

**ENCLOSURE 2
ATTACHMENT 13**

SHINE MEDICAL TECHNOLOGIES, INC.

**SHINE MEDICAL TECHNOLOGIES, INC. APPLICATION FOR CONSTRUCTION PERMIT
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION**

**TRAINING AND QUALIFICATION RECORDS
ATKINS NUCLEAR SOLUTIONS US INDIVIDUAL #2**

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FORM-CS-01
Nuclear Criticality Safety Engineer Training and Qualification
Competency Area 1 – Formal Education

Name:				
<p>List all degrees completed in the table below. A check mark or "X" in the box in the column labeled "verified" indicates evidence of the degree (i.e., a copy of transcripts or the diploma) is on file. This column is filled out by the Criticality Safety Department Manager. While all degrees should be listed, verification is only required for one degree at the B.S. level or higher.</p>				
Degree	Major	Institution	Date Conferred	Verified
BS	NE	UNIV. OF WISCONSIN - MADISON	5/1989	X
ME	PROF. PRACTICE	UNIV. OF WISCONSIN - MADISON	5/2003	X
<p>If the candidate does not have at least a B.S. in nuclear engineering or physics, the Criticality Safety Department Manager shall indicate in the box below why the achieved degree is acceptable.</p> <div style="border: 1px solid black; height: 100px; width: 100%; margin-top: 5px;"></div>				
<p>Acceptance By signing below, the Criticality Safety Department Manager attests the candidate has met the requirements for competency area 1.</p> <p>Printed Name/Signature/Date: 8/6/07</p>				

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FORM-CS-02
Nuclear Criticality Safety Engineer Training and Qualification
Competency Area 2 – NCS Training

Name:				
Part 1: Work Experience. Only indicate criticality safety work experience. Note: The Criticality Safety Department Manager puts an "X" in the verified box to indicate the experience has been verified via review of the candidates resume and discussions with managers and/or peers				
Employer	Site	Years Worked	DOE or NRC?	Verified
EG&G	ROCKY FLATS	1 1/2	DOE	X
LOCKHEED-MARTIN	PADUCAH GDP	1 1/2	DOE/ NRC	X
WATKINS & ASSOCIATES / FRANKSE FREDMAN & ASSOC	ROCKY FLATS	7	DOE	X
TRS/FLUOR	HANFORD	1 1/2	DOE	X
NSA	WESTINGHOUSE - COLUMBIA	2	NRC	X

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FORM-CS-02
Nuclear Criticality Safety Engineer Training and Qualification
Competency Area 2 – NCS Training

Name:			
Part 3: NCS Training as Part of College Degree. If your school offers specialized coursework in criticality safety, and/or you did a graduate thesis in the criticality safety field, list the pertinent information below. The Criticality Safety Department Manager puts an "X" in the verified box to indicate he has confirmed the coursework and/or thesis from transcripts and/or a copy of the thesis.			
Title of Course/Thesis	Institution	Year Completed	Verified
			See Exemption

Certification By signing below the employee certifies that all information on this form is true and accurate to the best or his/her knowledge.	
Employee Signature: _____	Date: 8/6/07
Acceptance Signature below by the Criticality Safety Department Manager attest the employee has fulfilled all requirements for competency area 2.	
Printed Name/Signature: _____	Date: 8/6/07
Comments:	

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FORM-CS-02
Nuclear Criticality Safety Engineer Training and Qualification
Competency Area 2 – NCS Training

Name:

Training Exemptions for Experienced NCS Engineers: For experienced NCS Engineers, full completion of the NCS Engineer Training and Qualification Program may not be required. Provide justification for any exemption that will be granted to the individual. In the previous FORM-CS-02 entries, acknowledge the exemption by recording "See exemption" in the corresponding approval locations.

Exemption Justification:

has extensive prior criticality safety experience at the Rocky Flats Plant, the Paducah Gaseous Diffusion Plant, the Hanford Site, and the Westinghouse Columbia Fuel Fabrication Facility. Related criticality safety experience included criticality safety analysis and technical review of criticality safety evaluations for moderated and unmoderated systems involving plutonium and uranium systems. Performance of criticality safety analyses at the respective sites required be well-versed in basic criticality / neutronics concepts, criticality safety theory, the various national standards put forth in the ANSI/ANS 8 Series, and facility authorization basis requirements for both U.S. Department of Energy and Nuclear Regulatory Commission facilities.

