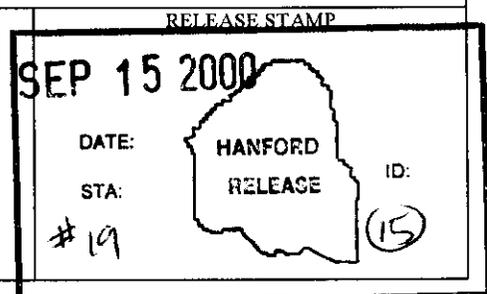


ENGINEERING CHANGE NOTICE

1. ECN **662836**

Proj. ECN

2. ECN Category (mark one) Supplemental <input type="checkbox"/> Direct Revision <input checked="" type="checkbox"/> Change ECN <input type="checkbox"/> Temporary <input type="checkbox"/> Standby <input type="checkbox"/> Supersedeure <input type="checkbox"/> Cancel/Void <input type="checkbox"/>	3. Originator's Name, Organization, MSIN, and Telephone No. T. Nuxall, CVDF, R3-86, 372-3739		4. USQ Required? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5. Date 9/15/00
	6. Project Title/No./Work Order No. SNF/W-441 Spent Nuclear Fuel Cold Vacuum Drying		7. Bldg./Sys./Fac. No. CVDF 142-K	8. Approval Designator S ^N Q
	9. Document Numbers Changed by this ECN (includes sheet no. and rev.) <u>4880 org 9/15/00</u> SNF- 6811 , Rev. 1		10. Related ECN No(s). N/A	11. Related PO No. N/A
12a. Modification Work <input type="checkbox"/> Yes (fill out Blk. 12b) <input checked="" type="checkbox"/> No (NA Blks. 12b, 12c, 12d)	12b. Work Package No. N/A	12c. Modification Work Complete N/A _____ Design Authority/Cog. Engineer Signature & Date	12d. Restored to Original Condition (Temp. or Standby ECN only) N/A _____ Design Authority/Cog. Engineer Signature & Date	
13a. Description of Change SCHe Revision to color and length of web strapping. USQ Number: <u>CVD-00-1766</u> ^{MSN} _{9/15/00}				
13b. Design Baseline Document? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				
13c. Design Baseline Document? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				
13d. Design Baseline Document? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				
14a. Justification (mark one) Criteria Change <input type="checkbox"/> Design Improvement <input checked="" type="checkbox"/> Environmental <input type="checkbox"/> Facility Deactivation <input type="checkbox"/> As-Found <input type="checkbox"/> Facilitate Const <input type="checkbox"/> Const. Error/Omission <input type="checkbox"/> Design Error/Omission <input type="checkbox"/>				
14b. Justification Details Inadvertent error. The design verification method for SC/SS components is by independent review in accordance with EN-6-027-01. Documentation of this review is accomplished by the independent review approval signature provided on page 2 of this ECN.				
15. Distribution (include name, MSIN, and no. of copies) See distribution sheet.				



SNF-4880
Revision 2

Seismic Restraint Cable and Web Strap for SCHe Helium Bottles

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

Project Hanford Management Contractor for the
U.S. Department of Energy under Contract DE-AC06-96RL13200

Fluor Hanford
P.O. Box 1000
Richland, Washington

SNF-4880
Revision 2

ECN 662836

Seismic Restraint Cable and Web Strap for SCHe Helium Bottles

Project No: W-441

Document Type: RPT

Division: SNF

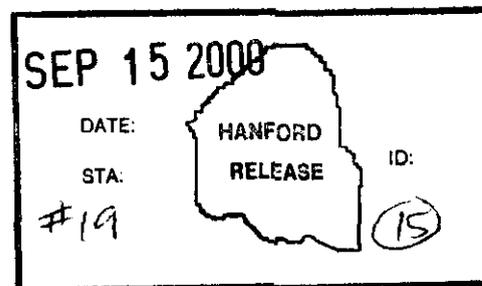
C Miska
FH

Date Published
September 2000

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

Project Hanford Management Contractor for the
U.S. Department of Energy under Contract DE-AC06-96RL13200

