



**ORAU TEAM
Dose Reconstruction
Project for NIOSH**

Oak Ridge Associated Universities | NV5|Dade Moeller | MJW Technical Services

DOE Review Release 06/28/2019

REDACTED VERSION

**Evaluation of Bioassay Data for
Subcontracted Construction Trade Workers
at the Savannah River Site**

ORAUT-RPRT-0092 Rev. 00
Effective Date: 06/14/2019
Supersedes: None

Subject Expert(s): James M. Mahathy, Donald G. Morris

Document Owner Approval: Signature on File Approval Date: 06/12/2019
James M. Mahathy, Document Owner

Concurrence: Signature on File Concurrence Date: 06/12/2019
Michael S. Kubiak, Objective 4 Manager

Concurrence: Vickie S. Short Signature on File for Concurrence Date: 06/12/2019
Kate Kimpan, Project Director

Approval: Signature on File Approval Date: 06/14/2019
Timothy D. Taulbee, Associate Director for Science

FOR DOCUMENTS MARKED AS A TOTAL REWRITE, REVISION, OR PAGE CHANGE, REPLACE THE PRIOR REVISION AND DISCARD / DESTROY ALL COPIES OF THE PRIOR REVISION.

New Total Rewrite Revision Page Change

PUBLICATION RECORD

EFFECTIVE DATE	REVISION NUMBER	DESCRIPTION
06/14/2019	00	New report initiated to document the evaluation of bioassay data for subcontracted construction trade workers. Incorporates formal internal and NIOSH review comments. Training is not required. Initiated by James M. Mahathy. This version is redacted to remove Official Use Only (OUO) information. An unredacted copy is available upon request, with NIOSH approval.

TABLE OF CONTENTS

<u>SECTION</u>	<u>TITLE</u>	<u>PAGE</u>
	Acronyms and Abbreviations	6
1.0	Introduction	8
2.0	Work Permit Sampling Plan	10
2.1	Definitions for Sampling Plan.....	12
2.2	Inventory	12
2.3	Sampling Methodology, 1990 to 1998.....	16
2.4	Execution of the Sampling Plan	22
2.5	Sampling Plan Execution Issues.....	27
2.6	Radiological Records Collection	28
2.7	Analysis and Report	28
3.0	Radiological Work Permit Sampling, 1991 to 1998.....	31
4.0	Evaluation of Subcontractor Bioassay, 1990 to 1998	32
4.1	Bioassay Sampling Frequency	32
4.1.1	Reasons for Not Meeting Established Sampling Frequencies	32
4.1.2	Work Area Descriptions.....	33
4.1.3	Evaluating Periods with No Bioassay Results	34
4.2	Subcontractor Monitoring Analysis Results, 1990 to 1998	34
4.3	Plutonium Bioassay	39
4.4	Strontium Bioassay.....	41
4.5	Uranium Bioassay	42
4.6	Americium Bioassay	44
4.7	Neptunium Bioassay.....	46
5.0	Job Plan and Special Work Permit Data Collection and Evaluation, 1972 to 1989	47
5.1	Evaluation of Subcontractor Bioassay, 1972 to 1974	49
5.2	Evaluation of Subcontractor Bioassay, 1975 to 1979.....	50
5.3	Evaluation of Subcontractor Bioassay, 1980 to 1989.....	50
5.3.1	Plutonium Bioassay.....	51
5.3.2	Americium Bioassay.....	52
5.3.3	Strontium/Fission Product Bioassay	53
5.3.4	Incident Bioassay, F and H Areas	54
6.0	Conclusions	55
6.1	Job Plan and Special Work Permit Period, 1972 to 1989.....	55
6.2	Radiological Work Permit Period, 1990 to 1998.....	58
6.3	Summary.....	59
	References	60
ATTACHMENT A	WORK PERMIT FOLDER REVIEW GUIDANCE	64
ATTACHMENT B	WORK PERMIT SAMPLING GUIDANCE	68
ATTACHMENT C	RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998.....	74
ATTACHMENT D	JOB PLAN – CONSTRUCTION TRADE WORKER DATA, 1972 TO 1989 ...	145

LIST OF TABLES

<u>TABLE</u>	<u>TITLE</u>	<u>PAGE</u>
2-1	Estimated pages by nonreactor area and year for folders of interest (excluding SRWPs), 1972 to 1985.....	13
2-2	Estimated pages by nonreactor area and year for folders of interest (excluding SRWPs), 1986 to 1998.....	13
2-3	Estimated pages by reactor area and year for folders of interest (excluding SRWPs), 1989 to 1998.....	13
2-4	Folders by nonreactor area and year for folders of interest (excluding SRWPs), 1972 to 1985.....	16
2-5	Folders by nonreactor area and year for folders of interest (excluding SRWPs), 1986 to 1998.....	16
2-6	Folders by reactor area and year for folders of interest (excluding SRWPs), 1989 to 1998	16
2-7	Distribution of the number of folders in each area, 1990 to 1998.....	18
2-8	Distribution of months to be sampled in different sampling schemes.....	18
2-9	Population of RWP folders	22
2-10	Example of subCTW versus monitoring in an RWP.....	30
4-1	SubCTWs with at least one bioassay for any radionuclide, 1990 to 1998.....	35
4-2	Number of workers by craft by ORAU Team report	36
4-3	SubCTWs with at least one bioassay for any radionuclide by craft, 1990 to 1998	37
4-4	SubCTWs with at least one bioassay by area, 1990 to 1998.....	37
4-5	SubCTW bioassay, 1990 to 1998.....	38
4-6	SubCTW plutonium bioassay, 1990 to 1998	40
4-7	Examples of subCTW coworkers with plutonium bioassay, paired subCTW–coworker subCTW in brackets.....	40
4-8	SubCTW plutonium bioassay by craft, 1990 to 1998.....	41
4-9	SubCTW plutonium bioassay by area, 1990 to 1998.....	41
4-10	SubCTW strontium/FP bioassay by year, 1990 to 1998	42
4-11	SubCTW strontium/FP bioassay by craft, 1990 to 1998	42
4-12	SubCTW strontium/FP bioassay by area, 1990 to 1998	42
4-13	SubCTW uranium bioassay, 1990 to 1995	43
4-14	SubCTW uranium bioassay by craft, 1990 to 1995.....	43
4-15	SubCTW uranium bioassay by area, 1990 to 1995	44
4-16	SubCTW americium bioassay, 1990 to 1998.....	45
4-17	SubCTW americium product bioassay by craft, 1990 to 1998	46
4-18	SubCTW americium bioassay by area, 1990 to 1998.....	46
4-19	SubCTW neptunium bioassay, 1991 to 1995	46
4-20	SubCTW neptunium bioassay by craft, 1991 to 1995.....	47
4-21	SubCTW neptunium bioassay by area, 1991 to 1995.....	47
5-1	Job Plans and SWPs with subCTWs, 1972 to 1989	48
5-2	SubCTW bioassay monitoring, 1972 to 1974	49
5-3	SubCTW plutonium bioassay monitoring by craft, 1972 to 1974.....	50
5-4	SubCTW strontium/FP bioassay monitoring by craft, 1972 to 1974.....	50
5-5	SubCTW bioassay monitoring, 1975 to 1979	50
5-6	SubCTW plutonium bioassay by year, 1980 to 1988.....	51
5-7	SubCTW plutonium bioassay by craft, 1980 to 1988.....	51
5-8	SubCTW americium bioassay by year, 1980 to 1988	52
5-9	SubCTW americium bioassay by craft, 1980 to 1988	52
5-10	SubCTW strontium/FP bioassay, 1980 to 1988.....	53
5-11	SubCTW strontium/FP bioassay by craft, 1980 to 1988	54

5-12	Incident bioassay, 1985 to 1990.....	54
5-13	Incident bioassay by craft, 1985 to 1990	55
5-14	Incident bioassay by area, 1985 to 1990	55
6-1	Monitoring rates by radionuclide and period.....	56
6-2	SubCTW used for americium coworker model, ORAUT-OTIB-0081.....	58
6-3	SubCTW bioassay, 1990 to 1998.....	59
6-4	Rates of monitoring of subCTW for at least one radionuclide, 1981 to 1998	59
B-1	CTW craft codes	72
B-2	CTW titles and abbreviations	72
B-3	Area and building designations	73
C-1	RWP bioassay requirements.....	77
C-2	Roster of subCTWs by sample, 1990 to 1998.....	81
C-3	SubCTW required plutonium bioassay, 1990 to 1998.....	97
C-4	SubCTW required strontium bioassay, 1990 to 1998	116
C-5	SubCTW required uranium bioassay, 1990 to 1998	129
C-6	SubCTW required americium bioassay, 1990 to 1998.....	136
C-7	SubCTW required neptunium bioassay, 1990 to 1998	142
D-1	Job Plan bioassay requirements, 1972 to 1989.....	146
D-2	Roster of subCTWs from Job Plans with bioassay, 1972 to 1974.....	158
D-3	Results of subCTWs obtained from Job Plans with bioassay, 1980 to 1989.....	164
D-4	Results of subCTWs obtained from incident reports and bioassay, 1985 to 1990	185
D-5	SubCTW americium bioassay by Job Plan, 1981 to 1987	187

LIST OF FIGURES

<u>FIGURE</u>	<u>TITLE</u>	<u>PAGE</u>
1-1	RWP job-specific bioassay process	10
2-1	DuPont CTW and subCTW annual tritium doses, reactor area workers	14
2-2	Definition of an SWP	14
2-3	Distribution of proportion of subCTWs monitored.....	18
2-4	Distribution of lengths of confidence intervals.....	19
2-5	Distribution of the number of subCTWs in the samples	20
2-6	Distribution of proportion of subCTWs monitored	20
2-7	Distribution of lengths of confidence intervals.....	21
2-8	Distribution of the number of subCTWs in the samples	22
2-9	Diagram to illustrate how the sampling plan was executed.....	26
4-1	Example of waived termination bioassay sample	33
4-2	Craft distribution.....	36
4-3	Example of job breakdown by task.....	36
4-4	Attachment 2 to Root Cause Analysis Corrective Action Report.....	39
4-5	Example chest count report.....	45
5-1	SubCTWs compared to all other SRS workers with claims as of August 2018	49
6-1	Job Plans with common work.....	57
6-2	Procedure review with crafts, DuPont, and construction.....	58
A-1	Folder summary for input to work permit statistical sampling plan	67
B-1	Team A details	70
B-2	Team A HP WP and CTW collection sheet	71

ACRONYMS AND ABBREVIATIONS

ASL	Air Sample Logsheet
BSRI	Bechtel Savannah River, Inc.
CEDE	committed effective dose equivalent
CFR	Code of Federal Regulations
CMX	code designation for a Semi-works facility
CPF	Californium Production Facility
CTW	construction trade worker
DOE	U.S. Department of Energy
dpm	disintegrations per minute
DPSOL	DuPont Standard Operating Logsheet
DPSOP	DuPont Standard Operating Procedure
DWPF	Defense Waste Processing Facility
EDWS	Electronic Document and Workflow System
ESWP	Extended Special Work Permit
FP	fission product
ft	foot
FTF	F Area Tank Farm
HBL	New HB-Line
HCMA	Hot-Crane Maintenance Area in Building 221-F (F Canyon)
HP	Health Physics (department), health physicist (Attachment B)
HWCTR	Heavy Water Components Test Reactor
in.	inch
L	liter
LLC	low-level contamination
mL	milliliter
mrem	millirem
N/A	not applicable
NIOSH	National Institute for Occupational Safety and Health
NOCTS	NIOSH-Division of Compensation Analysis and Support Claims Tracking System
OBL	Old HB-Line
ORAU	Oak Ridge Associated Universities
PAC	possible high-level alpha contamination
PBC	possible high-level beta/gamma contamination
PS	Project Statistician
RC	Records Custodian
RCA	Radiologically Controlled Areas
RR	respirator required
RSL	Radiation Survey Logsheet

RWP Radiological Work Permit

SID numerical portion of sample ID

SME subject matter expert

SRDB Ref ID Site Research Database Reference Identification (number)

SRS Savannah River Site

SRWP Standing Radiological Work Permit

subCTW subcontracted construction trade worker

SWP Special Work Permit

TFF Target Fabrication Facility

TLD thermoluminescent dosimeter

TNX Semi-works

TPM SRS *Internal Dosimetry Technical Basis Manual*

WBC whole-body count

WP work permit

1.0 **INTRODUCTION**

In ORAUT-RPRT-0083, *Evaluation of Monitoring of Construction Workers Identified in High-Level Cave Job Plans at the Savannah River Site* (ORAUT 2017), the Oak Ridge Associated Universities (ORAU) Team found that subcontracted construction trade workers (subCTWs) at the Savannah River Site (SRS) were monitored similarly to prime contractor CTWs.¹ In addition, the report found that 99% of DuPont CTWs and 97% of subCTWs from 1980 through 1986 in that evaluation were monitored for external dose. However, that evaluation considered only CTWs identified in Job Plans for high-level caves and cells in Building 773-A covering 1981 through 1986.

The Advisory Board SRS work group requested a similar statistical evaluation of subCTWs working at other operating areas from 1972 through 1998. This report documents the processes and results of the effort used to address that request. Results of the analysis are presented for the periods from 1972 to 1974, 1975 to 1980, 1981 to 1989, and 1990 to 1998, which match the sets of collected bioassay data.

History of Routine Bioassay Sampling Program

SRS implemented bioassay programs to cover 35 facilities that processed actinides, fission products (FPs), and tritium (Thomas, McFee, and La Bone 1993). Bioassay sampling procedures dating back to 1965 document who was to be monitored for which radionuclides. The procedures prioritized monitoring for those workers with higher exposure potential. In 1965, groups of workers with potential for intakes of tritium and/or FPs were specified. The procedure lists eight work groups across several buildings required to leave urine samples for FP analysis. Work groups not listed in the procedure were not considered to have potential for intakes. DuPont specified bioassay operating guides, sampling frequencies, instructions for requesting and collecting urine samples, and related administrative controls in the *Bioassay Control* procedure, which changed over time. The earliest available version of the procedure is Revision 2 from January 1968 (DuPont 1968). In Revision 3 (January 1970), the positive level for total activity from trivalent actinides (americium, curium, and californium) was noted as 0.3 dpm/1.5 L and the sample positive level was used for the resample level (DuPont 1970). The sample size was reduced to 250 mL. An intake was considered confirmed if the initial bioassay result was >1 dpm/1.5 L and a resample result was >0.3 dpm/1.5 L. The process for requesting samples was similar to the previous process, but approval of a Health Physics (HP) Senior Supervisor or above was no longer required for 24-hour samples. Additional instructions were provided for collecting samples in the event of suspected inhalations, ingestions, injections, skin contaminations, or whenever airborne contamination exceeded control guides. In 1971, additional guidance for Construction Division personnel was added but with no specific guidance for trivalent actinides (DuPont 1971a). "Other nuclides," which would have included the trivalent actinides, were monitored as specified by area health physicists in the construction Job Plans.

The frequencies of routine urine sampling changed throughout the 1970s for various work locations and as a result of the introduction of in vivo counting (DuPont 1971a, 1971b, 1976b). The sampling frequencies for various personnel during the period from 1971 through 1989 are provided in Attachment C of ORAUT-OTIB-0081, *Internal Coworker Dosimetry Data for the Savannah River Site* (ORAUT 2019a).

From 1990 to 1998, SRS performed urine sampling for radioactive material using both routine and special sampling. Workers with "reasonable potential" for internal exposure were included in the Routine Bioassay Sampling Program. The Special Bioassay Sampling Program was designed for

¹ Prime CTWs and subCTWs are defined in ORAUT-OTIB-0081, *Internal Coworker Dosimetry Data for the Savannah River Site* (ORAUT 2019a).

assessing “inadvertent intakes” of radioactive material that could exceed the 100-mrem threshold (LaBone 2001).

SRS designed the Routine Bioassay Sampling Program to assess the adequacy of facility controls and personnel protective measures. U.S. Department of Energy (DOE) orders in place during this period [DOE Order 5480.11 (DOE 1988) and later 10 CFR Part 835] indicated that facilities should, where feasible, be designed and operated with engineered controls that would prevent worker intakes of radioactive materials. The routine program had two parts, prescheduled sampling and job-specific sampling. The program was used in facilities where workers had a reasonable potential for exposure to radioactive materials (WSRC 1990).

By 1990, a worker’s enrollment in the routine bioassay program was based not only on the radioactive hazards associated with the facility where the individual worked, but also the type of work the worker normally performed. SRS considered a worker who routinely performed tasks requiring respiratory protection to be at greater risk of involvement in an incident resulting in an intake than, for instance, a manager who occasionally performed a cursory walkthrough of a facility. Therefore, for the purposes of the routine program, SRS defined three categories of workers that were in effect until the implementation of 10 CFR Part 835 (WSRC 1993a):

- Category I. Hands-on workers with the highest intake potential. They routinely worked in Contamination or High Contamination Areas and were required to wear respiratory protection. For these employees, the routine program typically required quarterly urine samples and an annual chest count.
- Category II. Supervisors, engineers, or operators who did not perform hands-on work, but who routinely entered Radiologically Controlled Areas (RCAs) to observe work or record data. They were typically required to submit an annual urine sample but did not receive annual chest counts.
- Category III. Other people working on site who occasionally entered RCAs only to observe work. These employees were at little to no risk of receiving an intake. They were not required to submit routine urine samples, and they did not receive annual chest counts.

With the implementation of 10 CFR Part 835, SRS defined the three categories of workers for actinide bioassay as:

- Those “likely” to exceed 100-mrem committed effective dose equivalent (CEDE),²
- Those with “reasonable potential” to exceed 100-mrem CEDE; and
- Those with “no potential” to exceed 100-mrem CEDE.

No worker at SRS was considered “likely” to exceed 100-mrem CEDE (Findley 1998, p. 6).

For both actinide and tritium bioassay, prescheduled sampling was used to sample workers who routinely worked in locations with Airborne Radioactivity Area postings. Samples were generally scheduled annually or semiannually based on a worker’s date of birth or another recurring event. A large majority of routine bioassay samples were collected with prescheduled sampling.

Job-specific sampling was used to sample workers not on prescheduled sampling but who needed to enter locations requiring respiratory protection. Like prescheduled sampling, job-specific sampling

² To formalize the definition of who might fit this criterion, SRS performed a statistical study of bioassay data for 1999 and 2000 to test the process of judging a worker’s likelihood of exceeding 100-mrem CEDE from intakes of radioactive materials (LaBone 2001).

was used to assess the adequacy of facility controls and personnel protective measures. A definition of the job-specific sampling from September 1997 described it as follows (Findley 1997):

Job-specific urine sampling is also known as “RWP (Radiation Work Permit) sampling” and is administered exclusively by radiological control personnel. RWPs are written to describe a specific scope of work to be performed. Additional information such as the expected radiological hazards to be encountered, respiratory protection if needed, and dosimetry requirements are listed on the RWP. Based on the degree and nature of the radiological hazards it may be necessary to request each worker performing “hands on” work to leave a urine bioassay sample, hence the term “job-specific sampling.” If a worker is wearing respiratory protection and is not on an appropriate routine sampling program then a job-specific sample should be requested.

RWP (job-specific) sampling was not performed to measure a suspected intake. At SRS, dose was not assigned from job-specific bioassay sampling results. However, results of prescheduled and job-specific bioassays could flag a worker for special bioassay sampling. Samples collected from routine sampling for uranium, actinides, and FPs were generally collected over 24 hours, although some were collected as 8-hour samples. Figure 1-1 shows the RWP job-specific bioassay process.

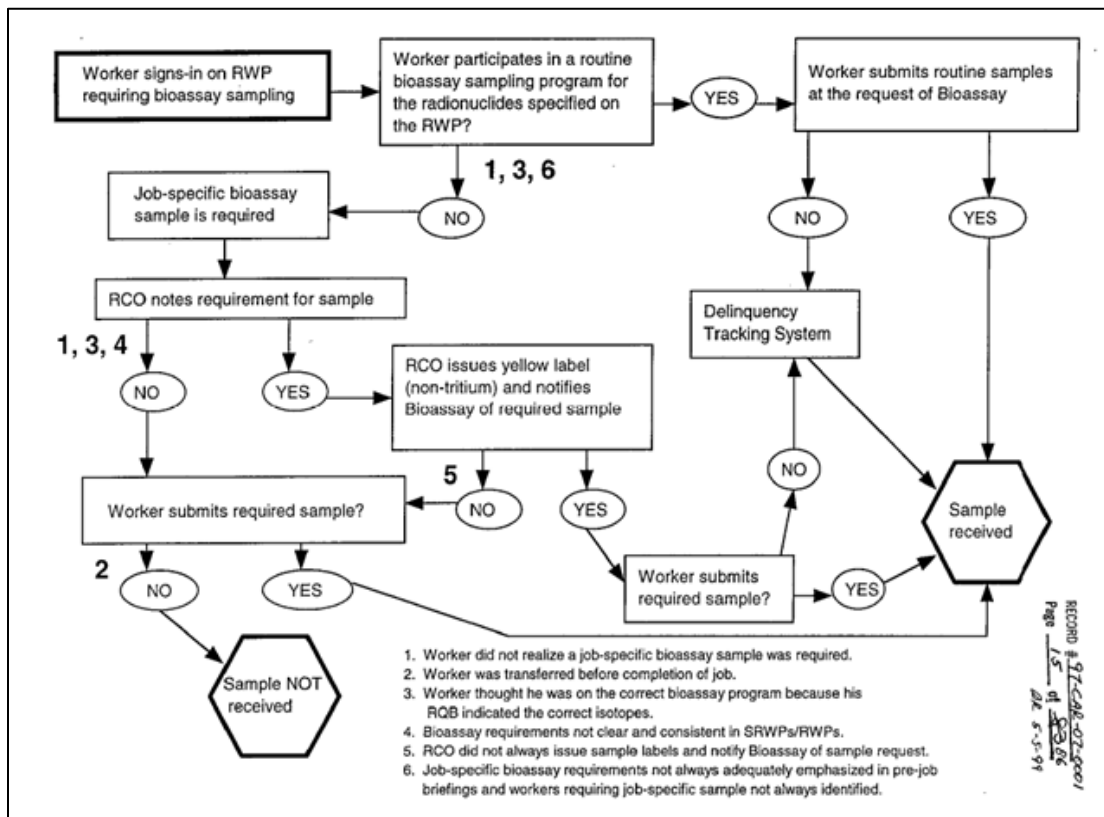


Figure 1-1. RWP job-specific bioassay process (Morgan 1999).

SRS designed the Special Bioassay Sampling Program to assess “inadvertent intakes” of radioactive material that could exceed the 100-mrem threshold (LaBone 2001). Under this program, samples were required in response to unusual or unanticipated circumstances.

2.0 WORK PERMIT SAMPLING PLAN

The ORAU Team statistician, in conjunction with the National Institute for Occupational Safety and Health (NIOSH), developed a two-part sampling plan to randomly select subCTWs so that an

evaluation of monitored and unmonitored subCTWs could be conducted (see Attachments A and B). Sampling occurred in June 2018; Attachments C and D contain tables of the collected data that support this report.

Three evaluations of associated subCTW data were conducted. The first evaluation was a simple statistic of the percentage of subCTWs monitored by year. The second evaluation focused on the unmonitored subCTWs to determine if there was an appropriate coworker who worked in the same radiological environment at the same time. The third evaluation investigated the radionuclides of concern for the sampled radiological environments and compared them to the bioassay monitoring of the individual subCTWs. The combination of these evaluations should provide sufficient insight into the actual monitoring practices of the subCTWs over the period from 1972 through 1998.

The data collection and analysis team determined that the best way to demonstrate the monitoring practices was to randomly examine various types of work permits (WPs) and directly compare the monitoring of listed subCTWs as having worked on the individual WPs.

On an Advisory Board on Radiation and Worker Health, SRS Work Group call on February 9, 2018 (NIOSH 2018), NIOSH discussed a finding from the DOE OpenNet Human Radiation Experiments that referenced 383 ft³ of records, or 852 boxes of historical Special Work Permit (SWP), Radiation Survey Logsheet (RSL), and DuPont Standard Operating Procedure (DPSOP) records. The inventory stated the periods covered were 1952 to 1975, 1979 to 1987, and 1992 (HAI 1996, pp. 493–511). Using the SRS Electronic Document and Workflow System (EDWS) the team evaluated the list of boxes. While the findings suggested WPs were available for the period 1973 through 1992, only one box, T050-9554-10-T459, contained Job Plans. These covered a portion of 1976 for A Area. Subsequently, the team worked with the SRS Records Management department to perform onsite database searches to identify SRS holdings that might contain the following types of WPs for the period from January 1, 1972, to December 31, 1998: Job Plan, SWP, Radiation Work Permit (RWP), Standing RWP (SRWP), and Extended SWP (ESWP). In addition, the Site Research Database (SRDB) was searched to identify target material and resulted in an additional 24 Job Plans for review.

The combined effort to locate target holdings resulted in the identification and subsequent review of 206 records boxes. The boxes were reviewed the week of March 12, 2018, by a team of six individuals for the presence of WPs, more specifically WPs with subCTWs noted. The review identified 132 boxes of interest (i.e., containing WPs and/or associated sign-in sheets). Boxes of interest consisted of 65 physical, 6 microfilmed, and 61 stored electronically in the EDWS. The review also included the identification of 11 folders in the boxes that contained subCTW-related information embedded in the WPs as well as indicating if bioassay was noted as being required.

The WPs proved to be challenging either to qualify or to quantify specifically because they were sometimes mixed with RSLs or Air Sample Logsheets (ASLs) and were also mixed between tasks or applications such as Operations, Maintenance (who were prime contractor CTWs), and Construction (who were subCTWs). Prime CTWs and subCTWs are defined in ORAUT-OTIB-0081 (ORAUT 2019a). However, they were generally batched together by areas and years. A more pressing challenge arose during the review because folders contained other, more relevant variations, such as (1) how many WPs were in a folder, (2) how many of the WPs in that folder contained a subCTW annotation, and (3) how many of the WPs with subCTWs could be identified as requiring bioassay. To address the variations, the team reviewed 11 folders to a level of detail that provided information for consideration about the elements of number of WPs, those with subCTWs, and those with subCTWs and required bioassay in the folders population.

Consistency among the review team was enhanced by developing and following the guidance contained in Attachment A, Work Permit Folder Review Guidance. Below is a concise summary of the data review effort:

- Inventoried 852 boxes identified on DOE finding aid (HAI 1996, pp. 493–511).
- Identified and reviewed 126 physical boxes for WP and CTW material. Sixty-five were identified as having material of interest.
- Identified and reviewed 70 electronically stored boxes for WP and CTW material. Sixty-one boxes were identified as having material of interest. Note that the initial population was identified by using the following keywords: “RWP,” “SRWP,” “Radiation Work Permit,” “SWP,” “Special Work Permit,” and “Job Plan.”
- Identified and reviewed 10 microfilmed boxes for WP and CTW material. Six were identified as having material of interest, each with about 2,000 to 3,000 pages.
- Identified and reviewed 24 Job Plan documents in the SRDB.
- Reviewed 11 folders at a high level of specificity for number of WPs, number of WPs with subCTWs noted, and the number of subCTW WPs requiring bioassay.
- Documented review results on data collection sheet *SRS Folder Summary for Input to Work Permit (WP) Statistical Sampling Plan* (Figure A-1) and subsequently transferred the data into a spreadsheet for statistical analysis.

2.1 DEFINITIONS FOR SAMPLING PLAN

The following terms apply to the plan and this analysis:

- Folder of interest. Folder containing at least one RWP or Job Plan requiring bioassay, with both RWP detail (header) data indicating work performed and/or monitoring requirements along with sign-in sheets of workers. Sign-in sheets were also used if the RWP header was denoted as available in another folder. At least one of those workers must have been a subCTW who should have been monitored by bioassay as a result of work on the job.
- SubCTW being monitored. Worker was monitored by bioassay, which could include routine sampling, according to the RWP requirements. For a pulled subCTW, the ORAU Team used available bioassay data, including DOE data already in the NIOSH-Division of Compensation Analysis and Support Claims Tracking System (NOCTS), to determine if a worker was monitored within a frequency specific to the sampled radionuclide from date of RWP sign-in, either by urinalysis or in vivo analysis, for all radionuclides listed on the RWP other than tritium (^3H).

2.2 INVENTORY

For sampling purposes, ideally, one would like to know exactly how many RWPs of interest there are, where the RWPs of interest are located (box and folder), and how many subCTWs are on them. When dealing with the number of boxes that had to be inventoried, it would be very cumbersome to locate and inventory each RWP and count the number of subCTWs on each. The RWPs are organized in folders, so this natural division could be exploited to make the inventory process simpler. Folders of interest were inventoried, along with the area, dates, thickness/page count, etc. From this information, the number of RWPs and number of subCTWs could be estimated reasonably enough to

perform a sample size calculation. The inventory is summarized in Tables 2-1, 2-2, and 2-3. A distinction should be made between general RWP and SRWP. General RWPs were designed to cover a specific job or task (typical of construction work), whereas SRWPs were written for more routine types of work. However, the site appeared to use these interchangeably depending on the duration of the job. The review identified CTWs on both types of RWPs. A further complicating issue was that many SRWPs were written for tours and egress across nonradiation areas at the site and do not necessarily reflect work with potential for radiation exposure. Therefore, the sampling plan did not include SRWPs.

The results of inventory and lists of the estimated number of pages of RWPs per year by area are shown in Tables 2-1 and 2-2 for nonreactor areas and Table 2-3 for reactor areas. The ORAU Team identified no pages for reactor areas before 1989.

Table 2-1. Estimated pages by nonreactor area and year for folders of interest (excluding SRWPs), 1972 to 1985.

Area	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	Totals
A	1,220	928	146	0	675	0	263	153	0	157	217	526	0	322	4,607
E	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	1,220	928	146	0	675	0	263	153	0	157	217	526	0	322	4,607

Table 2-2. Estimated pages by nonreactor area and year for folders of interest (excluding SRWPs), 1986 to 1998.

Area	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	Totals
A	25	44	0	0	0	601	0	1,802	2,926	0	0	0	0	5,398
E	0	0	0	0	0	0	75	0	55	0	0	3	0	133
F	0	0	0	0	15	3,168	3,819	2,288	2,415	1,475	2,220	6,878	6,785	29,063
H	0	0	0	0	0	751	4,165	6,685	1,292	4,101	2,645	0	0	19,639
M	0	0	0	0	0	0	884	626	0	0	0	0	0	1,510
Z	0	0	0	0	0	0	0	457	525	0	0	0	0	982
Totals	25	44	0	0	15	4,520	8,943	11,858	7,213	5,576	4,865	6,881	6,785	56,725

Table 2-3. Estimated pages by reactor area and year for folders of interest (excluding SRWPs), 1989 to 1998.

Area	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	Totals
C	0	38	161	1,526	0	188	0	0	0	574	2,487
K	796	3,452	2,418	0	2,337	354	0	0	0	0	9,357
L	0	0	0	0	427	3,342	2,264	0	0	0	6,033
P	0	5,080	0	0	0	172	0	0	0	0	5,252
R	0	150	0	0	0	165	0	0	0	0	315
Reactor	0	0	150	0	0	0	15	0	0	0	165
Totals	796	8,720	2,729	1,526	2,764	4,221	2,279	0	0	574	23,609

For this analysis, the team stratified the reactor areas from all other areas. The reasons for this stratification were that large-scale tritium monitoring was performed on reactor area workers including subCTWs, and the resulting tritium doses have been very low. For example, the 95th percentile for subCTWs has been less than 100 mrem since 1973 (Figure 2-1). In addition, due to the large-scale monitoring, inclusion of these areas could skew the analysis because a higher percentage of subCTWs were monitored for tritium than for actinides.

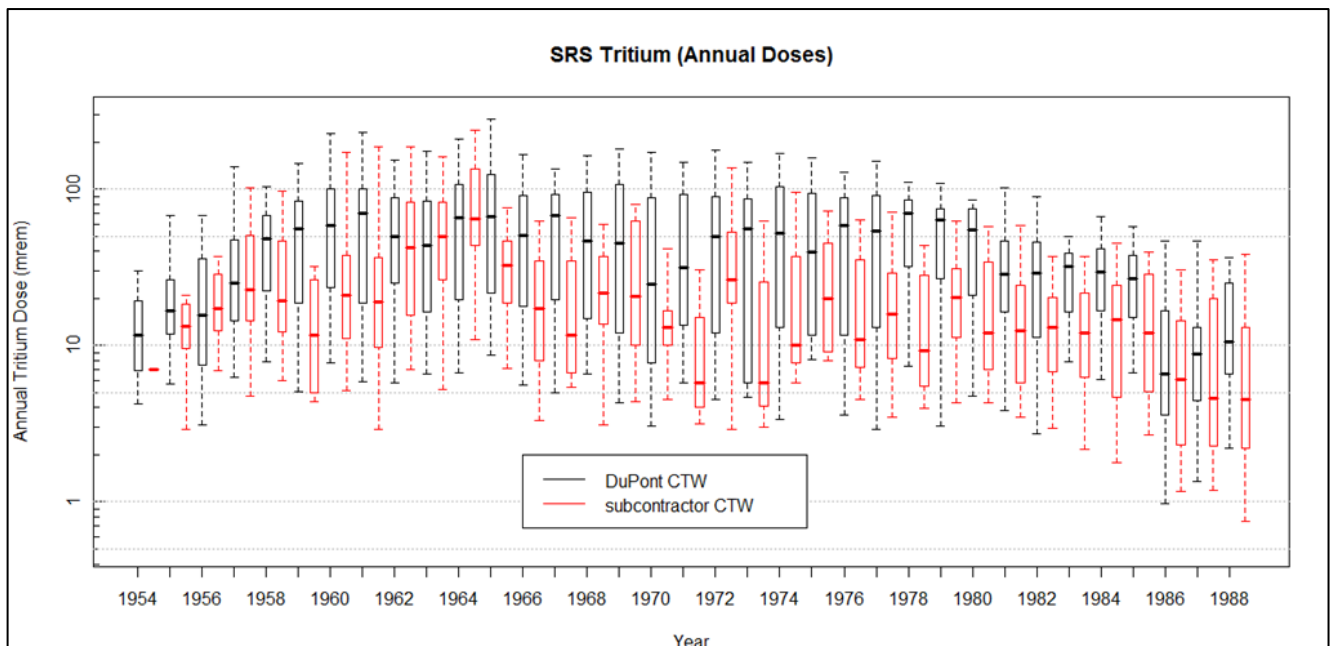


Figure 2-1. DuPont CTW and subCTW annual tritium doses, reactor area workers.

Based on this inventory, only one area (A Area) appears to have routinely used SWPs and/or Job Plans in the 1972 through 1989 era (DuPont era). Approximately 700 SWP boxes were noted for the pre-1972 era that are not depicted in Table 2-1 (HAI 1996, pp. 493–511). Those boxes were not included in the sampling plan because they contained no Job Plans or SWPs from after 1971. Sometime between 1972 and 1976, the use of SWPs appears to have been phased out. In DPSOP 40, *Radiation & Contamination Control*, SRS HP stated SWPs were no longer in general use (DuPont 1976a). Figure 2-2 shows a portion of the procedure highlighting the definition of an SWP.

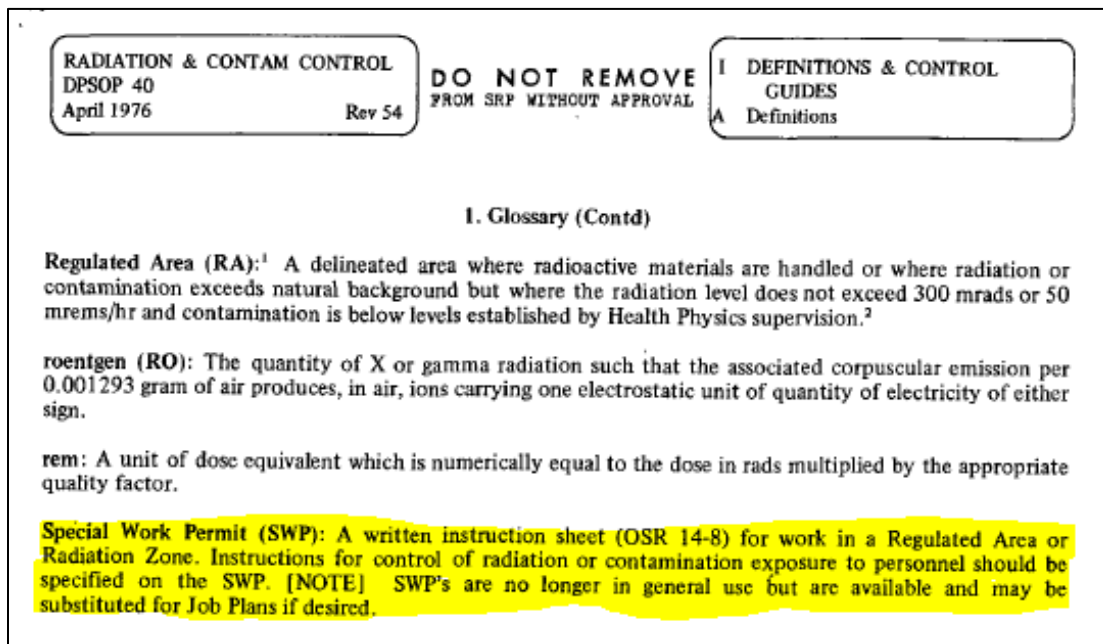


Figure 2-2. Definition of an SWP (DuPont 1976a, p. 159).

The team followed up with site personnel about this nuance and learned that each operating area used DuPont Standard Operating Logsheets (DPSOLs) and/or Job Plans for work control. Starting in the early 1970s SRS largely relied on DPSOLs to control worker radiation exposures in the same way

as SWPs (ORAUT 2018a). The team reviewed some DPSOLs, but they contained only general information about radiation monitoring and did not specify bioassay requirements. In addition, the DPSOLs only contained initials of the individuals who completed the step and not full names or payroll numbers. As a result, workers were not specifically tracked by DPSOLs as they were on SWPs and would later be on RWPs. In the period leading up to the use of RWPs, worker exposures were monitored (tracked) in areas by employee exposure cards, thermoluminescent dosimeters (TLDs), and bioassay.

The team found and reviewed approximately 3,100 2.5- by 6-in. employee exposure cards, of which about 80 were identified as being subCTWs, primarily from Areas P, K, and L from 1972 to 1976. Site records personnel indicated that more of these cards are available off site. These exposure cards were used to record and monitor entry into the canyons and other high-level exposure areas. The exposure cards identify who worked in a regulated area, but they do not specify the type of work being conducted. Therefore, there is no clear way to determine whether the worker should have been monitored for internal exposure.

Note that current and former employee interviews indicated that some records were destroyed in the late 1980s or early 1990s (NIOSH 2008):

[Name Redacted] stated that he was working at the SRS site in November 1989 for Miller-Dunn Electric when Westinghouse took over the contract from DuPont. He witnessed two crews of laborers who worked for six to eight weeks destroying both DuPont and subcontractor documents. [Name Redacted] stated that either Westinghouse or Bechtel sent a truck to pick up his records for North Brothers and said that they would take custody of them. [Name Redacted] added that prior to Westinghouse taking over, DuPont Construction hired all the crafts but three: Miller-Dunn hired the electricians, B. F. Shaw hired the pipefitters, and North Brothers hired the insulators.

The SWPs or Job Plans for other areas might have been destroyed as part of that effort. The only clear information the team was able to glean from this search is that SWP and Job Plans are only available for one area during the period from 1972 to 1990. Under Westinghouse, starting with the K-Reactor startup, RWP use was initiated. RWPs were rolled out as a pilot in 1989 for K-Reactor startup work and phased in across the site starting in 1990 (ORAUT 2018a). The team collected subCTWs from all Job Plans and permits for 1972 to 1990 where bioassay was required by the permit. The team considered the start of RWP use in nonreactor areas to be 1991.

One of the difficulties in searching EDWS is that the document date is not always representative of the data in the records box. Sometimes the document date refers to the date the records were submitted, and other times it refers to the date of the documents in the box. EDWS was searched for later years (1998 to 2000) to determine if more RWPs from 1996 and 1997 could be found, but none were. The team identified about 80,000 pages of SWPs, Job Plans, and RWPs for nonreactor areas from which a sample of subCTWs could be selected and a comparison conducted on a per-RWP basis.

Sampling Frame, Folders

As indicated earlier, the RWPs are in specific folders in specific boxes. Table 2-1 provides the estimated number of pages because the information is less specific. For example, one folder could be 0.25 in. thick and only contain a few pages of RWPs, while another folder could be 3 in. thick and contain multiple RWPs covering multiple months and have hundreds of listed workers. This is illustrated by comparing A Area and M Area in 1993. A Area has one folder with 1,802 pages of RWPs. M Area has three folders but contains only 626 pages, or approximately one-third the quantity. The conclusion is that the small number of folders can be misleading in terms of content.

The RWP information, however, is organized by folders, so this was an important component of the sampling. The same sampling frame as depicted in Tables 2-1 through 2-3 is provided based on folders in Tables 2-4 (1972 to 1985), 2-5 (1986 to 1998), and 2-6 (1989 to 1998).

Table 2-4. Folders by nonreactor area and year for folders of interest (excluding SRWPs), 1972 to 1985.

Area	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	Totals
A	8	4	1	0	3	0	2	1	0	1	1	2	0	1	24
E	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	8	4	1	0	3	0	2	1	0	1	1	2	0	1	24

Table 2-5. Folders by nonreactor area and year for folders of interest (excluding SRWPs), 1986 to 1998.

Area	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	Totals
A	1	1	0	0	0	4	0	1	1	0	0	0	0	8
E	0	0	0	0	0	0	1	4	1	0	0	1	0	7
F	0	0	0	0	1	5	19	12	15	7	9	27	34	129
H	0	0	0	0	0	5	19	36	10	14	9	0	0	93
M	0	0	0	0	0	0	3	3	0	0	0	0	0	6
Z	0	0	0	0	0	0	0	2	2	0	0	0	0	4
Totals	1	1	0	0	1	14	42	58	29	21	18	28	34	247

Table 2-6. Folders by reactor area and year for folders of interest (excluding SRWPs), 1989 to 1998.

Area	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	Totals
C	0	1	1	6	0	2	0	0	0	2	12
K	4	12	10	0	1	4	0	0	0	0	31
L	0	0	0	0	1	8	1	0	0	0	10
P	0	11	0	0	0	4	0	0	0	0	15
R	0	1	0	0	0	1	0	0	0	0	2
Reactor	0	0	1	0	0	0	1	0	0	0	2
Totals	4	25	12	6	2	19	2	0	0	2	72

2.3 SAMPLING METHODOLOGY, 1990 TO 1998

As shown in Tables 2-4 and 2-5, information of interest before 1991 was available for A Area and reactors only. For that reason, all subCTW information was collected for the period before 1991. As such, the following sampling methodology only applies to the 1990 to 1998 portion of Tables 2-1 and 2-2.

Sample Size Calculation

The way the RWPs were organized (i.e., boxes and folders) and the known number of RWPs and months in each folder, along with the desire to cover all areas (strata) and all years, led to a stratified multistage sample approach, with random sampling at the following four stages:

1. Years,
2. Folders,
3. RWPs, and
4. Months.

All subCTWs of interest in a month were sampled, which is a census at the CTW stage. Based on information from the inventory process, months needed to be included as a sampling stage. Single

RWPs ranged from 1 to 12 months and from 1 to over 300 pages. If the plan did not include the month as the elementary sampling unit, and a 300-page RWP was selected, the sampler would have to count unique subCTWs and scan all 300 pages, which could lead to an inappropriately skewed sample representation. By including the month as a sampling stage, large single RWPs would not be able to dominate the sampling, the information gathering was simpler, and the sampling was able to cover more areas and years. Work with transplutonium was primarily conducted in F and H Areas (and a lesser amount in A Area), so under this plan a majority of RWPs should be from F and H Areas. Reactor areas were excluded from this analysis.

From a statistical sampling perspective, a stratified four-stage sample is extremely complicated, so there is no textbook sample size calculation that can be performed. Therefore, a simulation exercise was conducted to determine the necessary sample size. In addition to the inventory and sampling frame information included above, the simulation required subject matter expert (SME) estimates of several things:

- Current folder counts are folders that have at least one RWP with a subCTW listed. Estimate the fraction of the current folder count that will be folders of interest, as defined above.
 - Triangular distribution: min=0.75, mode=0.85, max=1
- Estimate the number of RWPs of interest in each folder of interest, based on folder name and/or thickness.
 - Median regression through the origin of total RWP vs. folder thickness, where available
 - Total RWP = 21.42857 × folder thickness
 - Fraction of interest – triangular: min=0.1, mode=0.4, max=1
- Estimate how many months of interest are in each RWP of interest.
 - Triangular distribution: min=1, mode=1, max=min(3, folder months)
- Estimate the number of unique subCTWs in each month of interest.
 - Triangular distribution: min=2, mode=4, max=8
- Estimate the percentage of subCTWs that were monitored, as defined above.
 - Simulate once using 50% and once using 75%

The desired outcome of the sample size simulation was to provide a minimum number of months that needed to be sampled and a minimum number of subCTWs. The goal with the sample size calculation was to be able to estimate the percentage of subCTWs of interest who were monitored (with “of interest” and “monitored” as defined above) to within $\pm 5\%$ with 95% confidence. Confidence intervals for proportions in this report were calculated using the “beta” method in the *svyciprop* function from the R survey package (Korn and Graubard 1998) to ensure the lower and upper limits are between 0 and 1.

The sampling frame of folders (Tables 2-5 and 2-6) was stratified by area. For the simulation, the total number of folders in each area is shown in Table 2-7. Note that the simulation was performed before the digitized microfilm folders were added to Tables 2-5 and 2-6, and some data entry errors were corrected, so the numbers in Table 2-7 do not necessarily match the appropriate totals in the former three tables. The proportional sampling scheme in Table 2-8 was the starting point for the simulation, but some areas were underrepresented. The semiproportional sampling scheme was

devised by the SME to better represent all areas while keeping the sample sizes semiproportional to the total number of folders in each area. Any multiple of the semiproportional scheme can be used to satisfy the $\pm 5\%$ with 95% confidence criterion in the simulations.

Table 2-7. Distribution of the number of folders in each area, 1990 to 1998.

A	E	F	H	M	Z	Total
6	6	124	88	3	3	230

Table 2-8. Distribution of months to be sampled in different sampling schemes.

Sampling scheme	A	E	F	H	M	Z	Totals
Proportional	2	2	42	30	1	1	78
Semiproportional	15	10	30	30	10	10	105
1.5 x semiproportional	23	15	45	45	15	15	158

Simulation with 50% Estimate

The simulation was run first with an SME estimate of 50% of subCTWs monitored. Ten populations were generated from 10 random draws from the list of distributions of parameter estimates from the SMEs given earlier in Section 2.3. The semiproportional sampling scheme calls for at least 105 months to be sampled. Two hundred independent samples (each of 105 months distributed as shown above) were drawn from each of the 10 populations. Figure 2-3 shows the distribution of the 2,000 final proportions of subCTWs monitored (and the 95% confidence interval denoted by the red vertical lines).

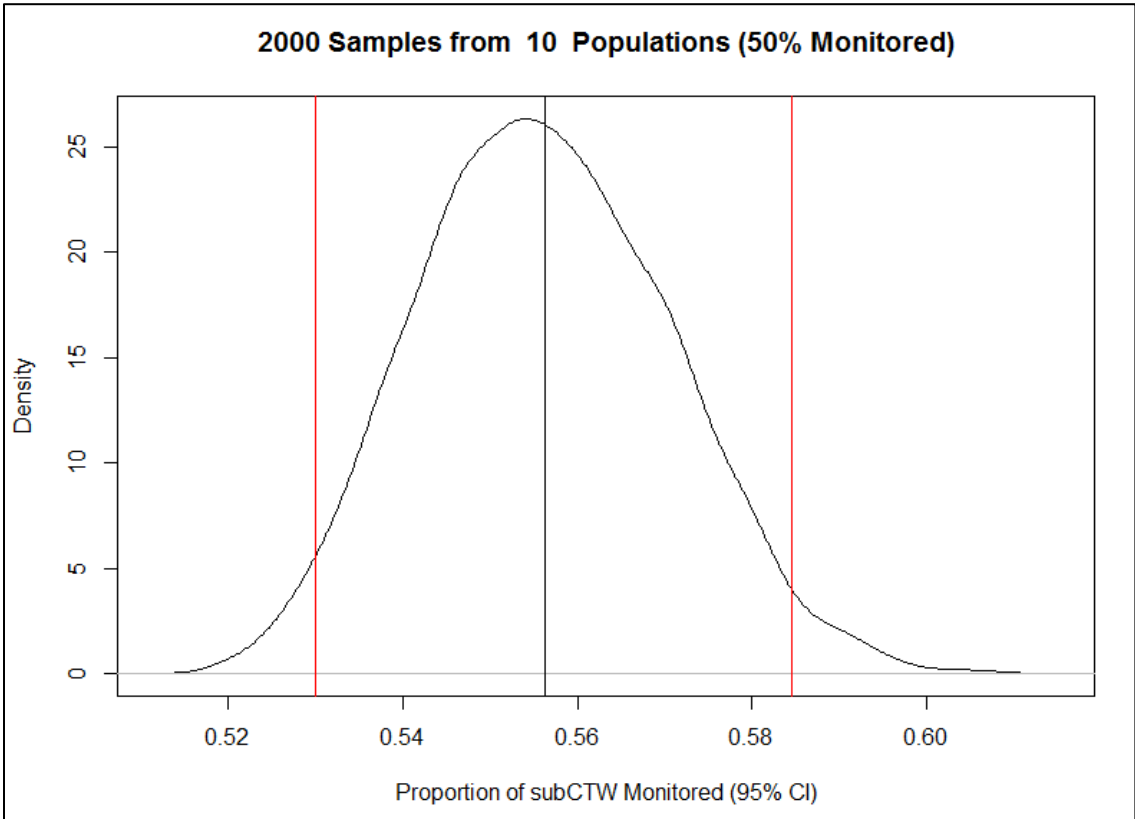


Figure 2-3. Distribution of proportion of subCTWs monitored.

A 95% confidence interval was calculated for each of the 2,000 samples. The distribution of the lengths of these 2,000 intervals is shown in Figure 2-4. The goal of the sample size calculation was to

be able to estimate the percentage of subCTWs of interest who were monitored to within $\pm 5\%$ with 95% confidence. This means the length of the confidence interval would be at most 10%, which is denoted by the red vertical line. Also note that “ $P(X < 0.1) = 1$ ” printed in the upper right corner means that every one of the 2,000 confidence intervals had a length less than 0.1 (or 10%).

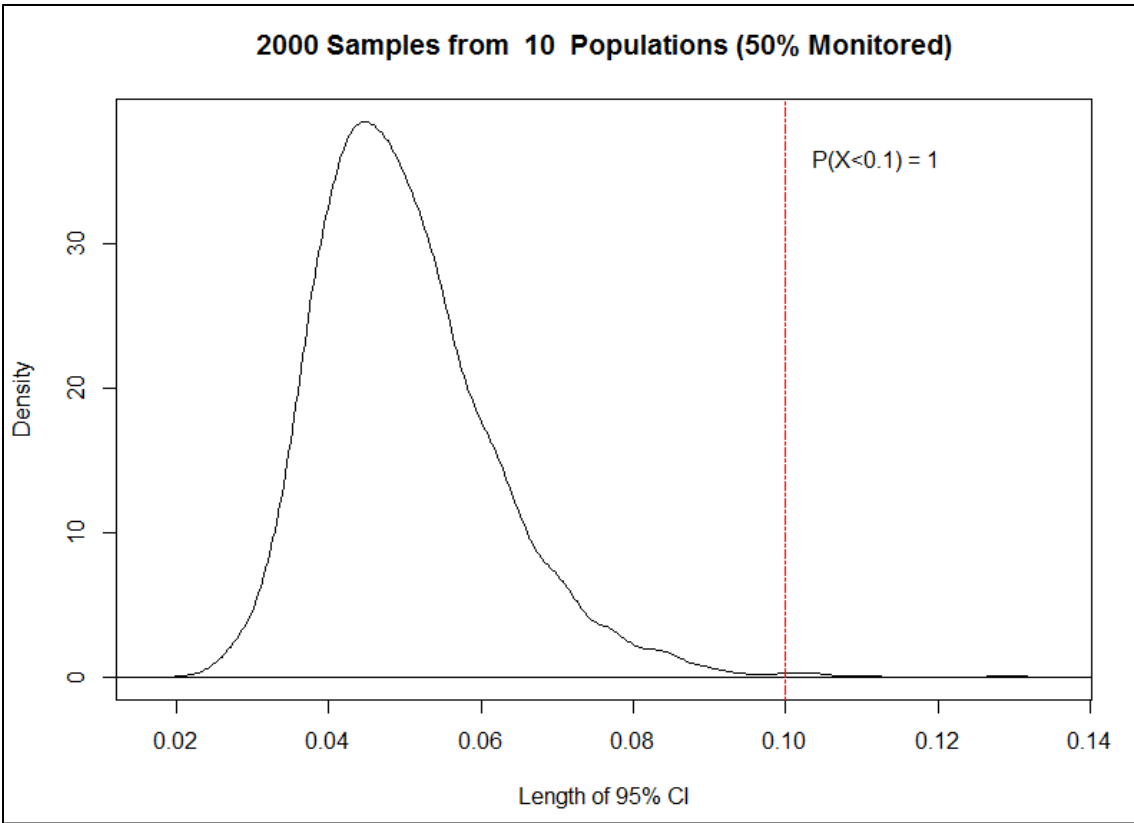


Figure 2-4. Distribution of lengths of confidence intervals.

From Figures 2-3 and 2-4, it is apparent that the semiproportional sampling with a total of 105 months is more than adequate to fulfill the “ $\pm 5\%$ with 95% confidence” criterion because all of the confidence intervals had lengths less than 10%.

To demonstrate that the sampling plan included an adequate number of subCTWs, the distribution of the number of subCTWs in each of the 2,000 samples is pictured in Figure 2-5. The 99th percentile of this distribution is 516 subCTWs.

Under the assumption that 50% of subCTWs were monitored, a semiproportional sample of 105 months and 516 subCTWs should be adequate to satisfy estimating the percentage of subCTWs of interest monitored to within $\pm 5\%$ with 95% confidence.

Simulation with 75% Estimate

In addition, the simulation was run with an SME estimate of 75% of subCTWs monitored. Ten populations were generated from 10 random draws from the list of distributions of parameter estimates from the SMEs given earlier in Section 2.3. The semiproportional sampling scheme calls for at least 105 months to be sampled. This simulation with 105 months did not meet the criterion of $\pm 5\%$ with 95% confidence, so the values in the semiproportional scheme were multiplied by 1.5, which is also shown in Table 2-8. Two thousand independent samples (each of 158 months distributed as shown above) were drawn from each of the 10 populations. Figure 2-6 shows the distribution of the 2,000 final proportions of subCTWs monitored (and the 95% confidence interval denoted by the red vertical lines).

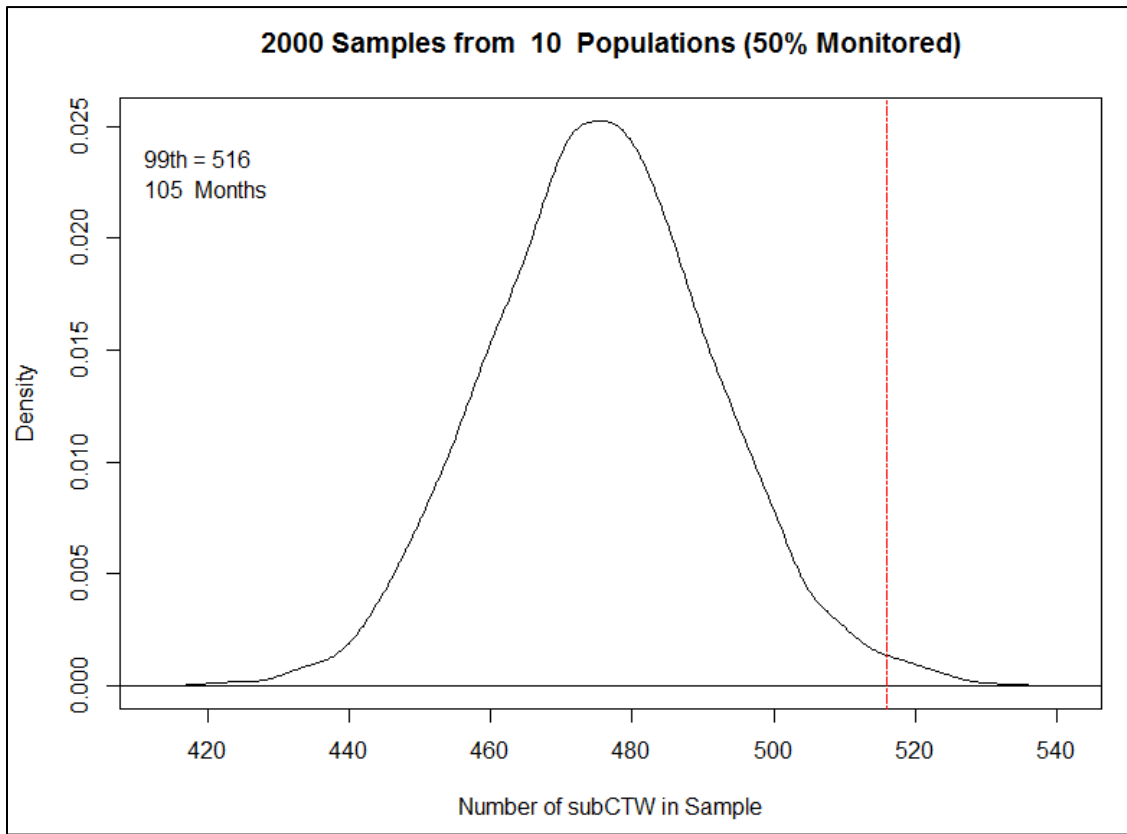


Figure 2-5. Distribution of the number of subCTWs in the samples.

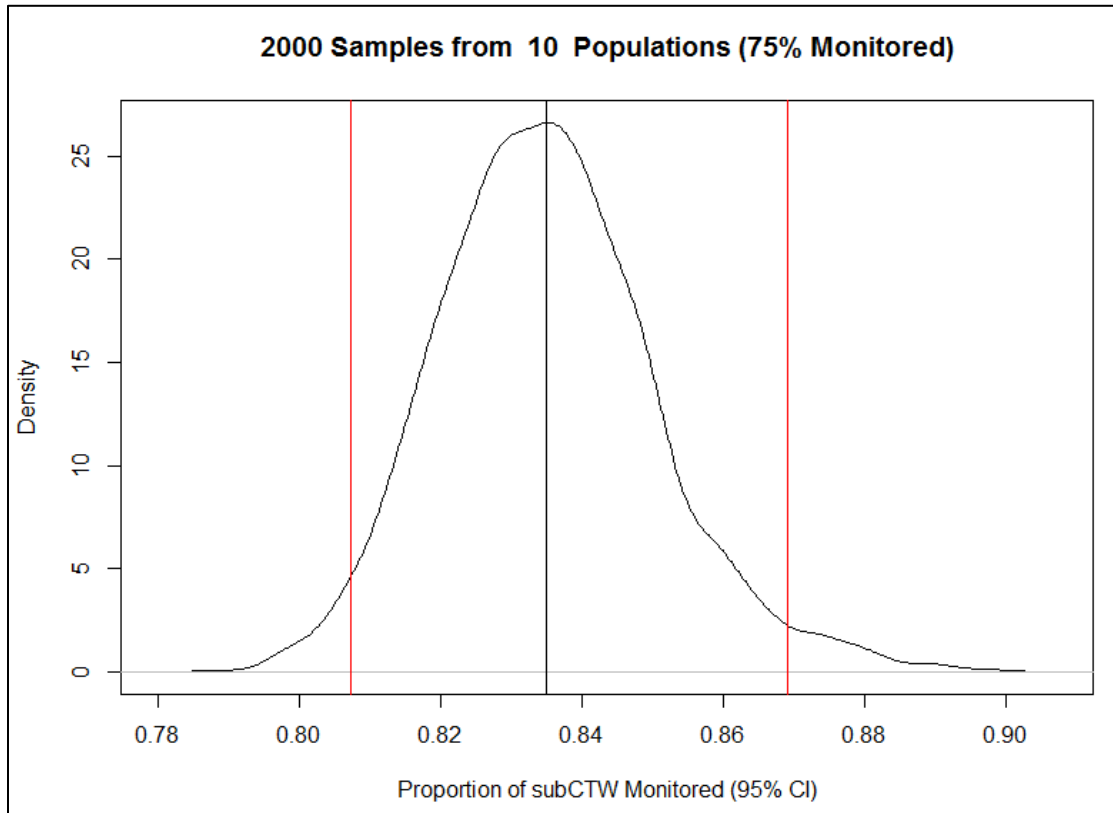


Figure 2-6. Distribution of proportion of subCTWs monitored.

A 95% confidence interval was calculated for each of the 2,000 samples. The distribution of the lengths of these 2,000 intervals is shown in Figure 2-7.

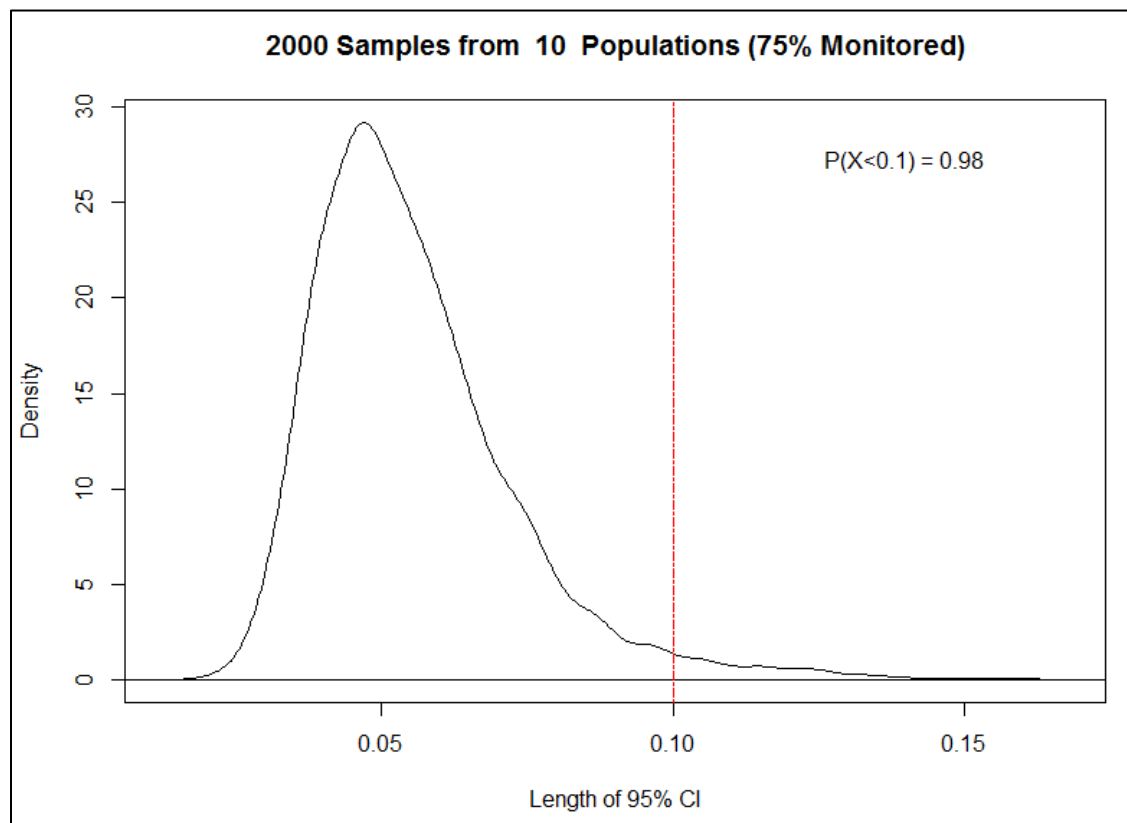


Figure 2-7. Distribution of lengths of confidence intervals.

The goal of the sample size calculation was to be able to estimate the percentage of subCTWs of interest who were monitored to within $\pm 5\%$ with 95% confidence. This means the length of the confidence interval would be at most 10%, which is denoted by the red vertical line. Note that “ $P(X < 0.1) = 0.98$ ” printed in the upper right corner means that 98% of the 2,000 confidence intervals had a length less than 0.1 (or 10%).

From Figures 2-6 and 2-7, the team determined that semiproportional sampling with a total of 158 months was adequate to fulfill the confidence criterion because more than 95% of the confidence intervals had lengths less than 10%.

To demonstrate that the sampling plan included an adequate number of subCTWs, the distribution of the number of subCTWs in each of the 2,000 samples is pictured in Figure 2-8. The 99th percentile of this distribution is 766 subCTWs.

Assuming that 75% of subCTWs were monitored, a semiproportional sample of 158 months and 766 subCTWs should be adequate to satisfy estimating the percentage of subCTWs of interest monitored to within $\pm 5\%$ with 95% confidence. Note that the stated number of 766 subCTWs refers to subCTW entries on separate WPs, not the number of unique individual subCTWs. Example: CTW-X enters on RWP#1 in June and then the same CTW-X enters on RWP#2 in August; this would count as 2 of the 766 subCTWs. Therefore, the actual item being assessed is “CTW–RWP Entries,” which are shown in Attachment C along with the relevant bioassay data.

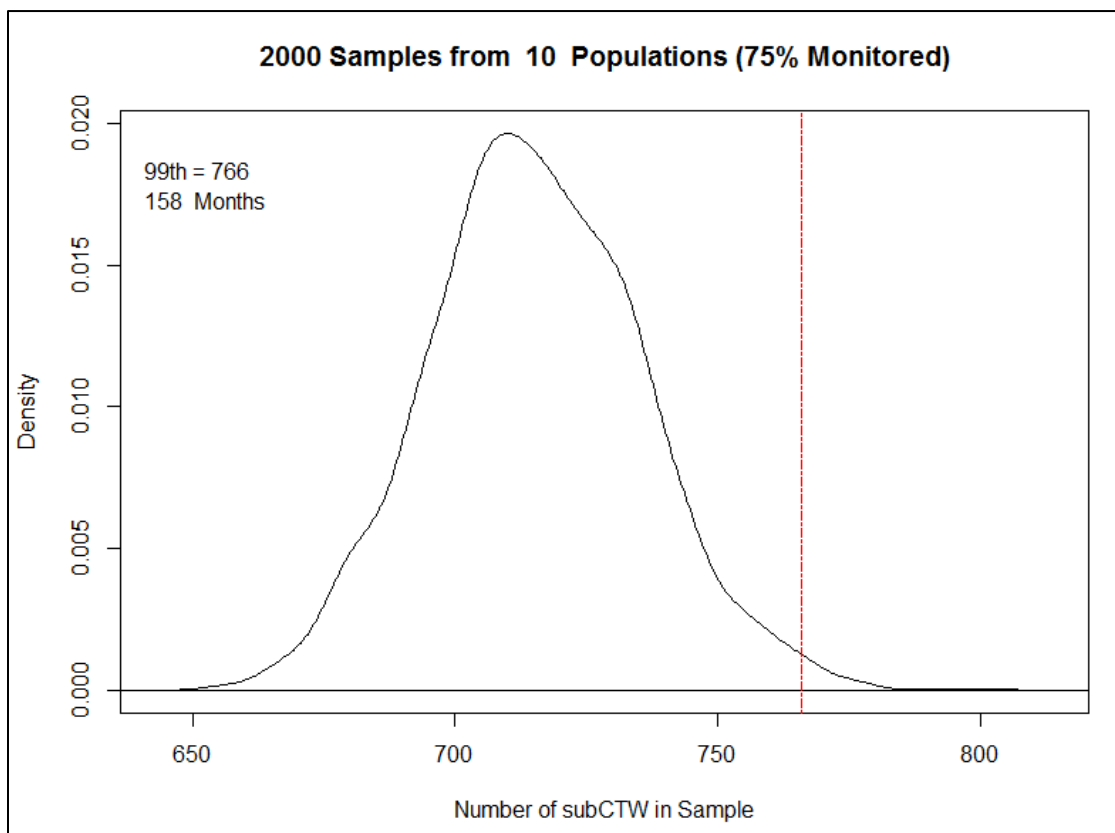


Figure 2-8. Distribution of the number of subCTWs in the samples.

2.4 EXECUTION OF THE SAMPLING PLAN

Before the site visit, the ORAU Team statistician picked a stratum (according to the 1.5 times semiproportional line in Table 2-8) from the population of RWP folders (Table 2-9) and randomly chose an available year from that area. A folder of interest was randomly selected from the chosen area and year. The statistician provided the person(s) doing the sampling with information (i.e., box and folder name) from the selected folder of interest.

Table 2-9. Population of RWP folders.

Population ID	Box Number	Folder ID	Area	Year
2	QH1381-0943-93-013	1992 RWPs 92-24INH-131 thru 92-24INH-250	H	1992
3	QH1381-0943-93-013	1992 RWPs 92-24INH-151 thru 92-24INH-180	H	1992
4	QH1381-0943-93-013	1992 RWPs 92-24INH-121 thru 92-24INH-150	H	1992
4	QH1381-0943-93-013	1992 RWPs 92-24INH-121 thru 92-24INH-150	H	1992
8	QH125-113094-009	RWP #101 - #103 9/18/90 To 1/14/91	F	1990
10	QH137-0901-93-014	Cancelled RWP's For The Year 1991	F	1991
10	QH137-0901-93-014	Cancelled RWP's For The Year 1991	F	1991
11	QH130-1954-96-007	Spine Title: 299H 8-1491-10.25-91 RWP's #001-155	H	1991
11	QH130-1954-96-007	Spine Title: 299H 8-1491-10.25-91 RWP's #001-155	H	1991
12	00H151-0188-92-001	91_T3_101 Thru 91-T3 RWP's	A	1991
13	QH133-0574-93-001	1991 RWPs Old Hill TKS 9-16	H	1991
13	QH133-0574-93-001	1991 RWPs Old Hill TKS 9-16	H	1991
13	QH133-0574-93-001	1991 RWPs Old Hill TKS 9-16	H	1991
14	QH123-0476-93-005	RWPs for 1991	F	1991
16	QR200-2488-97-0107 (98-0164-Digitized Film)	Radiation Work Permits	F	1991

Population ID	Box Number	Folder ID	Area	Year
17	QH133-0574-93-001	1991 RWPs New Hill and PP56	H	1991
19	QH100-1062 93-001	235F 1991 Radiation Worker Permits 7/1/91 To 12/31/91	F	1991
20	00H151-0188-92-001	RWPs	A	1991
21	00H151-0188-92-001	RWP Log Book 91-T3-215 Thru 91-T3-238	A	1991
21	00H151-0188-92-001	RWP Log Book 91-T3-215 Thru 91-T3-238	A	1991
21	00H151-0188-92-001	RWP Log Book 91-T3-215 Thru 91-T3-238	A	1991
22	QH1821-1324-94-003	Terminated "92" SRWP and RWPs 182-207	H	1992
22	QH1821-1324-94-003	Terminated "92" SRWP and RWPs 182-207	H	1992
23	00H151-0188-92-001	12-12-91 Thru1-23-92 RWP's 91-T3-239 Thru 92-T3-109	A	1992
24	QR240-2344-97-010 (97-0441) Digitized Film	1993 terminated RWPs 930-BL-101 thru 123	H	1993
29	QH128-1059-93-005	RWP/TEL 92HC001 To 92HC300	H	1992
29	QH128-1059-93-005	RWP/TEL 92HC001 To 92HC300	H	1992
31	QH125-113094-009	RWP #101 - #115 Year 1992 1/22/92 To 8/8/92	F	1992
35	QH000-1136-94-002	RWP 101-140 and Index 1992	F	1992
35	QH000-1136-94-002	RWP 101-140 and Index 1992	F	1992
40	QH000-1136-94-002	RWP #141-175 1992	F	1992
41	QH1821-1324-94-003	Terminated "92" SRWP and RWPs 145-181	H	1992
46	QH128-1059-93-005	RWP/TEL 92HC902 To 92HC1050	H	1992
47	QH128-1059-93-005	RWP/TEL 92HC701 To 92HC901	H	1992
48	QH-122-1225-94-002	1992 RWP 92FC354 Thru 391 6/10/92 To 12/31/92	F	1992
51	QH180-2062-96-004	RWP's 920FH-0200 - 920FH-281	H	1992
51	QH180-2062-96-004	RWP's 920FH-0200 - 920FH-281	H	1992
52	QH125-113094-009	RWP #170 - #239 Year 1992 8/10/92 To 12/18/92	772F	1992
52	QH125-113094-009	RWP #170 - #239 Year 1992 8/10/92 To 12/18/92	772F	1992
52	QH125-113094-009	RWP #170 - #239 Year 1992 8/10/92 To 12/18/92	772F	1992
56	QH-122-1225-94-002	1992 RWP 92FC452 Thru 488 10/8/92 To 12/30/92	F	1992
57	QR240-2344-97-010 (97-0441) Digitized Film	1993 terminated RWPs 930-BL-124 thru 178	H	1993
57	QR240-2344-97-010 (97-0441) Digitized Film	1993 terminated RWPs 930-BL-124 thru 178	H	1993
57	QR240-2344-97-010 (97-0441) Digitized Film	1993 terminated RWPs 930-BL-124 thru 178	H	1993
57	QR240-2344-97-010 (97-0441) Digitized Film	1993 terminated RWPs 930-BL-124 thru 178	H	1993
57	QR240-2344-97-010 (97-0441) Digitized Film	1993 terminated RWPs 930-BL-124 thru 178	H	1993
60	QH182-1178-94-020	Terminated RWPs 93CH101-93CH199	H	1993
63	QH140-2145-96-005	RWP 93-E-1	E	1993
63	QH140-2145-96-005	RWP 93-E-1	E	1993
66	QH140-2145-96-005	RWP 93-E-4	E	1993
72	OQH120-2013-96-007	1993 Radiological Work Permit 247-F RWP 101 to RWP 126 Book 1 of 2	F	1993
73	OQH120-2013-96-006	RWP (Time & Exposure Log) 93-235F-101 thru 93-235F-161	F	1993
73	OQH120-2013-96-006	RWP (Time & Exposure Log) 93-235F-101 thru 93-235F-161	F	1993
83	QH137-1503-95-012	RWP's 1993 From 101 To 153 Terminated	F	1993
90	QR240-2344-97-010 (97-0441) Digitized Film	1993 terminated RWPs 930-BL-101 thru 125	H	1993
90	QR240-2344-97-010 (97-0441) Digitized Film	1993 terminated RWPs 930-BL-101 thru 125	H	1993

Population ID	Box Number	Folder ID	Area	Year
92	QH182-1178-94-020	Terminated RWP's 93CH-101 - 93CH-182	H	1993
98	QH182-1178-94-023	RWP 93 400-500 Book 3	H	1993
102	QH1821-1324-94-001	93-OBL-142 To 93-OBL-158	H	1993
104	QH180-2062-96-004	RWP 101 6/21/93 To 140 11/1/93	H	1993
105	OQH120-2013-96-007	1994 Radiological Work Permit 247-F RWP 127 to RWP 178 Book 2 of 2	F	1993
113	QH137-1503-95-012	1993 RWP's From 154 to 225	F	1993
119	QH1821-1324-94-001	94-USF-101 To 94-USF-113	H	1994
120	QH1821-1324-94-001	94-USF-114 To 94-USF-140	H	1994
121	QH180-2062-96-004	RWP's 101-137 1/18/94	H	1994
122	QH140-2364-97-003 Pt2 Digitized Film	RWP's for 1994 (pages 440-456)	F	1994
127	OQH120-2260-96-016	RWP 1994 #94-772F-100 to #94-77F-158	772F	1994
127	OQH120-2260-96-016	RWP 1994 #94-772F-100 to #94-77F-158	772F	1994
128	QH130-2269-96-004	1994 Z Area RWP's 942-131 thru 942-145 Book 2 of 2	Z	1994
128	QH130-2269-96-004	1994 Z Area RWP's 942-131 thru 942-145 Book 2 of 2	Z	1994
128	QH130-2269-96-004	1994 Z Area RWP's 942-131 thru 942-145 Book 2 of 2	Z	1994
128	QH130-2269-96-004	1994 Z Area RWP's 942-131 thru 942-145 Book 2 of 2	Z	1994
128	QH130-2269-96-004	1994 Z Area RWP's 942-131 thru 942-145 Book 2 of 2	Z	1994
128	QH130-2269-96-004	1994 Z Area RWP's 942-131 thru 942-145 Book 2 of 2	Z	1994
128	QH130-2269-96-004	1994 Z Area RWP's 942-131 thru 942-145 Book 2 of 2	Z	1994
128	QH130-2269-96-004	1994 Z Area RWP's 942-131 thru 942-145 Book 2 of 2	Z	1994
128	QH130-2269-96-004	1994 Z Area RWP's 942-131 thru 942-145 Book 2 of 2	Z	1994
130	QH130-2269-96-004	1994 Z Area RWP's 942-101 thru 942-130 Book 1 of 2	Z	1994
130	QH130-2269-96-004	1994 Z Area RWP's 942-101 thru 942-130 Book 1 of 2	Z	1994
130	QH130-2269-96-004	1994 Z Area RWP's 942-101 thru 942-130 Book 1 of 2	Z	1994
130	QH130-2269-96-004	1994 Z Area RWP's 942-101 thru 942-130 Book 1 of 2	Z	1994
130	QH130-2269-96-004	1994 Z Area RWP's 942-101 thru 942-130 Book 1 of 2	Z	1994
130	QH130-2269-96-004	1994 Z Area RWP's 942-101 thru 942-130 Book 1 of 2	Z	1994
130	QH130-2269-96-004	1994 Z Area RWP's 942-101 thru 942-130 Book 1 of 2	Z	1994
130	QH130-2269-96-004	1994 Z Area RWP's 942-101 thru 942-130 Book 1 of 2	Z	1994
130	QH130-2269-96-004	1994 Z Area RWP's 942-101 thru 942-130 Book 1 of 2	Z	1994
130	QH130-2269-96-004	1994 Z Area RWP's 942-101 thru 942-130 Book 1 of 2	Z	1994
131	QR420-2549-97-003	RWP Sign In Sheets, RWP's 1994, QR420-2549-97-003 A1	E	1994
132	QH140-2364-97-003 Pt2 Digitized Film	(pages 513-568)	E	1994
132	QH140-2364-97-003 Pt2 Digitized Film	(pages 513-568)	E	1994
132	QH140-2364-97-003 Pt2 Digitized Film	(pages 513-568)	E	1994
132	QH140-2364-97-003 Pt2 Digitized Film	(pages 513-568)	E	1994
133	OQH120-2260-96-016	RWP 94-772F-185 thru 94-772F-232	772F	1994
137	QR420-2549-97-003	QR420-2549-97-003 #06	H	1994
137	QR420-2549-97-003	QR420-2549-97-003 #06	E	1994
142	QH1822-1325-94-007	RWP's 578-602 12-4-94 to 12-31-84	H	1994
144	QR240-2411-97-001	95C141 - 95CH181	H	1995
147	QR240-2411-97-001	95C222 - 95CH261	H	1995
155	QR210-3185-2002-017	QR210-3185-2002-017-P004	F	1998
158	QR210-3185-2002-017	QR210-3185-2002-017-P014	F	1998
162	QR210-3185-2002-017	QR210-3185-2002-017-P020	F	1998
172	QR210-3185-2002-022	QR210-3185-2002-022-P003	F	1997
184	QR210-3197-2002-021	QR210-3197-2002-021-P011	F	1997
190	QR210-3197-2002-023	QR210-3197-2002-023-P005	F	1998
191	QR210-3197-2002-030	QR210-3197-2002-030-P022	F	1995
192	QR210-3197-2002-030	QR210-3197-2002-030-P023	F	1995
192	QR210-3197-2002-030	QR210-3197-2002-030-P023	F	1995

Population ID	Box Number	Folder ID	Area	Year
197	QR210-3202-2002-006	QR210-3202-2002-006-P013	F	1995
197	QR210-3202-2002-006	QR210-3202-2002-006-P013	F	1995
203	QR220-3203-2002-006	QR220-3203-2002-006-P002	F	1995
208	QR220-3203-2002-018	QR220-3203-2002-018-P008	F	1997
209	QR220-3203-2002-021	QR220-3203-2002-021-P001	F	1998
211	QR220-3203-2002-021	QR220-3203-2002-021-P003	F	1998
217	QR230-2544-97-001	QR230-2544-97-001-P004	H	1996
217	QR230-2544-97-001	QR230-2544-97-001-P004	H	1996
218	QR230-2544-97-001	QR230-2544-97-001-P006	H	1996
219	QR230-2544-97-001	QR230-2544-97-001-P007	H	1996
220	QR230-2544-97-001	QR230-2544-97-001-P008	H	1996
222	QR230-2544-97-001	QR230-2544-97-001-P010	H	1996
226	QR230-2544-97-002	QR230-2544-97-002-P006	H	1995
227	QR230-2544-97-002	QR230-2544-97-002-P007	H	1995
227	QR230-2544-97-002	QR230-2544-97-002-P007	H	1995
228	QR230-2544-97-002	QR230-2544-97-002-P009	H	1995
228	QR230-2544-97-002	QR230-2544-97-002-P009	H	1995
229	QR230-2544-97-002	QR230-2544-97-002-P010	H	1995
229	QR230-2544-97-002	QR230-2544-97-002-P010	H	1995
234	QR330-3001-2002-001	QR330-3001-2002-001-P003	F	1996
235	QR330-3001-2002-003	QR330-3001-2002-003-P003	F	1997
238	QR330-3001-2002-001	QR330-3001-2002-001-P006	F	1996
240	QR330-3001-2002-001	QR330-3001-2002-001-P007	F	1996
241	QR330-3001-2002-003	QR330-3001-2002-003-P007	F	1998
241	QR330-3001-2002-003	QR330-3001-2002-003-P007	F	1998
244	QR330-3001-2002-003	QR330-3001-2002-003-P009	F	1998
246	QR330-3001-2002-003	QR330-3001-2002-003-P010	F	1998
248	QR330-3001-2002-001	QR330-3001-2002-001-P012	F	1997
249	QR420-3236-2002-033	QR420-3236-2002-033-P133	E	1997
251	QR600-2505-97-002	QR600-2505-97-002	A	1994
251	QR600-2505-97-002	QR600-2505-97-002	A	1994
251	QR600-2505-97-002	QR600-2505-97-002	A	1994
251	QR600-2505-97-002	QR600-2505-97-002	A	1994
251	QR600-2505-97-002	QR600-2505-97-002	A	1994
251	QR600-2505-97-002	QR600-2505-97-002	A	1994
251	QR600-2505-97-002	QR600-2505-97-002	A	1994
251	QR600-2505-97-002	QR600-2505-97-002	A	1994
252	QR600-2505-97-003	QR600-2505-97-003	A	1994
252	QR600-2505-97-003	QR600-2505-97-003	A	1994
254	QR600-2505-97-005	QR600-2505-97-008	A	1993
254	QR600-2505-97-005	QR600-2505-97-008	A	1993
254	QR600-2505-97-005	QR600-2505-97-008	A	1993
254	QR600-2505-97-005	QR600-2505-97-008	A	1993
254	QR600-2505-97-005	QR600-2505-97-008	A	1993
254	QR600-2505-97-005	QR600-2505-97-008	A	1993
256	QH117-1511-95-019	QH117-1511-95-019-P001	M	1992
256	QH117-1511-95-019	QH117-1511-95-019-P001	M	1992
256	QH117-1511-95-019	QH117-1511-95-019-P001	M	1992
256	QH117-1511-95-019	QH117-1511-95-019-P001	M	1992
257	QH117-1511-95-019	QH117-1511-95-019-P002	M	1992
257	QH117-1511-95-019	QH117-1511-95-019-P002	M	1992
258	QH117-1511-95-019	QH117-1511-95-019-P004	M	1993
261	QR600-2905-99-003	QR600-2905-99-003-P003	A	1996
264	QR600-2905-99-003	QR600-2905-99-003-P006	A	1996
266	QR420-3121-008	QR420-3121-008-P017	E	1997

Population ID	Box Number	Folder ID	Area	Year
267	QR420-3121-008	QR420-3121-008-P019	E	1997
270	QR710-2885-99-008	QR710-2885-99-008-P006	M	1995
270	QR710-2885-99-008	QR710-2885-99-008-P006	M	1995

For the following discussion, assume that an RWP was pulled. This ignores the fact that the sampler might have pulled a sign-in sheet (or something else) and then had to track down the RWP. The process is demonstrated using an actual sample, sample number 32, drawn from the June data capture. The diagram in Figure 2-9 shows the example. Before the site visit, from the sampling frame (a subset of Tables 2-4 and 2-5 is shown), the ORAU Team statistician chose F Area. F Area has folders available for every year from 1990 to 1998. The statistician randomly chose 1992, which has 19 folders of interest. From those 19 folders, the statistician randomly chose a folder, named “RWP 101-140 and Index 1992” in box “QH000-1136-94-002.”