As part of the qualifications for and ongoing practice in the various site NCS Engineering positions, demonstrated proficiency in the following topic areas related to development, technical review, and implementation of criticality safety analyses and evaluations:

- Multi-parameter control
- Double contingency
- Favorable / unfavorable geometry
- Treatment of bounding assumptions
- Computer code modeling involving SCALE and MCNP
- Fault tree theory
- Criticality accident alarm coverage
- Criticality safety posting / signs
- Criticality safety of storage arrays of SNM
- Performance of audits, inspections, and training related to criticality safety in support of plant operations
- Integration of criticality safety program elements and evaluations with facility authorization basis elements

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Name:

Certification

By signing below the employee certifies that all information on this form is true and accurate to the best of his/her knowledge.

Employee Signature: _____

Date: 8/6/07

Acceptance

Signature below by the Criticality Safety Department Manager attest the employee has fulfilled all requirements for competency area 2.

Printed Name/Signature: _____

Date: 8/6/07

Comments:

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FORM-CS-03
Nuclear Criticality Safety Engineer Training and Qualification
Competency Area 3 – Required Reading

Name:	
Part 1: ANSI and ASTM Standards These standards are required reading for both the DOE and NRC competency. Refer to the NCS T&Q procedure for guidance and expectations related to these standards. Note that all of these standards are available on the NSA Safety Net.	
Standard	Date Completed
ANSI/ANS 8.1, <i>Nuclear Criticality Safety in Operations with Fissionable Materials Outside Reactors</i>	1/1992
ANSI/ANS 8.3, <i>Criticality Accident Alarm System</i>	1/1992
ANSI/ANS 8.5, <i>Use of Borosilicate-Glass Raschig Rings as a Neutron Absorber in Solutions of Fissile Material</i>	1/1992
ANSI/ANS 8.6, <i>Safety in Conduction Subcritical Neutron-Multiplication Measurements In Situ</i>	1/1992
ANSI/ANS 8.7, <i>Guide for Nuclear Criticality Safety in the Storage of Fissile Materials</i>	1/1992
ANSI/ANS 8.9, <i>Nuclear Criticality Safety Criteria for Steel-Pipe Intersections Containing Aqueous Solutions on Fissile Materials</i>	1/1992
ANSI/ANS 8.10, <i>Criteria for Nuclear Criticality Safety Controls in Operations With Shielding and Confinement</i>	1/1992
ANSI/ANS 8.12, <i>Nuclear Criticality Control and Safety of Plutonium-Uranium Fuel Mixtures Outside Reactors</i>	1/1992
ANSI/ANS 8.14, <i>Use of Soluble Neutron Absorbers in Nuclear Facilities Outside Reactors</i>	8/2007
ANSI/ANS 8.15, <i>Nuclear Criticality Control of Special Actinide Elements</i>	1/1992
ANSI/ANS 8.17, <i>Criticality Safety Criteria for the Handling, Storage and Transportation of LWR Fuel Outside Reactors</i>	1/1992
ANSI/ANS 8.19, <i>Administrative Practices for Nuclear Criticality Safety</i>	6/1997
ANSI/ANS 8.20, <i>Nuclear Criticality Safety Training</i>	1/1992
ANSI/ANS 8.21, <i>Use of Fixed Neutron Absorbers in Nuclear Facilities Outside Reactors</i>	6/1997
ANSI/ANS 8.22, <i>Nuclear Criticality Safety Based on Limiting and Controlling Moderators</i>	8/2007
ANSI/ANS 8.23, <i>Nuclear Criticality Accident Emergency Planning and Response</i>	8/2007
ANSI/ANS 10.4, <i>American National Standard Guidelines for the Verification and Validation of Scientific and Engineering Computer Programs for the Nuclear Industry</i>	1/1992
ASTM C 1215, <i>Standard Guide for Preparing and Interpreting Precision and Bias Statements in Test Method Standards Used in the Nuclear Industry</i> , 1992, reapproved 1997, ASTM International	8/2007
ASTM C 1592, <i>Standard Guide for Nondestructive Assay Measurements</i> , 2004, ASTM International	8/2007
ASTM D 3648, <i>Standard Practices for the Measurement of Radioactivity</i> , 2004, ASTM International	8/2007

