine and special maintenance, and performs waste volume reduction operations via the 242-A Evaporator Complex.

**Goal 1\*** Annual collective dose for the facility; 18.13 person-rem

**Status:** Not Attained (See page 52A, paragraph 2 for further explanation)

**Analysis of Performance and Lessons Learned:**

Year End Total 21.06 person-rem. The original goal of 14.75 person-rem was revised upward to 18.13 person-rem during the year to account for the projected increases in personnel and productivity which were greater than originally estimated, as well as the fluctuations in work scope and organizational structure. Given the increases and fluctuation in work scope, performance indicates that the dose projections were within acceptable margin-of-error parameters but need additional attention. Improvement in the area of prejob planning and exposure estimating will be addressed in the 1995 ALARA goals.

**Goal 2:** Average worker dose: 13.2 person-millirem average exposure to all radiological workers.

**Status:** Not Attained (See page 52A, paragraph 3 for further explanation)

**Analysis of Performance and Lessons Learned:**

22.94 average person-millirem. This ALARA topic is the result of the modified format as discussed in the Note above. It is the intention of TWRS to keep the average radiological worker exposure to levels As Low As Reasonably Achievable. In mid-year, this performance indicator was revised upward to 20 person-millirem and TWRS attempted to maintain the average worker exposure below this value for the remainder of the calendar year. The final average of 22.94 person-millirem is within the acceptable margin-of-error parameters given the increased level of intrusive characterization work performed and the reduction in number of badged personnel between the beginning and the end of the year.

**Goal 3\*** Annual collective dose for the major departments involved in radiological work:

	<u>GOAL / YEAR END STATUS</u>
a. Tank Waste Operations:	11.24 / 11.380 person-rem
b. Tank Waste Maintenance:	3.80 / 4.571 person-rem
c. Tank Waste Engineering:	1.70 / 0.811 person-rem
d. Tank Waste RadCon (HP):	4.01 / 4.345 person-rem

**Status:** Not Attained (See page 52A, paragraph 4, for further explanation)

**Analysis of Performance and Lessons Learned:**

This ALARA goal was revised upward from the original at mid-year to account for the increases in personnel and productivity which were greater than originally estimated, as well as the fluctuations in work scope and organizational structure. Performance indicates that the dose projections were within acceptable margin-of-error parameters but need additional attention. Improvement in the area of prejob planning and exposure estimating will be addressed in the 1995 ALARA goals.

**Goal 4\*** Maximum dose to a worker: 500 millirem

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

Worker exposures are being monitored; all are under 500 millirem with one exception. This individual is a new hire that came to Westinghouse Hanford Company from a position as a contract I&C Technician. In this former position he received 670 millirem before going to work for TWRS. He has received 121 millirem in his job as an Instrument Technician with TWRS.

**Goal 5:** Number of unplanned exposures resulting in doses greater than the administrative control levels: 0 (zero)

**Status:** Performance Indicator

**Analysis of Performance and Lessons Learned:**

This ALARA topic is the result of the modified format as discussed in the Note above. There were no unplanned exposures greater than the administrative control levels.

**Goal 6:** Number of skin contaminations: 1 per 20,000 entries

**Status:** Performance Indicator

**Analysis of Performance and Lessons Learned:**

TWRS had a rate of one skin contamination per 62,875 documented entries into radiologically controlled areas for 1995. This is more than six times lower than the Nuclear Regulatory Commission (NRC) Standard of one skin contamination per 10,000 entries.

**Goal 7:** Number of clothing contaminations: 1 per 2,000 entries

**Status:** Performance Indicator

**Analysis of Performance and Lessons Learned:**

TWRS had a total of eleven clothing contaminations per 62,875 entries for an average rate of 1 per 5,715.91 entries. This is almost six times lower than the NRC Standard of 1 clothing contaminations per 1,000 entries.

**Goal 8:** Number of radiological occurrences: N/A

**Status:** Performance Indicator

**Analysis of Performance and Lessons Learned:**

Twenty seven Occurrence Reports were filed in 1994 dealing with radiological occurrences. Each Occurrence Report is reviewed by TWRS Plant Operations to determine the root cause and corrective actions are determined and tracked.

