

# **SC&A Evaluation of CPP Class Definition Requiring Evidence of External Dosimetry (1963–1974)**

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**Contractor to:**

**Advisory Board on Radiation and Worker Health/ABRWH  
Center For Disease Control and Prevention**

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# Background

- March 12, 2015: NIOSH releases Petition Evaluation Report for SEC-00219, Idaho National Laboratory (INL)
- March 26, 2015:
  - NIOSH presents the Evaluation Report to the ABRWH
  - SC&A is tasked with evaluating the proposed class definition with a focus on available dosimetry records at the Chemical Processing Plant (CPP)
- June 29, 2015: SC&A releases it's review of the CPP SEC class definition

# NIOSH Class Definition

*“All employees of the Department of Energy, its predecessor agencies, and their contractors and subcontractors who worked at Idaho National Laboratory in Scoville, Idaho, and were monitored for external radiation at the Idaho Chemical Processing Plant (CPP) (e.g., at least one film badge or TLD dosimeter from CPP) between January 1, 1963 and December 31, 1974 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 in the Special Exposure Cohort.”*

# Rationale for SEC Class

- Contamination control program was deemed ineffective
- Bioassay program was incident-based
- In vivo program deemed inadequate to detect chronic low-level alpha/beta exposures
- Insufficient available air monitoring data
- *“The potential for exposures to transuranics that had been separated from the mixed fission products makes it unlikely that exposures to alpha-emitters can be reconstructed from January 1963 through December 1974.” (SEC ER, pg. 187)*

# SC&A Investigative Approach

1. Assessment of available interviews with former workers
2. Evaluate claimant records to assess the dosimetry program in the context of the current class definition

# Summary of Interview Assessment

- 50 Sets of worker interview summaries
  - Interviews conducted by the Board, NIOSH, and SC&A in June, September, and November of 2014
  - Not all of the worker interview summaries have been finalized
  - Available summaries affirm universal badging of CPP personnel entering radiological areas
- Recommendations:
  - Continue line of inquiry with future interviews and a focus on badging policies
  - Evaluate interviews that are not yet available

# Goals of SC&A Claimant Evaluation

1. Characterize the external dosimetry program for the completeness/availability of records
2. Determine the extent to which “gaps” exist and explore potential explanations:
  - Not monitored, but not likely exposed
  - Not monitored, but likely should have been
  - Moved to another location on site or likely not employed at INL
3. Evaluate if the class definition captures all relevant workers

# SC&A Approach and Methods

- Analyze a subset of claimants and relevant records/information
  - Available dosimetry records
  - Department of Labor (DOL) case files
  - Computer-Assisted Telephone Interview (CATI)
- Iterative process used in selection of claimants for focused review
- Sampling is NOT a representative cross-section of the claimant population!

## SC&A Approach and Methods (cont.)

- Initial group of claimants chosen to cover several different job types (security, engineers, operators, laborers, maintenance, construction, instrument techs, HP techs, firemen, etc.)
- Based on initial assessment, review focused on subcontract trades workers with intermittent employment
- 30 total claims characterized (initial group + focused group)

# SC&A Approach and Methods (cont.)

Final Spread of Job Types Among 30 Claims

<b>Job Category</b>	<b># Claims Reviewed</b>
Laborer/Construction	10
Pipefitter/Welder	4
Engineer/Technician	4
Maintenance	2
Electrician	2
Visitor/Unknown	2
Security	1
Machinist	1
Radiographer	1
HP Technician	1
Fireman	1
Equipment Operator	1

# Available Work Location Information

- Area Dosimetry “Cycle” Reports (routine monitoring)
- Temporary and/or Visitor Badges
- Internal Monitoring (in vivo, urinalysis)
- Incident Reports (generally medical, not radiological)
- CATI and/or other Interview Statements
- Location File Cards
- Master Security File Card