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FORM-CS-03
Nuclear Criticality Safety Engineer Training and Qualification
Competency Area 3 – Required Reading

Name:	
<p>Part 2: DOE Regulations, Orders, Guides, and Standards. This material is required reading only for the DOE competency. Refer to the NCS T&Q procedure for guidance and expectations related to this material. Note that links to all of these documents are available on the NSA Safety Net.</p>	
Document	Date Completed
DOE Policy 450.4, <i>Safety Management System Policy</i>	8/2007
DOE Order 420.1, <i>FACILITY SAFETY, Section 4.3, Nuclear Criticality Safety</i> (supercedes DOE Order 5480.24)	5/2004
DOE Order 425.1C, <i>Start-up and Restart of Nuclear Facilities</i>	8/2007
DOE G 421.1-1, <i>Criticality Safety Good Practices Program Guide for DOE Non-Reactor Nuclear Facilities</i>	10/2003
DOE G 421.1-2, <i>Implementation Guide for Use in Developing Documented Safety Analyses to Meet Subpart B of 10 CFR 830</i>	10/2003
DOE G 423.1-1, <i>Implementation Guide for Use in Developing Technical Safety Requirements</i>	10/2003
DOE G 424.1-1, <i>Implementation Guide for Use in Addressing Unreviewed Safety Question Requirement</i>	10/2003
DOE G 450.4, <i>Integrated Safety Management System Guide</i>	8/2007
DOE-STD-1158-2002, <i>Self-Assessment Standard for DOE Contractor Criticality Safety Programs</i>	8/2007
DOE-STD-3007-93, (Change Notice No. 1, September 1998) <i>Guidelines for Preparing Criticality Safety Evaluations at Department of Energy Non-Reactor Nuclear Facilities</i>	6/1997
DOE-STD-3009-94, <i>Preparation Guide for U.S. Department of Energy nonreactor Nuclear facility Safety Analysis Report</i>	6/1997
DOE-STD-3011-2002, <i>Guidance for Preparation of Basis for Interim Operation (BIO) Documents</i>	10/2003
10 CFR part 830, <i>Nuclear Safety Management</i>	8/2007
Regulatory Guide 3.71, <i>Nuclear Criticality Safety Standards for Fuels and Material Facilities</i>	8/2007

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FORM-CS-03
Nuclear Criticality Safety Engineer Training and Qualification
Competency Area 3 – Required Reading

Name:	
<p>Part 3: NRC Regulations, Reg Guides, Etc. This material is required reading only for the NRC competency. Refer to the NCS T&Q procedure for guidance and expectations related to this material. Note that links to all of these documents are available on the NSA Safety Net.</p>	
Document	Date Completed
10 CFR 70	10/2005
NUREG-1513, Integrated Safety Analysis Guidance Document	8/2007
NUREG-1520, Standard Review Plan for the Review of a License Application for a Fuel Cycle Facility	8/2007
Reg Guide 3.71-2005, Nuclear Criticality Safety Standards for Fuels and Material Facilities	8/2007
Reg Guide 3.67-1992, Standard Format and Content for Emergency Plans for Fuels and Material Facilities	8/2007
FCSS-ISG-03, Nuclear Criticality Safety Performance Requirements and Double Contingency Principle	8/2007
FCSS-ISG-05, Reporting Requirements	8/2007
FCSS-ISG-08, Natural Phenomena Hazards	8/2007
FCSS-ISG-09, Initial Event Frequencies	8/2007
FCSS-ISG-10, Justification of Minimum Margin of Subcriticality for Safety	8/2007