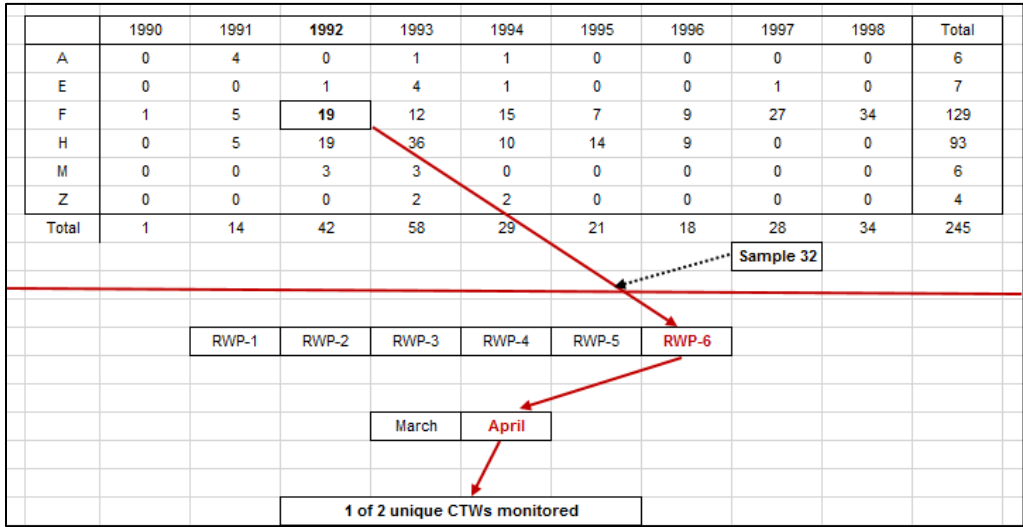


Figure 2-9. Diagram to illustrate how the sampling plan was executed.

The random sampling in the following steps was done in the statistical software program R.

1. Sample number 32 was drawn from Population ID 35, Box Number QH000-1136-94-002, Folder ID RWP 101-140, and Index 1992, F Area, 1992.
2. The team counted and recorded the number of RWPs of interest in the folder (6 RWPs counted), so $n_{rwp} = 6$.
3. The team randomly sampled (and recorded) a number (Rn_{rwp}) between 1 and n_{rwp} (6) and pulled that RWP of interest. The number 6 was drawn such that $Rn_{rwp} = 6$, so the sixth RWP was used.
4. The team randomly sampled (and recorded) a number between 1 and n_{month} (2) and pulled that month as the RWP-month to examine for subCTWs. The number 2 was randomly selected so the team used the second month (April) of the sixth RWP.
5. The team counted (and recorded on the form shown in Figure B-2) the number of unique subCTWs in April 1992. The RWP-month folder and completed form were scanned.

At the site, the sampler found that folder in that box and performed the steps above until the minimum number of months (158) and the minimum number of subCTWs (766) were satisfied. Suppose, for

our example, only one of the two unique subCTWs on that January 1992 RWP were monitored. The process in Figure 2-9 would continue until both criteria for sample size from the simulation were satisfied.

Randomly selected folders in EDWS were analyzed before the data capture was completed at SRS. The team worked with SRS personnel to retrieve bioassay data for each listed worker for both the EDWS and onsite efforts. The team captured all available bioassay data for each of the identified subCTWs, regardless of sample dates. The statistician computed a point estimate and confidence interval for the percentage of subCTWs of interest who were monitored, with “of interest” and “monitored” as defined above. Finally, the team evaluated the bioassay data and developed this report of subCTW monitoring.

2.5 SAMPLING PLAN EXECUTION ISSUES

While the team satisfied the need to capture 158 RWP folders of interest, 63 samples had some sort of issue and could not be completed exactly as planned. The majority of the March 2018 RWP inventory was done with the initial definition of a folder of interest, where the team was only interested in the RWP containing subCTWs. The “of interest” definition changed to having subCTWs where bioassay was required (or should have been). Based on this, some of the folders that were inventoried as being of interest turned out not to be. This complicated matters when the 158 folders for the sampling plan were chosen (with replacements) from the March inventory. It was possible to sample a folder that ended up not containing any RWPs of interest. Therefore, a replacement path (RWP-month) had to be used.

Replacement Issues

The most prominent issue (46 of the 63 issues) was a folder that had no RWP-months of interest or a folder that had already been exhausted in previous samples. When this happened, in 23 instances the team was able to replace that RWP-month with another random RWP-month in the same area and year. These replacements, for all intents and purposes, are no different than the paths they replaced. There were 14 instances when the team could not find a replacement in the same area and year, so the team used a replacement in the same area but in a neighboring year. This was not ideal, but necessary. There were four more instances when the team could not find a replacement in the same area and a neighboring year from the inventory, but new RWPs were discovered and the team used the closest newly discovered year in that area. At a certain point in the process, the team had exhausted everything in the E Area inventory but had not reached the desired number of paths for E Area. At the time the team was directed to replace those five RWP-months for E Area with RWP-months in the same years for Building 772-F.

Inventory Errors

The remaining 17 issues can be attributed to issues with the March 2018 inventory. The area was recorded incorrectly for the folders used in 13 of the RWP-months. The year was recorded incorrectly for the folders used in 1 of the paths. Sometimes a folder would stretch across calendar years. At some point in the development of the sampling plan, the team decided these folders would be counted toward the beginning year of the span. Because of this, two folders were inventoried as a year other than the year the sampled RWP was used. There was one RWP where the beginning year was used and the area was inventoried incorrectly.

Effect on Confidence Interval

Several different types of execution issues have been outlined above, but they do not prevent computing a confidence interval. There is a larger issue only briefly mentioned in the replacement section that affects such a computation. The fundamental assumption of any sampling plan is that the sampling frame (in this case, the March inventory) contains all the elements of the population. If not, the analysis must be able to properly describe the elements the frame does not contain. This

assumption must hold for any inference, based on the sample, to legitimately be generalized to the population, which is the goal.

Bioassay Required Errors

The team did not discover an additional inventory error until reviewing sample folders as part of the analysis for the report. As mentioned, the definition of folder of interest changed from a “RWP-month with at least one subCTW” to “RWP-month with at least one subCTW required to be monitored by bioassay.” While this affected the inventory and replacements, the change also led to misidentification of some folders as having one or more subCTWs to be monitored. Some RWP samples required bioassay for only certain tasks. Some RWP samples were selected when in fact they did not contain subCTWs assigned to the tasks requiring bioassay. In addition some RWP samples did not directly indicate bioassay was required, but team members selected them based on the judgment that bioassay would be required. In a few instances that choice was wrong. As a result of these bioassay-required errors, the team removed 12 RWP samples and their corresponding subCTWs to reach a final count of 662 subCTWs in 146 RWP folders of interest.

2.6 RADIOLOGICAL RECORDS COLLECTION

As the team collected 53,300 pages of data that included names and payroll numbers of subCTWs from the SWPs, Job Plans, and RWPs, the associated radiological record (in vitro and in vivo) for these employees was captured. The team reduced the amount of data for analysis to about 6,000 pages. The team requested release from SRS of the smaller collection of pages. The team also collected about 400 spreadsheets that contained bioassay results extracted from the SRS bioassay records system by SRS staff. The team requested release of these spreadsheets.

The main reason for the in vivo monitoring records is that it appears whole-body counts (WBCs) and chest counts (which include ^{241}Am , ^{244}Cm , and $^{238/239}\text{Pu}$) might have been conducted in lieu of, or in addition to, in vitro monitoring. When evaluating if a subCTW was monitored, the team determined that available chest counts could be counted as bioassay if a subCTW lacked a required in vitro strontium, plutonium, uranium, americium, and/or neptunium sample.

Two teams working simultaneously collected this information. One team (Team A) sampled RWPs, identified subCTWs, and recorded CTW data, while the second team (Team B) retrieved bioassay data for the identified workers. The two-team approach accelerated the data capture effort.

The team recorded the identifying information for each identified CTW in a selected folder of interest on premade data entry forms. Identifying information included first and last name, Social Security Number or payroll ID, listed craft and department (which have also appeared as a company), date of work, task worked on, RWP number, and listed start and stop work times.

2.7 ANALYSIS AND REPORT

The analysis evaluated: (1) the fraction of subCTWs identified on RWPs of interest who were monitored for internal intakes of radionuclides, (2) identification of appropriate coworker(s) who were internally monitored to use as surrogates for unmonitored subCTWs, and (3) radionuclides of interest for each RWP along with the bioassay monitoring for those radionuclides.

SubCTW Monitoring (Evaluation 1)

The sampling plan was designed to determine the percentage of subCTWs who were monitored by bioassay. This percentage was reported on an annual basis as well as the total. To address this evaluation, a total of 766 RWP-CTW entries were expected to be needed to result in an estimate with a $\pm 5\%$ uncertainty. This statistic is a direct measure of the RWP-to-bioassay relationship as noted in the preliminary Notice of Violation (Brush 1998) raised by SC&A. A success metric is not considered

for this topic because a coworker model is generally not applied to internally monitored workers. However, this statistic is very important and helps inform the evaluation of the unmonitored workers in Evaluation 2 below.

Evaluation of Unmonitored subCTWs (Evaluation 2)

The second evaluation involved subCTWs who were not monitored for internal intakes identified in Evaluation 1 to determine if there was a coworker on the same RWP that was monitored. The evaluation itself was rather straightforward, involving identification of the unmonitored subCTWs from Evaluation 1 and evaluation of each coworker on the same RWP. A success metric, however, is much more complicated and depends greatly on information from Evaluation 1. If a large number or percentage of subCTWs were monitored, then the percentage of the unmonitored subCTWs decreased.

In addition, the *Draft Criteria for the Evaluation and Use of Coworker Datasets* states the following about number of samples of workers for coworker models (NIOSH 2015):

The minimum number of samples should, of course, be considered considering the number of workers potentially exposed to the airborne source-term. For example, the number of samples necessary to be representative of the exposures at a uranium foundry, where airborne activity is generally widespread, will be greater than the number required of a small glove box operation where six workers were involved in the manipulation of plutonium parts. In the latter situation, it may be that samples for three out of six workers could be used to bound exposures for the three who were not monitored. Where the distribution of the data has large geometric means and/or standard deviations, the number of samples required will also be greater.

If each RWP of interest is considered a small work activity, a percentage as low as 50% might be reasonable or appropriate to bound the coworker model for that group of workers. As a result, the success metric for this topic becomes more qualitative than quantitative when considering multiple small operations such as construction work. An individual evaluation of each RWP that has an unmonitored subCTW becomes the most critical component.

The team reported the monitored and unmonitored worker information for each RWP and specifically addressed the unmonitored subCTWs. A followup review was conducted for each unmonitored subCTW to identify a monitored coworker if one exists on the RWP.

Using selected RWP sampling plan data, an example is presented in Table 2-10 to demonstrate evaluation of RWPs of interest (samples) and the bioassay monitoring for the CTWs listed on the RWPs. Specifically for this example, 1993 and 1994 RWPs of interest requiring americium bioassay were used. Monitoring of prime contractor CTWs was included in the example even though prime CTW data were not considered as coworkers in the evaluation of subCTW bioassay, although they might have been.

Table 2-10. Example of subCTW versus monitoring in an RWP.^a

RWP (SID)	Year	SubCTWs internally monitored	SubCTWs not internally monitored	Prime CTWs internally monitored	Prime CTWs not internally monitored	CTWs internally monitored	CTWs not internally monitored
143	1993	5	1	2	0	7	1
144	1993	14	15	2	1	16	16
230	1993	7	0	1	0	8	0
231	1993	2	2	0	0	2	2
232	1993	6	1	0	0	6	1
233	1993	8	8	2	0	10	8
234	1994	1	1	2	0	3	1
236	1994	5	0	1	1	6	1
237	1994	2	0	0	0	2	0
Totals	N/A	50	28	10	2	60	30

a. SID = numerical portion of sample ID.

In this example of americium bioassay given in Table 2-10, each of the nine RWPs had at least one subCTW monitored by bioassay, and 50 of the 78 subCTWs (64%) were monitored. If the information is stratified by year, the analysis can be even more complicated to convey. For 1993 in Table 2-9, each RWP had a monitored subCTW, but only 42 of the 69 (60%) subCTWs had bioassay monitoring. In 1994 again, each RWP had at least one monitored subCTW, but eight of the nine subCTWs (89%) were monitored. Setting an individual metric can be very difficult and lead to different conclusions.

RWP sample (SID) #234 (Table 2-10) had an unmonitored subCTW on a work crew of four CTWs in which two prime CTWs were monitored, providing a monitoring rate of 75% for the job crew. Both of the subCTWs were laborers working on the same task at the same time and for the same duration. For that reason the monitored subCTW could serve as a surrogate for the unmonitored laborer. If the subCTWs had not both been laborers working on a common task at the same time, there would be one unmonitored subCTW with no surrogate. One would be left to consider the use of monitoring of the other three CTWs, which depends on the point of view. Without additional information, valid arguments can be made for both points of view. Fortunately, by capturing the complete information, the context of the work can be considered in the evaluation. For example, if all the DuPont CTWs were pipefitters and the subCTW was simply brought in as an additional worker, then the criteria noted in NIOSH (2015) would be appropriate and 64% would be considered a success. If the DuPont CTWs were electricians that did electrical work in the morning and the subCTW was a pipefitter who worked in the afternoon doing a separate task, then the DuPont CTWs would not be appropriate coworkers. The context matters, which is why the team looked carefully at each unmonitored subCTW to determine if there was a reasonable monitored coworker. Note that some determinations involved professional judgment.

As Table 2-10 shows, reporting on a single or a combination metric can be complicated and could be misleading. As a result, a qualitative weight of evidence of multiple approaches and thoughts will likely determine if subCTW monitoring can be reasonably characterized or bounded by the monitored subCTWs.

Radionuclide Evaluation (Evaluation 3)

The final evaluation considered the radionuclides of interest for the area. The RWP of interest indicated the work area. The radionuclides of interest for that area were determined using those required by the RWP, those that should have been required by SRS procedures in place at the time of work and, as the final authority, the 1999 memorandum entitled *Specification of Urine Bioassay Requirements on Radiological Work Permits* (Farrell and Findley 1999). Farrell and Findley was written as a followup to the bioassay issues originally reported in Brush (1998). Farrell and Findley

includes radionuclide source terms for 1999 SRS waste inventories; however, these source terms are used for the entire period of this report from 1972 through 1998.

The bioassay of the monitored workers was compared against these documents for each work area and reported. Surrogate radionuclides were considered if the source term was a mixture and did not have the potential to be separated. Note that this comparison was conducted for all the subCTWs in Evaluations 1 and 2 above.

3.0 RADIOLOGICAL WORK PERMIT SAMPLING, 1991 TO 1998

Two work teams (Teams A and B) were charged with specific tasks. Team A consisted of four health physicists, a Project Statistician (PS), and one Records Custodian (RC). Team A initially identified all subCTWs on Job Plans for 1972 through 1989 because those were not selected by a random process. Then, for RWPs from 1990 through 1998, Team A worked with the ORAU Team statistician to systematically identify CTWs using the statistical process in Section 2.4. Team A only scanned excerpts from sampled RWPs and captured data on subCTWs for 1990 through 1998. The process for inspecting a sample and capturing CTW data, with form, is detailed in Attachment B, RWP Sampling Guidelines. Steps in this guidance were repeated until 158 RWP folders of Interest (RWP-months) and 766 unique CTW-RWP-month entries were identified and the associated data was collected. The team later found that some of the folders did not contain subCTWs required to have bioassay, and replacement samples above sample 158 were used as replacements until Team A identified 766 unique CTW-RWP-month entries.

Team B consisted of six health physicists and two RCs. Team B collected and scanned hundreds of pages of bioassay data for the subCTWs Team A identified.

Sampling of EDWS RWPs began the week of June 4, 2018. Team A sampled RWPs contained in boxes. Team B collected bioassay data for subCTWs identified from sampling EDWS and the census for the period from 1972 through 1989. Team A completed sampling of RWPs on June 28, 2018. From those folders of interest Team A identified 860 subCTWs, of which 522 are unique subCTW entries. Team B returned to SRS the week of July 9, 2018, to finish the collection of bioassay data. Over the course of 3 weeks Team B sought bioassay data on those subCTWs covering employment from 1972 through 1998; some of those were prime contractor workers. Bioassay data that included urinalysis results, WBC, Fastscan, and chest count data were scanned and stored by individual workers.

The team parsed and segregated urinalysis results and chest count results. SubCTW bioassay data was then analyzed by specific folder of interest and bioassay requirements specific to each RWP to build a matrix of subCTWs by folder of interest to store dates and supporting information for each radionuclide required for the RWP. Some RWPs did not specifically list bioassay as required but were initially considered a folder of interest due to listed air or surface contamination or requirements for respiratory protective equipment. Requirements of bioassay for these tables were assumed using:

- Air monitoring and contamination survey results listed on the RWP,
- Bioassay requirements for similar RWPs for the same areas and location, and
- Guidelines given in the 1990, 1992, and 1996 versions of the SRS *Internal Dosimetry Technical Basis Manual* or TPM, WSRC-IM-90-139 (WSRC 1990, 1992, 1996).
- Farrell and Findley (1999).

Bioassay requirements for all RWP folders of interest are given in Attachment C, Table C-1. In addition, some RWPs required bioassay for only certain defined job tasks, although that detail was not readily discernable in the March 2018 site data capture. During this analysis several folders of interest were deemed to not require bioassay. In addition some subCTWs captured from RWP folders of interest were found during the analysis to not have required bioassay for their task, which left 662 subCTWs and 146 RWP folders of interest for the discussion of results in Section 4.0.

4.0 EVALUATION OF SUBCONTRACTOR BIOASSAY, 1990 TO 1998

Evaluation of subCTW bioassay for 1990 to 1998 is detailed in the following sections.

4.1 BIOASSAY SAMPLING FREQUENCY

The primary reference SRS used to set required bioassay by RWP for this report is *Specification of Urine Bioassay Requirements on Radiological Work Permits* (Farrell and Findley 1999). However, bioassay requirements and sampling frequencies were also based on other SRS bioassay documents and requirements in each RWP. The guiding SRS documents for bioassay sampling requirements and frequencies were revisions of the TPM (WSRC-IM-90-139; WSRC 1990). The team identified four relevant revisions of the manual from 1990 to 1996: 1990 (Revision 1), 1992 (Revision 1.5), 1993b (Revision 2), and 1996 (Revision 5). The latter three have the same radionuclide sampling frequency guidelines. The team considered the frequencies in those technical basis manuals, information in *SRS Actinide Bioassay Program Basis Document* (WSRC 1993a), and guidance in ORAUT-OTIB-0060, *Internal Dose Reconstruction* (ORAUT 2018b, Section 3.3.4). Minimal sampling frequencies given in WSRC-IM-1990-139, Revision 1.5 (WSRC 1992) are:

- Plutonium. One in vitro sample per year.
- Strontium. One in vitro sample per year, one WBC per year (for FPs).
- Uranium. One enriched uranium sample per year and one chest count, or one elemental uranium sample per year.
- Americium. One in vitro sample per year and one chest count.
- Neptunium. One in vitro sample per year and one chest count.

4.1.1 Reasons for Not Meeting Established Sampling Frequencies

From the analysis of subCTWs, both in this report and ORAUT-RPRT-0083 (ORAUT 2017), looking at bioassay data over a period of years, the timing of required urine bioassay samples sometimes appears to not meet these established frequencies. There are reasons for this:

1. SubCTWs would sometimes terminate employment without leaving a termination in vitro bioassay. In such cases the subCTW either waived the opportunity to leave a sample or did not return a sample kit, then returned to employment. Having returned, the subCTW could later be sampled. Figure 4-1 shows a redacted example of a waiver submitted by [redacted]. A waiver was the action of the worker, not SRS HP.
2. Several examples of this are represented in the captured bioassay data. For example, [redacted] worked at SRS at various times between 1990 and 1998. The subCTW left a routine bioassay for plutonium on June 15, 1994. The same subCTW later worked on an RWP requiring bioassay on November 15, 1994. Being assigned to routine bioassay, the worker should have been sampled again in June 1995 but was terminated in early 1995 with a

Termination Bioassay Sampling Kit Receipt Form

Name _____

Social Security Number _____

Department BSR1

For Office Use Only
AIRBILL #: _____

Waived

I hereby acknowledge receipt of a take-home kit, and the instructions that go with it. I understand that I am required to fill these bottles and submit them, via FEDERAL EXPRESS (at no cost to me), to the Health Protection Department using the shipping container provided to me.

Signature Date 4-8-98

This sample will only be analyzed for radioactive materials. No other testing will be

Figure 4-1. Example of waived termination bioassay sample (ORAUT 2018c).

termination WBC on February 22, 1995. HP noted that no bioassay kit was needed. After returning to SRS as a subCTW in late 1997, the worker waived a bioassay kit in March 1998 to monitor the most recent employment. The subCTW returned yet again in late 1998, that time leaving a routine urine sample in June 1998.

Workers with no qualifying results in the published radionuclide frequency were matched with workers having bioassay doing the same or similar tasks, when available.

4.1.2 Work Area Descriptions

RWP samples were taken from the following locations. The primary radionuclides of concern are provided.

1. 772-F. Central Laboratory for process operations (radionuclides of interest depend on Analytical Laboratory, generally plutonium, americium, and strontium/FP)
2. 773-A. Research and Development Laboratory (radionuclides of interest depend on Analytical Laboratory, generally plutonium, americium, and FPs/⁹⁰Sr).
3. F/H-241. Tank Farms, FPs/⁹⁰Sr and plutonium.
4. 235-F. Plutonium Fuel Fabrication Facility and Actinide Billet Line, plutonium and neptunium.
5. F/H-221. Main Canyon Building, primarily FPs/⁹⁰Sr.
6. F/H B-Line. Primary product line, primarily plutonium but can have ²³⁷Np for the old HB-Line (OBL). Neptunium was not introduced in the new HB-Line (HBL) until 2001 (SRNS 2012). The HBL was constructed on the roof of H Canyon.
7. F/H A-Line. Uranium recovery line (Building 211).
8. 313-M. Depleted uranium target fabrication.

9. 321-M. Enriched uranium and actinide target fabrication with some very limited plutonium.
10. E Area. Low-level waste disposal facility; primarily plutonium.
11. Z Area. Saltstone Production Facility and Vault, generally plutonium and FPs/⁹⁰Sr.

4.1.3 **Evaluating Periods with No Bioassay Results**

While SRS operated a routine bioassay program with radionuclide sampling frequencies, the team used guidance in ORAUT-OTIB-0060 for evaluating periods with no bioassay results (ORAUT 2018b). These periods are handled as either “for missed dose” where results span published frequencies or as “for unmonitored dose” when no bioassay results are available for the subCTW. From ORAUT-OTIB-0060:

The line between missed and unmonitored dose is not well defined because material from an intake is excreted over an extended period depending on the half-life and retention characteristics of the nuclide. A long-lived, long-retained nuclide (e.g., plutonium and uranium) can be retained for decades with continuous excretion of small amounts. One result after many years of employment can contain activity from all previous intakes and provide information for determining an intake amount for all previous years and, in such a situation, a lack of bioassay samples for several years would not be considered unmonitored because an upper bound can be placed on the intake. This is not true for nuclides that are eliminated relatively rapidly from the body (e.g., ¹³⁷Cs). An unmonitored period can precede a monitored period for these shorter-retained nuclides. For both types of nuclides, an individual can be monitored for some period, after which there is an unmonitored period. The period after the last bioassay sample is considered unmonitored for both long- and short-retained materials. An individual’s bioassay data always take precedence over other data (e.g., coworker or site default values), unless the bioassay has been shown to be flawed or not representative of the individual’s exposure.

For long-lived, long-retained radionuclides:

Missed dose is calculated from the start of the potential intake period through the date of the last bioassay sample in the period being assessed. This period is considered to be monitored regardless of the date of the first bioassay sample. Unmonitored dose is assigned from the day after the last bioassay sample through the end of the potential exposure period. Long-lived, long-retained nuclides include all absorption types of plutonium, uranium, and americium, unless the only monitoring method is chest counting. Types F and M are not retained for significant periods in the lungs and the rules for short-retained radionuclides must be followed.

For short-lived or short-retained radionuclides (including ¹³⁷Cs and ⁹⁰Sr) during potential exposure periods: Missed dose is calculated in the intervals where there are bioassay results; other periods are considered to be unmonitored. Gaps of greater than 2 years between results are considered to be unmonitored.

4.2 **SUBCONTRACTOR MONITORING ANALYSIS RESULTS, 1990 TO 1998**

The team evaluated the 662 subCTWs (429 individual subCTWs making 662 entries) required to be monitored by bioassay to determine the percentage of subCTWs with bioassay results. The roster of subCTWs evaluated for this period, 1990 to 1998, is given in Attachment C, Table C-2. RWP files are available in WSRC 1990-1998; CTW bioassay data is available in WSRC 1990-1998 and ORAUT

2018c. The team reviewed two folders of data from 1990, one for F Area and one from H Area. However, the team found only one subCTW required to be monitored in late 1990, so 1990 was combined with 1991 for the statistical analysis. Findings apply to the sampling plan period from 1990 through 1998. These data are presented by radionuclide, and for all radionuclides by area, by craft, and by year.

Of 662 subCTWs, 633 had one or more required bioassay results. Another 19 are represented by coworkers with pertinent bioassay. The team found only 10 subCTWs who did not submit a bioassay sample and are not represented by a coworker. Of those 10 subCTWs, five either waived the bioassay sample or HP determined a sample was not needed after the job. However, these five subCTWs are included in the count of not having been sampled. The team calculated percentages of subCTWs monitored by year having at least one required bioassay, even though a subCTW could have more than one; results are provided in Table 4-1. For example, a subCTW bioassay required for plutonium and strontium would be counted in this tabulation if the subCTW had been sampled for either.

Table 4-1. SubCTWs with at least one bioassay for any radionuclide, 1990 to 1998.

Year	Bioassay required	No. of RWP	SubCTWs monitored by bioassay	Percent with bioassay	SubCTWs matched to coworker with bioassay	Effective percent monitored
1990–1991	82	17	81	99%	1	100%
1992	106	29	103	97%	3	100%
1993	173	27	167	97%	5	99%
1994	140	32	131	94%	4	96%
1995	57	15	54	95%	3	100%
1996	24	7	20	83%	0	83%
1997	55	9	54	98%	1	100%
1998	25	10	23	92%	2	100%
Totals	662^a	146	633	96%	19	98%

a. Three subCTWs waived termination bioassay; two subCTWs deemed sample not needed.

The team calculated percentages of subCTWs monitored by craft for subCTWs having at least one required bioassay and separately using required bioassay for plutonium, strontium/FP, uranium, americium, and neptunium. The distribution of crafts is shown by pie chart in Figure 4-2. Laborer is the largest piece of the pie chart, followed by iron or steel worker, pipefitter, carpenter, electrician, boilermaker, painter, insulator, and millwright. However, the rates of bioassay of laborers across RWP are consistent among all crafts except iron and steel workers, which averaged 4.3 workers per RWP. From reviewing the sampled RWPs, it appears laborers were rotated in and out of jobs. Laborers were also assigned with other trades on the same tasks. For example, on RWP 94-Z-415, laborers accompanied sheet metal workers on task 2 and ironworkers on task 6; both tasks required bioassay (WSRC 1994, p. 7). On November 10, 1994, three laborers worked with one sheet metal worker on task 2 from 8 a.m. to 11:30 a.m. The work done on that day for task 2 was removing a water-stop in one of the vaults.

The distribution of crafts for this report differs somewhat from that in ORAUT-RPRT-0094, *Bioassay for Subcontracted Construction Trade Workers at the Savannah River Site from 1972 to 1997* (see Table 4-2 (ORAUT 2019b)). Note that in that report craft was taken from NOCTS as the craft the claimant provided. ORAUT-RPRT-0094 reported pipefitter and electrician as the largest two crafts used in that analysis. Similarly, ORAUT-RPRT-0083 reported pipefitter and electrician as the largest two codes used in that analysis (Table 4-2) (ORAUT 2017). The sources of data for the latter report were Job Plans and SWPs for A Area for 1980 through 1987. A majority of those Job Plans considered for ORAUT-RPRT-0083 were written for specific short-term tasks to be performed by one or two crafts and include both DuPont and subCTWs.

Unlike the Job Plans used for ORAUT-RPRT-0083 (ORAUT 2017), starting around 1994 RWP's were written for a variety of tasks and crafts. An example is shown in Figure 4-3. Personal protections

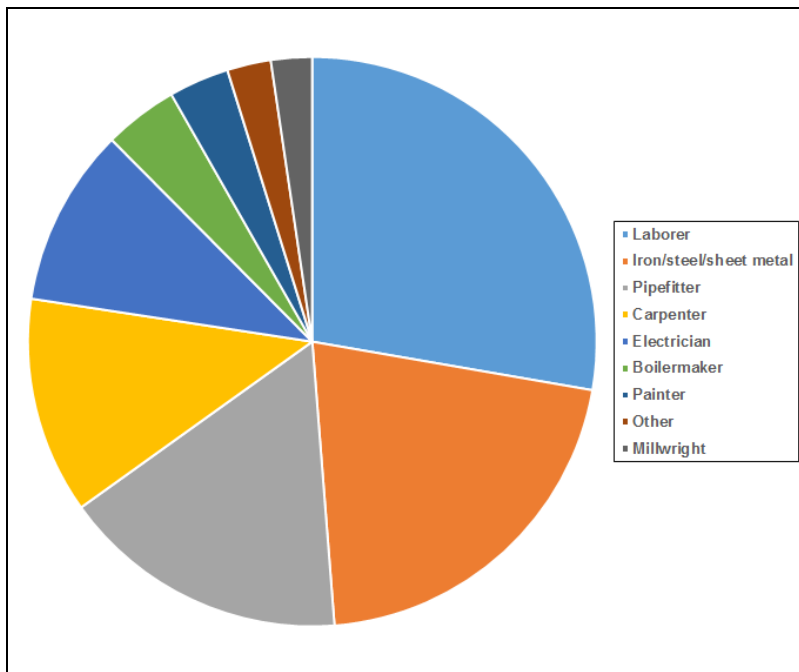


Figure 4-2. Craft distribution.

Table 4-2. Number of workers by craft by ORAU Team report.^a

Craft	ORAUT-RPRT-0083	ORAUT-RPRT-0092 (this report)	ORAUT-RPRT-0094
Boilermaker/welder	8	27	74
Carpenter	14	79	62
Electrician	22	67	233
Insulator	0	19	33
Iron/steel/sheetmetal	12	137	78
Laborer	6	177	67
Other	27	30	135
Painter	9	22	34
Pipefitter/Welder	35	105	202
Period	1981–1986	1990–1998	1972–1998

a. Sources: ORAUT (2017, 2019a).

Section V					
Estimated Exposure Summary					
Part 1 (To be completed by RWP Requester)					
No.	Job Breakdown by Task	Craft/Dept.	Crew Size	Task Duration (hrs)	RWP Man-hrs *
1	Make cuts for expansion joints/flashing	Sheetmetal	2	24	48
2	Remove temporary flashing	Sheetmetal	2	24	48
3	Clean out void space between wall grout	Constr	2	24	48
4	Pour concrete and sealant	Mason/Lab.	5	40	200
5	Install caulking and permanent flashing	Sheetmetal	4	40	160
6	Housekeep area within Contamination Area	Ops/Const	4	16	64
7	RCO Monitoring within Contamination Area	RCO	2	96	192

* RWP Man-hrs = Crew Size x Task Duration

Figure 4-3. Example of job breakdown by task (WSRC 1994).

were also assigned by task. Some of these RWPs contained several pages of sign-in sheets that could include both workers required and not required to submit bioassay. The larger number of laborers appears to be proportional to the number of RWPs that assigned work to laborers, which reasons well; that is, more RWPs would need laborer than pipefitter, electrician, or any of the other crafts. The same proportionality can be used to assess the relative percentage of all crafts; craft per sample rates are given in Table 4-3. Using the column Craft workers per RWP, the largest crafts are the millwrights (3.0 per RWP), the grouping of iron or steel workers and sheet metal workers (4.3 per RWP) followed by laborers (2.5 per RWP), and the combination of all laborers, pipefitters, and carpenters (2.4 per RWP). With the exception of laborers, the others are similar to the distributions in ORAUT-RPRT-0083 and ORAUT-RPRT-0094 (ORAUT 2017, 2019b).

Table 4-3. SubCTWs with at least one bioassay for any radionuclide by craft, 1990 to 1998.

Craft	Bioassay required	No. of RWPs	Craft workers per RWP	SubCTWs monitored by bioassay	Percent with bioassay	SubCTWs matched to coworker with bioassay	Effective percent monitored
Boilermaker	27	12	2.3	26	97%	1	100%
Carpenter	79	33	2.4	72	94%	7	100%
Electrician	66	28	2.4	63	95%	1	97%
Insulator	19	10	1.9	18	95%	1	100%
Iron/steel/sheet metal	137	32	4.3	136	99%	1	100%
Laborer	177	70	2.5	175	99%	0	99%
Millwright	15	5	3.0	13	87%	2	100%
Painter	22	12	1.8	19	86%	2	95%
Pipefitter	105	43	2.4	97	90%	4	96%
Other	15	8	N/A	14	93%	0	93%
Totals	662^a	N/A	N/A	633	96%	19	99%

a. Three subCTWs waived termination bioassay; two subCTWs deemed sample not needed.

As shown in Table 4-3, the percentage of subCTWs submitting who submitted required bioassay for one or more of the radionuclides plutonium, strontium, uranium, americium, and neptunium by craft ranged from 86% for painters to 99% for laborers and ironworkers. There is no appreciable difference in the internal monitoring of any craft based on the sampled workers. It is apparent SRS HP required bioassay of all subCTWs equally regardless of craft.

Lastly, the team calculated percentages of subCTWs required to be monitored having at least one required bioassay (Table 4-4) by SRS area. The percentage of subCTWs, by SRS area, required to be monitored and who were monitored for one or more of the radionuclides plutonium, strontium, uranium, americium, and neptunium and monitored for at least one of those ranged from 83% in E Area to 100% in both A and Z Areas.

Table 4-4. SubCTWs with at least one bioassay by area, 1990 to 1998.

Area	Bioassay required	No. of RWPs	SubCTWs monitored by bioassay	Percent with bioassay	SubCTWs matched to coworker with bioassay	Effective percent monitored
A	112	21	112	100%	0	100%
F	200	49	187	94%	8	98%
H	230	50	219	95%	7	98%
M	18	6	17	94%	1	100%
E	23	10	19	83%	3	96%
Z	79	10	79	100%	0	100%
Totals	662^a	146	633	96%	19	99%

a. Three subCTWs waived termination bioassay; two subCTWs deemed sample not needed.

Results of analysis of individual radionuclide sampling programs are summarized in Table 4-5. Discussion of each radionuclide bioassay follows below.

Table 4-5. SubCTW bioassay, 1990 to 1998.

Radionuclide	Bioassay required	SubCTWs monitored by bioassay	Percent with bioassay	SubCTWs matched to coworker with bioassay	Percent monitored or with coworker bioassay
Plutonium	644	567	88%	47	95%
Strontium	429	414	97%	12	99%
Uranium	225	199	88%	17	96%
Americium	180	131	73%	25	87%
Neptunium	91	63	69%	13	84%
Totals	1,569	1,374	88%	114	95%

Confidence Interval

Due to the reasons provided in Section 2.5, the calculated confidence interval only applies to generalizing the results from the sample to the population of RWPs available in the March inventory because the sample was not complete. These issues were:

- Preplacement issues,
- Inventory errors, and
- Bioassay-required errors.

Of the 662 subCTWs who should have been monitored, 633 of them were. A simple point estimate would indicate that 95.62% of subCTWs (in the March inventory) who should have been monitored were. Because the data are stratified in these RWPs by area, the point estimate needs to be weighted based on strata. Weighted by strata, an estimated 95.13% of subCTWs (in the March inventory) who should have been monitored were. This results in 95% confidence that between 87.18% and 98.84% of subCTWs (in the March inventory) who should have been monitored were monitored.

A May 1997 self-assessment by SRS evaluated DOE concerns about workers not leaving required bioassay samples. SRS found that 107 samples, or 3.35%, were not provided out of 3,200 samples requested during the first 4 months of 1997 (DOE 1998, p. 3). Of those 3,200 requested samples, only 5% were for job-specific requirements as required on the job's RWP. The remaining 95% were requested routine bioassay samples. Participation for routine samples was found to be 100%. The 107 missing nonroutine samples were requested for job-specific requirements and indicated a 66% nonparticipation rate for job-specific bioassay samples or approximately 3% of all bioassay samples. The overall participation rate for the first 4 months of 1997 was approximately 97%.

The results of the May 1997 self-assessment are illustrated in Figure 4-4. It begins with the requested 3,200 samples; 95% of these were for routine samples and follow the path to the right; 5% follow the path on the left for RWP samples. All of the requested routine samples were received by the analytical laboratory. For the RWP bioassays, 3.35% or 107 of the requested samples terminated in the hexagonal node labeled "Sample NOT received." This resulted in 96.65% or 3,092 samples received at the laboratory for the first 4 months of 1997.

The overall participation rate (monitoring) was 96.65%, and the incomplete rate was 3.35%. The participation rate obtained from the self-assessment falls within the confidence interval of this sample.

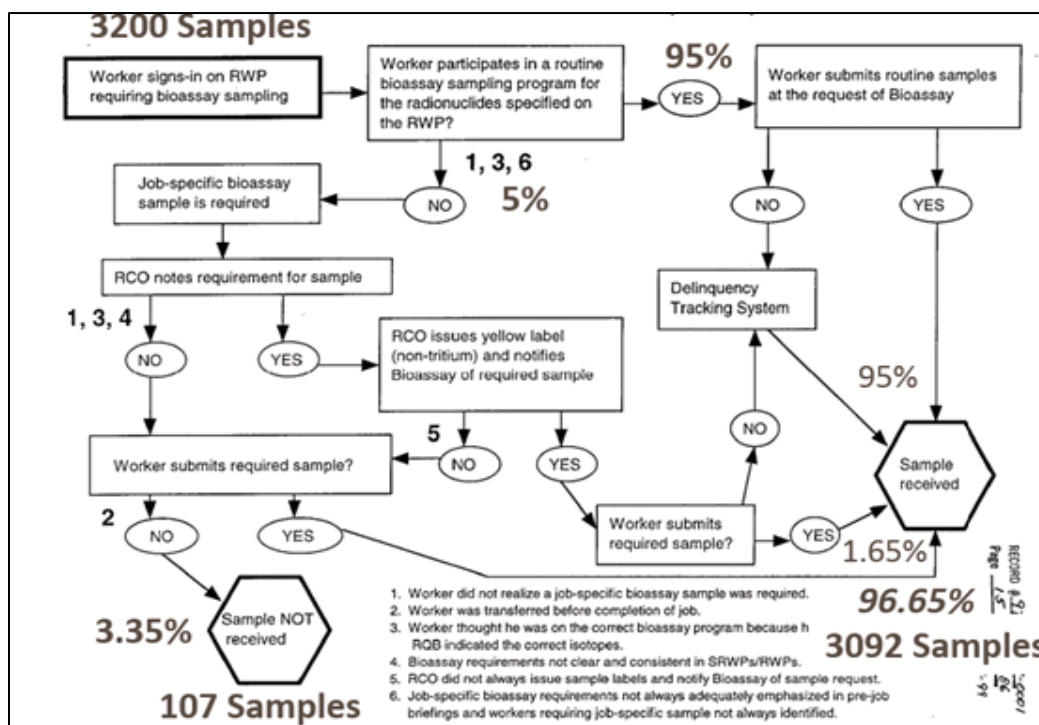


Figure 4-4. Attachment 2 to Root Cause Analysis Corrective Action Report (Kornacki and Gatlin, p. 23). The flowchart is the expected process; the large numbers represent actual May 1997 participation.

4.3 PLUTONIUM BIOASSAY

Six hundred forty-four subCTWs were required to be monitored for plutonium by bioassay from 140 RWPs. Of those, 548 were monitored by plutonium urinalysis and 19 by in vivo chest counting. The rate of monitoring was 88%. Three subCTWs waived bioassay sampling for the period, and HP determined plutonium monitoring was not needed for four subCTWs, but these seven instances were counted as no sample. Forty-seven subCTWs are represented by coworkers with plutonium bioassay for an effective monitoring rate of 95% (calculated as the total number of workers bioassay plus total with coworker bioassay divided by total required minus the number waived and the number deemed not needed). The listing of results of the subCTWs required to have plutonium bioassay is shown in Attachment C, Table C-3. The mean number of days from date of RWP to urinalysis sampling is 159 with a median of 113. Of the 548 plutonium urine results, 501 are for samples collected within 1 year of RWP date, another 39 are for samples collected within 2 years. Data detailing subCTW required to be monitored for plutonium intakes is given by year in Table 4-6.

A portion of the list is provided in Table 4-7 as a demonstration of coworker matching. Matched coworkers have the same (SID) number and the matched coworker is indicated in the last column.

Statistics of plutonium bioassay by craft for 1990 through 1998 are presented in Table 4-8. The percentage of subCTWs required to have bioassay for plutonium by craft is almost identical to percentages of subCTWs required to have bioassay for any radionuclide (Table 4-3). The percentage of subCTW monitoring ranged from 77% for painters to 94% for insulators. There was no appreciable difference in the internal monitoring of any craft based on the sampled workers. Rates of effective monitoring ranged from 91% to 100%.

The team derived percentages of subCTWs monitored by year having required plutonium bioassay by SRS area; results are shown in Table 4-9. The percentage of subCTWs required to be monitored by

Table 4-6. SubCTW plutonium bioassay, 1990 to 1998.

Year	Bioassay required	No. of RWP	SubCTWs monitored by bioassay	Percent with bioassay	SubCTWs matched to coworker with bioassay	Effective percent monitored
1990–1991	82	17	78	95%	3	99%
1992	88	23	85	97%	3	100%
1993	173	27	154	89%	11	95%
1994	140	32	104	74%	20	89%
1995	57	15	52	91%	5	100%
1996	24	7	20	83%	0	83%
1997	55	9	54	98%	1	100%
1998	25	10	20	80%	4	96%
Totals	644^a	140	567	88%	47	95%

a. Three subCTWs waived termination bioassay; two subCTWs deemed sample not needed.

Table 4-7. Examples of subCTW coworkers with plutonium bioassay, paired subCTW–coworker subCTW in brackets.

Example	CTW	SID	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Pu date	Coworker
1	[redacted]	4	03/24/1992	830	1100	None	None	None	None	[redacted]
1	[redacted]	4	03/24/1992	830	1100	03/24/1992	1230	1500	03/24/1992	No data
2	[redacted]	4	03/09/1992	830	1020	03/09/1992	1430	1500	None	[redacted]
2	[redacted]	4	03/09/1992	830	1100	03/09/1992	1430	1500	12/04/1992	No data
3	[redacted]	17	12/22/1991	1300	1430	None	None	None	None	[redacted]
3	[redacted]	17	12/22/1991	1300	1430	None	None	None	05/11/1992	No data
4	[redacted]	127	10/20/1997	1115	1200	None	None	None	None	[redacted]
4	[redacted]	127	10/20/1997	1025	1300	10/20/1997	1245	1300	02/20/1998	No data
5	[redacted]	212	09/16/1993	900	1430	09/17/1993	745	915	None	[redacted]
5	[redacted]	212	09/16/1993	900	1430	09/17/1993	745	915	02/02/1994	No data
6	[redacted]	246	07/22/1994	900	1100	07/27/1994	900	1130	None	[redacted]
6	[redacted]	246	07/22/1994	900	1100	07/27/1994	900	1130	09/12/1994	No data

Table 4-8. SubCTW plutonium bioassay by craft, 1990 to 1998.

Craft	Bioassay required	No. of RWPs	SubCTWs monitored by bioassay	Percent with bioassay	SubCTWs matched to coworker with bioassay	Effective percent monitored
Boilermaker	27	12	24	89%	2	96%
Carpenter	79	33	71	90%	7	99%
Electrician	56	24	49	88%	2	91%
Insulator	17	9	16	94%	0	94%
Iron/steel/ sheet metal	137	33	122	89%	12	98%
Laborer	174	70	147	84%	14	93%
Millwright	15	6	13	87%	2	100%
Painter	22	12	17	77%	4	95%
Pipefitter	102	42	94	92%	4	96%
Other	15	8	14	93%	0	93%
Totals	644^a	N/A	567	88%	47	95%

a. Three subCTWs waived termination bioassay; two subCTWs deemed sample not needed.

Table 4-9. SubCTW plutonium bioassay by area, 1990 to 1998.

Area	Bioassay required	No. of RWPs	SubCTWs monitored by bioassay	Percent with bioassay	SubCTWs matched to coworker with bioassay	Effective percent monitored
A	112	21	101	90%	6	96%
F	200	49	177	89%	14	96%
H	230	50	218	95%	8	98%
E	23	10	17	74%	3	87%
Z	79	10	54	68%	16	89%
Totals	644^a	140	567	88%	47	95%

a. Three subCTWs waived termination bioassay; two subCTWs deemed sample not needed.

plutonium bioassay by SRS area ranged from 68% in Z Area to 95% in H Area. Rates of effective monitoring ranged from 87% to 98%.

4.4 STRONTIUM BIOASSAY

Four hundred twenty-nine subCTWs were required to be monitored for intakes of strontium/FPs by bioassay. The listing of results of the subCTWs required to have been monitored for strontium is shown in Attachment C, Table C-4. Three hundred nineteen subCTWs were monitored by ⁹⁰Sr urinalysis. An additional 95 subCTWs were monitored indirectly by in vivo WBC, which was also used at SRS to monitor exposures to FPs and certain actinides. While ⁹⁰Sr is a beta emitter, concentrations of strontium and other FPs can be derived using a reference radionuclide such as ¹³⁷Cs considering known isotopic ratios of the various areas and buildings. Fifteen subCTWs required to submit a bioassay sample for strontium analysis or be analyzed by WBC did not, resulting in a monitoring rate of 96%.

Twelve subCTWs are represented by coworkers with strontium bioassay. The effective monitoring rate for ⁹⁰Sr is 99%. The mean number of days from date of RWP to urinalysis sampling is 178 with a median of 137. Of the 319 urine results, 287 are samples collected within 1 year of RWP date. Data detailing subCTWs required to be monitored for strontium/FP intakes is given by year in Table 4-10.

Statistics for strontium bioassay by craft for 1990 through 1998 are presented in Table 4-11. The percentage of subCTW monitoring ranged from 85% for painters to 100% for electricians, insulators, iron and steel workers, and millwrights. Rates of effective monitoring by craft ranged from 93% to 100%.

Table 4-10. SubCTW strontium/FP bioassay by year, 1990 to 1998.

Year	Bioassay required	No. of RWP	SubCTWs monitored by bioassay	Percent with bioassay	SubCTWs matched to coworker with bioassay	Effective percent monitored
1990–1991	71	14	70	99%	1	100%
1992	33	9	31	94%	2	100%
1993	94	13	94	100%	0	100%
1994	121	26	117	97%	2	99%
1995	20	5	19	95%	1	100%
1996	16	3	14	88%	2	100%
1997	54	8	51	94%	2	98%
1998	20	7	18	90%	2	100%
Totals	429	85	414	97%	12	99%

Table 4-11. SubCTW strontium/FP bioassay by craft, 1990 to 1998.

Craft	Bioassay required	No. of RWP	SubCTWs monitored by bioassay	Percent with bioassay	SubCTWs matched to coworker with bioassay	Effective percent monitored
Boilermaker	21	9	20	95%	0	95%
Carpenter	51	7	45	88%	6	100%
Electrician	25	8	25	100%	0	100%
Insulator	9	5	9	100%	0	100%
Iron/steel/ sheet metal	104	24	104	100%	0	100%
Laborer	114	47	113	99%	1	100%
Millwright	8	2	8	100%	0	100%
Painter	13	6	11	85%	2	100%
Pipefitter	70	25	66	94%	3	99%
Other	14	7	13	93%	0	93%
Totals	429	N/A	414	97%	12	99%

The team derived percentages of subCTWs monitored by year having required strontium/FP bioassay by SRS area. Results are shown in Table 4-12. The percentage of subCTWs required to be monitored by strontium/FP bioassay and by SRS area ranged from 83% in E Area to 100% in A and Z Areas. Note that a majority of samples in F and H Areas were collected from work at the tank farms. Rates of effective monitoring by area ranged from 91% to 100%. There was no appreciable difference in the internal monitoring by craft or area based on the sampled workers.

Table 4-12. SubCTW strontium/FP bioassay by area, 1990 to 1998.

Area	Bioassay required	RWP samples	SubCTWs monitored by bioassay	Percent with bioassay	SubCTWs matched to coworker with bioassay	Effective percent monitored
A	112	21	112	100%	0	100%
F	144	31	135	94%	8	99%
H	71	13	69	97%	2	100%
E	23	10	19	83%	2	91%
Z	79	10	79	100%	0	100%
Totals	429	85	414	97%	12	99%

4.5 URANIUM BIOASSAY

Uranium monitoring was not required for RWP samples collected in 1996, 1997 and 1998, so the data for the uranium analysis are from 1990 to 1995 only. Two hundred twenty-five subCTWs were required to be monitored by bioassay for intakes of uranium from 1990 to 1995. Of those, 174 were monitored by uranium urinalysis (includes both elemental uranium and enriched uranium) and 25 by

chest counting, also used to detect intakes of uranium, which together yield a sampling rate of 88%. Seventeen subCTWs are represented by coworkers with uranium urinalysis. The effective monitoring rate for uranium is 96%. The mean number of days from date of RWP to date of urinalysis sampling is 172 with a median of 131. Of the 173 uranium urinalysis results, 154 for samples collected within 1 year of the RWP date. Data detailing subCTWs required to be monitored for uranium intakes is given by year in Table 4-13. The listing of results of the subCTWs required to have been monitored for uranium is given in Attachment C, Table C-5.

Table 4-13. SubCTW uranium bioassay, 1990 to 1995.

Year	Bioassay required	No. of RWPs	SubCTWs monitored by bioassay	Percent with bioassay	SubCTWs matched to coworker with bioassay	Effective percent monitored
1990–1991	16	6	11	69%	5	100%
1992	65	20	62	95%	2	98%
1993	96	11	80	83%	8	92%
1994	40	15	38	95%	2	100%
1995	8	2	8	100%	0	100%
Totals	225	54	199	88%	17	96%

Effective rates of monitoring by bioassay ranged from 96% to 100%. The selected RWP samples contained no RWPs requiring uranium bioassay for 1996 through 1998.

Statistics for uranium bioassay by craft for 1990 through 1995 are presented in Table 4-14. Percentage of subCTW monitoring ranged from 80% for painters to 97% for pipefitters with rates of effective monitoring ranging from 94% to 100%. Note that only 2 of the 225 subCTW were millwrights and 1 of those was not sampled. Rates of uranium bioassay by SRS area are given in Table 4-15. Uranium bioassay was not required on RWP samples collected for E and Z Areas. The largest number of required uranium samples from the RWP samples are those from RWPs for A Area followed by H Area. Rates of bioassay ranged from 85% in A Area to 94% in M Area. Effective rates of monitoring by area ranged from 93% in A Area to 100% in H and M Areas.

Table 4-14. SubCTW uranium bioassay by craft, 1990 to 1995.

Craft	Bioassay required	No. of RWPs	SubCTWs monitored by bioassay	Percent with bioassay	SubCTWs matched to coworker with bioassay	Effective percent monitored
Boilermaker	No data	No data	No data	No data	No data	No data
Carpenter	28	12	23	82%	5	100%
Electrician	33	13	30	91%	0	91%
Insulator	9	4	8	89%	1	100%
Iron/steel/ sheet metal	52	9	44	85%	5	94%
Laborer	59	23	54	92%	4	98%
Millwright	2	1	1	50%	0	50%
Painter	10	6	8	80%	1	90%
Pipefitter	31	13	30	97%	1	100%
Other	1	1	1	100%	0	100%
Totals	225	N/A	199	88%	17	96%

Table 4-15. SubCTW uranium bioassay by area, 1990 to 1995.

Area	Bioassay required	No. of RWP's	SubCTWs monitored by bioassay	Percent with bioassay	SubCTWs matched to coworker with bioassay	Effective percent monitored
A	98	18	83	85%	8	93%
F	37	12	34	92%	1	95%
H	72	18	65	90%	7	100%
M	18	6	17	94%	1	100%
Totals	225	54	199	88%	17	96%

4.6 AMERICIUM BIOASSAY

Retrospectively, Farrell and Findley (1999) showed that americium bioassay should have been required in some laboratories in Buildings 773-A and 772-F. Therefore, Farrell and Findley (1999) was used to augment the selection of RWP's that should have required americium bioassay.

One hundred eighty subCTW's were required to be monitored by bioassay for intakes of americium or other trivalent radionuclides, either by RWP, SRS procedure, or Farrell and Findley (1999). The listing of results of the subCTW's required to have been monitored for americium is shown in Attachment C, Table C-6. Americium urine and chest count bioassay were evaluated as acceptable sampling for intakes of ²⁴¹Am. Americium urinary excretion curves show an intake can be detected after several years; however, urine bioassay was capped at 10 years from the date of Job Plan. Most of an americium intake clears the lungs in a few months but about 10% remains in the lungs for a period of years (Northcutt 1986; Toohey and Essling 1980). Therefore, chest count results were also used up to 3 years from the date of the job though chest counting would be valid for longer durations with the minimum detectable activity of the detector being the limiting factor. Ten subCTW's were monitored by americium urinalysis; 121 were monitored by chest counting for a total of 131 subCTW's. An example printout from a chest count showing results for ²⁴¹Am is provided in Figure 4-5. Four subCTW's waived their bioassay sample; HP determined that one of the remaining workers did not need to leave a sample; however, these five instances are counted as not leaving a required sample. The rate of americium bioassay for these subCTW's is 73%. Twenty-five CTW's have a coworker with americium monitoring data, for an effective rate of americium monitoring of 87%. Effective rates of americium bioassay were 100% for 1992 and 1996 through 1998. Data detailing subCTW's required to be monitored for americium are given by year in Table 4-16.

Statistics for americium bioassay by craft for 1990 through 1998 are presented in Table 4-17. Effective rates of americium bioassay ranged from 67% for iron and steel workers to 100% for insulators. Statistics for required americium bioassay by area are given in Table 4-18. Americium bioassay was required in some RWP's used in this report for A, F, and H Areas only.

Canberra/NSD ARACOS-LE		Routine Count Report			file number: 13949; input: 3					
name last:	first:	middle:								
social security / ID:	section:	location: 781								
counted: 14-DEC-94 11:24:49	height: (in)	weight: (lb)								
printed: 14-DEC-94 11:56:06	age: (yrs.)	sex:		CWT: 41.9 (mm)						
counter location: PLUTONIUM/URANIUM LUNG COUNTER				showered before count: Y						
operator: Redacted		directory: [000,001]		wore special clothing for count: Y						
comments:										
Preliminary Whole Body Count Results (Peak Energy Analysis)										
nuclide	energy (keV)	activity (nCi)	% error (2.0 SD)	gain (%)	fit	burden (%)	peak area	centroid (ch)	warning AC FT GN BB	comments
unknown?	53.3	0.1167	58.9	-0.08	1.13	0.0	35.	265.78		<i>WON'T peak at 53</i>
RADON	13.0							64.81		MDA activity 0.8159 nCi
RADON	16.3							81.28		MDA activity 5.9088E-03 nCi
PU-238	20.3							101.19		MDA activity 210.5 nCi
PU-239	20.3							101.24		MDA activity 491.8 nCi
CM-244	21.5							107.48		MDA activity 144.2 nCi
TH-231	25.6							127.89		MDA activity 3.461 nCi
CS-137	31.8							158.62		MDA activity 10.72 nCi
CS-137	32.2							160.61		MDA activity 8.644 nCi
AM-241	59.5							296.92		MDA activity 0.4061 nCi
TH-234	63.3							315.61		MDA activity 3.546 nCi
RADON	74.8							372.96		MDA activity 1.2276E-05 nCi
RADON	77.1							384.42		MDA activity 1.1421E-05 nCi
MP-237	86.5							431.24		MDA activity 0.8585 nCi
RADON	87.3							435.23		MDA activity 1.1515E-05 nCi
TH-234	92.4							460.53		MDA activity 4.038 nCi
totals		0.0000E+00				0.	totals are computed from the final (nuclide analysis) report			
count time:	1800.	input	sum of counts	fraction	calibrations used		warning levels			

Figure 4-5. Example chest count report (ORAUT 2018c).

Table 4-16. SubCTW americium bioassay, 1990 to 1998.

Year	Bioassay required	No. of RWPs	SubCTWs monitored by bioassay	Percent with bioassay	SubCTWs matched to coworker with bioassay	Effective percent monitored
1990-1991	20	4	7	35%	8	75%
1992	46	11	45	98%	1	100%
1993	73	13	46	63%	11	78%
1994	25	9	23	92%	1	96%
1995	10	3	4	40%	4	80%
1996	3	2	3	100%	0	100%
1997-1998	3	2	3	100%	0	100%
Totals	180	44	131	73%	25	87%

Table 4-17. SubCTW americium product bioassay by craft, 1990 to 1998.

Craft	Bioassay required	No. of RWP	SubCTWs monitored by bioassay	Percent with bioassay	SubCTWs matched to coworker with bioassay	Effective percent monitored
Boilermaker	7	3	4	57%	1	71%
Carpenter	35	14	23	66%	8	89%
Electrician	15	8	11	73%	1	80%
Insulator	7	3	7	100%	0	100%
Iron/steel/ sheet metal	30	8	14	47%	6	67%
Laborer	64	24	56	88%	6	97%
Painter	1	1	1	100%	0	100%
Pipefitter	19	9	14	74%	3	89%
Other	2	2	1	50%	0	50%
Totals	180	N/A	131	73%	25	87%

Table 4-18. SubCTW americium bioassay by area, 1990 to 1998.

Area	Bioassay required	No. of RWP	SubCTWs monitored by bioassay	Percent with bioassay	SubCTWs matched to coworker with bioassay	Effective percent monitored
A	13	5	12	92%	1	100%
F	11	4	5	45%	0	45%
H	156	35	114	72%	24	88%
Totals	180	44	131	73%	25	87%

4.7 NEPTUNIUM BIOASSAY

Ninety-one subCTWs were required to be monitored by bioassay for intakes of neptunium. Twenty-four of those 91 were monitored by urinalysis and 39 by chest counting. The rate of bioassay for neptunium is 69%. Thirteen subCTWs worked with coworkers on the same jobs who were monitored for neptunium. The effective rate for neptunium bioassay for subCTWs is therefore 84%. Bioassay dates and status of the subCTWs required to have been monitored for neptunium are shown in Attachment C, Table C-7.

Data detailing subCTWs required to be monitored for neptunium intakes are given by year in Table 4-19 for 1991 through 1995. No RWPs were found for 1990, 1994, 1997, and 1998 that required neptunium bioassay.

Table 4-19. SubCTW neptunium bioassay, 1991 to 1995.

Year	Bioassay required	No. of RWP	SubCTWs monitored by bioassay	Percent with bioassay	SubCTWs matched to coworker with bioassay	Effective percent monitored
1991	4	1	2	50%	1	75%
1992	13	2	13	100%	0	100%
1993	63	11	43	68%	12	87%
1994	No data	No data	No data	No data	No data	No data
1995	11	3	5	45%	0	45%
Totals	91	17	63	69%	13	84%

Statistics for neptunium bioassay by craft for 1991 through 1995 are presented in Table 4-20. While each listed craft has a small number of subCTWs, the rate of bioassay for two of the eight crafts assigned work is 100%.

Table 4-20. SubCTW neptunium bioassay by craft, 1991 to 1995.

Craft	Bioassay required	No. of RWPs	SubCTWs monitored by bioassay	Percent with bioassay	SubCTWs matched to coworker with bioassay	Effective percent monitored
Carpenter	13	6	10	77%	2	92%
Electrician	15	7	11	73%	2	87%
Insulator	2	1	2	100%	0	100%
Iron/steel/ sheet metal	20	4	10	50%	7	85%
Laborer	28	11	25	89%	2	96%
Millwright	5	3	1	20%	0	20%
Painter	1	1	1	100%	0	100%
Pipefitter	6	3	3	50%	0	50%
Other (concrete)	1	0	0	0%	0	0%
Totals	91	N/A	63	69%	13	84%

RWPs requiring neptunium bioassay were found only for F and H Areas, primarily H Area. That would be expected given the separation of neptunium in the OBL. Neptunium was not introduced to the HBL until 2001 (SRNS 2012). Rates of subCTWs neptunium monitoring for F and H Areas are given in Table 4-21.

Table 4-21. SubCTW neptunium bioassay by area, 1991 to 1995.

Area	Bioassay required	No. of RWPs	SubCTWs monitored by bioassay (in vitro + chest)	Percent with bioassay	SubCTWs matched to coworker with bioassay	Effective percent monitored
F	24	5	12	50%	3	63%
H	67	12	51	76%	10	91%
Totals	91	17	63	69%	13	84%

5.0 JOB PLAN AND SPECIAL WORK PERMIT DATA COLLECTION AND EVALUATION, 1972 TO 1989

As discussed in Section 2.0, the team identified very few boxes with Job Plans and SWPs for the period before 1991. Those that were found were only for work in A Area. As a reminder, sometime between 1972 and 1976 the use of SWPs was phased out. In *Radiation & Contamination Control*, DPSOP 40, Revision 54 from April 1976, SRS HP stated SWPs were no longer in general use but relied on DPSOLs and/or Job Plans for work control (DuPont 1976a, p. 159; ORAUT 2018a). Starting in the early 1970s SRS largely relied on DPSOLs to control worker radiation exposures in the same way as SWPs (ORAUT 2018a). The team reviewed some DPSOLs, but they contained only general information about radiation monitoring and did not specify bioassay requirements. In addition, the DPSOLs only contained initials of the individuals who completed the step and not their full names or payroll numbers. As a result, workers were not specifically tracked by DPSOLs. In the period leading up to the use of RWPs, worker exposures were monitored (tracked) in areas by employee exposure cards, TLDs, and bioassay. Because of the low number of boxes identified for 1972 through 1990 in the sampling plan, the team was charged with collecting all subCTW work data from Job Plans that required bioassay or respiratory protection. The team reviewed folders from physical boxes and EDWS identified in the box inventory. Job Plans and SWPs covered portions of 1972, 1973 through 1976, and 1979 through 1988 for work done in Building 773-A.

The number of individual subCTWs employed at SRS from 1972 to 1989 further complicates the analysis for that period. At SRS during this period DuPont primarily used in-house CTWs. A large majority of work performed under Job Plans and reviewed by the team for A Area was done by DuPont construction workers. SRS employed relatively small numbers of subCTWs during that time,

and not all work by subCTWs was on jobs that required bioassay. The team tabulated the number of pages of Job Plans (including SWPs) assigned to subCTWs requiring bioassay for each year Job Plans were available; the results are given in Table 5-1. For the years with Job Plan data for all 12 months (shown in gray) the rate of subCTW pages to all pages ranges from 1.6% (in 1984) to 4.9% (in 1985). The mean is about 3.2% of the total Job Plan pages covered work by subCTWs, resulting in a very small population to evaluate. In summary, about only 24% of the Job Plan pages involved all CTWs. Of those, approximately 87% were for work by DuPont CTWs and about 13% were for work by subCTWs.

Table 5-1. Job Plans and SWPs with subCTWs, 1972 to 1989.

Year	Job Plan pages	DuPont CTW pages	Percent DuPont CTW pages	subCTW pages	Percent subCTW pages	All CTW pages	Percent all CTW pages
1972 ^a	1,167	320	27.4%	40	3.4%	360	30.8%
1973 ^a	1,094	230	21.0%	40	3.7%	270	24.7%
1974	146	40	27.4%	5	3.4%	45	30.8%
1975	5	0	0.0%	0	0.0%	0	0.0%
1976	189	0	0.0%	0	0.0%	0	0.0%
1977	0	0	0.0%	0	0.0%	0	0.0%
1978	0	0	0.0%	0	0.0%	0	0.0%
1979	2	1	50.0%	0	0.0%	1	50.0%
1980 ^a	610	200	32.8%	11	1.8%	211	34.6%
1981 ^a	473	95	20.1%	9	1.9%	104	22.0%
1982 ^a	645	150	23.3%	19	2.9%	169	26.2%
1983 ^a	782	160	20.5%	35	4.5%	195	24.9%
1984 ^a	505	135	26.7%	8	1.6%	143	28.3%
1985 ^a	924	170	18.4%	45	4.9%	215	23.3%
1986 ^a	715	70	9.8%	25	3.5%	95	13.3%
1987	423	55	13.0%	6	1.4%	61	14.4%
1988	30	2	6.7%	5	16.7%	7	23.3%
1989	0	0	0.0%	0	0.0%	0	0.0%
Totals	7,710	1,628	21.0	248	3.2%	1,826	24.0%

a. Gray indicates complete year.

In ORAUT-RPRT-0094, the team examined the numbers of all workers and subCTWs by year from 1972 through 1997 using data in NOCTS claim files as a sample (ORAUT 2019b). These data are plotted for subCTWs versus all other workers in Figure 5-1. The periods presented in this report (1972 to 1974, 1975 to 1979, 1980 to 1989, and 1990 1998) are separated by vertical black bars in the figure for visual convenience. The rising number of workers between 1972 and 1990 and the declining number between 1990 and 1997 represent the overall increase and decrease of the site population during this extended period. The number of subCTWs was about 5% of all SRS claimants with employment in 1972, increasing to a maximum of 18% in 1987 with the K-Reactor startup, and then decreasing to 12% by 1997.

Bioassay requirements for Job Plans and SWPs for 1972 through 1989 are listed in Attachment D, Table D-1.

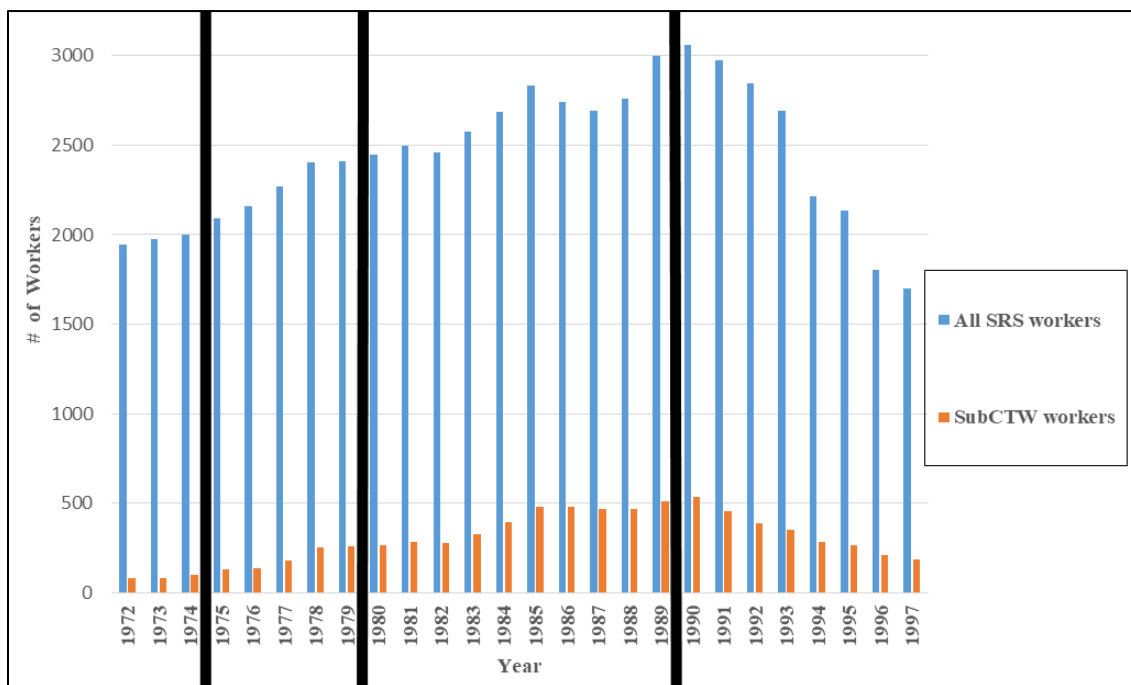


Figure 5-1. SubCTWs compared to all other SRS workers with claims as of August 2018.

5.1 EVALUATION OF SUBCONTRACTOR BIOASSAY, 1972 TO 1974

The team identified 31 unique subCTWs for work across 59 Job Plans conducted from 1972 to 1974 for a total of 136 subCTW-Job Plan combinations. The team only found Job Plans and SWPs for A Area for this period. However, SRS controlled exposures to radioactive materials through DPSOLs and by DPSOP 40, *Radiation & Contamination Control*. In 1976 SRS HP stated SWPs were no longer in general use (DuPont 1976a).

The listing of these subCTW bioassay results is shown in Attachment D, Table D-2. Statistics for subCTW bioassay for 1972 through 1974 are given in Table 5-2. Sixty-nine (51%) of the subCTWs were monitored for plutonium intakes, and another 25 subCTWs had a coworker that was monitored for plutonium. One hundred one subCTWs were monitored for intakes of FPs, and another 27 subCTWs worked with coworker who was monitored. Only one subCTW was required to be monitored for intakes of americium during this period but was not monitored. SubCTWs were not evaluated for uranium or neptunium bioassay during this period as neither radionuclide were identified as a hazard for the location during this time.

Table 5-2. SubCTW bioassay monitoring, 1972 to 1974.

Radionuclide	SubCTWs	SubCTWs with bioassay	Percent subCTWs with bioassay	SubCTWs matched to coworker with bioassay	Percent subCTWs with bioassay or coworker bioassay
Plutonium	136	69	51%	25	69%
Americium ^a	1	0	0%	0	0%
Strontium/FP	136	101	74%	27	94%

a. Only one job (Job Plan number 46) was performed in an area where americium bioassay should have been required.

As mentioned, all Job Plan files reviewed by the team covered work in A Area Building 773-A. Plutonium and FPs were primary sources of potential intakes during the period for which bioassay would have been required in the areas of work. Farrell and Findley (1999) did not specify FPs as a

waste concern for A Area and specifically Building 773-A. However, bioassay control procedures in place at the time listed FP as a requirement for the building for some workers (DuPont 1971a, 1971b, 1976b, 1984, ca. 1977). This was likely due to handling of waste stream materials from the canyons. For this report all work performed in A Area Building 773-A was assumed to have potential for intakes of FPs.

Statistics for plutonium and strontium/FP bioassay by craft are presented in Tables 5-3 and 5-4. Rates of plutonium monitoring range from 42% for pipefitters to 90% for carpenters. Effective percentages of FP monitoring ranged from 62% for pipefitters to 100% for three craft groups.

Table 5-3. SubCTW plutonium bioassay monitoring by craft, 1972 to 1974.

Craft	SubCTWs	SubCTWs with bioassay	Percent subCTWs with bioassay	SubCTWs matched to coworker with bioassay	Percent subCTWs with bioassay or coworker bioassay
Carpenter	10	9	90%	1	100%
Electrician	10	6	60%	2	80%
Iron/steel/sheet metal	5	4	80%	1	100%
Laborer	7	6	86%	1	100%
Pipefitter	104	44	42%	20	62%
Totals	136	69	51%	25	69%

Table 5-4. SubCTW strontium/FP bioassay monitoring by craft, 1972 to 1974.

Craft	SubCTWs	SubCTWs with bioassay	Percent subCTWs with bioassay	SubCTWs matched to coworker with bioassay	Percent subCTWs with bioassay or coworker bioassay
Carpenter	10	10	100%	0	100%
Electrician	10	7	70%	3	100%
Iron/steel/sheet metal	5	4	80%	1	100%
Laborer	7	6	86%	1	100%
Pipefitter	104	74	71%	22	92%
Totals	136	101	74%	27	94%

5.2 EVALUATION OF SUBCONTRACTOR BIOASSAY, 1975 TO 1979

The team did not find Job Plans or SWPs requiring bioassay or respiratory protection for subCTWs in 1975 through 1979 as detailed in Table 5-5.

Table 5-5. SubCTW bioassay monitoring, 1975 to 1979.

Radionuclide	SubCTWs	SubCTWs with bioassay	Percent subCTWs with bioassay
Plutonium	No data	N/A	N/A
Americium	No data	N/A	N/A
Strontium/FP	No data	N/A	N/A

5.3 EVALUATION OF SUBCONTRACTOR BIOASSAY, 1980 TO 1989

For 1980 through 1989, the team identified 219 unique subCTWs on 145 Job Plans (DuPont 1973–1989) for a total of 591 subCTW-Job Plan combinations from Job Plans and SWPs written for A Area though no Job Plans were found for 1989. Only Job Plans with specific bioassay requirements listed

or with respiratory protection required were selected. The team captured bioassay data for a portion of these workers in 2015 and for the remaining subCTWs during the June 2018 data capture.

5.3.1 Plutonium Bioassay

Plutonium bioassay requirements for these subCTW jobs were determined by considering requirements in the *Bioassay Control* procedures (DuPont 1977, 1985a) and in Job Plans (DuPont 1973–1989) and was supplemented by radionuclide waste streams in Farrell and Findley (1999). From this review, all 591 subCTWs were required to be sampled for plutonium. The team verified each worker either having plutonium urinalysis or plutonium analysis by chest counting as the means of satisfying the requirement.

Summary statistics by year for subCTWs with plutonium bioassay are given in Table 5-6. Overall, 472 of the 591 (80%) were monitored for plutonium intakes and another 102 worked with coworkers who were monitored giving an effective percent of monitoring of 97%. The effective percent of monitored subCTWs for plutonium by year ranged from 89% in 1987 to 100% in 1981, 1983, and 1988. Statistics for plutonium bioassay by craft for 1980 through 1988 are presented in Table 5-7. Monitoring by plutonium bioassay ranged from 61% for electricians to 100% for millwrights. When considering coworkers with plutonium bioassay the effective rate of monitoring ranged from 93% for iron and steelworkers to 100% for boilermakers, laborers, millwrights, and painters. The listing of subCTWs bioassay dates is given in Attachment D, Table D-3.

Table 5-6. SubCTW plutonium bioassay by year, 1980 to 1988.

Year	Bioassay required	SubCTWs monitored by bioassay	Percent with bioassay	SubCTWs matched to coworker with bioassay	Effective percent monitored
1980	6	3	50%	3	100%
1981	102	87	85%	13	98%
1982	29	23	79%	3	90%
1983	99	84	85%	15	100%
1984	51	38	75%	11	91%
1985	155	121	78%	28	96%
1986	116	91	78%	24	99%
1987	27	20	74%	4	89%
1988	6	5	83%	1	100%
Totals	591	472	80%	102	97%

Table 5-7. SubCTW plutonium bioassay by craft, 1980 to 1988.

Craft	Bioassay required	SubCTWs monitored by bioassay	Percent with bioassay	SubCTWs matched to coworker with bioassay	Effective percent monitored
Boilermaker	31	29	94%	2	100%
Carpenter	102	92	90%	7	97%
Electrician	44	27	61%	16	98%
Iron/steel/ sheet metal	75	51	68%	19	93%
Laborer	91	85	93%	6	100%
Millwright	16	16	100%	0	100%
Painter	35	25	71%	10	100%
Pipefitter	172	123	72%	42	96%
Other	25	24	96%	0	96%
Totals	591	472	80%	102	97%

5.3.2 Americium Bioassay

Americium bioassay requirements for these subCTW jobs were determined by considering Building 773-A radionuclide waste streams in Farrell and Findley (1999). While that document reports waste streams with varying percentages of americium in several wings of the building, americium is the primary radionuclide of concern only in the F-Wing stream. Therefore, the team considered americium as a required bioassay for all Job Plans identified for F-Wing.

From this review, 151 subCTWs were required to be sampled for americium. The team verified each worker either having americium urinalysis or americium analysis by chest counting as the means of satisfying the requirement; 17 results were urinalysis while 35 were chest counts, some having been performed beyond 3 years after the job date. The team found americium bioassay results for 52 of the 151 (34%). The team found that 62 subCTWs had coworker subCTWs with americium bioassay for an effective percent of 76%. Results for subCTWs with americium bioassay are given in Table 5-8.

Table 5-8. SubCTW americium bioassay by year, 1980 to 1988.

Year	Bioassay required	SubCTWs monitored by bioassay	Percent with bioassay	SubCTWs matched to coworker with bioassay	Effective percent monitored
1980	0	0	N/A	0	N/A
1981	37	8	22%	20	76%
1982	3	1	33%	2	100%
1983	12	2	17%	1	25%
1984	11	4	36%	3	64%
1985	47	13	28%	23	77%
1986	38	22	58%	14	95%
1987	3	2	67%	0	67%
1988	0	0	N/A	0	N/A
Totals	151	52	34%	63	76%

Statistics for americium bioassay by craft for 1980 through 1988 are presented in Table 5-9. The data show monitoring by americium bioassay ranged from 15% for steelworkers to 77% for boilermakers with the exception of heavy equipment operators, none of whom were monitored. When considering coworkers with americium bioassay, the effective rate of monitoring ranged from 55% for pipefitters to 100% laborers. Coworkers were matched who performed similar jobs or with coworkers with a higher potential for intake. The listing of subCTWs americium bioassay dates is given in Attachment D, Table D-3.

Table 5-9. SubCTW americium bioassay by craft, 1980 to 1988.

Craft	Bioassay required	SubCTWs monitored by bioassay	Percent with bioassay	SubCTWs matched to coworker with bioassay	Effective percent monitored
Boilermaker	15	5	33%	9	93%
Carpenter	13	5	39%	4	69%
Electrician	5	2	40%	1	60%
Iron/steel/ sheet metal	40	6	15%	29	88%
Laborer	31	24	77%	7	100%
Millwright	10	4	40%	3	70%
Painter	0	0	N/A	N/A	N/A
Pipefitter	29	6	21%	10	55%
HEO	8	0	0%	0	0%
Totals	151	52	34%	63	76%

The team further evaluated americium bioassay coverage by job (Attachment D, Table D-5) as demonstrated by the effective percent monitored. For 21 of the 35 jobs, 100% of the subCTWs were covered either by personal or coworker bioassay. The effective rate of monitoring ranged from 42% to 91% of subCTWs for another 6 of the remaining 14 jobs. No subCTWs with americium bioassay were noted for 8 jobs. Of those 8 jobs, respiratory protection was required for Job Plan numbers 103 and 125 for line breaks only; it is plausible respirators were not needed. However, the team still assumed respiratory protection was required for these and all listed jobs. Respiratory protection was required for Job Plan number 104 for hot duct work that was a part of the overall job. While hot duct work might have been done; the team cannot say with certainty that it was performed. Similarly for Job Plan number 157, respiratory protection was required only for work performed in the tent. While no subCTWs working on Job Plans 171 and 205 have recorded americium bioassay, DuPont CTWs worked alongside the subCTWs. Each of the DuPont workers were monitored by americium urinalysis; as such, potential intakes to subCTWs can be represented by americium bioassay of DuPont workers. Twenty-nine of 35 jobs are covered by americium bioassay.

5.3.3 Strontium/Fission Product Bioassay

Farrell and Findley (1999) did not specify FPs as a waste concern for A Area and specifically Building 773-A. However, bioassay control procedures in place at the time listed FP as a requirement for the building for some workers (DuPont 1976b, ca. 1977, 1985a). This was likely due to handling of waste stream materials from the canyons. For this report all work was assumed to have potential for intakes of FPs.

Results from evaluation of strontium/FP bioassay are given in Table 5-10. Five hundred ninety-one subCTWs were required to be monitored for FP intakes. Four hundred sixty-three subCTWs were monitored by strontium/FP bioassay (78%) for FP intakes. Another 120 worked with coworkers who were monitored for strontium/FP analysis. The effective percent of monitored subCTWs for strontium/FP by year ranged from 97% in 1985 to 100% in 1980, 1982, 1984, 1987, and 1988.

Table 5-10. SubCTW strontium/FP bioassay, 1980 to 1988.

Year	Bioassay required	SubCTWs monitored by bioassay	Percent with bioassay	SubCTWs matched to coworker with bioassay	Effective percent monitored
1980	6	3	50%	3	100%
1981	102	78	76%	23	99%
1982	29	25	86%	4	100%
1983	99	70	71%	28	99%
1984	51	35	69%	16	100%
1985	155	120	77%	31	97%
1986	116	105	91%	9	98%
1987	27	25	93%	2	100%
1988	6	2	33%	4	100%
Totals	591	463	78%	120	99%

Statistics for FP bioassay by craft for 1980 through 1988 are presented in Table 5-11. Monitoring by FP bioassay ranged from 48% for electricians to 94% for millwrights. When considering coworkers with FP bioassay, the effective rate of monitoring ranged from 95% for electricians to 100% for four craft types.

Table 5-11. SubCTW strontium/FP bioassay by craft, 1980 to 1988.

Craft	Bioassay required	SubCTWs monitored by bioassay	Percent with bioassay	SubCTWs matched to coworker with bioassay	Effective percent monitored
Boilermaker	31	27	87%	3	97%
Carpenter	102	84	82%	16	98%
Electrician	44	21	48%	21	95%
Iron/steel/ sheet metal	75	50	67%	25	100%
Laborer	91	73	80%	17	99%
Millwright	16	15	94%	1	100%
Painter	35	26	74%	9	100%
Pipefitter	172	142	83%	27	98%
Other	25	25	100%	0	100%
Totals	591	463	78%	120	99%

SubCTWs were not evaluated for uranium or neptunium bioassay during this period as neither radionuclide was identified as a hazard for the location during this time.

5.3.4 Incident Bioassay, F and H Areas

As a reminder, the data in Tables 5-6 through 5-11 represent work in A Area Building 773-A only. While the team was not able to capture job-specific data for other areas, it did capture incident reports for the latter portion of the 1980s for F and H Areas (DuPont 1983–1989, 1989–1992). The reports include listings of DuPont CTWs and subCTWs. Often, the same incidents involved both sets of workers. The team identified 45 subCTWs in those reports who received head-area contamination occurring from 1985 through 1990 to determine if HP followed up with the workers with bioassay. The team assumed required bioassay radionuclides based on the location of work and description of the incident. The team assumed plutonium bioassay was required from 44 subCTWs, FP bioassay from 12 subCTWs, and uranium bioassay from 1. Statistics for the bioassay of these subCTWs are presented in Table 5-12. Data used for Table 5-13 are in Attachment D, Table D-4.