# Example: Area Dosimetry Cycle Report

09/13/74 PAGE 1

EPFGON AREA EXPOSURE REPORT  
SUMMARY DATES / / 000

PERIOD COVERED FROM 08/01/74 TO 08/31/74  
SLIDING QUARTER / / / /

ARRINGTON CONSTRUCTION COMPANY  
CALENDAR QUARTER 07/01/74 - 08/31/74

BADGE	QTR TO DATE			YR TO DATE			CONTR/OC6		APN/115001		DS	DATE/OS	RC	XC	CURRENT PERIOD			PSN	
[REDACTED]	TOTALS	CQ	460	520	00	565	795	00	00	00	00	3	08/07/74	02	00	00	00	00	9
[REDACTED]	TOTALS	CQ	1695	1075	00	1655	2310	00	00	00	00	3	08/31/74	02	00	505	165	00	11
[REDACTED]	TOTALS	CQ	00	00	00	00	475	00	00	00	00	3	08/31/74	02	00	00	00	00	3
[REDACTED]	TOTALS	CQ	280	450	00	280	480	00	00	00	00	3	08/31/74	02	00	280	00	00	4
[REDACTED]	TOTALS	CQ	00	00	00	00	00	00	00	00	00	3	08/31/74	02	00	00	00	00	1

Contractor Code Designation

Area Code Designation

Personal Sequential Number?

# Example: Location File Card

**LOCATOR FILE CARD**

Area Code Designation

Contractor Designation

LOCATOR FILE CARD		NAME			CARD CODE	EFFECTIVE DATE	EFFECTIVE REASON	CONTRACTOR CODE	SHIFT	LOCATION CODE	HEALTH BADGE NUMBER
CONT. CODE	AREA CODE	DATE OF ISSUE			MO.	DAY	YR.				
006	115	8-27-74	TF								
037		7-11-74									
006	115	9-4-74	TF								
006	115	10-1-74									
006	115	TF	11-1-74								

# Example: Master Security File Card

NAME ON SECURITY CARD IS [REDACTED]

BADGES

EMPLOYER	ISSUED	DESTROYED	TERMINATED
FLUOR CORP	2/11/1963	3/11/1963	3/11/1963
HK FERGUSON	5/24/1963	5/27/1963	5/24/1963
KELLOGG CO	12/30/1965	1/5/1966	12/31/1965
ARRINGTON CONST-DETWEILER BROS	12/5/1966	1/24/1967	1/20/1967
ANL-ARRINGTON CONST	1/30/1967	5/11/1967	5/5/1967
ANL-ARRINGTON CONST	5/15/1967	6/22/1967	6/5/1967
ANL-AIMAN CONST	4/10/1971	6/16/1971	6/14/1971
H.S. WRIGHT	9/21/1971	11/1/1971	10/22/1971
ORMOND CONST	10/3/1972	4/6/1973	3/15/1973
MK	2/5/1976	3/19/1976	3/17/1976
HUNTER SAUCERMAN CONST	11/19/1976	12/1/1976	11/30/1976
WEST-ORMOND CONST	5/12/1977	5/27/1977	5/27/1977
JONES-BOECON	6/10/1977	11/6/1978	8/29/1980
JONES-BOECON	4/6/1978	9/3/1980	
CATALYTIC-BOECON	9/2/1980		

Indicates  
"ANL"