**Goal 9:** Number of incidents of area contamination: N/A

**Status:** Performance Indicator

**Analysis of Performance and Lessons Learned:**

Three incidents of area contamination have been reported on Occurrence Reports. Each instance of loss of contamination control is reviewed by TWRS Plant Operations to determine the root cause and establish meaningful corrective actions. The vast majority of the contamination spreads have been as a result of biological and botanical infestation of long standing contamination areas rather than a true "loss" of contamination control through work practices in contaminated areas. The general problem of biological and botanical transport of contamination is being aggressively worked at TWRS facilities. Such actions as "shotcreting" accessible contamination areas to prevent animal intrusion, sealing of valve and pump pits,

sealing of facilities, spraying of vegetation control chemicals, and the application of fixative to contaminated surfaces in the tank farms are just some of the many actions being taken to eliminate the spread of contamination at Tank Farms.

**Goal 10:** Percentage of the facilities square footage that is contaminated and the age of the percentage of the facilities contaminated area to be reduced: N/A

**Status:** Performance Indicator

**Analysis of Performance and Lessons Learned:**

The percentage of facilities square footage that has been reduced was not set as a goal this year as the requirements set out by the APO did not occur until after the TWRS Facility Goals were set and the money appropriated for this years work. However there has been significant reduction in contaminated areas at Tank Farms, see Performance Indicator 11 below.

**Goal 11\*** Reduce Surface Contamination Areas within TWRS via decontamination and/or stabilization by 300,000 square feet.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

Surface Contamination Areas in Tank Farms were reduced by 1,398,340 square feet. This substantial increase over the stated goal of 300,000 square feet was the result of additional funds being located and allocated to the Surface Contamination Area (SCA) reduction effort early in the year.

**Goal 12:** Volume and activity of radioactive waste generated in cubic feet and curies, respectively: N/A

**Status:** Performance Indicator

**Analysis of Performance and Lessons Learned:**

20,474.62 cubic feet of waste was generated by TWRS facilities from January 1, 1994 to December 31, 1994. The total curie content of solid waste generated is not currently available. The information is recorded but is not included in the TWRS data base. Consequently, the information would have to be retrieved from individual waste transfer records and calculated; since this was not an original ALARA Goal it would not be cost effective to do so at this time.

**Goal 13:** Percentage of waste transported to disposal sites: N/A

**Status:** Performance Indicator

**Analysis of Performance and Lessons Learned:**

100% of the generated waste has been shipped or is scheduled to be shipped in accordance with the 180 Day Clock requirement.

**Goal 14\*** Develop and implement a Waste Tanks Waste Generation Awareness and Minimization Plan that reinforces the "Cradle to Grave" philosophy.

**Status:** Canceled (See page 52B, paragraph 6, for further explanation)

**Analysis of Performance and Lessons Learned:**

This activity is being conducted by the Waste Management Group within TWRS and the status is reported through TWRS Waste Minimization Program channels.

**Goal 15\*** Integrate ALARA Safety Planning into all work packages, procedures and operations conducted at TWRS.

**Status:** Not Attained

**Analysis of Performance and Lessons Learned:**

With the insertion of RadCon/ALARA Planners into the various Work Planning/Control Groups, prejob ALARA planning is continuing to show improvement. Continued improvement in the area of prejob planning will be addressed in the 1995 ALARA goals.

**Goal 16\*** Coordinate with the TWRS Safety Manager to develop a performance based training program for training all TWRS Managers and work force personnel in the principles and practical application of ALARA requirements and techniques.

**Status:** Canceled (See page 52B, paragraph 5, for further explanation)

**Analysis of Performance and Lessons Learned:**

Behavior Based Safety Training was the first leg of the training program. Development of specific ALARA principles training is 90% complete and in compliance with the draft revised WHC ALARA Program. Since issuance of the revised WHC ALARA Program manual was delayed beyond years end, the training program remains incomplete and this goal is canceled.

**Goal 17\*** Strengthen and improve the Waste Tank ALARA Awareness Program to better encourage the "Work Safely" philosophy.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

This goal was captured and launched in the Behavior Based Safety Training. ALARA awareness posters and RADCON worker responsibilities are posted at all radiation area entry points. In addition, ALARA considerations/instructions are discussed at the pre-job meetings within TWRS.

**Goal 18\*** Incorporate RADCON requirements into 40% of the Waste Tanks Operating and Maintenance procedures.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

The insertion of RadCon/ALARA Planners into each of the 10 Work Control Zones has allowed TWRS to meet and substantially exceed this goal. 100% of all first-time and/or non-routine radiological work packages and/or work plans/procedures are now reviewed by the cognizant RadCon/ALARA Planners who provide the input required to ensure that Radcon and ALARA requirements/issues are addressed and included.