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FORM-CS-03
Nuclear Criticality Safety Engineer Training and Qualification
Competency Area 3 – Required Reading

Name: _____	
Part 4: Other Required Reading. This material is required reading for both the NRC and DOE competency. Refer to the NCS T&Q procedure for guidance and expectations related to this material. Note that links to all of these documents are available on the NSA Safety Net.	
Document	Date Completed
<i>Guidelines for Hazard Evaluation Procedures-With Worked Examples, 2nd ed., Sections 4.4 – 4.8 and Sections 6.4 – 6.8, Center for Chemical Process Safety, AIChE, 1992.</i>	10/2007
<i>BNWL-SA-4868, Revision 2, Anomalies of Criticality, E. D. Clayton, September 1974</i>	1/1992
<i>LA-10860-MS, Critical Dimensions of Systems Containing U235, Pu239, and U233</i>	6/1997
<i>LA-12808, Nuclear Criticality Safety Guide</i>	6/1997
<i>LA-13638, A Review of Criticality Accidents</i>	6/1997
<i>International Handbook of Evaluated Criticality Safety Benchmark Experiments, Volumes I through VII.A, NEA nuclear Science Committee</i>	11/2001
<i>Nuclear Criticality Safety Theory and Practice (Knief)</i>	6/1997
Certification By signing below the employee certifies that all information on this form is true and accurate to the best of his/her knowledge	
Employee Signature/Date: _____	8/6/07
Acceptance Signature below by the Criticality Safety Department Manager attest the employee has fulfilled all requirements for competency area 2.	
Printed Name/Signature/Date: _____	8/6/2007

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FORM-CS-04
Nuclear Criticality Safety Engineer Training and Qualification
Competency Area 4 – On the Job Experience and CSE Performance

Name:		
Total Years Criticality Safety Experience from FORM-CS-01: (Must be two or greater to satisfy the requirement)	13 1/2	
Criticality Safety Evaluation List up to five criticality safety evaluations (CSEs) you have performed. If possible, submit copies of the CSE for verification purposes. Any submitted CSEs shall be returned to the candidate after evaluation, but a copy of the cover page shall be retained in the training record. To satisfy requirements, DOE CSEs must conform to STD-3007; NRC CSEs must conform to the applicable licensee standards, and must address 10CFR70 Subpart H concerns.		
CSE Title, Document Number, Date, and Owning Organization,	DOE or NRC	Verified
CSE for Scrap Cya Tanks, CSE-11-D, 9/2006 - Westinghouse Columbia	NRC	X
CSE for Scrap Cya Dissolver, CSE-11-A, 4/2006 - Westinghouse Columbia	NRC	X
CSE for Safe Geometry Dissolver System, CSE-4-A - Westinghouse Columbia	NRC	X
CSE for Conversion Lines Oil Dryers & Bucket Elevators, CSE-3-H, 6/2007 - Westinghouse Columbia	NRC	X
Certification By signing below the employee certifies that all information on this form is true and accurate to the best of his/her knowledge		
Employee Signature/Date: <div style="float: right; text-align: center;">8/6/07</div>		
Acceptance Signature below by the Criticality Safety Department Manager attest the employee has fulfilled all requirements for competency area 4.		
Printed Name/Signature/Date: <div style="float: right; text-align: center;">8/6/07</div>		
Competency Area (Circle All Applicable): <div style="display: inline-block; margin: 0 10px; text-align: center;"> <div style="border: 1px solid black; border-radius: 50%; padding: 2px 5px;">NRC</div> </div> <div style="display: inline-block; margin: 0 10px; text-align: center;"> <div style="border: 1px solid black; border-radius: 50%; padding: 2px 5px;">DOE</div> </div>		

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FORM-CS-05
Nuclear Criticality Safety Engineer Training and Qualification
Competency Area 5 – Site Specific Training