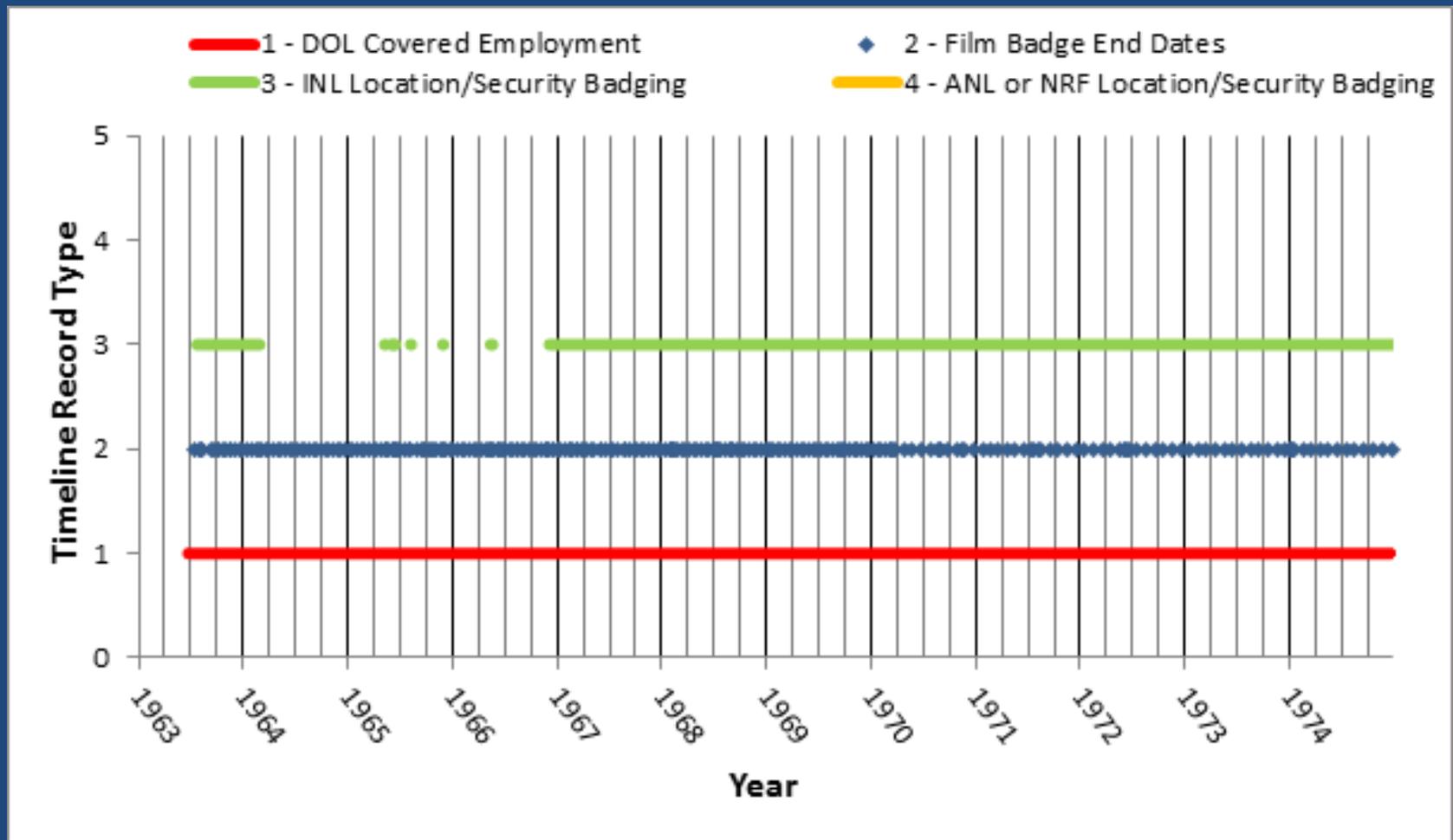
Indicates  
"NRF"