The following goals, formerly included in the 1994 TWRS ALARA Program Goals, are canceled as a result of the ALARA Program Office and RL direction that the ALARA program focus on radiological issues. These goals have been moved into other appropriate programs to ensure continuing pursuit of these improvements.

**Goal 19\*** Coordinate with the Training Department to develop a training series for ALARA Engineers in all aspects of the ALARA process to include OSHA, Industrial Hygiene, Environmental Law, Radiological Controls (both Health Physics and Radiological Engineering), Criticality safety, Hazard Analysis and Communication, Fire Protection and the application of Safety criteria.

**Status:** Canceled (See page 52B, paragraph 4, for further explanation)

**Analysis of Performance and Lessons Learned:**

ALARA Coordinators will maintain their training through normal Radiological Controls training requirements.

**Goal 20\*** Develop an internship program for WHC ALARA Engineers to provide a certification method for the ALARA Engineer prior to integrating that person into the work force.

**Status:** Canceled (See page 52B, paragraph 4, for further explanation)

**Analysis of Performance and Lessons Learned:**

This method of training ALARA Engineers was determined to not be cost beneficial.

**Goal 21\*** Develop a requirements basis file to guide management decisions as they relate to Safety.

**Status:** Canceled (See page 52B, paragraph 3, for further explanation)

**Analysis of Performance and Lessons Learned:** N/A

**Goal 22\*** Reduce exposure to chemical vapors via implementation of the NEST and Tank Vapor Characterization Programs.

**Status:** Canceled (See page 52B, paragraph 3, for further explanation)

**Analysis of Performance and Lessons Learned:** N/A

**Goal 23\*** Reduce OSHA reportable accident rate by 50% from CY93 total.

**Status:** Canceled (See page 52B, paragraph 3, for further explanation)

**Analysis of Performance and Lessons Learned:** N/A

**Goal 24\*** Identify sources of Chemical Vapors via implementation of the Noxious Odor Advisory System (NOAS) Program. (J. Osborne, Mgr.)

**Status:** Canceled (See page 52B, paragraph 3, for further explanation)

**Analysis of Performance and Lessons Learned:** N/A

**Goal 25\*** Reduce Sources of Industrial accidents via ALARA Team Health and Safety facility surveillances.

**Status:** Canceled (See page 52B, paragraph 3, for further explanation)

**Analysis of Performance and Lessons Learned:** N/A

**Goal 26\*** Issue revisions to the TWRS Plant ALARA Procedure to reflect the change in scope of the WHC ALARA Program as well as the staffing and organizational changes occurring within Waste Tank Operations. (Revised to delete WT Safety Program Procedure)

**Status:** Canceled (See page 52B, paragraph 7, for further explanation)

**Analysis of Performance and Lessons Learned:**

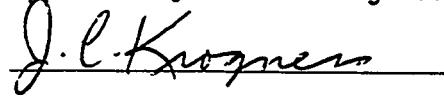
This goal will be reopened when the ALARA Program Office has completed revision of the WHC ALARA Program Manual.

4.9306E LABORATORIES

Compiled by: W. C. Milliron

Approved by: J. C. Krogness

Goals Scheduled	4
Goals Complete	4



**SCOPE** The 306E is an operating laboratory supporting tasks performed by Nondestructive Examination (NDE), Fabrication Engineering and Laboratory, Advanced Technology, and Equipment Design and Testing.

**Goal 1:** NDE will maintain or reduce by 5 percent the radiation exposure average of 50 mrem.

- A) Performing radiography in 306E X-Ray cells when possible,
- B) Continue to work with clients to reduce exposure in the facility where NDE must be performed.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

The average exposure for the NDE Group for CY 1994 is 25 mrem. This exposure rate is well under the projected exposure number for the year.

**Goal 2:** Use building engineering and administrative control to ensure that laboratory personnel are aware of hazards pertaining to the 306E new machine shop now in full operation.

- A) A review of machine shop operations and safety practices shall be completed by building personnel by year end.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

The machine shop operation and safety practices are being rewritten.

**Goal 3:** The 306E building has received new laser equipment. As the new equipment is installed personnel awareness of the new hazard shall be implemented to protect building personnel.