Table 5-12. Incident bioassay, 1985 to 1990.

Year	Bioassay Pu required	SubCTWs monitored by Pu bioassay	Percent with Pu bioassay	Bioassay FP required	subCTWs with FP bioassay	Percent with FP bioassay
1985	7	6	86%	1	1	100%
1986	2	2	100%	1	1	100%
1987	12	11	92%	3	2	67%
1988	18	17	94%	6	5	83%
1989–1990	5	5	100%	1	1	100%
Totals	44	41	93%	12	10	83%

Forty-three subCTWs should have been monitored for plutonium after the reported incidents. One subCTW ([redacted]) was contaminated two different times giving a total of 44 plutonium subCTW contamination events. The team found bioassay for 41 of the 44 subCTW contamination events. Samples were collected within 10 days from 24 of the subCTWs. Twelve subCTWs should have left samples for FP analysis. The team found bioassay for 10 of those subCTWs. Rates of bioassay monitoring for these subCTWs working in F and H Areas are consistent with those associated with Job Plans in A Area. Further noted is that SRS monitored subCTWs no differently from DuPont workers in F and H Areas during this period. Rates of plutonium and FP bioassay by craft are given in Table 5-13 and by area in Table 5-14. Bioassay of subCTWs was consistently performed the same in

F and H Areas. Monitoring rates given in Table 5-14 for plutonium bioassay compare favorably to rates given for the same monitoring in Table 5-7 for subCTWs working in Building 773-A.

Table 5-13. Incident bioassay by craft, 1985 to 1990.

Craft	Pu bioassay required	SubCTWs monitored by Pu bioassay	Percent with Pu bioassay	FP bioassay required	SubCTWs with FP bioassay	Percent with FP bioassay
Boilermaker	1	1	100%	0	0	N/A
Carpenter	4	4	100%	1	1	50%
Electrician	8	7	88%	2	1	100%
Insulator	4	4	100%	2	2	100%
Iron/steel/sheet metal	4	4	100%	1	1	100%
Laborer	2	2	100%	0	N/A	N/A
Millwright	2	2	100%	0	N/A	N/A
Painter	3	3	100%	0	N/A	N/A
Pipefitter	16	14	88%	6	5	83%
Totals	44	41	93%	12	10	83%

Table 5-14. Incident bioassay by area, 1985 to 1990.

Area	Pu bioassay required	SubCTWs monitored by Pu bioassay	Percent with Pu bioassay	FP bioassay required	SubCTWs with FP bioassay	Percent with FP bioassay
F	35	32	91%	9	7	78%
H	9	9	100%	3	3	100%
Totals	44	41	93%	12	10	83%

6.0 CONCLUSIONS

The ORAU Team identified and inventoried boxes containing Job Plans, SWPs, and RWPs to assess bioassay monitoring of subCTWs. Then the team wrote the RWP sampling plan (Section 2.0) to sample permits from all years. However, as shown in Tables 2-1 and 2-2, while the team found a sufficient number of boxes for 1990 to 1998 (when RWPs were used), it did not for the preceding period (primarily 1972 through 1989) when Job Plans and SWPs were used. As a result, the team was directed to capture all subCTWs from Job Plans and SWPs that required bioassay for the pre-1990 period.

6.1 JOB PLAN AND SPECIAL WORK PERMIT PERIOD, 1972 TO 1989

Monitoring rates for plutonium, americium, and strontium/FPs are given separately for 1972 through 1980, for 1981 through 1989, and for 1990 through 1998. As noted in Table 5-2, percentages of subCTWs to other workers were about one-third of the percentages of subCTWs to other workers at the height of K-Reactor startup work in the latter 1980s. The team tabulated the number of subCTW pages and the number of DuPont CTW pages versus all pages in available Job Plans by year from 1972 through 1989, as given in Table 5-1. Slightly more than 3% of Job Plan pages covered work by subCTWs while almost 21% of pages covered work by DuPont CTWs.

Approximately 700 SWP boxes were noted for the pre-1972 era that are not depicted in Table 2-1 (HAI 1996, pp. 493–511). Sometime between 1972 and 1976, the use of SWPs appears to have been phased out. In DPSOP 40, *Radiation & Contamination Control*, SRS HP stated SWPs were no longer in general use (DuPont 1976a). See Figure 2-2 for the definition of an SWP.

In addition, during this time the use of Job Plans was abandoned in large part with reliance on DPSOLs to control worker radiation exposures in the same way as SWPs (ORAUT 2018a). As stated in Section 2.0 the team reviewed some DPSOLs, but they contained only general information about radiation monitoring and did not specify bioassay requirements. Furthermore, the DPSOLs only contained initials of the individuals who completed the step and not full names or payroll numbers.

As shown in Table 6-1, for 1972 through 1974 51% of subCTWs who were required to be monitored for plutonium have samples to verify monitoring while 74% have FP samples. For 1980 through 1989, approximately 80% of subCTWs required to be monitored for plutonium and FPs. Bioassay data from subCTWs who were contaminated while working in F and H Areas show over 90% of subCTWs were monitored for required plutonium bioassay and over 80% were monitored for required FP bioassay (Table 5-14). The data show no appreciable difference in the rate of monitoring across crafts or SRS areas.

Americium bioassay was required for only one of the 59 Job Plans reviewed for 1972 through 1974. Potential intakes of americium were monitored at an effective rate of 76% for the Job Plans reviewed for the period 1980 through 1989. Exposure conditions and potential for intakes were similar among all CTWs. Additionally, similar jobs were performed by both prime and subCTWs. HP monitored jobs by prime CTWs and subCTWs for surface and airborne contamination and incidents. Portions of three Job Plans for a set of connected work in Building 773-A Rooms C-135/C-139 are shown in Figure 6-1. Work was performed by Construction Carpenters, Electrical and Instrumentation Mechanics, and Maintenance Mechanics, which supports the premise that both DuPont CTWs and subCTWs performed similar work for short periods across SRS. HP treated subcontracted construction and prime crafts the same by procedure for job evaluation as shown in Figure 6-2. Workers in the CTW population would perform frequent tasks of generally short duration that could nevertheless present a potential for external and internal radiation exposure. Given that DuPont and subCTWs did similar work under similar conditions, it is worth looking at the americium data used to derive coworker excretion rates in ORAUT-OTIB-0081 (ORAUT 2019a). As shown in Table 6-2, the percentages of total CTW Job Plan pages from Table 5-1 are similar to the percentages of CTWs to non-CTWs used to derive CTW and non-CTW americium excretion rates. While there are separate excretion rate values for non-CTWs and CTWs, either set of excretion rates would provide plausible values to derive intakes of americium by non-CTWs for 1972 through 1989.

Table 6-1. Monitoring rates by radionuclide and period.^a

Period	Radionuclide	SubCTWs required to be monitored	Number monitored	Percent monitored	Effective percent monitored
1972–1974	Pu	136	69	51%	69%
1975–1979	Pu	0	0	0%	0%
1980–1989	Pu	591	472	80%	97%
1990–1998	Pu	644	567	88%	95%
1972–1974	Am	1	0	0%	0%
1975–1979	Am	0	0	0%	0%
1980–1989	Am	151	52	34%	76%
1990–1998	Am	180	131	73%	87%
1972–1974	Sr/FP	136	101	58%	94%
1975–1979	Sr/FP	0	0	0%	0%
1980–1989	Sr/FP	591	463	78%	99%
1990–1998	Sr/FP	429	414	97%	99%
1990–1998	Uranium	225	199	88%	96%
1990–1998	Np	91	63	69%	84%

a. Effective monitoring is number monitored plus those unmonitored that had a coworker that was monitored.

JOB PLAN		Authorizations
Date: <u>8/30/85</u>	Time: <u>8:30 A.M.</u>	Operating Supv: _____
Location: <u>C-005</u>		OHP Supv: _____ <u>2/1-85</u>
Responsible Supv: _____		Maint. Supv: _____ <u>-3-85</u>
Phone Number: <u>3718</u>		T & T Supv: _____ <u>2-2-85</u>
Work Group: <u>Const. Carp.</u>		E & I Supv: _____
Describe operation, safety precaution, and radiation and contamination controls		
<p><u>Const. Carp. to move and re-locate scaffolding in C-005. OHP DRILL FOR C-135/139 (MATCH PA) FOR C-102. BRIDG BROWK PEW LINE @ COL J-19 TO INSTALL HOSE BIBB FOR COKE DRILL SUPPLY. (LN. 4-5-85) Seal out & drain system before line work. (LN. 4-5-85) JER 9506</u></p> <p style="text-align: right;"><u>8/1/85</u></p>		
JOB PLAN		Authorizations
Date: <u>9/5/85</u>	Time: <u>8:00 A.M.</u>	Operating Supv: _____
Location: <u>C-005 Under C-135-139</u>		OHP Supv: _____ <u>4/8</u>
Responsible Supv: _____		Maint. Supv: _____
Phone Number: <u>3714</u>		T & T Supv: _____
Work Group: <u>E&I</u>		E & I Supv: <u>Thomson, J. W.</u>
Describe operation, safety precaution, and radiation and contamination controls		
<p><u>Remove lights fixture in shielded Area C-005 under C-135-139 so Const. Carpenter can erect scaffolding to drill a 3" hole through the floor to install a new Hike Drain. Contact OHP before starting work.</u></p>		
JOB PLAN		Authorizations
Date: <u>9-20-85</u>	Time: _____	Operating S _____
Location: <u>C-005</u>		OHP Supv: _____ <u>2-20-85</u>
Responsible Supv: _____		Maint. Supv: _____
Phone Number: _____		T & T Supv: _____
Work Group: _____		E & I Supv: _____
Describe operation, safety precaution, and radiation and contamination controls		
<p><u>Repair Handle on C/135-139 Above Box Equipment dust danger in C-005</u></p>		

Figure 6-1. Job Plans with common work.

JOB EVALUATION		Rq'd	JOB EVALUATION		Rq'd
1. Does job alter ventilation patterns?		NA	1. Does job alter ventilation patterns?		NO
2. Rigging approved?		NA	2. Rigging approved?		YES
3. Building Services?		✓	3. Building Services?		N/A
4. Will operation effect other jobs and/or personnel?		NA	4. Will operation effect other jobs and/or personnel?		NO
5. Does job require a special procedure?		NA	5. Does job require a special procedure? <i>JOB PLAN prepared.</i>		YES
5. Has area been properly cleared for job?		NA	5. Has area been properly cleared for job? <i>cleared</i>		YES
7. Procedure review for HLC personnel?		NA	7. Procedure review for HLC <i>craft</i> personnel? <i>JOB PLAN</i>		YES
3. Procedure review with Crafts (Maint., E&I, T&T)?		✓	3. Procedure review with Crafts (Maint., E&I, T&T)? <i>CONF. (REKBA)</i>		YES

Figure 6-2. Procedure review with crafts, DuPont, and construction.

Table 6-2. SubCTW used for americium coworker model, ORAUT-OTIB-0081.

Year	Non-CTWs ^a	CTWs ^{a,b}	Percentage of CTWs to non-CTWs ^a
1972	540	112	20.7%
1973	526	110	20.9%
1974	376	86	22.9%
1975	377	95	25.2%
1976	360	89	24.7%
1977	315	69	21.9%
1978	160	53	33.1%
1979	211	60	28.4%
1980	182	40	22.0%
1982	425	47	11.1%
1984	368	53	14.4%
1986	339	34	10.0%
1988	369	23	6.2%
Totals	4548	871	19.2%

a. Source: ORAUT (2019a, Table 4-2).
 b. Includes DuPont and subcontracted CTWs.

6.2 RADIOLOGICAL WORK PERMIT PERIOD, 1990 TO 1998

These conclusions about the RWP period apply only to 1990 through 1998. The team has demonstrated that subCTWs with required bioassay were monitored at a high rate during this time. After having reviewed data for 662 subCTWs requiring bioassay from the 146 RWP folders, the team obtained the results of monitoring in Section 4.0. Summary data showing the percent monitored for at least one required radionuclide and for each radionuclide, and the effective percent of monitoring are given in Table 6-3. The data show no appreciable difference in the rate of monitoring across crafts or SRS areas.

Table 6-3. SubCTW bioassay, 1990 to 1998.

Radionuclide	Bioassay required	SubCTW monitored by bioassay	Percent with bioassay	SubCTW matched to coworker with bioassay	Percent monitored or with coworker bioassay
Plutonium	644	567	88%	47	95%
Strontium	429	414	97%	12	99%
Uranium	225	199	88%	17	96%
Americium	180	131	73%	25	87%
Neptunium	91	63	69%	13	84%

The team concluded that subCTWs were sufficiently monitored by bioassay from 1990 through 1998. The analysis shows 95% confidence that between 87.18% and 98.84% of subCTWs (in the March inventory) who should have been monitored were monitored. Monitoring data for a large majority of subCTWs is available for dose reconstruction. For periods of missing bioassay data for these workers, ORAUT-OTIB-0060 should be consulted to reconstruct missed and unmonitored dose (ORAUT 2018b).

6.3 SUMMARY

When considering subCTWs identified from Job Plans, SWPs, and RWPs from 1972 through 1998 as a combined unit of time, 1,271 (89%) of the 1,389 subCTWs were monitored for at least one radionuclide. Effective rates of monitoring are consistent across the three sets of data used for the combined 1972 to 1998 period as detailed in Table 6-4 averaging 97%.

Table 6-4. Rates of monitoring of subCTW for at least one radionuclide, 1981 to 1998.

SubCTW source	Total subCTWs	SubCTWs with at least one bioassay	Percent subCTWs with bioassay	# subCTWs with coworker with bioassay	Effective rate of bioassay monitoring
1972–1974 Job Plans	136	104	76%	12	85%
1981–1988 Job Plans	591	534	90%	49	99%
1990–1998 RWPs	662	633	96%	19	98%
Totals	1,389	1,271	92%	80	97%

The chief conclusion of this report is that a large percentage of subCTWs were monitored for potential intakes while working under a Job Plan, SWP or RWP. A recap of monitoring rates by period, 1972 to 1974, 1975 to 1980, 1981 to 1989, 1990 to 1998 and by radionuclide is given in Table 6-1. These rates of monitoring are further supported by rates of monitoring obtained for contamination incidents given in Table 5-13. Neptunium and uranium are included only for 1990 through 1998, for the RWPs that required bioassay of these radionuclides. For the majority of subCTWs with bioassay data, dose reconstructions should continue to use actual bioassay data and ORAUT-OTIB-0060 (ORAUT 2018b) for periods of missed or unmonitored dose. For workers without internal monitoring data through 1989, coworker excretion rates can be used to reconstruct dose from ORAUT-OTIB-0081 (ORAUT 2019a).

REFERENCES

- Brush, P. N, 1998, "Preliminary Notice of Violation and Proposed Imposition of Civil Penalty, \$75,000 (NTS-SR--WSRC-ESH-1997-0001)," letter to A. L. Schwallie (Westinghouse Savannah River Company), U.S. Department of Energy, Office of the Secretary of Environment, Safety and Health, Washington, D.C., September 21. [SRDB Ref ID: 167497, p. 8]
- DOE (U.S. Department of Energy), 1988, *Radiation Protection for Occupational Workers*, Order 5480.11, Office of Environment, Safety and Health, Washington D.C., December 21. [SRDB Ref ID: 8073]
- DOE (U.S. Department of Energy), 1998, "Inadequate Participation in the Job-Specific Bioassay Program," Occurrence Report EM-SR--WSRC-MOGEN-1997-0005, Office of Environment, Health, Safety and Security, Washington D.C., March 23. [SRDB Ref ID: 167487]
- DuPont (E. I. du Pont de Nemours and Company), 1968, *Bioassay Control*, DPSOL 193-302, Rev. 2, Savannah River Plant, Aiken, South Carolina, January 2. [SRDB Ref ID: 126996]
- DuPont (E. I. du Pont de Nemours and Company), 1970, *Bioassay Control*, DPSOL 193-302, Rev. 3, Savannah River Plant, Aiken, South Carolina, January. [SRDB Ref ID: 126997]
- DuPont (E. I. du Pont de Nemours and Company), 1971a, *Bioassay Control*, DPSOL 193-302, Rev. 4, Savannah River Plant, Aiken, South Carolina, March. [SRDB Ref ID: 126998]
- DuPont (E. I. du Pont de Nemours and Company), 1971b, *Bioassay Control*, DPSOL 193-302, Rev. 5, Savannah River Plant, Aiken, South Carolina, September 1. [SRDB Ref ID: 124941]
- DuPont (E. I. du Pont de Nemours and Company), 1976a, *Radiation & Contamination Control*, DPSOP 40, Savannah River Plant, Aiken, South Carolina, April. [SRDB Ref ID: 86188, p. 159]
- DuPont (E. I. du Pont de Nemours and Company), 1976b, *Bioassay Control*, DPSOL 193-302, Rev. 7, Savannah River Plant, Aiken, South Carolina, October 15. [SRDB Ref ID: 131322]
- DuPont (E. I. du Pont de Nemours and Company), ca. 1977, *Bioassay Control*, DPSOL 193-302, Rev. 8, Savannah River Plant, Aiken, South Carolina. [SRDB Ref ID: 129515]
- DuPont (E. I. du Pont de Nemours and Company), 1981, collection of Job Plans, Savannah River Plant, Aiken, South Carolina. [SRDB Ref ID: 159283, p. 5]
- DuPont (E. I. du Pont de Nemours and Company), 1982, collection of Job Plans, Savannah River Plant, Aiken, South Carolina. [SRDB Ref ID: 157065, p. 4]
- DuPont (E. I. du Pont de Nemours and Company), 1983a, collection of Job Plans, Savannah River Plant, Aiken, South Carolina. [SRDB Ref ID: 157066, p. 4]
- DuPont (E. I. du Pont de Nemours and Company), 1983b, collection of Job Plans, Savannah River Plant, Aiken, South Carolina. [SRDB Ref ID: 157067, p. 4]
- DuPont (E. I. du Pont de Nemours and Company), 1983–1989, collection of Job Plans, Savannah River Plant, Aiken, South Carolina. [SRDB Ref ID: 157067]
- DuPont (E. I. du Pont de Nemours and Company), 1989–1992, collection of contamination statistics and monthly reports, Savannah River Plant, Aiken, South Carolina. [SRDB Ref ID: 175693]

- DuPont (E. I. du Pont de Nemours and Company), 1984a, collection of contamination statistic and monthly reports, Savannah River Plant, Aiken, South Carolina. [SRDB Ref ID: 175693, p. 4]
- DuPont (E. I. du Pont de Nemours and Company), 1984b, collection of Job Plans, Savannah River Plant, Aiken, South Carolina. [SRDB Ref ID: 157070, p. 4]
- DuPont (E. I. du Pont de Nemours and Company), 1984c, collection of Job Plans, Savannah River Plant, Aiken, South Carolina. [SRDB Ref ID: 157073, p. 3]
- DuPont (E. I. du Pont de Nemours and Company), 1985a, *Bioassay Control (Temporary)*, DPSOL 193-302T, Rev. 0, Savannah River Plant, Aiken, South Carolina, February 25. [SRDB Ref ID: 45958, p. 273]
- DuPont (E. I. du Pont de Nemours and Company), 1985b, collection of Job Plans, Savannah River Plant, Aiken, South Carolina. [SRDB Ref ID: 157074, p. 4]
- DuPont (E. I. du Pont de Nemours and Company), 1986a, collection of Job Plans, Savannah River Plant, Aiken, South Carolina. [SRDB Ref ID: 159277, p. 5]
- DuPont (E. I. du Pont de Nemours and Company), 1986b, collection of Job Plans, Savannah River Plant, Aiken, South Carolina. [SRDB Ref ID: 159276, p. 5]
- DuPont (E. I. du Pont de Nemours and Company), 1987, collection of Job Plans, Savannah River Plant, Aiken, South Carolina. [SRDB Ref ID: 159275, p. 5]
- DuPont (E. I. du Pont de Nemours and Company), 1973–1989, collection of Job Plans, Savannah River Plant, Aiken, South Carolina. [SRDB Ref ID: 173830]
- Farrell, W. E., and W. M. Findley, 1999, *Specification of Urine Bioassay Requirements on Radiological Work Permits*, memorandum to M. D. Matheny, Westinghouse Savannah River Company, Savannah River Site, Aiken, South Carolina, March 10. [SRDB Ref ID: 167754, p. 9]
- Findley, W. M., 1997, *Understanding Urine Bioassay Sampling*, Rev. 3, Savannah River Site, Aiken, South Carolina, November 7. [SRDB Ref ID: 167760, p. 8]
- Findley, W. M., 1998, "Proposed Changes to Administration of the Routine Urine Bioassay Program at the Savannah River Site, presentation, Savannah River Nuclear Solutions, Savannah River Site, Aiken, South Carolina, September 16. [SRDB Ref ID: 167847]
- HAI (History Associates Incorporated), 1996, "Special Work Permit (SWP) Log Sheets, 1952-1976, 1979-1987, 1992," *Health Protection at the Savannah River Site: A Guide to Records Series of the Department of Energy and Its Contractors*, Rockville, Maryland, September. [SRDB Ref ID: 9185, pp. 493]
- Korn, E. L., and B. I. Graubard, 1998, "Confidence Intervals for Proportions with Small Expected Number of Positive Counts Estimated from Survey Data," *Survey Methodology*, volume 24, pp. 193–201. [SRDB Ref ID: 166973]
- Kornacki, J. W., and J. L. Gatlin, 1998, "Root Cause Analysis for Corrective Action Report #97-CAR-07-0001," memorandum to C.C. Cabbil, Westinghouse Savannah River Company, Savannah River Site, Aiken, South Carolina, January 19. [SRDB Ref ID: 167757, p. 14]

- LaBone, T., 2001, "Verification of Likelihood of Exceeding 0.1 Rem from Intakes of Radioactive Materials Under Typical Conditions," memorandum to the DOE Plutonium Working Group, Westinghouse Savannah River Company, Savannah River Site, Aiken, South Carolina, June 26. [SRDB Ref ID: 167848]
- Morgan, C. R., 1999, "Response to the Compilation of PAAA Internal Dosimetry Issues," memorandum to M. D. Matheny, Westinghouse Savannah River Company, Savannah River Site, Aiken, South Carolina, November 2. [SRDB Ref ID: 167676, p. 8]
- NIOSH (National Institute for Occupational Safety and Health), 2008, *NIOSH SEC Worker Outreach Meeting for the Savannah River Site (SRS), Proceedings of the 1:00 p.m. Meeting, SRS SEC Petition 103/104, Draft, Augusta, South Carolina*, Cincinnati, Ohio, May 22. [SRDB Ref ID: 90125]
- NIOSH (National Institute for Occupational Safety and Health), 2015, *Draft Criteria for the Evaluation and Use of Coworker Datasets*, Rev. 4.1.1, Division of Compensation Analysis and Support, Cincinnati, Ohio, July 6. [SRDB Ref ID: 171952]
- NIOSH (National Institute for Occupational Safety and Health), 2018, "Savannah River Site (SRS) Work Group, Friday, February 9, 2018," transcript, Advisory Board on Radiation and Worker Health, Washington, D.C., February 9. [SRDB Ref ID: 174346]
- Northcutt, A. R., 1986, *In Vivo Counting of Americium-241 in Human Lungs and Tracheobronchial Lymph Nodes*, master's thesis, Oregon State University, Corvallis, Oregon, June 2. [SRDB Ref ID: 175410]
- ORAUT (Oak Ridge Associated Universities Team), 2017, *Evaluation of Monitoring of Construction Workers Identified in High-Level Cave Job Plans at the Savannah River Site*, ORAUT-RPRT-0083, Rev. 00, Oak Ridge Associated Universities, Oak Ridge, Tennessee, June 27. [SRDB Ref ID: 167136]
- ORAUT (Oak Ridge Associated Universities Team), 2018a, "Information about SWP/Permit Usage at SRS Circa: 1972-1989," e-mail to Oak Ridge Associated Universities Team, Oak Ridge, Tennessee, March 20. [SRDB Ref ID: 170182]
- ORAUT (Oak Ridge Associated Universities Team), 2018b, *Internal Dose Reconstruction*, ORAUT-OTIB-0060, Rev. 02, Oak Ridge, Tennessee, April 20. [SRDB Ref ID: 171554]
- ORAUT (Oak Ridge Associated Universities Team), 2018c, "Index of construction trade workers identified on RWPs, 1991-1998," Oak Ridge, Tennessee. [SRDB Ref ID: 175135]
- ORAUT (Oak Ridge Associated Universities Team), 2019a, *Internal Coworker Dosimetry Data for the Savannah River Site*, ORAUT-OTIB-0081, Rev. 04, Oak Ridge, Tennessee, March 13. [SRDB Ref ID: 175614]
- ORAUT (Oak Ridge Associated Universities Team), 2019b, *Bioassay for Subcontracted Construction Trade Workers at the Savannah River Site from 1972 to 1997*, ORAUT-RPRT-0094, Rev. 00, Oak Ridge, Tennessee. [SRDB Ref ID: 175025]
- SRNS (Savannah River Nuclear Solutions), 2012, "HB Line," 11PA00218JA, Savannah River Site, Aiken, South Carolina, March. [SRDB Ref ID: 124029]

- Thomas, S. A., M. C. McFee, and T. R. La Bone, 1993, *Routine Bioassay Programs at the Savannah River Site*, Westinghouse Savannah River Company, Savannah River Site, Aiken, South Carolina, April 14. [SRDB Ref ID: 167850]
- Toohy, R. E., and M. A. Essling, 1980, "Measurements of ²⁴¹Am In Vivo at Long Times After Inhalation," *Health Physics*, volume 38, pp. 139–145. [SRDB Ref ID: 175409]
- WSRC (Westinghouse Savannah River Company), 1990, *Internal Dosimetry Technical Basis Manual*, WSRC-IM-90-139, Rev. 1, Savannah River Site, Aiken, South Carolina, December 20. [SRDB Ref ID: 11266]
- WSRC (Westinghouse Savannah River Company), 1990–1998, collection of Radiation Work Permits, Savannah River Plant, Aiken, South Carolina. [SRDB Ref ID: 175838]
- WSRC (Westinghouse Savannah River Company), 1992, *Internal Dosimetry Technical Basis Manual*, WSRC-IM-90-139, Rev. 1.5, Savannah River Site, Aiken, South Carolina, June 30. [SRDB Ref ID: 173925]
- WSRC (Westinghouse Savannah River Company), 1993a, *SRS Actinide Bioassay Program Basis Document*, ESH-HPT-93-0401, Rev. 2, Savannah River Site, Aiken, South Carolina, September 10. [SRDB Ref ID: 148919, p. 4]
- WSRC (Westinghouse Savannah River Company), 1993b, *Internal Dosimetry Technical Basis Manual*, WSRC-IM-90-139, Rev. 2, Savannah River Site, Aiken, South Carolina, October 1. [SRDB Ref ID: 173926]
- WSRC (Westinghouse Savannah River Company) 1994, Radiological Work Permit 94-Z-145, Savannah River Site, Aiken, South Carolina, August 21. [SRDB Ref ID: 174099, p. 7]
- WSRC (Westinghouse Savannah River Company), 1996, *Internal Dosimetry Technical Basis Manual*, WSRC-IM-90-139, Rev. 5, Savannah River Site, Aiken, South Carolina, December 31. [SRDB Ref ID: 173927]

ATTACHMENT A WORK PERMIT FOLDER REVIEW GUIDANCE

This attachment provides the instructions the data collection team used to evaluate work permit folders.

NOTE: Using the included *SRS Folder Summary for Input to Work Permit (WP) Statistical Sampling Plan* (Figure A-1), complete each cell, if there is nothing to note, place "N/A" in that cell.

1. Box # - Enter the box number as shown on the box.
2. CTW Notation – Generally, any mention of Construction on actual Work Permit (WP) is "Y".

For **SWP** check "Department" listed in header information of the WP, if "Construction", is noted, then enter "Y". IF "Construction is NOT indicated, then check the Payroll Numbers on the sign in sheets, IF any are formatted as 2 digits/5 digits (e.g., 22-24353), then note "Y".

IF "Construction Trade Workers" are NOT identified, then place a "N", note if there are Airborne/ Radiation Survey Logsheets and go to the next folder.

IF "Construction Trade Workers" are identified, you do not need to look any further in that folder for additional instances, just complete the rest of the cells in that row, including determining whether there is a WP logsheet or Airborne/Radiation Survey Logsheets.

For **JOB PLANS** check the worker sign-in pane in the lower right area. IF any are formatted as 2 digits/5 digits (e.g., 22-24353), then note "Y",

IF "Construction Trade Workers" are NOT identified, then place a "N", note if there are Airborne/ Radiation Survey Logsheets and go to the next folder.

IF "Construction Trade Workers" are identified, you do not need to look any further in that folder for additional instances, just complete the rest of the cells in that row, including determining whether there is a WP logsheet or Airborne/Radiation Survey Logsheets.

For **RWP** or **SRWP** check the Dept/Craft on the sign-in sheet, If any of the below is listed then "Y" for CTW:

- 2-digit number such as 17, 25, 87, etc.
- Boilermaker (BM)
- BSRI [Bechtel Savannah River, Inc.] (NOT "BSRI Engineering")
- Carpenter (Carp)
- Concrete (Concrete worker, or cement masons)
- Constr (Construction or CST)
- Driver
- Electrician
- Ironworker
- Laborer or Labor (Millwright, MW or m/w)
- MK (MK Ferguson)
- Paint or painter
- Pipefitter or pipe
- Roofer
- Sheetmetal (Sheetmetal worker, SIM or SM)

ATTACHMENT A
WORK PERMIT FOLDER REVIEW GUIDANCE (continued)

3. Folder ID – IF Work Permits are in a folder, use the folder title listed. If Work Permits are not already in a folder, place them in a supplied folder and identify the folder as follows: Box # - Sequential# 01... (begin at 01 in each box). IF work permits are in a binder and the first page provides a description, use that description.

IF the folder contains only Work Permit sign-in sheets, note this and identify the folder that contains the associated Work Permit (*if it is in the same box*).

4. Type – RWP (Radiation Work Permit), SRWP (Standing RWP), SWP (Special Work Permit), ESWP (Extended Special Work Permit) and JP (Job Plan).
5. Area – In the Work Permit header information, usually in format such as: 221-H where "221" is building and "H" is the area. Here is a list of potential areas you may see on Work Permits:
- 100 Area Reactors = R, P, L, K, C
 - 200 Area Separations = H, F
 - 300 Area Fuel Fabrication = M
 - 400 Area Heavy Water Production = D
 - 700 Area Research and Admin = A
 - Defense Waste Processing Facility (DWPF) = S
 - Saltstone Processing and Disposal Facility = Z
 - General Area = G
 - Pilot Areas (Semi-works) = CMX, TNX
 - DOE and Health Physics laboratories (formerly Construction and Heavy Water Components Test Reactor; HWCTR) = B
 - Central Shops (Construction) = C or N depending on time frame
6. Building – In the Work Permit header information, usually in format such as: 221-H where "221" is building and "H" is the area.
7. Begin & End Dates – Spot check the folder to determine if the Work Permits appear to be in chronological order (this is the expected norm), then use originating date of earliest and latest Work Permits for "Begin" and "End" dates.
8. Pages/Inches (Estimate) – Measure thickness, or use exact number if available, like on microfilm.
9. WP Logs – Does the folder contain a logsheet that lists numerous work permits? This may be at the back of the folder.

ATTACHMENT A
WORK PERMIT FOLDER REVIEW GUIDANCE (continued)

10. # of WPs – If there is a work permit logsheet, then note how many are listed.
11. # of Con WPs – If there is a work permit logsheet, then note how many are “Construction”.
12. ASL RSL – Does the box contain Airborne or Radiation Survey Logsheets?

ATTACHMENT A WORK PERMIT FOLDER REVIEW GUIDANCE

SRS Folder Summary for Input to Work Permit (WP) Statistical Sampling Plan												
Box #	CTW (Y/N)	Folder ID <small>If the folder contains only sign-in sheets, then note this along with the Folder ID and associated WP folder ID</small>	Type (RWP-SRWP-SWP-ESWP-JP)	Area (e.g., "H")	Building (eg, "221")	Begin Date (Month/Yr)	End Date (Month/Yr)	Pages / Inches (Estimate)	WP Logs (Y/N)	# of WPs	# of Con WPs	ASL RSL
												ASL <input type="checkbox"/> RSL <input type="checkbox"/>
												ASL <input type="checkbox"/> RSL <input type="checkbox"/>
												ASL <input type="checkbox"/> RSL <input type="checkbox"/>
												ASL <input type="checkbox"/> RSL <input type="checkbox"/>
												ASL <input type="checkbox"/> RSL <input type="checkbox"/>
												ASL <input type="checkbox"/> RSL <input type="checkbox"/>
												ASL <input type="checkbox"/> RSL <input type="checkbox"/>
												ASL <input type="checkbox"/> RSL <input type="checkbox"/>
												ASL <input type="checkbox"/> RSL <input type="checkbox"/>
												ASL <input type="checkbox"/> RSL <input type="checkbox"/>

Name: _____ Date: _____ Page ____ of ____

Figure A-1. Folder summary for input to work permit statistical sampling plan.

**ATTACHMENT B
WORK PERMIT SAMPLING GUIDANCE**

LIST OF TABLES

<u>TABLES</u>	<u>TITLE</u>	<u>PAGE</u>
B-1	CTW craft codes	72
B-2	CTW titles and abbreviations	72
B-3	Area and building designations	73

LIST OF FIGURES

<u>FIGURES</u>	<u>TITLE</u>	<u>PAGE</u>
B-1	Team A details	70
B-2	Team A HP WP and CTW collection sheet	71

ATTACHMENT B WORK PERMIT SAMPLING GUIDANCE (continued)

This attachment provides the sampling guidance the review team used to identify CTWs from RWPs and to collect internal exposure data for those CTWs.

This effort will be executed by two teams comprised of a Project Statistician (PS), Health Physicists (HP) and Records Custodians (RC), which are referred to as Team A and Team B. Team A will perform steps necessary to identify and provide to Team B the names of Construction Trade Workers (CTW) who worked under a specified Radiation Work Permit (RWP) that required bioassay analysis. Team B will locate and duplicate internal exposure data for each unique CTW name as provided by Team A.

Figure B-1, Team A Details, and Figure B-2, Team A HP RWP/CTW Collection Sheet, are provided for convenience and to increase the consistency of data collected. Figure B-2 shows the information that should be documented by the Team A Reviewing HP; this information will be helpful both during the review and possibly when the review is complete. This process guidance is completed with sequential input from a Project Statistician using the process discussed in [Section 2.0 of this document].

TEAM A DETAILS

Team A will work with the Project Statistician to systematically identify CTWs using the process described below. Steps in this guidance will be repeated until 158 RWPs of Interest AND 766 unique CTWs have been identified and the associated data collected. Figure B-1, "Team A Details," provides a simple flow chart for Team A activities.

1. Project Statistician (PS) – Provide the Sample ID, a designated site box number, and the specific folder within the box to be reviewed.
2. HP Reviewer (HP) – Document the Sample ID, Box number and Specified Folder on Figure B-2, then determine the number of RWPs that contain CTW entries and that require bioassay. Document the number of RWPs of Interest on the upper section of Figure B-2, and document the name (i.e., RWP#) of each RWP with CTWs in the lower section of Figure B-2.

Note 1: This review does not include a determination by the reviewing HP as to whether a bioassay sample should have been required, but only identifies if a bioassay was required by the RWP (*RWPs with CTW and "bioassay required" are considered "RWPs of Interest"*).

Note 2: All revisions of a specific RWP count as one (1) RWP.

Note 3: CTWs are identified using the Craft Codes or Titles/Abbreviations contained in Table B-1, CTW craft codes, and Table B-2, CTW titles and abbreviations.

3. HP Reviewer – Provide the total number of RWPs of Interest to the Project Statistician.
4. Project Statistician – Provide HP Reviewer with a random number (RN1), which determines the RWP of Interest within the folder that will receive further review.
5. HP Reviewer – Using RN1, review the RWP of Interest within the folder that is associated with RN1 for the total number of months with CTW entries associated with that RWP, then document the number on upper section of Figure B-2 and report the number of months to the Project Statistician.

**ATTACHMENT B
WORK PERMIT SAMPLING GUIDANCE (continued)**

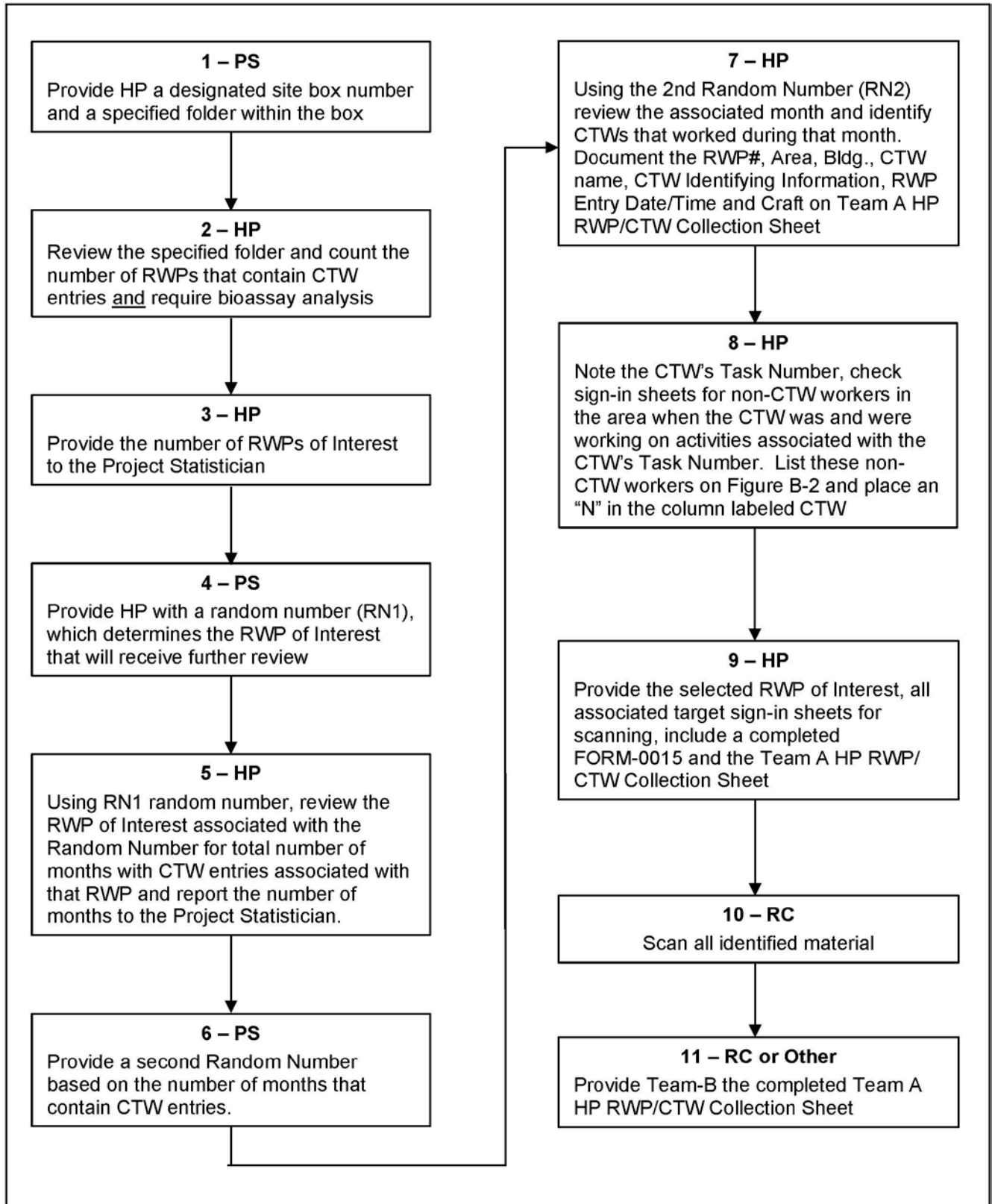


Figure B-1. Team A details.

**ATTACHMENT B
WORK PERMIT SAMPLING GUIDANCE (continued)**

Attachment B								
Team-A HP RWP/CTW Collection Sheet								
Please print clearly			RN1: _____	#Months: _____				
#RWPs of Interest: _____ (J/F/M/A/M/J/J/A/S/O/N/D)			RN2: _____					
Box - Folder ID – RWP	Area	Bldg	CTW <u>or</u> Other Name	CTW <u>or</u> Other Identifier	Entry Date	Craft	CTW	Pull
<i>Box#</i>								
<i>Folder#</i>								
<i>RWP#</i>								
List All RWPs with CTWs in Target Folder:								
.....								
.....								
.....								
Sample ID _____			Reviewing HP: _____			Date		
Reviewed: _____								

Figure B-2. Team A HP WP and CTW collection sheet.

**ATTACHMENT B
WORK PERMIT SAMPLING GUIDANCE (continued)**

Table B-1. CTW craft codes.

Craft code	Craft code	Craft code
1 – 12345 - Safety	2 – 12345 - Instruments	2 – 12345 - Testing and Inspection
4 – 12345 - Layout	5 – 12345 - Labor	6 – 12345 - Carpenter
8 – 12345 - Concrete	9 – 12345 - Concrete	10 – 12345 - Transportation
12 – 12345 - Structural Iron	14 – 12345 - Heavy Equipment	15 – 12345 - Re-Steel
18 – 12345 - Millwrights	20 – 12345 - Boilermaker	21 – 12345 - Sheet metal
25 – 12345 - Electrical	26 – 12345 - Pipe	30 – 12345 - Pittsburgh Testing Laboratory
31 – 12345 - Insulation	33 – 12345 - Paint	No code

Table B-2. CTW titles and abbreviations.

Title (abbreviation)	Title (abbreviation)	Title (abbreviation)
Apprentice	Asbestos worker	Boilermaker (BM)
Bricklayer	BSRI (NOT "BSRI Engineering")	Carpenter (Carp)
Concrete (Concrete worker, cement masons)	Constr (Construction or CST)	Driver
Electrician	Heavy equipment operator (operating engineer, not crane operators)	Insulator
Ironworker	Laborer or Labor	Millwright (MW, m/w)
Painter (Paint, plasterer)	Pipefitter (Pipe, plumber, steam fitter, sprinkler fitter)	MK (MK Ferguson)
Roofer	Rocky Roark	Steam fitter
Steel worker (SW)	S/M (With "/" only is CTW Sheet metal worker)	Welder

Note: Figure B-2 lists the month's first letter as a tool for marking off the identified months.

Example: If 6 RWP's of Interest were identified in the folder and the Project Statistician provides a Random Number of 4, then the 4th RWP of Interest in the folder will be the targeted RWP of Interest for further review.

6. **Project Statistician** – Provide a 2nd Random Number (RN2) based on the number of months that contain CTW entries.
7. **HP Reviewer** – Using RN2 review the associated month based on monthly chronological order. Identify each CTW that worked under that RWP of Interest during that specified month. Document the RWP#, Area, Building, CTW name, CTW Identifying Information, Entry date, and Craft (if noted) on the "**Team A Health Physicist RWP/CTW Collection Sheet**". Place a "Y" in the column labeled "CTW".

Example: If the 2nd Random Number for the month provided by the Project Statistician is 3 and there are 7 months identified with CTW entries, then select the third month using normal monthly sequencing in a year (*i.e., months identified are Jan, Feb, Jun, Aug, Sept, Nov, Dec, then JUNE would be the month associated with the Random Number 3*).

Note 1: The column labeled "Pull" on Figure B-2 is used by the Team B Records Custodian to identify if the individual's folder needs to be pulled. "Y" indicates the individuals' file needs pulled and "N" means it does not need pulled.

Note 2: Area/Building Determination – Located in the RWP or sign-in sheet header information, usually in format such as: 221-H where "221" is building and "H" is the area. Table B-3 "Area/Building Designations" provides a listing of common designations.

**ATTACHMENT B
WORK PERMIT SAMPLING GUIDANCE (continued)**

Table B-3. Area and building designations.

Area and designation	Area and designation
200 Area Separations = H, F	300 Area Fuel Fabrication = M
400 Area Heavy Water Production = D	700 Area Research and Admin = A
Defense Waste Processing Facility (DWPF) = S	Saltstone Processing and Disposal Facility = Z
General Area = G	Pilot Areas (Semi-works)= CMX, TNX
DOE and Health Physics laboratories (formerly Construction and Heavy Water Components Test Reactor; HWCTR) = B	Central Shops (Construction) = C or N depending on time frame

8. HP Reviewer – Note the RWP “Task Number” the CTW was working on and check the RWP sign-in sheet for other non-CTW workers who were in the area during the time the CTW was in the area and were working on activities associated with the CTWs “Task Number”. List each of these identified non-CTW workers on Figure B-2 and place a “N” in the column labeled “CTW”.
9. HP Reviewer – Complete a FORM-015 “Data Collection Document Discovery and Review” and attach it to the completed Figure B-2, descriptive pages of the selected RWP of Interest and sign-in sheets containing the identified CTWs and other workers, then provide the complete package to the Records Custodian for scanning.
10. Records Custodian – Verify the Figure B-2 information is legible and scan all the identified material.
11. The “Team A Health Physicist RWP/CTW Collection Sheets” will be provided to the Team B Records Custodian at least daily and more often as applicable, based on resource availability for each team.

TEAM B DETAILS

Team B will operate in the HP dosimetry records area to locate and collect internal exposure data for all CTWs provided by Team A.

1. Records Custodian – Develop and maintain a spreadsheet with the information on Figure B-2, “Team A Health Physicist RWP/CTW Collection Sheet”.
2. Records Custodian – As practical identify CTW or other names whose records have already been pulled and scanned and place “Y” in the “Pull”.
3. Records Custodian – Provide the Team B HP Reviewer the “Team A Health Physicist RWP/CTW Collection Sheet”.
4. HP Reviewer – Locate either on microfilm or hard record the internal exposure data (i.e., in vivo and in vitro) for each provided CTW name. Submit this data along with a completed FORM-0015 “Data Collection Document Discovery and Review” to the Records Custodian.

Note: Individual files that have already been pulled do not need to be pulled again.

5. Records Custodian – Scan all identified material.

ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998

LIST OF TABLES

<u>TABLE</u>	<u>TITLE</u>	<u>PAGE</u>
C-1	RWP bioassay requirements.....	77
C-2	Roster of subCTWs by sample, 1990 to 1998.....	81
C-3	SubCTW required plutonium bioassay, 1990 to 1998.....	97
C-4	SubCTW required strontium bioassay, 1990 to 1998.....	116
C-5	SubCTW required uranium bioassay, 1990 to 1998.....	129
C-6	SubCTW required americium bioassay, 1990 to 1998.....	136
C-7	SubCTW required neptunium bioassay, 1990 to 1998.....	142

ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998
(continued)

RWP samples were taken from the following buildings and areas:

- 772-F: Central Laboratory for Process operations (radionuclides of interest depend on Analytical Laboratory; generally plutonium, americium, and Sr/FP).
- 773-A: Research and Development Laboratory (radionuclides of interest depend on Analytical Laboratory; generally plutonium, americium, and Sr/FP).
- F/H-241: Tank Farms (Sr/FP, and plutonium).
- 235-F: Plutonium Fuel Fabrication Facility and Actinide Billet Line (plutonium and neptunium).
- F/H-221: Main Canyon Building (primarily Sr/FP).
- F/H B-Line: Primary product line [primarily plutonium but can have ²³⁷Np for the OBL. Neptunium was not introduced in the HBL until 2001 (SRNS 2012); the HBL was constructed on the roof of H Canyon].
- F/H A-Line: Uranium recovery line (Building 211).
- 247-F: Navy fuels.
- 313-M: Depleted uranium target fabrication.
- 321-M: Enriched uranium and actinide target fabrication with some very limited plutonium.
- E Area: Low-level waste disposal facility (primary plutonium).
- Z Area: Saltstone Production Facility and Vault (generally plutonium and Sr/FP).
- FTF: F Area Tank Farm.

ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998
(continued)

Table C-1 identifies primary radionuclides of concern that either were required by the RWP or should have been based on information in the following documents:

- TPM = SRS Internal Dosimetry Technical Basis Manual (WSRC 1990, 1992, 1993b, 1996),
- FF = *Specification of Urine Bioassay Requirements on Radiological Work Permits* (Farrell and Findley 1999), and
- RWP = The particular RWP.

Other codes used in Table C-1:

- A = radionuclide assumed to be required
- BG = beta/gamma
- LLC = no or low-level contamination detected
- PAC = possible high alpha contamination
- PBC = possible high beta/gamma contamination
- R = radionuclide required
- RR = respirator required

**ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)**

Table C-1. RWP bioassay requirements.

SID	Sample	RWP number	SRDB Ref ID	Area	Building	Year	Pu required	Sr/FP required	Am/Cm required	U required	Np required	Task	Notes
1	1	92-241-NH-246	173753	H	241	1992	A	A	No	No	No	All	RR, TPM
2	2	92-241-NH-156	173755	H	241	1992	A	A	No	No	No	All	LLC, TBM
3	3	92-241-NH-149	173757	H	241	1992	A	A	No	No	No	All	LLC, RR, TBM
4	4	92-241-NH-149	173758	H	241	1992	A	A	No	No	No	All	LLC, RR, TBM
5	5	90-L-102	173754	F	772	1990	A	A	No	A	No	All	PAC, RR, TPM, FF
8	8	91-WMF-104	173756	F	241	1991	A	A	No	No	No	All	PBC, RR, TBM
9	9	91-WMF-103	173760	F	241	1991	A	A	No	No	No	All	PBC, RR, TBM
11	11	91-299H-140	173759	H	299	1991	A	A	A	A	No	All	PAC, RR, TPM, FF
12	12	91-T3-176	173767	A	773	1991	A	A	No	No	No	All	PAC, RR, TPM, FF
14	14	91-241H-124	173761	H	241	1991	A	A	No	No	No	All	PAC, RR, TPM,
15	15	91-FB-004	173762	F	FB-Line	1991	A	No	No	No	No	All	PAC, RR, TPM, FF
16	16	91-NF-111	173789	F	247	1991	A	A	A	A	No	All	LLC, RR, TBM
17	17	91-241-NH-122	173766	H	241	1991	A	A	No	No	No	All	LLC, RR, TBM
20	20	91-T3-187	173763	A	773	1991	A	A	No	No	No	All	PAC, RR, TPM, FF
21	21	91-T3-225	173765	A	TNX	1991	A	A	No	R	No	All	LLC, RR, TBM
22	22	92-OBL-185	173770	H	OBL	1992	A	No	A	A	A	All	LLC, RR, TBM, FF
23	23	92-T3-104	173768	A	773	1992	A	A	No	A	No	All	LLC, RR, TBM, FF
25	25	93-OBL-111	173799	H	OBL	1993	A	No	A	No	A	All	LLC, RR, TBM
30	30	92-HC162	173773	H	221	1992	A	No	A	A	No	All	LLC, RR, TBM, FF
31	31	92-HC-239	173774	H	221	1992	A	No	A	A	No	All	LLC, RR, TBM, FF
32	32	92-FB-133	173776	F	FB-Line	1992	A	No	No	No	No	All	LLC, RR, TBM, FF
33	33	92-FB-117	173777	F	FB-Line	1992	A	No	No	No	No	All	PAC, RR, TPM, FF
34	34	92-FB-156	173775	F	FB-Line	1992	A	No	No	No	No	All	PAC, RR, TPM, FF
35	35	92-OBL-162	173769	H	OBL	1992	A	No	A	No	A	All	LLC, RR, TBM
36	36	92-HC-1029	173772	H	221	1992	A	No	A	A	No	All	LLC, RR, TBM, FF
37	37	92-HC-862	173771	H	221	1992	A	No	A	A	No	All	LLC, RR, TBM, FF
38	38	92-FC-390	173783	F	221	1992	A	No	A	A	No	All	LLC, RR, TBM, FF
39	39	92-OFH-0242	173778	H	211	1992	A	No	A	A	No	All	LLC, RR, TBM, FF
40	40	92-OFH-0257	173779	H	211	1992	A	No	A	A	No	All	PAC, RR, TPM, FF
41	41	92-FC-486	173781	F	221	1992	A	No	No	A	No	All	LLC, RR, TBM, FF
42	42	93-OBL-134	173808	H	OBL	1993	A	No	A	No	A	All	PAC, RR, TPM, FF
43	43	93-OBL-160	173811	H	OBL	1993	A	No	A	No	A	All	PAC, RR, TPM, FF
44	44	93-OBL-139	173792	H	OBL	1993	A	No	A	No	A	All	PAC, RR, TPM, FF
45	45	93-OBL-130	173790	H	OBL	1993	A	No	A	No	A	All	PAC, RR, TPM, FF
46	46	93-OBL-143	173793	H	OBL	1993	A	No	A	No	A	All	PAC, RR, TPM, FF
47	47	93-E-0104	173787	E	643	1993	A	A	No	No	No	All	LLC, RR, TBM
49	49	93-E-103	173785	E	643	1993	A	A	No	No	No	All	LLC, RR, TBM
57	57	93-247NF-112	173791	F	247	1993	A	A	A	A	No	All	LLC, RR, TBM
59	59	93-WMF-139	173788	F	241	1993	A	A	No	No	No	All	PBC, TBM
64	64	93-OBL-105	173834	H	OBL	1993	A	No	A	No	A	All	PAC, RR, TPM, FF
65	65	93-OBL-110	173835	H	OBL	1993	A	No	A	No	A	All	LLC, TBM, FF
66	66	93-CH-167	173805	H	221	1993	R	No	A	R	No	All	LLC, RWP, FF
67	67	93-CH-490	173801	H	221	1993	A	No	A	A	No	All	PAC, RR, TPM, FF

**ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)**

SID	Sample	RWP number	SRDB Ref ID	Area	Building	Year	Pu required	Sr/FP required	Am/Cm required	U required	Np required	Task	Notes
68	68	93-OBL-151	173804	H	OBL	1993	A	No	A	No	A	All	LLC, RWP, FF
69	69	93-OFH-140	173780	FH	Outside	1993	A	A	No	No	No	2	PAC, RR, TPM, FF
71	71	94-USF-107	173806	H	221	1994	R	No	A	R	No	All	LLC, RR, RWP, FF
72	72	94-USF-131	173807	H	221	1994	R	No	A	R	No	All	LLC, RR, RWP, FF
73	73	94-OFH-130	173782	H	281-4	1994	R	No	A	R	No	3,4	LLC, RR, RWP, FF
74	74	94-ERS-105	174094	F	281-3	1994	A	No	No	A	No	All	RWP
75	75	94-772F-100	173809	F	772	1994	A	A	No	A	No	All	LLC, RR, RWP, FF
78	78	94-Z-133	173812	Z	451	1994	R	R	No	No	No	All	LLC, RR, RWP
79	79	94-Z-145	173802	Z	451	1994	R	R	No	No	No	All	RWP
80	80	94-Z-145	173800	Z	451	1994	R	R	No	No	No	All	LLC, RR, RWP
82	82	94-Z-114	173796	Z	704	1994	R	R	No	No	No	1-3, 5, 7-8, 12-14	LLC, RR, RWP
83	83	94-Z-115	173795	Z	210	1994	R	R	No	No	No	1-3, 7-8	LLC, RR, RWP
84	84	94-E-103	173814	E	643	1994	R	R	No	No	No	All	PAC, RR, TPM
85	85	94-ERS-108	174095	E	643	1994	R	R	No	No	No	3	LLC, RR, RWP
88	88	94-ERS-108	174098	E	643	1994	R	A	No	No	No	3, 5	LLC, RR, RWP
90	90	94-230-103	173784	E	230	1994	R	R	No	No	No	All	LLC, RR, RWP
91	91	94-E-106	173786	E	643	1994	R	R	No	No	No	All	LLC, RR, RWP
92	92	94-CH-591	1737798	H	221	1994	R	No	A	R	No	All	LLC, RR, RWP, FF
93	93	95-CH-141	173797	H	221	1995	R	R	A	R	No	1, 2, 3	LLC, RR, RWP, FF
94	94	95-CH-228	173813	H	221	1995	R	No	A	R	No	All	LLC, RR, RWP, FF
97	97	98-FBL-101	175319	F	FB-Line	1998	R	No	No	No	No	All	LLC, RR, RWP, FF
98	98	98-FBL-140	175320	F	FB-Line	1998	R	No	No	No	No	All	LLC, RR, RWP, FF
99	99	98-FBL-106	175322	F	FB-Line	1997	R	No	No	No	No	All	LLC, RR, RWP, FF
100	100	97-FC-140	175326	F	221	1997	R	R	No	No	No	All	LLC, RR, RWP, FF
101	101	98-OF_F-176	175329	H	211	1998	R	R	A	No	No	1, 2, 11	LLC, RR, RWP, FF
102	102	95OF/F-167	175395	F	294	1995	R	R	No	No	No	All	LLC, RR, RWP, FF
103	103	95-OF/F-179	175331	F	292	1995	R	R	No	No	No	All	LLC, RR, RWP, FF
104	104	95-OF/F-185	175333	F	292	1995	R	R	No	No	No	All	LLC, RR, RWP, FF
105	105	95-235F-113	175334	F	235	1995	R	No	No	No	A	All	LLC, RR, RWP, FF
106	106	95-235F-104	175341	F	235	1995	R	No	No	No	A	All	LLC, RR, RWP, FF
107	107	95-FC-162	175343	F	221	1995	R	R	No	No	No	All	LLC, RR, RWP, FF
108	108	97-FC-326	175346	F	221	1997	R	R	No	No	No	All	LLC, RR, RWP, FF
109	109	98-FC-108	175349	F	221	1998	R	R	No	No	No	All	LLC, RR, RWP, FF
113	113	98-FC-142	175351	F	221	1998	R	R	No	No	No	All	LLC, RR, RWP, FF
114	114	96-HBL-104	175352	H	221	1996	R	No	A	No	No	1, 2, 4, 6, 7, 8	LLC, RR, RWP, FF
115	115	96-HBL-104	175355	H	221	1996	R	No	A	No	R	1, 2, 4, 6, 7, 8	LLC, RR, RWP, FF
116	116	96-WMF-227	175357	F	241	1996	R	R	No	No	No	1, 3, 57-8, 13, 15	LLC, RR, TBM
117	117	96-HBL-116	175359	H	HBL	1996	R	No	No	No	No	1	LLC, RR, RWP, FF
118	118	96-HBL-137	175361	H	HBL	1996	R	No	No	No	No	All	LLC, RR, RWP, FF
120	120	95-HBL-108	175323	H	HBL	1995	R	No	No	No	No	All	LLC, RR, RWP, FF
121	121	95-HBL-128	175324	H	HBL	1995	R	No	No	No	No	1-3, 5-8	LLC, RR, RWP, FF
122	122	95-HBL-127	175325	H	HBL	1995	R	No	No	No	No	1-7	LLC, RR, RWP, FF
123	123	95-HBL-139	175327	H	HBL	1995	R	No	No	No	No	All	LLC, RR, RWP, FF

Document No. ORAUT-RPRT-0092
Revision No. 00
Effective Date: 06/14/2019
Page 78 of 188

**ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)**

SID	Sample	RWP number	SRDB Ref ID	Area	Building	Year	Pu required	Sr/FP required	Am/Cm required	U required	Np required	Task	Notes
124	124	94-SRTC-203	175330	H	HBL	1995	R	No	No	No	No	All	LLC, RR, RWP, FF
125	125	95-HBL-178	175332	H	HBL	1995	R	No	No	No	R	All	LLC, RR, RWP, FF
126	126	96-WMF-132	175335	F	241	1996	R	R	No	No	No	1-9	LLC, RR, TBM
127	127	97-WMF-264	175337	F	241	1997	R	R	No	No	No	All	LLC, RR, TBM
128	128	96-WMF-224	175338	F	241	1996	R	R	No	No	No	1, 2	LLC, RR, TBM
129	129	96-WMF-256	175340	F	241	1997	R	R	No	No	No	1-4	LLC, RR, TBM
130	130	98-WMF-160	175342	A	773	1998	A	A	No	No	No	All	LLC, RR, RWP, FF
131	131	98-WMF-220	175345	F	241	1998	A	A	No	No	No	2	LLC, RR, TBM
132	132	97-WMF-190	175347	F	241	1997	R	R	No	No	No	All	PBC, RR, TBM
136	136	94-SRTC-188	175350	A	773	1994	A	A	A	A	No	All	PBC, RR, TBM, FF
137	137	94-SRTC-203	175354	A	773	1994	R	R	No	R	No	1-4, 6	LLC, RR, RWP, FF
138	138	94-SRTC-313	175356	A	773	1994	R	R	R	A	No	1	LLC, RR, RWP, FF
139	139	94-SRTC-164	175363	A	773	1994	A	A	No	A	No	All	LLC, RR, RWP, FF
140	140	94-SRTC-123	175328	A	773	1994	A	A	No	A	No	All	TPM, FF
143	143	93-TI-103	175336	A	773	1993	A	A	No	A	No	All	RR, TPM, FF
144	144	93-TI-123	175339	A	773	1993	A	A	No	A	No	All	RR, TPM, FF
152	152	92M-109	175344	M	313	1992	No	No	No	A	No	All	RR, TPM
153	153	92M-131	175348	M	321	1992	No	No	No	A	No	All	RR, TPM
154	154	92M-174	175353	M	321	1992	No	No	No	A	No	All	RR, TPM
155	155	92M-246	173358	M	321	1992	No	No	No	A	No	All	RR, TPM
163	133/163	97-CIF-174	174104	H	261	1997	R	R	A	No	No	All	PAC, RR, TPM, FF
183	58/183	93-HC-0109	173853	H	HCMA	1993	A	A	A	A	No	All	LLC, RR, RWP, FF
190	18/190	91-299H-138	173848	H	299	1991	A	A	A	A	No	All	LLC, RR, RWP, FF
200	50/200	94-Z-145	174100	Z	451	1994	R	R	No	No	No	All	LLC, RR, TBM
201	51/201	94-Z-145	174099	Z	451	1994	R	R	No	No	No	All	LLC, RR, TBM
202	52/202	94-Z-116	173815	Z	451	1994	R	R	No	No	No	7, 10, 12, 13, 16	LLC, RR, TBM
204	54/204	94-Z-127	174101	Z	451	1994	R	R	No	No	No	1, 2, 7	LLC, RR, TBM
205	55/205	94-Z-127	174102	Z	451	1994	R	R	No	No	No	1, 2, 7	LLC, RR, TBM
207	13/207	91-T3-229	174091	A	773	1991	A	A	No	No	No	All	PAC, RR, TPM, FF
208	24/208	91-T3-229	174092	A	773	1991	A	A	No	No	No	All	PAC, TPM, FF
209	49/209	93-E-0104	173850	E	643	1993	A	No	No	No	No	All	PAC, TPM, FF
211	10/211	91-235-111	173818	F	235	1991	A	No	No	No	A	All	LLC, RR, TBM, FF
212	60/212	93-235F-143	173847	F	235	1993	A	No	No	No	A	All	RWP
215	70/215	94-772F-102	174106	F	772	1994	A	No	No	No	No	All	LLC, TBM
216	110/216	98-FBL-108	173816	F	221	1998	R	No	No	No	No	All	LLC, RR, RWP, FF
217	111/217	98-WMF-160	173817	F	241	1998	R	R	No	No	No	1, 2, 3, 4, 6, 7, 8	LLC, RR, TBM
218	112/218	98-WMF-206	174108	F	241	1998	R	R	No	No	No	1, 2, 3	LLC, RR, TBM
220	61/166/20	93-235F-147	173846	F	235	1993	A	No	No	No	A	All	RWP
221	62/213/21	93-247F-167	173819	F	247 roof	1993	A	No	No	A	No	All	RWP
222	157/222	92M-194	173832	M	321	1992	No	No	No	A	No	All	RR, TPM
223	158/223	92M-257	173833	M	316	1992	No	No	No	A	No	All	RR, TPM

ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)

SID	Sample	RWP number	SRDB Ref ID	Area	Building	Year	Pu required	Sr/FP required	Am/Cm required	U required	Np required	Task	Notes
224	6/224	91-241H-105	173851	H	242	1991	A	A	A	No	No	All	LLC, RR, TBM, FF
225	7/225	92-OBL-191	173849	H	292	1992	A	No	A	No	No	All	LLC, RR, TBM, FF
226	95/226	95-HBL-184	173820	H	221	1995	R	No	No	No	No	All	LLC, RR, RWP, FF
227	19/210/2 27	91-241H-138	173852	H	242	1991	A	No	No	No	No	All	LLC, RR, TBM, FF
230	145/230	93-TI-103	173821	A	773	1993	A	A	No	A	No	All	RR, TPM, FF
231	146/231	93-TI-103	173824	A	773	1993	A	A	No	A	No	All	RR, TPM, FF
232	147/232	93-TI-103	173829	A	773	1993	A	A	No	A	No	All	RR, TPM, FF
233	148/233	93-TI-123	173825	A	773	1993	A	A	No	A	No	All	RR, TPM, FF
234	149/234	94-SRTC-198	173857	A	773	1994	R	R	R	A	No	All	PAC, RR, TPM, FF
235	150/235	94-SRTC-108	173822	A	773	1994	A	A	No	A	No	All	LLC, RR, RWP, FF
236	151/236	94-SRTC-194	173823	A	773	1994	R	A	A	A	No	All	RR, TPM
237	96/237	94-SRTC-3117	173856	A	773	1994	R	R	R	A	No	All	LLC, RR, RWP, FF
240	134/240	97-E-110	173837	E	643	1997	R	R	No	No	No	All	PAC, RR, TPM, FF
241	135/241	97-E-112	173836	E	643	1997	R	R	No	No	No	1-7	LLC, RR, RWP, FF
242	26/242	92-L-220	173839	F	772	1992	A	A	A	A	No	All	LLC, RR, TBM, FF
243	27/243	92L-110	173842	F	772	1992	A	A	No	A	No	All	LLC, RR, TBM, FF
244	28/244	92L-199	173841	F	772	1992	A	A	A	A	No	All	LLC, RR, TBM, FF
245	29/245	92L-207	173840	F	772	1992	A	A	No	A	No	All	LLC, RR, TBM, FF
246	89/246	94-772F-205	173843	F	772	1994	R	No	No	No	No	All	PAC, RR, TPM

**ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)**

Table C-2. Roster of subCTWs by sample (folder of interest), 1990 to 1998.

CTW	SID	Craft	Area	Building	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Pu required	Sr/FP required	Am required	U required	Np required
[redacted]	1	millwright	H	241	8/4/1992	1630	1800	8/5/1992	1315	1500	Yes	Yes	No	No	No
[redacted]	1	pipefitter	H	241	8/5/1992	1640	1830	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	1	millwright	H	241	8/10/1992	1335	1450	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	1	millwright	H	241	8/5/1992	115	300	8/10/1992	1335	1450	Yes	Yes	No	No	No
[redacted]	2	laborer	H	241	1/22/1992	800	1130	1/22/1992	1230	1530	Yes	Yes	No	No	No
[redacted]	2	pipefitter	H	241	1/22/1992	800	1130	1/22/1992	1230	1530	Yes	Yes	No	No	No
[redacted]	2	pipefitter	H	241	1/22/1992	800	1130	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	2	laborer	H	241	1/21/1992	930	1130	1/22/1992	1230	1530	Yes	Yes	No	No	No
[redacted]	2	pipefitter	H	241	1/22/1992	800	1130	1/22/1992	1230	1530	Yes	Yes	No	No	No
[redacted]	3	insulator	H	241	1/8/1992	1330	1500	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	4	electrician	H	241	3/9/1992	1430	1500	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	4	carpenter	H	241	3/24/1992	1230	1430	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	4	laborer	H	241	3/24/1992	800	1100	3/24/1992	1230	1500	Yes	Yes	No	No	No
[redacted]	4	carpenter	H	241	3/9/1992	830	1100	3/9/1992	1130	1500	Yes	Yes	No	No	No
[redacted]	4	electrician	H	241	3/9/1992	1430	1500	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	4	sheetmetal	H	241	3/24/1992	830	1100	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	4	laborer	H	241	3/24/1992	830	1100	3/24/1992	1230	1500	Yes	Yes	No	No	No
[redacted]	4	carpenter	H	241	3/24/1992	815	1100	3/24/1992	1230	1500	Yes	Yes	No	No	No
[redacted]	4	carpenter	H	241	3/9/1992	830	1020	3/9/1992	1130	1500	Yes	Yes	No	No	No
[redacted]	5	painter	F	772	10/8/1990	1000	1040	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	8	laborer	F	241	10/10/1991	900	1000	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	8	boilermaker	F	241	10/10/1991	900	1140	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	8	laborer	F	241	10/10/1991	900	1000	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	8	laborer	F	241	10/10/1991	900	1000	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	8	ironworker	F	241	10/10/1991	945	1005	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	9	boilermaker	F	241	10/9/1991	1031	1140	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	9	boilermaker	F	241	10/9/1991	1031	1140	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	9	boilermaker	F	241	10/9/1991	1031	1140	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	9	boilermaker	F	241	10/9/1991	1031	1140	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	11	laborer	H	299	4/18/1991	800	1159	4/18/1991	1230	1530	Yes	Yes	Yes	Yes	No
[redacted]	11	laborer	H	299	4/23/1991	1230	1530	No data	No data	No data	Yes	Yes	Yes	Yes	No
[redacted]	11	carpenter	H	299	4/18/1991	805	1100	No data	No data	No data	Yes	Yes	Yes	Yes	No
[redacted]	11	carpenter	H	299	4/18/1991	800	1100	No data	No data	No data	Yes	Yes	Yes	Yes	No
[redacted]	11	carpenter	H	299	4/23/1991	1230	1530	No data	No data	No data	Yes	Yes	Yes	Yes	No
[redacted]	11	carpenter	H	299	4/23/1991	1230	1530	No data	No data	No data	Yes	Yes	Yes	Yes	No
[redacted]	11	laborer	H	299	4/18/1991	800	1159	4/23/1991	1230	1530	Yes	Yes	Yes	Yes	No
[redacted]	12	electrician	A	773	9/24/1991	845	No data	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	12	electrician	A	773	9/24/1991	845	No data	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	12	sheetmetal	A	773	9/24/1991	845	No data	9/24/1991	1455	1515	Yes	Yes	No	No	No
[redacted]	12	sheetmetal	A	773	9/24/1991	845	No data	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	12	sheetmetal	A	773	9/24/1991	845	No data	No data	No data	No data	Yes	Yes	No	No	No

Document No. ORAUT-RPRT-0092 | Revision No. 00 | Effective Date: 06/14/2019 | Page 81 of 188

**ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)**

CTW	SID	Craft	Area	Building	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Pu required	Sr/FP required	Am required	U required	Np required
[redacted]	14	laborer	H	241	10/22/1991	900	945	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	14	pipefitter	H	241	10/22/1991	900	945	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	14	pipefitter	H	241	10/22/1991	900	945	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	15	laborer	F	FB-Line	6/16/1991	450	No data	No data	No data	No data	Yes	No	No	No	No
[redacted]	15	laborer	F	FB-Line	6/16/1991	450	No data	No data	No data	No data	Yes	No	No	No	No
[redacted]	16	carpenter	F	247	7/25/1991	800	915	No data	No data	No data	Yes	Yes	Yes	Yes	No
[redacted]	16	carpenter	F	247	7/25/1991	800	915	No data	No data	No data	Yes	Yes	Yes	Yes	No
[redacted]	17	laborer	H	241	12/3/1991	800	1100	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	17	millwright	H	241	12/3/1991	900	1015	12/11/1991	920	1015	Yes	Yes	No	No	No
[redacted]	17	carpenter	H	241	12/27/1991	1300	1430	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	17	pipefitter	H	241	12/20/1991	900	1030	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	17	laborer	H	241	12/3/1991	800	1100	12/27/1991	800	1100	Yes	Yes	No	No	No
[redacted]	17	pipefitter	H	241	12/23/1991	830	1130	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	17	laborer	H	241	12/19/1991	800	1100	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	17	millwright	H	241	12/20/1991	905	1100	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	17	carpenter	H	241	12/13/1991	945	1130	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	17	millwright	H	241	12/3/1991	900	1015	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	17	carpenter	H	241	12/27/1991	1300	1430	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	17	millwright	H	241	12/11/1991	920	1015	12/19/1991	800	930	Yes	Yes	No	No	No
[redacted]	17	carpenter	H	241	12/26/1991	1030	1130	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	17	millwright	H	241	12/3/1991	900	1030	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	17	sheetmetal	H	241	12/23/1991	1045	1130	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	17	carpenter	H	241	12/18/1991	900	1030	12/13/1991	945	1130	Yes	Yes	No	No	No
[redacted]	17	pipefitter	H	241	12/23/1991	830	1000	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	17	pipefitter	H	241	12/23/1991	830	1130	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	17	carpenter	H	241	12/13/1991	940	1130	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	17	laborer	H	241	12/18/1991	900	1100	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	20	pipefitter	A	773	11/21/1991	900	1200	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	20	pipefitter	A	773	11/21/1991	900	1503	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	21	laborer	A	773	12/12/1991	900	1500	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	21	laborer	A	773	12/12/1991	900	1100	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	22	laborer	H	OBL	10/14/1992	2030	2300	No data	No data	No data	Yes	No	Yes	Yes	Yes
[redacted]	22	electrician	H	OBL	10/20/1992	1530	1730	No data	No data	No data	Yes	No	Yes	Yes	Yes
[redacted]	22	laborer	H	OBL	10/20/1992	1330	1730	No data	No data	No data	Yes	No	Yes	Yes	Yes
[redacted]	22	laborer	H	OBL	10/20/1992	800	1100	10/20/1992	1330	1730	Yes	No	Yes	Yes	Yes
[redacted]	22	laborer	H	OBL	10/20/1992	800	1000	No data	No data	No data	Yes	No	Yes	Yes	Yes
[redacted]	22	laborer	H	OBL	10/26/1992	2000	2300	No data	No data	No data	Yes	No	Yes	Yes	Yes
[redacted]	22	laborer	H	OBL	10/12/1992	2030	2300	10/14/1992	2020	2305	Yes	No	Yes	Yes	Yes
[redacted]	22	laborer	H	OBL	10/12/1992	2030	2300	10/26/1992	2000	2300	Yes	No	Yes	Yes	Yes
[redacted]	22	laborer	H	OBL	10/20/1992	1330	1730	No data	No data	No data	Yes	No	Yes	Yes	Yes
[redacted]	23	insulator	A	773	1/10/1992	920	1000	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	23	insulator	A	773	1/10/1992	920	1000	No data	No data	No data	Yes	Yes	No	Yes	No

Document No. ORAUT-RPRT-0092 Revision No. 00 Effective Date: 06/14/2019 Page 82 of 188

**ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)**

CTW	SID	Craft	Area	Building	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Pu required	Sr/FP required	Am required	U required	Np required
[redacted]	25	laborer	H	OBL	1/18/1993	2030	2145	No data	No data	No data	Yes	No	Yes	No	Yes
[redacted]	30	electrician	H	221	1/23/1992	1010	1100	No data	No data	No data	Yes	No	Yes	Yes	No
[redacted]	30	laborer	H	221	1/14/1992	845	1030	1/14/1992	1235	1500	Yes	No	Yes	Yes	No
[redacted]	30	carpenter	H	221	1/14/1992	830	1030	1/14/1992	1330	1430	Yes	No	Yes	Yes	No
[redacted]	30	electrician	H	221	1/23/1992	1010	1100	No data	No data	No data	Yes	No	Yes	Yes	No
[redacted]	30	laborer	H	221	1/14/1992	845	1030	1/14/1992	1330	1500	Yes	No	Yes	Yes	No
[redacted]	30	carpenter	H	221	1/14/1992	830	1030	No data	No data	No data	Yes	No	Yes	Yes	No
[redacted]	30	carpenter	H	221	1/14/1992	1330	1430	No data	No data	No data	Yes	No	Yes	Yes	No
[redacted]	31	pipefitter	H	221	3/25/1992	1645	1845	No data	No data	No data	Yes	No	Yes	Yes	No
[redacted]	31	pipefitter	H	221	3/25/1992	1645	1845	No data	No data	No data	Yes	No	Yes	Yes	No
[redacted]	32	pipefitter	F	221	4/1/1992	1040	1115	4/1/1992	1345	1450	Yes	No	No	No	No
[redacted]	32	painter	F	221	4/1/1992	1000	1120	4/1/1992	1305	1410	Yes	No	No	No	No
[redacted]	33	painter	F	221	1/14/1992	1715	1830	No data	No data	No data	Yes	No	No	No	No
[redacted]	34	painter	F	FB-Line	4/16/1992	915	1110	4/28/1992	1325	1355	Yes	No	No	No	No
[redacted]	34	sheetmetal	F	FB-Line	4/21/1992	35	1120	4/24/1992	955	1110	Yes	No	No	No	No
[redacted]	34	sheetmetal	F	FB-Line	4/28/1992	830	1020	4/28/1992	1400	1430	Yes	No	No	No	No
[redacted]	34	sheetmetal	F	FB-Line	4/16/1992	915	1110	4/28/1992	1320	1440	Yes	No	No	No	No
[redacted]	35	pipefitter	H	OBL	7/21/1992	2030	2300	No data	No data	No data	Yes	No	Yes	No	Yes
[redacted]	35	pipefitter	H	OBL	7/16/1992	900	1030	No data	No data	No data	Yes	No	Yes	No	Yes
[redacted]	35	laborer	H	OBL	7/21/1992	2030	2300	No data	No data	No data	Yes	No	Yes	No	Yes
[redacted]	35	pipefitter	H	OBL	7/21/1992	2030	2300	No data	No data	No data	Yes	No	Yes	No	Yes
[redacted]	36	electrician	H	221	10/29/1992	900	1130	10/29/1992	1300	1500	Yes	No	Yes	Yes	No
[redacted]	36	electrician	H	221	10/29/1992	900	1130	10/29/1992	1300	1500	Yes	No	Yes	Yes	No
[redacted]	37	laborer	H	221	8/12/1992	1300	1500	No data	No data	No data	Yes	No	Yes	Yes	No
[redacted]	37	insulator	H	221	8/7/1992	1300	1500	8/12/1992	1300	1500	Yes	No	Yes	Yes	No
[redacted]	37	insulator	H	221	8/7/1992	1300	1500	8/12/1992	1300	1500	Yes	No	Yes	Yes	No
[redacted]	37	insulator	H	221	8/6/1992	800	1500	8/7/1992	1300	1500	Yes	No	Yes	Yes	No
[redacted]	38	millwright	F	221	7/22/1992	830	1000	7/24/1992	905	1130	Yes	No	No	Yes	No
[redacted]	38	millwright	F	221	7/21/1992	955	1100	7/22/1992	830	1000	Yes	No	No	Yes	No
[redacted]	38	electrician	F	221	7/23/1992	915	1045	No data	No data	No data	Yes	No	No	Yes	No
[redacted]	38	electrician	F	221	7/23/1992	915	1045	No data	No data	No data	Yes	No	No	Yes	No
[redacted]	39	insulator	H	211	10/22/1992	1300	1445	10/23/1992	800	1500	Yes	No	Yes	Yes	No
[redacted]	39	insulator	H	211	10/22/1992	1300	1445	10/23/1992	800	1500	Yes	No	Yes	Yes	No
[redacted]	40	carpenter	H	211	10/27/1992	1340	1400	No data	No data	No data	Yes	No	Yes	Yes	No
[redacted]	41	pipefitter	F	221	12/23/1992	1005	1120	No data	No data	No data	Yes	No	No	Yes	No
[redacted]	41	pipefitter	F	221	12/18/1992	1100	1145	No data	No data	No data	Yes	No	No	Yes	No
[redacted]	42	ironworker	H	OBL	2/2/1993	230	330	No data	No data	No data	Yes	No	Yes	No	Yes
[redacted]	42	ironworker	H	OBL	2/2/1993	230	330	2/8/1993	2100	2400	Yes	No	Yes	No	Yes
[redacted]	43	sheetmetal	H	OBL	3/22/1993	830	1145	No data	No data	No data	Yes	No	Yes	No	Yes
[redacted]	43	sheetmetal	H	OBL	3/17/1993	940	1200	3/18/1993	900	1130	Yes	No	Yes	No	Yes
[redacted]	43	ironworker	H	OBL	3/22/1993	1400	1630	No data	No data	No data	Yes	No	Yes	No	Yes
[redacted]	43	laborer	H	OBL	3/22/1993	1405	1805	No data	No data	No data	Yes	No	Yes	No	Yes

Document No. ORAUT-RPRT-0092 Revision No. 00 Effective Date: 06/14/2019 Page 83 of 188

**ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)**

CTW	SID	Craft	Area	Building	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Pu required	Sr/FP required	Am required	U required	Np required
[redacted]	43	ironworker	H	OBL	3/22/1993	1400	1630	No data	No data	No data	Yes	No	Yes	No	Yes
[redacted]	43	sheetmetal	H	OBL	3/18/1993	900	1130	No data	No data	No data	Yes	No	Yes	No	Yes
[redacted]	43	carpenter	H	OBL	3/22/1993	1630	1700	No data	No data	No data	Yes	No	Yes	No	Yes
[redacted]	43	ironworker	H	OBL	3/22/1993	1700	1800	No data	No data	No data	Yes	No	Yes	No	Yes
[redacted]	43	ironworker	H	OBL	3/22/1993	1425	1630	No data	No data	No data	Yes	No	Yes	No	Yes
[redacted]	43	laborer	H	OBL	3/22/1993	1405	1805	No data	No data	No data	Yes	No	Yes	No	Yes
[redacted]	43	sheetmetal	H	OBL	3/18/1993	900	1130	3/22/1993	830	1145	Yes	No	Yes	No	Yes
[redacted]	43	sheetmetal	H	OBL	3/16/1993	915	1130	3/22/1993	1425	1630	Yes	No	Yes	No	Yes
[redacted]	43	sheetmetal	H	OBL	3/16/1993	1500	1700	3/18/1993	1500	1800	Yes	No	Yes	No	Yes
[redacted]	44	sheetmetal	H	OBL	4/6/1993	830	1030	No data	No data	No data	Yes	No	Yes	No	Yes
[redacted]	44	carpenter	H	OBL	4/8/1993	1600	1800	4/13/1993	1100	1230	Yes	No	Yes	No	Yes
[redacted]	44	carpenter	H	OBL	4/8/1993	900	1030	No data	No data	No data	Yes	No	Yes	No	Yes
[redacted]	44	carpenter	H	OBL	4/6/1993	830	1030	No data	No data	No data	Yes	No	Yes	No	Yes
[redacted]	44	carpenter	H	OBL	4/13/1993	1100	1235	No data	No data	No data	Yes	No	Yes	No	Yes
[redacted]	44	carpenter	H	OBL	4/8/1993	900	1100	4/8/1993	1400	1700	Yes	No	Yes	No	Yes
[redacted]	44	carpenter	H	OBL	4/8/1993	1400	1600	No data	No data	No data	Yes	No	Yes	No	Yes
[redacted]	45	electrician	H	OBL	1/27/1993	1400	1630	No data	No data	No data	Yes	No	Yes	No	Yes
[redacted]	45	laborer	H	OBL	1/26/1993	300	530	No data	No data	No data	Yes	No	Yes	No	Yes
[redacted]	45	laborer	H	OBL	1/25/1993	2130	2330	No data	No data	No data	Yes	No	Yes	No	Yes
[redacted]	45	electrician	H	OBL	1/27/1993	1400	1630	No data	No data	No data	Yes	No	Yes	No	Yes
[redacted]	45	laborer	H	OBL	1/26/1993	300	530	No data	No data	No data	Yes	No	Yes	No	Yes
[redacted]	45	laborer	H	OBL	1/25/1993	2130	2330	No data	No data	No data	Yes	No	Yes	No	Yes
[redacted]	46	laborer	H	OBL	2/10/1993	1000	1200	No data	No data	No data	Yes	No	Yes	No	Yes
[redacted]	46	laborer	H	OBL	2/10/1993	1400	1600	No data	No data	No data	Yes	No	Yes	No	Yes
[redacted]	46	laborer	H	OBL	2/10/1993	1000	1200	No data	No data	No data	Yes	No	Yes	No	Yes
[redacted]	47	laborer	E	643	2/4/1993	1110	1135	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	47	boilermaker	E	643	2/4/1993	1030	1125	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	49	boilermaker	E	643	6/17/1993	No data	No data	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	49	boilermaker	E	643	6/17/1993	No data	No data	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	57	ironworker	F	247	6/11/1993	925	1130	6/11/1993	1250	1500	Yes	Yes	Yes	Yes	No
[redacted]	57	ironworker	F	247	6/4/1993	930	1130	6/4/1993	1300	1500	Yes	Yes	Yes	Yes	No
[redacted]	57	ironworker	F	247	6/4/1993	930	1130	6/9/1993	845	1100	Yes	Yes	Yes	Yes	No
[redacted]	57	concrete	F	247	6/23/1993	1000	1130	6/23/1993	1300	1345	Yes	Yes	Yes	Yes	No
[redacted]	57	ironworker	F	247	6/18/1993	900	1130	6/18/1993	1330	1440	Yes	Yes	Yes	Yes	No
[redacted]	59	laborer	F	241	10/22/1993	1100	1400	10/23/1993	810	1105	Yes	Yes	No	No	No
[redacted]	59	laborer	F	241	10/8/1993	1000	1125	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	59	insulator	F	241	10/22/1993	1100	1400	10/23/1993	810	1050	Yes	Yes	No	No	No
[redacted]	59	insulator	F	241	10/22/1993	1100	1400	10/23/1993	810	1050	Yes	Yes	No	No	No
[redacted]	59	insulator	F	241	10/23/1993	810	1050	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	64	sheetmetal	H	OBL	7/8/1993	1420	1730	No data	No data	No data	Yes	No	Yes	No	Yes
[redacted]	64	sheetmetal	H	OBL	7/8/1993	1415	1730	No data	No data	No data	Yes	No	Yes	No	Yes
[redacted]	64	sheetmetal	H	OBL	7/1/1993	1400	1645	No data	No data	No data	Yes	No	Yes	No	Yes