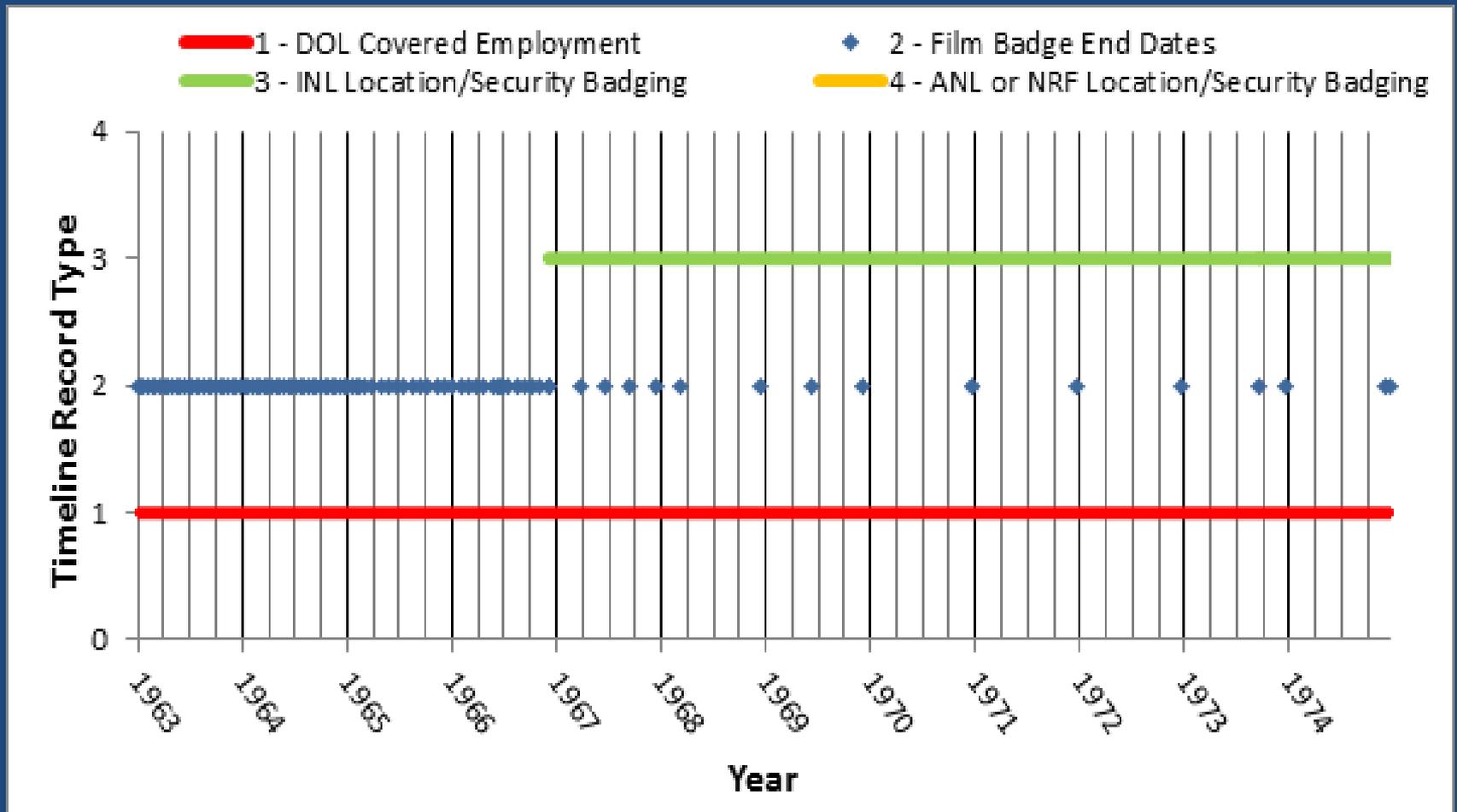
# Results of 30 Claim Reviews

- SC&A developed five “categories” of claimants based on the available dosimetry:
  - **Category 1:** *No gaps observed in dosimetry records*
  - **Category 2:** *Gaps appear to exist, but records are likely complete based on “PSN number”*
  - **Category 3:** *Gaps exist in monitoring records, but no evidence of exposure during unmonitored periods identified*
  - **Category 4:** *Gaps exist in monitoring records, but there is some indication of potential exposure during unmonitored periods*
  - **Category 5:** *Only annual dosimetry summaries available*