Fluor Hanford
P.O. Box 1000
Richland, Washington



Anis Braden
Release Approval

9/15/00
Date

Release Stamp

SNF-4880
Rev 2

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Total Pages: 13

Commercial Grade Item Upgrade Dedication Form

SNF-4880, Rev. 2

ECN No. N/A CGI No. CGI-SNF-D-13-2-P5-053

Page 1 of 9

Title: **Seismic Restraint Cable and Web Strap for SCHe Helium Bottles**

Section 1 Part Information			
Item No.: N/A	Manufacturer: N/A	Supplier: N/A	
Mfg. Part/Model No.: N/A	Supplier's P/N: N/A		
Part Description: N/A			
End Use Description: N/A			
Section 2a Component Information			
Equipment No.: Seismic Restraint Cables and Web Straps for SCHe supply bottles to the Helium process system.	Specification No.: SNF-5304 (W-441-P5)	Manufacturer: McMaster Carr	Past P.O. No.: N/A
Procurement and/or Model No.: Cable Restraint: 30785T5 (Dwg. H-1-82367, Item 72) Web: 8842T18	Equipment Supplier (if different from manufacturer): Apollo		Equip. Supplier's Part No.: N/A
Component Description: This seismic restraint cable fits the neck of the SCH helium supply bottle to limit bottle motion in the event of a Seismic Event. The web strap is for the seismic stand and has a ratchet tensioning buckle.			
Section 2b Commercial Availability of the Item			
<p>1. Is the Item available from a catalogue from a qualified NQA1 supplier or ISO 9000 supplier (coordinate with project CGI interface Engineer or BTR)?</p> <p><input type="checkbox"/> YES (go to #2 below)</p> <p><input checked="" type="checkbox"/> NO (go to procedure step 6.3.2, proceed to dedicate Item)</p> <p>If not available from a qualified NQA1 supplier, is it available from an ISO 9000 supplier? (coordinate w/ project CGI Interface Engineer or BTR):</p> <p><input type="checkbox"/> YES (go to #2 below, dedicate Item)</p> <p><input checked="" type="checkbox"/> NO (dedicate Item)</p>			
2. List of Candidate qualified suppliers or ISO 9000 suppliers: N/A			
3. Recommended Procurement Strategy(coordinate with project CGI interface Engineer or BTR): N/A			
Section 2c CGI Determination			
CGI Determination Questions:			
#1: Is the Item subject to design or specification requirements that are unique to nuclear facilities or activities?			
<input type="checkbox"/> YES (the Item is not commercial grade)		<input checked="" type="checkbox"/> NO (continue)	
#2: Is the Item used in applications other than nuclear facilities or activities?			
<input type="checkbox"/> NO (the item is not commercial grade)		<input checked="" type="checkbox"/> YES (continue)	
#3: Is the Item ordered from manufacturer/supplier on the basis of specifications set forth in the manufacturer's catalog?			
<input type="checkbox"/> NO (the item is not commercial grade)		<input checked="" type="checkbox"/> YES (continue)	
<input checked="" type="checkbox"/> All three criteria have been satisfied. The Item meets the definition of commercial grade.			
Section 2d Reason for Dedication			
The above Commercial Grade (CG) described Item is being Dedicated for use in the application cited for the following reason(s):			
<input checked="" type="checkbox"/>	Item is being purchased from a non-ESL manufacturer supplier as CG to be used in a Safety Class application.		
<input type="checkbox"/>	Item is being purchased from a non-ESL manufacturer supplier as CG to be used in a Safety Significant application.		
<input type="checkbox"/>	Item was purchased from a non-ESL manufacturer supplier as CG to be used in a Safety Class application.		
<input type="checkbox"/>	Item was purchased from a non-ESL manufacturer supplier as CG to be used in a Safety Significant application.		
<input type="checkbox"/>	Other ('like-for-like', similar, substitution, replacement evaluation)		

Commercial Grade Item Upgrade Dedication Form

SNF-4880, Rev. 2

ECN No. **N/A**

CGI No. **CGI-SNF-D-13-2-P5-053**

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Title: **Seismic Restraint Cable and Web Strap for SCHe Helium Bottles**