Document No. ORAUT-RPRT-0092 Revision No. 00 Effective Date: 06/14/2019 Page 84 of 188

**ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)**

CTW	SID	Craft	Area	Building	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Pu required	Sr/FP required	Am required	U required	Np required
[redacted]	64	laborer	H	OBL	7/1/1993	1400	1645	No data	No data	No data	Yes	No	Yes	No	Yes
[redacted]	64	sheetmetal	H	OBL	7/8/1993	800	900	No data	No data	No data	Yes	No	Yes	No	Yes
[redacted]	64	sheetmetal	H	OBL	7/1/1993	1400	1645	7/8/1993	1420	1730	Yes	No	Yes	No	Yes
[redacted]	64	laborer	H	OBL	7/6/1993	800	1130	No data	No data	No data	Yes	No	Yes	No	Yes
[redacted]	64	sheetmetal	H	OBL	7/1/1993	1400	1645	No data	No data	No data	Yes	No	Yes	No	Yes
[redacted]	64	sheetmetal	H	OBL	7/6/1993	800	1130	No data	No data	No data	Yes	No	Yes	No	Yes
[redacted]	65	electrician	H	OBL	6/8/1993	1015	1100	6/21/1993	930	1130	Yes	No	Yes	No	Yes
[redacted]	65	electrician	H	OBL	6/21/1993	930	1130	6/22/1993	800	830	Yes	No	Yes	No	Yes
[redacted]	65	electrician	H	OBL	6/7/1993	1600	1700	6/8/1993	930	1100	Yes	No	Yes	No	Yes
[redacted]	66	pipefitter	H	221	7/7/1993	1330	1500	7/9/1993	815	1145	Yes	No	Yes	Yes	No
[redacted]	66	pipefitter	H	221	7/7/1993	1330	1500	7/27/1993	930	1130	Yes	No	Yes	Yes	No
[redacted]	66	carpenter	H	221	7/12/1993	900	1150	No data	No data	No data	Yes	No	Yes	Yes	No
[redacted]	66	laborer	H	221	7/12/1993	800	1130	7/27/1993	1300	1500	Yes	No	Yes	Yes	No
[redacted]	66	carpenter	H	221	7/12/1993	900	1130	No data	No data	No data	Yes	No	Yes	Yes	No
[redacted]	66	laborer	H	221	7/27/1993	900	1130	No data	No data	No data	Yes	No	Yes	Yes	No
[redacted]	66	pipefitter	H	221	7/7/1993	1330	1500	No data	No data	No data	Yes	No	Yes	Yes	No
[redacted]	67	laborer	H	221	11/24/1993	830	1530	No data	No data	No data	Yes	No	Yes	Yes	No
[redacted]	67	carpenter	H	221	11/24/1993	900	1015	No data	No data	No data	Yes	No	Yes	Yes	No
[redacted]	67	carpenter	H	221	11/24/1993	800	1015	No data	No data	No data	Yes	No	Yes	Yes	No
[redacted]	67	laborer	H	221	11/24/1993	845	1145	11/24/1993	1345	1600	Yes	No	Yes	Yes	No
[redacted]	67	laborer	H	221	11/24/1993	830	1145	11/24/1993	1345	1600	Yes	No	Yes	Yes	No
[redacted]	68	insulator	H	OBL	12/6/1993	1300	1615	No data	No data	No data	Yes	No	Yes	No	Yes
[redacted]	68	painter	H	OBL	12/6/1993	1000	1130	No data	No data	No data	Yes	No	Yes	No	Yes
[redacted]	68	laborer	H	OBL	12/6/1993	1000	1130	12/9/1993	830	1030	Yes	No	Yes	No	Yes
[redacted]	68	carpenter	H	OBL	12/2/1993	1000	1030	No data	No data	No data	Yes	No	Yes	No	Yes
[redacted]	68	carpenter	H	OBL	12/6/1993	1000	1130	No data	No data	No data	Yes	No	Yes	No	Yes
[redacted]	68	laborer	H	OBL	12/6/1993	1000	1130	No data	No data	No data	Yes	No	Yes	No	Yes
[redacted]	68	insulator	H	OBL	12/6/1993	930	1115	12/6/1993	1300	1615	Yes	No	Yes	No	Yes
[redacted]	68	carpenter	H	OBL	12/6/1993	1000	1130	No data	No data	No data	Yes	No	Yes	No	Yes
[redacted]	69	ironworker	F	outside	11/10/1993	900	1130	11/10/1993	1330	1530	Yes	Yes	No	No	No
[redacted]	69	ironworker	F	outside	11/4/1993	1400	1530	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	69	electrician	F	outside	11/4/1993	1345	1415	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	69	ironworker	F	outside	11/4/1993	1400	1530	11/10/1993	900	1130	Yes	Yes	No	No	No
[redacted]	71	laborer	H	221	1/4/1994	1330	1530	1/5/1994	915	1030	Yes	No	Yes	Yes	No
[redacted]	71	laborer	H	221	1/4/1994	1530	1600	No data	No data	No data	Yes	No	Yes	Yes	No
[redacted]	71	laborer	H	221	1/4/1994	1330	1600	1/5/1994	915	1030	Yes	No	Yes	Yes	No
[redacted]	71	electrician	H	221	1/4/1994	900	1300	1/4/1994	1330	1600	Yes	No	Yes	Yes	No
[redacted]	71	electrician	H	221	1/4/1994	1330	1600	1/5/1994	915	1030	Yes	No	Yes	Yes	No
[redacted]	72	pipefitter	H	221	2/9/1994	2215	2245	No data	No data	No data	Yes	No	Yes	Yes	No
[redacted]	73	pipefitter	H	281	10/7/1994	1410	1730	No data	No data	No data	Yes	No	Yes	Yes	No
[redacted]	73	pipefitter	H	281	10/7/1994	1420	1730	No data	No data	No data	Yes	No	Yes	Yes	No
[redacted]	74	laborer	F	281	5/9/1994	1100	1200	5/12/1994	1030	1300	Yes	Yes	No	Yes	No

**ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)**

CTW	SID	Craft	Area	Building	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Pu required	Sr/FP required	Am required	U required	Np required
[redacted]	74	laborer	F	281	5/6/1994	1000	1245	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	74	laborer	F	281	5/6/1994	900	1000	5/12/1994	1030	1300	Yes	Yes	No	Yes	No
[redacted]	75	pipefitter	F	772	4/12/1994	800	1000	4/14/1994	800	1015	Yes	Yes	No	Yes	No
[redacted]	75	laborer	F	772	4/29/1994	830	1030	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	75	pipefitter	F	772	4/12/1994	800	1000	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	75	pipefitter	F	772	4/12/1994	800	1000	4/14/1994	800	1015	Yes	Yes	No	Yes	No
[redacted]	78	laborer	Z	451	5/16/1994	1030	1145	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	78	sheetmetal	Z	451	5/17/1994	1330	1420	5/18/1994	830	945	Yes	Yes	No	No	No
[redacted]	78	sheetmetal	Z	451	5/17/1994	1330	1420	5/18/1994	830	945	Yes	Yes	No	No	No
[redacted]	78	laborer	Z	451	5/16/1994	1030	1145	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	78	sheetmetal	Z	451	5/17/1994	1330	1420	5/18/1994	830	945	Yes	Yes	No	No	No
[redacted]	79	laborer	Z	451	12/6/1994	830	1115	12/6/1994	1300	1400	Yes	Yes	No	No	No
[redacted]	79	sheetmetal	Z	451	12/6/1994	830	1115	12/6/1994	1300	1400	Yes	Yes	No	No	No
[redacted]	79	sheetmetal	Z	451	12/1/1994	1330	1430	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	80	laborer	Z	451	9/22/1994	830	1130	9/27/1994	1030	1130	Yes	Yes	No	No	No
[redacted]	80	laborer	Z	451	9/20/1994	845	1129	9/27/1994	1230	1500	Yes	Yes	No	No	No
[redacted]	80	laborer	Z	451	9/27/1994	740	1000	9/27/1994	1030	1130	Yes	Yes	No	No	No
[redacted]	80	sheetmetal	Z	451	9/15/1994	950	1415	9/27/1994	1030	1130	Yes	Yes	No	No	No
[redacted]	80	laborer	Z	451	9/15/1994	1316	1330	9/28/1994	940	1145	Yes	Yes	No	No	No
[redacted]	80	sheetmetal	Z	451	9/15/1994	950	1415	9/27/1994	1030	1130	Yes	Yes	No	No	No
[redacted]	82	sheetmetal	Z	704	3/13/1994	830	855	3/13/1994	1000	1715	Yes	Yes	No	No	No
[redacted]	82	sheetmetal	Z	704	3/12/1994	1600	1800	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	82	laborer	Z	704	3/12/1994	800	900	3/12/1994	1600	1700	Yes	Yes	No	No	No
[redacted]	82	pipefitter	Z	704	3/12/1994	745	1445	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	82	carpenter	Z	704	3/13/1994	1020	1130	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	82	sheetmetal	Z	704	3/12/1994	745	810	3/13/1994	1000	1715	Yes	Yes	No	No	No
[redacted]	82	carpenter	Z	704	3/12/1994	1600	1650	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	82	sheetmetal	Z	704	3/13/1994	830	1230	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	82	sheetmetal	Z	704	3/13/1994	830	1130	3/13/1994	1400	1715	Yes	Yes	No	No	No
[redacted]	82	pipefitter	Z	704	3/12/1994	802	851	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	82	pipefitter	Z	704	3/12/1994	745	1445	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	82	sheetmetal	Z	704	3/12/1994	1400	1715	3/13/1994	830	955	Yes	Yes	No	No	No
[redacted]	82	pipefitter	Z	704	3/12/1994	745	1445	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	82	laborer	Z	704	3/13/1994	1030	1130	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	82	carpenter	Z	704	3/13/1994	830	1000	3/13/1994	1030	1130	Yes	Yes	No	No	No
[redacted]	83	pipefitter	Z	210	3/16/1994	1630	1910	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	83	pipefitter	Z	210	3/15/1994	1820	1910	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	83	pipefitter	Z	210	3/18/1994	1328	1755	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	83	pipefitter	Z	210	3/18/1994	1700	1755	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	83	pipefitter	Z	210	3/18/1994	1328	1755	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	84	boilermaker	E	643	2/17/1994	930	1500	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	84	carpenter	E	643	2/22/1994	1000	1130	No data	No data	No data	Yes	Yes	No	No	No

**ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)**

CTW	SID	Craft	Area	Building	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Pu required	Sr/FP required	Am required	U required	Np required
[redacted]	84	laborer	E	643	2/22/1994	1000	1130	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	84	boilermaker	E	643	2/17/1994	930	1130	2/22/1994	1000	1145	Yes	Yes	No	No	No
[redacted]	84	boilermaker	E	643	2/22/1994	1030	1130	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	84	boilermaker	E	643	2/17/1994	930	1500	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	85	laborer	E	643	8/2/1994	815	1000	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	88	BSRI	E	643	11/1/1994	900	945	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	90	carpenter	E	230	12/29/1994	1300	1615	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	90	laborer	E	230	12/28/1994	1330	1430	12/29/1994	1425	1510	Yes	Yes	No	No	No
[redacted]	90	carpenter	E	230	12/28/1994	1030	1130	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	90	carpenter	E	230	12/28/1994	1030	1635	12/29/1994	1300	1635	Yes	Yes	No	No	No
[redacted]	91	carpenter	E	643	2/24/1994	1000	1200	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	91	laborer	E	643	2/24/1994	1000	1200	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	92	laborer	H	221	12/29/1994	930	1330	No data	No data	No data	Yes	No	Yes	Yes	No
[redacted]	92	electrician	H	221	12/28/1994	930	1130	No data	No data	No data	Yes	No	Yes	Yes	No
[redacted]	92	laborer	H	221	12/28/1994	930	1145	No data	No data	No data	Yes	No	Yes	Yes	No
[redacted]	92	laborer	H	221	12/29/1994	930	1400	No data	No data	No data	Yes	No	Yes	Yes	No
[redacted]	93	carpenter	H	221	1/23/1995	900	1130	1/23/1995	1235	1635	Yes	Yes	Yes	Yes	No
[redacted]	93	carpenter	H	221	1/23/1995	900	1130	1/23/1995	1235	1635	Yes	Yes	Yes	Yes	No
[redacted]	93	carpenter	H	221	1/23/1995	800	1100	No data	No data	No data	Yes	Yes	Yes	Yes	No
[redacted]	93	carpenter	H	221	1/23/1995	900	1130	1/23/1995	1235	1635	Yes	Yes	Yes	Yes	No
[redacted]	94	laborer	H	221	6/13/1995	1100	1200	No data	No data	No data	Yes	No	Yes	Yes	No
[redacted]	94	laborer	H	221	6/13/1995	1100	1200	No data	No data	No data	Yes	No	Yes	Yes	No
[redacted]	94	laborer	H	221	6/13/1995	1100	1200	No data	No data	No data	Yes	No	Yes	Yes	No
[redacted]	94	laborer	H	221	6/13/1995	1100	1200	No data	No data	No data	Yes	No	Yes	Yes	No
[redacted]	97	carpenter	F	FB-Line	12/8/1998	1330	1430	No data	No data	No data	Yes	No	No	No	No
[redacted]	97	carpenter	F	FB-Line	12/11/1998	1015	1115	No data	No data	No data	Yes	No	No	No	No
[redacted]	97	carpenter	F	FB-Line	12/11/1998	1015	1115	12/11/1998	1500	1530	Yes	No	No	No	No
[redacted]	98	pipefitter	F	FB-Line	12/9/1998	1400	1450	No data	No data	No data	Yes	No	No	No	No
[redacted]	99	painter	F	FB-Line	10/8/1997	830	1000	No data	No data	No data	Yes	No	No	No	No
[redacted]	100	electrician	F	221	12/27/1997	800	925	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	100	electrician	F	221	12/27/1997	800	925	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	101	carpenter	H	211	11/24/1998	1315	1515	No data	No data	No data	Yes	Yes	Yes	No	No
[redacted]	102	laborer	F	294	7/18/1995	230	530	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	102	laborer	F	294	7/18/1995	1000	1200	7/18/1995	1400	1500	Yes	Yes	No	No	No
[redacted]	102	laborer	F	294	7/18/1995	1000	1200	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	102	laborer	F	294	7/18/1995	1000	1200	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	102	laborer	F	294	7/18/1995	1000	1200	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	102	laborer	F	294	7/18/1995	230	530	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	102	laborer	F	294	7/18/1995	230	530	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	103	sheetmetal	F	292	7/20/1995	1630	1800	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	103	sheetmetal	F	292	7/18/1995	1420	1520	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	103	sheetmetal	F	292	7/18/1995	1420	1524	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	103	sheetmetal	F	292	7/19/1995	945	1100	7/19/1995	1315	1530	Yes	Yes	No	No	No

**ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)**

CTW	SID	Craft	Area	Building	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Pu required	Sr/FP required	Am required	U required	Np required
[redacted]	103	sheetmetal	F	292	7/19/1995	900	1100	7/19/1995	1315	1537	Yes	Yes	No	No	No
[redacted]	104	laborer	F	FA-Line	8/2/1995	1030	1115	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	104	laborer	F	FA-Line	8/2/1995	1030	1115	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	105	millwright	F	235	6/22/1995	915	925	No data	No data	No data	Yes	No	No	No	Yes
[redacted]	106	pipefitter	F	235	3/8/1995	1500	1600	3/13/1995	910	1000	Yes	No	No	No	Yes
[redacted]	106	laborer	F	235	3/27/1995	850	1115	3/27/1995	1300	1530	Yes	No	No	No	Yes
[redacted]	106	concrete	F	235	3/9/1995	930	1045	3/22/1995	910	1100	Yes	No	No	No	Yes
[redacted]	106	carpenter	F	235	3/8/1995	1500	1600	No data	No data	No data	Yes	No	No	No	Yes
[redacted]	106	electrician	F	235	3/27/1995	1315	1530	No data	No data	No data	Yes	No	No	No	Yes
[redacted]	106	millwright	F	235	3/16/1995	800	1115	3/16/1995	1330	1640	Yes	No	No	No	Yes
[redacted]	106	laborer	F	235	3/13/1995	415	1045	3/13/1995	1330	1430	Yes	No	No	No	Yes
[redacted]	106	laborer	F	235	3/27/1995	800	1115	3/27/1995	1300	1535	Yes	No	No	No	Yes
[redacted]	107	carpenter	F	221	2/27/1995	1025	1100	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	107	laborer	F	221	2/27/1995	1315	1430	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	107	carpenter	F	221	2/23/1995	1315	1445	2/27/1995	900	1100	Yes	Yes	No	No	No
[redacted]	107	laborer	F	221	2/23/1995	1330	1445	2/27/1995	1315	1430	Yes	Yes	No	No	No
[redacted]	107	carpenter	F	221	2/23/1995	1315	1445	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	108	carpenter	F	221	9/17/1997	1000	1110	9/17/1997	1230	1500	Yes	Yes	No	No	No
[redacted]	108	pipefitter	F	221	9/18/1997	1015	1215	9/18/1997	1430	1730	Yes	Yes	No	No	No
[redacted]	108	pipefitter	F	221	9/18/1997	1015	1215	9/18/1997	1430	1730	Yes	Yes	No	No	No
[redacted]	108	laborer	F	221	9/26/1997	1315	1415	9/30/1997	1000	1200	Yes	Yes	No	No	No
[redacted]	108	laborer	F	221	9/29/1997	1330	1600	9/30/1997	1000	1200	Yes	Yes	No	No	No
[redacted]	108	pipefitter	F	221	9/18/1997	1530	1730	9/23/1997	1115	1215	Yes	Yes	No	No	No
[redacted]	108	insulator	F	221	9/29/1997	1330	1600	9/30/1997	1000	1200	Yes	Yes	No	No	No
[redacted]	108	laborer	F	221	9/17/1997	1000	1115	9/17/1997	1330	1500	Yes	Yes	No	No	No
[redacted]	109	laborer	F	221	1/13/1998	930	1120	1/13/1998	1330	1440	Yes	Yes	No	No	No
[redacted]	109	laborer	F	221	1/8/1998	930	1100	1/29/1998	915	1045	Yes	Yes	No	No	No
[redacted]	113	painter	F	221	4/28/1998	915	1115	4/29/1998	900	1130	Yes	Yes	No	No	No
[redacted]	113	painter	F	221	4/8/1998	910	1115	4/8/1998	1330	1530	Yes	Yes	No	No	No
[redacted]	113	painter	F	221	4/8/1998	910	1115	4/8/1998	1330	1530	Yes	Yes	No	No	No
[redacted]	113	painter	F	221	4/8/1998	910	1100	4/8/1998	1330	1530	Yes	Yes	No	No	No
[redacted]	113	painter	F	221	4/28/1998	900	1015	4/28/1998	1315	1530	Yes	Yes	No	No	No
[redacted]	113	painter	F	221	4/8/1998	910	1115	4/8/1998	1330	1530	Yes	Yes	No	No	No
[redacted]	113	painter	F	221	4/28/1998	900	1015	4/28/1998	1315	1530	Yes	Yes	No	No	No
[redacted]	114	boilermaker	H	221	1/4/1996	800	1100	1/23/1996	900	1100	Yes	No	Yes	No	No
[redacted]	114	boilermaker	H	221	1/24/1996	800	1000	No data	No data	No data	Yes	No	Yes	No	No
[redacted]	115	boilermaker	H	221	4/17/1996	730	1100	No data	No data	No data	Yes	No	Yes	No	No
[redacted]	116	pipefitter	F	241	8/19/1996	1400	1500	8/20/1996	1030	1115	Yes	Yes	No	No	No
[redacted]	116	pipefitter	F	241	8/19/1996	1410	1500	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	116	pipefitter	F	241	8/20/1996	1030	1115	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	117	pipefitter	H	221	2/5/1996	1430	1630	No data	No data	No data	Yes	No	No	No	No
[redacted]	117	pipefitter	H	221	2/5/1996	1430	1630	No data	No data	No data	Yes	No	No	No	No

**ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)**

CTW	SID	Craft	Area	Building	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Pu required	Sr/FP required	Am required	U required	Np required
[redacted]	118	pipefitter	H	221	4/2/1996	910	1415	No data	No data	No data	Yes	No	No	No	No
[redacted]	118	pipefitter	H	221	4/1/1996	1030	1500	4/2/1996	915	1345	Yes	No	No	No	No
[redacted]	118	laborer	H	221	4/2/1996	915	1200	4/2/1996	1345	1515	Yes	No	No	No	No
[redacted]	118	pipefitter	H	221	4/1/1996	1030	1530	No data	No data	No data	Yes	No	No	No	No
[redacted]	118	insulator	H	221	4/2/1996	1345	1530	No data	No data	No data	Yes	No	No	No	No
[redacted]	120	electrician	H	221	1/5/1995	1400	1545	1/11/1995	1315	1415	Yes	No	No	No	No
[redacted]	120	electrician	H	221	1/5/1995	1400	1545	1/11/1995	1315	1415	Yes	No	No	No	No
[redacted]	121	pipefitter	H	221	3/2/1995	1150	1520	No data	No data	No data	Yes	No	No	No	No
[redacted]	121	pipefitter	H	221	3/2/1995	1150	1520	No data	No data	No data	Yes	No	No	No	No
[redacted]	122	boilermaker	H	221	2/22/1995	930	1330	2/27/1995	1200	1400	Yes	No	No	No	No
[redacted]	122	electrician	H	221	2/22/1995	1200	1400	2/23/1995	1230	1315	Yes	No	No	No	No
[redacted]	122	electrician	H	221	2/22/1995	1200	1400	2/23/1995	1230	1315	Yes	No	No	No	No
[redacted]	122	boilermaker	H	221	2/22/1995	930	1330	No data	No data	No data	Yes	No	No	No	No
[redacted]	122	steel worker	H	221	2/22/1995	1230	1330	2/27/1995	1200	1400	Yes	No	No	No	No
[redacted]	122	boilermaker	H	221	2/22/1995	930	1330	2/27/1995	1200	1400	Yes	No	No	No	No
[redacted]	122	steel worker	H	221	2/22/1995	1230	1430	2/22/1995	1230	1430	Yes	No	No	No	No
[redacted]	122	steel worker	H	221	2/22/1995	1200	1400	2/27/1995	1230	1330	Yes	No	No	No	No
[redacted]	122	steel worker	H	221	2/22/1995	1230	1430	2/27/1995	1230	1330	Yes	No	No	No	No
[redacted]	122	electrician	H	221	2/22/1995	1200	1400	2/23/1995	1230	1315	Yes	No	No	No	No
[redacted]	123	carpenter	H	221	5/1/1995	1000	1130	5/1/1995	1345	1700	Yes	No	No	No	No
[redacted]	123	carpenter	H	221	5/1/1995	1000	1130	5/1/1995	1345	1700	Yes	No	No	No	No
[redacted]	124	pipefitter	H	221	5/1/1995	1300	1530	5/2/1995	1300	1400	Yes	No	No	No	No
[redacted]	124	pipefitter	H	221	5/1/1995	1300	1530	5/2/1995	1300	1400	Yes	No	No	No	No
[redacted]	125	pipefitter	H	HBL	12/5/1995	1500	1600	12/7/1995	1330	1630	Yes	No	No	No	Yes
[redacted]	125	pipefitter	H	HBL	12/5/1995	1500	1600	12/7/1995	1330	1630	Yes	No	No	No	Yes
[redacted]	126	steel worker	F	241	4/8/1996	1300	1475	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	126	boilermaker	F	241	4/2/1996	945	1130	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	126	HEO	F	241	4/8/1996	1100	1130	4/8/1996	1300	1430	Yes	Yes	No	No	No
[redacted]	126	laborer	F	241	4/2/1996	1515	1630	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	126	driver	F	241	4/8/1996	1300	1500	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	126	laborer	F	241	4/2/1996	1430	1630	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	126	laborer	F	241	4/8/1996	1300	1500	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	126	boilermaker	F	241	4/2/1996	945	1130	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	126	steel worker	F	241	4/8/1996	1300	1415	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	127	HEO	F	241	10/17/1997	1000	1500	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	127	laborer	F	241	10/17/1997	1030	1500	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	127	laborer	F	241	10/17/1997	1030	1445	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	127	HEO	F	241	10/17/1997	1010	1530	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	127	HEO	F	241	10/20/1997	1115	1215	10/20/1997	1245	1510	Yes	Yes	No	No	No
[redacted]	127	HEO	F	241	10/17/1997	1430	1600	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	127	carpenter	F	241	10/20/1997	1115	1200	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	127	laborer	F	241	10/17/1997	1015	1230	10/17/1997	1300	1445	Yes	Yes	No	No	No

Document No. ORAUT-RPRT-0092 Revision No. 00 Effective Date: 06/14/2019 Page 89 of 188

**ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)**

CTW	SID	Craft	Area	Building	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Pu required	Sr/FP required	Am required	U required	Np required
[redacted]	127	carpenter	F	241	10/20/1997	1110	1145	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	127	pipefitter	F	241	10/23/1997	1400	1545	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	127	pipefitter	F	241	10/17/1997	1600	1700	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	127	steel worker	F	241	10/17/1997	1036	1210	10/17/1997	1245	1415	Yes	Yes	No	No	No
[redacted]	127	pipefitter	F	241	10/23/1997	1400	1545	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	127	laborer	F	241	10/17/1997	1030	1500	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	127	carpenter	F	241	10/17/1997	1335	1535	10/17/1997	1630	1700	Yes	Yes	No	No	No
[redacted]	127	carpenter	F	241	10/17/1997	1445	1505	10/17/1997	1630	1700	Yes	Yes	No	No	No
[redacted]	127	carpenter	F	241	10/17/1997	1336	1535	10/17/1997	1630	1700	Yes	Yes	No	No	No
[redacted]	127	pipefitter	F	241	10/20/1997	1025	1300	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	128	pipefitter	F	241	8/15/1996	1600	1625	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	128	pipefitter	F	241	8/15/1996	1600	1625	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	129	pipefitter	F	241	1/20/1997	1115	1345	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	129	pipefitter	F	241	1/20/1997	1115	1345	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	130	laborer	F	241	12/1/1998	910	1100	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	130	electrician	F	241	12/1/1998	910	1100	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	130	electrician	F	241	12/1/1998	910	1100	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	131	mechanic	F	241	11/10/1998	1245	1530	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	131	mechanic	F	241	11/10/1998	1245	1530	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	132	HEO	F	241	5/8/1997	800	1330	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	132	HEO	F	241	5/8/1997	1200	1330	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	132	carpenter	F	241	5/8/1997	1330	1345	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	132	laborer	F	241	5/8/1997	1200	1230	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	132	HEO	F	241	5/9/1997	1300	1430	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	132	pipefitter	F	241	5/9/1997	1700	2000	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	132	laborer	F	241	5/9/1997	945	1245	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	132	laborer	F	241	5/9/1997	830	1430	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	132	carpenter	F	241	5/10/1997	1730	1830	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	132	laborer	F	241	5/8/1997	1650	1815	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	132	pipefitter	F	241	5/8/1997	1230	1400	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	132	pipefitter	F	241	5/9/1997	800	1430	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	132	laborer	F	241	5/7/1997	1655	1755	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	132	pipefitter	F	241	5/9/1997	1700	2000	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	132	pipefitter	F	241	5/8/1997	1230	1400	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	132	pipefitter	F	241	5/9/1997	1700	2000	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	132	laborer	F	241	5/10/1997	1630	1830	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	132	pipefitter	F	241	5/9/1997	1630	2030	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	136	electrician	A	773	3/22/1994	1040	1230	No data	No data	No data	Yes	Yes	Yes	Yes	No
[redacted]	136	electrician	A	773	3/22/1994	1040	1230	No data	No data	No data	Yes	Yes	Yes	Yes	No
[redacted]	137	pipefitter	A	773	3/26/1994	835	1135	3/26/1994	1308	1340	Yes	Yes	No	Yes	No
[redacted]	137	laborer	A	773	3/26/1994	835	1135	3/26/1994	1308	1340	Yes	Yes	No	Yes	No
[redacted]	137	pipefitter	A	773	3/26/1994	835	1135	3/26/1994	1308	1340	Yes	Yes	No	Yes	No

**ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)**

CTW	SID	Craft	Area	Building	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Pu required	Sr/FP required	Am required	U required	Np required
[redacted]	137	pipefitter	A	773	3/26/1994	835	1135	3/26/1994	1308	1340	Yes	Yes	No	Yes	No
[redacted]	138	laborer	A	773	7/28/1994	1400	1530	No data	No data	No data	Yes	Yes	Yes	Yes	No
[redacted]	138	laborer	A	773	7/28/1994	1400	1530	No data	No data	No data	Yes	Yes	Yes	Yes	No
[redacted]	139	painter	A	773	3/15/1994	800	930	3/15/1994	1400	1510	Yes	Yes	Yes	Yes	No
[redacted]	140	painter	A	773	1/18/1994	850	1145	1/18/1994	1400	1520	Yes	Yes	No	Yes	No
[redacted]	140	painter	A	773	1/18/1994	850	1145	1/18/1994	1300	1520	Yes	Yes	No	Yes	No
[redacted]	143	laborer	A	773	4/1/1993	1140	1500	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	143	laborer	A	773	4/1/1993	1140	1500	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	143	sheetmetal	A	773	4/1/1993	1150	1500	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	143	sheetmetal	A	773	4/6/1993	910	1110	4/6/1993	1400	1530	Yes	Yes	No	Yes	No
[redacted]	143	laborer	A	773	4/2/1993	850	1035	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	143	sheetmetal	A	773	4/1/1993	1150	1500	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	143	laborer	A	773	4/6/1993	910	1100	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	144	sheetmetal	A	773	3/1/1993	1240	1350	3/1/1993	1430	1445	Yes	Yes	No	Yes	No
[redacted]	144	sheetmetal	A	773	3/4/1993	1831	1850	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	144	sheetmetal	A	773	3/4/1993	1048	1102	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	144	laborer	A	773	3/9/1993	1300	1530	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	144	sheetmetal	A	773	3/5/1993	1515	1930	3/5/1993	1945	2215	Yes	Yes	No	Yes	No
[redacted]	144	sheetmetal	A	773	3/1/1993	1144	1159	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	144	electrician	A	773	3/4/1993	1335	1355	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	144	sheetmetal	A	773	3/5/1993	800	1030	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	144	laborer	A	773	3/9/1993	1140	1500	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	144	sheetmetal	A	773	3/5/1993	800	1130	3/5/1993	1300	1345	Yes	Yes	No	Yes	No
[redacted]	144	electrician	A	773	3/5/1993	930	1125	3/5/1993	1300	1610	Yes	Yes	No	Yes	No
[redacted]	144	sheetmetal	A	773	3/5/1993	800	1125	3/5/1993	1300	1520	Yes	Yes	No	Yes	No
[redacted]	144	pipefitter	A	773	3/5/1993	900	1000	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	144	sheetmetal	A	773	3/5/1993	800	1130	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	144	sheetmetal	A	773	3/5/1993	849	902	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	144	electrician	A	773	3/5/1993	1345	1610	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	144	sheetmetal	A	773	3/4/1993	1645	1715	3/4/1993	2120	2330	Yes	Yes	No	Yes	No
[redacted]	144	electrician	A	773	3/5/1993	1355	1715	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	144	electrician	A	773	3/1/1993	1416	1740	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	144	sheetmetal	A	773	3/4/1993	1808	2200	3/4/1993	2246	2330	Yes	Yes	No	Yes	No
[redacted]	144	pipefitter	A	773	3/5/1993	900	1000	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	144	laborer	A	773	3/5/1993	1300	1500	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	144	steel worker	A	773	3/3/1993	1	30	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	144	electrician	A	773	3/3/1993	1340	1440	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	144	electrician	A	773	3/5/1993	930	1130	3/5/1993	1300	1615	Yes	Yes	No	Yes	No
[redacted]	144	laborer	A	773	3/8/1993	1030	1235	3/8/1993	1300	1400	Yes	Yes	No	Yes	No
[redacted]	144	sheetmetal	A	773	3/5/1993	850	1000	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	144	sheetmetal	A	773	3/5/1993	800	1130	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	144	sheetmetal	A	773	3/5/1993	800	1050	No data	No data	No data	Yes	Yes	No	Yes	No

**ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)**

CTW	SID	Craft	Area	Building	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Pu required	Sr/FP required	Am required	U required	Np required
[redacted]	152	sheetmetal	M	313	4/20/1992	830	1100	4/20/1992	1230	1440	No	No	No	Yes	No
[redacted]	152	sheetmetal	M	313	4/20/1992	830	1100	4/20/1992	1230	1440	No	No	No	Yes	No
[redacted]	152	sheetmetal	M	313	4/30/1992	1330	1438	No data	No data	No data	No	No	No	Yes	No
[redacted]	153	pipefitter	M	321	5/12/1992	805	930	No data	No data	No data	No	No	No	Yes	No
[redacted]	153	pipefitter	M	321	5/12/1992	805	930	No data	No data	No data	No	No	No	Yes	No
[redacted]	153	electrician	M	321	5/19/1992	800	1030	5/19/1992	1120	1125	No	No	No	Yes	No
[redacted]	153	pipefitter	M	321	5/12/1992	805	930	5/14/1992	1330	1415	No	No	No	Yes	No
[redacted]	153	electrician	M	321	5/19/1992	910	1030	5/19/1992	1120	1125	No	No	No	Yes	No
[redacted]	154	electrician	M	321	8/7/1992	740	900	8/7/1992	1020	1140	No	No	No	Yes	No
[redacted]	154	electrician	M	321	8/6/1992	730	1040	No data	No data	No data	No	No	No	Yes	No
[redacted]	154	electrician	M	321	8/20/1992	730	1130	8/20/1992	1250	1430	No	No	No	Yes	No
[redacted]	154	electrician	M	321	8/7/1992	800	900	8/7/1992	1030	1130	No	No	No	Yes	No
[redacted]	155	insulator	M	321	11/18/1992	900	1100	11/18/1992	1300	1500	No	No	No	Yes	No
[redacted]	155	insulator	M	321	11/18/1992	900	1100	11/18/1992	1300	1500	No	No	No	Yes	No
[redacted]	163	laborer	H	261	10/13/1997	1100	1200	No data	No data	No data	Yes	Yes	Yes	No	No
[redacted]	163	laborer	H	261	10/13/1997	1100	1200	No data	No data	No data	Yes	Yes	Yes	No	No
[redacted]	183	ironworker	H	HCMA	1/4/1993	830	945	No data	No data	No data	Yes	Yes	Yes	Yes	No
[redacted]	183	ironworker	H	HCMA	1/4/1993	830	1100	No data	No data	No data	Yes	Yes	Yes	Yes	No
[redacted]	183	ironworker	H	HCMA	1/4/1993	900	1100	No data	No data	No data	Yes	Yes	Yes	Yes	No
[redacted]	183	ironworker	H	HCMA	1/4/1993	900	1100	No data	No data	No data	Yes	Yes	Yes	Yes	No
[redacted]	190	laborer	H	299	3/21/1991	1300	1500	No data	No data	No data	Yes	Yes	Yes	Yes	No
[redacted]	190	laborer	H	299	3/21/1991	915	1130	3/21/1991	1300	1500	Yes	Yes	Yes	Yes	No
[redacted]	200	laborer	Z	451	10/27/1994	830	1130	10/27/1994	1300	1300	Yes	Yes	No	No	No
[redacted]	200	laborer	Z	451	10/25/1994	1100	1130	10/25/1994	1315	1600	Yes	Yes	No	No	No
[redacted]	200	laborer	Z	451	10/28/1994	900	1200	10/28/1994	1300	1430	Yes	Yes	No	No	No
[redacted]	200	ironworker	Z	451	10/26/1994	1300	1400	10/27/1994	930	1130	Yes	Yes	No	No	No
[redacted]	200	laborer	Z	451	10/28/1994	900	1200	10/28/1994	1330	1430	Yes	Yes	No	No	No
[redacted]	200	sheetmetal	Z	451	10/4/1994	800	815	10/6/1994	1315	1500	Yes	Yes	No	No	No
[redacted]	200	laborer	Z	451	10/25/1994	1100	1145	10/25/1994	1315	1600	Yes	Yes	No	No	No
[redacted]	200	sheetmetal	Z	451	10/5/1994	1250	1315	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	200	sheetmetal	Z	451	10/8/1994	745	1130	10/26/1994	1315	1600	Yes	Yes	No	No	No
[redacted]	200	sheetmetal	Z	451	10/5/1994	1030	1145	10/5/1994	1245	1450	Yes	Yes	No	No	No
[redacted]	200	sheetmetal	Z	451	10/28/1994	900	1200	10/28/1994	1300	1430	Yes	Yes	No	No	No
[redacted]	200	laborer	Z	451	10/25/1994	1315	1600	10/27/1994	830	1130	Yes	Yes	No	No	No
[redacted]	200	laborer	Z	451	10/27/1994	830	1130	10/27/1994	1300	1300	Yes	Yes	No	No	No
[redacted]	200	sheetmetal	Z	451	10/27/1994	830	1130	10/27/1994	1300	1315	Yes	Yes	No	No	No
[redacted]	200	sheetmetal	Z	451	10/8/1994	730	1130	10/8/1994	1230	1530	Yes	Yes	No	No	No
[redacted]	201	steel worker	Z	451	11/16/1994	941	1008	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	201	laborer	Z	451	11/3/1994	930	1130	11/16/1994	900	1000	Yes	Yes	No	No	No
[redacted]	201	ironworker	Z	451	11/14/1994	900	1130	11/15/1994	930	1035	Yes	Yes	No	No	No
[redacted]	201	laborer	Z	451	11/3/1994	930	1330	11/18/1994	1100	1230	Yes	Yes	No	No	No
[redacted]	201	ironworker	Z	451	11/1/1994	930	1230	11/9/1994	1000	1130	Yes	Yes	No	No	No

Document No. ORAUT-RPRT-0092 Revision No. 00 Effective Date: 06/14/2019 Page 92 of 188

**ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)**

CTW	SID	Craft	Area	Building	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Pu required	Sr/FP required	Am required	U required	Np required
[redacted]	201	laborer	Z	451	11/23/1994	830	1100	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	201	laborer	Z	451	11/10/1994	800	1130	11/10/1994	1300	1400	Yes	Yes	No	No	No
[redacted]	201	sheetmetal	Z	451	11/15/1994	845	1130	11/16/1994	900	1045	Yes	Yes	No	No	No
[redacted]	201	insulator	Z	451	11/14/1994	1045	1115	11/15/1994	845	1045	Yes	Yes	No	No	No
[redacted]	201	sheetmetal	Z	451	11/14/1994	1015	1130	11/14/1994	1245	1600	Yes	Yes	No	No	No
[redacted]	201	laborer	Z	451	11/14/1994	900	1130	11/14/1994	1300	1430	Yes	Yes	No	No	No
[redacted]	201	laborer	Z	451	11/3/1994	1300	1530	11/18/1994	1100	1230	Yes	Yes	No	No	No
[redacted]	201	sheetmetal	Z	451	11/8/1994	830	1130	11/8/1994	1300	1430	Yes	Yes	No	No	No
[redacted]	201	sheetmetal	Z	451	11/23/1994	830	1100	11/23/1994	1230	1345	Yes	Yes	No	No	No
[redacted]	201	laborer	Z	451	11/10/1994	800	1130	10/10/1994	1300	1400	Yes	Yes	No	No	No
[redacted]	201	insulator	Z	451	11/15/1994	900	1045	11/15/1994	1420	1440	Yes	Yes	No	No	No
[redacted]	201	sheetmetal	Z	451	11/4/1994	800	1130	11/4/1994	1300	1430	Yes	Yes	No	No	No
[redacted]	201	laborer	Z	451	11/3/1994	930	1130	11/7/1994	815	1130	Yes	Yes	No	No	No
[redacted]	201	ironworker	Z	451	11/7/1994	1020	1145	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	201	ironworker	Z	451	11/18/1994	1105	1230	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	201	sheetmetal	Z	451	11/10/1994	800	1130	11/10/1994	1300	1400	Yes	Yes	No	No	No
[redacted]	202	pipefitter	Z	451	3/16/1994	1050	1500	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	202	pipefitter	Z	451	3/16/1994	1050	1300	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	202	pipefitter	Z	451	3/16/1994	1050	1300	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	204	sheetmetal	Z	451	4/18/1994	900	1000	4/18/1994	1300	1330	Yes	Yes	No	No	No
[redacted]	204	sheetmetal	Z	451	4/18/1994	900	1000	4/18/1994	1300	1330	Yes	Yes	No	No	No
[redacted]	204	ironworker	Z	451	4/14/1994	925	1135	4/15/1994	800	1130	Yes	Yes	No	No	No
[redacted]	205	sheetmetal	Z	451	5/5/1994	835	1100	5/5/1994	1230	1500	Yes	Yes	No	No	No
[redacted]	205	sheetmetal	Z	451	5/5/1994	1230	1500	5/12/1994	800	1015	Yes	Yes	No	No	No
[redacted]	205	sheetmetal	Z	451	5/11/1994	845	1055	5/12/1994	800	1015	Yes	Yes	No	No	No
[redacted]	207	pipefitter	A	773	11/21/1991	803	1503	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	207	pipefitter	A	773	11/21/1991	830	1115	11/21/1991	1245	1600	Yes	Yes	No	No	No
[redacted]	207	pipefitter	A	773	11/21/1991	830	930	11/21/1991	1245	1600	Yes	Yes	No	No	No
[redacted]	207	carpenter	A	773	11/21/1991	1008	1115	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	207	carpenter	A	773	11/21/1991	1008	1115	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	207	laborer	A	773	11/21/1991	1303	1503	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	207	pipefitter	A	773	11/21/1991	900	1145	11/21/1991	1245	1500	Yes	Yes	No	No	No
[redacted]	208	pipefitter	A	773	12/12/1991	730	900	12/12/1991	930	1130	Yes	Yes	No	No	No
[redacted]	208	pipefitter	A	773	12/12/1991	730	900	12/12/1991	930	1130	Yes	Yes	No	No	No
[redacted]	209	boilermaker	E	643	3/5/1993	1010	1130	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	211	laborer	F	235	8/1/1991	820	1030	8/3/1991	1300	1345	Yes	No	No	No	Yes
[redacted]	211	carpenter	F	235	8/3/1991	1300	1345	No data	No data	No data	Yes	No	No	No	Yes
[redacted]	211	electrician	F	235	8/2/1991	845	1045	8/3/1991	830	845	Yes	No	No	No	Yes
[redacted]	211	electrician	F	235	8/1/1991	820	1030	8/2/1991	845	1045	Yes	No	No	No	Yes
[redacted]	212	millwright	F	235	9/16/1993	920	1035	No data	No data	No data	Yes	No	No	No	Yes
[redacted]	212	electrician	F	235	9/10/1993	800	900	No data	No data	No data	Yes	No	No	No	Yes
[redacted]	212	millwright	F	235	9/16/1993	920	1430	9/17/1993	745	915	Yes	No	No	No	Yes

Document No. ORAUT-RPRT-0092 Revision No. 00 Effective Date: 06/14/2019 Page 93 of 188

**ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)**

CTW	SID	Craft	Area	Building	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Pu required	Sr/FP required	Am required	U required	Np required
[redacted]	212	millwright	F	235	9/16/1993	900	1430	9/17/1993	745	915	Yes	No	No	No	Yes
[redacted]	212	carpenter	F	235	9/10/1993	1415	1500	No data	No data	No data	Yes	No	No	No	Yes
[redacted]	212	electrician	F	235	9/10/1993	800	900	No data	No data	No data	Yes	No	No	No	Yes
[redacted]	215	electrician	F	772	2/1/1994	915	1100	2/5/1994	815	1200	Yes	No	No	No	No
[redacted]	215	electrician	F	772	2/1/1994	925	1100	2/12/1994	1305	1410	Yes	No	No	No	No
[redacted]	215	laborer	F	772	2/7/1994	1030	1140	2/7/1994	1320	1445	Yes	No	No	No	No
[redacted]	215	laborer	F	772	2/7/1994	830	1140	2/7/1994	1320	1445	Yes	No	No	No	No
[redacted]	216	pipefitter	F	221	2/19/1998	1300	1430	2/23/1998	1030	1230	Yes	No	No	No	No
[redacted]	217	electrician	F	241	11/24/1998	1030	1330	11/30/1998	1300	1500	Yes	Yes	No	No	No
[redacted]	217	electrician	F	241	11/24/1998	1030	1330	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	217	electrician	F	241	11/23/1998	1030	1130	11/30/1998	1300	1500	Yes	Yes	No	No	No
[redacted]	217	laborer	F	241	11/23/1998	1330	1530	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	218	pipefitter	F	FTF	3/26/1998	1500	1530	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	220	electrician	F	235	11/18/1993	930	1130	11/30/1993	1100	1500	Yes	No	No	No	Yes
[redacted]	220	electrician	F	235	11/17/1993	1008	1514	No data	No data	No data	Yes	No	No	No	Yes
[redacted]	220	electrician	F	235	11/17/1993	1300	1500	11/30/1993	1100	1500	Yes	No	No	No	Yes
[redacted]	220	electrician	F	235	11/17/1993	1008	1500	No data	No data	No data	Yes	No	No	No	Yes
[redacted]	220	laborer	F	235	11/17/1993	1030	1115	No data	No data	No data	Yes	No	No	No	Yes
[redacted]	221	painter	F	247	12/7/1993	930	1630	No data	No data	No data	Yes	No	No	Yes	No
[redacted]	221	painter	F	247	12/7/1993	830	1639	12/15/1993	830	930	Yes	No	No	Yes	No
[redacted]	221	painter	F	247	12/9/1993	830	1639	No data	No data	No data	Yes	No	No	Yes	No
[redacted]	221	painter	F	247	12/15/1993	830	930	No data	No data	No data	Yes	No	No	Yes	No
[redacted]	222	electrician	M	321	8/19/1992	830	1145	8/19/1992	1300	1500	No	No	No	Yes	No
[redacted]	222	electrician	M	321	8/19/1992	830	1145	8/19/1992	1300	1500	No	No	No	Yes	No
[redacted]	223	electrician	M	316	12/7/1992	1230	1400	12/8/1992	1300	1530	No	No	No	Yes	No
[redacted]	223	electrician	M	316	12/7/1992	1230	1530	12/9/1992	1230	1530	No	No	No	Yes	No
[redacted]	224	boilermaker	H	242	10/18/1991	930	1100	No data	No data	No data	Yes	Yes	Yes	No	No
[redacted]	224	boilermaker	H	242	10/18/1991	930	1100	No data	No data	No data	Yes	Yes	Yes	No	No
[redacted]	224	laborer	H	242	10/18/1991	830	1100	No data	No data	No data	Yes	Yes	Yes	No	No
[redacted]	224	laborer	H	242	10/18/1991	830	1100	No data	No data	No data	Yes	Yes	Yes	No	No
[redacted]	224	boilermaker	H	242	10/18/1991	840	1100	No data	No data	No data	Yes	Yes	Yes	No	No
[redacted]	224	boilermaker	H	242	10/18/1991	930	1100	No data	No data	No data	Yes	Yes	Yes	No	No
[redacted]	224	pipefitter	H	242	10/21/1991	845	1000	No data	No data	No data	Yes	Yes	Yes	No	No
[redacted]	224	pipefitter	H	242	10/21/1991	845	1000	No data	No data	No data	Yes	Yes	Yes	No	No
[redacted]	224	driver	H	242	10/18/1991	1245	1430	No data	No data	No data	Yes	Yes	Yes	No	No
[redacted]	225	laborer	H	292	11/6/1992	2100	2250	11/11/1992	2000	2245	Yes	No	Yes	No	No
[redacted]	225	laborer	H	292	11/9/1992	1020	1200	11/9/1992	1615	1730	Yes	No	Yes	No	No
[redacted]	225	laborer	H	292	11/9/1992	900	1030	11/9/1992	1500	1615	Yes	No	Yes	No	No
[redacted]	225	carpenter	H	292	11/9/1992	900	1200	11/9/1992	1500	1800	Yes	No	Yes	No	No
[redacted]	225	laborer	H	292	11/9/1992	900	1200	11/9/1992	1500	1730	Yes	No	Yes	No	No
[redacted]	225	laborer	H	292	11/9/1992	130	330	No data	No data	No data	Yes	No	Yes	No	No
[redacted]	225	laborer	H	292	11/6/1992	2100	2300	11/9/1992	2000	2215	Yes	No	Yes	No	No

**ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)**

CTW	SID	Craft	Area	Building	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Pu required	Sr/FP required	Am required	U required	Np required
[redacted]	225	carpenter	H	292	11/9/1992	900	1200	11/9/1992	1500	1730	Yes	No	Yes	No	No
[redacted]	225	laborer	H	292	11/9/1992	1630	1715	No data	No data	No data	Yes	No	Yes	No	No
[redacted]	225	laborer	H	292	11/9/1992	2000	2215	No data	No data	No data	Yes	No	Yes	No	No
[redacted]	225	laborer	H	292	11/9/1992	1020	1200	No data	No data	No data	Yes	No	Yes	No	No
[redacted]	226	pipefitter	H	221	12/13/1995	1300	1630	No data	No data	No data	Yes	No	Yes	No	No
[redacted]	226	pipefitter	H	221	12/13/1995	1300	1630	No data	No data	No data	Yes	No	Yes	No	No
[redacted]	227	ironworker	H	242	10/30/1991	1430	1530	No data	No data	No data	Yes	No	No	No	No
[redacted]	227	laborer	H	242	10/30/1991	1330	1430	No data	No data	No data	Yes	No	No	No	No
[redacted]	227	ironworker	H	242	10/30/1991	1330	1430	No data	No data	No data	Yes	No	No	No	No
[redacted]	227	ironworker	H	242	10/30/1991	1330	1430	No data	No data	No data	Yes	No	No	No	No
[redacted]	227	laborer	H	242	10/30/1991	1330	1430	No data	No data	No data	Yes	No	No	No	No
[redacted]	230	pipefitter	A	773	1/27/1993	830	1300	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	230	painter	A	773	1/20/1993	930	1205	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	230	laborer	A	773	1/11/1993	700	745	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	230	carpenter	A	773	1/13/1993	1241	1455	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	230	sheetmetal	A	773	1/26/1993	820	1245	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	230	carpenter	A	773	1/13/1993	720	1110	1/13/1993	1240	1455	Yes	Yes	No	Yes	No
[redacted]	230	pipefitter	A	773	1/27/1993	830	1300	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	231	sheetmetal	A	773	2/16/1993	800	1115	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	231	sheetmetal	A	773	2/16/1993	1135	1245	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	231	sheetmetal	A	773	2/4/1993	830	1245	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	231	sheetmetal	A	773	2/11/1993	1100	1300	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	231	sheetmetal	A	773	2/11/1993	1100	1300	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	232	pipefitter	A	773	3/25/1993	945	1230	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	232	carpenter	A	773	3/31/1993	900	1145	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	232	laborer	A	773	3/25/1993	800	1230	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	232	carpenter	A	773	3/22/1993	820	920	3/31/1993	900	1145	Yes	Yes	No	Yes	No
[redacted]	232	pipefitter	A	773	3/25/1993	845	1250	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	232	laborer	A	773	3/30/1993	930	1100	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	232	laborer	A	773	3/22/1993	820	920	3/30/1993	930	1100	Yes	Yes	No	Yes	No
[redacted]	233	sheetmetal	A	773	2/27/1993	1415	1715	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	233	sheetmetal	A	773	2/27/1993	1840	2230	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	233	sheetmetal	A	773	2/28/1993	720	1120	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	233	sheetmetal	A	773	2/26/1993	2300	2345	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	233	sheetmetal	A	773	2/28/1993	720	1120	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	233	steel worker	A	773	2/24/1993	1315	1515	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	233	electrician	A	773	2/24/1993	1400	1600	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	233	electrician	A	773	2/26/1993	1500	1700	2/26/1993	1745	1845	Yes	Yes	No	Yes	No
[redacted]	233	sheetmetal	A	773	2/27/1993	1450	1730	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	233	electrician	A	773	2/21/1993	1545	1700	2/26/1993	1745	1845	Yes	Yes	No	Yes	No
[redacted]	233	electrician	A	773	2/24/1993	1516	1603	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	233	sheetmetal	A	773	2/27/1993	1850	2230	No data	No data	No data	Yes	Yes	No	Yes	No

**ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)**

CTW	SID	Craft	Area	Building	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Pu required	Sr/FP required	Am required	U required	Np required
[redacted]	233	sheetmetal	A	773	2/27/1993	1850	2100	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	233	sheetmetal	A	773	2/28/1993	720	1120	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	233	sheetmetal	A	773	2/27/1993	1850	2230	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	233	sheetmetal	A	773	2/26/1993	800	1200	2/26/1993	1500	1700	Yes	Yes	No	Yes	No
[redacted]	234	laborer	A	773	4/7/1994	900	1100	4/8/1994	945	1100	Yes	Yes	Yes	Yes	No
[redacted]	234	laborer	A	773	4/6/1994	945	1100	4/7/1994	900	1100	Yes	Yes	Yes	Yes	No
[redacted]	235	painter	A	773	1/7/1994	1115	1215	1/7/1994	1250	1345	Yes	Yes	No	Yes	No
[redacted]	236	pipefitter	A	773	11/29/1994	1030	1230	No data	No data	No data	Yes	Yes	Yes	Yes	No
[redacted]	236	laborer	A	773	11/7/1994	910	1145	No data	No data	No data	Yes	Yes	Yes	Yes	No
[redacted]	236	pipefitter	A	773	11/8/1994	800	815	11/8/1994	900	1025	Yes	Yes	Yes	Yes	No
[redacted]	236	carpenter	A	773	11/11/1994	No data	No data	No data	No data	No data	Yes	Yes	Yes	Yes	No
[redacted]	236	pipefitter	A	773	11/7/1994	945	1145	11/7/1994	1440	1555	Yes	Yes	Yes	Yes	No
[redacted]	237	laborer	A	773	8/1/1994	1345	1500	8/2/1994	1345	1445	Yes	Yes	Yes	Yes	No
[redacted]	237	laborer	A	773	8/1/1994	1345	1500	8/2/1994	1345	1445	Yes	Yes	Yes	Yes	No
[redacted]	240	laborer	E	643	3/8/1997	1640	1810	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	240	laborer	E	643	3/8/1997	1640	1815	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	241	boilermaker	E	643	6/17/1997	1030	1130	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	241	boilermaker	E	643	6/17/1997	1030	1130	No data	No data	No data	Yes	Yes	No	No	No
[redacted]	242	pipefitter	F	772	10/19/1992	1430	1530	No data	No data	No data	Yes	Yes	Yes	Yes	No
[redacted]	243	sheetmetal	F	772	1/29/1992	900	1100	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	243	sheetmetal	F	772	1/29/1992	900	1100	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	243	laborer	F	772	1/29/1992	830	1135	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	243	sheetmetal	F	772	1/29/1992	812	1115	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	243	sheetmetal	F	772	1/29/1992	900	1100	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	243	laborer	F	772	1/29/1992	830	1135	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	244	laborer	F	772	10/1/1992	900	1040	10/1/1992	1330	1445	Yes	Yes	Yes	Yes	No
[redacted]	244	carpenter	F	772	10/1/1992	900	1040	10/1/1992	1330	1445	Yes	Yes	Yes	Yes	No
[redacted]	244	carpenter	F	772	10/1/1992	900	1040	10/1/1992	1330	1445	Yes	Yes	Yes	Yes	No
[redacted]	245	carpenter	F	772	9/30/1992	845	945	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	245	carpenter	F	772	9/30/1992	845	945	No data	No data	No data	Yes	Yes	No	Yes	No
[redacted]	246	laborer	F	772	7/26/1994	1330	1630	7/27/1994	1300	1600	Yes	No	No	No	No
[redacted]	246	pipefitter	F	772	7/22/1994	900	1100	7/27/1994	900	1130	Yes	No	No	No	No
[redacted]	246	pipefitter	F	772	7/22/1994	900	1100	7/27/1994	900	1130	Yes	No	No	No	No

ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)

Table C-3. SubCTW required plutonium bioassay, 1990 to 1998.^a

CTW	SID	Craft	Area	Building	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Pu bioassay type	Pu bioassay date	# days since RWP, status
[redacted]	1	millwright	H	241	8/4/1992	1630	1800	8/5/1992	1315	1500	U	11/16/1992	103
[redacted]	1	pipefitter	H	241	8/5/1992	1640	1830	No data	No data	No data	U	4/5/1993	243
[redacted]	1	millwright	H	241	8/5/1992	115	300	8/10/1992	1335	1450	U	1/3/1993	146
[redacted]	1	millwright	H	241	8/10/1992	1335	1450	No data	No data	No data	U	8/6/1993	361
[redacted]	2	laborer	H	241	1/21/1992	930	1130	1/22/1992	1230	1530	U	4/6/1992	75
[redacted]	2	laborer	H	241	1/22/1992	800	1130	1/22/1992	1230	1530	U	10/8/1992	260
[redacted]	2	pipefitter	H	241	1/22/1992	800	1130	1/22/1992	1230	1530	U	8/5/1992	196
[redacted]	2	pipefitter	H	241	1/22/1992	800	1130	No data	No data	No data	U	8/10/1992	201
[redacted]	2	pipefitter	H	241	1/22/1992	800	1130	1/22/1992	1230	1530	U	1/27/1992	5
[redacted]	3	insulator	H	241	1/8/1992	1330	1500	No data	No data	No data	U	5/7/1992	120
[redacted]	4	electrician	H	241	3/9/1992	1430	1500	No data	No data	No data	U	8/12/1992	156
[redacted]	4	carpenter	H	241	3/9/1992	830	1100	3/9/1992	1130	1500	U	12/4/1992	270
[redacted]	4	electrician	H	241	3/9/1992	1430	1500	No data	No data	No data	U	8/12/1992	156
[redacted]	4	carpenter	H	241	3/9/1992	830	1020	3/9/1992	1130	1500	N/A	None	[redacted]
[redacted]	4	carpenter	H	241	3/24/1992	1230	1430	No data	No data	No data	U	1/25/1993	307
[redacted]	4	laborer	H	241	3/24/1992	816	1100	3/24/1992	1230	1500	U	3/24/1992	0
[redacted]	4	sheetmetal	H	241	3/24/1992	830	1100	No data	No data	No data	N/A	None	[redacted]
[redacted]	4	laborer	H	241	3/24/1992	830	1100	3/24/1992	1230	1500	U	3/24/1992	0
[redacted]	4	carpenter	H	241	3/24/1992	815	1100	3/24/1992	1230	1500	U	12/29/1992	280
[redacted]	5	painter	F	772	10/8/1990	1000	1040	No data	No data	No data	U	1/17/1991	101
[redacted]	8	laborer	F	241	10/10/1991	900	1000	No data	No data	No data	U	10/24/1991	14
[redacted]	8	boilermaker	F	241	10/10/1991	900	1140	No data	No data	No data	N/A	None	None
[redacted]	8	laborer	F	241	10/10/1991	900	1000	No data	No data	No data	U	12/18/1991	69
[redacted]	8	laborer	F	241	10/10/1991	900	1000	No data	No data	No data	U	10/18/1991	8
[redacted]	8	ironworker	F	241	10/10/1991	945	1005	No data	No data	No data	U	10/16/1991	6
[redacted]	9	boilermaker	F	241	10/9/1991	1031	1140	No data	No data	No data	U	11/13/1991	35
[redacted]	9	boilermaker	F	241	10/9/1991	1031	1140	No data	No data	No data	U	10/13/1991	4
[redacted]	9	boilermaker	F	241	10/9/1991	1031	1140	No data	No data	No data	N/A	None	[redacted]
[redacted]	9	boilermaker	F	241	10/9/1991	1031	1140	No data	No data	No data	U	11/12/1991	34
[redacted]	11	laborer	H	299	4/18/1991	930	1130	4/18/1991	1230	1530	U	1/14/1992	271
[redacted]	11	carpenter	H	299	4/18/1991	805	1100	No data	No data	No data	U	7/2/1991	75
[redacted]	11	carpenter	H	299	4/18/1991	800	1100	No data	No data	No data	U	12/3/1991	229
[redacted]	11	laborer	H	299	4/18/1991	800	1159	4/23/1991	1230	1530	U	2/18/1992	301
[redacted]	11	laborer	H	299	4/23/1991	1230	1530	No data	No data	No data	U	1/14/1992	266

**ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)**

CTW	SID	Craft	Area	Building	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Pu bioassay type	Pu bioassay date	# days since RWP, status
[redacted]	11	carpenter	H	299	4/23/1991	1230	1530	No data	No data	No data	U	8/13/1991	112
[redacted]	11	carpenter	H	299	4/23/1991	1230	1530	No data	No data	No data	U	5/4/1992	377
[redacted]	12	electrician	A	773	9/24/1991	845	No data	No data	No data	No data	U	1/10/1992	108
[redacted]	12	electrician	A	773	9/24/1991	845	No data	No data	No data	No data	U	4/20/1992	209
[redacted]	12	sheetmetal	A	773	9/24/1991	845	No data	9/24/1991	1455	1515	U	9/16/1992	358
[redacted]	12	sheetmetal	A	773	9/24/1991	845	No data	No data	No data	No data	U	2/7/1992	136
[redacted]	12	sheetmetal	A	773	9/24/1991	845	No data	No data	No data	No data	U	2/1/1992	130
[redacted]	14	laborer	H	241	10/22/1991	900	945	No data	No data	No data	U	3/25/1992	155
[redacted]	14	pipefitter	H	241	10/22/1991	900	945	No data	No data	No data	U	11/14/1991	23
[redacted]	14	pipefitter	H	241	10/22/1991	900	945	No data	No data	No data	U	4/28/1992	189
[redacted]	15	laborer	F	FB-Line	6/16/1991	450	No data	No data	No data	No data	U	9/19/1991	95
[redacted]	15	laborer	F	FB-Line	6/16/1991	450	No data	No data	No data	No data	U	7/1/1991	15
[redacted]	16	carpenter	F	247	7/25/1991	800	915	No data	No data	No data	U	2/10/1992	200
[redacted]	16	carpenter	F	247	7/25/1991	800	915	No data	No data	No data	U	4/30/1992	280
[redacted]	17	laborer	H	241	12/3/1991	800	1100	No data	No data	No data	U	12/4/1991	1
[redacted]	17	millwright	H	241	12/3/1991	900	1015	12/11/1991	920	1015	U	12/11/1992	366
[redacted]	17	laborer	H	241	12/3/1991	800	1100	12/27/1991	800	1100	U	3/24/1992	88
[redacted]	17	millwright	H	241	12/3/1991	900	1015	No data	No data	No data	U	8/20/1992	261
[redacted]	17	millwright	H	241	12/3/1991	900	1015	No data	No data	No data	U	5/2/1992	151
[redacted]	17	millwright	H	241	12/11/1991	920	1015	12/19/1991	800	930	U	2/7/1992	50
[redacted]	17	carpenter	H	241	12/13/1991	945	1130	No data	No data	No data	U	12/4/1992	357
[redacted]	17	carpenter	H	241	12/13/1991	940	1130	No data	No data	No data	U	12/29/1992	382
[redacted]	17	carpenter	H	241	12/18/1991	900	1030	12/13/1991	945	1130	U	8/19/1992	250
[redacted]	17	laborer	H	241	12/18/1991	900	1100	No data	No data	No data	U	4/24/1992	128
[redacted]	17	laborer	H	241	12/19/1991	800	1100	No data	No data	No data	U	1/29/1992	41
[redacted]	17	pipefitter	H	241	12/20/1991	900	1030	No data	No data	No data	U	7/13/1992	206
[redacted]	17	millwright	H	241	12/20/1991	900	1100	No data	No data	No data	U	2/9/1992	51
[redacted]	17	pipefitter	H	241	12/23/1991	830	1130	No data	No data	No data	U	10/9/1992	291
[redacted]	17	sheetmetal	H	241	12/23/1991	1045	1130	No data	No data	No data	U	2/10/1992	49
[redacted]	17	pipefitter	H	241	12/23/1991	830	1000	No data	No data	No data	U	2/20/1992	59
[redacted]	17	pipefitter	H	241	12/23/1991	830	1130	No data	No data	No data	U	1/27/1992	35
[redacted]	17	carpenter	H	241	12/26/1991	1030	1130	No data	No data	No data	U	5/11/1992	137
[redacted]	17	carpenter	H	241	12/27/1991	1300	1430	No data	No data	No data	U	2/20/1992	55
[redacted]	17	carpenter	H	241	12/27/1991	1300	1430	No data	No data	No data	N/A	None	[redacted]
[redacted]	20	pipefitter	A	773	11/21/1991	900	1200	No data	No data	No data	U	8/20/1992	273

ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)

CTW	SID	Craft	Area	Building	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Pu bioassay type	Pu bioassay date	# days since RWP, status
[redacted]	20	pipefitter	A	773	11/21/1991	900	1503	No data	No data	No data	U	12/27/1991	36
[redacted]	21	laborer	A	773	12/12/1991	900	1500	No data	No data	No data	N/A	None	[redacted]
[redacted]	21	laborer	A	773	12/12/1991	900	1100	No data	No data	No data	U	9/9/1992	272
[redacted]	22	laborer	H	OBL	10/12/1992	2030	2300	10/14/1992	2020	2305	C	10/23/1992	9
[redacted]	22	laborer	H	OBL	10/12/1992	2030	2300	10/26/1992	2000	2300	U	11/24/1992	29
[redacted]	22	laborer	H	OBL	10/14/1992	2030	2330	No data	No data	No data	U	9/10/1993	331
[redacted]	22	electrician	H	OBL	10/20/1992	1530	1730	No data	No data	No data	U	1/11/1993	83
[redacted]	22	laborer	H	OBL	10/20/1992	1330	1730	No data	No data	No data	U	11/10/1992	21
[redacted]	22	laborer	H	OBL	10/20/1992	800	1100	10/20/1992	1330	1730	U	1/19/1993	91
[redacted]	22	laborer	H	OBL	10/20/1992	800	1000	No data	No data	No data	U	12/11/1992	52
[redacted]	22	laborer	H	OBL	10/20/1992	1330	1730	No data	No data	No data	U	1/9/1993	81
[redacted]	22	laborer	H	OBL	10/26/1992	2000	2300	No data	No data	No data	U	11/11/1992	16
[redacted]	23	insulator	A	773	1/10/1992	920	1000	No data	No data	No data	U	11/9/1993	669
[redacted]	23	insulator	A	773	1/10/1992	920	1000	No data	No data	No data	U	4/25/1992	106
[redacted]	25	laborer	H	OBL	1/18/1993	2030	2145	No data	No data	No data	U	2/5/1993	18
[redacted]	30	laborer	H	221	1/14/1992	845	1030	1/14/1992	1235	1500	U	1/14/1992	0
[redacted]	30	carpenter	H	221	1/14/1992	830	1030	1/14/1992	1330	1430	U	1/31/1992	17
[redacted]	30	laborer	H	221	1/14/1992	845	1030	1/14/1992	1330	1500	U	9/3/1992	233
[redacted]	30	carpenter	H	221	1/14/1992	830	1030	No data	No data	No data	U	3/10/1992	56
[redacted]	30	carpenter	H	221	1/14/1992	1330	1430	No data	No data	No data	U	3/10/1992	56
[redacted]	30	electrician	H	221	1/23/1992	1010	1100	No data	No data	No data	U	3/9/1992	46
[redacted]	30	electrician	H	221	1/23/1992	1010	1100	No data	No data	No data	U	3/9/1992	46
[redacted]	31	pipefitter	H	221	3/25/1992	1645	1845	No data	No data	No data	N/A	None	[redacted]
[redacted]	31	pipefitter	H	221	3/25/1992	1645	1845	No data	No data	No data	U	5/8/1992	44
[redacted]	32	pipefitter	F	221	4/1/1992	1040	1115	4/1/1992	1345	1450	U	8/12/1992	133
[redacted]	32	painter	F	221	4/1/1992	1000	1120	4/1/1992	1305	1410	U	7/22/1992	112
[redacted]	33	painter	F	221	1/14/1992	1715	1830	No data	No data	No data	U	3/5/1992	51
[redacted]	34	painter	F	FB-Line	4/16/1992	915	1110	4/28/1992	1325	1355	U	7/22/1992	85
[redacted]	34	sheetmetal	F	FB-Line	4/16/1992	915	1110	4/28/1992	1320	1440	U	9/11/1992	136
[redacted]	34	sheetmetal	F	FB-Line	4/21/1992	35	1120	4/24/1992	955	1110	U	6/7/1992	44
[redacted]	34	sheetmetal	F	FB-Line	4/28/1992	830	1020	4/28/1992	1400	1430	U	6/11/1992	44
[redacted]	35	pipefitter	H	OBL	7/16/1992	900	1030	No data	No data	No data	U	1/11/1993	179
[redacted]	35	pipefitter	H	OBL	7/21/1992	2030	2300	No data	No data	No data	U	7/7/1993	351
[redacted]	35	laborer	H	OBL	7/21/1992	2030	2300	No data	No data	No data	U	11/24/1992	126
[redacted]	35	pipefitter	H	OBL	7/21/1992	2030	2300	No data	No data	No data	U	12/22/1992	154

Document No. ORAUT-RPRT-0092 Revision No. 00 Effective Date: 06/14/2019 Page 99 of 188

**ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)**

CTW	SID	Craft	Area	Building	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Pu bioassay type	Pu bioassay date	# days since RWP, status
[redacted]	36	electrician	H	221	10/29/1992	900	1130	10/29/1992	1300	1500	U	4/1/1993	154
[redacted]	36	electrician	H	221	10/29/1992	900	1130	10/29/1992	1300	1500	U	12/8/1992	40
[redacted]	37	insulator	H	221	8/6/1992	800	1500	8/7/1992	1300	1500	U	10/25/1992	79
[redacted]	37	insulator	H	221	8/7/1992	1300	1500	8/12/1992	1300	1500	U	3/8/1993	208
[redacted]	37	insulator	H	221	8/7/1992	1300	1500	8/12/1992	1300	1500	U	9/9/1992	28
[redacted]	37	laborer	H	221	8/12/1992	1300	1500	No data	No data	No data	U	8/31/1992	19
[redacted]	38	millwright	F	221	7/21/1992	955	1100	7/22/1992	830	1000	U	8/25/1992	34
[redacted]	38	millwright	F	221	7/22/1992	830	1000	7/24/1992	905	1130	U	11/24/1992	123
[redacted]	38	electrician	F	221	7/23/1992	915	1045	No data	No data	No data	U	7/31/1992	8
[redacted]	38	electrician	F	221	7/23/1992	915	1045	No data	No data	No data	U	2/8/1993	200
[redacted]	39	insulator	H	211	10/22/1992	1300	1445	10/23/1992	800	1500	U	11/9/1992	17
[redacted]	39	insulator	H	211	10/22/1992	1300	1445	10/23/1992	800	1500	U	11/5/1992	13
[redacted]	40	carpenter	H	211	10/27/1992	1340	1400	No data	No data	No data	U	1/19/1993	84
[redacted]	41	pipefitter	F	221	12/18/1992	1100	1145	No data	No data	No data	U	12/22/1992	4
[redacted]	41	pipefitter	F	221	12/23/1992	1005	1120	No data	No data	No data	U	5/7/1993	135
[redacted]	42	ironworker	H	OBL	2/2/1993	230	330	No data	No data	No data	U	6/21/1993	139
[redacted]	42	ironworker	H	OBL	2/2/1993	230	330	2/8/1993	2100	2400	U	2/26/1993	18
[redacted]	43	sheetmetal	H	OBL	3/16/1993	915	1130	3/22/1993	1425	1630	U	4/23/1993	32
[redacted]	43	sheetmetal	H	OBL	3/16/1993	1500	1700	3/18/1993	1500	1800	U	11/24/1993	251
[redacted]	43	sheetmetal	H	OBL	3/17/1993	940	1200	3/18/1993	900	1130	U	4/6/1993	19
[redacted]	43	sheetmetal	H	OBL	3/18/1993	900	1130	No data	No data	No data	U	7/12/1993	116
[redacted]	43	sheetmetal	H	OBL	3/18/1993	900	1130	3/22/1993	830	1145	C	3/13/1998	1817
[redacted]	43	sheetmetal	H	OBL	3/22/1993	830	1145	No data	No data	No data	U	4/30/1993	39
[redacted]	43	ironworker	H	OBL	3/22/1993	1400	1630	No data	No data	No data	U	6/21/1993	91
[redacted]	43	laborer	H	OBL	3/22/1993	1405	1805	No data	No data	No data	U	5/10/1993	49
[redacted]	43	ironworker	H	OBL	3/22/1993	1400	1630	No data	No data	No data	U	6/23/1993	93
[redacted]	43	carpenter	H	OBL	3/22/1993	1630	1700	No data	No data	No data	U	4/6/1993	15
[redacted]	43	ironworker	H	OBL	3/22/1993	1700	1800	No data	No data	No data	U	11/5/1993	228
[redacted]	43	ironworker	H	OBL	3/22/1993	1425	1630	No data	No data	No data	N/A	None	[redacted]
[redacted]	43	laborer	H	OBL	3/22/1993	1405	1805	No data	No data	No data	U	11/9/1993	232
[redacted]	44	sheetmetal	H	OBL	4/6/1993	830	1030	No data	No data	No data	U	4/30/1993	24
[redacted]	44	carpenter	H	OBL	4/6/1993	830	1030	No data	No data	No data	U	4/6/1993	0
[redacted]	44	carpenter	H	OBL	4/8/1993	1400	1700	4/13/1993	1100	1230	U	6/14/1993	62
[redacted]	44	carpenter	H	OBL	4/8/1993	900	1030	No data	No data	No data	U	8/23/1993	137
[redacted]	44	carpenter	H	OBL	4/8/1993	900	1100	4/8/1993	1400	1700	U	7/7/1993	90

ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)

CTW	SID	Craft	Area	Building	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Pu bioassay type	Pu bioassay date	# days since RWP, status
[redacted]	44	carpenter	H	OBL	4/8/1993	1400	1600	No data	No data	No data	U	5/4/1993	26
[redacted]	44	carpenter	H	OBL	4/13/1993	1100	1235	No data	No data	No data	U	7/13/1993	91
[redacted]	45	laborer	H	OBL	1/25/1993	2130	2330	No data	No data	No data	U	3/5/1993	39
[redacted]	45	laborer	H	OBL	1/25/1993	2130	2330	No data	No data	No data	U	2/4/1993	10
[redacted]	45	sheetmetal	H	OBL	1/26/1993	300	530	No data	No data	No data	U	3/9/1993	42
[redacted]	45	laborer	H	OBL	1/26/1993	300	530	No data	No data	No data	U	3/28/1993	61
[redacted]	45	electrician	H	OBL	1/27/1993	1400	1630	No data	No data	No data	U	2/8/1993	12
[redacted]	45	electrician	H	OBL	1/27/1993	1400	1630	No data	No data	No data	U	3/8/1993	40
[redacted]	46	laborer	H	OBL	2/10/1993	1000	1200	No data	No data	No data	U	4/13/1993	62
[redacted]	46	laborer	H	OBL	2/10/1993	1400	1600	No data	No data	No data	U	12/14/1993	307
[redacted]	46	laborer	H	OBL	2/10/1993	1000	1200	No data	No data	No data	U	4/5/1993	54
[redacted]	47	laborer	E	643	2/4/1993	1110	1135	No data	No data	No data	U	10/14/1993	252
[redacted]	47	boilermaker	E	643	2/4/1993	1030	1125	No data	No data	No data	U	2/5/1993	1
[redacted]	49	boilermaker	E	643	6/17/1993	No data	No data	No data	No data	No data	U	6/10/1994	358
[redacted]	49	boilermaker	E	643	6/17/1993	No data	No data	No data	No data	No data	U	10/11/1993	116
[redacted]	57	ironworker	F	247	6/4/1993	930	1130	6/4/1993	845	1100	U	10/31/1993	149
[redacted]	57	ironworker	F	247	6/4/1993	930	1130	6/9/1993	845	1100	C	9/7/1993	90
[redacted]	57	ironworker	F	247	6/11/1993	925	1130	6/11/1993	1250	1500	N/A	None	None
[redacted]	57	steel worker	F	247	6/18/1993	900	1130	6/18/1993	1330	1440	U	2/7/1994	234
[redacted]	57	concrete	F	247	6/23/1993	1000	1130	6/23/1993	1300	1345	U	12/14/1993	174
[redacted]	59	laborer	F	241	10/8/1993	1000	1125	No data	No data	No data	U	11/10/1994	398
[redacted]	59	laborer	F	241	10/22/1993	1100	1400	10/23/1993	810	1105	N/A	None	[redacted]
[redacted]	59	insulator	F	241	10/22/1993	1100	1400	10/23/1993	810	1105	U	4/5/1994	164
[redacted]	59	insulator	F	241	10/22/1993	1100	1400	10/23/1993	810	1105	U	12/8/1993	46
[redacted]	59	insulator	F	241	10/23/1993	810	1050	No data	No data	No data	U	2/1/1994	101
[redacted]	64	sheetmetal	H	OBL	7/1/1993	1400	1645	No data	No data	No data	U	10/11/1993	102
[redacted]	64	laborer	H	OBL	7/1/1993	1400	1645	No data	No data	No data	U	8/10/1993	40
[redacted]	64	sheetmetal	H	OBL	7/1/1993	1400	1645	7/8/1993	1420	1730	U	10/14/1993	98
[redacted]	64	sheetmetal	H	OBL	7/1/1993	1400	1645	No data	No data	No data	U	7/13/1993	12
[redacted]	64	laborer	H	OBL	7/6/1993	800	1130	No data	No data	No data	C	3/15/1994	252
[redacted]	64	sheetmetal	H	OBL	7/6/1993	800	1130	No data	No data	No data	U	8/31/1993	56
[redacted]	64	sheetmetal	H	OBL	7/8/1993	1420	1730	No data	No data	No data	U	9/8/1993	62
[redacted]	64	sheetmetal	H	OBL	7/8/1993	1415	1730	No data	No data	No data	U	9/8/1993	62
[redacted]	64	sheetmetal	H	OBL	7/8/1993	800	900	No data	No data	No data	U	7/12/1993	4
[redacted]	65	electrician	H	OBL	6/7/1993	1600	1700	6/8/1993	930	1100	U	9/7/1993	91

Document No. ORAUT-RPRT-0092 Revision No. 00 Effective Date: 06/14/2019 Page 101 of 188

**ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)**

CTW	SID	Craft	Area	Building	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Pu bioassay type	Pu bioassay date	# days since RWP, status
[redacted]	65	electrician	H	OBL	6/8/1993	1015	1100	6/21/1993	930	1130	U	9/7/1993	78
[redacted]	65	electrician	H	OBL	6/21/1993	930	1130	No data	No data	No data	U	9/22/1993	93
[redacted]	66	pipefitter	H	221	7/7/1993	1330	1500	7/9/1993	815	1145	U	12/15/1993	159
[redacted]	66	pipefitter	H	221	7/7/1993	1330	1500	7/27/1993	930	1130	U	2/9/1994	197
[redacted]	66	pipefitter	H	221	7/7/1993	1330	1500	No data	No data	No data	U	1/17/1994	194
[redacted]	66	carpenter	H	221	7/12/1993	900	1150	No data	No data	No data	N/A	None	[redacted]
[redacted]	66	laborer	H	221	7/12/1993	800	1130	7/27/1993	1300	1500	U	10/6/1993	71
[redacted]	66	carpenter	H	221	7/12/1993	900	1130	No data	No data	No data	U	4/5/1994	267
[redacted]	66	laborer	H	221	7/27/1993	900	1130	No data	No data	No data	U	8/17/1993	21
[redacted]	67	laborer	H	221	11/24/1993	830	1530	No data	No data	No data	U	1/5/1994	42
[redacted]	67	carpenter	H	221	11/24/1993	900	1015	No data	No data	No data	U	1/10/1994	47
[redacted]	67	carpenter	H	221	11/24/1993	800	1015	No data	No data	No data	U	2/2/1994	70
[redacted]	67	laborer	H	221	11/24/1993	830	1145	11/24/1993	1345	1600	U	5/3/1994	160
[redacted]	67	laborer	H	221	11/24/1993	830	1145	11/24/1993	1345	1600	U	2/9/1994	77
[redacted]	68	carpenter	H	OBL	12/2/1993	1000	1030	No data	No data	No data	U	3/4/1994	92
[redacted]	68	insulator	H	OBL	12/6/1993	1300	1615	No data	No data	No data	U	5/4/1994	149
[redacted]	68	painter	H	OBL	12/6/1993	1000	1130	No data	No data	No data	U	5/3/1994	148
[redacted]	68	laborer	H	OBL	12/6/1993	1000	1130	12/9/1993	830	1000	U	3/7/1994	88
[redacted]	68	carpenter	H	OBL	12/6/1993	1000	1130	No data	No data	No data	U	7/15/1996	952
[redacted]	68	laborer	H	OBL	12/6/1993	1000	1130	No data	No data	No data	U	1/3/1994	28
[redacted]	68	insulator	H	OBL	12/6/1993	930	1113	No data	No data	No data	U	3/7/1994	91
[redacted]	68	carpenter	H	OBL	12/6/1993	1000	1130	No data	No data	No data	U	1/19/1994	44
[redacted]	69	ironworker	F	outside	11/4/1993	1400	1530	No data	No data	No data	U	1/9/1994	66
[redacted]	69	electrician	F	outside	11/4/1993	1345	1415	No data	No data	No data	N/A	None	None
[redacted]	69	ironworker	F	outside	11/4/1993	1400	1530	11/10/1993	900	1130	U	4/12/1994	153
[redacted]	69	ironworker	F	outside	11/10/1993	900	1130	11/10/1993	1330	1530	U	12/13/1993	33
[redacted]	71	laborer	H	221	1/4/1994	1330	1530	1/5/1994	915	1030	U	4/15/1994	100
[redacted]	71	laborer	H	221	1/4/1994	1530	1600	No data	No data	No data	U	5/3/1994	119
[redacted]	71	laborer	H	221	1/4/1994	1330	1600	1/5/1994	915	1030	U	7/26/1994	202
[redacted]	71	electrician	H	221	1/4/1994	900	1300	1/4/1994	1330	1600	U	5/11/1994	127
[redacted]	71	electrician	H	221	1/4/1994	1330	1600	1/5/1994	915	1030	U	5/11/1994	126
[redacted]	72	pipefitter	H	221	2/9/1994	2215	2245	No data	No data	No data	U	2/12/1994	3
[redacted]	73	pipefitter	H	281	10/7/1994	1410	1730	No data	No data	No data	U	9/14/1995	342
[redacted]	73	pipefitter	H	281	10/7/1994	1420	1730	No data	No data	No data	U	2/6/1995	122
[redacted]	74	laborer	F	281	5/6/1994	1000	1245	No data	No data	No data	U	9/8/1994	125

**ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)**

CTW	SID	Craft	Area	Building	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Pu bioassay type	Pu bioassay date	# days since RWP, status
[redacted]	74	laborer	F	281	5/6/1994	900	1000	5/12/1994	1030	1300	U	9/8/1994	119
[redacted]	74	laborer	F	281	5/9/1994	1100	1200	No data	No data	No data	U	6/27/1994	49
[redacted]	75	pipefitter	F	772	4/12/1994	800	1000	4/14/1994	800	1015	U	5/3/1994	19
[redacted]	75	pipefitter	F	772	4/12/1994	800	1000	No data	No data	No data	U	10/14/1994	185
[redacted]	75	pipefitter	F	772	4/12/1994	800	1000	4/14/1994	800	1015	U	9/1/1994	140
[redacted]	75	laborer	F	772	4/29/1994	830	1030	No data	No data	No data	U	11/7/1994	192
[redacted]	78	laborer	Z	451	5/16/1994	1030	1145	No data	No data	No data	N/A	None	None
[redacted]	78	laborer	Z	451	5/16/1994	1030	1145	No data	No data	No data	N/A	None	None
[redacted]	78	sheetmetal	Z	451	5/17/1994	1330	1420	5/18/1994	830	945	U	3/16/1996	668
[redacted]	78	sheetmetal	Z	451	5/17/1994	1330	1420	5/18/1994	830	945	U	7/5/1995	413
[redacted]	78	sheetmetal	Z	451	5/17/1994	1330	1420	5/18/1994	830	945	U	5/3/1996	716
[redacted]	79	sheetmetal	Z	451	12/1/1994	1330	1430	No data	No data	No data	U	5/3/1996	519
[redacted]	79	laborer	Z	451	12/6/1994	830	1115	12/6/1994	1300	1400	N/A	None	[redacted]
[redacted]	79	sheetmetal	Z	451	12/6/1994	830	1115	12/6/1994	1300	1400	U	10/10/1995	308
[redacted]	80	sheetmetal	Z	451	9/15/1994	950	1415	9/27/1994	1030	1130	U	1/16/1995	111
[redacted]	80	laborer	Z	451	9/15/1994	1316	1330	9/28/1994	940	1145	N/A	None	[redacted]
[redacted]	80	sheetmetal	Z	451	9/15/1994	950	1415	9/27/1994	1030	1130	U	12/29/1995	458
[redacted]	80	laborer	Z	451	9/20/1994	845	1129	9/27/1994	1230	1500	N/A	None	[redacted]
[redacted]	80	laborer	Z	451	9/22/1994	830	1130	9/27/1994	1030	1130	N/A	None	[redacted]
[redacted]	80	laborer	Z	451	9/27/1994	740	1000	9/27/1994	1030	1130	N/A	None	[redacted]
[redacted]	82	sheetmetal	Z	704	3/12/1994	1600	1800	No data	No data	No data	U	8/8/1994	149
[redacted]	82	laborer	Z	704	3/12/1994	800	900	3/12/1994	1600	1700	N/A	None	[redacted]
[redacted]	82	pipefitter	Z	704	3/12/1994	745	1445	No data	No data	No data	U	4/6/1994	25
[redacted]	82	carpenter	Z	704	3/12/1994	745	810	3/13/1994	1000	1715	N/A	None	[redacted]
[redacted]	82	sheetmetal	Z	704	3/12/1994	745	810	3/13/1994	1000	1715	N/A	None	[redacted]
[redacted]	82	carpenter	Z	704	3/12/1994	1600	1650	No data	No data	No data	U	7/10/1995	485
[redacted]	82	pipefitter	Z	704	3/12/1994	802	851	No data	No data	No data	C	6/19/1997	1195
[redacted]	82	pipefitter	Z	704	3/12/1994	745	1445	No data	No data	No data	U	4/12/1994	31
[redacted]	82	sheetmetal	Z	704	3/12/1994	1400	1715	3/13/1994	830	955	U	5/3/1996	782
[redacted]	82	pipefitter	Z	704	3/12/1994	745	1445	No data	No data	No data	U	8/7/1995	513
[redacted]	82	sheetmetal	Z	704	3/13/1994	830	855	3/13/1994	1000	1715	U	12/15/1994	277
[redacted]	82	sheetmetal	Z	704	3/13/1994	830	1230	No data	No data	No data	U	1/10/1995	303
[redacted]	82	sheetmetal	Z	704	3/13/1994	830	1130	3/13/1994	1400	1715	N/A	None	[redacted]
[redacted]	82	laborer	Z	704	3/13/1994	1030	1130	No data	No data	No data	U	7/15/1994	124
[redacted]	82	carpenter	Z	704	3/13/1994	830	1000	3/13/1994	1030	1130	U	8/8/1994	148

Document No. ORAUT-RPRT-0092 Revision No. 00 Effective Date: 06/14/2019 Page 103 of 188

ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)

CTW	SID	Craft	Area	Building	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Pu bioassay type	Pu bioassay date	# days since RWP, status
[redacted]	83	pipefitter	Z	210	3/15/1994	1820	1910	No data	No data	No data	U	4/30/1994	46
[redacted]	83	pipefitter	Z	210	3/16/1994	1630	1910	No data	No data	No data	U	10/9/1996	938
[redacted]	83	pipefitter	Z	210	3/18/1994	1328	1755	No data	No data	No data	U	6/3/1996	808
[redacted]	83	pipefitter	Z	210	3/18/1994	1700	1755	No data	No data	No data	U	9/11/1996	908
[redacted]	83	pipefitter	Z	210	3/18/1994	1328	1755	No data	No data	No data	U	4/5/1994	18
[redacted]	84	boilermaker	E	643	2/17/1994	930	1500	No data	No data	No data	U	8/9/1994	173
[redacted]	84	boilermaker	E	643	2/17/1994	930	1500	2/22/1994	1000	1145	N/A	None	[redacted]
[redacted]	84	boilermaker	E	643	2/17/1994	930	1500	No data	No data	No data	U	12/6/1995	657
[redacted]	84	carpenter	E	643	2/22/1994	1000	1130	No data	No data	No data	N/A	None	[redacted]
[redacted]	84	laborer	E	643	2/22/1994	1000	1130	No data	No data	No data	N/A	None	[redacted]
[redacted]	84	boilermaker	E	643	2/22/1994	1030	1130	No data	No data	No data	U	7/26/1994	154
[redacted]	85	laborer	E	643	8/2/1994	815	1000	No data	No data	No data	U	2/2/1995	184
[redacted]	88	BSRI	E	643	11/1/1994	900	945	No data	No data	No data	N/A	None	None
[redacted]	90	laborer	E	230	12/28/1994	1330	1430	12/29/1994	1425	1510	U	8/14/1995	228
[redacted]	90	carpenter	E	230	12/28/1994	1030	1130	No data	No data	No data	U	3/6/1995	68
[redacted]	90	carpenter	E	230	12/28/1994	1030	1635	12/29/1994	1300	1635	U	2/10/1995	43
[redacted]	90	carpenter	E	230	12/29/1994	1300	1615	No data	No data	No data	U	5/15/1995	137
[redacted]	91	carpenter	E	643	2/24/1994	1000	1200	No data	No data	No data	N/A	None	None
[redacted]	91	laborer	E	643	2/24/1994	1000	1200	No data	No data	No data	N/A	None	None
[redacted]	92	electrician	H	221	12/28/1994	930	1130	No data	No data	No data	U	1/10/1995	13
[redacted]	92	laborer	H	221	12/28/1994	930	1145	No data	No data	No data	C	3/16/1995	78
[redacted]	92	laborer	H	221	12/29/1994	930	1330	No data	No data	No data	U	1/16/1995	18
[redacted]	92	laborer	H	221	12/29/1994	930	1400	No data	No data	No data	U	4/20/1995	112
[redacted]	93	carpenter	H	221	1/23/1995	900	1130	1/23/1995	1235	1635	U	3/6/1995	42
[redacted]	93	carpenter	H	221	1/23/1995	800	1100	No data	No data	No data	U	4/10/1995	77
[redacted]	93	carpenter	H	221	1/23/1995	800	1100	No data	No data	No data	U	2/13/1995	21
[redacted]	93	carpenter	H	221	1/23/1995	900	1130	1/23/1995	1235	1635	U	5/9/1995	106
[redacted]	94	laborer	H	221	6/13/1995	1100	1200	No data	No data	No data	U	2/14/1996	246
[redacted]	94	laborer	H	221	6/13/1995	1100	1200	No data	No data	No data	U	12/19/1995	189
[redacted]	94	laborer	H	221	6/13/1995	1100	1200	No data	No data	No data	U	7/10/1995	27
[redacted]	94	laborer	H	221	6/13/1995	1100	1200	No data	No data	No data	U	11/20/1995	160
[redacted]	97	carpenter	F	FB-Line	12/8/1998	1330	1430	No data	No data	No data	U	11/2/1999	329
[redacted]	97	carpenter	F	FB-Line	12/11/1998	1015	1115	No data	No data	No data	U	3/19/1999	98
[redacted]	97	carpenter	F	FB-Line	12/11/1998	1015	1115	12/11/1998	1500	1530	C	11/8/1999	332
[redacted]	98	pipefitter	F	FB-Line	12/9/1998	1400	1450	No data	No data	No data	U	10/21/1999	316

Document No. ORAUT-RPRT-0092 Revision No. 00 Effective Date: 06/14/2019 Page 104 of 188

**ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)**

CTW	SID	Craft	Area	Building	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Pu bioassay type	Pu bioassay date	# days since RWP, status
[redacted]	99	painter	F	FB-Line	10/8/1997	830	1000	No data	No data	No data	U	2/5/1998	120
[redacted]	100	electrician	F	221	12/27/1997	800	925	No data	No data	No data	U	4/9/1998	103
[redacted]	100	electrician	F	221	12/27/1997	800	925	No data	No data	No data	U	3/18/1998	81
[redacted]	101	carpenter	H	211	11/24/1998	1315	1515	No data	No data	No data	U	4/20/1999	147
[redacted]	102	laborer	F	294	7/18/1995	230	530	No data	No data	No data	U	12/19/1995	154
[redacted]	102	laborer	F	294	7/18/1995	1000	1200	7/18/1995	1400	1500	U	3/5/1996	231
[redacted]	102	laborer	F	294	7/18/1995	1000	1200	No data	No data	No data	U	8/15/1995	28
[redacted]	102	laborer	F	294	7/18/1995	1000	1200	No data	No data	No data	N/A	None	[redacted]
[redacted]	102	laborer	F	294	7/18/1995	1000	1200	No data	No data	No data	U	9/13/1995	57
[redacted]	102	laborer	F	294	7/18/1995	230	530	No data	No data	No data	U	9/12/1995	56
[redacted]	103	sheetmetal	F	292	7/18/1995	1420	1520	No data	No data	No data	U	3/13/1996	239
[redacted]	103	sheetmetal	F	292	7/18/1995	1420	1524	No data	No data	No data	U	9/14/1995	58
[redacted]	103	sheetmetal	F	292	7/19/1995	945	1100	7/19/1995	1315	1530	U	8/15/1995	27
[redacted]	103	sheetmetal	F	292	7/19/1995	900	1100	7/19/1995	1315	1537	U	9/18/1995	61
[redacted]	103	sheetmetal	F	292	7/20/1995	1630	1800	No data	No data	No data	U	10/10/1995	82
[redacted]	104	laborer	F	FA-Line	8/2/1995	1030	1114	No data	No data	No data	U	11/20/1995	110
[redacted]	104	laborer	F	FA-Line	8/2/1995	1030	1115	No data	No data	No data	U	9/12/1995	41
[redacted]	105	millwright	F	235	6/22/1995	915	925	No data	No data	No data	U	8/14/1995	53
[redacted]	106	pipefitter	F	235	3/8/1995	1500	1600	3/13/1995	910	1000	U	7/26/1995	135
[redacted]	106	carpenter	F	235	3/8/1995	1500	1600	No data	No data	No data	U	4/10/1995	33
[redacted]	106	concrete	F	235	3/9/1995	930	1045	3/22/1995	910	1100	U	5/13/1995	52
[redacted]	106	laborer	F	235	3/13/1995	415	1045	3/13/1995	1330	1430	U	6/12/1995	91
[redacted]	106	millwright	F	235	3/16/1995	800	1115	3/16/1995	1330	1640	U	1/7/1997	663
[redacted]	106	laborer	F	235	3/27/1995	850	1115	3/27/1995	1300	1530	U	9/15/1995	172
[redacted]	106	electrician	F	235	3/27/1995	1315	1530	No data	No data	No data	U	9/7/1995	164
[redacted]	106	laborer	F	235	3/27/1995	800	1115	3/27/1995	1300	1535	U	6/13/1995	78
[redacted]	107	carpenter	F	221	2/23/1995	1315	1445	2/27/1995	900	1100	N/A	None	[redacted]
[redacted]	107	laborer	F	221	2/23/1995	1330	1445	2/27/1995	1315	1430	N/A	None	[redacted]
[redacted]	107	carpenter	F	221	2/23/1995	1315	1445	No data	No data	No data	U	7/20/1995	147
[redacted]	107	carpenter	F	221	2/27/1995	1025	1100	No data	No data	No data	U	6/13/1995	106
[redacted]	107	laborer	F	221	2/27/1995	1315	1430	No data	No data	No data	U	4/18/1995	50
[redacted]	108	carpenter	F	221	9/17/1997	1000	1110	9/17/1997	1230	1500	U	10/2/1997	15
[redacted]	108	laborer	F	221	9/17/1997	1000	1115	9/17/1997	1330	1500	U	11/24/1998	433
[redacted]	108	pipefitter	F	221	9/18/1997	1015	1215	9/18/1997	1430	1730	U	10/6/1997	18
[redacted]	108	pipefitter	F	221	9/18/1997	1015	1215	9/18/1997	1430	1730	U	1/12/1998	116

**ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)**

CTW	SID	Craft	Area	Building	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Pu bioassay type	Pu bioassay date	# days since RWP, status
[redacted]	108	pipefitter	F	221	9/18/1997	1530	1730	No data	No data	No data	U	10/6/1997	18
[redacted]	108	laborer	F	221	9/26/1997	1315	1415	9/30/1997	1000	1200	U	2/9/1998	132
[redacted]	108	laborer	F	221	9/29/1997	1330	1600	9/30/1997	1000	1200	U	2/9/1998	132
[redacted]	108	insulator	F	221	9/29/1997	1330	1600	9/30/1997	1000	1200	U	11/3/1997	34
[redacted]	109	laborer	F	221	1/8/1998	930	1100	1/29/1998	915	1045	U	3/18/1998	48
[redacted]	109	laborer	F	221	1/13/1998	930	1120	1/13/1998	1330	1440	U	2/9/1998	27
[redacted]	113	painter	F	211	4/8/1998	910	1115	4/8/1998	1330	1530	U	8/12/1998	126
[redacted]	113	painter	F	221	4/8/1998	910	1115	4/8/1998	1330	1530	N/A	None	[redacted]
[redacted]	113	painter	F	221	4/8/1998	910	1100	4/8/1998	1330	1530	N/A	None	[redacted]
[redacted]	113	painter	F	221	4/8/1998	910	1115	4/8/1998	1330	1530	N/A	None	[redacted]
[redacted]	113	painter	F	221	4/28/1998	915	1115	4/29/1998	900	1130	U	8/26/1998	119
[redacted]	113	painter	F	221	4/28/1998	900	1015	4/28/1998	1315	1530	U	8/10/1998	104
[redacted]	113	painter	F	221	4/28/1998	900	1015	4/28/1998	1315	1530	N/A	None	[redacted]
[redacted]	114	boilermaker	H	221	1/4/1996	800	1100	1/23/1996	900	1100	U	2/8/1996	16
[redacted]	114	boilermaker	H	221	1/24/1996	800	1000	No data	No data	No data	U	4/15/1996	82
[redacted]	115	boilermaker	H	221	4/17/1996	730	1100	No data	No data	No data	U	10/8/1996	174
[redacted]	116	pipefitter	F	241	8/19/1996	1400	1500	8/20/1996	1030	1115	U	2/11/1997	175
[redacted]	116	pipefitter	F	241	8/19/1996	1410	1500	No data	No data	No data	U	9/9/1996	21
[redacted]	116	pipefitter	F	241	8/20/1996	1030	1115	No data	No data	No data	U	9/6/1996	17
[redacted]	117	pipefitter	H	221	2/5/1996	1430	1630	No data	No data	No data	N/A	None	Waived
[redacted]	117	pipefitter	H	221	2/5/1996	1430	1630	No data	No data	No data	N/A	None	None
[redacted]	118	pipefitter	H	221	4/1/1996	1030	1500	4/2/1996	915	1345	N/A	None	Waived
[redacted]	118	pipefitter	H	221	4/1/1996	1030	1530	No data	No data	No data	N/A	None	None
[redacted]	118	pipefitter	H	221	4/2/1996	910	1415	No data	No data	No data	U	8/5/1996	125
[redacted]	118	laborer	H	221	4/2/1996	915	1200	4/2/1996	1345	1515	U	8/5/1996	125
[redacted]	118	insulator	H	221	4/2/1996	1345	1530	No data	No data	No data	U	9/9/1996	160
[redacted]	120	electrician	H	221	1/5/1995	1400	1545	1/11/1995	1315	1415	C	2/23/1995	43
[redacted]	120	electrician	H	221	1/5/1995	1400	1545	1/11/1995	1315	1415	U	2/20/1997	771
[redacted]	121	pipefitter	H	221	3/2/1995	1150	1520	No data	No data	No data	U	3/6/1995	4
[redacted]	121	pipefitter	H	221	3/2/1995	1150	1520	No data	No data	No data	U	6/5/1995	95
[redacted]	122	boilermaker	H	221	2/22/1995	930	1330	2/27/1995	1200	1400	U	6/7/1995	100
[redacted]	122	electrician	H	221	2/22/1995	1200	1400	2/23/1995	1230	1315	U	7/7/1995	134
[redacted]	122	electrician	H	221	2/22/1995	1200	1400	2/23/1995	1230	1315	U	6/7/1995	104
[redacted]	122	boilermaker	H	221	2/22/1995	930	1330	No data	No data	No data	U	1/4/1996	316
[redacted]	122	steel worker	H	221	2/22/1995	1230	1330	2/27/1995	1200	1400	U	8/8/1995	162

**ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)**

CTW	SID	Craft	Area	Building	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Pu bioassay type	Pu bioassay date	# days since RWP, status
[redacted]	122	boilermaker	H	221	2/22/1995	930	1330	2/27/1995	1200	1400	U	1/8/1996	315
[redacted]	122	steel worker	H	221	2/22/1995	1230	1430	2/22/1995	1230	1430	U	7/17/1995	145
[redacted]	122	steel worker	H	221	2/22/1995	1200	1400	2/27/1995	1230	1330	U	3/20/1995	21
[redacted]	122	steel worker	H	221	2/22/1995	1230	1430	2/27/1995	1230	1330	U	7/17/1995	140
[redacted]	122	electrician	H	221	2/22/1995	1200	1400	2/23/1995	1230	1315	U	7/13/1995	140
[redacted]	123	carpenter	H	221	5/1/1995	1000	1130	5/1/1995	1345	1700	U	9/11/1995	133
[redacted]	123	carpenter	H	221	5/1/1995	1000	1130	5/1/1995	1345	1700	U	1/24/1996	268
[redacted]	124	pipefitter	H	221	5/1/1995	1300	1530	5/2/1995	1300	1400	U	10/18/1995	169
[redacted]	124	pipefitter	H	221	5/1/1995	1300	1530	5/2/1995	1300	1400	U	6/5/1995	34
[redacted]	125	pipefitter	H	HBL	12/5/1995	1500	1600	12/7/1995	1330	1630	N/A	None	[redacted]
[redacted]	125	pipefitter	H	HBL	12/5/1995	1500	1600	12/7/1995	1330	1630	U	12/20/1995	13
[redacted]	126	boilermaker	F	241	4/2/1996	945	1130	No data	No data	No data	U	6/5/1996	64
[redacted]	126	laborer	F	241	4/2/1996	1515	1630	No data	No data	No data	U	2/10/1997	314
[redacted]	126	laborer	F	241	4/2/1996	1430	1630	No data	No data	No data	U	5/17/1996	45
[redacted]	126	boilermaker	F	241	4/2/1996	945	1130	No data	No data	No data	U	12/12/1996	254
[redacted]	126	steel worker	F	241	4/8/1996	1300	1475	No data	No data	No data	U	12/9/1996	245
[redacted]	126	HEO	F	241	4/8/1996	1100	1130	4/8/1996	1300	1430	U	4/6/1998	728
[redacted]	126	driver	F	241	4/8/1996	1300	1500	No data	No data	No data	U	10/28/1996	203
[redacted]	126	laborer	F	241	4/8/1996	1300	1500	No data	No data	No data	U	9/5/1997	515
[redacted]	126	steel worker	F	241	4/8/1996	1300	1415	No data	No data	No data	U	10/23/1996	198
[redacted]	127	HEO	F	241	10/17/1997	1000	1500	No data	No data	No data	U	10/5/1998	353
[redacted]	127	laborer	F	241	10/17/1997	1030	1500	No data	No data	No data	U	12/15/1997	59
[redacted]	127	laborer	F	241	10/17/1997	1030	1445	No data	No data	No data	U	2/10/1998	116
[redacted]	127	HEO	F	241	10/17/1997	1010	1530	No data	No data	No data	U	5/15/1998	210
[redacted]	127	HEO	F	241	10/17/1997	1430	1600	No data	No data	No data	U	4/7/1998	172
[redacted]	127	laborer	F	241	10/17/1997	1015	1230	10/17/1997	1300	1445	U	12/15/1997	59
[redacted]	127	pipefitter	F	241	10/17/1997	1600	1700	No data	No data	No data	U	11/6/1997	20
[redacted]	127	steel worker	F	241	10/17/1997	1036	1210	10/17/1997	1245	1415	U	4/7/1998	172
[redacted]	127	laborer	F	241	10/17/1997	1030	1500	No data	No data	No data	U	2/5/1998	111
[redacted]	127	steel worker	F	241	10/17/1997	1335	1535	10/17/1997	1630	1700	U	2/9/1998	115
[redacted]	127	carpenter	F	241	10/17/1997	1445	1505	10/17/1997	1630	1700	U	2/20/1998	126
[redacted]	127	carpenter	F	241	10/17/1997	1336	1535	10/17/1997	1630	1700	U	11/24/1998	403
[redacted]	127	HEO	F	241	10/20/1997	1115	1215	10/20/1997	1245	1510	U	2/10/1998	113
[redacted]	127	carpenter	F	241	10/20/1997	1115	1200	No data	No data	No data	N/A	None	[redacted]
[redacted]	127	carpenter	F	241	10/20/1997	1110	1145	No data	No data	No data	U	1/15/1998	87

**ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)**

CTW	SID	Craft	Area	Building	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Pu bioassay type	Pu bioassay date	# days since RWP, status
[redacted]	127	pipefitter	F	241	10/20/1997	1025	1300	No data	No data	No data	U	2/20/1998	123
[redacted]	127	pipefitter	F	241	10/23/1997	1400	1545	No data	No data	No data	U	2/18/1998	118
[redacted]	127	pipefitter	F	241	10/23/1997	1400	1545	No data	No data	No data	U	11/20/1997	28
[redacted]	128	pipefitter	F	241	8/15/1996	1600	1625	No data	No data	No data	U	2/11/1997	180
[redacted]	128	pipefitter	F	241	8/15/1996	1600	1625	No data	No data	No data	U	9/6/1996	22
[redacted]	129	pipefitter	F	241	1/20/1997	1115	1345	No data	No data	No data	U	2/11/1997	22
[redacted]	129	pipefitter	F	241	1/20/1997	1115	1345	No data	No data	No data	U	7/14/1997	175
[redacted]	130	laborer	F	241	12/1/1998	910	1100	No data	No data	No data	U	12/15/1998	14
[redacted]	130	electrician	F	241	12/1/1998	910	1100	No data	No data	No data	U	12/9/1998	8
[redacted]	130	electrician	F	241	12/1/1998	910	1100	No data	No data	No data	U	3/18/1999	107
[redacted]	131	mechanic	F	241	11/10/1998	1245	1530	No data	No data	No data	U	2/2/1999	84
[redacted]	131	mechanic	F	241	11/10/1998	1245	1530	No data	No data	No data	U	9/20/1999	314
[redacted]	132	laborer	F	241	5/7/1997	1655	1755	No data	No data	No data	U	6/5/1997	29
[redacted]	132	HEO	F	241	5/8/1997	800	1330	No data	No data	No data	U	8/6/1997	90
[redacted]	132	HEO	F	241	5/8/1997	1200	1330	No data	No data	No data	U	10/2/1997	147
[redacted]	132	carpenter	F	241	5/8/1997	1330	1345	No data	No data	No data	U	10/13/1997	158
[redacted]	132	laborer	F	241	5/8/1997	1200	1230	No data	No data	No data	U	12/15/1997	221
[redacted]	132	laborer	F	241	5/8/1997	830	1430	No data	No data	No data	U	9/5/1997	120
[redacted]	132	laborer	F	241	5/8/1997	1650	1815	No data	No data	No data	U	9/2/1997	117
[redacted]	132	pipefitter	F	241	5/8/1997	1230	1400	No data	No data	No data	U	7/14/1997	67
[redacted]	132	pipefitter	F	241	5/8/1997	1230	1400	No data	No data	No data	U	5/12/1997	4
[redacted]	132	HEO	F	241	5/9/1997	1300	1430	No data	No data	No data	U	10/6/1997	150
[redacted]	132	pipefitter	F	241	5/9/1997	1700	2000	No data	No data	No data	U	10/7/1997	151
[redacted]	132	laborer	F	241	5/9/1997	945	1245	No data	No data	No data	U	7/22/1997	74
[redacted]	132	pipefitter	F	241	5/9/1997	800	1430	No data	No data	No data	U	8/18/1997	101
[redacted]	132	pipefitter	F	241	5/9/1997	1700	2000	No data	No data	No data	U	6/26/1997	48
[redacted]	132	pipefitter	F	241	5/9/1997	1700	2000	No data	No data	No data	U	5/12/1997	3
[redacted]	132	pipefitter	F	241	5/9/1997	1630	2030	No data	No data	No data	U	10/13/1997	157
[redacted]	132	carpenter	F	241	5/10/1997	1730	1830	No data	No data	No data	U	10/14/1997	157
[redacted]	132	laborer	F	241	5/10/1997	1630	1830	No data	No data	No data	U	6/11/1997	32
[redacted]	136	electrician	A	773	3/22/1994	1040	1230	No data	No data	No data	U	6/22/1994	92
[redacted]	136	electrician	A	773	3/22/1994	1040	1230	No data	No data	No data	U	4/17/1995	391
[redacted]	137	pipefitter	A	773	3/26/1994	835	1135	3/26/1994	1308	1340	U	8/17/1994	144
[redacted]	137	laborer	A	773	3/26/1994	835	1135	3/26/1994	1308	1340	U	6/13/1994	79
[redacted]	137	pipefitter	A	773	3/26/1994	835	1135	3/26/1994	1308	1340	C	12/13/1994	262

**ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)**

CTW	SID	Craft	Area	Building	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Pu bioassay type	Pu bioassay date	# days since RWP, status
[redacted]	137	pipefitter	A	773	3/26/1994	835	1135	3/26/1994	1308	1340	U	2/6/1995	317
[redacted]	138	laborer	A	773	9/14/1994	1400	1530	No data	No data	No data	U	12/12/1994	89
[redacted]	138	laborer	A	773	9/14/1994	1400	1530	No data	No data	No data	U	12/12/1994	89
[redacted]	139	painter	A	773	3/15/1994	800	930	3/15/1994	1400	1510	U	4/5/1994	21
[redacted]	140	painter	A	773	1/18/1994	850	1145	1/18/1994	1400	1520	U	4/5/1994	77
[redacted]	140	painter	A	773	1/18/1994	850	1145	1/18/1994	1300	1520	U	3/10/1994	51
[redacted]	143	laborer	A	773	4/1/1993	1140	1500	No data	No data	No data	U	10/11/1993	193
[redacted]	143	laborer	A	773	4/1/1993	1140	1500	No data	No data	No data	U	5/14/1993	43
[redacted]	143	sheetmetal	A	773	4/1/1993	1150	1500	No data	No data	No data	U	10/13/1993	195
[redacted]	143	sheetmetal	A	773	4/1/1993	1150	1500	No data	No data	No data	U	1/11/1994	285
[redacted]	143	laborer	A	773	4/2/1993	850	1035	No data	No data	No data	U	5/19/1993	47
[redacted]	143	sheetmetal	A	773	4/6/1993	910	1110	4/6/1993	1400	1530	U	7/22/1993	107
[redacted]	143	laborer	A	773	4/6/1993	910	1100	No data	No data	No data	U	5/6/1993	30
[redacted]	144	sheetmetal	A	773	3/1/1993	1240	1350	3/1/1993	1430	1445	U	12/15/1993	289
[redacted]	144	sheetmetal	A	773	3/1/1993	1144	1159	No data	No data	No data	U	7/21/1993	142
[redacted]	144	electrician	A	773	3/1/1993	1416	1740	No data	No data	No data	N/A	None	None
[redacted]	144	steel worker	A	773	3/3/1993	1	30	No data	No data	No data	U	3/10/1993	7
[redacted]	144	electrician	A	773	3/3/1993	1340	1440	No data	No data	No data	U	5/5/1993	63
[redacted]	144	sheetmetal	A	773	3/3/1993	1800	2250	3/3/1993	2330	230	U	3/23/1993	20
[redacted]	144	sheetmetal	A	773	3/4/1993	1831	1850	No data	No data	No data	U	2/7/1994	340
[redacted]	144	sheetmetal	A	773	3/4/1993	1048	1102	No data	No data	No data	N/A	None	None
[redacted]	144	electrician	A	773	3/4/1993	1335	1355	No data	No data	No data	U	10/13/1993	223
[redacted]	144	sheetmetal	A	773	3/4/1993	1645	1715	3/4/1993	2120	2330	U	10/13/1993	223
[redacted]	144	sheetmetal	A	773	3/4/1993	1808	2200	3/4/1993	2246	2330	N/A	None	None
[redacted]	144	sheetmetal	A	773	3/5/1993	1515	1930	3/5/1993	1945	2215	U	8/8/1994	521
[redacted]	144	sheetmetal	A	773	3/5/1993	800	1030	No data	No data	No data	U	6/16/1993	103
[redacted]	144	sheetmetal	A	773	3/5/1993	800	1130	3/5/1993	1300	1345	N/A	None	[redacted]
[redacted]	144	electrician	A	773	3/5/1993	930	1125	3/5/1993	1300	1610	U	5/20/1993	76
[redacted]	144	sheetmetal	A	773	3/5/1993	800	1125	3/5/1993	1300	1525	C	12/20/1994	655
[redacted]	144	pipefitter	A	773	3/5/1993	900	1000	No data	No data	No data	C	7/19/1993	136
[redacted]	144	sheetmetal	A	773	3/5/1993	800	1130	No data	No data	No data	U	7/14/1993	131
[redacted]	144	sheetmetal	A	773	3/5/1993	849	902	No data	No data	No data	N/A	None	[redacted]
[redacted]	144	electrician	A	773	3/5/1993	1345	1520	No data	No data	No data	U	6/8/1993	95
[redacted]	144	electrician	A	773	3/5/1993	1355	1715	No data	No data	No data	U	11/8/1993	248
[redacted]	144	pipefitter	A	773	3/5/1993	900	1000	No data	No data	No data	U	7/13/1993	130

**ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)**

CTW	SID	Craft	Area	Building	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Pu bioassay type	Pu bioassay date	# days since RWP, status
[redacted]	144	laborer	A	773	3/5/1993	1300	1500	No data	No data	No data	U	5/19/1993	75
[redacted]	144	electrician	A	773	3/5/1993	930	1130	3/5/1993	1300	1615	N/A	None	None
[redacted]	144	sheetmetal	A	773	3/5/1993	850	1000	No data	No data	No data	U	1/11/1994	312
[redacted]	144	sheetmetal	A	773	3/5/1993	800	1130	No data	No data	No data	U	8/5/1993	153
[redacted]	144	laborer	A	773	3/8/1993	1030	1235	3/8/1993	1300	1400	N/A	None	None
[redacted]	144	laborer	A	773	3/9/1993	1300	1530	No data	No data	No data	U	10/11/1993	216
[redacted]	144	laborer	A	773	3/9/1993	1140	1500	No data	No data	No data	U	5/14/1993	66
[redacted]	163	laborer	H	261	10/13/1997	1100	1200	No data	No data	No data	U	8/6/1998	297
[redacted]	163	laborer	H	261	10/13/1997	1100	1200	No data	No data	No data	U	2/11/1998	121
[redacted]	183	ironworker	H	HCMA	1/4/1993	830	945	No data	No data	No data	C	3/11/1993	66
[redacted]	183	ironworker	H	HCMA	1/4/1993	830	1100	No data	No data	No data	U	7/30/1993	207
[redacted]	183	ironworker	H	HCMA	1/4/1993	900	1100	No data	No data	No data	U	7/20/1993	197
[redacted]	183	ironworker	H	HCMA	1/4/1993	900	1100	No data	No data	No data	U	10/30/1993	299
[redacted]	190	laborer	H	299	3/21/1991	1300	1500	No data	No data	No data	U	1/14/1992	299
[redacted]	190	laborer	H	299	3/21/1991	915	1130	3/21/1991	1300	1500	U	3/26/1991	5
[redacted]	200	sheetmetal	Z	451	10/4/1994	800	815	10/6/1994	1315	1500	U	1/16/1995	102
[redacted]	200	sheetmetal	Z	451	10/5/1994	1250	1315	No data	No data	No data	U	1/10/1995	97
[redacted]	200	sheetmetal	Z	451	10/5/1994	1030	1145	10/5/1994	1245	1450	U	12/12/1995	433
[redacted]	200	sheetmetal	Z	451	10/8/1994	745	1130	10/26/1994	1315	1600	U	7/5/1995	252
[redacted]	200	sheetmetal	Z	451	10/8/1994	730	1130	10/8/1994	1230	1530	U	2/8/1995	123
[redacted]	200	laborer	Z	451	10/25/1994	1100	1130	10/25/1994	1315	1600	U	5/7/1996	560
[redacted]	200	laborer	Z	451	10/25/1994	1100	1145	10/25/1994	1315	1600	N/A	None	[redacted]
[redacted]	200	laborer	Z	451	10/25/1994	1315	1600	10/27/1994	830	1130	U	11/7/1994	11
[redacted]	200	ironworker	Z	451	10/26/1994	1300	1400	10/27/1994	930	1130	U	12/20/1995	419
[redacted]	200	laborer	Z	451	10/27/1994	830	1130	10/27/1994	1300	1300	N/A	None	None
[redacted]	200	laborer	Z	451	10/27/1994	830	1130	10/27/1994	1300	1350	N/A	None	Not needed
[redacted]	200	sheetmetal	Z	451	10/27/1994	830	1130	10/27/1994	1300	1315	N/A	None	[redacted]
[redacted]	200	laborer	Z	451	10/28/1994	900	1200	10/28/1994	1300	1430	N/A	None	None
[redacted]	200	laborer	Z	451	10/28/1994	900	1200	10/28/1994	1330	1430	N/A	None	[redacted]
[redacted]	200	sheetmetal	Z	451	10/28/1994	900	1200	10/28/1994	1300	1430	U	5/3/1996	553
[redacted]	201	ironworker	Z	451	11/1/1994	930	1230	11/9/1994	1000	1130	U	12/20/1995	406
[redacted]	201	laborer	Z	451	11/3/1994	930	1130	11/16/1994	900	1000	N/A	None	None
[redacted]	201	laborer	Z	451	11/3/1994	930	1330	11/18/1994	1100	1230	N/A	None	None
[redacted]	201	laborer	Z	451	11/3/1994	1300	1530	11/18/1994	1100	1230	N/A	None	None
[redacted]	201	laborer	Z	451	11/3/1994	930	1130	11/7/1994	815	1130	U	11/7/1994	0

**ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)**

CTW	SID	Craft	Area	Building	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Pu bioassay type	Pu bioassay date	# days since RWP, status
[redacted]	201	sheetmetal	Z	451	11/4/1994	800	1130	11/4/1994	1300	1430	U	5/3/1996	546
[redacted]	201	ironworker	Z	451	11/7/1994	1020	1145	No data	No data	No data	C	7/16/1996	617
[redacted]	201	sheetmetal	Z	451	11/8/1994	830	1130	11/8/1994	1300	1430	U	3/13/1996	491
[redacted]	201	laborer	Z	451	11/10/1994	800	1130	11/10/1994	1300	1400	N/A	None	[redacted]
[redacted]	201	laborer	Z	451	11/10/1994	800	1130	10/10/1994	1300	1400	U	1/12/1995	94
[redacted]	201	sheetmetal	Z	451	11/10/1994	800	1130	11/10/1994	1300	1400	N/A	None	[redacted]
[redacted]	201	ironworker	Z	451	11/14/1994	900	1130	11/15/1994	930	1035	U	9/13/1995	302
[redacted]	201	insulator	Z	451	11/14/1994	1045	1115	11/15/1994	845	1045	U	8/20/1996	644
[redacted]	201	sheetmetal	Z	451	11/14/1994	1015	1130	11/14/1994	1245	1600	U	1/16/1995	63
[redacted]	201	laborer	Z	451	11/14/1994	900	1130	11/14/1994	1300	1430	U	1/14/1995	61
[redacted]	201	sheetmetal	Z	451	11/15/1994	845	1130	11/16/1994	900	1045	U	10/10/1995	328
[redacted]	201	insulator	Z	451	11/15/1994	900	1045	11/15/1994	1420	1440	N/A	None	Not needed
[redacted]	201	steel worker	Z	451	11/16/1994	941	1008	No data	No data	No data	U	12/9/1994	23
[redacted]	201	ironworker	Z	451	11/18/1994	1105	1230	No data	No data	No data	N/A	None	[redacted]
[redacted]	201	laborer	Z	451	11/23/1994	830	1100	No data	No data	No data	U	12/12/1994	19
[redacted]	201	sheetmetal	Z	451	11/23/1994	830	1100	11/23/1994	1230	1345	U	7/5/1995	224
[redacted]	202	pipefitter	Z	451	3/16/1994	1050	1500	No data	No data	No data	C	6/19/1997	1191
[redacted]	202	pipefitter	Z	451	3/16/1994	1050	1300	No data	No data	No data	U	4/12/1994	27
[redacted]	202	pipefitter	Z	451	3/16/1994	1050	1300	No data	No data	No data	U	8/7/1995	509
[redacted]	204	ironworker	Z	451	4/14/1994	925	1135	4/15/1994	800	1130	N/A	None	[redacted]
[redacted]	204	sheetmetal	Z	451	4/18/1994	900	1000	4/18/1994	1300	1330	U	8/8/1994	112
[redacted]	204	sheetmetal	Z	451	4/18/1994	900	1000	4/18/1994	1300	1330	U	5/3/1996	746
[redacted]	205	sheetmetal	Z	451	5/5/1994	835	1100	5/5/1994	1230	1500	U	8/8/1994	95
[redacted]	205	sheetmetal	Z	451	5/5/1994	1230	1500	5/12/1994	800	1015	U	3/13/1996	671
[redacted]	205	sheetmetal	Z	451	5/11/1994	845	1055	5/12/1994	800	1015	U	5/3/1996	722
[redacted]	207	pipefitter	A	773	11/21/1991	803	1503	No data	No data	No data	U	8/20/1992	273
[redacted]	207	pipefitter	A	773	11/21/1991	830	1115	11/21/1991	1245	1600	U	8/12/1994	995
[redacted]	207	pipefitter	A	773	11/21/1991	830	930	11/21/1991	1245	1600	U	7/14/1992	236
[redacted]	207	carpenter	A	773	11/21/1991	1008	1115	No data	No data	No data	U	7/20/1992	242
[redacted]	207	carpenter	A	773	11/21/1991	1008	1115	No data	No data	No data	U	6/8/1992	200
[redacted]	207	laborer	A	773	11/21/1991	1303	1503	No data	No data	No data	U	1/17/1992	57
[redacted]	207	pipefitter	A	773	11/21/1991	900	1145	11/21/1991	1245	1500	U	1/14/1992	54
[redacted]	208	pipefitter	A	773	12/12/1991	730	900	12/12/1991	930	1130	U	8/13/1992	245
[redacted]	208	pipefitter	A	773	12/12/1991	730	900	12/12/1991	930	1130	U	7/14/1992	215
[redacted]	209	boilermaker	E	643	3/5/1993	1010	1130	No data	No data	No data	U	8/10/1993	158

**ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)**

CTW	SID	Craft	Area	Building	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Pu bioassay type	Pu bioassay date	# days since RWP, status
[redacted]	211	laborer	F	235	8/1/1991	820	1030	8/3/1991	1300	1345	U	9/27/1991	55
[redacted]	211	electrician	F	235	8/1/1991	820	1030	8/2/1991	845	1045	U	3/9/1993	585
[redacted]	211	electrician	F	235	8/2/1991	845	1045	8/3/1991	830	845	U	4/26/1992	267
[redacted]	211	carpenter	F	235	8/3/1991	1300	1345	No data	No data	No data	U	1/14/1992	164
[redacted]	212	electrician	F	235	9/10/1993	800	900	No data	No data	No data	U	9/14/1994	369
[redacted]	212	carpenter	F	235	9/10/1993	1415	1500	No data	No data	No data	U	5/10/1994	242
[redacted]	212	electrician	F	235	9/10/1993	800	900	No data	No data	No data	U	10/8/1993	28
[redacted]	212	millwright	F	235	9/16/1993	920	1035	No data	No data	No data	N/A	None	[redacted]
[redacted]	212	millwright	F	235	9/16/1993	920	1430	9/17/1993	745	915	N/A	None	[redacted]
[redacted]	212	millwright	F	235	9/16/1993	900	1430	9/17/1993	745	915	U	2/2/1994	138
[redacted]	215	electrician	F	772	2/1/1994	915	1100	2/5/1994	815	1200	N/A	None	Not needed
[redacted]	215	electrician	F	772	2/1/1994	925	1100	2/12/1994	1305	1410	N/A	None	Not needed
[redacted]	215	laborer	F	772	2/7/1994	1030	1140	2/7/1994	1320	1445	N/A	None	None
[redacted]	215	laborer	F	772	2/7/1994	830	1140	2/7/1994	1320	1445	N/A	None	None
[redacted]	216	pipefitter	F	221	2/19/1998	1300	1430	2/23/1998	1030	1230	U	4/8/1998	44
[redacted]	217	electrician	F	241	11/23/1998	1030	1130	11/30/1998	1300	1500	U	3/18/1999	108
[redacted]	217	laborer	F	241	11/23/1998	1330	1530	No data	No data	No data	N/A	None	None
[redacted]	217	electrician	F	241	11/24/1998	1030	1330	11/30/1998	1300	1500	U	12/9/1998	9
[redacted]	217	electrician	F	241	11/24/1998	1030	1330	No data	No data	No data	U	3/18/1999	114
[redacted]	218	pipefitter	F	FTF	3/26/1998	1500	1530	No data	No data	No data	U	5/21/1998	56
[redacted]	220	electrician	F	235	11/17/1993	1008	1514	No data	No data	No data	U	7/19/1994	244
[redacted]	220	electrician	F	235	11/17/1993	1300	1500	11/30/1993	1100	1500	U	2/28/1994	90
[redacted]	220	electrician	F	235	11/17/1993	1008	1500	No data	No data	No data	U	1/17/1994	61
[redacted]	220	laborer	F	235	11/17/1993	1030	1115	No data	No data	No data	U	3/7/1994	110
[redacted]	220	electrician	F	235	11/18/1993	930	1130	11/30/1993	1100	1500	N/A	None	[redacted]
[redacted]	221	painter	F	247	12/7/1993	930	1630	No data	No data	No data	U	1/18/1994	42
[redacted]	221	painter	F	247	12/7/1993	830	1639	12/15/1993	830	930	U	6/6/1995	538
[redacted]	221	painter	F	247	12/9/1993	830	1639	No data	No data	No data	U	6/16/1995	554
[redacted]	221	painter	F	247	12/15/1993	830	930	No data	No data	No data	N/A	None	Waived
[redacted]	224	boilermaker	H	242	10/18/1991	930	1100	No data	No data	No data	U	11/18/1991	31
[redacted]	224	boilermaker	H	242	10/18/1991	930	1100	No data	No data	No data	U	11/13/1991	26
[redacted]	224	laborer	H	242	10/18/1991	830	1100	No data	No data	No data	U	12/27/1991	70
[redacted]	224	laborer	H	242	10/18/1991	830	1100	No data	No data	No data	U	2/11/1992	116
[redacted]	224	boilermaker	H	242	10/18/1991	840	1100	No data	No data	No data	U	6/5/1992	231
[redacted]	224	boilermaker	H	242	10/18/1991	930	1100	No data	No data	No data	U	12/19/1991	62

Document No. ORAUT-RPRT-0092 Revision No. 00 Effective Date: 06/14/2019 Page 112 of 188

**ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)**

CTW	SID	Craft	Area	Building	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Pu bioassay type	Pu bioassay date	# days since RWP, status
[redacted]	224	driver	H	242	10/18/1991	1245	1430	No data	No data	No data	U	8/4/1992	291
[redacted]	224	pipefitter	H	242	10/21/1991	845	1000	No data	No data	No data	U	4/28/1992	190
[redacted]	224	pipefitter	H	242	10/21/1991	845	1000	No data	No data	No data	U	2/18/1992	120
[redacted]	225	sheetmetal	H	292	11/6/1992	2100	2250	11/11/1992	2000	2245	U	12/12/1992	31
[redacted]	225	laborer	H	292	11/6/1992	2100	2300	11/9/1992	2000	2215	U	11/11/1992	2
[redacted]	225	laborer	H	292	11/9/1992	1020	1200	11/9/1992	1615	1730	U	11/10/1992	1
[redacted]	225	laborer	H	292	11/9/1992	900	1030	11/9/1992	1500	1615	U	12/14/1993	400
[redacted]	225	carpenter	H	292	11/9/1992	900	1200	11/9/1992	1500	1800	U	1/10/1993	62
[redacted]	225	laborer	H	292	11/9/1992	900	1200	11/9/1992	1500	1730	C	3/15/1994	491
[redacted]	225	laborer	H	292	11/9/1992	130	330	No data	No data	No data	U	11/11/1992	2
[redacted]	225	carpenter	H	292	11/9/1992	900	1200	11/9/1992	1500	1730	U	4/6/1993	148
[redacted]	225	laborer	H	292	11/9/1992	1630	1715	No data	No data	No data	U	11/4/1993	360
[redacted]	225	laborer	H	292	11/9/1992	2000	2215	No data	No data	No data	U	11/24/1992	15
[redacted]	225	laborer	H	292	11/9/1992	1020	1200	No data	No data	No data	U	11/25/1992	16
[redacted]	226	pipefitter	H	221	12/13/1995	1300	1630	No data	No data	No data	N/A	None	[redacted]
[redacted]	226	pipefitter	H	221	12/13/1995	1300	1630	No data	No data	No data	U	12/20/1995	7
[redacted]	227	ironworker	H	242	10/30/1991	1430	1530	No data	No data	No data	U	11/23/1992	390
[redacted]	227	laborer	H	242	10/30/1991	1330	1430	No data	No data	No data	U	12/5/1991	36
[redacted]	227	ironworker	H	242	10/30/1991	1330	1430	No data	No data	No data	U	1/3/1992	65
[redacted]	227	ironworker	H	242	10/30/1991	1330	1430	No data	No data	No data	U	3/9/1992	131
[redacted]	227	laborer	H	242	10/30/1991	1330	1430	No data	No data	No data	U	12/17/1991	48
[redacted]	230	laborer	A	773	1/11/1993	700	745	No data	No data	No data	U	10/11/1993	273
[redacted]	230	carpenter	A	773	1/13/1993	1241	1455	No data	No data	No data	U	12/8/1993	329
[redacted]	230	carpenter	A	773	1/13/1993	720	1110	1/13/1993	1240	1455	U	4/9/1993	86
[redacted]	230	painter	A	773	1/20/1993	930	1205	No data	No data	No data	U	1/25/1993	5
[redacted]	230	sheetmetal	A	773	1/26/1993	820	1245	No data	No data	No data	U	10/13/1993	260
[redacted]	230	pipefitter	A	773	1/27/1993	830	1300	No data	No data	No data	U	2/4/1993	8
[redacted]	230	pipefitter	A	773	1/27/1993	830	1300	No data	No data	No data	C	3/24/1993	56
[redacted]	231	sheetmetal	A	773	2/4/1993	830	1245	No data	No data	No data	U	10/13/1993	251
[redacted]	231	sheetmetal	A	773	2/11/1993	1100	1300	No data	No data	No data	U	1/11/1994	334
[redacted]	231	sheetmetal	A	773	2/16/1993	800	1115	No data	No data	No data	U	7/15/1993	149
[redacted]	231	sheetmetal	A	773	2/16/1993	1135	1245	No data	No data	No data	C	12/20/1994	672
[redacted]	231	sheetmetal	A	773	2/16/1993	800	1115	No data	No data	No data	U	8/5/1993	170
[redacted]	232	carpenter	A	773	3/22/1993	820	920	3/31/1993	900	1145	U	4/9/1993	9
[redacted]	232	laborer	A	773	3/22/1993	820	920	3/30/1993	930	1100	U	5/6/1993	37

**ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)**

CTW	SID	Craft	Area	Building	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Pu bioassay type	Pu bioassay date	# days since RWP, status
[redacted]	232	pipefitter	A	773	3/25/1993	945	1230	No data	No data	No data	U	8/11/1993	139
[redacted]	232	laborer	A	773	3/25/1993	800	1230	No data	No data	No data	U	2/8/1994	320
[redacted]	232	pipefitter	A	773	3/25/1993	845	1250	No data	No data	No data	U	7/13/1993	110
[redacted]	232	laborer	A	773	3/30/1993	930	1100	No data	No data	No data	U	5/19/1993	50
[redacted]	232	carpenter	A	773	3/31/1993	900	1145	No data	No data	No data	U	3/9/1994	343
[redacted]	233	electrician	A	773	2/21/1993	1545	1700	2/26/1993	1745	1845	U	11/8/1993	255
[redacted]	233	steel worker	A	773	2/24/1993	1315	1515	No data	No data	No data	U	7/14/1993	140
[redacted]	233	electrician	A	773	2/24/1993	1400	1600	No data	No data	No data	U	5/19/1993	84
[redacted]	233	electrician	A	773	2/24/1993	1516	1603	No data	No data	No data	N/A	None	[redacted]
[redacted]	233	sheetmetal	A	773	2/26/1993	2300	2345	No data	No data	No data	N/A	None	[redacted]
[redacted]	233	electrician	A	773	2/26/1993	1500	1700	2/26/1993	1745	1845	U	6/8/1993	102
[redacted]	233	sheetmetal	A	773	2/26/1993	800	1200	2/26/1993	1500	1700	U	8/5/1993	160
[redacted]	233	sheetmetal	A	773	2/27/1993	1415	1715	No data	No data	No data	U	12/15/1993	291
[redacted]	233	sheetmetal	A	773	2/27/1993	1840	2230	No data	No data	No data	U	8/8/1994	527
[redacted]	233	sheetmetal	A	773	2/27/1993	1450	1730	No data	No data	No data	U	10/13/1993	228
[redacted]	233	steel worker	A	773	2/27/1993	1850	2230	No data	No data	No data	N/A	None	[redacted]
[redacted]	233	sheetmetal	A	773	2/27/1993	1850	2100	No data	No data	No data	U	3/10/1993	11
[redacted]	233	sheetmetal	A	773	2/27/1993	1850	2230	No data	No data	No data	U	3/23/1993	24
[redacted]	233	sheetmetal	A	773	2/28/1993	720	1120	No data	No data	No data	U	6/16/1993	108
[redacted]	233	sheetmetal	A	773	2/28/1993	720	1120	No data	No data	No data	C	12/20/1994	660
[redacted]	233	sheetmetal	A	773	2/28/1993	720	1120	No data	No data	No data	U	1/11/1994	317
[redacted]	234	laborer	A	773	4/7/1994	900	1100	4/8/1994	945	1100	U	10/17/1994	192
[redacted]	234	laborer	A	773	4/7/1994	900	1100	4/8/1994	945	1100	U	6/13/1994	66
[redacted]	235	painter	A	773	1/7/1994	1100	1215	1/7/1994	1250	1345	U	4/5/1994	88
[redacted]	236	laborer	A	773	11/7/1994	910	1145	No data	No data	No data	U	12/12/1994	35
[redacted]	236	pipefitter	A	773	11/7/1994	945	1145	11/7/1994	1440	1555	C	12/13/1994	36
[redacted]	236	pipefitter	A	773	11/8/1994	800	815	11/8/1994	900	1025	U	11/14/1994	6
[redacted]	236	carpenter	A	773	11/11/1994	No data	No data	No data	No data	No data	U	4/10/1995	150
[redacted]	236	pipefitter	A	773	11/29/1994	1030	1230	No data	No data	No data	U	8/23/1995	267
[redacted]	237	laborer	A	773	8/1/1994	1345	1500	8/2/1994	1345	1445	U	12/12/1994	132
[redacted]	237	laborer	A	773	8/1/1994	1345	1500	8/2/1994	1345	1445	U	12/12/1994	132
[redacted]	240	laborer	E	643	3/8/1997	1640	1810	No data	No data	No data	U	3/27/1997	19
[redacted]	240	laborer	E	643	3/8/1997	1640	1815	No data	No data	No data	U	3/19/1997	11
[redacted]	241	boilermaker	E	643	6/17/1997	1030	1130	No data	No data	No data	U	6/17/1997	0
[redacted]	241	boilermaker	E	643	6/17/1997	1030	1130	No data	No data	No data	U	6/17/1997	0

ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)

CTW	SID	Craft	Area	Building	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Pu bioassay type	Pu bioassay date	# days since RWP, status
[redacted]	242	pipefitter	F	772	10/19/1992	1430	1530	No data	No data	No data	U	4/7/1993	170
[redacted]	243	sheetmetal	F	772	1/29/1992	900	1100	No data	No data	No data	U	4/29/1992	91
[redacted]	243	sheetmetal	F	772	1/29/1992	900	1100	No data	No data	No data	U	1/30/1992	1
[redacted]	243	laborer	F	772	1/29/1992	830	1135	No data	No data	No data	U	10/15/1992	260
[redacted]	243	sheetmetal	F	772	1/29/1992	812	1115	No data	No data	No data	U	7/27/1992	180
[redacted]	243	sheetmetal	F	772	1/29/1992	900	1100	No data	No data	No data	U	4/29/1992	91
[redacted]	243	laborer	F	772	1/29/1992	830	1135	No data	No data	No data	U	9/8/1993	588
[redacted]	244	carpenter	F	772	10/1/1992	900	1040	10/1/1992	1330	1445	U	10/12/1992	11
[redacted]	244	carpenter	F	772	10/1/1992	900	1040	10/1/1992	1330	1445	U	11/7/1992	37
[redacted]	244	carpenter	F	772	10/1/1992	900	1040	10/1/1992	1330	1445	U	8/9/1993	312
[redacted]	245	carpenter	F	772	9/30/1992	845	945	No data	No data	No data	U	11/7/1992	38
[redacted]	245	carpenter	F	772	9/30/1992	845	945	No data	No data	No data	U	8/9/1993	313
[redacted]	246	pipefitter	F	772	7/22/1994	900	1100	7/27/1994	900	1130	U	9/12/1994	47
[redacted]	246	pipefitter	F	772	7/22/1994	900	1100	7/27/1994	900	1130	N/A	None	[redacted]
[redacted]	246	laborer	F	772	7/26/1994	1330	1630	7/27/1994	1300	1600	U	12/12/1994	138

a. Bioassay type codes: U represents urinalysis; C represents chest count.

ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)

Table C-4. SubCTW required strontium bioassay, 1990 to 1998.^a

CTW	SID	Craft	Area	Bldg.	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Sr/FP bioassay type	Sr/FP bioassay date	# days since RWP, status
[redacted]	1	millwright	H	241	8/4/1992	1630	1800	8/5/1992	1315	1500	U	11/16/1992	103
[redacted]	1	pipefitter	H	241	8/5/1992	1640	1830	No data	No data	No data	U	10/12/1992	68
[redacted]	1	millwright	H	241	8/5/1992	115	300	8/10/1992	1335	1450	U	9/8/1992	29
[redacted]	1	millwright	H	241	8/10/1992	1335	1450	No data	No data	No data	W	9/8/1992	29
[redacted]	2	laborer	H	241	1/21/1992	930	1130	1/22/1992	1230	1530	U	3/12/1992	50
[redacted]	2	laborer	H	241	1/22/1992	800	1130	1/22/1992	1230	1530	U	5/20/1992	119
[redacted]	2	pipefitter	H	241	1/22/1992	800	1130	1/22/1992	1230	1530	U	2/27/1992	36
[redacted]	2	pipefitter	H	241	1/22/1992	800	1130	No data	No data	No data	U	3/11/1992	49
[redacted]	2	pipefitter	H	241	1/22/1992	800	1130	1/22/1992	1230	1530	U	1/27/1992	5
[redacted]	3	insulator	H	241	1/8/1992	1330	1500	No data	No data	No data	U	5/7/1992	120
[redacted]	4	electrician	H	241	3/9/1992	1430	1500	No data	No data	No data	U	8/12/1992	156
[redacted]	4	carpenter	H	241	3/9/1992	830	1020	3/9/1992	1130	1500	U	6/8/1992	91
[redacted]	4	electrician	H	241	3/9/1992	1430	1500	No data	No data	No data	U	8/12/1992	156
[redacted]	4	carpenter	H	241	3/9/1992	830	1020	3/9/1992	1130	1500	N/A	None	[redacted]
[redacted]	4	carpenter	H	241	3/24/1992	1230	1430	No data	No data	No data	U	3/26/1992	2
[redacted]	4	laborer	H	241	3/24/1992	800	1100	3/24/1992	1230	1500	U	4/28/1992	35
[redacted]	4	sheetmetal	H	241	3/24/1992	830	1100	No data	No data	No data	W	4/26/1993	398
[redacted]	4	laborer	H	241	3/24/1992	830	1100	3/24/1992	1230	1500	U	3/24/1992	0
[redacted]	4	carpenter	H	241	3/24/1992	815	1100	3/24/1992	1230	1500	U	5/11/1992	48
[redacted]	5	painter	F	772	10/8/1990	1000	1040	No data	No data	No data	W	6/17/1991	252
[redacted]	8	laborer	F	241	10/10/1991	900	1000	No data	No data	No data	U	10/24/1991	14
[redacted]	8	boilermaker	F	241	10/10/1991	900	1140	No data	No data	No data	W	8/27/1992	322
[redacted]	8	laborer	F	241	10/10/1991	900	1000	No data	No data	No data	U	10/14/1991	4
[redacted]	8	laborer	F	241	10/10/1991	900	1000	No data	No data	No data	U	10/18/1991	8
[redacted]	8	ironworker	F	241	10/10/1991	945	1005	No data	No data	No data	U	10/16/1991	6
[redacted]	9	boilermaker	F	241	10/9/1991	1031	1140	No data	No data	No data	U	11/13/1991	35
[redacted]	9	boilermaker	F	241	10/9/1991	1031	1140	No data	No data	No data	U	7/17/1992	282
[redacted]	9	boilermaker	F	241	10/9/1991	1031	1140	No data	No data	No data	W	8/27/1992	323
[redacted]	9	boilermaker	F	241	10/9/1991	1031	1140	No data	No data	No data	U	11/12/1991	34
[redacted]	11	laborer	H	299	4/18/1991	930	1130	4/18/1991	1230	1530	U	1/14/1992	271
[redacted]	11	carpenter	H	299	4/18/1991	805	1100	No data	No data	No data	W	5/30/1991	42
[redacted]	11	carpenter	H	299	4/18/1991	800	1100	No data	No data	No data	U	9/23/1991	158
[redacted]	11	laborer	H	299	4/18/1991	800	1159	4/23/1991	1230	1530	U	2/18/1992	301

Document No. ORAUT-RPRT-0092 Revision No. 00 Effective Date: 06/14/2019 Page 116 of 188

**ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)**

CTW	SID	Craft	Area	Bldg.	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Sr/FP bioassay type	Sr/FP bioassay date	# days since RWP, status
[redacted]	11	laborer	H	299	4/23/1991	1230	1530	No data	No data	No data	U	1/14/1992	266
[redacted]	11	carpenter	H	299	4/23/1991	1230	1530	No data	No data	No data	U	6/11/1992	415
[redacted]	11	carpenter	H	299	4/23/1991	1230	1530	No data	No data	No data	U	5/4/1992	377
[redacted]	12	electrician	A	773	9/24/1991	845	No data	No data	No data	No data	U	1/14/1992	112
[redacted]	12	electrician	A	773	9/24/1991	845	No data	No data	No data	No data	U	10/7/1991	13
[redacted]	12	sheetmetal	A	773	9/24/1991	845	No data	9/24/1991	1455	1515	U	3/4/1992	162
[redacted]	12	sheetmetal	A	773	9/24/1991	845	No data	No data	No data	No data	U	2/7/1992	136
[redacted]	12	sheetmetal	A	773	9/24/1991	845	No data	No data	No data	No data	W	3/27/1992	185
[redacted]	14	laborer	H	241	10/22/1991	900	945	No data	No data	No data	U	3/25/1992	155
[redacted]	14	pipefitter	H	241	10/22/1991	900	945	No data	No data	No data	U	11/14/1991	23
[redacted]	14	pipefitter	H	241	10/22/1991	900	945	No data	No data	No data	U	10/22/1991	0
[redacted]	16	carpenter	F	247	7/25/1991	800	915	No data	No data	No data	U	2/10/1992	200
[redacted]	16	carpenter	F	247	7/25/1991	800	915	No data	No data	No data	U	10/9/1991	76
[redacted]	17	laborer	H	241	12/3/1991	800	1100	No data	No data	No data	U	12/17/1991	14
[redacted]	17	millwright	H	241	12/3/1991	900	1015	12/11/1991	920	1015	U	6/7/1992	179
[redacted]	17	laborer	H	241	12/3/1991	800	1100	12/27/1991	800	1100	U	3/24/1992	88
[redacted]	17	millwright	H	241	12/3/1991	900	1015	No data	No data	No data	W	8/17/1992	258
[redacted]	17	millwright	H	241	12/3/1991	900	1030	No data	No data	No data	W	5/7/1992	156
[redacted]	17	millwright	H	241	12/11/1991	920	1015	12/19/1991	800	930	U	2/12/1993	421
[redacted]	17	carpenter	H	241	12/13/1991	945	1130	No data	No data	No data	U	6/8/1992	178
[redacted]	17	carpenter	H	241	12/13/1991	940	1130	No data	No data	No data	U	5/11/1992	150
[redacted]	17	carpenter	H	241	12/18/1991	900	1030	12/13/1991	945	1130	U	3/11/1992	89
[redacted]	17	laborer	H	241	12/18/1991	900	1100	No data	No data	No data	U	4/24/1992	128
[redacted]	17	laborer	H	241	12/19/1991	800	1100	No data	No data	No data	U	1/29/1992	41
[redacted]	17	pipefitter	H	241	12/20/1991	900	1030	No data	No data	No data	U	3/9/1992	80
[redacted]	17	millwright	H	241	12/20/1991	905	1100	No data	No data	No data	U	12/18/1992	364
[redacted]	17	pipefitter	H	241	12/23/1991	830	1130	No data	No data	No data	U	4/24/1992	123
[redacted]	17	sheetmetal	H	241	12/23/1991	1045	1130	No data	No data	No data	W	3/11/1992	79
[redacted]	17	pipefitter	H	241	12/23/1991	830	1000	No data	No data	No data	U	2/20/1992	59
[redacted]	17	pipefitter	H	241	12/23/1991	830	1130	No data	No data	No data	U	1/27/1992	35
[redacted]	17	carpenter	H	241	12/26/1991	1030	1130	No data	No data	No data	U	5/11/1992	137
[redacted]	17	carpenter	H	241	12/27/1991	1300	1430	No data	No data	No data	U	2/20/1992	55
[redacted]	17	carpenter	H	241	12/27/1991	1300	1430	No data	No data	No data	N/A	None	[redacted]
[redacted]	20	pipefitter	A	773	11/21/1991	900	1200	No data	No data	No data	U	3/3/1992	103

Document No. ORAUT-RPRT-0092 Revision No. 00 Effective Date: 06/14/2019 Page 117 of 188

**ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)**

CTW	SID	Craft	Area	Bldg.	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Sr/FP bioassay type	Sr/FP bioassay date	# days since RWP, status
[redacted]	20	pipefitter	A	773	11/21/1991	900	1503	No data	No data	No data	U	5/13/1992	174
[redacted]	21	laborer	A	773	12/12/1991	900	1500	No data	No data	No data	W	3/12/1992	91
[redacted]	21	laborer	A	773	12/12/1991	900	1100	No data	No data	No data	U	5/4/1992	144
[redacted]	23	insulator	A	773	1/10/1992	920	1000	No data	No data	No data	U	5/7/1992	118
[redacted]	23	insulator	A	773	1/10/1992	920	1000	No data	No data	No data	U	1/21/1992	11
[redacted]	47	laborer	E	643	2/4/1993	1110	1135	No data	No data	No data	W	4/21/1994	441
[redacted]	47	boilermaker	E	643	2/4/1993	1030	1125	No data	No data	No data	U	2/14/1994	375
[redacted]	49	boilermaker	E	643	6/17/1993	No data	No data	No data	No data	No data	U	6/10/1994	358
[redacted]	49	boilermaker	E	643	6/17/1993	No data	No data	No data	No data	No data	U	10/11/1993	116
[redacted]	57	ironworker	F	247	6/4/1993	930	1130	6/4/1993	1300	1500	U	10/31/1993	149
[redacted]	57	ironworker	F	247	6/4/1993	930	1130	6/9/1993	845	1100	U	9/7/1993	90
[redacted]	57	ironworker	F	247	6/11/1993	925	1130	6/11/1993	1250	1500	U	11/8/1994	515
[redacted]	57	ironworker	F	247	6/18/1993	900	1130	6/18/1993	1330	1440	U	9/16/1993	90
[redacted]	57	concrete	F	247	6/23/1993	1000	1130	6/23/1993	1300	1345	U	12/14/1993	174
[redacted]	59	laborer	F	241	10/8/1993	1000	1125	No data	No data	No data	U	11/10/1994	398
[redacted]	59	laborer	F	241	10/22/1993	1100	1400	10/23/1993	810	1105	W	4/6/1994	165
[redacted]	59	insulator	F	241	10/22/1993	1100	1400	10/23/1993	810	1050	U	6/27/1994	247
[redacted]	59	insulator	F	241	10/22/1993	1100	1400	10/23/1993	810	1050	U	12/8/1993	46
[redacted]	59	insulator	F	241	10/23/1993	810	1050	No data	No data	No data	U	2/1/1994	101
[redacted]	69	ironworker	F	outside	11/4/1993	1400	1530	No data	No data	No data	U	1/11/1994	68
[redacted]	69	electrician	F	outside	11/4/1993	1345	1415	No data	No data	No data	W	12/15/1993	41
[redacted]	69	ironworker	F	outside	11/4/1993	1400	1530	11/10/1993	900	1130	U	4/12/1994	153
[redacted]	69	ironworker	F	outside	11/10/1993	900	1130	11/10/1993	1330	1530	U	12/13/1993	33
[redacted]	74	laborer	F	281	5/6/1994	1000	1245	No data	No data	No data	U	3/14/1995	312
[redacted]	74	laborer	F	281	5/6/1994	900	1000	5/12/1994	1030	1300	U	9/8/1994	119
[redacted]	74	laborer	F	281	5/9/1994	1100	1200	5/12/1994	1030	1300	U	12/12/1994	214
[redacted]	75	pipefitter	F	772	4/12/1994	800	1000	4/14/1994	800	1015	U	2/7/1995	299
[redacted]	75	pipefitter	F	772	4/12/1994	800	1000	No data	No data	No data	U	4/10/1995	363
[redacted]	75	pipefitter	F	772	4/12/1994	800	1000	4/14/1994	800	1015	U	10/13/1994	182
[redacted]	75	laborer	F	772	4/29/1994	830	1030	No data	No data	No data	U	11/7/1994	192
[redacted]	78	laborer	Z	451	5/16/1994	1030	1145	No data	No data	No data	W	9/22/1994	129
[redacted]	78	laborer	Z	451	5/16/1994	1030	1145	No data	No data	No data	W	6/30/1995	410
[redacted]	78	sheetmetal	Z	451	5/17/1994	1330	1420	5/18/1994	830	945	U	3/13/1996	665
[redacted]	78	sheetmetal	Z	451	5/17/1994	1330	1420	5/18/1994	830	945	U	7/5/1995	413

Document No. ORAUT-RPRT-0092 Revision No. 00 Effective Date: 06/14/2019 Page 118 of 188

**ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)**

CTW	SID	Craft	Area	Bldg.	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Sr/FP bioassay type	Sr/FP bioassay date	# days since RWP, status
[redacted]	78	sheetmetal	Z	451	5/17/1994	1330	1420	5/18/1994	830	945	U	5/3/1996	716
[redacted]	79	sheetmetal	Z	451	12/1/1994	1330	1430	No data	No data	No data	U	5/3/1996	519
[redacted]	79	laborer	Z	451	12/6/1994	830	1115	12/6/1994	1300	1400	W	3/15/1995	99
[redacted]	79	sheetmetal	Z	451	12/6/1994	830	1115	12/6/1994	1300	1400	U	10/10/1995	308
[redacted]	80	sheetmetal	Z	451	9/15/1994	950	1415	9/27/1994	1030	1130	U	1/16/1995	111
[redacted]	80	laborer	Z	451	9/15/1994	1316	1330	9/28/1994	940	1145	W	1/2/1996	461
[redacted]	80	sheetmetal	Z	451	9/15/1994	950	1415	9/27/1994	1030	1130	U	12/29/1995	458
[redacted]	80	laborer	Z	451	9/20/1994	845	1129	9/27/1994	1230	1500	W	9/30/1994	3
[redacted]	80	laborer	Z	451	9/22/1994	830	1130	9/27/1994	1030	1130	W	3/15/1995	169
[redacted]	80	laborer	Z	451	9/27/1994	740	1000	9/27/1994	1030	1130	W	6/15/1995	261
[redacted]	82	sheetmetal	Z	704	3/12/1994	1600	1800	No data	No data	No data	U	8/8/1994	149
[redacted]	82	laborer	Z	704	3/12/1994	800	900	3/12/1994	1600	1700	W	8/1/1994	142
[redacted]	82	pipefitter	Z	704	3/12/1994	745	1445	No data	No data	No data	U	4/6/1994	25
[redacted]	82	sheetmetal	Z	704	3/12/1994	745	810	3/13/1994	1000	1715	U	12/9/1994	271
[redacted]	82	carpenter	Z	704	3/12/1994	1600	1650	No data	No data	No data	U	7/10/1995	485
[redacted]	82	pipefitter	Z	704	3/12/1994	802	851	No data	No data	No data	W	3/31/1994	19
[redacted]	82	pipefitter	Z	704	3/12/1994	745	1445	No data	No data	No data	W	4/13/1994	32
[redacted]	82	sheetmetal	Z	704	3/12/1994	1400	1715	3/13/1994	830	955	W	5/18/1995	431
[redacted]	82	pipefitter	Z	704	3/12/1994	745	1445	No data	No data	No data	U	10/10/1994	212
[redacted]	82	sheetmetal	Z	704	3/13/1994	830	855	3/13/1994	1000	1715	U	6/20/1994	99
[redacted]	82	carpenter	Z	704	3/13/1994	1020	1130	No data	No data	No data	W	7/27/1994	136
[redacted]	82	sheetmetal	Z	704	3/13/1994	830	1230	No data	No data	No data	U	3/16/1994	3
[redacted]	82	sheetmetal	Z	704	3/13/1994	830	1130	3/13/1994	1400	1715	W	2/22/1995	346
[redacted]	82	laborer	Z	704	3/13/1994	1030	1130	No data	No data	No data	U	7/15/1994	124
[redacted]	82	carpenter	Z	704	3/13/1994	830	1000	3/13/1994	1030	1130	U	8/8/1994	148
[redacted]	83	pipefitter	Z	210	3/15/1994	1820	1910	No data	No data	No data	U	4/30/1994	46
[redacted]	83	pipefitter	Z	210	3/16/1994	1630	1910	No data	No data	No data	W	5/24/1995	434
[redacted]	83	pipefitter	Z	210	3/18/1994	1328	1755	No data	No data	No data	W	12/6/1994	263
[redacted]	83	pipefitter	Z	210	3/18/1994	1700	1755	No data	No data	No data	W	12/14/1994	271
[redacted]	83	pipefitter	Z	210	3/18/1994	1328	1755	No data	No data	No data	W	5/24/1995	432
[redacted]	84	boilermaker	E	643	2/17/1994	930	1500	No data	No data	No data	U	8/9/1994	173
[redacted]	84	boilermaker	E	643	2/17/1994	930	1130	2/22/1994	1000	1145	N/A	None	[redacted]
[redacted]	84	boilermaker	E	643	2/17/1994	930	1500	No data	No data	No data	U	5/4/1994	76
[redacted]	84	carpenter	E	643	2/22/1994	1000	1130	No data	No data	No data	N/A	None	[redacted]

Document No. ORAUT-RPRT-0092 Revision No. 00 Effective Date: 06/14/2019 Page 119 of 188

**ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)**

CTW	SID	Craft	Area	Bldg.	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Sr/FP bioassay type	Sr/FP bioassay date	# days since RWP, status
[redacted]	84	laborer	E	643	2/22/1994	1000	1130	No data	No data	No data	W	8/4/1995	528
[redacted]	84	boilermaker	E	643	2/22/1994	1030	1130	No data	No data	No data	U	7/26/1994	154
[redacted]	85	laborer	E	643	8/2/1994	815	1000	No data	No data	No data	U	2/2/1995	184
[redacted]	88	BSRI	E	643	11/1/1994	900	945	No data	No data	No data	N/A	None	None
[redacted]	90	laborer	E	230	12/28/1994	1330	1430	12/29/1994	1425	1510	W	8/4/1995	218
[redacted]	90	carpenter	E	230	12/28/1994	1030	1130	No data	No data	No data	U	9/11/1995	257
[redacted]	90	carpenter	E	230	12/28/1994	1030	1635	12/29/1994	1300	1635	U	2/10/1995	43
[redacted]	90	carpenter	E	230	12/29/1994	1300	1615	No data	No data	No data	U	5/15/1995	137
[redacted]	91	carpenter	E	643	2/24/1994	1000	1200	No data	No data	No data	N/A	None	[redacted]
[redacted]	91	laborer	E	643	2/24/1994	1000	1200	No data	No data	No data	W	8/4/1995	526
[redacted]	93	carpenter	H	221	1/23/1995	900	1130	1/23/1995	1235	1635	U	9/11/1995	231
[redacted]	93	carpenter	H	221	1/23/1995	900	1130	1/23/1995	1235	1635	W	4/10/1995	77
[redacted]	93	carpenter	H	221	1/23/1995	800	1100	No data	No data	No data	U	5/15/1995	112
[redacted]	93	carpenter	H	221	1/23/1995	900	1130	1/23/1995	1235	1635	U	5/9/1995	106
[redacted]	100	electrician	F	221	12/27/1997	800	925	No data	No data	No data	U	10/11/1999	653
[redacted]	100	electrician	F	221	12/27/1997	800	925	No data	No data	No data	U	3/18/1998	81
[redacted]	101	carpenter	H	211	11/24/1998	1315	1515	No data	No data	No data	W	4/20/1999	147
[redacted]	102	laborer	F	294	7/18/1995	230	530	No data	No data	No data	U	12/19/1995	154
[redacted]	102	laborer	F	294	7/18/1995	1000	1200	7/18/1995	1400	1500	U	3/5/1996	231
[redacted]	102	laborer	F	294	7/18/1995	1000	1200	No data	No data	No data	U	2/16/1996	213
[redacted]	102	laborer	F	294	7/18/1995	1000	1200	No data	No data	No data	W	1/24/1996	190
[redacted]	102	laborer	F	294	7/18/1995	1000	1200	No data	No data	No data	U	3/4/1996	230
[redacted]	102	laborer	F	294	7/18/1995	230	530	No data	No data	No data	U	9/12/1995	56
[redacted]	103	sheetmetal	F	292	7/18/1995	1420	1520	No data	No data	No data	U	3/13/1996	239
[redacted]	103	sheetmetal	F	292	7/18/1995	1420	1524	No data	No data	No data	W	12/18/1995	153
[redacted]	103	sheetmetal	F	292	7/19/1995	945	1100	7/19/1995	1315	1530	U	8/15/1995	27
[redacted]	103	sheetmetal	F	292	7/19/1995	900	1100	7/19/1995	1315	1537	U	9/18/1995	61
[redacted]	103	sheetmetal	F	292	7/20/1995	1630	1800	No data	No data	No data	U	10/10/1995	82
[redacted]	104	laborer	F	FA-Line	8/2/1995	1030	1115	No data	No data	No data	U	11/20/1995	110
[redacted]	104	laborer	F	FA-Line	8/2/1995	1030	1115	No data	No data	No data	U	9/12/1995	41
[redacted]	107	carpenter	F	221	2/23/1995	1315	1445	2/27/1995	900	1100	N/A	None	[redacted]
[redacted]	107	laborer	F	221	2/23/1995	1330	1445	2/27/1995	1315	1430	U	8/10/1995	164
[redacted]	107	carpenter	F	221	2/23/1995	1315	1445	No data	No data	No data	U	7/20/1995	147
[redacted]	107	carpenter	F	221	2/27/1995	1025	1100	No data	No data	No data	U	6/13/1995	106

Document No. ORAUT-RPRT-0092 Revision No. 00 Effective Date: 06/14/2019 Page 120 of 188

**ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)**

CTW	SID	Craft	Area	Bldg.	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Sr/FP bioassay type	Sr/FP bioassay date	# days since RWP, status
[redacted]	107	laborer	F	221	2/27/1995	1315	1430	No data	No data	No data	U	11/16/1995	262
[redacted]	108	carpenter	F	221	9/17/1997	1000	1110	9/17/1997	1230	1500	U	10/2/1997	15
[redacted]	108	laborer	F	221	9/17/1997	1000	1115	9/17/1997	1330	1500	U	8/10/1998	327
[redacted]	108	pipefitter	F	221	9/18/1997	1015	1215	9/18/1997	1430	1730	U	10/6/1997	18
[redacted]	108	pipefitter	F	221	9/18/1997	1015	1215	9/18/1997	1430	1730	U	7/7/1998	292
[redacted]	108	pipefitter	F	221	9/18/1997	1530	1730	9/23/1997	1115	1215	U	4/6/1998	195
[redacted]	108	laborer	F	221	9/26/1997	1315	1415	9/30/1997	1000	1200	U	8/11/1998	315
[redacted]	108	laborer	F	221	9/29/1997	1330	1600	9/30/1997	1000	1200	U	8/10/1998	314
[redacted]	108	insulator	F	221	9/29/1997	1330	1600	9/30/1997	1000	1200	U	11/3/1997	34
[redacted]	109	laborer	F	221	1/8/1998	930	1100	1/29/1998	915	1045	U	3/18/1998	48
[redacted]	109	laborer	F	221	1/13/1998	930	1120	1/13/1998	1330	1440	U	2/9/1998	27
[redacted]	113	painter	F	221	4/8/1998	910	1115	4/8/1998	1330	1530	U	8/12/1998	126
[redacted]	113	painter	F	221	4/8/1998	910	1115	4/8/1998	1330	1530	N/A	None	[redacted]
[redacted]	113	painter	F	221	4/8/1998	910	1100	4/8/1998	1330	1530	W	6/30/1999	448
[redacted]	113	painter	F	221	4/8/1998	910	1115	4/8/1998	1330	1530	N/A	None	[redacted]
[redacted]	113	painter	F	221	4/28/1998	915	1115	4/29/1998	900	1130	W	12/16/1998	231
[redacted]	113	painter	F	221	4/28/1998	900	1015	4/28/1998	1315	1530	U	1/28/2000	640
[redacted]	113	painter	F	221	4/28/1998	900	1015	4/28/1998	1315	1530	W	8/24/1998	118
[redacted]	116	pipefitter	F	241	8/19/1996	1400	1500	8/20/1996	1030	1115	N/A	None	[redacted]
[redacted]	116	pipefitter	F	241	8/19/1996	1410	1500	No data	No data	No data	U	3/10/1997	203
[redacted]	116	pipefitter	F	241	8/20/1996	1030	1115	No data	No data	No data	U	9/6/1996	17
[redacted]	126	boilermaker	F	241	4/2/1996	945	1130	No data	No data	No data	U	6/5/1996	64
[redacted]	126	laborer	F	241	4/2/1996	1515	1630	No data	No data	No data	U	8/6/1996	126
[redacted]	126	laborer	F	241	4/2/1996	1430	1630	No data	No data	No data	U	5/17/1996	45
[redacted]	126	boilermaker	F	241	4/2/1996	945	1130	No data	No data	No data	U	12/12/1996	254
[redacted]	126	steel worker	F	241	4/8/1996	1300	1475	No data	No data	No data	U	6/4/1996	57
[redacted]	126	HEO	F	241	4/8/1996	1100	1130	4/8/1996	1300	1430	U	10/2/1997	542
[redacted]	126	driver	F	241	4/8/1996	1300	1500	No data	No data	No data	U	10/28/1996	203
[redacted]	126	laborer	F	241	4/8/1996	1300	1500	No data	No data	No data	U	6/25/1997	443
[redacted]	126	steel worker	F	241	4/8/1996	1300	1415	No data	No data	No data	U	10/23/1996	198
[redacted]	127	HEO	F	241	10/17/1997	1000	1500	No data	No data	No data	W	10/29/1997	12
[redacted]	127	laborer	F	241	10/17/1997	1030	1500	No data	No data	No data	U	12/15/1997	59
[redacted]	127	laborer	F	241	10/17/1997	1030	1445	No data	No data	No data	U	8/10/1998	297
[redacted]	127	HEO	F	241	10/17/1997	1010	1530	No data	No data	No data	W	10/17/1997	0

Document No. ORAUT-RPRT-0092 Revision No. 00 Effective Date: 06/14/2019 Page 121 of 188

**ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)**

CTW	SID	Craft	Area	Bldg.	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Sr/FP bioassay type	Sr/FP bioassay date	# days since RWP, status
[redacted]	127	HEO	F	241	10/17/1997	1430	1600	No data	No data	No data	W	10/29/1997	12
[redacted]	127	laborer	F	241	10/17/1997	1015	1230	10/17/1997	1300	1445	U	6/8/1998	234
[redacted]	127	pipefitter	F	241	10/17/1997	1600	1700	No data	No data	No data	N/A	None	None
[redacted]	127	steel worker	F	241	10/17/1997	1036	1210	10/17/1997	1245	1415	U	10/5/1998	353
[redacted]	127	laborer	F	241	10/17/1997	1030	1500	No data	No data	No data	U	8/11/1998	298
[redacted]	127	carpenter	F	241	10/17/1997	1335	1535	10/17/1997	1630	1700	U	8/10/1998	297
[redacted]	127	carpenter	F	241	10/17/1997	1445	1505	10/17/1997	1630	1700	U	2/20/1998	126
[redacted]	127	carpenter	F	241	10/17/1997	1336	1535	10/17/1997	1630	1700	U	5/6/1998	201
[redacted]	127	HEO	F	241	10/20/1997	1115	1215	10/20/1997	1245	1510	U	2/10/1998	113
[redacted]	127	carpenter	F	241	10/20/1997	1115	1200	No data	No data	No data	N/A	None	[redacted]
[redacted]	127	carpenter	F	241	10/20/1997	1110	1145	No data	No data	No data	U	7/4/1998	257
[redacted]	127	pipefitter	F	241	10/20/1997	1025	1300	No data	No data	No data	U	2/20/1998	123
[redacted]	127	pipefitter	F	241	10/23/1997	1400	1545	No data	No data	No data	U	2/18/1998	118
[redacted]	127	pipefitter	F	241	10/23/1997	1400	1545	No data	No data	No data	U	5/21/1998	210
[redacted]	128	pipefitter	F	241	8/15/1996	1600	1625	No data	No data	No data	N/A	None	[redacted]
[redacted]	128	pipefitter	F	241	8/15/1996	1600	1625	No data	No data	No data	U	9/6/1996	22
[redacted]	129	pipefitter	F	241	1/20/1997	1115	1345	No data	No data	No data	N/A	None	[redacted]
[redacted]	129	pipefitter	F	241	1/20/1997	1115	1345	No data	No data	No data	W	1/5/1998	350
[redacted]	130	laborer	F	241	12/1/1998	910	1100	No data	No data	No data	U	12/15/1998	14
[redacted]	130	electrician	F	241	12/1/1998	910	1100	No data	No data	No data	U	6/11/1999	192
[redacted]	130	electrician	F	241	12/1/1998	910	1100	No data	No data	No data	U	3/16/1999	105
[redacted]	131	mechanic	F	241	11/10/1998	1245	1530	No data	No data	No data	U	2/2/1999	84
[redacted]	131	mechanic	F	241	11/10/1998	1245	1530	No data	No data	No data	U	9/20/1999	314
[redacted]	132	laborer	F	241	5/7/1997	1655	1755	No data	No data	No data	U	10/7/1998	518
[redacted]	132	HEO	F	241	5/8/1997	800	1330	No data	No data	No data	U	2/9/1998	277
[redacted]	132	HEO	F	241	5/8/1997	1200	1330	No data	No data	No data	U	10/2/1997	147
[redacted]	132	carpenter	F	241	5/8/1997	1330	1345	No data	No data	No data	U	4/6/1998	333
[redacted]	132	laborer	F	241	5/8/1997	1200	1230	No data	No data	No data	U	12/15/1997	221
[redacted]	132	laborer	F	241	5/8/1997	830	1430	No data	No data	No data	U	6/25/1997	48
[redacted]	132	laborer	F	241	5/8/1997	1650	1815	No data	No data	No data	U	3/12/1998	308
[redacted]	132	pipefitter	F	241	5/8/1997	1230	1400	No data	No data	No data	U	1/16/1998	253
[redacted]	132	pipefitter	F	241	5/8/1997	1230	1400	No data	No data	No data	U	11/11/1997	187
[redacted]	132	HEO	F	241	5/9/1997	1300	1430	No data	No data	No data	U	10/6/1997	150
[redacted]	132	pipefitter	F	241	5/9/1997	1700	2000	No data	No data	No data	U	10/6/1997	150

Document No. ORAUT-RPRT-0092 Revision No. 00 Effective Date: 06/14/2019 Page 122 of 188

**ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)**

CTW	SID	Craft	Area	Bldg.	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Sr/FP bioassay type	Sr/FP bioassay date	# days since RWP, status
[redacted]	132	laborer	F	241	5/9/1997	945	1245	No data	No data	No data	U	7/22/1997	74
[redacted]	132	pipefitter	F	241	5/9/1997	800	1430	No data	No data	No data	W	9/25/1997	139
[redacted]	132	pipefitter	F	241	5/9/1997	1700	2000	No data	No data	No data	U	6/26/1997	48
[redacted]	132	pipefitter	F	241	5/9/1997	1700	2000	No data	No data	No data	U	5/12/1997	3
[redacted]	132	pipefitter	F	241	5/9/1997	1630	2030	No data	No data	No data	U	10/13/1997	157
[redacted]	132	carpenter	F	241	5/10/1997	1730	1830	No data	No data	No data	U	7/4/1997	55
[redacted]	132	laborer	F	241	5/10/1997	1630	1830	No data	No data	No data	U	6/11/1997	32
[redacted]	136	electrician	A	773	3/22/1994	1040	1230	No data	No data	No data	U	1/2/1996	651
[redacted]	136	electrician	A	773	3/22/1994	1040	1230	No data	No data	No data	U	10/16/1995	573
[redacted]	137	pipefitter	A	773	3/26/1994	835	1135	3/26/1994	1308	1340	U	8/17/1994	144
[redacted]	137	laborer	A	773	3/26/1994	835	1135	3/26/1994	1308	1340	U	12/12/1994	261
[redacted]	137	pipefitter	A	773	3/26/1994	835	1135	3/26/1994	1308	1340	U	8/7/1995	499
[redacted]	137	pipefitter	A	773	3/26/1994	835	1135	3/26/1994	1308	1340	U	4/19/1994	24
[redacted]	138	laborer	A	773	9/14/1994	1400	1530	No data	No data	No data	U	12/12/1994	89
[redacted]	138	laborer	A	773	9/14/1994	1400	1530	No data	No data	No data	U	12/12/1994	89
[redacted]	139	painter	A	773	3/15/1994	800	930	3/15/1994	1400	1510	U	10/19/1994	218
[redacted]	140	painter	A	773	1/18/1994	850	1145	1/18/1994	1400	1520	U	10/19/1994	274
[redacted]	140	painter	A	773	1/18/1994	850	1145	1/18/1994	1300	1520	U	3/10/1994	51
[redacted]	143	laborer	A	773	4/1/1993	1140	1500	No data	No data	No data	U	4/12/1993	11
[redacted]	143	laborer	A	773	4/1/1993	1140	1500	No data	No data	No data	U	2/23/1994	328
[redacted]	143	sheetmetal	A	773	4/1/1993	1150	1500	No data	No data	No data	U	10/13/1993	195
[redacted]	143	sheetmetal	A	773	4/1/1993	1150	1500	No data	No data	No data	U	8/9/1993	130
[redacted]	143	laborer	A	773	4/2/1993	850	1035	No data	No data	No data	U	5/19/1993	47
[redacted]	143	sheetmetal	A	773	4/6/1993	910	1110	4/6/1993	1400	1530	U	1/13/1994	282
[redacted]	143	laborer	A	773	4/6/1993	910	1100	No data	No data	No data	U	11/4/1993	212
[redacted]	144	sheetmetal	A	773	3/1/1993	1240	1350	3/1/1993	1430	1445	U	6/16/1993	107
[redacted]	144	sheetmetal	A	773	3/1/1993	1144	1159	No data	No data	No data	U	7/21/1993	142
[redacted]	144	electrician	A	773	3/1/1993	1416	1740	No data	No data	No data	W	9/22/1993	205
[redacted]	144	steel worker	A	773	3/3/1993	1	30	No data	No data	No data	U	3/10/1993	7
[redacted]	144	electrician	A	773	3/3/1993	1340	1440	No data	No data	No data	U	5/5/1993	63
[redacted]	144	sheetmetal	A	773	3/3/1993	1800	2250	3/3/1993	2330	230	U	3/23/1993	20
[redacted]	144	sheetmetal	A	773	3/4/1993	1831	1850	No data	No data	No data	U	2/7/1994	340
[redacted]	144	sheetmetal	A	773	3/4/1993	1048	1102	No data	No data	No data	W	5/11/1993	68
[redacted]	144	electrician	A	773	3/4/1993	1335	1355	No data	No data	No data	U	10/13/1993	223

**ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)**

CTW	SID	Craft	Area	Bldg.	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Sr/FP bioassay type	Sr/FP bioassay date	# days since RWP, status
[redacted]	144	sheetmetal	A	773	3/4/1993	1645	1715	3/4/1993	2120	2330	U	10/13/1993	223
[redacted]	144	sheetmetal	A	773	3/4/1993	1808	2200	3/4/1993	2246	2330	W	4/29/1993	56
[redacted]	144	sheetmetal	A	773	3/5/1993	1515	1930	3/5/1993	1945	2215	U	8/8/1994	521
[redacted]	144	sheetmetal	A	773	3/5/1993	800	1030	No data	No data	No data	U	6/16/1993	103
[redacted]	144	sheetmetal	A	773	3/5/1993	800	1130	3/5/1993	1300	1345	W	9/23/1993	202
[redacted]	144	electrician	A	773	3/5/1993	930	1125	3/5/1993	1300	1610	U	11/23/1993	263
[redacted]	144	sheetmetal	A	773	3/5/1993	800	1125	3/5/1993	1300	1520	W	4/20/1993	46
[redacted]	144	pipefitter	A	773	3/5/1993	900	1000	No data	No data	No data	U	7/6/1993	123
[redacted]	144	sheetmetal	A	773	3/5/1993	800	1130	No data	No data	No data	U	7/14/1993	131
[redacted]	144	sheetmetal	A	773	3/5/1993	849	902	No data	No data	No data	W	2/24/1994	356
[redacted]	144	electrician	A	773	3/5/1993	1345	1610	No data	No data	No data	U	6/8/1993	95
[redacted]	144	electrician	A	773	3/5/1993	1355	1715	No data	No data	No data	U	5/27/1993	83
[redacted]	144	pipefitter	A	773	3/5/1993	900	1000	No data	No data	No data	W	3/12/1993	7
[redacted]	144	laborer	A	773	3/5/1993	1300	1500	No data	No data	No data	U	5/19/1993	75
[redacted]	144	electrician	A	773	3/5/1993	930	1130	3/5/1993	1300	1615	W	6/30/1993	117
[redacted]	144	sheetmetal	A	773	3/5/1993	850	1000	No data	No data	No data	U	8/9/1993	157
[redacted]	144	sheetmetal	A	773	3/5/1993	800	1130	No data	No data	No data	U	2/1/1994	333
[redacted]	144	laborer	A	773	3/8/1993	1030	1235	3/8/1993	1300	1400	W	1/31/1994	329
[redacted]	144	laborer	A	773	3/9/1993	1300	1530	No data	No data	No data	U	4/12/1993	34
[redacted]	144	laborer	A	773	3/9/1993	1140	1500	No data	No data	No data	U	2/23/1994	351
[redacted]	163	laborer	H	261	10/13/1997	1100	1200	No data	No data	No data	U	2/15/1999	490
[redacted]	163	laborer	H	261	10/13/1997	1100	1200	No data	No data	No data	U	8/10/1998	301
[redacted]	183	ironworker	H	HCMA	1/4/1993	830	945	No data	No data	No data	W	3/11/1993	66
[redacted]	183	ironworker	H	HCMA	1/4/1993	830	1100	No data	No data	No data	U	1/19/1993	15
[redacted]	183	ironworker	H	HCMA	1/4/1993	900	1100	No data	No data	No data	U	1/19/1993	15
[redacted]	183	ironworker	H	HCMA	1/4/1993	900	1100	No data	No data	No data	U	10/30/1993	299
[redacted]	190	laborer	H	299	3/21/1991	1300	1500	No data	No data	No data	U	3/26/1991	5
[redacted]	190	laborer	H	299	3/21/1991	915	1130	3/21/1991	1300	1500	U	3/26/1991	5
[redacted]	200	sheetmetal	Z	451	10/4/1994	800	815	10/6/1994	1315	1500	U	1/16/1995	102
[redacted]	200	sheetmetal	Z	451	10/5/1994	1250	1315	No data	No data	No data	U	1/10/1995	97
[redacted]	200	sheetmetal	Z	451	10/5/1994	1030	1145	10/5/1994	1245	1450	U	12/29/1995	450
[redacted]	200	sheetmetal	Z	451	10/8/1994	745	1130	10/26/1994	1315	1600	U	7/5/1995	252
[redacted]	200	sheetmetal	Z	451	10/8/1994	730	1130	10/8/1994	1230	1530	W	3/2/1995	145
[redacted]	200	laborer	Z	451	10/25/1994	1100	1130	10/25/1994	1315	1600	U	5/7/1996	560

**ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)**

CTW	SID	Craft	Area	Bldg.	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Sr/FP bioassay type	Sr/FP bioassay date	# days since RWP, status
[redacted]	200	laborer	Z	451	10/25/1994	1100	1145	10/25/1994	1315	1600	W	1/2/1996	434
[redacted]	200	laborer	Z	451	10/25/1994	1315	1600	10/27/1994	830	1130	W	11/11/1994	15
[redacted]	200	ironworker	Z	451	10/26/1994	1300	1400	10/27/1994	930	1130	W	2/24/1995	120
[redacted]	200	laborer	Z	451	10/27/1994	830	1130	10/27/1994	1300	1300	W	3/15/1995	139
[redacted]	200	laborer	Z	451	10/27/1994	830	1130	10/27/1994	1300	1300	W	11/15/1994	19
[redacted]	200	sheetmetal	Z	451	10/27/1994	830	1130	10/27/1994	1300	1315	W	3/13/1995	137
[redacted]	200	laborer	Z	451	10/28/1994	900	1200	10/28/1994	1300	1430	W	5/4/1995	188
[redacted]	200	laborer	Z	451	10/28/1994	900	1200	10/28/1994	1330	1430	W	6/15/1995	230
[redacted]	200	sheetmetal	Z	451	10/28/1994	900	1200	10/28/1994	1300	1430	U	5/3/1996	553
[redacted]	201	ironworker	Z	451	11/1/1994	930	1230	11/9/1994	1000	1130	U	12/20/1995	406
[redacted]	201	laborer	Z	451	11/3/1994	930	1130	11/16/1994	900	1000	W	3/15/1995	119
[redacted]	201	laborer	Z	451	11/3/1994	930	1330	11/18/1994	1100	1230	W	5/4/1995	167
[redacted]	201	laborer	Z	451	11/3/1994	1300	1530	11/18/1994	1100	1230	W	1/2/1996	410
[redacted]	201	laborer	Z	451	11/3/1994	930	1130	11/7/1994	815	1130	W	11/11/1994	4
[redacted]	201	sheetmetal	Z	451	11/4/1994	800	1130	11/4/1994	1300	1430	U	5/3/1996	546
[redacted]	201	ironworker	Z	451	11/7/1994	1020	1145	No data	No data	No data	W	8/4/1995	270
[redacted]	201	sheetmetal	Z	451	11/8/1994	830	1130	11/8/1994	1300	1430	U	3/13/1996	491
[redacted]	201	laborer	Z	451	11/10/1994	800	1130	11/10/1994	1300	1400	W	6/15/1995	217
[redacted]	201	laborer	Z	451	11/10/1994	800	1130	10/10/1994	1300	1400	U	1/12/1995	94
[redacted]	201	sheetmetal	Z	451	11/10/1994	800	1130	11/10/1994	1300	1400	W	3/13/1995	123
[redacted]	201	ironworker	Z	451	11/14/1994	900	1130	11/15/1994	930	1035	U	3/7/1995	112
[redacted]	201	insulator	Z	451	11/14/1994	1045	1115	11/15/1994	845	1045	U	8/20/1996	644
[redacted]	201	sheetmetal	Z	451	11/14/1994	1015	1130	11/14/1994	1245	1600	U	1/16/1995	63
[redacted]	201	laborer	Z	451	11/14/1994	900	1130	11/14/1994	1300	1430	U	1/14/1995	61
[redacted]	201	sheetmetal	Z	451	11/15/1994	845	1130	11/16/1994	900	1045	U	10/10/1995	328
[redacted]	201	insulator	Z	451	11/15/1994	900	1045	11/15/1994	1420	1440	W	2/22/1995	99
[redacted]	201	steel worker	Z	451	11/16/1994	941	1008	No data	No data	No data	U	12/9/1994	23
[redacted]	201	ironworker	Z	451	11/18/1994	1105	1230	No data	No data	No data	W	9/25/1995	311
[redacted]	201	laborer	Z	451	11/23/1994	830	1100	No data	No data	No data	W	6/19/1995	208
[redacted]	201	sheetmetal	Z	451	11/23/1994	830	1100	11/23/1994	1230	1345	U	7/5/1995	224
[redacted]	202	pipefitter	Z	451	3/16/1994	1050	1500	No data	No data	No data	W	3/31/1994	15
[redacted]	202	pipefitter	Z	451	3/16/1994	1050	1300	No data	No data	No data	W	4/13/1994	28
[redacted]	202	pipefitter	Z	451	3/16/1994	1050	1300	No data	No data	No data	W	10/10/1994	208
[redacted]	204	ironworker	Z	451	4/14/1994	925	1135	4/15/1994	800	1130	W	9/27/1994	165

Document No. ORAUT-RPRT-0092 Revision No. 00 Effective Date: 06/14/2019 Page 125 of 188

ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)

CTW	SID	Craft	Area	Bldg.	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Sr/FP bioassay type	Sr/FP bioassay date	# days since RWP, status
[redacted]	204	sheetmetal	Z	451	4/18/1994	900	1000	4/18/1994	1300	1330	U	8/8/1994	112
[redacted]	204	sheetmetal	Z	451	4/18/1994	900	1000	4/18/1994	1300	1330	W	5/20/1994	32
[redacted]	205	sheetmetal	Z	451	5/5/1994	835	1100	5/5/1994	1230	1500	U	8/8/1994	95
[redacted]	205	sheetmetal	Z	451	5/5/1994	1230	1500	5/12/1994	800	1015	U	3/13/1996	671
[redacted]	205	sheetmetal	Z	451	5/11/1994	845	1055	5/12/1994	800	1015	U	5/3/1996	722
[redacted]	207	pipefitter	A	773	11/21/1991	803	1503	No data	No data	No data	U	3/3/1992	103
[redacted]	207	pipefitter	A	773	11/21/1991	830	1115	11/21/1991	1245	1600	W	4/3/1992	134
[redacted]	207	pipefitter	A	773	11/21/1991	830	930	11/21/1991	1245	1600	U	4/29/1992	160
[redacted]	207	carpenter	A	773	11/21/1991	1008	1115	No data	No data	No data	U	1/27/1992	67
[redacted]	207	carpenter	A	773	11/21/1991	1008	1115	No data	No data	No data	U	12/9/1991	18
[redacted]	207	laborer	A	773	11/21/1991	1303	1503	No data	No data	No data	U	1/17/1992	57
[redacted]	207	pipefitter	A	773	11/21/1991	900	1145	11/21/1991	1245	1500	U	1/14/1992	54
[redacted]	208	pipefitter	A	773	12/12/1991	730	900	12/12/1991	930	1130	U	5/12/1992	152
[redacted]	208	pipefitter	A	773	12/12/1991	730	900	12/12/1991	930	1130	U	4/29/1992	139
[redacted]	209	boilermaker	E	643	3/5/1993	1010	1130	No data	No data	No data	W	4/28/1993	54
[redacted]	217	electrician	F	241	11/23/1998	1030	1130	11/30/1998	1300	1500	U	3/18/1999	108
[redacted]	217	laborer	F	241	11/23/1998	1330	1530	No data	No data	No data	W	3/1/1999	98
[redacted]	217	electrician	F	241	11/24/1998	1030	1330	11/30/1998	1300	1500	U	6/11/1999	193
[redacted]	217	electrician	F	241	11/24/1998	1030	1330	No data	No data	No data	U	3/18/1999	114
[redacted]	218	pipefitter	F	FTF	3/26/1998	1500	1530	No data	No data	No data	U	5/21/1998	56
[redacted]	224	boilermaker	H	242	10/18/1991	930	1100	No data	No data	No data	W	10/18/1991	0
[redacted]	224	boilermaker	H	242	10/18/1991	930	1100	No data	No data	No data	U	11/13/1991	26
[redacted]	224	laborer	H	242	10/18/1991	830	1100	No data	No data	No data	U	12/27/1991	70
[redacted]	224	laborer	H	242	10/18/1991	830	1100	No data	No data	No data	U	2/11/1992	116
[redacted]	224	boilermaker	H	242	10/18/1991	840	1100	No data	No data	No data	U	12/9/1991	52
[redacted]	224	boilermaker	H	242	10/18/1991	930	1100	No data	No data	No data	W	8/20/1992	307
[redacted]	224	driver	H	242	10/18/1991	1245	1430	No data	No data	No data	U	2/11/1992	116
[redacted]	224	pipefitter	H	242	10/21/1991	845	1000	No data	No data	No data	U	10/22/1991	1
[redacted]	224	pipefitter	H	242	10/21/1991	845	1000	No data	No data	No data	U	2/18/1992	120
[redacted]	230	laborer	A	773	1/11/1993	700	745	No data	No data	No data	U	4/12/1993	91
[redacted]	230	carpenter	A	773	1/13/1993	1241	1455	No data	No data	No data	U	6/9/1993	147
[redacted]	230	carpenter	A	773	1/13/1993	720	1110	1/13/1993	1240	1455	U	4/9/1993	86
[redacted]	230	painter	A	773	1/20/1993	930	1205	No data	No data	No data	U	7/19/1993	180
[redacted]	230	sheetmetal	A	773	1/26/1993	820	1245	No data	No data	No data	U	10/13/1993	260

**ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)**

CTW	SID	Craft	Area	Bldg.	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Sr/FP bioassay type	Sr/FP bioassay date	# days since RWP, status
[redacted]	230	pipefitter	A	773	1/27/1993	830	1300	No data	No data	No data	U	8/11/1993	196
[redacted]	230	pipefitter	A	773	1/27/1993	830	1300	No data	No data	No data	W	6/28/1993	152
[redacted]	231	sheetmetal	A	773	2/4/1993	830	1245	No data	No data	No data	U	10/13/1993	251
[redacted]	231	sheetmetal	A	773	2/11/1993	1100	1300	No data	No data	No data	U	8/9/1993	179
[redacted]	231	sheetmetal	A	773	2/16/1993	800	1115	No data	No data	No data	U	6/16/1993	120
[redacted]	231	sheetmetal	A	773	2/16/1993	1135	1245	No data	No data	No data	W	4/20/1993	63
[redacted]	231	sheetmetal	A	773	2/16/1993	800	1115	No data	No data	No data	U	2/1/1994	350
[redacted]	232	carpenter	A	773	3/22/1993	820	920	3/31/1993	900	1145	U	4/9/1993	9
[redacted]	232	laborer	A	773	3/22/1993	820	920	3/30/1993	930	1100	U	11/4/1993	219
[redacted]	232	pipefitter	A	773	3/25/1993	945	1230	No data	No data	No data	U	8/11/1993	139
[redacted]	232	laborer	A	773	3/25/1993	800	1230	No data	No data	No data	U	2/8/1994	320
[redacted]	232	pipefitter	A	773	3/25/1993	845	1250	No data	No data	No data	U	1/12/1994	293
[redacted]	232	laborer	A	773	3/30/1993	930	1100	No data	No data	No data	U	5/19/1993	50
[redacted]	232	carpenter	A	773	3/31/1993	900	1145	No data	No data	No data	U	3/9/1994	343
[redacted]	233	electrician	A	773	2/21/1993	1545	1700	2/26/1993	1745	1845	U	5/27/1993	90
[redacted]	233	steel worker	A	773	2/24/1993	1315	1515	No data	No data	No data	U	7/14/1993	140
[redacted]	233	electrician	A	773	2/24/1993	1400	1600	No data	No data	No data	U	10/8/1993	226
[redacted]	233	electrician	A	773	2/24/1993	1516	1603	No data	No data	No data	W	9/22/1993	210
[redacted]	233	sheetmetal	A	773	2/26/1993	2300	2345	No data	No data	No data	W	8/6/1993	161
[redacted]	233	electrician	A	773	2/26/1993	1500	1700	2/26/1993	1745	1845	U	6/8/1993	102
[redacted]	233	sheetmetal	A	773	2/26/1993	800	1200	2/26/1993	1500	1700	U	2/1/1994	340
[redacted]	233	sheetmetal	A	773	2/27/1993	1415	1715	No data	No data	No data	U	6/16/1993	109
[redacted]	233	sheetmetal	A	773	2/27/1993	1840	2230	No data	No data	No data	U	8/8/1994	527
[redacted]	233	sheetmetal	A	773	2/27/1993	1450	1730	No data	No data	No data	U	10/13/1993	228
[redacted]	233	sheetmetal	A	773	2/27/1993	1850	2230	No data	No data	No data	W	4/29/1993	61
[redacted]	233	sheetmetal	A	773	2/27/1993	1850	2100	No data	No data	No data	U	3/10/1993	11
[redacted]	233	sheetmetal	A	773	2/27/1993	1850	2230	No data	No data	No data	U	3/23/1993	24
[redacted]	233	sheetmetal	A	773	2/28/1993	720	1120	No data	No data	No data	U	6/16/1993	108
[redacted]	233	sheetmetal	A	773	2/28/1993	720	1120	No data	No data	No data	W	4/20/1993	51
[redacted]	233	sheetmetal	A	773	2/28/1993	720	1120	No data	No data	No data	U	8/9/1993	162
[redacted]	234	laborer	A	773	4/6/1994	945	1100	4/7/1994	900	1100	U	12/12/1994	249
[redacted]	234	laborer	A	773	4/7/1994	900	1100	4/8/1994	945	1100	U	10/17/1994	192
[redacted]	235	painter	A	773	1/7/1994	1115	1215	1/7/1994	1250	1345	U	10/19/1994	285
[redacted]	236	laborer	A	773	11/7/1994	910	1145	No data	No data	No data	U	12/12/1994	35

**ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)**

CTW	SID	Craft	Area	Bldg.	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Sr/FP bioassay type	Sr/FP bioassay date	# days since RWP, status
[redacted]	236	pipefitter	A	773	11/7/1994	945	1145	11/7/1994	1440	1555	U	8/7/1995	273
[redacted]	236	pipefitter	A	773	11/8/1994	800	815	11/8/1994	900	1025	U	5/18/1995	191
[redacted]	236	carpenter	A	773	11/11/1994	No data	No data	No data	No data	No data	W	4/10/1995	150
[redacted]	236	pipefitter	A	773	11/29/1994	1030	1230	No data	No data	No data	U	8/23/1995	267
[redacted]	237	laborer	A	773	8/1/1994	1345	1500	8/2/1994	1345	1445	U	12/12/1994	132
[redacted]	237	laborer	A	773	8/1/1994	1345	1500	8/2/1994	1345	1445	U	12/12/1994	132
[redacted]	240	laborer	E	643	3/8/1997	1640	1810	No data	No data	No data	U	3/27/1997	19
[redacted]	240	laborer	E	643	3/8/1997	1640	1815	No data	No data	No data	U	3/27/1997	19
[redacted]	241	boilermaker	E	643	6/17/1997	1030	1130	No data	No data	No data	U	6/17/1997	0
[redacted]	241	boilermaker	E	643	6/17/1997	1030	1130	No data	No data	No data	U	6/17/1997	0
[redacted]	242	pipefitter	F	772	10/19/1992	1430	1530	No data	No data	No data	U	4/7/1993	170
[redacted]	243	sheetmetal	F	772	1/29/1992	900	1100	No data	No data	No data	U	2/10/1992	12
[redacted]	243	sheetmetal	F	772	1/29/1992	900	1100	No data	No data	No data	W	7/23/1992	176
[redacted]	243	laborer	F	772	1/29/1992	830	1135	No data	No data	No data	U	4/27/1992	89
[redacted]	243	sheetmetal	F	772	1/29/1992	812	1115	No data	No data	No data	U	7/27/1992	180
[redacted]	243	sheetmetal	F	772	1/29/1992	900	1100	No data	No data	No data	U	10/12/1992	257
[redacted]	243	laborer	F	772	1/29/1992	830	1135	No data	No data	No data	N/A	None	[redacted]
[redacted]	244	laborer	F	772	10/1/1992	900	1040	10/1/1992	1330	1445	U	10/12/1992	11
[redacted]	244	carpenter	F	772	10/1/1992	900	1040	10/1/1992	1330	1445	W	6/17/1993	259
[redacted]	244	carpenter	F	772	10/1/1992	900	1040	10/1/1992	1330	1445	U	8/9/1993	312
[redacted]	245	carpenter	F	772	9/30/1992	845	945	No data	No data	No data	W	6/17/1993	260
[redacted]	245	carpenter	F	772	9/30/1992	845	945	No data	No data	No data	U	8/9/1993	313

a. Bioassay type codes: U = urinalysis; C = chest count; W = whole-body count.

ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)

Table C-5. SubCTW required uranium bioassay, 1990 to 1998.^a

CTW	SID	Craft	Area	Bldg.	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	U bioassay type	U bioassay date	# days since RWP, status
[redacted]	5	painter	F	772	10/8/1990	1000	1040	No data	No data	No data	C	2/23/1993	869
[redacted]	11	laborer	H	299	4/18/1991	800	1159	4/18/1991	1230	1530	N/A	None	[redacted]
[redacted]	11	carpenter	H	299	4/18/1991	805	1100	No data	No data	No data	C	12/29/1992	621
[redacted]	11	carpenter	H	299	4/18/1991	800	1100	No data	No data	No data	N/A	None	[redacted]
[redacted]	11	laborer	H	299	4/18/1991	800	1159	4/23/1991	1230	1530	U	8/6/1992	471
[redacted]	11	laborer	H	299	4/23/1991	1230	1530	No data	No data	No data	U	7/17/1992	451
[redacted]	11	carpenter	H	299	4/23/1991	1230	1530	No data	No data	No data	N/A	None	[redacted]
[redacted]	11	carpenter	H	299	4/23/1991	1230	1530	No data	No data	No data	U	5/13/1992	386
[redacted]	16	carpenter	F	247	7/25/1991	800	915	No data	No data	No data	U	5/8/1992	288
[redacted]	16	carpenter	F	247	7/25/1991	800	915	No data	No data	No data	N/A	None	[redacted]
[redacted]	20	pipefitter	A	773	11/21/1991	900	1200	No data	No data	No data	U	3/3/1992	103
[redacted]	20	pipefitter	A	773	11/21/1991	900	1503	No data	No data	No data	C	9/29/1995	1408
[redacted]	21	laborer	A	773	12/12/1991	900	1500	No data	No data	No data	N/A	None	[redacted]
[redacted]	21	laborer	A	773	12/12/1991	900	1100	No data	No data	No data	U	5/4/1992	144
[redacted]	22	laborer	H	OBL	10/12/1992	2030	2300	10/14/1992	2020	2305	U	11/11/1992	28
[redacted]	22	laborer	H	OBL	10/12/1992	2030	2300	10/26/1992	2000	2300	U	11/24/1992	29
[redacted]	22	laborer	H	OBL	10/14/1992	2030	2330	No data	No data	No data	U	12/17/1992	64
[redacted]	22	electrician	H	OBL	10/20/1992	1530	1730	No data	No data	No data	U	1/11/1993	83
[redacted]	22	laborer	H	OBL	10/20/1992	1330	1730	No data	No data	No data	U	11/10/1992	21
[redacted]	22	laborer	H	OBL	10/20/1992	800	1100	10/20/1992	1330	1730	U	11/11/1992	22
[redacted]	22	laborer	H	OBL	10/20/1992	800	1000	No data	No data	No data	U	12/29/1992	70
[redacted]	22	laborer	H	OBL	10/20/1992	1330	1730	No data	No data	No data	U	1/9/1993	81
[redacted]	22	laborer	H	OBL	10/26/1992	2000	2300	No data	No data	No data	U	11/17/1992	22
[redacted]	23	insulator	A	773	1/10/1992	920	1000	No data	No data	No data	U	5/7/1992	118
[redacted]	23	insulator	A	773	1/10/1992	920	1000	No data	No data	No data	U	1/21/1992	11
[redacted]	30	laborer	H	221	1/14/1992	845	1030	1/14/1992	1235	1500	U	7/17/1992	185
[redacted]	30	carpenter	H	221	1/14/1992	830	1030	1/14/1992	1330	1430	C	12/29/1992	350
[redacted]	30	laborer	H	221	1/14/1992	845	1030	1/14/1992	1330	1500	U	5/11/1992	118
[redacted]	30	carpenter	H	221	1/14/1992	830	1030	No data	No data	No data	C	11/4/1993	660
[redacted]	30	carpenter	H	221	1/14/1992	1330	1430	No data	No data	No data	U	11/11/1992	302
[redacted]	30	electrician	H	221	1/23/1992	1010	1100	No data	No data	No data	U	3/8/1993	410
[redacted]	30	electrician	H	221	1/23/1992	1010	1100	No data	No data	No data	U	9/8/1992	229
[redacted]	31	pipefitter	H	221	3/25/1992	1645	1845	No data	No data	No data	N/A	None	[redacted]

Document No. ORAUT-RPRT-0092 Revision No. 00 Effective Date: 06/14/2019 Page 129 of 188

**ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)**

CTW	SID	Craft	Area	Bldg.	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	U bioassay type	U bioassay date	# days since RWP, status
[redacted]	31	pipefitter	H	221	3/25/1992	1645	1845	No data	No data	No data	C	11/3/1992	223
[redacted]	36	electrician	H	221	10/29/1992	900	1130	10/29/1992	1300	1500	U	1/8/1993	71
[redacted]	36	electrician	H	221	10/29/1992	900	1130	10/29/1992	1300	1500	U	12/9/1992	41
[redacted]	37	insulator	H	221	8/6/1992	800	1500	8/7/1992	1300	1500	C	5/10/1993	276
[redacted]	37	insulator	H	221	8/7/1992	1300	1500	8/12/1992	1300	1500	U	11/11/1992	91
[redacted]	37	insulator	H	221	8/7/1992	1300	1500	8/12/1992	1300	1500	C	2/3/1993	175
[redacted]	37	laborer	H	221	8/12/1992	1300	1500	No data	No data	No data	U	11/11/1992	91
[redacted]	38	millwright	F	221	7/21/1992	955	1100	7/22/1992	830	1000	N/A	None	None
[redacted]	38	millwright	F	221	7/22/1992	830	1000	7/24/1992	905	1130	C	12/1/1992	130
[redacted]	38	electrician	F	221	7/23/1992	915	1045	No data	No data	No data	C	12/21/1992	151
[redacted]	38	electrician	F	221	7/23/1992	915	1045	No data	No data	No data	U	8/7/1992	15
[redacted]	39	insulator	H	211	10/22/1992	1300	1445	10/23/1992	800	1500	U	11/9/1992	17
[redacted]	39	insulator	H	211	10/22/1992	1300	1445	10/23/1992	800	1500	U	11/10/1992	18
[redacted]	40	carpenter	H	211	10/27/1992	1340	1400	No data	No data	No data	U	11/11/1992	15
[redacted]	41	pipefitter	F	221	12/18/1992	1100	1145	No data	No data	No data	U	6/15/1993	179
[redacted]	41	pipefitter	F	221	12/23/1992	1005	1120	No data	No data	No data	U	11/17/1993	329
[redacted]	57	ironworker	F	247	6/4/1993	930	1130	6/4/1993	845	1100	U	10/31/1993	149
[redacted]	57	ironworker	F	247	6/4/1993	930	1130	6/9/1993	845	1100	C	9/7/1993	90
[redacted]	57	ironworker	F	247	6/11/1993	925	1130	6/11/1993	1250	1500	U	5/9/1994	332
[redacted]	57	steel worker	F	247	6/18/1993	900	1130	6/18/1993	1330	1440	U	8/16/1994	424
[redacted]	57	concrete	F	247	6/23/1993	1000	1130	6/23/1993	1300	1345	U	11/7/1994	502
[redacted]	66	pipefitter	H	221	7/7/1993	1330	1500	7/9/1993	815	1145	U	9/14/1993	67
[redacted]	66	pipefitter	H	221	7/7/1993	1330	1500	7/27/1993	930	1130	U	2/9/1994	197
[redacted]	66	pipefitter	H	221	7/7/1993	1330	1500	No data	No data	No data	U	1/17/1994	194
[redacted]	66	carpenter	H	221	7/12/1993	900	1150	No data	No data	No data	N/A	None	[redacted]
[redacted]	66	laborer	H	221	7/12/1993	800	1130	7/27/1993	1300	1500	U	1/11/1994	168
[redacted]	66	carpenter	H	221	7/12/1993	900	1130	No data	No data	No data	U	4/5/1994	267
[redacted]	66	laborer	H	221	7/27/1993	900	1130	No data	No data	No data	U	8/17/1993	21
[redacted]	67	laborer	H	221	11/24/1993	830	1530	No data	No data	No data	U	8/8/1994	257
[redacted]	67	carpenter	H	221	11/24/1993	900	1015	No data	No data	No data	N/A	None	[redacted]
[redacted]	67	carpenter	H	221	11/24/1993	800	1015	No data	No data	No data	U	2/2/1994	70
[redacted]	67	laborer	H	221	11/24/1993	830	1145	11/24/1993	1345	1600	U	5/3/1994	160
[redacted]	67	laborer	H	221	11/24/1993	830	1145	11/24/1993	1345	1600	U	2/9/1994	77
[redacted]	71	laborer	H	221	1/4/1994	1330	1530	1/5/1994	915	1030	N/A	None	[redacted]

ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)

CTW	SID	Craft	Area	Bldg.	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	U bioassay type	U bioassay date	# days since RWP, status
[redacted]	71	laborer	H	221	1/4/1994	1530	1600	No data	No data	No data	U	5/3/1994	119
[redacted]	71	laborer	H	221	1/4/1994	1330	1600	1/5/1994	915	1030	U	7/26/1994	202
[redacted]	71	electrician	H	221	1/4/1994	900	1300	1/4/1994	1330	1600	U	3/14/1994	69
[redacted]	71	electrician	H	221	1/4/1994	1330	1600	1/5/1994	915	1030	U	5/11/1994	126
[redacted]	72	pipefitter	H	221	2/9/1994	2215	2245	No data	No data	No data	U	5/2/1994	82
[redacted]	73	pipefitter	H	281	10/7/1994	1410	1730	No data	No data	No data	U	12/14/1994	68
[redacted]	73	pipefitter	H	281	10/7/1994	1420	1730	No data	No data	No data	U	2/6/1995	122
[redacted]	74	laborer	F	281	5/6/1994	1000	1245	No data	No data	No data	U	9/8/1994	125
[redacted]	74	laborer	F	281	5/6/1994	900	1000	5/12/1994	1030	1300	U	9/8/1994	119
[redacted]	74	laborer	F	281	5/9/1994	1100	1200	No data	No data	No data	U	6/27/1994	49
[redacted]	75	pipefitter	F	772	4/12/1994	800	1000	4/14/1994	800	1015	U	5/3/1994	19
[redacted]	75	pipefitter	F	772	4/12/1994	800	1000	No data	No data	No data	U	10/14/1994	185
[redacted]	75	pipefitter	F	772	4/12/1994	800	1000	4/14/1994	800	1015	U	5/31/1994	47
[redacted]	75	laborer	F	772	4/29/1994	830	1030	No data	No data	No data	U	11/7/1994	192
[redacted]	92	electrician	H	221	12/28/1994	930	1130	No data	No data	No data	U	1/10/1995	13
[redacted]	92	laborer	H	221	12/28/1994	930	1145	No data	No data	No data	U	9/22/1995	268
[redacted]	92	laborer	H	221	12/29/1994	930	1330	No data	No data	No data	U	5/10/1995	132
[redacted]	92	laborer	H	221	12/29/1994	930	1400	No data	No data	No data	U	4/20/1995	112
[redacted]	93	carpenter	H	221	1/23/1995	900	1130	1/23/1995	1235	1635	U	9/11/1995	231
[redacted]	93	carpenter	H	221	1/23/1995	900	1130	1/23/1995	1235	1635	U	4/10/1995	77
[redacted]	93	carpenter	H	221	1/23/1995	800	1100	No data	No data	No data	U	5/1/1995	98
[redacted]	93	carpenter	H	221	1/23/1995	900	1130	1/23/1995	1235	1635	U	5/9/1995	106
[redacted]	94	laborer	H	221	6/13/1995	1100	1200	No data	No data	No data	U	2/14/1996	246
[redacted]	94	laborer	H	221	6/13/1995	1100	1200	No data	No data	No data	U	12/19/1995	189
[redacted]	94	laborer	H	221	6/13/1995	1100	1200	No data	No data	No data	U	7/10/1995	27
[redacted]	94	laborer	H	221	6/13/1995	1100	1200	No data	No data	No data	U	11/20/1995	160
[redacted]	136	electrician	A	773	3/22/1994	1040	1230	No data	No data	No data	U	6/22/1994	92
[redacted]	136	electrician	A	773	3/22/1994	1040	1230	No data	No data	No data	U	4/17/1995	391
[redacted]	137	pipefitter	A	773	3/26/1994	835	1135	3/26/1994	1308	1340	U	8/17/1994	144
[redacted]	137	laborer	A	773	3/26/1994	835	1135	3/26/1994	1308	1340	C	12/13/1994	262
[redacted]	137	pipefitter	A	773	3/26/1994	835	1135	3/26/1994	1308	1340	C	12/13/1994	262
[redacted]	137	pipefitter	A	773	3/26/1994	835	1135	3/26/1994	1308	1340	U	8/8/1994	135
[redacted]	138	laborer	A	773	9/14/1994	1400	1530	No data	No data	No data	U	12/12/1994	89
[redacted]	138	laborer	A	773	9/14/1994	1400	1530	No data	No data	No data	U	12/12/1994	89

Document No. ORAUT-RPRT-0092 Revision No. 00 Effective Date: 06/14/2019 Page 131 of 188

ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)

CTW	SID	Craft	Area	Bldg.	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	U bioassay type	U bioassay date	# days since RWP, status
[redacted]	139	painter	A	773	3/15/1994	800	930	3/15/1994	1400	1510	U	4/5/1994	21
[redacted]	140	painter	A	773	1/18/1994	850	1145	1/18/1994	1400	1520	U	4/5/1994	77
[redacted]	140	painter	A	773	1/18/1994	850	1145	1/18/1994	1300	1520	N/A	None	[redacted]
[redacted]	143	laborer	A	773	4/1/1993	1140	1500	No data	No data	No data	U	4/5/1993	4
[redacted]	143	laborer	A	773	4/1/1993	1140	1500	No data	No data	No data	C	2/14/1995	684
[redacted]	143	sheetmetal	A	773	4/1/1993	1150	1500	No data	No data	No data	U	10/13/1993	195
[redacted]	143	sheetmetal	A	773	4/1/1993	1150	1500	No data	No data	No data	U	8/9/1993	130
[redacted]	143	laborer	A	773	4/2/1993	850	1035	No data	No data	No data	U	11/8/1993	220
[redacted]	143	sheetmetal	A	773	4/6/1993	910	1110	4/6/1993	1400	1530	U	7/22/1993	107
[redacted]	143	laborer	A	773	4/6/1993	910	1100	No data	No data	No data	U	11/4/1993	212
[redacted]	144	sheetmetal	A	773	3/1/1993	1240	1350	3/1/1993	1430	1445	U	6/16/1993	107
[redacted]	144	sheetmetal	A	773	3/1/1993	1144	1159	No data	No data	No data	U	5/19/1993	79
[redacted]	144	electrician	A	773	3/1/1993	1416	1740	No data	No data	No data	N/A	None	None
[redacted]	144	steel worker	A	773	3/3/1993	1	30	No data	No data	No data	U	9/7/1993	188
[redacted]	144	electrician	A	773	3/3/1993	1340	1440	No data	No data	No data	U	11/8/1993	250
[redacted]	144	sheetmetal	A	773	3/3/1993	1800	2250	3/3/1993	2330	230	U	3/10/1993	7
[redacted]	144	sheetmetal	A	773	3/4/1993	1831	1850	No data	No data	No data	N/A	None	None
[redacted]	144	sheetmetal	A	773	3/4/1993	1048	1102	No data	No data	No data	N/A	None	None
[redacted]	144	electrician	A	773	3/4/1993	1335	1355	No data	No data	No data	U	10/13/1993	223
[redacted]	144	sheetmetal	A	773	3/4/1993	1645	1715	3/4/1993	2120	2330	U	10/13/1993	223
[redacted]	144	sheetmetal	A	773	3/4/1993	1808	2200	3/4/1993	2246	2330	N/A	None	None
[redacted]	144	sheetmetal	A	773	3/5/1993	1515	1930	3/5/1993	1945	2215	U	8/8/1994	521
[redacted]	144	sheetmetal	A	773	3/5/1993	800	1030	No data	No data	No data	U	7/15/1993	132
[redacted]	144	sheetmetal	A	773	3/5/1993	800	1130	3/5/1993	1300	1345	N/A	None	[redacted]
[redacted]	144	electrician	A	773	3/5/1993	930	1125	3/5/1993	1300	1610	U	5/20/1993	76
[redacted]	144	sheetmetal	A	773	3/5/1993	800	1125	3/5/1993	1300	1525	N/A	None	[redacted]
[redacted]	144	pipefitter	A	773	3/5/1993	900	1000	No data	No data	No data	C	7/19/1993	136
[redacted]	144	sheetmetal	A	773	3/5/1993	800	1130	No data	No data	No data	U	7/22/1994	504
[redacted]	144	sheetmetal	A	773	3/5/1993	849	902	No data	No data	No data	U	2/2/1994	334
[redacted]	144	electrician	A	773	3/5/1993	1345	1520	No data	No data	No data	U	12/17/1993	287
[redacted]	144	electrician	A	773	3/5/1993	1355	1715	No data	No data	No data	U	5/27/1993	83
[redacted]	144	pipefitter	A	773	3/5/1993	900	1000	No data	No data	No data	U	7/13/1993	130
[redacted]	144	laborer	A	773	3/5/1993	1300	1500	No data	No data	No data	U	11/8/1993	248
[redacted]	144	electrician	A	773	3/5/1993	930	1130	3/5/1993	1300	1615	N/A	None	None

Document No. ORAUT-RPRT-0092 Revision No. 00 Effective Date: 06/14/2019 Page 132 of 188

**ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)**

CTW	SID	Craft	Area	Bldg.	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	U bioassay type	U bioassay date	# days since RWP, status
[redacted]	144	sheetmetal	A	773	3/5/1993	850	1000	No data	No data	No data	U	8/9/1993	157
[redacted]	144	sheetmetal	A	773	3/5/1993	800	1130	No data	No data	No data	U	8/5/1993	153
[redacted]	144	laborer	A	773	3/8/1993	1030	1235	3/8/1993	1300	1400	N/A	None	None
[redacted]	144	laborer	A	773	3/9/1993	1300	1530	No data	No data	No data	U	4/12/1993	34
[redacted]	144	laborer	A	773	3/9/1993	1140	1500	No data	No data	No data	U	2/9/1995	702
[redacted]	152	sheetmetal	M	313	4/20/1992	830	1100	4/20/1992	1230	1440	C	7/14/1993	450
[redacted]	152	sheetmetal	M	313	4/20/1992	830	1100	4/20/1992	1230	1440	U	10/16/1992	179
[redacted]	152	sheetmetal	M	313	4/30/1992	1330	1438	No data	No data	No data	U	5/4/1992	4
[redacted]	153	pipefitter	M	321	5/12/1992	805	930	No data	No data	No data	U	7/15/1992	64
[redacted]	153	pipefitter	M	321	5/12/1992	805	930	No data	No data	No data	U	3/4/1993	296
[redacted]	153	pipefitter	M	321	5/12/1992	805	930	5/14/1992	1330	1415	U	5/14/1992	0
[redacted]	153	electrician	M	321	5/19/1992	800	1030	5/19/1992	1120	1125	U	5/27/1993	373
[redacted]	153	electrician	M	321	5/19/1992	910	1030	5/19/1992	1120	1125	U	12/1/1992	196
[redacted]	154	electrician	M	321	8/6/1992	730	1040	No data	No data	No data	U	11/30/1992	116
[redacted]	154	electrician	M	321	8/7/1992	740	900	8/7/1992	1020	1140	U	9/8/1992	32
[redacted]	154	electrician	M	321	8/7/1992	800	900	8/7/1992	1030	1130	U	11/21/1992	106
[redacted]	154	electrician	M	321	8/20/1992	730	1130	8/20/1992	1250	1430	U	11/9/1992	81
[redacted]	155	Insulator	M	321	11/18/1992	900	1100	11/18/1992	1300	1500	U	1/5/1993	48
[redacted]	155	Insulator	M	321	11/18/1992	900	1100	11/18/1992	1300	1500	N/A	None	[redacted]
[redacted]	183	ironworker	H	HCMA	1/4/1993	830	945	No data	No data	No data	C	3/11/1993	66
[redacted]	183	ironworker	H	HCMA	1/4/1993	830	1100	No data	No data	No data	U	1/14/1993	10
[redacted]	183	ironworker	H	HCMA	1/4/1993	900	1100	No data	No data	No data	U	1/19/1993	15
[redacted]	183	ironworker	H	HCMA	1/4/1993	900	1100	No data	No data	No data	U	10/30/1993	299
[redacted]	190	laborer	H	299	3/21/1991	1300	1500	No data	No data	No data	U	7/17/1992	484
[redacted]	190	laborer	H	299	3/21/1991	915	1130	3/21/1991	1300	1500	C	5/12/1994	1148
[redacted]	221	painter	F	247	12/7/1993	930	1630	No data	No data	No data	U	1/18/1994	42
[redacted]	221	painter	F	247	12/7/1993	830	1639	12/15/1993	830	930	U	6/6/1995	538
[redacted]	221	painter	F	247	12/9/1993	830	1639	No data	No data	No data	U	6/15/1995	553
[redacted]	221	painter	F	247	12/15/1993	830	930	No data	No data	No data	N/A	None	Waived
[redacted]	222	electrician	M	321	8/19/1992	830	1145	8/19/1992	1300	1500	U	11/9/1992	82
[redacted]	222	electrician	M	321	8/19/1992	830	1145	8/19/1992	1300	1500	U	11/21/1992	94
[redacted]	223	electrician	M	316	12/7/1992	1230	1400	12/8/1992	1300	1530	U	12/8/1992	0
[redacted]	223	electrician	M	316	12/7/1992	1230	1530	12/9/1992	1230	1530	U	2/15/1993	68
[redacted]	230	laborer	A	773	1/11/1993	700	745	No data	No data	No data	U	4/5/1994	449

Document No. ORAUT-RPRT-0092 Revision No. 00 Effective Date: 06/14/2019 Page 133 of 188

ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)

CTW	SID	Craft	Area	Bldg.	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	U bioassay type	U bioassay date	# days since RWP, status
[redacted]	230	carpenter	A	773	1/13/1993	1241	1455	No data	No data	No data	U	6/9/1993	147
[redacted]	230	carpenter	A	773	1/13/1993	720	1110	1/13/1993	1240	1455	U	10/15/1993	275
[redacted]	230	painter	A	773	1/20/1993	930	1205	No data	No data	No data	U	7/19/1993	180
[redacted]	230	sheetmetal	A	773	1/26/1993	820	1245	No data	No data	No data	U	10/13/1993	260
[redacted]	230	pipefitter	A	773	1/27/1993	830	1300	No data	No data	No data	U	2/4/1993	8
[redacted]	230	pipefitter	A	773	1/27/1993	830	1300	No data	No data	No data	C	3/24/1993	56
[redacted]	231	sheetmetal	A	773	2/4/1993	830	1245	No data	No data	No data	U	10/13/1993	251
[redacted]	231	sheetmetal	A	773	2/11/1993	1100	1300	No data	No data	No data	U	8/9/1993	179
[redacted]	231	sheetmetal	A	773	2/16/1993	800	1115	No data	No data	No data	U	7/15/1993	149
[redacted]	231	sheetmetal	A	773	2/16/1993	1135	1245	No data	No data	No data	N/A	None	[redacted]
[redacted]	231	sheetmetal	A	773	2/16/1993	800	1115	No data	No data	No data	U	9/22/1993	218
[redacted]	232	carpenter	A	773	3/22/1993	820	920	3/31/1993	900	1145	U	10/15/1993	207
[redacted]	232	laborer	A	773	3/22/1993	820	920	3/30/1993	930	1100	U	5/6/1993	45
[redacted]	232	pipefitter	A	773	3/25/1993	945	1230	No data	No data	No data	U	8/11/1993	139
[redacted]	232	laborer	A	773	3/25/1993	800	1230	No data	No data	No data	N/A	None	[redacted]
[redacted]	232	pipefitter	A	773	3/25/1993	845	1250	No data	No data	No data	U	7/13/1993	110
[redacted]	232	laborer	A	773	3/30/1993	930	1100	No data	No data	No data	U	11/8/1993	223
[redacted]	232	carpenter	A	773	3/31/1993	900	1145	No data	No data	No data	U	3/9/1994	343
[redacted]	233	electrician	A	773	2/21/1993	1545	1700	2/26/1993	1745	1845	U	5/27/1993	90
[redacted]	233	steel worker	A	773	2/24/1993	1315	1515	No data	No data	No data	U	7/22/1994	513
[redacted]	233	electrician	A	773	2/24/1993	1400	1600	No data	No data	No data	U	5/19/1993	84
[redacted]	233	electrician	A	773	2/24/1993	1516	1603	No data	No data	No data	N/A	None	[redacted]
[redacted]	233	sheetmetal	A	773	2/26/1993	2300	2345	No data	No data	No data	U	8/6/1993	161
[redacted]	233	electrician	A	773	2/26/1993	1500	1700	No data	No data	No data	U	1/20/1994	328
[redacted]	233	sheetmetal	A	773	2/26/1993	800	1200	No data	No data	No data	U	8/5/1993	160
[redacted]	233	sheetmetal	A	773	2/27/1993	1415	1715	No data	No data	No data	U	6/16/1993	109
[redacted]	233	sheetmetal	A	773	2/27/1993	1840	2230	No data	No data	No data	U	8/8/1994	527
[redacted]	233	sheetmetal	A	773	2/27/1993	1450	1730	No data	No data	No data	U	10/13/1993	228
[redacted]	233	steel worker	A	773	2/27/1993	1850	2230	No data	No data	No data	N/A	None	[redacted]
[redacted]	233	sheetmetal	A	773	2/27/1993	1850	2100	No data	No data	No data	U	9/7/1993	192
[redacted]	233	sheetmetal	A	773	2/27/1993	1850	2230	No data	No data	No data	U	3/10/1993	11
[redacted]	233	sheetmetal	A	773	2/28/1993	720	1120	No data	No data	No data	U	7/15/1993	137
[redacted]	233	sheetmetal	A	773	2/28/1993	720	1120	No data	No data	No data	N/A	None	[redacted]
[redacted]	233	sheetmetal	A	773	2/28/1993	720	1120	No data	No data	No data	U	8/9/1993	162

**ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)**

CTW	SID	Craft	Area	Bldg.	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	U bioassay type	U bioassay date	# days since RWP, status
[redacted]	234	laborer	A	773	4/7/1994	900	1100	4/8/1994	945	1100	U	4/7/1995	364
[redacted]	234	laborer	A	773	4/7/1994	900	1100	4/8/1994	945	1100	U	6/13/1994	66
[redacted]	235	painter	A	773	1/7/1994	1100	1215	1/7/1994	1250	1345	U	4/5/1994	88
[redacted]	236	laborer	A	773	11/7/1994	910	1145	No data	No data	No data	U	12/12/1994	35
[redacted]	236	pipefitter	A	773	11/7/1994	945	1145	11/7/1994	1440	1555	C	9/11/1995	308
[redacted]	236	pipefitter	A	773	11/8/1994	800	815	11/8/1994	900	1025	U	11/14/1994	6
[redacted]	236	carpenter	A	773	11/11/1994	No data	No data	No data	No data	No data	U	1/17/1995	67
[redacted]	236	pipefitter	A	773	11/29/1994	1030	1230	No data	No data	No data	U	8/23/1995	267
[redacted]	237	laborer	A	773	8/1/1994	1345	1500	8/2/1994	1345	1445	C	12/13/1994	133
[redacted]	237	laborer	A	773	8/1/1994	1345	1500	8/2/1994	1345	1445	U	12/12/1994	132
[redacted]	242	pipefitter	F	772	10/19/1992	1430	1530	No data	No data	No data	U	4/5/1993	168
[redacted]	243	sheetmetal	F	772	1/29/1992	900	1100	No data	No data	No data	U	2/10/1992	12
[redacted]	243	sheetmetal	F	772	1/29/1992	900	1100	No data	No data	No data	U	10/12/1993	622
[redacted]	243	laborer	F	772	1/29/1992	830	1135	No data	No data	No data	U	4/27/1992	89
[redacted]	243	sheetmetal	F	772	1/29/1992	812	1115	No data	No data	No data	U	11/30/1992	306
[redacted]	243	sheetmetal	F	772	1/29/1992	900	1100	No data	No data	No data	U	10/12/1992	257
[redacted]	243	laborer	F	772	1/29/1992	830	1135	No data	No data	No data	U	9/12/1994	957
[redacted]	244	carpenter	F	772	10/1/1992	900	1040	10/1/1992	1330	1445	U	10/11/1992	10
[redacted]	244	carpenter	F	772	10/1/1992	900	1040	10/1/1992	1330	1445	C	6/17/1993	259
[redacted]	244	carpenter	F	772	10/1/1992	900	1040	10/1/1992	1330	1445	C	8/19/1993	322
[redacted]	245	carpenter	F	772	9/30/1992	845	945	No data	No data	No data	C	6/17/1993	260
[redacted]	245	carpenter	F	772	9/30/1992	845	945	No data	No data	No data	C	8/19/1993	323

a. Bioassay type codes: U = urinalysis; C = chest count; W = whole-body count.

ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)

Table C-6. SubCTW required americium bioassay, 1990 to 1998.^a

CTW	SID	Craft	Area	Bldg.	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Am bioassay type	Am bioassay date	# days since RWP, status
[redacted]	11	carpenter	H	299	4/18/1991	800	1100	No data	No data	No data	N/A	None	[redacted]
[redacted]	11	carpenter	H	299	4/18/1991	805	1100	No data	No data	No data	C	12/29/1992	621
[redacted]	11	laborer	H	299	4/18/1991	930	1130	4/18/1991	1230	1530	N/A	None	[redacted]
[redacted]	11	laborer	H	299	4/23/1991	1230	1530	4/18/1991	800	1159	N/A	None	[redacted]
[redacted]	11	laborer	H	299	4/23/1991	1230	1530	No data	No data	No data	C	1/20/1992	272
[redacted]	11	carpenter	H	299	4/23/1991	1230	1530	No data	No data	No data	N/A	None	[redacted]
[redacted]	11	carpenter	H	299	4/23/1991	1230	1530	No data	No data	No data	N/A	None	[redacted]
[redacted]	16	carpenter	F	247	7/25/1991	800	915	No data	No data	No data	N/A	None	None
[redacted]	16	carpenter	F	247	7/25/1991	800	915	No data	No data	No data	N/A	None	None
[redacted]	22	laborer	H	OBL	10/12/1992	2030	2300	10/14/1992	2020	2305	C	10/23/1992	9
[redacted]	22	laborer	H	OBL	10/12/1992	2030	2300	10/26/1992	2000	2300	C	2/9/1993	106
[redacted]	22	laborer	H	OBL	10/14/1992	2030	2330	No data	No data	No data	C	9/9/1993	330
[redacted]	22	laborer	H	OBL	10/20/1992	800	1000	No data	No data	No data	C	2/26/1993	129
[redacted]	22	laborer	H	OBL	10/20/1992	800	1100	10/20/1992	1330	1730	C	7/19/1995	1002
[redacted]	22	laborer	H	OBL	10/20/1992	1330	1730	No data	No data	No data	C	1/25/1993	97
[redacted]	22	laborer	H	OBL	10/20/1992	1330	1730	No data	No data	No data	C	3/18/1993	149
[redacted]	22	electrician	H	OBL	10/20/1992	1530	1730	No data	No data	No data	C	6/8/1993	231
[redacted]	22	laborer	H	OBL	10/26/1992	2000	2300	No data	No data	No data	C	10/28/1992	2
[redacted]	25	laborer	H	OBL	1/18/1993	2030	2145	No data	No data	No data	C	1/25/1993	7
[redacted]	30	carpenter	H	221	1/14/1992	830	1030	1/14/1992	1330	1430	C	12/29/1992	350
[redacted]	30	carpenter	H	221	1/14/1992	830	1030	No data	No data	No data	C	11/4/1993	660
[redacted]	30	laborer	H	221	1/14/1992	845	1030	1/14/1992	1235	1500	C	1/20/1994	737
[redacted]	30	laborer	H	221	1/14/1992	845	1030	1/14/1992	1330	1500	C	3/3/1993	414
[redacted]	30	carpenter	H	221	1/14/1992	1330	1430	No data	No data	No data	C	12/17/1992	338
[redacted]	30	electrician	H	221	1/23/1992	1010	1100	No data	No data	No data	C	3/29/1994	796
[redacted]	30	electrician	H	221	1/23/1992	1010	1100	No data	No data	No data	C	4/27/1993	460
[redacted]	31	pipefitter	H	221	3/25/1992	1645	1845	No data	No data	No data	N/A	None	[redacted]
[redacted]	31	pipefitter	H	221	3/25/1992	1645	1845	No data	No data	No data	C	5/9/1994	775
[redacted]	35	pipefitter	H	OBL	7/16/1992	900	1030	No data	No data	No data	C	1/11/1994	544
[redacted]	35	pipefitter	H	OBL	7/21/1992	900	1030	No data	No data	No data	C	6/15/1993	329
[redacted]	35	laborer	H	OBL	7/21/1992	2030	2300	No data	No data	No data	C	2/9/1993	203
[redacted]	35	pipefitter	H	OBL	7/21/1992	2030	2300	No data	No data	No data	C	12/14/1993	511
[redacted]	36	electrician	H	221	10/29/1992	900	1130	10/29/1992	1300	1500	C	4/20/1993	173

Document No. ORAUT-RPRT-0092 Revision No. 00 Effective Date: 06/14/2019 Page 136 of 188

**ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)**

CTW	SID	Craft	Area	Bldg.	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Am bioassay type	Am bioassay date	# days since RWP, status
[redacted]	36	electrician	H	221	10/29/1992	900	1130	10/29/1992	1300	1500	C	6/16/1993	230
[redacted]	37	insulator	H	221	8/6/1992	800	1500	8/7/1992	1300	1500	C	5/10/1993	276
[redacted]	37	insulator	H	221	8/7/1992	1300	1500	8/12/1992	1300	1500	C	4/29/1993	260
[redacted]	37	insulator	H	221	8/7/1992	1300	1500	8/12/1992	1300	1500	C	2/3/1993	175
[redacted]	37	laborer	H	221	8/12/1992	1300	1500	No data	No data	No data	C	7/19/1995	1071
[redacted]	39	insulator	H	211	10/22/1992	1300	1445	10/23/1992	800	1500	C	2/4/1993	104
[redacted]	39	insulator	H	211	10/22/1992	1300	1445	10/23/1992	800	1500	C	1/28/1993	97
[redacted]	40	carpenter	H	211	10/27/1992	1340	1400	No data	No data	No data	C	3/4/1993	128
[redacted]	42	ironworker	H	OBL	2/2/1993	230	330	2/8/1993	2100	2400	C	2/26/1993	18
[redacted]	42	ironworker	H	OBL	2/2/1993	230	330	No data	No data	No data	N/A	None	[redacted]
[redacted]	43	sheetmetal	H	OBL	3/16/1993	915	1130	3/22/1993	1425	1630	N/A	None	None
[redacted]	43	sheetmetal	H	OBL	3/16/1993	1500	1700	3/18/1993	1500	1800	N/A	None	None
[redacted]	43	sheetmetal	H	OBL	3/17/1993	940	1200	3/18/1993	900	1130	C	8/10/1993	145
[redacted]	43	sheetmetal	H	OBL	3/18/1993	900	1130	3/22/1993	830	1145	N/A	None	None
[redacted]	43	sheetmetal	H	OBL	3/18/1993	900	1130	No data	No data	No data	N/A	None	None
[redacted]	43	sheetmetal	H	OBL	3/22/1993	830	1145	No data	No data	No data	C	6/15/1993	85
[redacted]	43	ironworker	H	OBL	3/22/1993	1400	1630	No data	No data	No data	N/A	None	[redacted]
[redacted]	43	ironworker	H	OBL	3/22/1993	1400	1630	No data	No data	No data	N/A	None	None
[redacted]	43	laborer	H	OBL	3/22/1993	1405	1805	No data	No data	No data	C	10/11/1993	203
[redacted]	43	laborer	H	OBL	3/22/1993	1405	1805	No data	No data	No data	C	5/12/1994	416
[redacted]	43	ironworker	H	OBL	3/22/1993	1425	1630	No data	No data	No data	N/A	None	None
[redacted]	43	carpenter	H	OBL	3/22/1993	1630	1700	No data	No data	No data	C	7/14/1993	114
[redacted]	43	ironworker	H	OBL	3/22/1993	1700	1800	No data	No data	No data	C	11/22/1994	610
[redacted]	44	sheetmetal	H	OBL	4/6/1993	830	1030	No data	No data	No data	C	6/15/1993	70
[redacted]	44	carpenter	H	OBL	4/6/1993	830	1030	No data	No data	No data	C	7/14/1993	99
[redacted]	44	carpenter	H	OBL	4/8/1993	900	1030	No data	No data	No data	C	6/30/1993	83
[redacted]	44	carpenter	H	OBL	4/8/1993	900	1100	4/8/1993	1400	1700	N/A	None	None
[redacted]	44	carpenter	H	OBL	4/8/1993	1400	1600	No data	No data	No data	C	5/4/1993	26
[redacted]	44	carpenter	H	OBL	4/8/1993	1400	1700	4/13/1993	1100	1230	C	12/20/1994	616
[redacted]	44	carpenter	H	OBL	4/13/1993	1100	1235	No data	No data	No data	C	6/29/1993	77
[redacted]	45	laborer	H	OBL	1/25/1993	2130	2330	No data	No data	No data	C	9/16/1993	234
[redacted]	45	laborer	H	OBL	1/25/1993	2130	2330	No data	No data	No data	C	6/16/1993	142
[redacted]	45	sheetmetal	H	OBL	1/26/1993	300	530	No data	No data	No data	C	9/16/1993	233
[redacted]	45	laborer	H	OBL	1/26/1993	300	530	No data	No data	No data	C	2/9/1993	14

Document No. ORAUT-RPRT-0092 Revision No. 00 Effective Date: 06/14/2019 Page 137 of 188

**ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)**

CTW	SID	Craft	Area	Bldg.	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Am bioassay type	Am bioassay date	# days since RWP, status
[redacted]	45	electrician	H	OBL	1/27/1993	1400	1630	No data	No data	No data	C	6/8/1993	132
[redacted]	45	electrician	H	OBL	1/27/1993	1400	1630	No data	No data	No data	C	4/27/1993	90
[redacted]	46	laborer	H	OBL	2/10/1993	1000	1200	No data	No data	No data	C	7/19/1995	889
[redacted]	46	laborer	H	OBL	2/10/1993	1000	1200	No data	No data	No data	C	3/19/1993	37
[redacted]	46	laborer	H	OBL	2/10/1993	1400	1600	No data	No data	No data	C	12/16/1993	309
[redacted]	57	ironworker	F	247	6/4/1993	930	1130	6/4/1993	1300	1500	N/A	None	None
[redacted]	57	ironworker	F	247	6/4/1993	930	1130	6/9/1993	845	1100	C	9/7/1993	90
[redacted]	57	ironworker	F	247	6/11/1993	925	1130	6/11/1993	1250	1500	N/A	None	None
[redacted]	57	ironworker	F	247	6/18/1993	900	1130	6/18/1993	1330	1440	N/A	None	None
[redacted]	57	concrete	F	247	6/23/1993	1000	1130	6/23/1993	1300	1345	N/A	None	None
[redacted]	64	sheetmetal	H	OBL	7/1/1993	1400	1645	7/8/1993	1420	1730	C	9/22/1993	76
[redacted]	64	sheetmetal	H	OBL	7/1/1993	1400	1645	No data	No data	No data	C	10/19/1993	110
[redacted]	64	laborer	H	OBL	7/1/1993	1400	1645	No data	No data	No data	C	10/11/1993	102
[redacted]	64	sheetmetal	H	OBL	7/1/1993	1400	1645	No data	No data	No data	N/A	None	[redacted]
[redacted]	64	laborer	H	OBL	7/6/1993	800	1130	No data	No data	No data	C	3/15/1994	252
[redacted]	64	sheetmetal	H	OBL	7/6/1993	800	1130	No data	No data	No data	C	10/27/1993	113
[redacted]	64	sheetmetal	H	OBL	7/8/1993	800	900	No data	No data	No data	N/A	None	None
[redacted]	64	sheetmetal	H	OBL	7/8/1993	1415	1730	No data	No data	No data	C	9/16/1993	70
[redacted]	64	sheetmetal	H	OBL	7/8/1993	1420	1730	No data	No data	No data	N/A	None	[redacted]
[redacted]	65	electrician	H	OBL	6/7/1993	1600	1700	6/8/1993	930	1100	N/A	None	None
[redacted]	65	electrician	H	OBL	6/8/1993	1015	1100	6/21/1993	930	1130	N/A	None	None
[redacted]	65	electrician	H	OBL	6/21/1993	930	1130	6/22/1993	800	830	N/A	None	None
[redacted]	66	pipefitter	H	221	7/7/1993	1330	1500	7/9/1993	815	1145	C	12/21/1993	165
[redacted]	66	pipefitter	H	221	7/7/1993	1330	1500	7/27/1993	930	1130	C	8/10/1994	379
[redacted]	66	pipefitter	H	221	7/7/1993	1330	1500	No data	No data	No data	N/A	None	[redacted]
[redacted]	66	laborer	H	221	7/12/1993	800	1130	7/27/1993	1300	1500	C	10/7/1993	72
[redacted]	66	carpenter	H	221	7/12/1993	900	1130	No data	No data	No data	N/A	None	[redacted]
[redacted]	66	carpenter	H	221	7/12/1993	900	1150	No data	No data	No data	N/A	None	None
[redacted]	66	laborer	H	221	7/27/1993	900	1130	No data	No data	No data	C	3/2/1995	583
[redacted]	67	carpenter	H	221	11/24/1993	800	1015	No data	No data	No data	C	8/17/1994	266
[redacted]	67	laborer	H	221	11/24/1993	830	1145	11/24/1993	1345	1600	C	11/4/1994	345
[redacted]	67	laborer	H	221	11/24/1993	830	1145	11/24/1993	1345	1600	C	3/2/1995	463
[redacted]	67	laborer	H	221	11/24/1993	830	1530	No data	No data	No data	U	1/5/1994	42
[redacted]	67	carpenter	H	221	11/24/1993	900	1015	No data	No data	No data	N/A	None	[redacted]

**ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)**

CTW	SID	Craft	Area	Bldg.	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Am bioassay type	Am bioassay date	# days since RWP, status
[redacted]	68	carpenter	H	OBL	12/2/1993	1000	1030	No data	No data	No data	C	12/2/1993	0
[redacted]	68	insulator	H	OBL	12/6/1993	930	1113	12/6/1993	1300	1615	C	9/19/1994	287
[redacted]	68	laborer	H	OBL	12/6/1993	1000	1130	12/9/1993	830	1030	N/A	None	[redacted]
[redacted]	68	painter	H	OBL	12/6/1993	1000	1130	No data	No data	No data	U	10/31/1996	1060
[redacted]	68	carpenter	H	OBL	12/6/1993	1000	1130	No data	No data	No data	N/A	None	[redacted]
[redacted]	68	laborer	H	OBL	12/6/1993	1000	1130	No data	No data	No data	C	1/3/1994	28
[redacted]	68	carpenter	H	OBL	12/6/1993	1000	1130	No data	No data	No data	C	7/21/1994	227
[redacted]	68	insulator	H	OBL	12/6/1993	1300	1615	No data	No data	No data	C	5/23/1995	533
[redacted]	71	electrician	H	221	1/4/1994	900	1300	1/4/1994	1330	1600	C	9/14/1995	618
[redacted]	71	laborer	H	221	1/4/1994	1330	1530	1/5/1994	915	1030	U	8/11/1998	1679
[redacted]	71	laborer	H	221	1/4/1994	1330	1600	1/5/1994	915	1030	C	6/24/1994	170
[redacted]	71	electrician	H	221	1/4/1994	1330	1600	1/5/1994	915	1030	C	11/10/1994	309
[redacted]	71	laborer	H	221	1/4/1994	1530	1600	No data	No data	No data	C	11/4/1994	304
[redacted]	72	pipefitter	H	221	2/9/1994	2215	2245	No data	No data	No data	C	5/9/1994	89
[redacted]	73	pipefitter	H	281	10/7/1994	1410	1730	No data	No data	No data	C	9/11/1996	705
[redacted]	73	pipefitter	H	281	10/7/1994	1420	1730	No data	No data	No data	C	9/7/1995	335
[redacted]	92	electrician	H	221	12/28/1994	930	1130	No data	No data	No data	C	7/25/1995	209
[redacted]	92	laborer	H	221	12/28/1994	930	1145	No data	No data	No data	C	3/16/1995	78
[redacted]	92	laborer	H	221	12/29/1994	930	1330	No data	No data	No data	C	11/15/1995	321
[redacted]	92	laborer	H	221	12/29/1994	930	1400	No data	No data	No data	N/A	None	None
[redacted]	93	carpenter	H	221	1/23/1995	800	1100	No data	No data	No data	C	5/17/1995	114
[redacted]	93	carpenter	H	221	1/23/1995	900	1130	1/23/1995	1235	1635	N/A	None	[redacted]
[redacted]	93	carpenter	H	221	1/23/1995	900	1130	1/23/1995	1235	1635	C	4/10/1995	77
[redacted]	93	carpenter	H	221	1/23/1995	900	1130	1/23/1995	1235	1635	N/A	None	[redacted]
[redacted]	94	laborer	H	221	6/13/1995	1100	1200	No data	No data	No data	N/A	None	[redacted]
[redacted]	94	laborer	H	221	6/13/1995	1100	1200	No data	No data	No data	C	2/17/1998	980
[redacted]	94	laborer	H	221	6/13/1995	1100	1200	No data	No data	No data	N/A	None	[redacted]
[redacted]	94	laborer	H	221	6/13/1995	1100	1200	No data	No data	No data	C	5/15/1996	337
[redacted]	101	carpenter	H	211	11/24/1998	1315	1515	No data	No data	No data	C	1/5/1999	42
[redacted]	114	boilermaker	H	221	1/4/1996	800	1100	1/23/1996	900	1100	C	2/26/1997	400
[redacted]	114	boilermaker	H	221	1/24/1996	800	1000	No data	No data	No data	C	10/30/1996	280
[redacted]	115	boilermaker	H	221	4/17/1996	730	1100	No data	No data	No data	C	2/26/1997	315
[redacted]	136	electrician	A	773	3/22/1994	1040	1230	No data	No data	No data	N/A	None	[redacted]
[redacted]	136	electrician	A	773	3/22/1994	1040	1230	No data	No data	No data	U	7/25/1995	490

**ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)**

CTW	SID	Craft	Area	Bldg.	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Am bioassay type	Am bioassay date	# days since RWP, status
[redacted]	138	laborer	A	773	9/14/1994	1400	1530	No data	No data	No data	C	12/13/1994	90
[redacted]	138	laborer	A	773	9/14/1994	1400	1530	No data	No data	No data	C	12/14/1994	91
[redacted]	163	laborer	H	261	10/13/1997	1100	1200	No data	No data	No data	U	3/31/1998	169
[redacted]	163	laborer	H	261	10/13/1997	1100	1200	No data	No data	No data	U	8/15/2002	1767
[redacted]	183	ironworker	H	HCMA	1/4/1993	830	945	No data	No data	No data	C	3/11/1993	66
[redacted]	183	ironworker	H	HCMA	1/4/1993	830	1100	No data	No data	No data	N/A	None	[redacted]
[redacted]	183	ironworker	H	HCMA	1/4/1993	900	1100	No data	No data	No data	U	7/15/1999	2383
[redacted]	183	ironworker	H	HCMA	1/4/1993	900	1100	No data	No data	No data	N/A	None	[redacted]
[redacted]	190	laborer	H	299	3/21/1991	915	1130	3/21/1991	1300	1500	U	5/25/1999	2987
[redacted]	190	laborer	H	299	3/21/1991	1300	1500	No data	No data	No data	C	2/26/1993	708
[redacted]	224	laborer	H	242	10/18/1991	830	1100	No data	No data	No data	N/A	None	[redacted]
[redacted]	224	laborer	H	242	10/18/1991	830	1100	No data	No data	No data	N/A	None	None
[redacted]	224	boilermaker	H	242	10/18/1991	840	1100	No data	No data	No data	N/A	None	None
[redacted]	224	boilermaker	H	242	10/18/1991	930	1100	No data	No data	No data	N/A	None	[redacted]
[redacted]	224	boilermaker	H	242	10/18/1991	930	1100	No data	No data	No data	C	1/8/1992	82
[redacted]	224	boilermaker	H	242	10/18/1991	930	1100	No data	No data	No data	N/A	None	None
[redacted]	224	driver	H	242	10/18/1991	1245	1430	No data	No data	No data	C	10/12/1992	360
[redacted]	224	pipefitter	H	242	10/21/1991	845	1000	No data	No data	No data	C	4/13/1994	905
[redacted]	224	pipefitter	H	242	10/21/1991	845	1000	No data	No data	No data	N/A	None	[redacted]
[redacted]	225	sheetmetal	H	292	11/6/1992	2100	2250	11/11/1992	2000	2245	C	9/16/1993	309
[redacted]	225	laborer	H	292	11/6/1992	2100	2300	11/9/1992	2000	2215	C	8/10/1993	274
[redacted]	225	laborer	H	292	11/9/1992	130	330	No data	No data	No data	C	9/16/1993	311
[redacted]	225	laborer	H	292	11/9/1992	900	1030	11/9/1992	1500	1615	C	12/16/1993	402
[redacted]	225	carpenter	H	292	11/9/1992	900	1200	11/9/1992	1500	1800	C	12/29/1992	50
[redacted]	225	laborer	H	292	11/9/1992	900	1200	11/9/1992	1500	1730	C	3/15/1994	491
[redacted]	225	carpenter	H	292	11/9/1992	900	1200	11/9/1992	1500	1730	C	12/29/1992	50
[redacted]	225	laborer	H	292	11/9/1992	1020	1200	11/9/1992	1615	1730	C	1/25/1993	77
[redacted]	225	laborer	H	292	11/9/1992	1020	1200	No data	No data	No data	C	3/18/1993	129
[redacted]	225	laborer	H	292	11/9/1992	1630	1715	No data	No data	No data	C	9/9/1993	304
[redacted]	225	laborer	H	292	11/9/1992	2000	2215	No data	No data	No data	C	2/9/1993	92
[redacted]	226	pipefitter	H	221	12/13/1995	1300	1630	No data	No data	No data	N/A	None	waived
[redacted]	226	pipefitter	H	221	12/13/1995	1300	1630	No data	No data	No data	N/A	None	None
[redacted]	234	laborer	A	773	4/6/1994	945	1100	4/7/1994	900	1100	C	9/7/1995	518
[redacted]	234	laborer	A	773	4/7/1994	900	1100	4/8/1994	945	1100	U	10/11/1999	2012

Document No. ORAUT-RPRT-0092 | Revision No. 00 | Effective Date: 06/14/2019 | Page 140 of 188

**ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)**

CTW	SID	Craft	Area	Bldg.	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Am bioassay type	Am bioassay date	# days since RWP, status
[redacted]	236	laborer	A	773	11/7/1994	910	1145	No data	No data	No data	C	12/13/1994	36
[redacted]	236	pipefitter	A	773	11/7/1994	945	1145	11/7/1994	1440	1555	U	2/5/1996	455
[redacted]	236	pipefitter	A	773	11/8/1994	800	815	11/8/1994	900	1025	C	5/23/1995	196
[redacted]	236	carpenter	A	773	11/11/1994	No data	No data	No data	No data	No data	C	4/10/1995	150
[redacted]	236	pipefitter	A	773	11/29/1994	1030	1230	No data	No data	No data	C	9/7/1995	282
[redacted]	237	laborer	A	773	8/1/1994	1345	1500	8/2/1994	1345	1445	C	12/13/1994	133
[redacted]	237	laborer	A	773	8/1/1994	1345	1500	8/2/1994	1345	1445	C	12/14/1994	134
[redacted]	242	pipefitter	F	772	10/19/1992	1430	1530	No data	No data	No data	C	4/5/1993	168
[redacted]	244	carpenter	F	772	10/1/1992	900	1040	10/1/1992	1330	1445	C	2/26/1993	148
[redacted]	244	carpenter	F	772	10/1/1992	900	1040	10/1/1992	1330	1445	C	6/17/1993	259
[redacted]	244	carpenter	F	772	10/1/1992	900	1040	10/1/1992	1330	1445	C	8/19/1993	322

a. Bioassay type codes: U represents urinalysis; C represents chest count.

ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)

Table C-7. SubCTW required neptunium bioassay, 1990 to 1998.^a

CTW	SID	Craft	Area	Bldg.	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Np bioassay type	Np bioassay date	# days since RWP, status
[redacted]	22	laborer	H	OBL	10/12/1992	2030	2300	10/14/1992	2020	2305	C	10/23/1992	9
[redacted]	22	laborer	H	OBL	10/12/1992	2030	2300	10/26/1992	2000	2300	C	2/9/1993	106
[redacted]	22	laborer	H	OBL	10/14/1992	2030	2330	No data	No data	No data	C	9/9/1993	330
[redacted]	22	electrician	H	OBL	10/20/1992	1530	1730	No data	No data	No data	C	6/8/1993	231
[redacted]	22	laborer	H	OBL	10/20/1992	1330	1730	No data	No data	No data	U	11/10/1992	21
[redacted]	22	laborer	H	OBL	10/20/1992	800	1100	10/20/1992	1330	1730	U	7/13/1993	266
[redacted]	22	laborer	H	OBL	10/20/1992	800	1000	No data	No data	No data	C	2/26/1993	129
[redacted]	22	laborer	H	OBL	10/20/1992	1330	1730	No data	No data	No data	C	3/18/1993	149
[redacted]	22	laborer	H	OBL	10/26/1992	2000	2300	No data	No data	No data	C	10/28/1992	2
[redacted]	25	laborer	H	OBL	1/18/1993	2030	2145	No data	No data	No data	U	1/25/1993	7
[redacted]	35	pipefitter	H	OBL	7/16/1992	900	1030	No data	No data	No data	C	1/11/1994	544
[redacted]	35	pipefitter	H	OBL	7/21/1992	2030	2300	No data	No data	No data	C	6/15/1993	329
[redacted]	35	laborer	H	OBL	7/21/1992	2030	2300	No data	No data	No data	C	2/9/1993	203
[redacted]	35	pipefitter	H	OBL	7/21/1992	2030	2300	No data	No data	No data	C	12/14/1993	511
[redacted]	42	ironworker	H	OBL	2/2/1993	230	330	No data	No data	No data	N/A	None	[redacted]
[redacted]	42	ironworker	H	OBL	2/2/1993	230	330	2/8/1993	2100	2400	C	10/25/1993	259
[redacted]	43	sheetmetal	H	OBL	3/16/1993	915	1130	3/22/1993	1425	1630	N/A	None	None
[redacted]	43	sheetmetal	H	OBL	3/16/1993	1500	1700	3/18/1993	1500	1800	N/A	None	None
[redacted]	43	sheetmetal	H	OBL	3/17/1993	940	1200	3/18/1993	900	1130	C	8/10/1993	145
[redacted]	43	sheetmetal	H	OBL	3/18/1993	900	1130	No data	No data	No data	N/A	None	[redacted]
[redacted]	43	sheetmetal	H	OBL	3/18/1993	900	1130	3/22/1993	830	1145	C	3/13/1998	1817
[redacted]	43	sheetmetal	H	OBL	3/22/1993	830	1145	No data	No data	No data	U	6/9/1993	79
[redacted]	43	ironworker	H	OBL	3/22/1993	1400	1630	No data	No data	No data	N/A	None	[redacted]
[redacted]	43	laborer	H	OBL	3/22/1993	1405	1805	No data	No data	No data	U	10/11/1993	203
[redacted]	43	ironworker	H	OBL	3/22/1993	1400	1630	No data	No data	No data	N/A	None	[redacted]
[redacted]	43	carpenter	H	OBL	3/22/1993	1630	1700	No data	No data	No data	U	7/6/1993	106
[redacted]	43	ironworker	H	OBL	3/22/1993	1700	1800	No data	No data	No data	C	11/22/1994	610
[redacted]	43	ironworker	H	OBL	3/22/1993	1425	1630	No data	No data	No data	N/A	None	[redacted]
[redacted]	43	laborer	H	OBL	3/22/1993	1405	1805	No data	No data	No data	U	5/3/1994	407
[redacted]	44	sheetmetal	H	OBL	4/6/1993	830	1030	No data	No data	No data	U	6/9/1993	64
[redacted]	44	carpenter	H	OBL	4/6/1993	830	1030	No data	No data	No data	U	7/6/1993	91
[redacted]	44	carpenter	H	OBL	4/8/1993	1600	1800	4/13/1993	1100	1230	C	12/20/1994	616
[redacted]	44	carpenter	H	OBL	4/8/1993	900	1030	No data	No data	No data	C	6/30/1993	83

Document No. ORAUT-RPRT-0092 Revision No. 00 Effective Date: 06/14/2019 Page 142 of 188

ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)

CTW	SID	Craft	Area	Bldg.	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	Np bioassay type	Np bioassay date	# days since RWP, status
[redacted]	44	carpenter	H	OBL	4/8/1993	900	1100	4/8/1993	1400	1700	N/A	None	[redacted]
[redacted]	44	carpenter	H	OBL	4/8/1993	1400	1600	No data	No data	No data	C	5/4/1993	26
[redacted]	44	carpenter	H	OBL	4/13/1993	1100	1235	No data	No data	No data	C	6/29/1993	77
[redacted]	45	laborer	H	OBL	1/25/1993	2130	2330	No data	No data	No data	U	9/9/1993	227
[redacted]	45	laborer	H	OBL	1/25/1993	2130	2330	No data	No data	No data	C	6/16/1993	142
[redacted]	45	laborer	H	OBL	1/26/1993	300	530	No data	No data	No data	U	9/8/1993	225
[redacted]	45	laborer	H	OBL	1/26/1993	300	530	No data	No data	No data	U	2/9/1993	14
[redacted]	45	electrician	H	OBL	1/27/1993	1400	1630	No data	No data	No data	C	6/8/1993	132
[redacted]	45	electrician	H	OBL	1/27/1993	1400	1630	No data	No data	No data	U	3/8/1993	40
[redacted]	46	laborer	H	OBL	2/10/1993	1000	1200	No data	No data	No data	U	7/13/1993	153
[redacted]	46	laborer	H	OBL	2/10/1993	1400	1600	No data	No data	No data	C	12/16/1993	309
[redacted]	46	laborer	H	OBL	2/10/1993	1000	1200	No data	No data	No data	C	3/18/1993	36
[redacted]	64	sheetmetal	H	OBL	7/1/1993	1400	1645	No data	No data	No data	C	10/19/1993	110
[redacted]	64	laborer	H	OBL	7/1/1993	1400	1645	No data	No data	No data	U	10/11/1993	102
[redacted]	64	sheetmetal	H	OBL	7/1/1993	1400	1645	7/8/1993	1420	1730	C	9/22/1993	76
[redacted]	64	sheetmetal	H	OBL	7/1/1993	1400	1645	No data	No data	No data	N/A	None	[redacted]
[redacted]	64	laborer	H	OBL	7/6/1993	800	1130	No data	No data	No data	C	3/15/1994	252
[redacted]	64	sheetmetal	H	OBL	7/6/1993	800	1130	No data	No data	No data	C	10/27/1993	113
[redacted]	64	sheetmetal	H	OBL	7/8/1993	1420	1730	No data	No data	No data	N/A	None	[redacted]
[redacted]	64	sheetmetal	H	OBL	7/8/1993	1415	1730	No data	No data	No data	U	9/8/1993	62
[redacted]	64	sheetmetal	H	OBL	7/8/1993	800	900	No data	No data	No data	N/A	None	None
[redacted]	65	electrician	H	OBL	6/7/1993	1600	1700	6/8/1993	930	1100	U	9/7/1993	91
[redacted]	65	electrician	H	OBL	6/8/1993	1015	1100	6/21/1993	930	1130	U	9/23/1993	94
[redacted]	65	electrician	H	OBL	6/21/1993	930	1130	No data	No data	No data	N/A	None	None
[redacted]	68	carpenter	H	OBL	12/2/1993	1000	1030	No data	No data	No data	U	3/4/1994	92
[redacted]	68	insulator	H	OBL	12/6/1993	1300	1615	No data	No data	No data	C	5/23/1995	533
[redacted]	68	painter	H	OBL	12/6/1993	1000	1130	No data	No data	No data	U	4/3/1994	118
[redacted]	68	laborer	H	OBL	12/6/1993	1000	1130	12/9/1993	830	1000	N/A	[redacted]	[redacted]
[redacted]	68	carpenter	H	OBL	12/6/1993	1000	1130	No data	No data	No data	N/A	[redacted]	[redacted]
[redacted]	68	laborer	H	OBL	12/6/1993	1000	1130	No data	No data	No data	C	1/3/1994	28
[redacted]	68	insulator	H	OBL	12/6/1993	930	1113	12/6/1993	1300	1615	C	9/19/1994	287
[redacted]	68	carpenter	H	OBL	12/6/1993	1000	1130	No data	No data	No data	C	7/21/1994	227
[redacted]	105	millwright	F	235	6/22/1995	915	925	No data	No data	No data	N/A	None	None
[redacted]	106	pipefitter	F	235	3/8/1995	1500	1600	3/13/1995	910	1000	N/A	None	None

Document No. ORAUT-RPRT-0092 Revision No. 00 Effective Date: 06/14/2019 Page 143 of 188

ATTACHMENT C
RADIOLOGICAL WORK PERMIT – CONSTRUCTION TRADE WORKER DATA, 1990 TO 1998 (continued)

CTW	SID	Craft	Area	Bldg.	RWP date 1	Entry 1	Exit 1	RWP date 2	Entry 2	Exit 2	U bioassay type	U bioassay date	# days since RWP, status
[redacted]	106	carpenter	F	235	3/8/1995	1500	1600	No data	No data	No data	C	4/10/1995	33
[redacted]	106	concrete	F	235	3/9/1995	930	1045	3/22/1995	910	1100	N/A	None	None
[redacted]	106	laborer	F	235	3/13/1995	415	1045	3/13/1995	1330	1430	N/A	None	None
[redacted]	106	millwright	F	235	3/16/1995	800	1115	3/16/1995	1330	1640	C	10/21/1997	950
[redacted]	106	laborer	F	235	3/27/1995	850	1115	3/27/1995	1300	1530	C	3/19/1997	723
[redacted]	106	electrician	F	235	3/27/1995	1315	1530	No data	No data	No data	C	3/31/1998	1100
[redacted]	106	laborer	F	235	3/27/1995	800	1115	3/27/1995	1300	1535	C	6/15/1995	80
[redacted]	125	pipefitter	H	HBL	12/5/1995	1500	1600	12/7/1995	1330	1630	N/A	None	None
[redacted]	125	pipefitter	H	HBL	12/5/1995	1500	1600	12/7/1995	1330	1630	N/A	None	None
[redacted]	211	laborer	F	235	8/1/1991	820	1030	8/3/1991	1300	1345	N/A	None	[redacted]
[redacted]	211	electrician	F	235	8/1/1991	820	1030	8/2/1991	845	1045	C	6/22/1993	690
[redacted]	211	electrician	F	235	8/2/1991	845	1045	8/3/1991	830	845	N/A	None	None
[redacted]	211	carpenter	F	235	8/3/1991	1300	1345	No data	No data	No data	U	1/14/1992	164
[redacted]	212	electrician	F	235	9/10/1993	800	900	No data	No data	No data	U	9/11/1995	731
[redacted]	212	carpenter	F	235	9/10/1993	1415	1500	No data	No data	No data	N/A	None	None
[redacted]	212	electrician	F	235	9/10/1993	800	900	No data	No data	No data	C	10/22/1993	42
[redacted]	212	millwright	F	235	9/16/1993	920	1035	No data	No data	No data	N/A	None	None
[redacted]	212	millwright	F	235	9/16/1993	920	1430	9/17/1993	745	915	N/A	None	None
[redacted]	212	millwright	F	235	9/16/1993	900	1430	9/17/1993	745	915	N/A	None	None
[redacted]	220	electrician	F	235	11/17/1993	1008	1514	No data	No data	No data	N/A	None	[redacted]
[redacted]	220	electrician	F	235	11/17/1993	1300	1500	11/30/1993	1100	1500	U	10/27/1994	331
[redacted]	220	electrician	F	235	11/17/1993	1008	1500	No data	No data	No data	C	7/18/1994	243
[redacted]	220	laborer	F	235	11/17/1993	1030	1115	No data	No data	No data	U	9/21/1994	308
[redacted]	220	electrician	F	235	11/18/1993	930	1130	11/30/1993	1100	1500	N/A	None	[redacted]

a. Bioassay type codes: U represents urinalysis; C represents chest count.

ATTACHMENT D
JOB PLAN – CONSTRUCTION TRADE WORKER DATA, 1972 TO 1989

LIST OF TABLES

<u>TABLE</u>	<u>TITLE</u>	<u>PAGE</u>
D-1	Job Plan bioassay requirements, 1972 to 1989.....	146
D-2	Roster of subCTWs from Job Plans with bioassay, 1972 to 1974.....	158
D-3	Results of subCTWs obtained from Job Plans with bioassay, 1980 to 1989.....	164
D-4	Results of subCTWs obtained from incident reports and bioassay, 1985 to 1990	185
D-5	SubCTW americium bioassay by Job Plan, 1981 to 1987	187

ATTACHMENT D
JOB PLAN – CONSTRUCTION TRADE WORKER DATA, 1972 TO 1989 (continued)

Table D-1. Job Plan bioassay requirements, 1972 to 1989.

Job Plan number	Job date	Wing/room	Pu	Am/Cm	Reference	Page
1	2/7/1972	776A loading dock	A	No	DuPont (1973 – 1989)	7
2	2/8/1972	776A loading dock	A	No	DuPont (1973 – 1989)	9
3	2/10/1972	776A loading dock	A	No	DuPont (1973 – 1989)	11
4	2/15/1972	E-131	A	No	DuPont (1973 – 1989)	8
5	reserved	N/A	N/A	N/A	N/A	N/A
6	2/22/1972	E-131	A	No	DuPont (1973 – 1989)	9
7	2/29/1972	776A loading dock	A	No	DuPont (1973 – 1989)	15
8	3/1/1972	776A loading dock	A	No	DuPont (1973 – 1989)	17
9	3/2/1972	776A loading dock	A	No	DuPont (1973 – 1989)	19
10	3/3/1972	776A loading dock	A	No	DuPont (1973 – 1989)	21
11	3/6/1972	776A loading dock	A	No	DuPont (1973 – 1989)	23
12	3/31/1972	CPF	A	No	DuPont (1973 – 1989)	15
13	4/10/1972	B stack	A	No	DuPont (1973 – 1989)	16
14	4/17/1972-4/19/1972	HLC	A	No	DuPont (1973 – 1989)	17-19
15	4/20/1972	Cell 12	A	No	DuPont (1973 – 1989)	20
16	4/21/1972	Cell 16	A	No	DuPont (1973 – 1989)	21
17	4/25/1972	Cell 15	A	No	DuPont (1973 – 1989)	22

**ATTACHMENT D
JOB PLAN – CONSTRUCTION TRADE WORKER DATA, 1972 TO 1989 (continued)**

Job Plan number	Job date	Wing/room	Pu	Am/Cm	Reference	Page
18	4/26/1972-4/27/1972	Cell 15	A	No	DuPont (1973 – 1989)	23-24
19	5/1/1972-5/2/1972	Cell 12	A	No	DuPont (1973 – 1989)	25-26
20	5/4/1972-5/5/1972	Cell 12	A	No	DuPont (1973 – 1989)	60
21	5/8/1972	Cell 10	A	No	DuPont (1973 – 1989)	25
22	5/9/1972	Cell 10	A	No	DuPont (1973 – 1989)	28
23	5/10/1972-5/11/1972	Cell 12	A	No	DuPont (1973 – 1989)	29-30
24	5/26/1972	HLC	A	No	DuPont (1973 – 1989)	81
25	6/5/1972	HLC	A	No	DuPont (1973 – 1989)	32
26	6/12/1972-6/16/1972	HLC	A	No	DuPont (1973 – 1989)	35
27	6/21/1972	HLC	A	No	DuPont (1973 – 1989)	39
28	10/5/1972-10/6/1972	Outside	A	No	DuPont (1973 – 1989)	40
29	10/25/1972-10/26/1972	HLC	A	No	DuPont (1973 – 1989)	43
30	2/15/1973	HLC fan room	A	No	DuPont (1973 – 1989)	43
31	3/14/1973	B-002	A	No	DuPont (1973 – 1989)	46
32	3/16/1973-4/12/1973	HLC fan room	A	No	DuPont (1973 – 1989)	48
33	3/29/1973	HLC high bay	A	No	DuPont (1973 – 1989)	49
34	4/3/1973	C-002	A	No	DuPont (1973 – 1989)	50
35	4/9/1973	C-002	A	No	DuPont (1973 – 1989)	52

**ATTACHMENT D
JOB PLAN – CONSTRUCTION TRADE WORKER DATA, 1972 TO 1989 (continued)**

Job Plan number	Job date	Wing/room	Pu	Am/Cm	Reference	Page
36	4/17/1973-4/18/1973	HLC high bay	A	No	DuPont (1973 – 1989)	55
37	4/24/1973	HLC pipe	A	No	DuPont (1973 – 1989)	58
38	4/24/1973	HLC	A	No	DuPont (1973 – 1989)	58
39	reserved	N/A	N/A	N/A	N/A	N/A
40	5/8/1973	HLC	A	No	DuPont (1973 – 1989)	63
41	5/23/1973	HLC	A	No	DuPont (1973 – 1989)	65
42	5/24/1973-5/25/1973	HLC	A	No	DuPont (1973 – 1989)	66
43	5/29/1973	HLC	A	No	DuPont (1973 – 1989)	82
44	5/31/1973-6/1/1973	HLC	A	No	DuPont (1973 – 1989)	83
45	6/12/1973-6/13/1973	HLC	A	No	DuPont (1973 – 1989)	95
46	7/10/1973	F wing	A	A	DuPont (1973 – 1989)	106
47	8/10/1973	HLC	A	A	DuPont (1973 – 1989)	107
48	10/2/1973	HLC	A	No	DuPont (1973 – 1989)	108
49	10/3/1973	HLC	A	No	DuPont (1973 – 1989)	109
50	10/10/1973	HLC	A	No	DuPont (1973 – 1989)	110
51	11/8/1973	Tank Cell "A"	A	No	DuPont (1973 – 1989)	117
52	12/19/1973-12/20/1973	776-A tanks	A	No	DuPont (1973 – 1989)	120-121
53	12/20/1973	HLC	A	No	DuPont (1973 – 1989)	111

**ATTACHMENT D
JOB PLAN – CONSTRUCTION TRADE WORKER DATA, 1972 TO 1989 (continued)**

Job Plan number	Job date	Wing/room	Pu	Am/Cm	Reference	Page
54	12/21/1973	776-A tanks	A	No	DuPont (1973 – 1989)	126
55	12/26/1973	776-A tanks	A	No	DuPont (1973 – 1989)	128
56	12/27/1973-12/31/1973	HLC	A	No	DuPont (1973 – 1989)	132-135
57	reserved	N/A	N/A	N/A	N/A	N/A
58	12/31/1973	776-A piping	A	No	DuPont (1973 – 1989)	135
59	1/3/1974	HLC	A	No	DuPont (1973 – 1989)	136
60	1/9/1974	HLC	A	No	DuPont (1973 – 1989)	137
61	2/13/1974	HLC	A	No	DuPont (1973 – 1989)	138
62	2/26/1974	HLC	A	No	DuPont (1973 – 1989)	144
63	1/4/1980	Co-60 cell	A	No	DuPont (1973 – 1989)	12
64	7/15/1980	B-147	A	No	DuPont (1973 – 1989)	82
65	3/5/1981-3/7/1981	CPF	A	A	DuPont (1973 – 1989)	106-110
66	3/12/1981-3/13/1981	CPF	A	A	DuPont (1973 – 1989)	127-129
67	4/6/1981	CPF	A	A	DuPont (1973 – 1989)	193,194
68	4/20/1981	C-005	A	No	DuPont (1973 – 1989)	205,206
69	5/4/1981	B-005	A	No	DuPont (1973 – 1989)	8
70	9/24/1981	C-005	A	No	DuPont (1973 – 1989)	241
71	10/1/1981-10/2/1981	Cells 10-12	A	No	DuPont (1973 – 1989)	7,8

**ATTACHMENT D
JOB PLAN – CONSTRUCTION TRADE WORKER DATA, 1972 TO 1989 (continued)**

Job Plan number	Job date	Wing/room	Pu	Am/Cm	Reference	Page
72	10/5/1981-10/6/1981	Cells 10-12	A	No	DuPont (1973 – 1989)	9,10
73	10/7/1981-10/8/1981	Cells 10-12	A	No	DuPont (1973 – 1989)	16-17
74	10/9/1981	Cells 10-12	A	No	DuPont (1973 – 1989)	19
75	10/12/1981 (10/13/1981)	Cells 10-12	A	No	DuPont (1973 – 1989)	20,23
76	10/14/1981	Cells 10-12	A	No	DuPont (1973 – 1989)	24
77	10/15/1981 (10/16/1981)	Cells 10-12	A	No	DuPont (1973 – 1989)	30,31
78	10/19/1981	Cells 10-12	A	No	DuPont (1973 – 1989)	36
79	10/20/1981	Cells 10-12	A	No	DuPont (1973 – 1989)	41
80	10/21/1981- 10/22/1981	Cells 10-12	A	No	DuPont (1973 – 1989)	45,47
81	10/23/1981	Cells 10-12	A	No	DuPont (1973 – 1989)	49
82	10/26/1981	Cells 10-12	A	No	DuPont (1973 – 1989)	50
83	10/28/1981	Cells 10-12	A	No	DuPont (1973 – 1989)	54
84	11/3/1981	Cells 10-12	A	No	DuPont (1973 – 1989)	60
85	11/17/1981- 11/18/1981	Cells 10-12	A	No	DuPont (1973 – 1989)	90,98
86	11/19/1981- 11/20/1981	Cells 10-12	A	No	DuPont (1973 – 1989)	101,104
87	11/23/1981- 11/24/1981	Cells 10-12	A	No	DuPont (1973 – 1989)	110
88	1/28/1982	HLC	A	No	DuPont (1973 – 1989)	35
89	2/4/1982	HLC	A	No	DuPont (1973 – 1989)	47

ATTACHMENT D
JOB PLAN – CONSTRUCTION TRADE WORKER DATA, 1972 TO 1989 (continued)

Job Plan number	Job date	Wing/room	Pu	Am/Cm	Reference	Page
90	2/10/1982	Cells 10-12	A	No	DuPont (1973 – 1989)	52
91	2/12/1982	Cells 10-12	A	No	DuPont (1973 – 1989)	59
92	2/17/1982	Cells 10-12	A	No	DuPont (1973 – 1989)	64
93	2/18/1982	Cells 10-12	A	No	DuPont (1973 – 1989)	67
94	2/22/1982	Cells 10-12	A	No	DuPont (1973 – 1989)	79
95	2/24/1982-2/25/1982	Cells 10-12	A	No	DuPont (1973 – 1989)	84,88
96	3/8/1982	Cells 10-12	A	No	DuPont (1973 – 1989)	113
97	8/25/1982	F wing	A	A	DuPont (1973 – 1989)	199
98	3/11/1983-3/12/1983)	Cell 11	A	No	DuPont (1973 – 1989)	102, 103
99	3/16/1983	HLC pipe	A	No	DuPont (1973 – 1989)	109
100	7/29/1983	F wing	A	A	DuPont (1973 – 1989)	145
101	7/30/1983	E-001	A	No	DuPont (1973 – 1989)	150
102	8/2/1983-8/8/1983	C-005	A	No	DuPont (1973 – 1989)	151,152
103	8/3/1983	F-091	A	A	DuPont (1973 – 1989)	156
104	8/8/1983	F-091	A	A	DuPont (1973 – 1989)	167
105	8/9/1983	C-059	A	No	DuPont (1973 – 1989)	173
106	9/2/1983	CPF	A	A	DuPont (1973 – 1989)	9
107	9/14/1983	C-143	A	No	DuPont (1973 – 1989)	38

ATTACHMENT D
JOB PLAN – CONSTRUCTION TRADE WORKER DATA, 1972 TO 1989 (continued)

Job Plan number	Job date	Wing/room	Pu	Am/Cm	Reference	Page
108	9/16/1983	HLC	A	No	DuPont (1973 – 1989)	43,44
109	10/6/1983	C-077 (ILC)	A	No	DuPont (1973 – 1989)	101
110	10/12/1983	C-077 (ILC)	A	No	DuPont (1973 – 1989)	108
111	10/18/1983	C-077 (ILC)	A	No	DuPont (1973 – 1989)	121
112	10/19/1983- 10/20/1983	C-077 (ILC)	A	No	DuPont (1973 – 1989)	123
113	10/21/1983	C-077 (ILC)	A	No	DuPont (1973 – 1989)	131
114	10/24/1983	C-077 (ILC)	A	No	DuPont (1973 – 1989)	136
115	10/25/1983	C-077 (ILC)	A	No	DuPont (1973 – 1989)	140
116	10/27/1983	C-077 (ILC)	A	No	DuPont (1973 – 1989)	147
117	10/31/1983	C-077 (ILC)	A	No	DuPont (1973 – 1989)	161
118	11/1/1983	C-077 (ILC)	A	No	DuPont (1973 – 1989)	164
119	11/2/1983	C-077 (ILC)	A	No	DuPont (1973 – 1989)	172, 174
120	11/4/1983	C-077 (ILC)	A	No	DuPont (1973 – 1989)	176
121	11/9/1983	C-077 (ILC)	A	No	DuPont (1973 – 1989)	187
122	11/10/1983	C-077 (ILC)	A	No	DuPont (1973 – 1989)	188
123	11/14/1983	C-077 (ILC)	A	No	DuPont (1973 – 1989)	202
124	11/15/1983	C-077 (ILC)	A	No	DuPont (1973 – 1989)	204
125	11/22/1983	TFF (F-105)	A	A	DuPont (1973 – 1989)	220

**ATTACHMENT D
JOB PLAN – CONSTRUCTION TRADE WORKER DATA, 1972 TO 1989 (continued)**

Job Plan number	Job date	Wing/room	Pu	Am/Cm	Reference	Page
126	3/17/1984	HLC high bay	A	No	DuPont (1973 – 1989)	140
127	3/19/1984-4/6/1984	HLC high bay	A	No	DuPont (1973 – 1989)	141-156
128	3/30/1984	HLC high bay	A	No	DuPont (1973 – 1989)	172-173
129	4/13/1984	CPF	A	A	DuPont (1973 – 1989)	216
130	4/17/1984	CPF	A	A	DuPont (1973 – 1989)	226
131	4/26/1984	HLC	A	No	DuPont (1973 – 1989)	244
132	5/2/1984	CPF	A	A	DuPont (1973 – 1989)	5
133	5/10/1984	F-102	A	A	DuPont (1973 – 1989)	24
134	5/30/1984-6/4/1984	E-072	A	No	DuPont (1973 – 1989)	73
135	10/24/1984-10/25/1984	C-077 (ILC)	A	No	DuPont (1973 – 1989)	130
136	11/16/1984	C-077 (ILC)	A	No	DuPont (1973 – 1989)	224
137	11/19/1984	C-005	A	No	DuPont (1973 – 1989)	247
138	1/2/1985-1/4/1985	C-077 (ILC)	A	No	DuPont (1973 – 1989)	6,7
139	1/9/1985	B-048	A	No	DuPont (1973 – 1989)	32
140	1/18/1985	B-001	A	No	DuPont (1973 – 1989)	71,72
141	2/25/1985-2/26/1985	C-077 (ILC)	A	No	DuPont (1973 – 1989)	161
142	3/11/1985-3/12/1985	C-077 (ILC)	A	No	DuPont (1973 – 1989)	205
143	3/18/1985	C-077 (ILC)	A	No	DuPont (1973 – 1989)	243

ATTACHMENT D
JOB PLAN – CONSTRUCTION TRADE WORKER DATA, 1972 TO 1989 (continued)

Job Plan number	Job date	Wing/room	Pu	Am/Cm	Reference	Page
144	3/19/1985	C-079	A	No	DuPont (1973 – 1989)	288
145	3/29/1985	HLC	A	No	DuPont (1973 – 1989)	321
146	4/2/1985	E-131	A	No	DuPont (1973 – 1989)	327-328
147	6/7/1985	C-005	A	No	DuPont (1973 – 1989)	82
148	6/12/1985	B-111	A	No	DuPont (1973 – 1989)	95,96
149	6/27/1985	B-005	A	No	DuPont (1973 – 1989)	131
150	7/1/1985	B-005	A	No	DuPont (1973 – 1989)	137
151	7/3/1985	C-005	A	No	DuPont (1973 – 1989)	147,148
152	7/16/1985	B-111	A	No	DuPont (1973 – 1989)	161
153	7/24/1985-7/26/1985	TFF	A	A	DuPont (1973 – 1989)	183-184
154	7/28/1985	TFF	A	A	DuPont (1973 – 1989)	195-196
155	7/29/1985	C-005	A	No	DuPont (1973 – 1989)	199
156	8/1/1985-8/6/1985	C-005	A	No	DuPont (1973 – 1989)	217
157	8/8/1985	TFF	A	A	DuPont (1973 – 1989)	227
158	8/21/1985-8/23/1985	TFF	A	A	DuPont (1973 – 1989)	269,270
159	8/22/1985	C-005	A	No	DuPont (1973 – 1989)	275-276
160	8/26/1985-8/30/1985	TFF	A	A	DuPont (1973 – 1989)	283-284
161	8/26/1985	C-135	A	No	DuPont (1973 – 1989)	285

**ATTACHMENT D
JOB PLAN – CONSTRUCTION TRADE WORKER DATA, 1972 TO 1989 (continued)**

Job Plan number	Job date	Wing/room	Pu	Am/Cm	Reference	Page
162	8/30/1985	C-135	A	No	DuPont (1973 – 1989)	294, 297
163	9/6/1985	C-005	A	No	DuPont (1973 – 1989)	316
164	9/9/1985-9/13/1985	F-091	A	A	DuPont (1973 – 1989)	319,320
165	9/10/1985	C-077	A	No	DuPont (1973 – 1989)	329
166	10/1/1985	C-005	A	No	DuPont (1973 – 1989)	380
167	10/7/1985	TFF	A	A	DuPont (1973 – 1989)	395
168	10/11/1985	B-005	A	No	DuPont (1973 – 1989)	385,403
169	11/6/1985-11/7/1985	C119	A	No	DuPont (1973 – 1989)	445
170	11/11/1985	C119	A	No	DuPont (1973 – 1989)	493
171	11/25/1985	TFF	A	A	DuPont (1973 – 1989)	520
172	12/11/1985	TFF	A	A	DuPont (1973 – 1989)	551
173	1/7/1986	TFF	A	A	DuPont (1973 – 1989)	8
174	2/26/1986	TFF	A	A	DuPont (1973 – 1989)	100
175	4/3/1986	TFF	A	A	DuPont (1973 – 1989)	168
176	5/5/1986	F-091	A	A	DuPont (1973 – 1989)	222
177	5/12/1986	F-091	A	A	DuPont (1973 – 1989)	228
178	5/27/1986-5/30/1986	TFF	A	A	DuPont (1973 – 1989)	250
179	7/14/1986	TFF	A	A	DuPont (1973 – 1989)	15,39

**ATTACHMENT D
JOB PLAN – CONSTRUCTION TRADE WORKER DATA, 1972 TO 1989 (continued)**

Job Plan number	Job date	Wing/room	Pu	Am/Cm	Reference	Page
180	8/11/1986	C-005	A	No	DuPont (1973 – 1989)	71
181	8/19/1986	C-005	A	No	DuPont (1973 – 1989)	85
182	9/2/1986	TFF	A	A	DuPont (1973 – 1989)	108
183	9/11/1986	TFF	A	A	DuPont (1973 – 1989)	122
184	9/15/1986	TFF	A	A	DuPont (1973 – 1989)	130
185	11/10/1986	C-005	A	No	DuPont (1973 – 1989)	244
186	11/13/1986- 11/14/1986	C-005	A	No	DuPont (1973 – 1989)	262, 264
187	11/17/1986- 11/19/1986	C-005	A	No	DuPont (1973 – 1989)	267,27 2,274
188	11/21/1986	B-005	A	No	DuPont (1973 – 1989)	285,28 7
189	11/24/1986- 11/26/1986	B-005	A	No	DuPont (1973 – 1989)	297- 309
190	12/1/1986	C-005	A	No	DuPont (1973 – 1989)	317, 319
191	12/3/1986	C-005	A	No	DuPont (1973 – 1989)	345
192	12/4/1986	C-005	A	No	DuPont (1973 – 1989)	353, 355
193	12/8/1986	C-005	A	No	DuPont (1973 – 1989)	357, 359
194	12/9/1986- 12/11/1986	B-005	A	No	DuPont (1973 – 1989)	365- 369
195	12/16/1987- 12/17/1987	B-005	A	No	DuPont (1973 – 1989)	384- 386
196	12/18/1987- 12/23/1987	C-005	A	No	DuPont (1973 – 1989)	390- 394, 398

ATTACHMENT D
JOB PLAN – CONSTRUCTION TRADE WORKER DATA, 1972 TO 1989 (continued)

Job Plan number	Job date	Wing/room	Pu	Am/Cm	Reference	Page
197	12/19/1986	C-005	A	No	DuPont (1973 – 1989)	396
198	12/29/1987-1/2/1988	C-005	A	No	DuPont (1973 – 1989)	402-406
199	1/5/1987-1/8/1997	C-005	A	No	DuPont (1973 – 1989)	9, 11, 13
200	1/6/1987	776-A LAB	A	No	DuPont (1973 – 1989)	15
201	1/8/1987	C-005	A	No	DuPont (1973 – 1989)	24
202	1/9/1987	B-005	A	No	DuPont (1973 – 1989)	28
203	3/10/1987	C-005	A	No	DuPont (1973 – 1989)	103
204	5/11/1987-5/12/1987	TTF	A	A	DuPont (1973 – 1989)	179
205	10/29/1987	TFF	A	A	DuPont (1973 – 1989)	378
206	1/6/1988	776-A LAB	A	No	DuPont (1973 – 1989)	23
207	3/16/1988	HLC	A	No	DuPont (1973 – 1989)	40

a. A = assumed.

ATTACHMENT D
JOB PLAN – CONSTRUCTION TRADE WORKER DATA, 1972 TO 1989 (continued)

Table D-2. Roster of subCTWs from Job Plans with bioassay, 1972 to 1974.^a

Job Plan number	CTW	Craft	Area	Building	RWP date 1	Entry time 1	Exit time 1	RWP date 2	Entry time 2	Exit time 2	Pu required	Pu bioassay type	Pu	Pu status	Am required	Am bioassay type	Am	Am status	FP	Fp status
1	[redacted]	carpenter	A	776A	2/7/1972	1330	1600	2/8/1972	845	1130	Yes	N/A	None	[redacted]	No	N/A	None	None	9/8/1972	213
1	[redacted]	carpenter	A	776A	2/7/1972	1330	1600	2/8/1972	845	1130	Yes	N/A	8/27/1980	3123	No	N/A	None	None	11/20/1972	286
1	[redacted]	laborer	A	776A	2/7/1972	1330	1600	2/8/1972	845	1030	Yes	U	11/14/1973	645	No	N/A	None	None	12/13/1972	309
2	[redacted]	laborer	A	776A	2/8/1972	845	1010	No Data	No Data	No Data	Yes	U	11/14/1973	645	No	N/A	None	None	12/13/1972	309
2	[redacted]	carpenter	A	776A	2/8/1972	845	1130	No Data	No Data	No Data	Yes	N/A	10/13/1981	3535	No	N/A	None	None	9/8/1972	213
2	[redacted]	carpenter	A	776A	2/8/1972	845	1130	No Data	No Data	No Data	Yes	N/A	8/27/1980	3123	No	N/A	None	None	11/20/1972	286
3	[redacted]	pipefitter	A	776A	2/10/1972	1100	1130	No Data	No Data	No Data	Yes	N/A	None	None	No	N/A	None	None	11/29/1972	293
3	[redacted]	pipefitter	A	776A	2/15/1972	No Data	No Data	No Data	No Data	No Data	Yes	U	6/20/1972	126	No	N/A	None	None	6/20/1972	126
4	[redacted]	pipefitter	A	776A	2/15/1972	No Data	No Data	2/21/1972	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	None	11/29/1972	282
6	[redacted]	pipefitter	A	776A	2/22/1972	No Data	No Data	2/23/1972	No Data	No Data	Yes	U	6/20/1972	118	No	N/A	None	None	6/20/1972	118
6	[redacted]	pipefitter	A	776A	2/22/1972	No Data	No Data	2/23/1972	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	None	11/29/1972	280
7	[redacted]	pipefitter	A	776A	2/29/1972	1000	1130	2/29/1972	1315	1600	Yes	U	2/6/1973	343	No	N/A	None	None	5/5/1972	66
7	[redacted]	pipefitter	A	776A	2/29/1972	1000	1130	2/29/1972	1315	1600	Yes	U	6/20/1972	112	No	N/A	None	None	6/20/1972	112
7	[redacted]	pipefitter	A	776A	2/29/1972	1000	1130	2/29/1972	1315	1600	Yes	U	11/15/1973	625	No	N/A	None	None	6/30/1972	122
8	[redacted]	ironworker	A	776A	3/1/1972	845	1000	No Data	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	None	None	[redacted]
8	[redacted]	pipefitter	A	776A	3/1/1972	845	1000	No Data	No Data	No Data	Yes	U	6/20/1972	111	No	N/A	None	None	6/20/1972	111
8	[redacted]	pipefitter	A	776A	3/1/1972	845	1000	No Data	No Data	No Data	Yes	U	11/15/1973	624	No	N/A	None	None	6/30/1972	121
8	[redacted]	carpenter	A	776A	3/1/1972	1300	1500	No Data	No Data	No Data	Yes	N/A	10/13/1981	3513	No	N/A	None	None	9/8/1972	191
8	[redacted]	carpenter	A	776A	3/1/1972	1300	1500	No Data	No Data	No Data	Yes	N/A	8/27/1980	3101	No	N/A	None	None	11/20/1972	264
9	[redacted]	pipefitter	A	776A	3/2/1972	900	1130	3/2/1972	1245	1415	Yes	U	6/20/1972	110	No	N/A	None	None	6/20/1972	110
9	[redacted]	pipefitter	A	776A	3/2/1972	900	1130	3/2/1972	1245	1415	Yes	U	11/15/1973	623	No	N/A	None	None	6/30/1972	120
9	[redacted]	pipefitter	A	776A	3/2/1972	900	1130	No Data	No Data	No Data	Yes	U	8/27/1980	3100	No	N/A	None	None	2/6/1973	341
10	[redacted]	pipefitter	A	776A	3/3/1972	900	1040	3/3/1972	1300	1420	Yes	U	6/20/1972	109	No	N/A	None	None	6/20/1972	109
10	[redacted]	pipefitter	A	776A	3/3/1972	900	1040	3/3/1972	1300	1420	Yes	U	11/15/1973	622	No	N/A	None	None	6/30/1972	119
10	[redacted]	pipefitter	A	776A	3/3/1972	1300	1420	No Data	No Data	No Data	Yes	U	8/6/1974	886	No	N/A	None	None	10/9/1972	220

**ATTACHMENT D
JOB PLAN – CONSTRUCTION TRADE WORKER DATA, 1972 TO 1989 (continued)**

Job Plan number	CTW	Craft	Area	Building	RWP date 1	Entry time 1	Exit time1	RWP date 2	Entry time 2	Exit time 2	Pu required	Pu bioassay type	Pu	Pu status	Am required	Am bioassay type	Am	Am status	FP	Fp status
10	[redacted]	pipefitter	A	776A	3/3/1972	1300	1420	No Data	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	None	1/17/1973	320
11	[redacted]	carpenter	A	776A	3/6/1972	1000	1030	No Data	No Data	No Data	Yes	U	10/13/1981	3508	No	N/A	None	None	9/8/1972	186
11	[redacted]	carpenter	A	776A	3/6/1972	1000	1030	No Data	No Data	No Data	Yes	N/A	8/27/1980	3096	No	N/A	None	None	11/20/1972	259
11	[redacted]	laborer	A	776A	3/6/1972	1000	1030	No Data	No Data	No Data	Yes	U	11/14/1973	618	No	N/A	None	None	12/13/1972	282
12	[redacted]	pipefitter	A	773	3/31/1972	1030	1150	3/31/1972	1300	1500	Yes	U	2/6/1973	312	No	N/A	None	None	2/6/1973	312
12	[redacted]	pipefitter	A	773	3/31/1972	1030	1150	3/31/1972	1300	1500	Yes	U	1/4/1973	279	No	N/A	None	None	1/4/1973	279
13	[redacted]	pipefitter	A	773	4/10/1972	930	1145	No Data	No Data	No Data	Yes	U	2/6/1973	302	No	N/A	None	None	2/6/1973	302
14	[redacted]	pipefitter	A	773	4/17/1972	No Data	No Data	4/18/1972	No Data	No Data	Yes	U	8/6/1974	840	No	N/A	None	None	10/9/1972	174
14	[redacted]	pipefitter	A	773	4/17/1972	No Data	No Data	4/18/1972	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	None	5/18/1973	395
15	[redacted]	pipefitter	A	773	4/20/1972	No Data	No Data	4/21/1972	No Data	No Data	Yes	U	11/15/1973	573	No	N/A	None	None	6/30/1972	70
15	[redacted]	pipefitter	A	773	4/20/1972	No Data	No Data	No Data	No Data	No Data	Yes	U	8/6/1974	838	No	N/A	None	None	10/9/1972	172
16	[redacted]	pipefitter	A	773	4/21/1972	No Data	No Data	No Data	No Data	No Data	Yes	U	8/6/1974	837	No	N/A	None	None	10/9/1972	171
17	[redacted]	pipefitter	A	773	4/25/1972	No Data	No Data	No Data	No Data	No Data	Yes	U	8/6/1974	833	No	N/A	None	None	10/9/1972	167
18	[redacted]	pipefitter	A	773	4/26/1972	No Data	No Data	4/27/1972	No Data	No Data	Yes	U	8/6/1974	831	No	N/A	None	None	10/9/1972	165
19	[redacted]	pipefitter	A	773	5/1/1972	No Data	No Data	5/2/1972	No Data	No Data	Yes	U	8/6/1974	826	No	N/A	None	None	10/9/1972	160
19	[redacted]	pipefitter	A	773	5/1/1972	No Data	No Data	5/2/1972	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	None	6/30/1972	59
20	[redacted]	pipefitter	A	773	5/4/1972	No Data	No Data	5/5/1972	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	None	10/31/1973	544
21	[redacted]	pipefitter	A	773	5/8/1972	No Data	No Data	No Data	No Data	No Data	Yes	U	8/6/1974	820	No	N/A	None	None	10/9/1972	154
21	[redacted]	pipefitter	A	773	5/8/1972	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	None	10/31/1973	541
22	[redacted]	electrician	A	773	5/9/1972	No Data	No Data	No Data	No Data	No Data	Yes	U	3/1/1976	1392	No	N/A	None	None	9/10/1973	489
22	[redacted]	pipefitter	A	773	5/9/1972	No Data	No Data	No Data	No Data	No Data	Yes	U	8/6/1974	819	No	N/A	None	None	10/9/1972	153
22	[redacted]	pipefitter	A	773	5/9/1972	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	None	10/31/1973	540
23	[redacted]	pipefitter	A	773	5/10/1972	No Data	No Data	5/11/1972	No Data	No Data	Yes	U	2/6/1973	271	No	N/A	None	None	2/6/1973	271
23	[redacted]	pipefitter	A	773	5/10/1972	No Data	No Data	5/11/1972	No Data	No Data	Yes	U	8/6/1974	817	No	N/A	None	None	10/9/1972	151
23	[redacted]	pipefitter	A	773	5/10/1972	No Data	No Data	5/11/1972	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	None	10/31/1973	538
23	[redacted]	sheetmetal	A	773	5/10/1972	No Data	No Data	5/11/1972	No Data	No Data	Yes	U	6/20/1974	770	No	N/A	None	None	6/7/1973	392

**ATTACHMENT D
JOB PLAN – CONSTRUCTION TRADE WORKER DATA, 1972 TO 1989 (continued)**

Job Plan number	CTW	Craft	Area	Building	RWP date 1	Entry time 1	Exit time1	RWP date 2	Entry time 2	Exit time 2	Pu required	Pu bioassay type	Pu	Pu status	Am required	Am bioassay type	Am	Am status	FP	Fp status
23	[redacted]	sheetmetal	A	773	5/10/1972	No Data	No Data	5/11/1972	No Data	No Data	Yes	U	5/18/1973	372	No	N/A	None	None	5/18/1973	372
24	[redacted]	sheetmetal	A	773	5/26/1972	No Data	No Data	No Data	No Data	No Data	Yes	U	6/20/1974	755	No	N/A	None	None	6/7/1973	377
25	[redacted]	pipefitter	A	773	6/5/1972	No Data	No Data	No Data	No Data	No Data	Yes	U	2/6/1973	246	No	N/A	None	None	2/6/1973	246
25	[redacted]	pipefitter	A	773	6/5/1972	No Data	No Data	No Data	No Data	No Data	Yes	U	11/15/1973	528	No	N/A	None	None	6/30/1972	25
25	[redacted]	pipefitter	A	773	6/5/1972	No Data	No Data	No Data	No Data	No Data	Yes	U	8/6/1974	792	No	N/A	None	None	10/9/1972	126
26	[redacted]	carpenter	A	773	6/12/1972	No Data	No Data	6/15/1972	No Data	No Data	Yes	U	10/13/1981	3407	No	N/A	None	None	9/8/1972	85
26	[redacted]	pipefitter	A	773	6/12/1972	No Data	No Data	6/15/1972	No Data	No Data	Yes	U	2/6/1973	236	No	N/A	None	None	2/6/1973	236
26	[redacted]	sheetmetal	A	773	6/12/1972	No Data	No Data	No Data	No Data	No Data	Yes	U	6/20/1974	738	No	N/A	None	None	6/7/1973	360
26	[redacted]	pipefitter	A	773	6/15/1972	No Data	No Data	6/16/1972	No Data	No Data	Yes	U	11/15/1973	517	No	N/A	None	None	6/30/1972	14
27	[redacted]	pipefitter	A	776A	6/21/1972	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	None	No	N/A	None	None	11/27/1972	159
28	[redacted]	pipefitter	A	773	10/6/1972	905	1139	10/6/1972	1300	1515	Yes	U	11/15/1973	405	No	N/A	None	None	11/15/1973	405
28	[redacted]	pipefitter	A	773	10/6/1972	905	1139	10/6/1972	1300	1515	Yes	U	8/6/1974	669	No	N/A	None	None	10/9/1972	3
29	[redacted]	pipefitter	A	773	10/25/1972	No Data	No Data	10/26/1972	No Data	No Data	Yes	N/A	None	None	No	N/A	None	None	5/18/1973	204
29	[redacted]	pipefitter	A	773	10/25/1972	No Data	No Data	10/26/1972	No Data	No Data	Yes	N/A	None	None	No	N/A	None	None	1/17/1973	83
30	[redacted]	electrician	A	773	2/15/1973	9:38	1130	2/16/1973	900	1120	Yes	U	9/14/1977	1671	No	N/A	None	None	5/18/1973	91
30	[redacted]	electrician	A	773	2/15/1973	9:38	1130	2/16/1973	900	1120	Yes	N/A	None	[redacted]	No	N/A	None	None	None	[redacted]
30	[redacted]	electrician	A	773	2/15/1973	9:38	1130	No Data	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	None	None	[redacted]
31	[redacted]	pipefitter	A	773	3/14/1973	1430	1550	3/15/1973	1430	1530	Yes	N/A	None	None	No	N/A	None	None	5/18/1973	64
31	[redacted]	pipefitter	A	773	3/14/1973	1430	1550	3/15/1973	1430	1530	Yes	N/A	None	None	No	N/A	None	None	None	[redacted]
31	[redacted]	pipefitter	A	773	3/14/1973	1430	1550	No Data	No Data	No Data	Yes	C	10/22/1980	2779	No	N/A	None	None	5/18/1973	65
32	[redacted]	pipefitter	A	773	3/16/1973	1300	1545	4/17/1973	1300	1445	Yes	N/A	None	None	No	N/A	None	None	None	None
32	[redacted]	laborer	A	773	3/29/1973	No Data	No Data	No Data	No Data	No Data	Yes	U	8/28/1980	2709	No	N/A	None	None	5/18/1973	50
32	[redacted]	laborer	A	773	3/29/1973	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	None	None	[redacted]
33	[redacted]	carpenter	A	773	3/29/1973	No Data	No Data	No Data	No Data	No Data	Yes	N/A	8/27/1980	2708	No	N/A	None	None	12/28/1973	274
33	[redacted]	electrician	A	773	3/29/1973	No Data	No Data	No Data	No Data	No Data	Yes	U	3/1/1976	1068	No	N/A	None	None	9/10/1973	165
33	[redacted]	laborer	A	773	3/29/1973	No Data	No Data	No Data	No Data	No Data	Yes	U	12/23/1980	2826	No	N/A	None	None	11/15/1973	231

**ATTACHMENT D
JOB PLAN – CONSTRUCTION TRADE WORKER DATA, 1972 TO 1989 (continued)**

Job Plan number	CTW	Craft	Area	Building	RWP date 1	Entry time 1	Exit time1	RWP date 2	Entry time 2	Exit time 2	Pu required	Pu bioassay type	Pu	Pu status	Am required	Am bioassay type	Am	Am status	FP	Fp status
33	[redacted]	laborer	A	773	3/29/1973	No Data	No Data	No Data	No Data	No Data	Yes	U	5/18/1973	50	No	N/A	None	None	5/18/1973	50
34	[redacted]	pipefitter	A	773	4/3/1973	830	1000	4/3/1973	1030	1130	Yes	N/A	None	None	No	N/A	None	None	5/18/1973	45
34	[redacted]	pipefitter	A	773	4/3/1973	830	1000	4/3/1973	1030	1130	Yes	N/A	None	None	No	N/A	None	None	None	[redacted]
34	[redacted]	pipefitter	A	773	4/3/1973	830	1000	4/3/1973	1030	1130	Yes	N/A	None	None	No	N/A	None	None	10/31/1973	211
35	[redacted]	pipefitter	A	773	4/9/1973	1300	1500	No Data	No Data	No Data	Yes	N/A	None	None	No	N/A	None	None	None	None
36	[redacted]	pipefitter	A	773	4/17/1973	1315	1445	4/18/1973	915	1130	Yes	N/A	None	[redacted]	No	N/A	None	None	None	None
37	[redacted]	pipefitter	A	773	4/24/1973	930	1130	4/24/1973	1330	1500	Yes	N/A	None	[redacted]	No	N/A	None	None	None	None
38	[redacted]	pipefitter	A	773	5/8/1973	945	1115	No Data	No Data	No Data	Yes	U	12/23/1980	2786	No	N/A	None	None	11/15/1973	191
38	[redacted]	pipefitter	A	773	5/8/1973	1400	1600	5/8/1973	945	1145	Yes	U	8/27/1980	2668	No	N/A	None	None	12/28/1973	234
38	[redacted]	pipefitter	A	773	5/8/1973	1405	1600	5/8/1973	945	1145	Yes	U	10/13/1981	3080	No	N/A	None	None	11/5/1973	181
40	[redacted]	pipefitter	A	773	5/23/1973	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	None	No	N/A	None	None	None	[redacted]
41	[redacted]	pipefitter	A	773	5/24/1973	No Data	No Data	5/25/1973	No Data	No Data	Yes	U	None	None	No	N/A	None	None	1/16/1975	601
41	[redacted]	pipefitter	A	773	5/24/1973	No Data	No Data	5/25/1973	No Data	No Data	Yes	N/A	None	None	No	N/A	None	None	None	[redacted]
41	[redacted]	pipefitter	A	773	5/25/1973	No Data	No Data	No Data	No Data	No Data	Yes	U	8/28/1980	2652	No	N/A	None	None	None	[redacted]
42	[redacted]	pipefitter	A	773	5/29/1973	No Data	No Data	6/1/1973	No Data	No Data	Yes	U	None	None	No	N/A	None	None	1/16/1975	594
42	[redacted]	pipefitter	A	773	5/29/1973	No Data	No Data	6/1/1973	No Data	No Data	Yes	N/A	None	None	No	N/A	None	None	1/16/1975	594
43	[redacted]	pipefitter	A	773	5/31/1973	No Data	No Data	6/1/1973	No Data	No Data	Yes	U	None	None	No	N/A	None	None	1/16/1975	594
43	[redacted]	pipefitter	A	773	5/31/1973	No Data	No Data	6/1/1973	No Data	No Data	Yes	N/A	None	None	No	N/A	None	None	None	[redacted]
44	[redacted]	pipefitter	A	773	6/4/1973	No Data	No Data	6/5/1973	No Data	No Data	Yes	U	None	None	No	N/A	None	None	1/16/1975	590
44	[redacted]	pipefitter	A	773	6/4/1973	No Data	No Data	6/5/1973	No Data	No Data	Yes	N/A	None	None	No	N/A	None	None	None	[redacted]
45	[redacted]	pipefitter	A	773	6/12/1973	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	None	No	N/A	None	None	None	None
45	[redacted]	pipefitter	A	773	6/13/1973	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	None	No	N/A	None	None	7/10/1975	757
45	[redacted]	pipefitter	A	773	6/13/1973	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	None	No	N/A	None	None	None	[redacted]
46	[redacted]	pipefitter	A	773	7/10/1973	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	None	Yes	N/A	None	None	None	None
47	[redacted]	electrician	A	773	8/10/1973	No Data	No Data	No Data	No Data	No Data	Yes	U	9/2/1980	2580	No	N/A	None	None	11/1/1974	448
48	[redacted]	electrician	A	773	10/2/1973	1000	1135	No Data	No Data	No Data	Yes	U	9/2/1980	2527	No	N/A	None	None	11/1/1974	395

**ATTACHMENT D
JOB PLAN – CONSTRUCTION TRADE WORKER DATA, 1972 TO 1989 (continued)**

Job Plan number	CTW	Craft	Area	Building	RWP date 1	Entry time 1	Exit time1	RWP date 2	Entry time 2	Exit time 2	Pu required	Pu bioassay type	Pu	Pu status	Am required	Am bioassay type	Am	Am status	FP	Fp status
49	[redacted]	electrician	A	773	10/3/1973	900	1130	10/3/1973	1245	1530	Yes	N/A	None	None	No	N/A	None	None	11/1/1974	394
49	[redacted]	electrician	A	773	10/3/1973	1000	1105	10/3/1973	1245	1530	Yes	N/A	None	None	No	N/A	None	None	None	[redacted]
49	[redacted]	electrician	A	773	10/3/1973	1000	1135	No Data	No Data	No Data	Yes	U	9/2/1980	2526	No	N/A	None	None	11/1/1974	394
50	[redacted]	pipefitter	A	773	10/10/1973	840	1135	10/10/1973	1240	1530	Yes	N/A	None	None	No	N/A	None	None	None	[redacted]
50	[redacted]	pipefitter	A	773	10/10/1973	840	1135	10/10/1973	1240	1530	Yes	N/A	None	None	No	N/A	None	None	11/1/1974	387
51	[redacted]	pipefitter	A	773	11/8/1973	920	1145	No Data	No Data	No Data	Yes	U	12/23/1980	2602	No	N/A	None	None	11/15/1973	7
51	[redacted]	pipefitter	A	773	11/8/1973	920	1145	No Data	No Data	No Data	Yes	U	3/1/1976	844	No	N/A	None	None	7/10/1975	609
52	[redacted]	pipefitter	A	773	12/19/1973	1010	1140	12/19/1973	1615	1615	Yes	N/A	None	None	No	N/A	None	None	None	[redacted]
52	[redacted]	pipefitter	A	773	12/19/1973	1010	1140	12/19/1973	1615	1615	Yes	N/A	None	None	No	N/A	None	None	3/1/1975	437
53	[redacted]	pipefitter	A	773	12/20/1973	845	1140	12/20/1973	1250	1545	Yes	N/A	None	[redacted]	No	N/A	None	None	None	[redacted]
53	[redacted]	pipefitter	A	773	12/20/1973	845	1140	12/20/1973	1250	1545	Yes	N/A	None	[redacted]	No	N/A	None	None	None	None
53	[redacted]	pipefitter	A	773	12/20/1973	1100	1500	12/20/1973	1400	1445	Yes	U	2/1/1976	773	No	N/A	None	None	None	[redacted]
53	[redacted]	pipefitter	A	773	12/20/1973	1100	1500	12/20/1973	1400	1445	Yes	N/A	None	[redacted]	No	N/A	None	None	11/1/1974	316
54	[redacted]	pipefitter	A	773	12/21/1973	845	1100	12/21/1973	1300	1500	Yes	N/A	None	[redacted]	No	N/A	None	None	None	[redacted]
54	[redacted]	pipefitter	A	773	12/21/1973	845	1100	12/21/1973	1300	1500	Yes	N/A	None	[redacted]	No	N/A	None	None	None	None
55	[redacted]	pipefitter	A	773	12/26/1973	910	1140	No Data	No Data	No Data	Yes	N/A	None	None	No	N/A	None	None	None	[redacted]
55	[redacted]	pipefitter	A	773	12/26/1973	920	1140	No Data	No Data	No Data	Yes	N/A	None	None	No	N/A	None	None	7/10/1975	561
55	[redacted]	pipefitter	A	773	12/26/1973	920	1140	No Data	No Data	No Data	Yes	N/A	None	None	No	N/A	None	None	None	[redacted]
56	[redacted]	pipefitter	A	773	12/27/1973	930	1100	12/28/1973	1000	1600	Yes	U	2/1/1976	765	No	N/A	None	None	None	[redacted]
56	[redacted]	pipefitter	A	773	12/27/1973	930	1100	12/28/1973	1000	1600	Yes	N/A	None	[redacted]	No	N/A	None	None	11/1/1974	308
56	[redacted]	pipefitter	A	773	12/27/1973	930	1130	12/28/1973	1315	1430	Yes	N/A	None	[redacted]	No	N/A	None	None	None	[redacted]
56	[redacted]	pipefitter	A	773	12/27/1973	930	1130	12/28/1973	1315	1430	Yes	N/A	None	[redacted]	No	N/A	None	None	3/1/1975	428
58	[redacted]	pipefitter	A	773	12/31/1973	900	1000	No Data	No Data	No Data	Yes	N/A	None	None	No	N/A	None	None	None	[redacted]
58	[redacted]	pipefitter	A	773	12/31/1973	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	None	No	N/A	None	None	7/10/1975	556
58	[redacted]	pipefitter	A	773	12/31/1973	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	None	No	N/A	None	None	None	[redacted]
58	[redacted]	pipefitter	A	773	12/31/1973	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	None	No	N/A	None	None	3/1/1975	425
59	[redacted]	pipefitter	A	773	1/3/1974	910	1100	1/3/1974	1300	1600	Yes	N/A	None	None	No	N/A	None	None	11/1/1974	302

**ATTACHMENT D
JOB PLAN – CONSTRUCTION TRADE WORKER DATA, 1972 TO 1989 (continued)**

Job Plan number	CTW	Craft	Area	Building	RWP date 1	Entry time 1	Exit time1	RWP date 2	Entry time 2	Exit time 2	Pu required	Pu bioassay type	Pu	Pu status	Am required	Am bioassay type	Am	Am status	FP	Fp status
60	[redacted]	pipefitter	A	773	1/9/1974	1030	1050	1/9/1974	1400	1445	Yes	N/A	None	[redacted]	No	N/A	None	None	None	[redacted]
60	[redacted]	pipefitter	A	773	1/9/1974	1400	1445	No Data	No Data	No Data	Yes	U	3/1/1976	782	No	N/A	None	None	11/1/1974	296
61	[redacted]	pipefitter	A	773	2/13/1974	800	1000	2/13/1974	1430	1515	Yes	N/A	None	None	No	N/A	None	None	11/1/1974	261
61	[redacted]	pipefitter	A	773	2/13/1974	800	1000	2/13/1974	1430	1515	Yes	N/A	None	None	No	N/A	None	None	None	[redacted]
62	[redacted]	pipefitter	A	773	2/26/1974	840	1015	2/26/1974	1100	1130	Yes	N/A	None	None	No	N/A	None	None	None	[redacted]
62	[redacted]	pipefitter	A	773	2/26/1974	1100	1130	2/26/1974	1300	1430	Yes	N/A	None	None	No	N/A	None	None	11/1/1974	248

a. Bioassay type codes: U represents urinalysis; C represents chest count.

ATTACHMENT D
JOB PLAN – CONSTRUCTION TRADE WORKER DATA, 1972 TO 1989 (continued)

Table D-3. Results of subCTWs obtained from Job Plans with bioassay, 1980 to 1989.^a

Job Plan number	CTW	Craft	RWP date 1	Entry time 1	Exit time1	RWP date 2	Entry time 2	Exit time 2	Pu required	Pu bioassay type	Pu	Pu status	Am required	Am bioassay type	Am	Am status	FP	Fp status
63	[redacted]	pipefitter	1/4/1980	No Data	No Data	No Data	No Data	No Data	Yes	U	9/22/1980	262	No	N/A	None	None	6/9/1981	522
63	[redacted]	pipefitter	1/4/1980	No Data	No Data	No Data	No Data	No Data	Yes	C	5/13/1981	495	No	C	5/13/1981	495	10/15/1980	285
64	[redacted]	sheetmetal	7/15/1980	930	1100	No Data	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	[redacted]	None	[redacted]
64	[redacted]	sheetmetal	7/15/1980	930	1100	No Data	No Data	No Data	Yes	U	10/15/1980	92	No	C	3/21/1983	979	10/15/1980	92
64	[redacted]	laborer	7/15/1980	930	1100	No Data	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	[redacted]	None	[redacted]
64	[redacted]	laborer	7/15/1980	930	1100	No Data	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	[redacted]	None	[redacted]
65	[redacted]	sheetmetal	3/5/1981	815	1200	3/5/1981	1245	1600	Yes	C	3/21/1983	746	Yes	C	3/21/1983	746	7/7/1982	489
65	[redacted]	carpenter	3/5/1981	900	1145	3/5/1981	1240	1400	Yes	N/A	None	[redacted]	Yes	N/A	None	[redacted]	None	[redacted]
65	[redacted]	sheetmetal	3/5/1981	900	1150	3/5/1981	1400	1430	Yes	U	8/23/1983	901	Yes	N/A	None	[redacted]	8/23/1981	171
65	[redacted]	sheetmetal	3/5/1981	900	1200	3/5/1981	1230	1615	Yes	U	8/19/1982	532	Yes	C	5/1/1985	1518	8/19/1992	4185
65	[redacted]	carpenter	3/5/1981	900	1200	3/5/1981	1230	1615	Yes	N/A	None	[redacted]	Yes	N/A	None	[redacted]	None	[redacted]
65	[redacted]	sheetmetal	3/5/1981	900	1200	3/5/1981	1400	1615	Yes	U	4/9/1985	1496	Yes	N/A	None	None	3/2/1982	362
65	[redacted]	carpenter	3/5/1981	900	1200	3/5/1981	1230	1615	Yes	U	8/2/1982	515	Yes	N/A	None	[redacted]	8/2/1982	515
65	[redacted]	sheetmetal	3/5/1981	900	1200	3/5/1981	1230	1615	Yes	N/A	None	[redacted]	Yes	N/A	None	[redacted]	None	[redacted]
65	[redacted]	laborer	3/5/1981	900	1200	3/5/1981	1230	1615	Yes	C	5/15/1981	71	Yes	C	5/15/1981	71	8/10/1981	158
65	[redacted]	sheetmetal	3/5/1981	900	1200	No Data	No Data	No Data	Yes	N/A	None	[redacted]	Yes	N/A	None	[redacted]	None	[redacted]
65	[redacted]	HEO	3/5/1981	1100	1145	3/5/1981	1245	1530	Yes	U	9/1/1981	180	Yes	N/A	None	None	9/1/1981	180
65	[redacted]	pipefitter	3/5/1981	1300	1500	No Data	No Data	No Data	Yes	C	5/12/1981	68	Yes	C	5/12/1981	68	5/12/1981	68
65	[redacted]	pipefitter	3/5/1981	1300	1500	No Data	No Data	No Data	Yes	C	5/14/1981	70	Yes	C	5/14/1981	70	3/16/1981	11
65	[redacted]	pipefitter	3/5/1981	1400	1500	No Data	No Data	No Data	Yes	N/A	None	[redacted]	Yes	N/A	None	[redacted]	5/19/1982	440
65	[redacted]	ironworker	3/5/1981	1430	1600	3/6/1981	No Data	No Data	Yes	N/A	None	None	Yes	N/A	None	[redacted]	5/7/1982	428
65	[redacted]	sheetmetal	3/6/1981	815	1200	3/6/1981	1245	1600	Yes	U	9/27/1981	205	Yes	C	2/25/1982	356	9/27/1981	205
65	[redacted]	sheetmetal	3/6/1981	816	1200	3/6/1981	1245	1600	Yes	U	11/23/1982	627	Yes	N/A	None	[redacted]	10/14/1981	222
65	[redacted]	sheetmetal	3/6/1981	816	1200	3/6/1981	1245	1600	Yes	U	10/24/1983	962	Yes	N/A	None	[redacted]	10/20/1981	228
65	[redacted]	sheetmetal	3/6/1981	900	No Data	No Data	No Data	No Data	Yes	U	9/13/1983	921	Yes	N/A	None	[redacted]	10/26/1981	234
65	[redacted]	HEO	3/6/1981	900	No Data	No Data	No Data	No Data	Yes	U	11/25/1981	264	Yes	N/A	None	None	8/31/1981	178
65	[redacted]	sheetmetal	3/6/1981	1400	1530	No Data	No Data	No Data	Yes	U	12/18/1981	287	Yes	N/A	None	[redacted]	12/18/1981	287
65	[redacted]	carpenter	3/7/1981	1330	1440	No Data	No Data	No Data	Yes	N/A	None	None	Yes	N/A	None	None	None	None
66	[redacted]	sheetmetal	3/12/1981	800	920	3/13/1981	1015	1045	Yes	U	4/9/1985	1488	Yes	N/A	None	None	3/2/1982	354
66	[redacted]	sheetmetal	3/12/1981	800	920	No Data	No Data	No Data	Yes	N/A	None	[redacted]	Yes	N/A	None	None	None	[redacted]
66	[redacted]	carpenter	3/12/1981	800	1100	No Data	No Data	No Data	Yes	N/A	None	[redacted]	Yes	N/A	None	None	None	[redacted]
66	[redacted]	carpenter	3/12/1981	800	1100	No Data	No Data	No Data	Yes	U	8/2/1982	508	Yes	N/A	None	None	8/2/1982	508
66	[redacted]	HEO	3/12/1981	1330	1430	No Data	No Data	No Data	Yes	U	9/1/1981	173	Yes	N/A	None	None	9/1/1981	173
66	[redacted]	laborer	3/13/1981	925	No Data	No Data	No Data	No Data	Yes	U	8/23/1982	528	Yes	N/A	None	[redacted]	3/12/1982	364
66	[redacted]	laborer	3/13/1981	925	No Data	No Data	No Data	No Data	Yes	C	5/15/1981	63	Yes	C	5/15/1981	63	8/10/1981	150
66	[redacted]	sheetmetal	3/13/1981	1015	1045	No Data	No Data	No Data	Yes	U	10/24/1983	955	Yes	N/A	None	[redacted]	10/20/1981	221
66	[redacted]	ironworker	3/13/1981	1330	1430	No Data	No Data	No Data	Yes	N/A	None	[redacted]	Yes	N/A	None	[redacted]	5/7/1982	420
67	[redacted]	sheetmetal	4/6/1981	845	1015	No Data	No Data	No Data	Yes	U	4/9/1985	1464	Yes	N/A	None	[redacted]	3/2/1982	330
67	[redacted]	sheetmetal	4/6/1981	845	1015	No Data	No Data	No Data	Yes	U	10/24/1983	931	Yes	N/A	None	[redacted]	10/20/1981	197
67	[redacted]	pipefitter	4/6/1981	1300	1500	No Data	No Data	No Data	Yes	U	6/1/1983	786	Yes	N/A	None	[redacted]	6/1/1981	56
67	[redacted]	pipefitter	4/6/1981	1300	1500	No Data	No Data	No Data	Yes	C	5/12/1981	36	Yes	C	5/12/1981	36	5/12/1981	36
67	[redacted]	sheetmetal	4/6/1981	1300	1550	No Data	No Data	No Data	Yes	U	9/13/1983	890	Yes	N/A	None	[redacted]	10/26/1981	203
67	[redacted]	sheetmetal	4/6/1981	1300	1550	No Data	No Data	No Data	Yes	N/A	None	[redacted]	Yes	N/A	None	[redacted]	None	[redacted]

**ATTACHMENT D
JOB PLAN – CONSTRUCTION TRADE WORKER DATA, 1972 TO 1989 (continued)**

Job Plan number	CTW	Craft	RWP date 1	Entry time 1	Exit time1	RWP date 2	Entry time 2	Exit time 2	Pu required	Pu bioassay type	Pu	Pu status	Am required	Am bioassay type	Am	Am status	FP	Fp status
68	[redacted]	pipefitter	4/20/1981	530	800	4/20/1981	930	1100	Yes	U	3/7/1985	1417	No	N/A	None	[redacted]	2/5/1982	291
68	[redacted]	pipefitter	4/20/1981	530	800	4/20/1981	930	1100	Yes	U	11/19/1981	213	No	N/A	None	[redacted]	11/19/1981	213
68	[redacted]	pipefitter	4/20/1981	545	800	4/20/1981	930	1100	Yes	C	5/7/1981	17	No	C	5/7/1981	17	5/7/1981	17
68	[redacted]	pipefitter	4/20/1981	545	800	4/20/1981	930	1100	Yes	C	10/25/1982	553	No	C	10/25/1982	553	10/25/1982	553
68	[redacted]	pipefitter	4/20/1981	600	800	4/20/1981	900	1100	Yes	N/A	None	[redacted]	No	N/A	None	[redacted]	None	[redacted]
68	[redacted]	pipefitter	4/20/1981	600	800	4/20/1981	900	1100	Yes	C	5/7/1981	17	No	C	5/7/1981	17	5/7/1981	17
68	[redacted]	laborer	4/20/1981	600	900	4/20/1981	905	1100	Yes	C	5/15/1981	25	No	C	5/15/1981	25	8/10/1981	112
68	[redacted]	pipefitter	4/20/1981	1040	1130	4/20/1981	1415	1505	Yes	C	5/5/1981	15	No	C	5/5/1981	15	5/5/1981	15
68	[redacted]	pipefitter	4/20/1981	1040	1135	4/20/1981	1415	1505	Yes	U	6/1/1983	772	No	N/A	None	[redacted]	6/1/1981	42
68	[redacted]	pipefitter	4/20/1981	1040	1135	4/20/1981	1415	1505	Yes	C	5/13/1981	23	No	C	5/13/1981	23	5/13/1981	23
68	[redacted]	pipefitter	4/20/1981	1040	1135	4/20/1981	1415	1505	Yes	N/A	None	[redacted]	No	N/A	None	[redacted]	5/19/1982	394
68	[redacted]	pipefitter	4/20/1981	1040	1135	4/20/1981	1415	1505	Yes	C	5/6/1981	16	No	C	5/6/1981	16	5/6/1981	16
69	[redacted]	pipefitter	5/4/1981	900	1130	5/4/1981	1245	1530	Yes	C	5/14/1981	10	No	C	5/14/1981	10	5/14/1981	10
69	[redacted]	pipefitter	5/4/1981	900	1130	5/4/1981	1245	1530	Yes	N/A	None	[redacted]	No	N/A	None	[redacted]	None	[redacted]
70	[redacted]	carpenter	9/24/1981	845	1030	No Data	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	[redacted]	None	[redacted]
70	[redacted]	carpenter	9/24/1981	845	1030	No Data	No Data	No Data	Yes	U	10/28/1982	399	No	N/A	None	[redacted]	2/25/1982	154
70	[redacted]	laborer	9/24/1981	845	1100	No Data	No Data	No Data	Yes	U	8/9/1983	684	No	C	11/4/1986	1867	8/19/1982	329
71	[redacted]	laborer	10/1/1981	No Data	No Data	10/2/1981	No Data	No Data	Yes	U	1/22/1982	112	No	N/A	None	None	11/6/1981	35
71	[redacted]	laborer	10/1/1981	No Data	No Data	10/2/1981	No Data	No Data	Yes	U	8/23/1982	325	No	N/A	None	None	3/12/1982	161
71	[redacted]	carpenter	10/2/1981	No Data	No Data	No Data	No Data	No Data	Yes	U	10/28/1982	391	No	N/A	None	None	2/25/1982	146
72	[redacted]	laborer	10/5/1981	10/7/1091	No Data	10/6/1981	No Data	No Data	Yes	U	8/23/1982	321	No	N/A	None	None	3/12/1982	157
72	[redacted]	HEO	10/5/1981	No Data	No Data	10/6/1981	No Data	No Data	Yes	U	1/22/1982	108	No	N/A	None	None	11/6/1981	31
72	[redacted]	carpenter	10/5/1981	No Data	No Data	No Data	No Data	No Data	Yes	U	10/28/1982	388	No	N/A	None	None	2/25/1982	143
72	[redacted]	laborer	10/6/1981	No Data	No Data	No Data	No Data	No Data	Yes	U	3/12/1985	1253	No	N/A	None	None	None	[redacted]
73	[redacted]	laborer	10/7/1981	No Data	No Data	10/8/1981	No Data	No Data	Yes	U	3/12/1985	1251	No	N/A	None	None	None	[redacted]
73	[redacted]	laborer	10/7/1981	No Data	No Data	10/8/1981	No Data	No Data	Yes	U	8/23/1982	319	No	N/A	None	None	3/12/1982	155
73	[redacted]	HEO	10/7/1981	No Data	No Data	No Data	No Data	No Data	Yes	U	1/22/1982	107	No	N/A	None	None	11/6/1981	30
74	[redacted]	HEO	10/9/1981	No Data	No Data	No Data	No Data	No Data	Yes	U	1/22/1982	105	No	N/A	None	None	11/6/1981	28
74	[redacted]	laborer	10/9/1981	No Data	No Data	No Data	No Data	No Data	Yes	U	3/12/1985	1250	No	N/A	None	None	None	[redacted]
74	[redacted]	laborer	10/9/1981	No Data	No Data	No Data	No Data	No Data	Yes	U	8/23/1982	318	No	N/A	None	None	3/12/1982	154
75	[redacted]	HEO	10/12/1981	No Data	No Data	10/13/1981	No Data	No Data	Yes	U	1/22/1982	101	No	N/A	None	None	11/6/1981	24
75	[redacted]	laborer	10/12/1981	No Data	No Data	10/13/1981	No Data	No Data	Yes	U	8/23/1982	314	No	N/A	None	None	3/12/1982	150
75	[redacted]	laborer	10/12/1981	No Data	No Data	No Data	No Data	No Data	Yes	U	3/12/1985	1247	No	N/A	None	None	None	[redacted]
76	[redacted]	laborer	10/14/1981	No Data	No Data	No Data	No Data	No Data	Yes	U	3/12/1985	1245	No	N/A	None	None	None	[redacted]

Document No. ORAUT-RPRT-0092 Revision No. 00 Effective Date: 06/14/2019 Page 165 of 188

**ATTACHMENT D
JOB PLAN – CONSTRUCTION TRADE WORKER DATA, 1972 TO 1989 (continued)**

Job Plan number	CTW	Craft	RWP date 1	Entry time 1	Exit time1	RWP date 2	Entry time 2	Exit time 2	Pu required	Pu bioassay type	Pu	Pu status	Am required	Am bioassay type	Am	Am status	FP	Fp status
76	[redacted]	laborer	10/14/1981	No Data	No Data	No Data	No Data	No Data	Yes	U	8/23/1982	313	No	N/A	None	None	3/12/1982	149
77	[redacted]	laborer	10/15/1981	No Data	No Data	10/16/1981	No Data	No Data	Yes	U	8/23/1982	311	No	N/A	None	None	3/12/1982	147
77	[redacted]	HEO	10/15/1981	No Data	No Data	No Data	No Data	No Data	Yes	U	1/22/1982	99	No	N/A	None	None	11/6/1981	22
77	[redacted]	laborer	10/15/1981	No Data	No Data	No Data	No Data	No Data	Yes	U	3/12/1985	1244	No	N/A	None	None	None	[redacted]
78	[redacted]	HEO	10/19/1981	No Data	No Data	No Data	No Data	No Data	Yes	U	1/22/1982	95	No	N/A	None	None	11/6/1981	18
78	[redacted]	carpenter	10/19/1981	No Data	No Data	No Data	No Data	No Data	Yes	U	10/28/1982	374	No	N/A	None	[redacted]	2/25/1982	129
79	[redacted]	carpenter	10/20/1981	No Data	No Data	No Data	No Data	No Data	Yes	U	1/29/1991	3388	No	N/A	None	[redacted]	None	[redacted]
79	[redacted]	carpenter	10/20/1981	No Data	No Data	No Data	No Data	No Data	Yes	U	10/28/1982	373	No	N/A	None	None	2/25/1982	128
79	[redacted]	carpenter	10/20/1981	No Data	No Data	No Data	No Data	No Data	Yes	U	5/23/1984	946	No	N/A	None	[redacted]	5/20/1982	212
79	[redacted]	laborer	10/20/1981	No Data	No Data	No Data	No Data	No Data	Yes	U	3/12/1985	1239	No	N/A	None	None	None	[redacted]
79	[redacted]	laborer	10/20/1981	No Data	No Data	No Data	No Data	No Data	Yes	U	8/23/1982	307	No	N/A	None	None	3/12/1982	143
80	[redacted]	laborer	10/21/1981	No Data	No Data	10/22/1981	No Data	No Data	Yes	U	8/23/1982	305	No	N/A	None	None	3/12/1982	141
80	[redacted]	HEO	10/21/1981	No Data	No Data	No Data	No Data	No Data	Yes	U	1/22/1982	93	No	N/A	None	None	11/6/1981	16
80	[redacted]	laborer	10/21/1981	No Data	No Data	No Data	No Data	No Data	Yes	U	3/12/1985	1238	No	N/A	None	None	None	[redacted]
81	[redacted]	HEO	10/23/1981	No Data	No Data	No Data	No Data	No Data	Yes	U	1/22/1982	91	No	N/A	None	[redacted]	11/6/1981	14
81	[redacted]	carpenter	10/23/1981	No Data	No Data	No Data	No Data	No Data	Yes	U	1/29/1991	3385	No	N/A	None	[redacted]	None	[redacted]
81	[redacted]	carpenter	10/23/1981	No Data	No Data	No Data	No Data	No Data	Yes	U	10/28/1982	370	No	N/A	None	[redacted]	2/25/1982	125
81	[redacted]	carpenter	10/23/1981	No Data	No Data	No Data	No Data	No Data	Yes	U	5/23/1984	943	No	N/A	None	[redacted]	5/20/1982	209
81	[redacted]	laborer	10/23/1981	No Data	No Data	No Data	No Data	No Data	Yes	U	3/12/1985	1236	No	N/A	None	[redacted]	None	[redacted]
82	[redacted]	laborer	10/26/1981	No Data	No Data	No Data	No Data	No Data	Yes	U	8/9/1983	652	No	C	11/4/1986	1835	8/19/1982	297
83	[redacted]	laborer	10/28/1981	No Data	No Data	No Data	No Data	No Data	Yes	U	10/8/1991	3632	No	N/A	None	[redacted]	None	[redacted]
83	[redacted]	carpenter	10/28/1981	No Data	No Data	No Data	No Data	No Data	Yes	U	1/29/1991	3380	No	N/A	None	[redacted]	None	[redacted]
83	[redacted]	carpenter	10/28/1981	No Data	No Data	No Data	No Data	No Data	Yes	U	10/28/1982	365	No	N/A	None	[redacted]	2/25/1982	120
83	[redacted]	laborer	10/28/1981	No Data	No Data	No Data	No Data	No Data	Yes	U	8/9/1983	650	No	C	11/4/1986	1833	8/19/1982	295
84	[redacted]	laborer	11/3/1981	No Data	No Data	No Data	No Data	No Data	Yes	U	8/23/1982	293	No	N/A	None	None	3/12/1982	129
85	[redacted]	HEO	11/17/1981	No Data	No Data	11/18/1981	No Data	No Data	Yes	U	1/29/1982	72	No	N/A	None	None	1/28/1982	71

**ATTACHMENT D
JOB PLAN – CONSTRUCTION TRADE WORKER DATA, 1972 TO 1989 (continued)**

Job Plan number	CTW	Craft	RWP date 1	Entry time 1	Exit time1	RWP date 2	Entry time 2	Exit time 2	Pu required	Pu bioassay type	Pu	Pu status	Am required	Am bioassay type	Am	Am status	FP	Fp status
85	[redacted]	ironworker	11/17/1981	No Data	No Data	11/18/1981	No Data	No Data	Yes	U	5/19/1987	2008	No	N/A	None	None	5/7/1982	170
86	[redacted]	ironworker	11/19/1981	No Data	No Data	11/20/1981	No Data	No Data	Yes	U	5/19/1987	2006	No	N/A	None	None	5/7/1982	168
86	[redacted]	carpenter	11/20/1981	No Data	No Data	No Data	No Data	No Data	Yes	U	10/28/1982	342	No	N/A	None	[redacted]	2/25/1982	97
86	[redacted]	laborer	11/20/1981	No Data	No Data	No Data	No Data	No Data	Yes	U	8/9/1983	627	No	C	11/4/1986	1810	8/19/1982	272
87	[redacted]	ironworker	11/19/1981	No Data	No Data	11/20/1981	No Data	No Data	Yes	U	5/19/1987	2006	No	N/A	None	None	5/7/1982	168
88	[redacted]	pipefitter	1/28/1982	No Data	No Data	No Data	No Data	No Data	Yes	U	6/1/1983	489	No	N/A	None	None	7/19/1982	172
88	[redacted]	pipefitter	1/28/1982	No Data	No Data	No Data	No Data	No Data	Yes	U	3/8/1990	2961	No	N/A	None	None	2/5/1982	8
89	[redacted]	pipefitter	2/4/1982	No Data	No Data	No Data	No Data	No Data	Yes	U	7/1/1986	1608	No	N/A	None	None	None	[redacted]
89	[redacted]	pipefitter	2/4/1982	No Data	No Data	No Data	No Data	No Data	Yes	U	6/1/1983	482	No	N/A	None	None	7/19/1982	165
89	[redacted]	pipefitter	2/4/1982	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	None	5/19/1982	104
90	[redacted]	carpenter	2/10/1982	No Data	No Data	No Data	No Data	No Data	Yes	U	10/28/1982	260	No	N/A	None	None	2/25/1982	15
90	[redacted]	carpenter	2/10/1982	No Data	No Data	No Data	No Data	No Data	Yes	U	1/12/1983	336	No	N/A	None	[redacted]	1/12/1983	336
91	[redacted]	carpenter	2/12/1982	No Data	No Data	No Data	No Data	No Data	Yes	U	10/28/1982	258	No	N/A	None	None	2/25/1982	13
91	[redacted]	laborer	2/12/1982	No Data	No Data	No Data	No Data	No Data	Yes	U	8/23/1982	192	No	N/A	None	None	3/12/1982	28
91	[redacted]	concrete worker	2/12/1982	No Data	No Data	No Data	No Data	No Data	Yes	U	11/23/1985	1380	No	N/A	None	None	3/29/1982	45
92	[redacted]	carpenter	2/17/1982	No Data	No Data	No Data	No Data	No Data	Yes	U	10/28/1982	253	No	N/A	None	None	2/25/1982	8
92	[redacted]	carpenter	2/17/1982	No Data	No Data	No Data	No Data	No Data	Yes	U	1/12/1983	329	No	N/A	None	None	1/12/1983	329
93	[redacted]	carpenter	2/18/1982	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	None	3/2/1982	12
93	[redacted]	carpenter	2/18/1982	No Data	No Data	No Data	No Data	No Data	Yes	U	10/28/1982	252	No	N/A	None	None	2/25/1982	7
93	[redacted]	carpenter	2/18/1982	No Data	No Data	No Data	No Data	No Data	Yes	U	1/12/1983	328	No	N/A	None	None	1/12/1983	328
93	[redacted]	laborer	2/18/1982	No Data	No Data	No Data	No Data	No Data	Yes	U	8/23/1982	186	No	N/A	None	[redacted]	3/12/1982	22
93	[redacted]	concrete worker	2/18/1982	No Data	No Data	No Data	No Data	No Data	Yes	U	11/23/1985	1374	No	N/A	None	None	3/29/1982	39
93	[redacted]	laborer	2/18/1982	No Data	No Data	No Data	No Data	No Data	Yes	U	8/9/1983	537	No	C	11/4/1986	1720	8/19/1982	182
94	[redacted]	carpenter	2/22/1982	No Data	No Data	No Data	No Data	No Data	Yes	U	1/31/1992	3630	No	N/A	None	None	None	[redacted]
94	[redacted]	carpenter	2/22/1982	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	None	No	N/A	None	None	3/2/1982	8
94	[redacted]	laborer	2/22/1982	No Data	No Data	No Data	No Data	No Data	Yes	U	8/23/1982	182	No	N/A	None	None	3/12/1982	18