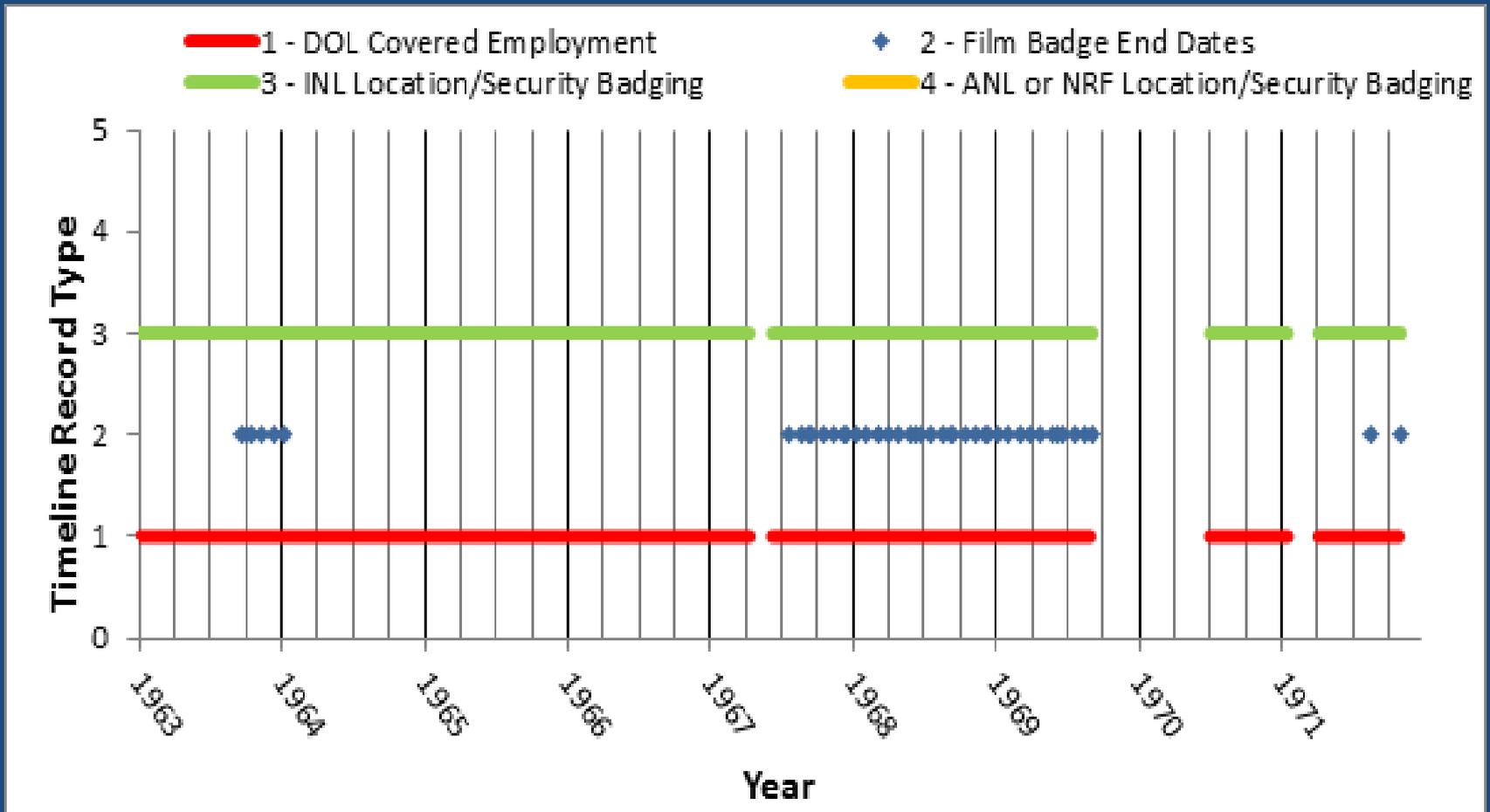
# Example of Category 1



# Example of Category 2



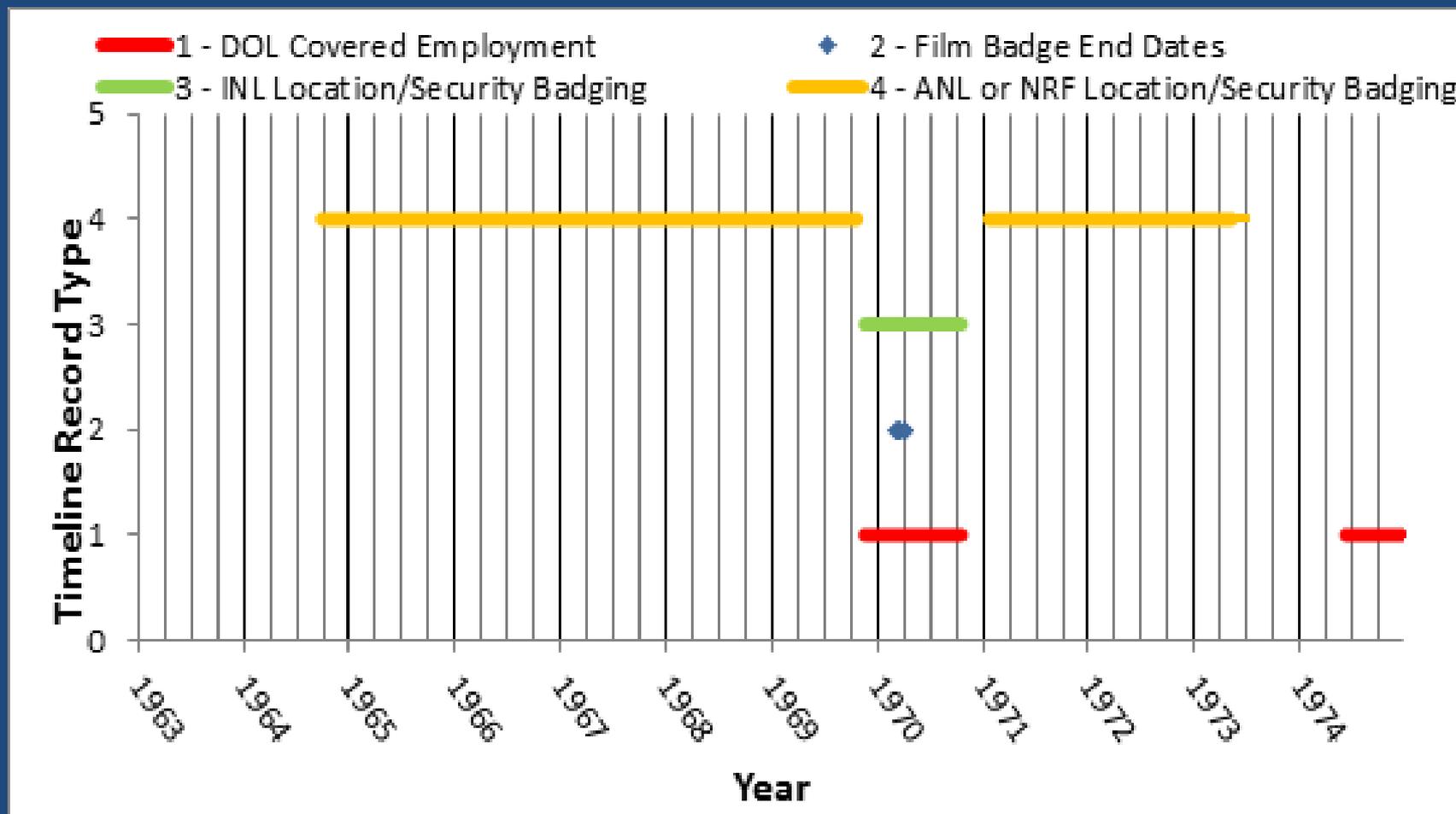
# Example of Category 3



# Notes on Category 3 Example

- In 1964, there are area dosimetry cycle reports, but no dose is recorded and record indicates “not in area”
- External Dosimetry from June 1967–September 1969 is a combination of CPP and material test reactor (MTR) areas
- July 1970 to January 1971, the Energy Employee (EE) worked for “H.S. Wright,” but no location information is available
- No bioassay or in vivo samples were submitted during the Special Exposure Cohort (SEC) period
- CATI report with survivor: “*specific [work] locations are unknown.*”

