

# Hanford Site

## Special Exposure Cohort

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# Research Efforts

- Hanford is a complex site with diverse facilities, changing missions, and numerous operating contractors during their operational history
- Research challenges due to the nature of this site involved the review of large numbers of classified and unclassified documents as well as numerous interviews
- NIOSH has worked to review this complex facility to address many different SEC issues that change over the life of the Hanford facility
- SEC-00057 comprised most of the work because of the very long time period evaluated (1943 thru 1990)

# SEC Evaluation History at Hanford

- October 1, 1943 through August 31, 1946, for selected areas of Hanford (Petition 57 part 1)
- September 1, 1946 through December 31, 1968, for selected areas of Hanford (Petition 57 part 2)
- October 1, 1943 through June 30, 1972, for all areas of Hanford (this class subsumed previous two classes; Petition 152)
- July 1, 1972 through December 31, 1983, for all areas of Hanford (Petition 201)
- One class was not added to the SEC because NIOSH found no evidence of falsification of radiological records during the time period for that petition (SEC-00155)

# Research with Work Group

- SEC-0057 remains open before the Advisory Board and an issues matrix continues to be addressed
- During review of these issues NIOSH and the Work Group agreed to address specific group of workers during the period 1984 - 1990
- Documents and correspondence detailed employees were not routinely bioassay monitored
- NIOSH conducted detailed follow-up including review of monitoring records and worker interviews
- NIOSH recommends that a class be added to the SEC so workers' claims are processed while the remaining 1984-90 Hanford issues are addressed with the Advisory Board
- The latest Hanford Petition (SEC-00226) was qualified for evaluation March 13, 2015 as an 83.14

# Worker Class Findings

- DOE operated Hanford using a number of prime contractors who have many sub-contractors
- Each of these prime contractors were responsible for implementing a radiological control program including determining if and how individuals should be monitored
- Construction support services was conducted under a separate prime contractor

# Construction Services Prime Contractors

- **JA Jones Construction Services**
  - Prime contractor for construction services 1953 through February 28, 1987
  - Maintained its own radiological control program
- **Kaiser Engineers Hanford**
  - Beginning in December 1986, KEH transitioned to be the prime contractor for construction services
  - Full transfer March 1, 1987
  - Maintained its own radiological control program

# Construction Trade Workers

- Supported broad range of Hanford activities including research, fuel handling, plutonium processing, decontamination and decommissioning, and reactor outages
- Included high contamination and high airborne-radioactivity work
- Worked in areas such as the 100-N reactor, PUREX fuel reprocessing facilities, research facilities, and plutonium finishing facilities as well as vaults
- Review of JAJ and KEH operating procedures found detailed external dosimetry practices
- Bioassay programs to support these operations not addressed