Document No. ORAUT-RPRT-0092

Revision No. 00

Effective Date: 06/14/2019

Page 167 of 188

**ATTACHMENT D
JOB PLAN – CONSTRUCTION TRADE WORKER DATA, 1972 TO 1989 (continued)**

Job Plan number	CTW	Craft	RWP date 1	Entry time 1	Exit time1	RWP date 2	Entry time 2	Exit time 2	Pu required	Pu bioassay type	Pu	Pu status	Am required	Am bioassay type	Am	Am status	FP	Fp status
94	[redacted]	concrete worker	2/22/1982	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	None	No	N/A	None	None	3/29/1982	35
95	[redacted]	laborer	2/23/1982	No Data	No Data	2/24/1982	No Data	No Data	Yes	U	8/23/1982	180	No	N/A	None	None	3/12/1982	16
95	[redacted]	carpenter	2/23/1982	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	None	No	N/A	None	None	3/2/1982	7
96	[redacted]	carpenter	3/8/1982	No Data	No Data	No Data	No Data	No Data	Yes	U	9/26/1991	3489	No	N/A	None	None	None	[redacted]
96	[redacted]	ironworker	3/8/1982	No Data	No Data	No Data	No Data	No Data	Yes	U	5/19/1987	1898	No	N/A	None	None	5/7/1982	60
97	[redacted]	pipefitter	8/25/1982	No Data	No Data	No Data	No Data	No Data	Yes	U	8/29/1984	735	Yes	C	4/17/1991	3157	8/29/1984	735
97	[redacted]	pipefitter	8/25/1982	No Data	No Data	No Data	No Data	No Data	Yes	U	3/8/1990	2752	Yes	N/A	None	[redacted]	None	[redacted]
97	[redacted]	pipefitter	8/25/1982	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	[redacted]	Yes	N/A	None	[redacted]	5/9/1983	257
98	[redacted]	carpenter	3/11/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	10/5/1983	208	No	N/A	None	None	None	None
98	[redacted]	electrician	3/11/1983	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	[redacted]	9/2/1983	175
98	[redacted]	electrician	3/11/1983	No Data	No Data	No Data	No Data	No Data	Yes	C	2/26/1987	1448	No	C	2/26/1987	1448	None	[redacted]
98	[redacted]	electrician	3/11/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	4/10/1991	2952	No	N/A	None	[redacted]	None	[redacted]
98	[redacted]	electrician	3/11/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	11/12/1983	246	No	U	11/12/1983	246	8/30/1983	172
98	[redacted]	electrician	3/12/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	4/26/1984	411	No	N/A	None	[redacted]	4/26/1984	411
99	[redacted]	pipefitter	3/16/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	3/1/1991	2907	No	N/A	None	None	None	[redacted]
99	[redacted]	pipefitter	3/16/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	6/1/1983	77	No	N/A	None	None	None	[redacted]
99	[redacted]	pipefitter	3/16/1983	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	None	5/9/1983	54
100	[redacted]	electrician	7/29/1983	1300	1330	7/29/1983	2030	2330	Yes	U	11/12/1983	106	Yes	U	11/12/1983	106	8/30/1983	32
101	[redacted]	painter	7/30/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	1/16/1991	2727	No	N/A	None	None	None	[redacted]
101	[redacted]	painter	7/30/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	6/11/1984	317	No	N/A	None	None	6/11/1984	317
101	[redacted]	painter	7/30/1983	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	None	12/13/1983	136
102	[redacted]	painter	8/2/1983	No Data	No Data	8/3/1983	No Data	No Data	Yes	U	1/19/1985	535	No	U	9/9/1983	37	8/28/1984	391
102	[redacted]	painter	8/2/1983	No Data	No Data	8/3/1983	No Data	No Data	Yes	U	8/16/1983	13	No	N/A	None	[redacted]	3/28/1984	238
103	[redacted]	pipefitter	8/3/1983	No Data	No Data	No Data	No Data	No Data	Yes	NA	none	[redacted]	Yes	N/A	None	None	None	[redacted]
103	[redacted]	pipefitter	8/3/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	6/23/1988	1786	Yes	N/A	None	None	7/30/1984	362
104	[redacted]	sheetmetal	8/8/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	5/29/1984	295	Yes	N/A	None	None	5/11/1984	277

**ATTACHMENT D
JOB PLAN – CONSTRUCTION TRADE WORKER DATA, 1972 TO 1989 (continued)**

Job Plan number	CTW	Craft	RWP date 1	Entry time 1	Exit time1	RWP date 2	Entry time 2	Exit time 2	Pu required	Pu bioassay type	Pu	Pu status	Am required	Am bioassay type	Am	Am status	FP	Fp status
104	[redacted]	sheetmetal	8/8/1983	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	[redacted]	Yes	N/A	None	None	3/29/1984	234
104	[redacted]	carpenter	8/8/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	12/12/1985	857	Yes	N/A	None	None	12/11/1984	491
105	[redacted]	sheetmetal	8/9/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	10/23/1985	806	No	N/A	None	None	2/7/1985	548
106	[redacted]	electrician	9/2/1983	800	1615	9/3/1983	815	1600	Yes	N/A	None	[redacted]	Yes	N/A	None	[redacted]	None	[redacted]
106	[redacted]	electrician	9/2/1983	800	1615	9/3/1983	815	1600	Yes	U	11/12/1983	70	Yes	U	11/12/1983	70	11/17/1983	75
107	[redacted]	sheetmetal	9/14/1983	915	No Data	No Data	No Data	No Data	Yes	U	5/29/1985	623	No	U	None	None	12/27/1984	470
107	[redacted]	sheetmetal	9/14/1983	915	No Data	No Data	No Data	No Data	Yes	U	10/19/1989	2227	No	N/A	None	None	10/12/1983	28
108	[redacted]	painter	9/16/1983	830	1200	9/16/1983	1230	None	Yes	N/A	None	[redacted]	No	N/A	None	[redacted]	3/28/1984	194
108	[redacted]	painter	9/16/1983	830	1200	9/16/1983	1230	None	Yes	U	6/27/1986	1015	No	U	None	[redacted]	3/20/1984	186
108	[redacted]	painter	9/16/1983	830	1200	9/16/1983	1230	None	Yes	N/A	None	[redacted]	No	N/A	None	[redacted]	9/22/1983	6
108	[redacted]	painter	9/16/1983	830	1200	9/16/1983	1230	None	Yes	C	6/3/1985	626	No	C	6/3/1985	626	6/3/1985	626
108	[redacted]	painter	9/16/1983	840	1200	9/16/1983	1230	None	Yes	N/A	None	[redacted]	No	N/A	None	[redacted]	9/22/1983	6
108	[redacted]	painter	9/16/1983	840	1200	9/16/1983	1230	None	Yes	U	3/10/1985	541	No	C	11/9/1988	1881	12/27/1984	468
108	[redacted]	painter	9/16/1983	840	1200	9/16/1983	1230	None	Yes	U	4/8/1985	570	No	U	None	[redacted]	3/27/1984	193
109	[redacted]	millwright	10/6/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	1/21/1986	838	No	N/A	None	None	10/12/1984	372
109	[redacted]	carpenter	10/6/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	1/31/1992	3039	No	N/A	None	None	None	[redacted]
109	[redacted]	carpenter	10/6/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	8/13/1987	1407	No	N/A	None	None	9/24/1984	354
109	[redacted]	carpenter	10/6/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	10/8/1984	368	No	N/A	None	None	10/8/1984	368
110	[redacted]	pipefitter	10/12/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	1/31/1989	1938	No	C	6/15/1990	2438	3/3/1985	508
110	[redacted]	pipefitter	10/12/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	8/13/1990	2497	No	N/A	None	[redacted]	None	[redacted]
111	[redacted]	carpenter	10/18/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	8/13/1987	1395	No	N/A	None	None	9/24/1984	342
112	[redacted]	millwright	10/19/1983	No Data	No Data	10/20/1983	None	None	Yes	U	1/21/1986	824	No	N/A	None	None	10/12/1984	358
112	[redacted]	carpenter	10/19/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	8/13/1987	1394	No	N/A	None	None	9/24/1984	341
112	[redacted]	laborer	10/19/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	8/8/1984	294	No	C	11/4/1986	1112	8/8/1984	294
113	[redacted]	pipefitter	10/21/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	8/13/1990	2488	No	N/A	None	None	None	[redacted]
113	[redacted]	pipefitter	10/21/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	7/21/1984	274	No	N/A	None	None	7/21/1984	274
114	[redacted]	carpenter	10/24/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	5/14/1992	3125	No	N/A	None	None	None	[redacted]
114	[redacted]	carpenter	10/24/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	8/13/1987	1389	No	N/A	None	None	9/24/1984	336
114	[redacted]	carpenter	10/24/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	10/8/1984	350	No	N/A	None	[redacted]	10/8/1984	350
114	[redacted]	laborer	10/24/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	8/8/1984	289	No	C	11/4/1986	1107	8/8/1984	289

**ATTACHMENT D
JOB PLAN – CONSTRUCTION TRADE WORKER DATA, 1972 TO 1989 (continued)**

Job Plan number	CTW	Craft	RWP date 1	Entry time 1	Exit time1	RWP date 2	Entry time 2	Exit time 2	Pu required	Pu bioassay type	Pu	Pu status	Am required	Am bioassay type	Am	Am status	FP	Fp status
115	[redacted]	painter	10/25/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	5/16/1985	569	No	N/A	None	None	8/22/1984	302
115	[redacted]	painter	10/25/1983	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	None	None	[redacted]
116	[redacted]	pipefitter	10/27/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	1/31/1989	1923	No	C	6/15/1990	2423	3/3/1985	493
116	[redacted]	sheetmetal	10/27/1983	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	None	None	[redacted]
116	[redacted]	sheetmetal	10/27/1983	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	[redacted]	7/12/1984	259
116	[redacted]	sheetmetal	10/27/1983	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	[redacted]	None	[redacted]
116	[redacted]	ironworker	10/27/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	7/2/1987	1344	No	N/A	None	[redacted]	6/11/1985	593
116	[redacted]	laborer	10/27/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	8/8/1984	286	No	C	11/4/1986	1104	8/8/1984	286
117	[redacted]	pipefitter	10/31/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	1/31/1989	1919	No	C	6/15/1990	2419	3/3/1985	489
117	[redacted]	carpenter	10/31/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	8/13/1987	1382	No	N/A	None	none	9/24/1984	329
117	[redacted]	carpenter	10/31/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	10/8/1984	343	No	N/A	None	[redacted]	10/8/1984	343
117	[redacted]	sheetmetal	10/31/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	10/19/1989	2180	No	N/A	None	[redacted]	None	[redacted]
117	[redacted]	laborer	10/31/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	8/8/1984	282	No	C	11/4/1986	1100	8/8/1984	282
118	[redacted]	carpenter	11/1/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	8/13/1987	1381	No	N/A	None	[redacted]	9/24/1984	328
118	[redacted]	sheetmetal	11/1/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	2/3/1984	94	No	N/A	None	None	None	[redacted]
118	[redacted]	carpenter	11/1/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	10/8/1984	342	No	N/A	None	[redacted]	10/8/1984	342
118	[redacted]	sheetmetal	11/1/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	10/19/1989	2179	No	N/A	None	None	None	[redacted]
118	[redacted]	laborer	11/1/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	8/8/1984	281	No	C	11/4/1986	1099	8/8/1984	281
119	[redacted]	pipefitter	11/2/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	8/13/1990	2476	No	N/A	None	None	None	[redacted]
119	[redacted]	pipefitter	11/2/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	7/21/1984	262	No	N/A	None	None	7/21/1984	262
119	[redacted]	carpenter	11/2/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	8/13/1987	1380	No	N/A	None	None	9/24/1984	327
119	[redacted]	pipefitter	11/2/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	5/11/1984	191	No	N/A	None	None	5/11/1984	191
119	[redacted]	sheetmetal	11/2/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	2/3/1984	93	No	N/A	None	None	None	[redacted]
119	[redacted]	carpenter	11/2/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	10/8/1984	341	No	N/A	None	None	10/8/1984	341
119	[redacted]	laborer	11/2/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	8/8/1984	280	No	C	11/4/1986	1098	8/8/1984	280
120	[redacted]	sheetmetal	11/4/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	2/3/1984	91	No	N/A	None	None	None	[redacted]

Document No. ORAUT-RPRT-0092 Revision No. 00 Effective Date: 06/14/2019 Page 170 of 188

**ATTACHMENT D
JOB PLAN – CONSTRUCTION TRADE WORKER DATA, 1972 TO 1989 (continued)**

Job Plan number	CTW	Craft	RWP date 1	Entry time 1	Exit time1	RWP date 2	Entry time 2	Exit time 2	Pu required	Pu bioassay type	Pu	Pu status	Am required	Am bioassay type	Am	Am status	FP	Fp status
120	[redacted]	sheetmetal	11/4/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	10/19/1989	2176	No	N/A	None	None	None	[redacted]
121	[redacted]	pipefitter	11/9/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	1/31/1989	1910	No	C	6/15/1990	2410	3/3/1985	480
121	[redacted]	pipefitter	11/9/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	8/13/1990	2469	No	N/A	None	[redacted]	None	[redacted]
121	[redacted]	pipefitter	11/9/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	7/21/1984	255	No	N/A	None	[redacted]	7/21/1984	255
121	[redacted]	carpenter	11/9/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	8/13/1987	1373	No	N/A	None	[redacted]	9/24/1984	320
121	[redacted]	carpenter	11/9/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	10/8/1984	334	No	C	7/13/1988	1708	10/8/1984	334
121	[redacted]	laborer	11/9/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	8/8/1984	273	No	C	11/4/1986	1091	8/8/1984	273
122	[redacted]	pipefitter	11/10/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	8/13/1990	2468	No	N/A	None	None	None	[redacted]
122	[redacted]	sheetmetal	11/10/1983	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	None	7/12/1984	245
122	[redacted]	pipefitter	11/10/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	7/21/1984	254	No	N/A	None	None	7/21/1984	254
122	[redacted]	carpenter	11/10/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	8/13/1987	1372	No	N/A	None	None	9/24/1984	319
122	[redacted]	carpenter	11/10/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	10/8/1984	333	No	N/A	None	None	10/8/1984	333
122	[redacted]	sheetmetal	11/10/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	10/19/1989	2170	No	N/A	None	None	None	[redacted]
123	[redacted]	millwright	11/14/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	10/12/1987	1428	No	N/A	None	None	10/17/1985	703
123	[redacted]	millwright	11/14/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	2/14/1984	92	No	N/A	None	None	2/14/1984	92
124	[redacted]	laborer	11/15/1983	No Data	No Data	No Data	No Data	No Data	Yes	C	5/20/1984	187	No	N/A	None	[redacted]	None	[redacted]
124	[redacted]	pipefitter	11/15/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	1/31/1989	1904	No	C	6/15/1990	2404	3/3/1985	474
124	[redacted]	pipefitter	11/15/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	6/20/1984	218	No	N/A	None	[redacted]	None	[redacted]
124	[redacted]	carpenter	11/15/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	8/13/1987	1367	No	N/A	None	[redacted]	9/24/1984	314
124	[redacted]	carpenter	11/15/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	10/8/1984	328	No	N/A	None	[redacted]	10/8/1984	328
124	[redacted]	laborer	11/15/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	8/8/1984	267	No	C	11/4/1986	1085	8/8/1984	267
125	[redacted]	electrician	11/22/1983	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	[redacted]	Yes	N/A	None	None	None	[redacted]
125	[redacted]	electrician	11/22/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	1/9/1984	48	Yes	N/A	None	None	1/9/1984	48
125	[redacted]	pipefitter	11/22/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	6/20/1984	211	Yes	N/A	None	None	None	[redacted]
125	[redacted]	pipefitter	11/22/1983	No Data	No Data	No Data	No Data	No Data	Yes	U	2/28/1985	464	Yes	N/A	None	None	12/27/1984	401
126	[redacted]	carpenter	3/17/1984	No Data	No Data	No Data	No Data	No Data	Yes	U	8/13/1987	1244	No	N/A	None	None	4/24/1984	38

Document No. ORAUT-RPRT-0092 Revision No. 00 Effective Date: 06/14/2019 Page 171 of 188

**ATTACHMENT D
JOB PLAN – CONSTRUCTION TRADE WORKER DATA, 1972 TO 1989 (continued)**

Job Plan number	CTW	Craft	RWP date 1	Entry time 1	Exit time1	RWP date 2	Entry time 2	Exit time 2	Pu required	Pu bioassay type	Pu	Pu status	Am required	Am bioassay type	Am	Am status	FP	Fp status
126	[redacted]	carpenter	3/17/1984	No Data	No Data	No Data	No Data	No Data	Yes	U	11/13/1985	606	No	N/A	None	None	11/7/1984	235
126	[redacted]	carpenter	3/17/1984	No Data	No Data	No Data	No Data	No Data	Yes	U	10/8/1984	205	No	N/A	None	None	10/8/1984	205
127	[redacted]	carpenter	3/19/1984	845	1115	3/19/1984	1315	1600	Yes	N/A	8/13/1987	1242	No	N/A	None	None	4/24/1984	36
127	[redacted]	carpenter	3/19/1984	845	1115	3/19/1984	1315	1600	Yes	U	11/13/1985	604	No	N/A	None	None	11/7/1984	233
127	[redacted]	carpenter	3/19/1984	845	1115	3/19/1984	1315	1600	Yes	U	10/8/1984	203	No	N/A	None	None	10/8/1994	3855
127	[redacted]	electrician	3/19/1984	No Data	No Data	3/20/1984	No Data	No Data	Yes	U	7/31/1989	1959	No	N/A	None	None	None	[redacted]
127	[redacted]	electrician	3/19/1984	No Data	No Data	3/20/1984	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	None	None	[redacted]
127	[redacted]	electrician	3/19/1984	No Data	No Data	3/20/1984	No Data	No Data	Yes	U	4/6/1988	1478	No	N/A	None	None	3/23/1984	3
127	[redacted]	electrician	3/19/1984	No Data	No Data	3/20/1984	No Data	No Data	Yes	U	12/5/1984	260	No	N/A	None	None	None	[redacted]
127	[redacted]	electrician	3/19/1984	No Data	No Data	3/20/1984	No Data	No Data	Yes	U	2/22/1991	2530	No	N/A	None	None	None	[redacted]
127	[redacted]	electrician	3/19/1984	No Data	No Data	3/20/1984	No Data	No Data	Yes	U	7/16/1984	118	No	N/A	None	None	7/16/1984	118
127	[redacted]	electrician	3/19/1984	No Data	No Data	3/20/1984	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	None	None	[redacted]
127	[redacted]	electrician	3/19/1984	No Data	No Data	3/20/1984	No Data	No Data	Yes	U	4/3/1986	744	No	N/A	None	None	None	[redacted]
127	[redacted]	electrician	3/19/1984	No Data	No Data	3/20/1984	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	None	None	[redacted]
127	[redacted]	electrician	3/19/1984	No Data	No Data	3/20/1984	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	None	None	[redacted]
127	[redacted]	electrician	3/19/1984	No Data	No Data	3/20/1984	No Data	No Data	Yes	U	10/1/1989	2021	No	N/A	None	None	9/6/1984	170
127	[redacted]	electrician	3/19/1984	No Data	No Data	3/24/1984	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	None	9/10/1984	170
127	[redacted]	electrician	3/19/1984	No Data	No Data	3/26/1984	No Data	No Data	Yes	U	3/6/1986	710	No	N/A	None	None	3/6/1986	710
127	[redacted]	electrician	3/19/1984	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	None	9/23/1985	553
127	[redacted]	electrician	3/20/1984	No Data	No Data	3/21/1984	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	None	None	[redacted]
127	[redacted]	electrician	3/20/1984	No Data	No Data	3/21/1984	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	None	None	[redacted]
127	[redacted]	electrician	3/20/1984	No Data	No Data	3/22/1984	No Data	No Data	Yes	U	4/23/1984	32	No	N/A	None	None	4/23/1984	32
127	[redacted]	electrician	3/26/1984	No Data	No Data	No Data	No Data	No Data	Yes	U	10/4/1984	192	No	N/A	None	None	10/4/1984	192
128	[redacted]	carpenter	3/30/1984	No Data	No Data	No Data	No Data	No Data	Yes	U	1/31/1991	2498	No	N/A	None	None	None	[redacted]
128	[redacted]	painter	3/30/1984	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	None	None	[redacted]
128	[redacted]	painter	3/30/1984	No Data	No Data	No Data	No Data	No Data	Yes	U	4/8/1985	374	No	N/A	None	None	7/12/1984	104
128	[redacted]	carpenter	3/30/1984	No Data	No Data	No Data	No Data	No Data	Yes	N/A	8/13/1987	1231	No	N/A	None	None	4/24/1984	25

**ATTACHMENT D
JOB PLAN – CONSTRUCTION TRADE WORKER DATA, 1972 TO 1989 (continued)**

Job Plan number	CTW	Craft	RWP date 1	Entry time 1	Exit time1	RWP date 2	Entry time 2	Exit time 2	Pu required	Pu bioassay type	Pu	Pu status	Am required	Am bioassay type	Am	Am status	FP	Fp status
128	[redacted]	painter	3/30/1984	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	None	None	[redacted]
128	[redacted]	painter	3/30/1984	No Data	No Data	No Data	No Data	No Data	Yes	U	4/26/1989	1853	No	N/A	None	None	None	[redacted]
129	[redacted]	pipefitter	4/13/1984	No Data	No Data	No Data	No Data	No Data	Yes	U	5/20/1984	37	Yes	N/A	None	None	5/20/1984	37
129	[redacted]	pipefitter	4/13/1984	No Data	No Data	No Data	No Data	No Data	Yes	U	1/16/1990	2104	Yes	N/A	None	None	1/15/1986	642
130	[redacted]	pipefitter	4/17/1984	No Data	No Data	No Data	No Data	No Data	Yes	U	5/20/1984	33	Yes	N/A	None	None	5/20/1984	33
130	[redacted]	pipefitter	4/17/1984	No Data	No Data	No Data	No Data	No Data	Yes	U	1/16/1990	2100	Yes	N/A	None	None	1/15/1986	638
131	[redacted]	painter	4/26/1984	No Data	No Data	No Data	No Data	No Data	Yes	U	5/16/1985	385	No	N/A	None	None	8/22/1984	118
131	[redacted]	painter	4/26/1984	No Data	No Data	No Data	No Data	No Data	Yes	U	1/7/1985	256	No	N/A	None	None	1/7/1985	256
132	[redacted]	millwright	5/2/1984	No Data	No Data	5/3/1984	None	None	Yes	U	10/12/1984	162	Yes	C	1/21/1986	628	1/21/1986	628
132	[redacted]	millwright	5/2/1984	No Data	No Data	5/3/1984	No Data	No Data	Yes	U	11/15/1984	196	Yes	N/A	None	[redacted]	11/15/1984	196
132	[redacted]	millwright	5/2/1984	No Data	No Data	5/3/1984	No Data	No Data	Yes	U	2/10/1987	1013	Yes	N/A	None	[redacted]	2/10/1987	1013
133	[redacted]	millwright	5/10/1984	No Data	No Data	No Data	No Data	No Data	Yes	U	7/21/1984	72	Yes	C	7/21/1986	802	7/21/1984	72
134	[redacted]	sheetmetal	5/30/1984	No Data	No Data	5/31/1864	No Data	No Data	Yes	N/A	None	None	No	N/A	None	[redacted]	None	[redacted]
134	[redacted]	electrician	5/30/1984	No Data	No Data	5/31/1864	No Data	No Data	Yes	N/A	None	None	No	N/A	None	[redacted]	None	[redacted]
135	[redacted]	boilermaker	10/25/1984	1303	1610	No Data	No Data	No Data	Yes	U	8/28/1987	1037	No	N/A	None	[redacted]	5/12/1985	199
135	[redacted]	boilermaker	10/25/1984	1303	1610	No Data	No Data	No Data	Yes	U	11/12/1984	18	No	C	7/24/1990	2098	11/12/1984	18
135	[redacted]	boilermaker	10/25/1984	1303	1610	No Data	No Data	No Data	Yes	U	5/4/1985	191	No	N/A	None	[redacted]	11/6/1985	377
136	[redacted]	pipefitter	11/16/1984	830	1610	No Data	No Data	No Data	Yes	U	6/4/1986	565	No	N/A	None	None	6/4/1986	565
136	[redacted]	pipefitter	11/16/1984	830	1610	No Data	No Data	No Data	Yes	U	None	[redacted]	No	N/A	None	None	6/14/1985	210
136	[redacted]	pipefitter	11/16/1984	830	1610	No Data	No Data	No Data	Yes	U	1/16/1990	1887	No	N/A	None	None	1/15/1986	425
137	[redacted]	millwright	11/19/1984	No Data	No Data	No Data	No Data	No Data	Yes	C	1/21/1986	428	Yes	C	1/21/1986	428	1/21/1986	428
137	[redacted]	millwright	11/19/1984	No Data	No Data	No Data	No Data	No Data	Yes	U	1/20/1988	1157	Yes	N/A	None	[redacted]	1/31/1985	73
137	[redacted]	millwright	11/19/1984	No Data	No Data	No Data	No Data	No Data	Yes	C	1/21/1986	428	Yes	C	1/21/1986	428	1/21/1986	428
138	[redacted]	painter	1/2/1985	820	1150	1/2/1985	1240	1604	Yes	U	6/20/1986	534	No	N/A	None	None	6/20/1986	534
138	[redacted]	pipefitter	1/3/1985	820	1609	1/4/1985	821	1608	Yes	N/A	None	[redacted]	No	N/A	None	None	6/14/1985	161
138	[redacted]	pipefitter	1/3/1985	820	1609	1/4/1985	821	1608	Yes	U	1/16/1990	1838	No	N/A	None	None	1/15/1986	376
139	[redacted]	boilermaker	1/2/1985	820	1150	1/3/1985	1230	No Data	Yes	U	10/3/1985	273	No	C	8/27/1987	966	10/3/1985	273
139	[redacted]	pipefitter	1/3/1985	820	1609	1/4/1985	821	1609	Yes	U	6/4/1986	516	No	N/A	None	None	6/4/1986	516
139	[redacted]	sheetmetal	1/9/1985	845	1030	No Data	No Data	No Data	Yes	U	8/26/1987	959	No	N/A	None	None	9/11/1986	610
139	[redacted]	sheetmetal	1/9/1985	845	1030	No Data	No Data	No Data	Yes	U	3/29/1985	79	No	N/A	None	None	10/14/1987	1008
139	[redacted]	boilermaker	2/26/1985	815	1150	2/26/1985	1230	No Data	Yes	U	5/1/1992	2621	No	N/A	None	None	None	[redacted]
139	[redacted]	boilermaker	2/26/1985	820	1150	2/26/1985	1230	No Data	Yes	U	10/3/1985	219	No	C	8/27/1987	912	10/3/1985	219
140	[redacted]	electrician	1/18/1985	430	1230	No Data	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	[redacted]	None	[redacted]
140	[redacted]	electrician	1/18/1985	430	1230	No Data	No Data	No Data	Yes	U	10/12/1987	997	No	N/A	None	[redacted]	9/19/1986	609

**ATTACHMENT D
JOB PLAN – CONSTRUCTION TRADE WORKER DATA, 1972 TO 1989 (continued)**

Job Plan number	CTW	Craft	RWP date 1	Entry time 1	Exit time1	RWP date 2	Entry time 2	Exit time 2	Pu required	Pu bioassay type	Pu	Pu status	Am required	Am bioassay type	Am	Am status	FP	Fp status
140	[redacted]	electrician	1/18/1985	430	1230	No Data	No Data	No Data	Yes	U	11/13/1985	299	No	N/A	None	[redacted]	None	[redacted]
140	[redacted]	electrician	1/18/1985	430	1230	No Data	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	[redacted]	9/23/1985	248
140	[redacted]	electrician	1/18/1985	430	1230	No Data	No Data	No Data	Yes	U	3/9/1989	1511	No	N/A	None	[redacted]	9/11/1986	601
140	[redacted]	electrician	1/18/1985	430	1230	No Data	No Data	No Data	Yes	U	4/11/1985	83	No	N/A	None	[redacted]	None	[redacted]
140	[redacted]	electrician	1/18/1985	430	1230	No Data	No Data	No Data	Yes	C	1/27/1986	374	No	C	1/27/1986	374	5/9/1985	111
141	[redacted]	boilermaker	2/26/1985	815	1150	2/26/1985	1240	None	Yes	U	5/1/1992	2621	No	N/A	None	[redacted]	None	[redacted]
141	[redacted]	boilermaker	2/26/1985	815	1150	2/26/1985	1240	None	Yes	U	10/3/1985	219	No	C	8/27/1987	912	10/3/1985	219
142	[redacted]	boilermaker	3/11/1985	1000	1600	3/12/1985	400	830	Yes	U	1/7/1986	301	No	N/A	None	[redacted]	1/7/1986	301
142	[redacted]	boilermaker	3/11/1985	1000	1600	3/12/1985	400	830	Yes	U	5/4/1985	53	No	N/A	None	[redacted]	11/6/1985	239
142	[redacted]	boilermaker	3/11/1985	1000	1600	No Data	No Data	No Data	Yes	U	6/20/1986	466	No	N/A	None	[redacted]	3/11/1986	365
143	[redacted]	electrician	3/18/1985	900	930	No Data	No Data	No Data	Yes	U	4/27/1987	770	No	N/A	None	[redacted]	4/27/1987	770
143	[redacted]	electrician	3/18/1985	900	930	No Data	No Data	No Data	Yes	U	1/21/1986	309	No	C	7/31/1986	500	1/21/1986	309
143	[redacted]	electrician	3/18/1985	900	930	No Data	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	[redacted]	None	[redacted]
143	[redacted]	boilermaker	3/18/1985	1410	500	No Data	No Data	No Data	Yes	U	1/7/1986	295	No	N/A	None	None	1/7/1986	295
143	[redacted]	boilermaker	3/18/1985	1410	500	No Data	No Data	No Data	Yes	U	5/4/1985	47	No	N/A	None	None	11/6/1985	233
144	[redacted]	HEO	3/19/1985	1300	1541	No Data	No Data	No Data	Yes	U	7/1/1985	104	No	N/A	None	None	9/11/1986	541
145	[redacted]	painter	3/29/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	4/23/1985	25	No	N/A	None	[redacted]	None	[redacted]
145	[redacted]	painter	3/29/1985	No Data	No Data	No Data	No Data	No Data	Yes	N/A	2/27/1987	700	No	N/A	None	[redacted]	12/4/1985	250
145	[redacted]	painter	3/29/1985	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	[redacted]	None	[redacted]
145	[redacted]	painter	3/29/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	7/27/1988	1216	No	C	6/23/1987	816	6/23/1987	816
145	[redacted]	painter	3/29/1985	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	[redacted]	None	[redacted]
146	[redacted]	painter	4/2/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	12/23/1985	265	No	N/A	None	[redacted]	12/23/1985	265
146	[redacted]	painter	4/2/1985	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	[redacted]	None	[redacted]
146	[redacted]	electrician	4/2/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	12/10/1987	982	No	N/A	None	None	12/10/1986	617
146	[redacted]	painter	4/2/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	3/22/1989	1450	No	N/A	None	None	9/3/1985	154
146	[redacted]	painter	4/2/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	3/3/1989	1431	No	N/A	None	None	2/26/1986	330
147	[redacted]	pipefitter	6/7/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	1/6/1986	213	No	N/A	None	None	8/5/1986	424
147	[redacted]	pipefitter	6/7/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	1/30/1987	602	No	N/A	None	None	2/25/1986	263
147	[redacted]	pipefitter	6/7/1985	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	None	1/26/1986	233
147	[redacted]	electrician	6/7/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	6/26/1985	19	No	N/A	None	None	None	[redacted]
147	[redacted]	pipefitter	6/7/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	5/6/1988	1064	No	N/A	None	None	9/28/1987	843
148	[redacted]	painter	6/12/1985	840	923	No Data	No Data	No Data	Yes	U	3/22/1989	1379	No	N/A	None	None	9/3/1985	83
148	[redacted]	carpenter	6/12/1985	930	1145	6/12/1985	1300	1500	Yes	C	2/25/1986	258	No	C	2/25/1986	258	2/25/1986	258
148	[redacted]	carpenter	6/12/1985	930	1145	6/12/1985	1300	1500	Yes	U	11/30/1987	901	No	N/A	None	[redacted]	12/12/1985	183
148	[redacted]	sheetmetal	6/12/1985	1000	1200	No Data	No Data	No Data	Yes	U	9/9/1987	819	No	N/A	None	None	9/8/1986	453
148	[redacted]	sheetmetal	6/13/1985	1000	1200	6/13/1985	1230	None	Yes	N/A	None	[redacted]	No	N/A	None	None	None	[redacted]

**ATTACHMENT D
JOB PLAN – CONSTRUCTION TRADE WORKER DATA, 1972 TO 1989 (continued)**

Job Plan number	CTW	Craft	RWP date 1	Entry time 1	Exit time1	RWP date 2	Entry time 2	Exit time 2	Pu required	Pu bioassay type	Pu	Pu status	Am required	Am bioassay type	Am	Am status	FP	Fp status
149	[redacted]	carpenter	6/27/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	11/13/1987	869	No	N/A	None	None	11/13/1987	869
149	[redacted]	carpenter	6/27/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	4/13/1988	1021	No	N/A	None	None	4/14/1986	291
149	[redacted]	carpenter	6/27/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	11/30/1987	886	No	N/A	None	None	12/12/1985	168
150	[redacted]	pipefitter	7/1/1985	1405	1450	No Data	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	None	1/26/1986	209
150	[redacted]	pipefitter	7/1/1985	1405	1450	No Data	No Data	No Data	Yes	U	5/6/1988	1040	No	N/A	None	None	9/28/1987	819
151	[redacted]	carpenter	7/3/1985	900	1135	7/3/1985	1300	1600	Yes	U	7/23/1986	385	No	N/A	None	[redacted]	7/23/1986	385
151	[redacted]	carpenter	7/3/1985	900	1135	7/3/1985	1300	1600	Yes	U	11/30/1987	880	No	N/A	None	[redacted]	12/12/1985	162
151	[redacted]	carpenter	7/3/1985	945	1135	7/3/1985	1300	1600	Yes	C	2/25/1986	237	No	C	2/25/1986	237	2/25/1986	237
151	[redacted]	pipefitter	7/3/1985	945	1135	No Data	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	None	1/26/1986	207
151	[redacted]	pipefitter	7/3/1985	945	1135	No Data	No Data	No Data	Yes	U	5/6/1988	1038	No	N/A	None	None	9/28/1987	817
152	[redacted]	carpenter	7/16/1985	No Data	No Data	No Data	No Data	No Data	Yes	C	2/25/1986	224	No	C	2/25/1986	224	2/25/1986	224
152	[redacted]	pipefitter	7/16/1985	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	None	1/26/1986	194
152	[redacted]	carpenter	7/16/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	11/30/1987	867	No	N/A	None	[redacted]	12/12/1985	149
152	[redacted]	pipefitter	7/16/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	5/15/1987	668	No	N/A	None	None	4/21/1986	279
152	[redacted]	pipefitter	7/16/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	5/6/1988	1025	No	N/A	None	None	9/28/1987	804
153	[redacted]	carpenter	7/24/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	11/13/1987	842	Yes	C	11/15/1991	2305	11/13/1987	842
153	[redacted]	pipefitter	7/24/1985	No Data	No Data	No Data	No Data	No Data	Yes	C	8/27/1985	34	Yes	C	8/27/1985	34	6/14/1986	325
153	[redacted]	pipefitter	7/24/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	11/18/1985	117	Yes	N/A	None	[redacted]	11/18/1985	117
153	[redacted]	pipefitter	7/24/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	7/2/1986	343	Yes	N/A	None	[redacted]	12/12/1985	141
153	[redacted]	carpenter	7/24/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	7/23/1986	364	Yes	C	12/29/1992	2715	7/23/1986	364
153	[redacted]	pipefitter	7/24/1985	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	[redacted]	Yes	N/A	None	[redacted]	None	[redacted]
153	[redacted]	carpenter	7/24/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	10/25/1985	93	Yes	N/A	None	[redacted]	10/25/1985	93
153	[redacted]	pipefitter	7/24/1985	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	[redacted]	Yes	N/A	None	[redacted]	None	[redacted]
154	[redacted]	laborer	7/28/1985	No Data	No Data	8/23/1985	No Data	No Data	Yes	U	10/21/1991	2250	Yes	N/A	None	[redacted]	None	None
154	[redacted]	pipefitter	7/28/1985	No Data	No Data	8/23/1985	No Data	No Data	Yes	C	8/27/1985	4	Yes	C	8/27/1985	4	None	None
154	[redacted]	sheetmetal	7/28/1985	No Data	No Data	8/23/1985	No Data	No Data	Yes	N/A	None	None	Yes	N/A	None	[redacted]	None	[redacted]
154	[redacted]	sheetmetal	7/28/1985	No Data	No Data	8/23/1985	No Data	No Data	Yes	N/A	None	None	Yes	N/A	None	[redacted]	12/9/1985	108
154	[redacted]	sheetmetal	7/28/1985	No Data	No Data	8/23/1985	No Data	No Data	Yes	N/A	None	None	Yes	N/A	None	[redacted]	None	[redacted]
154	[redacted]	sheetmetal	7/28/1985	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	[redacted]	Yes	N/A	None	[redacted]	8/8/1986	376

Document No. ORAUT-RPRT-0092
Revision No. 00
Effective Date: 06/14/2019
Page 175 of 188

**ATTACHMENT D
JOB PLAN – CONSTRUCTION TRADE WORKER DATA, 1972 TO 1989 (continued)**

Job Plan number	CTW	Craft	RWP date 1	Entry time 1	Exit time1	RWP date 2	Entry time 2	Exit time 2	Pu required	Pu bioassay type	Pu	Pu status	Am required	Am bioassay type	Am	Am status	FP	Fp status
154	[redacted]	carpenter	7/28/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	7/23/1986	360	Yes	C	12/29/1992	2711	7/23/1986	360
154	[redacted]	pipefitter	7/28/1985	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	None	Yes	N/A	None	[redacted]	None	None
154	[redacted]	pipefitter	7/28/1985	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	None	Yes	N/A	None	[redacted]	None	None
155	[redacted]	pipefitter	7/29/1985	No Data	No Data	No Data	No Data	No Data	Yes	C	2/25/1986	211	No	C	2/25/1986	211	2/25/1986	211
155	[redacted]	sheetmetal	7/29/1985	No Data	No Data	No Data	No Data	No Data	Yes	N/A	8/21/1990	1849	No	N/A	None	None	None	[redacted]
155	[redacted]	pipefitter	7/29/1985	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	[redacted]	1/26/1986	181
155	[redacted]	carpenter	7/29/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	11/30/1987	854	No	N/A	None	None	12/12/1985	136
155	[redacted]	pipefitter	7/29/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	5/6/1988	1012	No	N/A	None	None	9/28/1987	791
156	[redacted]	pipefitter	8/6/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	2/25/1986	203	No	U	3/13/1986	219	9/20/1985	45
156	[redacted]	carpenter	8/6/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	11/30/1987	846	No	N/A	None	[redacted]	12/12/1985	128
157	[redacted]	millwright	8/8/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	10/11/1988	1160	Yes	N/A	None	None	10/8/1986	426
157	[redacted]	millwright	8/8/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	10/4/1990	1883	Yes	N/A	None	None	9/19/1985	42
157	[redacted]	millwright	8/8/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	4/16/1987	616	Yes	N/A	None	None	5/13/1986	278
158	[redacted]	sheetmetal	8/22/1985	No Data	No Data	8/23/1985	None	None	Yes	U	2/26/1987	552	Yes	C	9/15/1988	1119	2/18/1986	179
158	[redacted]	sheetmetal	8/22/1985	No Data	No Data	8/23/1985	No Data	No Data	Yes	N/A	None	[redacted]	Yes	N/A	None	[redacted]	None	[redacted]
158	[redacted]	sheetmetal	8/22/1985	No Data	No Data	8/23/1985	No Data	No Data	Yes	N/A	None	[redacted]	Yes	N/A	None	[redacted]	10/14/1987	782
158	[redacted]	HEO	8/22/1985	No Data	No Data	8/23/1985	No Data	No Data	Yes	U	5/9/1986	259	Yes	N/A	None	None	12/17/1985	116
158	[redacted]	sheetmetal	8/22/1985	No Data	No Data	8/23/1985	No Data	No Data	Yes	N/A	None	[redacted]	Yes	N/A	None	[redacted]	12/9/1985	108
158	[redacted]	sheetmetal	8/22/1985	No Data	No Data	8/23/1985	No Data	No Data	Yes	U	12/20/1989	1580	Yes	N/A	None	[redacted]	None	[redacted]
158	[redacted]	sheetmetal	8/23/1985	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	[redacted]	Yes	N/A	None	[redacted]	8/8/1986	350
159	[redacted]	carpenter	8/22/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	4/24/1989	1341	No	N/A	None	None	None	[redacted]
159	[redacted]	carpenter	8/22/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	8/13/1987	721	No	C	10/13/1994	3339	None	[redacted]
159	[redacted]	pipefitter	8/22/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	2/25/1986	187	No	U	3/13/1986	203	9/20/1985	29
159	[redacted]	pipefitter	8/22/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	5/6/1988	988	No	N/A	None	[redacted]	9/28/1987	767
160	[redacted]	sheetmetal	8/26/1985	No Data	No Data	8/27/1985	No Data	No Data	Yes	U	4/24/1989	1336	Yes	N/A	None	[redacted]	None	[redacted]
160	[redacted]	sheetmetal	8/26/1985	No Data	No Data	8/27/1985	None	None	Yes	U	2/26/1987	548	Yes	C	9/15/1988	1115	2/18/1986	175

Document No. ORAUT-RPRT-0092 Revision No. 00 Effective Date: 06/14/2019 Page 176 of 188

**ATTACHMENT D
JOB PLAN – CONSTRUCTION TRADE WORKER DATA, 1972 TO 1989 (continued)**

Job Plan number	CTW	Craft	RWP date 1	Entry time 1	Exit time1	RWP date 2	Entry time 2	Exit time 2	Pu required	Pu bioassay type	Pu	Pu status	Am required	Am bioassay type	Am	Am status	FP	Fp status
160	[redacted]	sheetmetal	8/26/1985	No Data	No Data	8/27/1985	No Data	No Data	Yes	N/A	None	[redacted]	Yes	N/A	None	[redacted]	None	[redacted]
160	[redacted]	carpenter	8/26/1985	No Data	No Data	8/28/1985	No Data	No Data	Yes	U	10/25/1985	58	Yes	C	7/28/1993	2891	10/25/1985	58
160	[redacted]	HEO	8/26/1985	No Data	No Data	8/28/1985	No Data	No Data	Yes	U	5/9/1986	254	Yes	N/A	None	None	12/17/1985	111
160	[redacted]	laborer	8/26/1985	No Data	No Data	8/28/1985	No Data	No Data	Yes	U	None	[redacted]	Yes	N/A	None	[redacted]	None	[redacted]
160	[redacted]	laborer	8/28/1985	No Data	No Data	8/30/1985	No Data	No Data	Yes	U	4/3/1991	2042	Yes	U	4/3/1991	2042	3/1/1986	183
161	[redacted]	pipefitter	8/26/1985	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	[redacted]	1/26/1986	153
161	[redacted]	pipefitter	8/26/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	5/6/1988	984	No	N/A	None	[redacted]	9/28/1987	763
162	[redacted]	carpenter	8/30/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	11/13/1987	805	No	N/A	None	[redacted]	11/13/1987	805
162	[redacted]	laborer	8/30/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	4/3/1991	2042	No	U	4/3/1991	2042	3/1/1986	183
162	[redacted]	carpenter	8/30/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	2/25/1986	179	No	U	3/13/1986	195	9/20/1985	21
162	[redacted]	carpenter	8/30/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	11/30/1987	822	No	N/A	None	[redacted]	12/12/1985	104
162	[redacted]	laborer	8/30/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	7/26/1988	1061	No	C	5/19/1993	2819	8/15/1986	350
162	[redacted]	sheetmetal	8/30/1985	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	[redacted]	None	[redacted]
162	[redacted]	laborer	8/30/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	1/21/1987	509	No	N/A	None	[redacted]	2/27/1986	181
163	[redacted]	pipefitter	9/6/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	7/15/1986	312	No	N/A	None	None	7/15/1986	312
163	[redacted]	pipefitter	9/6/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	4/3/1991	2035	No	N/A	None	None	4/15/1986	221
164	[redacted]	laborer	9/9/1985	No Data	No Data	9/10/1985	No Data	No Data	Yes	U	12/13/1985	94	Yes	C	5/16/1991	2074	12/20/1985	101
164	[redacted]	laborer	9/9/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	4/3/1991	2032	Yes	U	4/3/1991	2032	3/1/1986	173
164	[redacted]	pipefitter	9/9/1985	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	[redacted]	Yes	N/A	None	None	None	[redacted]
164	[redacted]	HEO	9/9/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	5/9/1986	242	Yes	N/A	None	None	12/17/1985	99
164	[redacted]	laborer	9/9/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	1/21/1987	499	Yes	N/A	None	[redacted]	2/27/1986	171
164	[redacted]	ironworker	9/12/1985	No Data	No Data	9/13/1985	No Data	No Data	Yes	U	11/25/1987	803	Yes	N/A	None	[redacted]	3/6/1986	174
165	[redacted]	sheetmetal	9/10/1985	No Data	No Data	8/23/1985	None	None	Yes	U	2/26/1987	552	No	C	9/15/1988	1119	2/18/1986	179
165	[redacted]	HEO	9/10/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	8/26/1987	715	No	N/A	None	None	9/11/1986	366
166	[redacted]	laborer	10/1/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	4/3/1991	2010	No	U	4/3/1991	2010	3/1/1986	151
166	[redacted]	carpenter	10/1/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	2/25/1986	147	No	U	3/13/1986	163	9/26/1986	360

**ATTACHMENT D
JOB PLAN – CONSTRUCTION TRADE WORKER DATA, 1972 TO 1989 (continued)**

Job Plan number	CTW	Craft	RWP date 1	Entry time 1	Exit time1	RWP date 2	Entry time 2	Exit time 2	Pu required	Pu bioassay type	Pu	Pu status	Am required	Am bioassay type	Am	Am status	FP	Fp status
166	[redacted]	carpenter	10/1/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	11/30/1987	790	No	N/A	None	[redacted]	12/12/1985	72
166	[redacted]	laborer	10/1/1985	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	[redacted]	None	[redacted]
167	[redacted]	pipefitter	10/7/1985	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	None	Yes	N/A	None	None	None	[redacted]
167	[redacted]	laborer	10/7/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	11/5/1986	394	Yes	C	11/4/1986	393	7/22/1986	288
168	[redacted]	laborer	10/11/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	4/3/1991	2000	No	U	4/3/1991	2000	3/1/1986	141
168	[redacted]	sheetmetal	10/11/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	4/24/1989	1291	No	N/A	None	[redacted]	None	[redacted]
168	[redacted]	carpenter	10/11/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	2/25/1986	137	No	U	3/13/1986	153	7/22/1987	649
168	[redacted]	HEO	10/11/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	8/26/1987	684	No	N/A	None	None	9/11/1986	335
168	[redacted]	carpenter	10/11/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	11/30/1987	780	No	N/A	None	[redacted]	12/12/1985	62
168	[redacted]	laborer	10/11/1985	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	[redacted]	None	[redacted]
169	[redacted]	carpenter	11/6/1985	No Data	No Data	11/7/1985	No Data	No Data	Yes	U	2/25/1986	110	No	U	3/13/1986	126	9/29/1986	326
169	[redacted]	carpenter	11/6/1985	No Data	No Data	11/7/1985	No Data	No Data	Yes	U	11/30/1987	753	No	N/A	None	[redacted]	12/12/1985	35
169	[redacted]	HEO	11/6/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	8/26/1987	658	No	N/A	None	None	9/11/1986	309
170	[redacted]	laborer	11/11/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	4/3/1991	1969	No	U	4/3/1991	1969	3/1/1986	110
170	[redacted]	boilermaker	11/11/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	4/3/1991	1969	No	N/A	None	[redacted]	12/16/1985	35
170	[redacted]	pipefitter	11/11/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	11/18/1985	7	No	N/A	None	[redacted]	12/12/1986	396
170	[redacted]	millwright	11/11/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	5/16/1986	186	No	N/A	None	[redacted]	5/16/1986	186
170	[redacted]	boilermaker	11/11/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	1/14/1987	429	No	N/A	None	[redacted]	7/31/1986	262
170	[redacted]	HEO	11/11/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	5/9/1986	179	No	N/A	None	None	12/17/1985	36
170	[redacted]	boilermaker	11/11/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	7/29/1986	260	No	U	7/29/1986	260	4/21/1986	161
170	[redacted]	laborer	11/11/1985	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	[redacted]	9/11/1987	669
170	[redacted]	millwright	11/11/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	1/29/1986	79	No	N/A	None	[redacted]	None	[redacted]
171	[redacted]	pipefitter	11/25/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	7/20/1987	602	Yes	N/A	None	None	7/20/1987	602
171	[redacted]	pipefitter	11/25/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	1/17/1986	53	Yes	N/A	None	None	8/20/1986	268
172	[redacted]	boilermaker	12/11/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	12/16/1985	5	Yes	C	12/18/1991	2198	12/16/1985	5
172	[redacted]	HEO	12/11/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	5/9/1986	149	Yes	N/A	None	None	12/17/1985	6

Document No. ORAUT-RPRT-0092 Revision No. 00 Effective Date: 06/14/2019 Page 178 of 188

**ATTACHMENT D
JOB PLAN – CONSTRUCTION TRADE WORKER DATA, 1972 TO 1989 (continued)**

Job Plan number	CTW	Craft	RWP date 1	Entry time 1	Exit time1	RWP date 2	Entry time 2	Exit time 2	Pu required	Pu bioassay type	Pu	Pu status	Am required	Am bioassay type	Am	Am status	FP	Fp status
172	[redacted]	boilermaker	12/11/1985	No Data	No Data	No Data	No Data	No Data	Yes	U	8/15/1986	247	Yes	N/A	None	[redacted]	8/15/1986	247
173	[redacted]	pipefitter	1/7/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	8/18/1987	588	No	N/A	None	[redacted]	8/18/1987	588
173	[redacted]	pipefitter	1/7/1986	No Data	No Data	No Data	No Data	No Data	Yes	C	7/8/1989	1278	No	C	7/8/1989	1278	None	[redacted]
173	[redacted]	pipefitter	1/7/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	8/15/1986	220	No	N/A	None	[redacted]	8/15/1986	220
174	[redacted]	laborer	2/26/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	12/13/1989	1386	Yes	C	5/16/1991	1905	1/18/1988	691
174	[redacted]	laborer	2/26/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	2/16/1989	1086	Yes	C	3/19/1991	1847	2/16/1989	1086
174	[redacted]	laborer	2/26/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	11/5/1986	252	Yes	C	11/4/1986	251	7/22/1986	146
175	[redacted]	laborer	4/3/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	4/3/1991	1826	Yes	U	4/3/1991	1826	12/31/1986	272
175	[redacted]	laborer	4/3/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	12/13/1989	1350	Yes	C	5/16/1991	1869	1/18/1988	655
175	[redacted]	laborer	4/3/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	2/16/1989	1050	Yes	C	3/19/1991	1811	2/16/1989	1050
176	[redacted]	laborer	5/5/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	4/3/1991	1794	Yes	U	4/3/1991	1794	12/31/1986	240
176	[redacted]	laborer	5/5/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	5/29/1990	1485	Yes	N/A	None	[redacted]	7/31/1986	87
176	[redacted]	laborer	5/5/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	2/16/1989	1018	Yes	C	3/19/1991	1779	2/16/1989	1018
177	[redacted]	laborer	5/12/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	4/3/1991	1787	Yes	C	3/19/1991	1787	12/31/1986	233
177	[redacted]	laborer	5/12/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	5/29/1990	1478	Yes	N/A	None	[redacted]	7/31/1986	80
177	[redacted]	ironworker	5/12/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	1/9/1989	973	Yes	N/A	None	[redacted]	8/11/1987	456
177	[redacted]	laborer	5/12/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	2/16/1989	1011	Yes	C	3/19/1991	1772	2/16/1989	1011
177	[redacted]	ironworker	5/12/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	6/10/1987	394	Yes	N/A	None	[redacted]	6/10/1986	29
178	[redacted]	sheetmetal	5/27/1986	No Data	No Data	5/30/1986	No Data	No Data	Yes	U	12/16/1988	931	Yes	NA	None	[redacted]	12/18/1987	567
178	[redacted]	laborer	5/27/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	4/3/1991	1772	Yes	U	4/3/1991	1772	12/31/1986	218
178	[redacted]	laborer	5/27/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	4/27/1992	2162	Yes	N/A	None	[redacted]	None	[redacted]
178	[redacted]	laborer	5/27/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	2/16/1989	996	Yes	C	3/19/1991	1757	2/16/1989	996
178	[redacted]	sheetmetal	5/30/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	2/26/1987	272	Yes	C	9/15/1988	839	2/26/1987	272
179	[redacted]	laborer	7/14/1986	No Data	No Data	7/15/1986	No Data	No Data	Yes	U	4/3/1991	1723	Yes	U	4/3/1991	1724	12/31/1986	169
179	[redacted]	boilermaker	7/14/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	1/14/1987	184	Yes	N/A	None	[redacted]	7/31/1986	17
179	[redacted]	boilermaker	7/14/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	7/29/1986	15	Yes	U	7/29/1986	15	4/13/1987	273

Document No. ORAUT-RPRT-0092

Revision No. 00

Effective Date: 06/14/2019

Page 179 of 188

**ATTACHMENT D
JOB PLAN – CONSTRUCTION TRADE WORKER DATA, 1972 TO 1989 (continued)**

Job Plan number	CTW	Craft	RWP date 1	Entry time 1	Exit time1	RWP date 2	Entry time 2	Exit time 2	Pu required	Pu bioassay type	Pu	Pu status	Am required	Am bioassay type	Am	Am status	FP	Fp status
179	[redacted]	boilermaker	7/14/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	10/27/1986	105	Yes	N/A	None	[redacted]	8/15/1986	32
179	[redacted]	boilermaker	7/14/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	8/15/1986	32	Yes	N/A	None	[redacted]	8/15/1986	32
179	[redacted]	HEO	7/14/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	9/26/1986	74	Yes	N/A	None	None	9/26/1986	74
180	[redacted]	laborer	8/11/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	4/3/1991	1696	Yes	U	4/3/1991	1696	12/31/1986	142
180	[redacted]	boilermaker	8/11/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	1/22/1987	164	Yes	N/A	None	[redacted]	None	[redacted]
180	[redacted]	boilermaker	8/11/1986	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	[redacted]	Yes	N/A	None	[redacted]	None	[redacted]
180	[redacted]	boilermaker	8/11/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	1/14/1987	156	Yes	N/A	None	[redacted]	1/14/1987	156
180	[redacted]	boilermaker	8/11/1986	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	[redacted]	Yes	N/A	None	[redacted]	8/13/1986	2
180	[redacted]	boilermaker	8/11/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	9/11/1986	31	Yes	U	9/11/1986	31	4/13/1987	245
180	[redacted]	boilermaker	8/11/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	10/27/1986	77	Yes	N/A	None	[redacted]	8/15/1986	4
181	[redacted]	pipefitter	8/19/1986	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	None	7/15/1987	330
181	[redacted]	pipefitter	8/19/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	1/30/1987	164	No	N/A	None	None	1/30/1987	164
182	[redacted]	laborer	9/2/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	4/3/1991	1674	Yes	U	4/3/1991	1674	12/31/1986	120
182	[redacted]	boilermaker	9/2/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	4/13/1987	223	Yes	U	9/12/1986	10	4/13/1987	223
183	[redacted]	laborer	9/11/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	4/3/1991	1665	Yes	U	4/3/1991	1665	12/31/1986	111
183	[redacted]	boilermaker	9/11/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	9/12/1986	1	Yes	U	9/12/1986	1	4/13/1987	214
184	[redacted]	laborer	9/15/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	4/3/1991	1661	Yes	U	4/3/1991	1661	12/31/1986	107
184	[redacted]	boilermaker	9/15/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	4/13/1987	210	Yes	N/A	None	None	4/13/1987	210
185	[redacted]	pipefitter	11/10/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	5/10/1988	547	No	N/A	None	None	5/29/1987	200
185	[redacted]	pipefitter	11/10/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	8/26/1987	289	No	N/A	None	None	8/26/1987	289
186	[redacted]	pipefitter	11/13/1986	No Data	No Data	11/14/1986	No Data	No Data	Yes	U	5/10/1988	543	No	N/A	None	None	5/29/1987	196
186	[redacted]	pipefitter	11/13/1986	No Data	No Data	11/14/1986	No Data	No Data	Yes	U	8/26/1987	285	No	N/A	None	None	8/26/1987	285
187	[redacted]	pipefitter	11/17/1986	No Data	No Data	11/18/1986	No Data	No Data	Yes	U	5/10/1988	539	No	N/A	None	None	5/29/1987	192
187	[redacted]	pipefitter	11/17/1986	No Data	No Data	11/18/1986	No Data	No Data	Yes	U	8/26/1987	281	No	N/A	None	None	8/26/1987	281
188	[redacted]	pipefitter	11/21/1986	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	None	7/15/1987	236
188	[redacted]	pipefitter	11/21/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	5/10/1988	536	No	N/A	None	None	5/29/1987	189

Document No. ORAUT-RPRT-0092 Revision No. 00 Effective Date: 06/14/2019 Page 180 of 188

**ATTACHMENT D
JOB PLAN – CONSTRUCTION TRADE WORKER DATA, 1972 TO 1989 (continued)**

Job Plan number	CTW	Craft	RWP date 1	Entry time 1	Exit time1	RWP date 2	Entry time 2	Exit time 2	Pu required	Pu bioassay type	Pu	Pu status	Am required	Am bioassay type	Am	Am status	FP	Fp status
188	[redacted]	pipefitter	11/21/1986	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	None	No	N/A	None	None	1/26/1987	66
189	[redacted]	pipefitter	11/24/1986	No Data	No Data	11/25/1986	No Data	No Data	Yes	U	5/10/1988	532	No	N/A	None	None	5/29/1987	185
189	[redacted]	pipefitter	11/25/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	8/10/1987	258	No	C	4/17/1991	1604	8/10/1987	258
189	[redacted]	pipefitter	11/25/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	None	[redacted]	No	N/A	None	None	None	[redacted]
189	[redacted]	pipefitter	11/26/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	None	[redacted]	No	N/A	None	None	1/20/1987	55
189	[redacted]	pipefitter	11/26/1986	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	None	1/19/1987	54
189	[redacted]	electrician	11/26/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	10/23/1989	1062	No	N/A	None	None	None	None
190	[redacted]	pipefitter	12/1/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	8/10/1987	252	No	C	4/17/1991	1598	8/10/1987	252
190	[redacted]	pipefitter	12/1/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	None	[redacted]	No	N/A	None	None	1/20/1987	50
190	[redacted]	pipefitter	12/1/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	5/19/1989	900	No	N/A	None	None	5/13/1987	163
190	[redacted]	pipefitter	12/1/1986	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	None	1/19/1987	49
190	[redacted]	pipefitter	12/1/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	5/10/1988	526	No	N/A	None	None	5/29/1987	179
190	[redacted]	pipefitter	12/1/1986	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	None	None	[redacted]
190	[redacted]	pipefitter	12/1/1986	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	None	2/25/1987	86
191	[redacted]	pipefitter	12/3/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	8/10/1987	250	No	C	4/17/1991	1596	8/10/1987	250
191	[redacted]	pipefitter	12/3/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	5/19/1989	898	No	N/A	None	None	5/13/1987	161
191	[redacted]	pipefitter	12/3/1986	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	None	1/19/1987	47
191	[redacted]	carpenter	12/3/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	8/3/1987	243	No	N/A	None	None	8/3/1987	243
191	[redacted]	pipefitter	12/3/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	5/10/1988	524	No	N/A	None	None	5/29/1987	177
192	[redacted]	pipefitter	12/4/1986	No Data	No Data	12/5/1986	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	None	1/19/1987	45
192	[redacted]	pipefitter	12/4/1986	No Data	No Data	12/5/1986	No Data	No Data	Yes	U	5/10/1988	522	No	N/A	None	None	5/29/1987	175
192	[redacted]	carpenter	12/4/1986	No Data	No Data	12/5/1986	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	None	None	[redacted]
192	[redacted]	carpenter	12/4/1986	No Data	No Data	12/5/1986	No Data	No Data	Yes	U	8/3/1987	241	No	N/A	None	None	8/3/1987	241
192	[redacted]	carpenter	12/4/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	4/16/1987	133	No	N/A	None	None	4/16/1987	133
192	[redacted]	laborer	12/5/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	4/3/1991	1580	No	C	1/8/1993	2226	12/31/1986	26
192	[redacted]	pipefitter	12/5/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	3/15/1989	831	No	N/A	None	None	2/19/1987	76

Document No. ORAUT-RPRT-0092 Revision No. 00 Effective Date: 06/14/2019 Page 181 of 188

**ATTACHMENT D
JOB PLAN – CONSTRUCTION TRADE WORKER DATA, 1972 TO 1989 (continued)**

Job Plan number	CTW	Craft	RWP date 1	Entry time 1	Exit time1	RWP date 2	Entry time 2	Exit time 2	Pu required	Pu bioassay type	Pu	Pu status	Am required	Am bioassay type	Am	Am status	FP	Fp status
193	[redacted]	pipefitter	12/4/1986	No Data	No Data	12/5/1986	No Data	No Data	Yes	U	8/10/1987	248	No	C	4/17/1991	1594	8/10/1987	248
193	[redacted]	laborer	12/8/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	2/16/1987	70	No	C	12/12/1987	369	12/30/1986	22
193	[redacted]	carpenter	12/8/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	4/3/1991	1577	No	U	12/27/1989	1115	4/9/1987	122
193	[redacted]	pipefitter	12/8/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	8/10/1987	245	No	C	4/17/1991	1591	8/10/1987	245
193	[redacted]	carpenter	12/8/1986	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	[redacted]	None	[redacted]
193	[redacted]	pipefitter	12/8/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	None	[redacted]	No	N/A	None	[redacted]	1/20/1987	43
193	[redacted]	pipefitter	12/8/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	5/19/1989	893	No	N/A	None	[redacted]	5/13/1987	156
193	[redacted]	pipefitter	12/8/1986	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	[redacted]	1/19/1987	42
193	[redacted]	carpenter	12/8/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	8/3/1987	238	No	N/A	None	[redacted]	8/3/1987	238
193	[redacted]	pipefitter	12/8/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	5/10/1988	519	No	N/A	None	[redacted]	5/29/1987	172
194	[redacted]	carpenter	12/9/1986	No Data	No Data	12/10/1986	No Data	No Data	Yes	U	8/3/1987	236	No	N/A	None	[redacted]	8/3/1987	236
194	[redacted]	pipefitter	12/9/1986	No Data	No Data	12/11/1986	No Data	No Data	Yes	U	None	[redacted]	No	N/A	None	[redacted]	1/20/1987	40
194	[redacted]	laborer	12/9/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	2/16/1989	800	No	C	3/19/1991	1561	2/16/1988	434
194	[redacted]	pipefitter	12/10/1986	No Data	No Data	12/11/1986	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	[redacted]	1/19/1987	39
194	[redacted]	laborer	12/10/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	4/3/1991	1575	No	C	1/8/1993	2221	12/31/1986	21
194	[redacted]	pipefitter	12/10/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	8/10/1987	243	No	C	4/17/1991	1589	8/10/1987	243
194	[redacted]	pipefitter	12/11/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	5/10/1988	516	No	N/A	None	[redacted]	5/29/1987	169
194	[redacted]	pipefitter	12/11/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	5/22/1990	1258	No	N/A	None	None	None	[redacted]
195	[redacted]	pipefitter	12/16/1986	No Data	No Data	12/17/1986	No Data	No Data	Yes	U	8/10/1987	236	No	C	4/17/1991	1582	8/10/1987	236
195	[redacted]	pipefitter	12/16/1986	No Data	No Data	12/17/1986	No Data	No Data	Yes	U	5/10/1988	510	No	N/A	None	[redacted]	5/29/1987	163
195	[redacted]	pipefitter	12/16/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	5/19/1989	885	No	N/A	None	[redacted]	5/13/1987	148
195	[redacted]	pipefitter	12/16/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	3/15/1989	820	No	N/A	None	None	2/19/1987	65
195	[redacted]	pipefitter	12/16/1986	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	[redacted]	1/19/1987	34
195	[redacted]	pipefitter	12/22/1986	No Data	No Data	12/23/1986	No Data	No Data	Yes	U	None	[redacted]	No	N/A	None	[redacted]	1/20/1987	28
196	[redacted]	pipefitter	12/19/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	8/10/1987	234	No	C	4/17/1991	1580	8/10/1987	234
196	[redacted]	pipefitter	12/19/1986	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	[redacted]	1/19/1987	31

Document No. ORAUT-RPRT-0092

Revision No. 00

Effective Date: 06/14/2019 | Page 182 of 188

**ATTACHMENT D
JOB PLAN – CONSTRUCTION TRADE WORKER DATA, 1972 TO 1989 (continued)**

Job Plan number	CTW	Craft	RWP date 1	Entry time 1	Exit time1	RWP date 2	Entry time 2	Exit time 2	Pu required	Pu bioassay type	Pu	Pu status	Am required	Am bioassay type	Am	Am status	FP	Fp status
196	[redacted]	laborer	12/19/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	2/16/1989	790	No	C	3/19/1991	1551	2/16/1988	424
196	[redacted]	carpenter	12/22/1986	No Data	No Data	12/23/1986	No Data	No Data	Yes	U	8/3/1987	223	No	N/A	None	[redacted]	8/3/1987	223
197	[redacted]	laborer	12/19/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	12/13/1989	1090	No	N/A	None	[redacted]	1/18/1988	395
197	[redacted]	painter	12/19/1986	No Data	No Data	No Data	No Data	No Data	Yes	C	12/16/1988	728	No	C	12/16/1988	728	10/1/1987	286
197	[redacted]	laborer	12/19/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	2/16/1989	790	No	C	3/19/1991	1551	2/16/1988	424
197	[redacted]	painter	12/19/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	1/23/1989	766	No	N/A	None	[redacted]	4/2/1987	104
198	[redacted]	pipefitter	12/30/1986	No Data	No Data	12/31/1986	No Data	No Data	Yes	U	None	[redacted]	No	N/A	None	[redacted]	1/20/1987	20
198	[redacted]	carpenter	12/30/1986	No Data	No Data	12/31/1986	No Data	No Data	Yes	U	8/3/1987	215	No	N/A	None	[redacted]	8/3/1987	215
198	[redacted]	pipefitter	12/30/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	8/10/1987	223	No	C	4/17/1991	1569	8/10/1987	223
198	[redacted]	pipefitter	12/30/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	5/19/1989	871	No	N/A	None	[redacted]	5/13/1987	134
198	[redacted]	pipefitter	12/30/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	3/15/1989	806	No	N/A	None	[redacted]	2/19/1987	51
198	[redacted]	laborer	12/30/1986	No Data	No Data	No Data	No Data	No Data	Yes	U	2/16/1989	779	No	C	3/19/1991	1540	2/16/1988	413
198	[redacted]	electrician	12/30/1986	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	[redacted]	None	None
198	[redacted]	pipefitter	1/2/1987	No Data	No Data	No Data	No Data	No Data	Yes	U	8/10/1987	220	No	C	4/17/1991	1566	8/10/1987	220
198	[redacted]	pipefitter	1/2/1987	No Data	No Data	No Data	No Data	No Data	Yes	U	5/19/1989	868	No	N/A	None	[redacted]	5/13/1987	131
199	[redacted]	pipefitter	1/5/1987	No Data	No Data	1/6/1987	No Data	No Data	Yes	U	None	[redacted]	No	N/A	None	[redacted]	1/20/1987	14
199	[redacted]	pipefitter	1/5/1987	No Data	No Data	1/6/1987	No Data	No Data	Yes	U	5/19/1989	864	No	N/A	None	[redacted]	5/13/1987	127
199	[redacted]	pipefitter	1/5/1987	No Data	No Data	1/6/1987	No Data	No Data	Yes	U	3/15/1989	799	No	N/A	None	[redacted]	2/19/1987	44
199	[redacted]	painter	1/5/1987	No Data	No Data	No Data	No Data	No Data	Yes	C	12/16/1988	711	No	C	12/16/1988	711	10/1/1987	269
199	[redacted]	carpenter	1/5/1987	No Data	No Data	No Data	No Data	No Data	Yes	U	8/3/1987	210	No	N/A	None	[redacted]	8/3/1987	210
199	[redacted]	laborer	1/5/1987	No Data	No Data	No Data	No Data	No Data	Yes	U	2/16/1989	773	No	C	3/19/1991	1534	2/16/1988	407
199	[redacted]	electrician	1/5/1987	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	N/A	None	None	[redacted]
199	[redacted]	pipefitter	1/6/1987	No Data	No Data	No Data	No Data	No Data	Yes	U	None	[redacted]	No	N/A	None	[redacted]	1/20/1987	14
199	[redacted]	pipefitter	1/7/1987	No Data	No Data	1/8/1987	No Data	No Data	Yes	U	8/10/1987	214	No	C	4/17/1991	1560	8/10/1987	214
199	[redacted]	pipefitter	1/7/1987	No Data	No Data	1/8/1987	No Data	No Data	Yes	U	5/22/1990	1230	No	N/A	None	[redacted]	9/12/1988	613
199	[redacted]	pipefitter	3/16/1988	No Data	No Data	1/8/1987	No Data	No Data	Yes	U	11/4/1988	666	No	C	4/17/1991	1560	None	[redacted]

Document No. ORAUT-RPRT-0092 | Revision No. 00 | Effective Date: 06/14/2019 | Page 183 of 188

**ATTACHMENT D
JOB PLAN – CONSTRUCTION TRADE WORKER DATA, 1972 TO 1989 (continued)**

Job Plan number	CTW	Craft	RWP date 1	Entry time 1	Exit time1	RWP date 2	Entry time 2	Exit time 2	Pu required	Pu bioassay type	Pu	Pu status	Am required	Am bioassay type	Am	Am status	FP	Fp status
200	[redacted]	sheetmetal	1/6/1987	No Data	No Data	No Data	No Data	No Data	Yes	U	9/16/1987	253	No	N/A	None	None	9/16/1987	253
200	[redacted]	sheetmetal	1/6/1987	No Data	No Data	No Data	No Data	No Data	Yes	U	12/16/1988	710	No	U	None	[redacted]	12/18/1987	346
200	[redacted]	sheetmetal	1/6/1987	No Data	No Data	No Data	No Data	No Data	Yes	U	10/11/1989	1009	No	N/A	None	None	9/17/1987	254
201	[redacted]	pipefitter	1/8/1987	No Data	No Data	No Data	No Data	No Data	Yes	U	None	[redacted]	No	N/A	None	None	1/20/1987	12
201	[redacted]	pipefitter	1/8/1987	No Data	No Data	No Data	No Data	No Data	Yes	U	5/19/1989	862	No	N/A	None	None	5/13/1987	125
201	[redacted]	pipefitter	1/8/1987	No Data	No Data	No Data	No Data	No Data	Yes	U	3/15/1989	797	No	N/A	None	None	2/19/1987	42
201	[redacted]	painter	1/8/1987	No Data	No Data	No Data	No Data	No Data	Yes	U	1/23/1989	746	No	N/A	None	None	4/2/1987	84
202	[redacted]	pipefitter	1/9/1987	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	None	No	N/A	None	None	7/15/1987	187
202	[redacted]	pipefitter	1/9/1987	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	None	No	N/A	None	None	1/21/1987	12
203	[redacted]	pipefitter	3/10/1987	No Data	No Data	No Data	No Data	No Data	Yes	U	3/1/1991	1452	No	N/A	None	None	None	[redacted]
203	[redacted]	sheetmetal	3/10/1987	No Data	No Data	No Data	No Data	No Data	Yes	U	10/11/1989	946	No	N/A	None	None	9/17/1987	191
203	[redacted]	sheetmetal	3/10/1987	No Data	No Data	No Data	No Data	No Data	Yes	U	12/17/1989	1013	No	N/A	None	None	12/12/1987	277
204	[redacted]	laborer	5/14/1987	No Data	No Data	5/15/1987	No Data	No Data	Yes	U	4/3/1991	1419	Yes	C	1/8/1993	2065	2/4/1988	265
204	[redacted]	carpenter	5/22/1987	No Data	No Data	No Data	No Data	No Data	Yes	U	7/10/1987	49	Yes	C	6/20/1994	2586	12/12/1987	204
205	[redacted]	pipefitter	10/29/1987	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	None	Yes	N/A	None	None	2/16/1989	476
206	[redacted]	pipefitter	1/6/1988	No Data	No Data	No Data	No Data	No Data	Yes	U	2/1/1991	1122	No	N/A	None	None	1/26/1988	20
206	[redacted]	pipefitter	1/6/1988	No Data	No Data	No Data	No Data	No Data	Yes	U	3/1/1991	1150	No	N/A	None	None	None	[redacted]
207	[redacted]	pipefitter	3/16/1988	No Data	No Data	No Data	No Data	No Data	Yes	U	11/4/1988	233	No	C	4/17/1991	1127	None	[redacted]
207	[redacted]	pipefitter	3/16/1988	No Data	No Data	No Data	No Data	No Data	Yes	U	2/1/1991	1052	No	N/A	None	None	None	[redacted]
207	[redacted]	pipefitter	3/16/1988	No Data	No Data	No Data	No Data	No Data	Yes	N/A	None	[redacted]	No	N/A	None	None	2/16/1989	337

a. Bioassay type codes: U represents urinalysis; C represents chest count.

**ATTACHMENT D
JOB PLAN – CONSTRUCTION TRADE WORKER DATA, 1972 TO 1989 (continued)**

Table D-4. Results of subCTWs obtained from incident reports and bioassay, 1985 to 1990.

CTW	Craft	Area	Building	Date of contamination	Pu required	Pu	# days, status	FP required	FP	# days, status
[redacted]	pipefitter	F	772	7/17/1985	Yes	1/14/1988	911	No	1/19/1987	551
[redacted]	carpenter	F	772	7/17/1985	Yes	7/18/1985	1	No	7/18/1985	1
[redacted]	sheetmetal	F	FB-Line	10/4/1985	Yes	10/4/1985	0	No	10/4/1985	0
[redacted]	pipefitter	H	241	10/21/1985	Yes	10/21/1985	0	No	10/21/1985	0
[redacted]	pipefitter	F	241	12/5/1985	Yes	None	None	Yes	3/27/1986	112
[redacted]	pipefitter	F	FB-Line	12/6/1985	Yes	8/28/1987	630	No	3/6/1987	455
[redacted]	sheetmetal	F	FB-Line	12/10/1985	Yes	9/1/1993	2822	No	None	None
[redacted]	sheetmetal	F	FB-Line	12/12/1986	Yes	12/12/1986	0	No	8/6/1987	237
[redacted]	carpenter	F	221	12/19/1986	Yes	12/19/1986	0	Yes	12/19/1986	0
[redacted]	pipefitter	F	211	1/16/1987	Yes	1/19/1987	3	No	N/A	N/A
[redacted]	electrician	F	FB-Line	1/21/1987	Yes	1/21/1987	0	Yes	8/12/1987	203
[redacted]	electrician	F	FB-Line	3/13/1987	Yes	3/13/1987	0	No	3/13/1987	0
[redacted]	millwright	F	FB-Line	4/13/1987	Yes	2/9/1988	302	No	2/9/1988	302
[redacted]	electrician	F	247	5/14/1987	Yes	1/18/1989	615	Yes	None	None
[redacted]	electrician	F	221	7/16/1987	Yes	7/16/1987	0	No	7/16/1987	0
[redacted]	pipefitter	F	247	7/17/1987	Yes	None	None	Yes	1/19/1989	552
[redacted]	pipefitter	F	FB-Line	7/25/1987	Yes	9/2/1987	39	No	9/2/1987	39
[redacted]	carpenter	F	772	8/11/1987	Yes	8/13/1987	2	No	N/A	N/A
[redacted]	laborer	F	772	10/28/1987	Yes	10/28/1987	0	No	N/A	N/A
[redacted]	electrician	F	707	11/13/1987	Yes	8/20/1990	1011	No	N/A	N/A
[redacted]	carpenter	F	707	11/20/1987	Yes	11/30/1987	10	No	12/9/1987	19
[redacted]	pipefitter	F	221	2/2/1988	Yes	2/2/1988	0	Yes	2/2/1988	0
[redacted]	pipefitter	H	241	2/18/1988	Yes	12/9/1988	295	Yes	1/18/1989	335
[redacted]	pipefitter	F	247	3/4/1988	Yes	5/1/1991	1153	Yes	None	None
[redacted]	pipefitter	F	772	3/16/1988	Yes	3/16/1988	0	No	3/16/1988	0
[redacted]	insulator	F	241	4/13/1988	Yes	4/15/1988	2	Yes	4/15/1988	2
[redacted]	insulator	H	241	4/13/1988	Yes	4/13/1988	0	Yes	4/13/1988	0
[redacted]	electrician	F	FB-Line	5/23/1988	Yes	5/23/1988	0	No	10/3/1988	133
[redacted]	insulator	F	707	5/27/1988	Yes	5/12/1994	2176	No	N/A	N/A
[redacted]	pipefitter	F	772	5/31/1988	Yes	5/31/1988	0	No	5/31/1988	0
[redacted]	pipefitter	H	241	8/12/1988	Yes	8/14/1988	2	No	8/14/1988	2
[redacted]	millwright	F	772	10/6/1988	Yes	10/13/1988	7	No	None	None
[redacted]	painter	F	221	10/7/1988	Yes	10/10/1988	3	No	10/10/1988	3
[redacted]	electrician	F	772	11/1/1988	Yes	None	None	No	N/A	N/A
[redacted]	painter	F	772	11/2/1988	Yes	11/2/1988	0	No	N/A	N/A
[redacted]	pipefitter	F	772	11/2/1988	Yes	6/12/1992	1318	No	N/A	N/A
[redacted]	electrician	F	221	11/7/1988	Yes	6/27/1989	232	No	N/A	N/A
[redacted]	painter	F	772	11/8/1988	Yes	11/9/1988	1	No	11/9/1988	1
[redacted]	pipefitter	F	241	12/8/1988	Yes	12/9/1988	1	Yes	12/8/1988	0
[redacted]	insulator	H	211	2/22/1989	Yes	2/22/1989	0	No	2/22/1989	0
[redacted]	ironworker	H	232	8/3/1989	No	N/A	N/A	Yes	8/3/1989	0
[redacted]	pipefitter	H	OBL	5/1/1990	Yes	5/2/1990	1	No	5/2/1990	1
[redacted]	boilermaker	H	OBL	5/1/1990	Yes	5/1/1990	0	No	5/1/1990	0

ATTACHMENT D
JOB PLAN – CONSTRUCTION TRADE WORKER DATA, 1972 TO 1989 (continued)

CTW	Craft	Area	Building	Date of contamination	Pu required	Pu	# days, status	FP required	FP	# days, status
[redacted]	laborer	H	OBL	5/1/1990	Yes	5/2/1990	1	No	5/2/1990	1
[redacted]	sheetmetal	H	OBL	5/1/1990	Yes	5/1/1990	0	No	N/A	N/A

ATTACHMENT D
JOB PLAN – CONSTRUCTION TRADE WORKER DATA, 1972 TO 1989 (continued)

Table D-5. SubCTW americium bioassay by Job Plan, 1981 to 1987.^a

Job Plan	Reference	Pages	Year	Job description	Bioassay required	SubCTWs monitored by bioassay	SubCTWs matched to coworker with bioassay	Effective percent monitored
65	DuPont 1981	106–110	1981	Remove/replace contaminated filter housing at CPF	22	6	14	91
66	DuPont 1981	127–129	1981	Remove/replace contaminated offgas duct at CPF	9	1	3	44
67	DuPont 1981	193,194	1981	Install hangers for CPF duct; respirator protection for line breaks	6	5	1	100
97	DuPont 1982	199	1982	Connect Alpha D&D off-gas exhaust header in trench; DuPont CTW with americium bioassay also worked	3	1	2	100
100	DuPont 1983a	145	1983	Remove/replace CPF waste removal system	1	1	0	100
103	DuPont 1983a	156	1983	Remove instrument in F wing; respirator protection for line breaks	2	0	0	0
104	DuPont 1983a	167	1983	Install temporary exhaust in TFF; respirator protection for hot duct work	3	0	0	0
106	DuPont 1983b	9	1983	Remove/replace CPF waste removal system; DuPont worker has AM bioassay) ^a	2	1	1	100
125	DuPont 1983b	220	1983	Install spray decon system in F-105; respirator protection required for line breaks in F-091 only	4	0	0	0
129	DuPont 1984a	216	1984	Remove/replace inflatable seal line on Cell 1 at CPF	2	0	0	0
130	DuPont 1984a	226	1984	Remove/replace inflatable seal line on Cell 1 at CPF	2	0	0	0
132	DuPont 1984b	5	1984	Drill for mounting for robot in CPF	3	1	2	100
133	DuPont 1984b	24	1984	Place robot in CPF	1	1	0	100
137	DuPont 1984c	247	1984	Remove/replace oxide capsule entry port from TFF; DuPont workers also worked alongside; both have Am bioassay.	3	2	1	100
153	DuPont 1985b	183–184	1985	Remove piping and electrical over TFF	8	3	5	100
154	DuPont 1985b	195–196	1985	Remove glove boxes in TFF, install ductwork	9	2	7	100
157	DuPont 1985b	227	1985	Remove 3 tubes from TFF; respiratory protection required only while in tent	3	0	0	0
158	DuPont 1985b	269–270	1985	Remove auxiliary vent system from TFF	7	1	6	100
160	DuPont 1985b	283–284	1985	Remove auxiliary vent system from TFF	7	3	0	42
164	DuPont 1985b	319–320	1985	Remove bricks from north wall of TFF	6	2	3	83
167	DuPont 1985b	395	1985	Remove pipes under Cell C of TFF	2	1	0	50
171	DuPont 1985b	520	1985	Remove pipes in Cell A of TFF; DuPont workers also worked; all 3 have Am bioassay	2	0	0	0

ATTACHMENT D
JOB PLAN – CONSTRUCTION TRADE WORKER DATA, 1972 TO 1989 (continued)

Job Plan	Reference	Pages	Year	Job description	Bioassay required	SubCTWs monitored by bioassay	SubCTWs matched to coworker with bioassay	Effective percent monitored
172	DuPont 1985b	551	1985	Remove Cell A of TFF, place in burial box; DuPont worker worked alongside; both have Am bioassay	3	1	2	100
174	DuPont 1986a	100	1986	Remove tile, paint floor for ALARA in TFF	3	3	0	100
175	DuPont 1986a	168	1986	Operate scrabblers inside TFF shields	3	3	0	100
176	DuPont 1986a	222	1986	Prepare area for brick wall in TFF	3	2	1	100
177	DuPont 1986a	228	1986	Remove concrete blocks and model forms in TFF	5	2	3	100
178	DuPont 1986a	250	1986	Remove TFF annulus exhaust	5	3	2	100
179	DuPont 1986b	15,39	1986	Cut TFF water tanks	6	2	4	100
180	DuPont 1986b	71	1986	Cut TFF water tanks	7	2	5	100
182	DuPont 1986b	108	1986	Cut TFF Cell B water shield, place in B-25 box	2	2	0	100
183	DuPont 1986b	122	1986	Replace top of plastic on TFF	2	2	0	100
184	DuPont 1986b	130	1986	Cut TFF Tank A	2	1	0	50
204	DuPont 1987	179	1987	Install wall in TFF	2	2	0	100
205	DuPont 1987	378	1987	Work on low-level drain in F-080, DuPont CTW also worked; has Am bioassay	1	0	0	0

a. ALARA = as low as is reasonably achievable; CPF = Californium Production Facility; D&D = decontamination and decommissioning; TFF = Target Fabrication Facility.