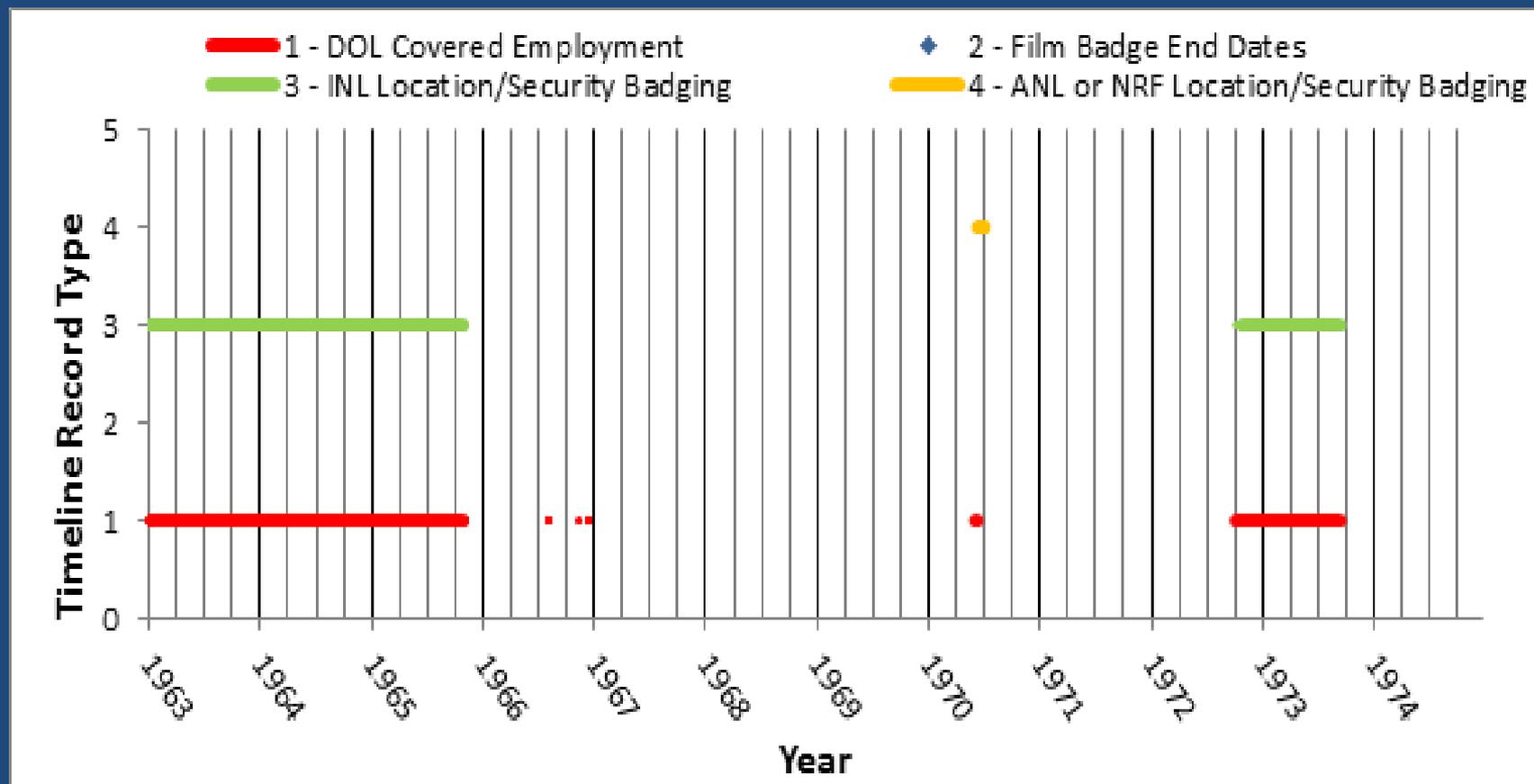
# Example 1 of Category 4



# Notes on Category 4, Example 1

- Claimant provides a detailed incident description in the CATI report (see Section D.4 for details):
  - Type of work performed
  - Specific external doses accrued
  - Actions taken as a result of the incident
- The exact dates of the incident are unknown
- Based on available information (available dosimetry, bioassay monitoring, employment dates) it is possible the incident occurred outside of the available badging period

# Example 2 of Category 4



# Notes on Category 4, Example 2

- Location file card only indicates employer, not location, during SEC
- From CATI Report
  - Building/Location: *“At CPP, LOFT project, SL-1”*
  - Frequency of Badge Worn: *“Daily”*
  - Badge Exchange Frequency: *“Several times a week”*
  - *“Area of contamination were all over the site... CPP was the most contaminated area. There were a lot of 55 gallon waste drums stored there. They had a lot of spills and evacuations which required restriction from the area for 2–3 days a time.”*
  - *“CPP a lot of years. This was a very contaminated area because of the stack emissions. Worked on the calciner project.”*
- Location file card indicates a brief assignment (~2 months) to CPP in 1978 (no dosimetry badge found)

# Category 5

- No dosimetry cycle reports or temporary/visitor badges in NIOSH/OCAS Claims Tracking System (NOCTS)
- Only annual summary record available (see below)



[REDACTED]  
 [REDACTED]  
 [REDACTED] 12 [REDACTED]

1970	4	0	145	0	0	2
1971	6	0	0	0	0	2
1972	7	0	0	0	0	2
1973	5	0	0	0	0	2
1974	5	0	0	0	0	2
1975	7	0	0	0	0	2
1976	8	0	0	0	0	2
1977	6	0	0	0	0	2
1978	5	0	36	0	0	2
1979	6	0	0	0	0	2
1980	8	0	0	0	0	2
1981	6	0	0	0	0	2
1982	8	0	0	0	0	2
1983	4	0	0	0	0	2
1984	4	0	25	0	0	2
1985	4	0	0	0	0	2
TOTAL	0	0	206	0	0	2

## Category 5 (cont.)

- Without the individual dosimetry reports, it is not possible to ascertain where the worker was badged.
- Prompted SC&A to investigate how many claims fit the Category 5 criteria:
  - SC&A identified 144 Category 5 claims out of 796 claims who worked during the SEC period.
  - Of those 144 Category 5 claims, 39 had DIRECT evidence of assignment to CPP during the SEC (i.e., location file card indicates CPP).
  - 12 of the 39 were subcontract workers.