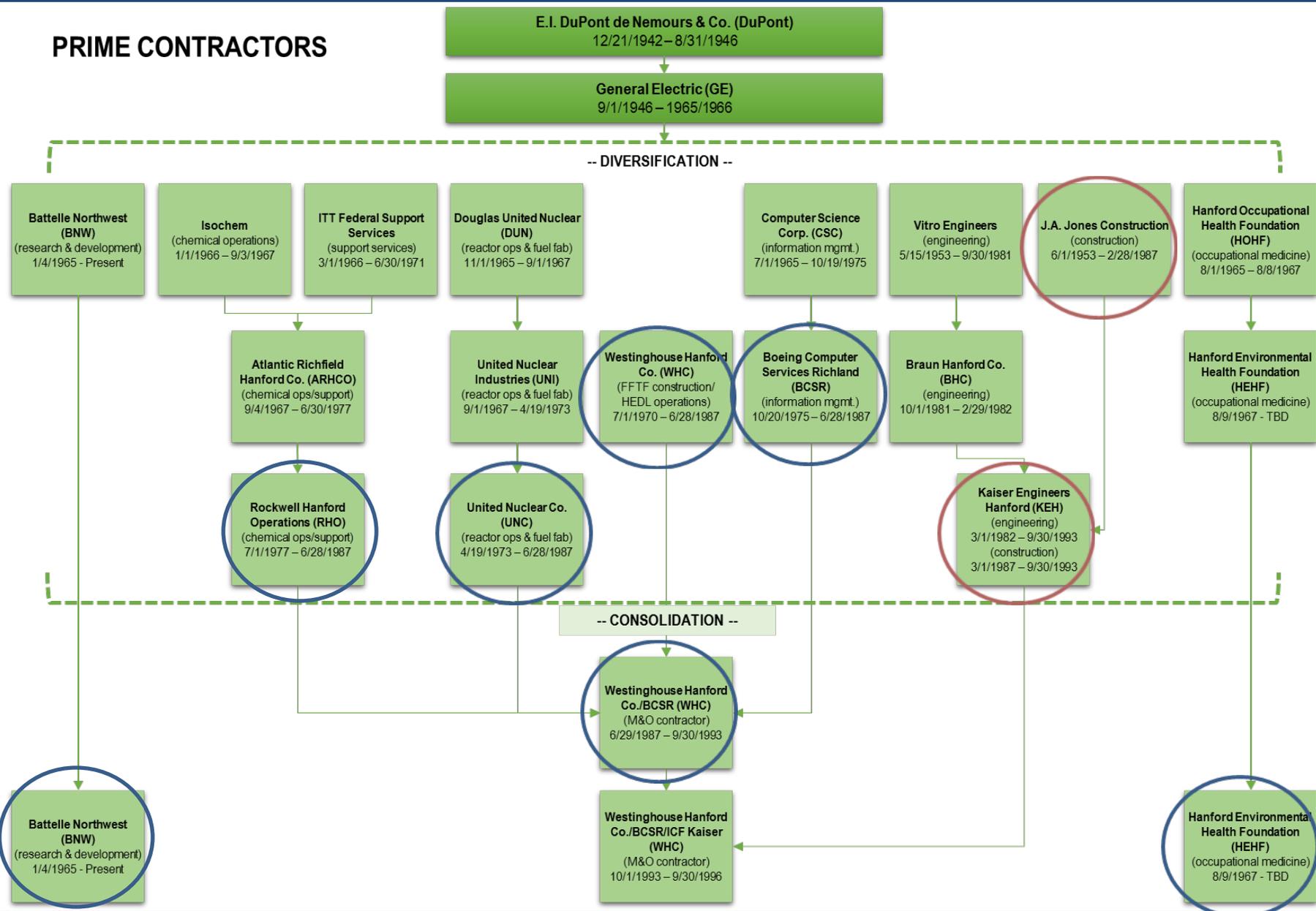
# Construction Trade Workers

- Work and fundamental radiological control practices very different than the work conducted by the other prime contractors
- Monitoring data for internal dose are available from other primes contractors
- JAJ and KEH had a small group of permanent workers
- JA Jones and KEH hired workers to complete construction services jobs on as needed basis

# Construction Trade Workers

- Sub-contractors were difficult for the Department of Energy to determine if they worked in the capacity of construction trades and most importantly which company is responsible for worker dosimetry
- NIOSH, in consultation with DOL and DOE, found that we cannot limit a class to JA Jones and Kaiser Engineers Hanford, and their sub-contractors
- DOE has identified that they have excellent employment records for the non-construction prime contractors
- Westinghouse Hanford Company subsumed many of the prime contractors in 1987, but it was not until 1993 when they absorbed the functions for construction services work