Section 3 Failure Effects Evaluation

A. Part/Component Safety Function:

- The cable provides a restraint to limit motion of the SCHe helium supply bottle in the event of a Seismic Event.**
- Maintain critical function before, during, and after Seismic Event**

B. Part/Component Functional Mode:

Safety Function #1:	<input type="checkbox"/>	Active	<input checked="" type="checkbox"/>	Passive
Safety Function #2:	<input type="checkbox"/>	Active	<input checked="" type="checkbox"/>	Passive
Safety Function #3:	<input type="checkbox"/>	Active	<input type="checkbox"/>	Passive

Active - Mechanical or Electrical change of state is required to occur for the component to perform its safety function

Passive - Change of state is not required for the component to perform its safety function

C. Host Component Safety Function (if applicable): **N/A**

1.

D. Failure Mode(s) and the effects on component or system safety function (see Worksheet 1):

- Failure of the restraint cable during a Seismic Event could allow bottle displacement which may be in excess of movement experienced during the seismic testing. The effects of this condition on the SCHe supply integrity is not defined and would constitute an unreviewed safety question.**
- Damage/corrosion of the cable or web may reduce its strength to withstand the forces associated with the Seismic Event**

Section 4 Environmental & Natural Phenomena Hazard Design

Environmental Qualification Required:

Yes	<input type="checkbox"/>	
No	<input checked="" type="checkbox"/>	Environmental Condition B

If yes: Environmental Qualification Requirements

Limiting Environmental Conditions:

Required Safety Functions:

Qualification Period:

Natural Phenomena Hazard (NPH) Design Required:

Yes	<input checked="" type="checkbox"/>	HNF-PRO-97, SNF-5304
No	<input type="checkbox"/>	

If yes: NPH Design Requirements

Performance Category: **PC-3**

NPH Design Req'ts.: **Seismic Condition C**

Required Safety Functions: **Maintain critical function before, during, and after Seismic Event.**

Section 5 Component Functional Classification

<input checked="" type="checkbox"/>	Safety Class (SC)	<input type="checkbox"/>	General Service	<input type="checkbox"/>	Safety Significant (SS)
-------------------------------------	-------------------	--------------------------	-----------------	--------------------------	-------------------------

If part/component classification is different from host component/system, document basis. **N/A**

Sections 6 and 7 (Reserved)

Section 8 References (for Functional Classification)

National Codes/Standards: **ISA-S5.1, S5.4, S18.1, and S20.20**

Safety Analysis Report (SAR): **HNF- 3553, Annex B**

Drawings: **Dwg. H-1-82367, Item 72, HNF-SD-SNF-SEL-002**

Vendor Manual/Manufacturer/Supplier Information: **Catalog Cut Sheets – McMaster-Carr Pages 1013, 1020 and 1164**

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ECN No. N/A

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Title: **Seismic Restraint Cable and Web Strap for SCHe Helium Bottles**