- A) Hold a laboratory staff safety meeting to ensure that personnel coming and going from the facility will be aware of the possible dangers of the new equipment.
- B) Ensure that the proper precautions are followed throughout the yearly operation of the equipment.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

A safety meeting on laser equipment was held and the safety interlocks were installed on the laser room doors.

**Goal 4:** Maintain annual training for radiation generating devices safety, American Society of Nondestructive Testing, and Industrial Radiography Radiation Safety Personnel certification.

**Status:** Complete

**Analysis of Performance and Lessons Learned:**

This training has been completed and the necessary certifications have been maintained.

## DISTRIBUTION

NAME	MSIN	NUMBER OF COPIES
<u>U. S. Department of Energy</u>		4
T. L. Aldridge	A5-55	
D. L. Clark	A5-55	
D. L. Rice	A5-55	
W. B. Scott	A5-55	
<u>MAC Technical Services</u>		1
G. R. Yesberger	A4-35	
<u>Pacific Northwest Laboratory</u>		1
S. L. Keller	P7-78	
<u>Westinghouse Hanford Company</u>		40
<u>ALARA Council Members and Managers</u>		
E. C. Benson, Jr.	L4-99	
O. D. Berglund	T7-37	
D. W. Brown	N2-30	
D. W. Carlyle	T4-05	
P. B. Chadly	T7-37	
W. A. Decker, Jr.	T0-06	
J. W. DeLine	L6-40	
E. V. DosRamos	T7-37	
J. A. Engel	B2-22	
D. G. Hamrick	S6-16	
P. L. Hapke	T4-05	
S. L. Hathaway	S6-62	
R. E. Heineman, Jr.	S6-65	
D. W. Humphrys, II	X3-72	
D. E. Kammenzind	S5-58	
T. J. Kelly	T0-06	
W. K. Lacey	S5-21	
T. D. Merkling	T7-37	
J. C. Midgett	S7-81	
L. A. Nelsen	N2-50	
D. J. Newland	T7-37	
M. D. Nuzum	T6-14	
H. G. Oglesbee	A1-03	
A. M. Ostby	T5-03	
E. D. Robbins	S6-65	
L. W. Roberts	L6-05	
J. L. Shelor	R2-36	
R. H. Smith, Jr.	T5-50	
W. H. Taylor	N2-30	
R. J. Thomas	R2-82	
M. C. Thompson	T6-14	
T. B. Veneziano	X3-71	

NAME	MSIN	NUMBER OF COPIES
E. C. Vogt	T5-50	
L. O. Waggoner	T7-37	
B. A. Watkins	T3-28	
M. S. Wright	T3-28	

<u>General Distribution</u>	27
-----------------------------	----

E. J. Adams	T4-03
B. L. Baumann	T0-06
M. L. Bell	T6-03
R. J. Bliss	B3-04
L. J. Estey	R3-56
D. T. Evans	S7-41
A. J. Fisher	B1-17
K. W. Gray	T5-57
D. D. Green	T4-01
J. W. Hagan	B5-20
A. R. Hawkins	B3-55
T. W. Hogg	T7-37
S. R. Johnson	T7-37
M. Kaviani	X3-60
R. J. Kobelski	S2-41
M. K. Korenko	B4-03
J. L. Lee	R2-50
R. E. Lerch	S7-85
R. R. Loeffler	S5-66
B. H. Lueck, Jr.	S7-81
H. E. McGuire	B3-63
S. R. Moreno	B3-06
R. L. Nelson	A5-55
D. J. Newland	T7-37
R. O. Putoff	S7-41
L. L. Reed	R3-09
A. L. Trego	B3-01
R. N. Smith	S6-65
D. J. Swaim	B3-51
E. P. Vodney	B3-50
R. L. Watts	L6-52
T. M. Wintczak	H4-81
OSTI (2)	L8-07
Central Files	L8-04
Correspondence & Document Control	A3-01

<u>Radiological Control Field Offices</u>	14
---	----

100 Area Facility	X1-78
100 K Facility	X3-61
222-S Laboratory	T6-28
300 Area	L6-52
400 Area	N2-50
B Plant	S6-61
East Tank Farm	S5-02
PFP	T5-57

NAME	MSIN	NUMBER OF COPIES
PUREX	S5-51	
Southern Areas	L6-52	
T Plant	T3-25	
TWRS	S4-39	
Waste Management	R3-12	
<u>Additional Copies</u>		50
ALARA/CCIP Program Office	T7-37	