Name:			
Site Qualifications List below all sites at which you have been qualified as a criticality safety analyst. If possible, submit a copy of your qualification card or other evidence to be retained in your file.			
Qualified at the Following Sites/Organizations	DOE or NRC	Formal Program?	Year Qualified
ROCKY FLATS	DOE	YES	1997
HANFORD	DOE	YES	2001
WESTINGHOUSE - COLUMBIA	NRC	YES	2005
Certification. By signing below the employee certifies that all information on this form is true and accurate to the best of his/her knowledge			
Employee Signature/Date: _____ 8/6/07			
Acceptance Signature below by the Criticality Safety Department Manager attests that sufficient evidence has been found to verify the above-listed site qualifications			
Printed Name/Signature/Date: _____ 8/6/07			

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FORM-CS-06
Nuclear Criticality Safety Engineer Training and Qualification
Competency Area 6 – Criticality Safety Computer Codes

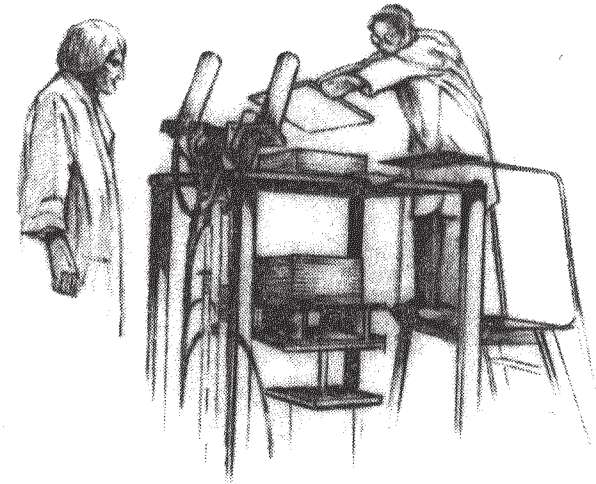
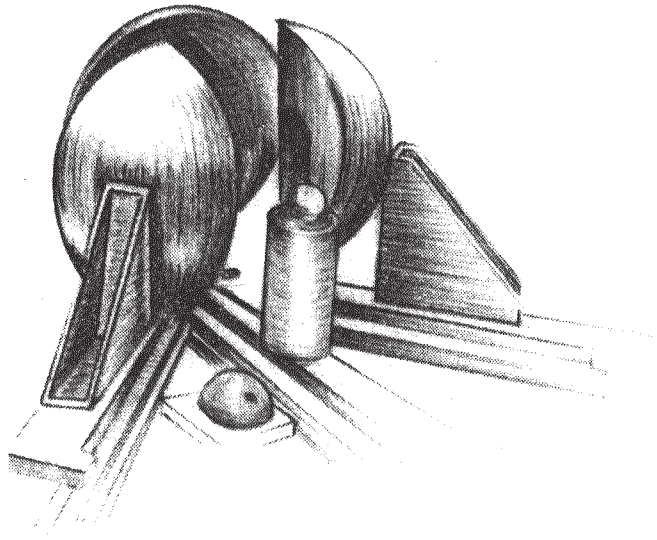
Name:	
Computer Code Classes List below any formal training you have received for computer codes applicable to criticality safety analyses (i.e., SCALE, MCNP)	
Course Title, Offering Organization, Location, & Dates	
SCALE – ORNL for Rocky Flats	8/30/96
MCNP – OJT (Westinghouse Columbia)	8/07
Certification By signing below the employee certifies that all information on this form is true and accurate to the best of his/her knowledge	
Employee Signature/Date:	8/6/07
Acceptance Signature below by the Criticality Safety Department Manager attests that a review of calculations performed by the candidate demonstrates adequate knowledge and capability to satisfy the requirements of this competency	
Printed Name/Signature/Date:	8/6/07
Computer codes: SCALE MCNP DANTSYS MONK WIMS <small>(Circle all codes for which competency is demonstrated)</small>	

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FORM-CS-10
Nuclear Criticality Safety Engineer Training and Qualification
Status Summary