Section 9 Critical Characteristics				
Critical Characteristics	Acceptance Criteria/Tolerances	ID	Function	Acc.Method
1. Item Identification Critical Characteristics (necessary for reasonable assurance that the Item delivered is the Item specified)				
Manufacturer	McMaster-Carr	X		1, IN
Model Number - Cable	30785T5 (Per Procurement Package SNF-5304, (W-441-P5), Dwg H-1-82367 with DCN W-441-HE-446, Item 72)	X		1, IN
Model Number - Web Strap	8842T18	X		1, IN
2. Physical Critical Characteristics (for reasonable assurance that the Item delivered is the Item specified)				
Cable - End Connections	3/8" 24 Threaded Stud One End, Loop with Stainless Steel Swage Fitting on Other End.	X		1, IN
Cable Diameter	Nominal 1/4"	X		1, IN
Cable Material	Stainless Steel Note 3	X		1, IN
Cable Condition	Cable Free of Kinks or Broken Strands Which Could Affect Load Capacity.	X		1, IN
Web Strap - Width	Nominal 2"	X		1, IN
Web Strap - Length	Minimum length of 5 feet	X		1, IN
Web Strap - Configuration	With Ratcheting Buckle	X		1, IN
Web Strap - Material	Nylon (Color = Black or charcoal grey)	X		1, IN
3. Performance Critical Characteristics (for reasonable assurance that the Item will perform its intended safety function(s))				
Environmental	Note 1			
Seismic Condition C (for Cable Only)	Note 2			1, T
4. Notes and Legend:			Acceptance Methods:	
<p>1. The seismic restraint cable and web strap (Nylon) is not subject to degradation from the 40° F and 60% RH or 115° F and 22% RH conditions and is suitable for Environmental Condition B application.</p> <p>2. Maintain critical function before, during, and after seismic event. SNF-5304 provides a seismic testing plan for these components at a seismic spectra defined in SNF-4895. Equipment that has been shaker-table tested should not be installed in a plant (Ref. IEEE Standard 344-1984, Section 7). Consequently, the seismic test constitutes a destructive test.</p> <p>3. Material verification acceptance method may be by either inspection or test.</p>			<p>1. Special Test and Inspection 1, IN for Inspection 1,T for Test 1,A for Analysis 2. Commercial Grade Survey 3. Source Verification 4. Vendor/Item History</p>	
<p>Rev. 1: Added Web Strap</p> <p>Rev. 2: Revised web strap length from Nominal 5' to Minimum length of five feet; revised web strap material color from black to black or charcoal grey.</p>				

Section 10 Initial Review and Approval

Approvals:

Designated Engineer:

Chad Venkatraj 9/15/00

QA Engineer:

[Signature] 9/15/00

Design Authority:

[Signature]

9/15/00

Other:

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Title: **Seismic Restraint Cable and Web Strap for SCHe Helium Bottles**

WORKSHEET 1

DETERMINATION OF FAILURE MECHANISMS

Section 1		
Typical Failure Mechanisms	Definition	X = Applicable to Component under Evaluation X? Indicate Failure Mode
Fracture	Separation of a solid accompanied by little or no macroscopic plastic deformation.	X Failure of the seismic restraint cable may permit bottle movement which may be greater than experienced during the seismic qualification test.
Corrosion	The gradual deterioration of a material due to chemical or electrochemical reactions, such as oxidation, between the material and its environment.	
Erosion	Destruction of materials by the abrasive action of moving fluids, usually accelerated by the presence of solid particles carried with the fluid.	
Open Circuit	An electrical circuit that is unintentionally broken so that there is no complete path for current flow.	
Short Circuit	An abnormal connection by which an electrical current is connected to ground, or to some conducting body, resulting in excessive current flow.	
Blockage	Clogging of a filtering medium resulting in the inability to perform its purification function or blockage of flow.	
Seizure	Binding of a normally moving item through excessive pressure, temperature, friction, jamming.	
Unacceptable Vibration	Mechanical oscillations produced are beyond the defined permissible limits due to unbalancing, poor support, or rotation at critical speeds.	
Loss of Properties	A loss of mechanical and physical properties of a material due to exposure to high temperatures, radiation exposure.	
Excess Strain	Under the action of excessive external forces the material of the part has been deformed or distorted.	
Mechanical Creep	From prolonged exposure to high temperature and stress, the object will show a slow change in its physical (shape and dimension) and mechanical characteristics.	
Ductile Fracture	Fracture characterized by tearing of metal accompanied by appreciable gross plastic deformation.	
Section 2 Additional Failure Modes Applicable to the Component Under Evaluation		
1. Damage to or deterioration of the cable and/or web with use that could reduce its strength.		