# Finding 1

**The dosimetry records contained in NOCTS are not sufficient to accurately determine if a given claimant worked at the CPP (and thus qualifies for the SEC) for at least some workers, due to the absence of external dosimetry records designating the area worked.**

# Supplemental Records Captured

- Technical Call between NIOSH, SC&A, and the Work Group took place on April 22, 2015
  - NIOSH informed SC&A that significant additional dosimetry records had been captured at INL and uploaded to the Site Research Database (SRDB)
  - Subsequent to that meeting, NIOSH provided SC&A with a listing of SRDB ID numbers to quickly access the records
  - Uploaded files include over 7,200 pages of CPP-related dosimetry files, including Routine Area Cycle Reports and Visitor/Temporary Badge reports

# Supplemental Records Captured (cont.)

- SC&A had identified 39 claimants with insufficient NOCTS records AND direct evidence of assignment to CPP.
- 12 of these 39 claims were employed by subcontractors at INL.
- SC&A carefully searched the supplemental records for these claims.
- SC&A was able to identify “at least one” dosimeter badge for these claimants for 36 out of the 39 cases.
- Remaining three cases could not be located in the supplemental records.

# Case 1

- Construction worker and Equipment Operator with Arrington Construction
- SEC employment ~1.5 months
- Location File Card indicates “CPP Cx Quarterly” under area code; handwritten notation “TF” also likely indicates “temporary film”
- The claimant had positive external doses during 1974 (per the annual summary card)

# Case 1 (cont.)

- From CATI
  - *“said he thinks he may have had a badge at one time but then the badges were taken away. He does not remember if he wore a dosimeter badge.”*
  - *“[The EE] cleaned up materials that leaked out of the stack... loaded the materials into 55 gallon plastic line drums.”*
  - *“it is his understanding that the facility had to bury the backhoe he used to clean up materials that leaked from the stack because it was so contaminated.”*
  - *“He said there was a trailer that had a monitored [sic] attached to it and a man walked around with a Geiger counter as he worked. He does not recall how many days the project lasted but it was at least a couple.”*
  - *What precautions were taken to protect you: “Coveralls (he had to change into fresh coveralls every two hours”*
  - *“said they walked through some form of arc to be checked for radiation”*

## Case 2

- Claimant worked as a construction laborer for H.S. Wright (~5.5 years in SEC period)
- Conflicting Information on Badging Policies
  - CATI indicates no badging took place
  - DOL Initial Case forms do indicate badging
  - Annual summary indicates external monitoring during year when Location File Card indicates CPP
- Location File Card indicates “CPP-Cx Quarterly” for the area code designation
- From CATI:
  - Work Location: *“Unknown, 3–4 miles northwest of central”*
  - *“Cleanup work, shovel work, and whatever needed to be done as laborer... they were called to do a clean-up at Wrights, just over the fence. They were pulled out because they said it was ‘too hot’”*

## Case 3

- Claimant worked as a Heavy Equipment Operator for H.S. Wright for five separate periods totaling ~4 years of SEC employment.
- Location file card contains three separate periods of assignment at CPP indicating “CPP-Cx Construction” and “CPP-Cx Monthly.”
- Location file card also indicates dual assignment at MTR during two of the three periods.
- Claimant registered positive penetrating dose during these two periods (per annual exposure summaries). Third period had recorded dose of zero.
- CATI report was performed with the survivor.

## Finding 2

Based on SC&A's evaluation of recently captured supplemental dosimetry records, as well as observed claimants with inadequate NOCTS records, it is apparent that the reviewed claimants who worked for the Atomic Energy Commission (AEC) or the prime contractor and who have direct evidence of work at CPP have at least one corresponding dosimeter badge associated with CPP to allow for SEC determination. However, SC&A could not locate corresponding dosimetry in the supplemental records for some claimants who worked as subcontractor trades workers and who have direct evidence of being assigned to CPP. Thus, SC&A was unable to validate the SEC class definition as proposed by NIOSH.

# SC&A Summary Conclusions

- It is SC&A's opinion that the probability of incorrect exclusion of AEC and/or prime contract employees from the SEC based on the absence of dosimetry records is low.
- SC&A was unable to locate supplementary dosimetry records for 3 of the 12 subcontract workers who were identified as having insufficient NOCTS records and direct evidence of assignment to the CPP. This suggests a problem with how construction trades workers were badged and/or how their company records were retained.

# SC&A Recommendations

- To the extent feasible, determine whether reasonable evidence exists to mitigate the missing dosimetry record(s) for the identified subcontract claims and other potential affected claimants.
- Instructive to conduct focused interviews with intermittent or transient subcontractors and trades workers to assure that the badging of individuals entering relevant areas was universal.
- Ascertain what subcontractors supported radiological work activities at CPP, and potentially obtain rosters of workers who were involved in such activities.