Name: _____		
Qualifications List All Qualifications Achieved (NCS Analyst, NCS Technical Reviewer, Computer Codes (identify which ones), P&T Analyst, P&T Reviewer, Criticality Detector Placement Analyst, Criticality Detector Placement Reviewer)		
<i>- NCS Analyst</i> <i>- NCS Technical Reviewer</i> <i>- SCALE / MCNP</i>		
An "X" in the box indicates competency is fulfilled	DOE	NRC
Competency Area 1 - Formal Education	X	
Competency Area 2 - NCS Training	X	
Competency Area 3 - Required Reading	X	X
Competency Area 4 - OJT & CSE	X	X
(Competency Areas 1 - 4 required for all qualification levels)	X	X
Competency Area 5 - Site Specific Training List all sites at which qualification has been achieved (note: this competency is not required for NSA qualification, but is required for qualification at some client sites)	X	X
<i>Rocky Flats, Paducah GDP, Hanford, Westhouse Columbia</i>		
Competency Area 6 - Criticality Computer Codes	X	
Competency Area 7 - P&T Required Reading	N/A	N/A
Competency Area 8 - P&T Analysis	N/A	N/A
Competency Area 9 - Criticality Detector Placement	N/A	N/A

Certificate of Participation



This is to certify that

EG & G Rocky Flats

has completed the

5 day

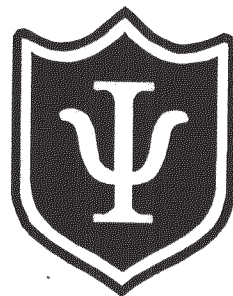
Nuclear Criticality Safety Training Program

Los Alamos, New Mexico

January 11-15, 1993

Instructor

Process Safety Institute



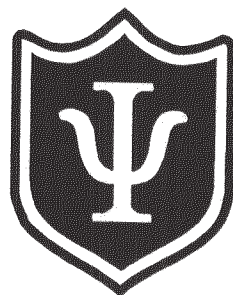
This is to acknowledge that

has completed a course in
Hazard Evaluation
Qualitative Methods

Knoxville, Tennessee

May 17 - 21, 1993

Process Safety Institute



This is to acknowledge that

has completed a course in

Hazard Evaluation – Quantitative Methods

Knoxville, Tennessee

July 12 - 16, 1993



Unwin Company

certifies that

has successfully completed the 3½-day course
Failure Scenario Training
December 7-10, 1998

Course Instructor

ASM International

This certifies that

has satisfactorily completed the course entitled

“Introduction to Plutonium Metallurgy”

under direction of the Los Alamos Chapter of ASM International
and in testimony thereof has been awarded this

Certificate 2.0 CEU

at Los Alamos National Laboratory, Los Alamos, NM, USA

this 20th day of March 2003

DATE: 3/21/2011
TO: Training Files
FROM: Criticality Safety Manager
SUBJECT: Re-qualification of

This memo documents the requalification of _____ as a Nuclear Criticality Safety (NCS) Analyst and NCS Technical Reviewer in accordance with NSA-QA-14 Revision 4. _____ was originally qualified within the NSA program in these areas on August 6, 2007 and is re-qualified for three years based on the information given below.

_____ has been performing NCS duties, including evaluations and peer reviews, since his initial qualification for various clients and sites. These include the Columbia Fuel Fabrication Facility (CFFF), Y-12 National Security Complex, and the Global Laser Enrichment project.

With regards to continuing education and professional development, _____ has supported three clients during the three year requalification period. Thus, the continuing training requirement is met per NSA-QA-14 as the individual has been exposed to NCS practices at multiple sites.

DATE: 8/9/13
TO: Training Files
FROM: , Criticality Safety Program Manager
SUBJECT: Re-qualification of

This memo documents the requalification of as a Nuclear Criticality Safety (NCS) Analyst and NCS Technical Reviewer in accordance with NSA-QA-14 Revision 6. was originally qualified within the NSA program in these areas on August 6, 2007 and is re-qualified for a third three year period (until August 5, 2016) based on the information given below.

has been performing NCS duties, including evaluations and peer reviews, since his previous requalification for various clients and sites. These include the Global Laser Enrichment project, SHINE medical isotope project and Los Alamos National Laboratory (LANL).

With regards to continuing education and professional development, has supported three clients during the three year requalification period. Thus, the continuing training requirement is met per NSA-QA-14 as the individual has been exposed to NCS practices at multiple sites.