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Title: **Seismic Restraint Cable and Web Strap for SCHe Helium Bottles**

Checklist 1 – Acceptance Method 1 – Special Test/Inspection Verification

SECTION 1			
Item Description: This seismic restraint cable fits the neck of the SCH helium supply bottle to limit bottle motion in the event of a Seismic Event. The web strap is for the seismic bottle stand and has a ratchet tensioning buckle.		Equip #: Seismic Restraint Cables and Web Straps for SCHe supply bottles to the Helium process system. Procurement and/or Model #: 30785T5; 8842T18	
System #: 13-2			
Manufacturer (Address/Phone): McMaster-Carr P.O. Box 740100 Atlanta, GA 30374-0100 atl.sales@mcmaster.com Ph: (404) 346-7000 Fax: (404) 349-9091		Supplier (Address/Phone): Apollo Sheet Metal 1207 W. Columbia Dr., Kennewick, WA 99336 (509)586-1104 (509)373-4027	
SECTION 2 CRITICAL CHARACTERISTICS TO BE VERIFIED BY METHOD 1.			
Insp	Test	Post-Test	
X			1. Manufacturer
X			2. Model Number
X			3. End Connections
X			4. Diameter
X	X		5. Material
X			6. Condition - free of kinks/broken strands
X			7. Width
X			8. Length
X			9. Configuration
SECTION 3 BY INSPECTION * See Attachment H, Table H-1 of Desk Instruction for Sampling Size; References (See Section 7)			
Characteristic: Manufacturer Acceptance Criteria: McMaster Carr			Receipt Inspection Plan / Report #: Sample Size*: 100%
Characteristic: Model Number - Cable Acceptance Criteria: 30785T5			Receipt Inspection Plan / Report #: Sample Size*: 100%
Characteristic: Model Number - Web Strap Acceptance Criteria: 8842T18			Receipt Inspection Plan / Report #: Sample Size*: 100%
Characteristic: Cable - End Connections Acceptance Criteria: 3/8" 24 Threaded Stud One End, Loop with Stainless Steel Swage Fitting on Other End.			Receipt Inspection Plan / Report #: Sample Size*: 100%
Characteristic: Cable Diameter Acceptance Criteria: Nominal 1/4"			Receipt Inspection Plan / Report #: Sample Size*: 100%
Characteristic: Cable Material Acceptance Criteria: Stainless Steel			Receipt Inspection Plan / Report #: Sample Size*: 100%

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Title: **Seismic Restraint Cable and Web Strap for SCHe Helium Bottles**

Characteristic: Cable Condition Acceptance Criteria: Cable Free of Kinks or Broken Strands Which Could Affect Load Capacity. Receipt Inspection Plan / Report #:	Sample Size*: 100%
Characteristic: Web Strap - Width Acceptance Criteria: Nominal 2" Receipt Inspection Plan / Report #:	Sample Size*: 100%
Characteristic: Web Strap - Length Acceptance Criteria: Minimum length of five feet. Receipt Inspection Plan / Report #:	Sample Size*: 100%
Characteristic: Web Strap - Configuration Acceptance Criteria: Strap with Ratcheting Buckle Receipt Inspection Plan / Report #:	Sample Size*: 100%
Characteristic: Web Strap - Material Acceptance Criteria: Nylon (Color = Black or Charcoal Grey) Receipt Inspection Plan / Report #:	Sample Size*: 100%
Section 4 By Special Test * See Attachment H, Table H-1 of Desk Instruction for Sampling Size; References (See Section 7)	
Characteristic for Test: Seismic (applies to cable restraint only) Acceptance Criteria: Maintain Critical Function Before, During, and After Seismic Event Sample Size: SNF-5304 provides the seismic testing plan for these components. The seismic testing is conducted for one complete panel with the components assembled on the panel and tested as a complete assembly. The test seismically qualifies the entire assembly, including mountings, piping, and components. The number of components tested is dictated by the panel assembly design. Actual Test Value: _____ Test Plan and Report #: _____	

**If Supplier/Manufacturer or Other, Refer to CGI Checklist-2 for Support Information

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ECN No. N/A CGI No. CGI-SNF-D-13-2-P5-053

Title: Seismic Restraint Cable and Web Strap for SCHe Helium Bottles

Section 5 Test / Inspection Summary (Acceptance Method 1)