# PRIME CONTRACTORS

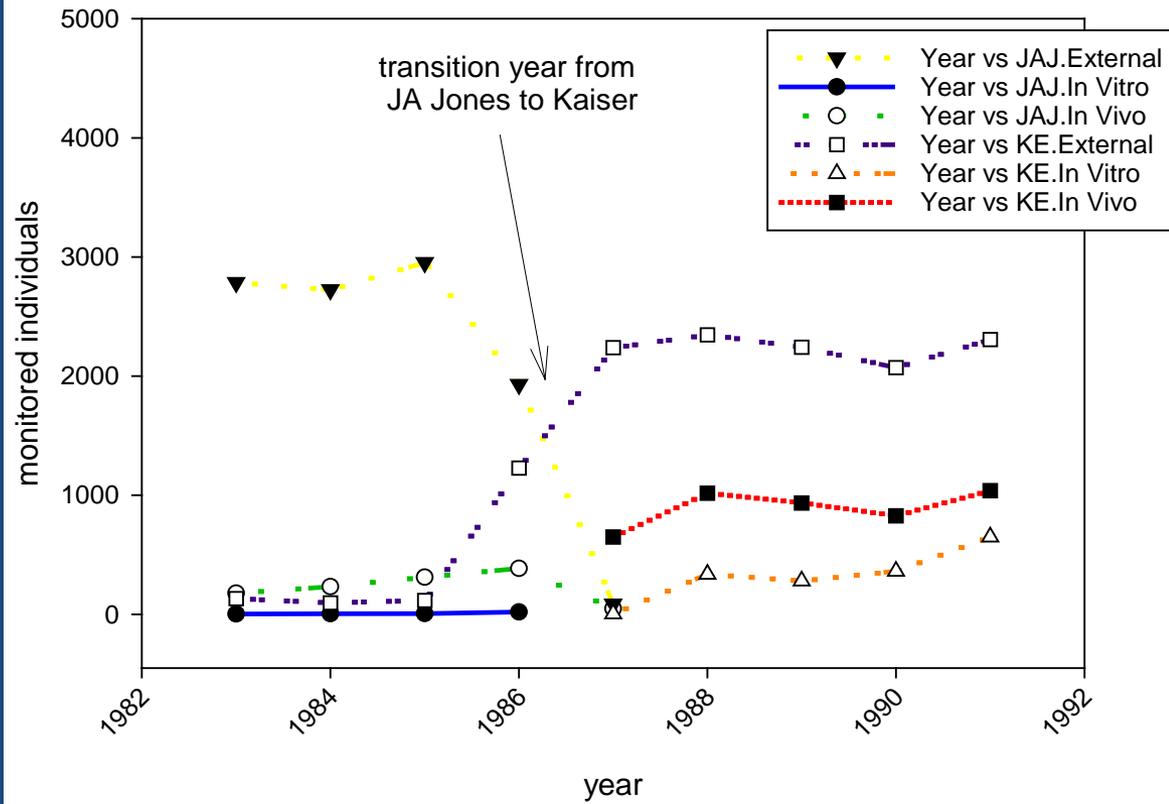


# Bases for NIOSH Findings

- NIOSH found a virtual absence of monitoring of JA Jones employees for internal dose during the period 1/1/1984 through 2/28/1987
- KEH recognized the bioassay problem for construction trades and issued a memo to PNL in February 1988 that they were looking to substantially increase the monitoring for their workers
- However for budget reasons the implementation of the program was delayed (May 1988)
- NIOSH reviewed the data for both JAJ and KEH during these time periods to evaluate the frequency of routine bioassay, reason codes (routine or pre-job), and specific types of bioassay (chest counting, plutonium urinalysis) to assess when the program had reached similar levels with the rest of the Hanford prime contractors
- NIOSH reached the determination that by the end of 1990 KEH had implemented a program that allows dose reconstruction using personal dosimetry data or coworker data for construction trades workers

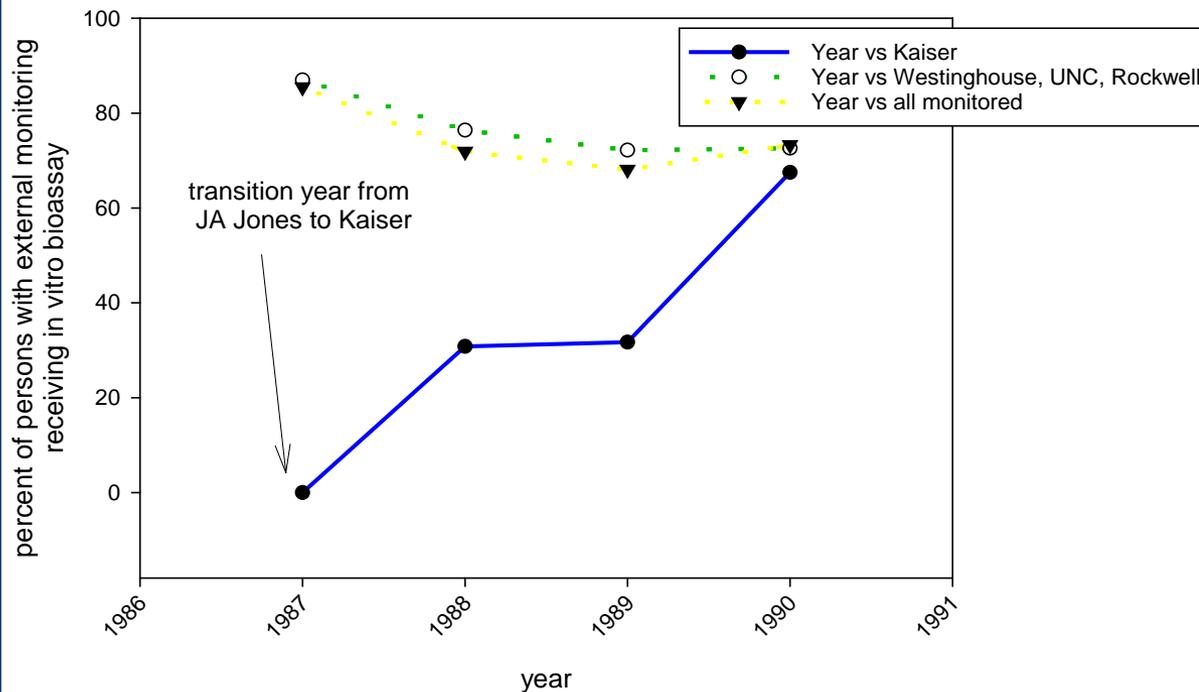
# Monitoring

Available Monitoring Data from REX for  
JA Jones, Kaiser Engineers and Subcontractors