1. Summary Of Verified Critical Characteristics , Their Verification Methods, and Results

ITEM DESCRIPTION: Cable Restraint

Critical Characteristics	Acceptance Criteria/Tolerances	ID	Function	Method T/IN	Procedure or RR#	Check- list ID	Number Tested	Number Failed	Verification Results	
									Verifying Organization	Printed Name Signature
Manufacturer	McMaster Carr	X		1, IN						
Model Number	3078575	X		1, IN						
Cable - End Connections	3/8" 24 Threaded Stud One End, Loop with Stainless Steel Swage Fitting on Other End.	X		1, IN						
Cable Diameter	Nominal 1/4"	X		1, IN						
Cable Material	Stainless Steel	X		1, IN						
Cable Condition	Cable Free of Kinks or Broken Strands Which Could Affect Load Capacity.		X	1, IN						
Seismic Condition C	Maintain Critical Function Before, During, and After Seismic Event		X	1, T						

2. Disposition of Unverified or Failed Critical Characteristics

Critical Characteristic	Disposition

3. Signature Indicates All Critical Characteristics Verified Satisfactory or Acceptably Dispositioned and Commercial Grade Dedication Is Satisfactory and Complete.

Testing Agency Approval: _____ Date _____ Design Authority: _____ Date _____

Testing Agency QA Engineer: _____ Date _____ QA Engineer: _____ Date _____

Commercial Grade Item Upgrade Dedication Form

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ECN No. N/A CGI No. CGI-SNF-D-13-2-P5-053

Title: Seismic Restraint Cable and Web Strap for SCHe Helium Bottles

Section 5 Test / Inspection Summary (Acceptance Method 1)

1. Summary Of Verified Critical Characteristics , Their Verification Methods, and Results

ITEM DESCRIPTION: Web Strap

Critical Characteristics		Verification Results									
Critical Characteristics	Acceptance Criteria/Tolerances	ID	Function	Method T/IN	Procedure or RR#	Check-List ID	Number Tested	Number Failed	Verifying Organization	Printed Name Signature	Date
Manufacturer	McMaster Carr	X		1, IN							
Model Number	8842T18	X		1, IN							
Web Strap - Width	Nominal 2"	X		1, IN							
Web Strap - Length	Minimum length of five feet	X		1, IN							
Web Strap - Configuration	With Ratcheting Buckle	X		1, IN							
Web Strap - Material	Nylon (Color = Black or Charcoal Grey)	X		1, IN							

2. Disposition of Unverified or Failed Critical Characteristics

Critical Characteristic	Disposition

3. Signature Indicates All Critical Characteristics Verified Satisfactory or Acceptably Dispositioned and Commercial Grade Dedication Is Satisfactory and Complete.

Testing Agency Approval: _____ Date _____ Design Authority: _____ Date _____
 Testing Agency QA Engineer: _____ Date _____ QA Engineer: _____ Date _____

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Title: **Seismic Restraint Cable and Web Strap for SCHe Helium Bottles**

Section 6 Contacts / Phone Numbers

Title	Name	Phone
Design Authority		
QA		
QC		
Cog - Engineer		
CGI Engineer	Larry Price	372-8770
Procurement Engineer		
Other		

Section 7 Supporting Documentation for This Checklist

Initial Procurement Documents		For Critical Characteristics
<input type="checkbox"/>	Drawings:	
<input type="checkbox"/>	Manuals (specify type & number):	
<input type="checkbox"/>	Design Calculations	
<input type="checkbox"/>	Installation Instructions	
<input type="checkbox"/>	Operation Instructions	
<input type="checkbox"/>	Calibration Instructions	
<input type="checkbox"/>	Manufacturer's Recommended Spare Parts List	
<input checked="" type="checkbox"/>	Other: Catalog Cut Sheets – Catalog Cut Sheets – McMaster-Carr Pages 1013, 1020 and 1164	All
Procurement Documents		
<input type="checkbox"/>	Certificate of Conformance/Compliance	
<input type="checkbox"/>	Seismic Qualification Certificate	
<input type="checkbox"/>	Environmental Qualification Certificate	
<input type="checkbox"/>	Test Report (s):	
<input type="checkbox"/>	Inspection Report (s):	
<input type="checkbox"/>	CMTRs for ASME Pressure Retaining Materials	
<input type="checkbox"/>	Valve Seat Leakage Report	
<input type="checkbox"/>	Weld Records	
<input type="checkbox"/>	Material Traceability Record	
<input type="checkbox"/>	Other:	