# Monitoring

Comparison of Kaiser Engineers Hanford Monitoring Practices to Other Prime Contractors and All Monitored Hanford Employees for *In Vitro* Bioassay



# Contractors

- JAJ, KEH employees and all sub-contractors are included in the recommended class
- NIOSH will use any internal dose data that may be available for individual claims
- NIOSH will use external and medical dose to complete partial dose reconstruction
- NIOSH will continue to perform full dose reconstructions for DOE employees and all the specifically identified prime contractors excluded from the class during this period
- NIOSH and the Advisory Board will continue to evaluate the remaining issues at Hanford during the 1984 through 1990 time period.

# DR Feasibility

**Table 7-1: Summary of Feasibility Findings for SEC-00226  
January 1, 1984 through December 31, 1990**

Source of Exposure	Reconstruction Feasible (January 1, 1984 through June 28, 1987)	Reconstruction Feasible (June 29, 1987 through December 31, 1990)	Reconstruction Not Feasible (January 1, 1984 through December 31, 1990)
<b>Internal</b>	Employees of: <ul style="list-style-type: none"> <li>- Department of Energy</li> <li>- Battelle Memorial Institute</li> <li>- Westinghouse Hanford Company</li> <li>- Hanford Environmental Health Foundation</li> <li>- Rockwell Hanford Operations</li> <li>- Boeing Computer Services Richland</li> <li>- UNC Nuclear Industries</li> </ul>	Employees of: <ul style="list-style-type: none"> <li>- Department of Energy</li> <li>- Battelle Memorial Institute</li> <li>- Westinghouse Hanford Company</li> <li>- Hanford Environmental Health Foundation</li> </ul>	ALL OTHER employees of the Department of Energy contractors and subcontractors

# DR Feasibility

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January 1, 1984 through December 31, 1990

	Reconstruction Feasible (January 1, 1984 through June 28, 1987)	Reconstruction Feasible (June 29, 1987 through December 31, 1990)	Partial Reconstruction Feasible
<b>External</b>	Employees of: - Department of Energy - Battelle Memorial Institute - Westinghouse Hanford Company - Hanford Environmental Health Foundation - Rockwell Hanford Operations - Boeing Computer Services Richland - UNC Nuclear Industries	Employees of: - Department of Energy - Battelle Memorial Institute - Westinghouse Hanford Company - Hanford Environmental Health Foundation	ALL OTHER employees of the Department of Energy contractors and subcontractors
- Gamma	X	X	X
- Beta	X	X	X
- Neutron	X	X	X
- Occupational Medical X-ray	X	X	X

# Effects on Claims

**Table 5-1: No. of Hanford Claims Submitted Under the Dose Reconstruction Rule**

Description	Totals
Total number of claims submitted for dose reconstruction	5,384
Total number of claims submitted for energy employees who worked during the period under evaluation (January 1, 1984 through December 31, 1990)	2,175
Number of dose reconstructions completed for energy employees who worked during the period under evaluation (January 1, 1984 through December 31, 1990) (i.e., the number of such claims completed by NIOSH and submitted to the Department of Labor for final approval)	1,801
Number of claims for which internal dosimetry records were obtained for energy employees who worked during the period under evaluation (January 1, 1984 through December 31, 1990)	1,532
Number of claims for which external dosimetry records were obtained for energy employees who worked during the period under evaluation (January 1, 1984 through December 31, 1990)	2,125

- Review of cases that have and SEC cancer by NIOSH indicates that there are 723 cases that have a dose reconstruction with a POC <50% and that there are also 29 cases at NIOSH awaiting a dose reconstruction that may need further evaluation
- Department of Energy has indicated that they have substantial new information on employment of sub-contractors that may also have additional impact

# Class Definition

All employees of Department of Energy contractors and subcontractors (excluding employees of the following Hanford prime contractors during the specified time periods: Battelle Memorial Institute, January 1, 1984 through December 31, 1990; Rockwell Hanford Operations, January 1, 1984 through June 28, 1987; Boeing Computer Services Richland, January 1, 1984 through June 28, 1987; UNC Nuclear Industries, January 1, 1984 through June 28, 1987; Westinghouse Hanford Company, January 1, 1984 through December 31, 1990; and Hanford Environmental Health Foundation, January 1, 1984 through December 31, 1990) who worked at the Hanford site in Richland, Washington, during the period from January 1, 1984 through December 31, 1990, for a number of work days aggregating at least 250 work days, occurring either solely under this employment, or in combination with work days within the parameters established for one or more other classes of employees included in the Special Exposure Cohort.