

# TEMPORARY CHANGE REQUEST

TCR NO. TCR-QA-020, R2-001

(e.g., TCR-ENG-021,R0-001)

The Temporary Change Request (TCR) Form is to be used to process urgent or minor changes for PPPL Policies, Organization/Mission Statements and Procedures. The TCR should be used when changes are:

- 1) urgent, and can not wait the 2-4 week period for Department Head review/comment, or
- 2) minor, and do not warrant Department Head review.

Person Requesting Change: Adolfo Amaya Phone Ext: 2305

Department Name: Quality Assurance/Quality Control

Document Number: QA-020 Revision No.: 2

Document Title: Suspect & Counterfeit Items Control and Dispositioning

## Reason for change:

1. Update to add guidance for “Metric” type fasteners marking requirements.
2. Corrected link under action 1

## Change description: (Summarize and attach changed pages, with changes clearly indicated)

Pg. 2, action 1: corrected link to <http://www-local.pppl.gov/qa/SCI/SCIintro.html>

Pg. 6, 1st bullet: added: which includes: and those that require grade marking in accordance with the applicable national standards (Some examples are: SAE grades 5 & 8, 8.2; ASTM grades A193, A325, A490, A453, F593 (and many others); and Metric fasteners (grades 8.8 & 10.9).

Pg. 6: added 4th bullet: Ratchet tie-down assemblies - Ratchet tie-down assemblies - (These are often assembled using high strength fasteners).

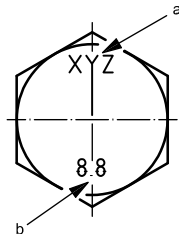
Pg. 7: added note and figure.

Note on “Metric Fasteners”:

ISO 898-1 standard, section 10 “Marking” identifies when and how manufacture’s symbols should be applied to metric fasteners. A manufacture’s identification mark shall be included during the manufacturing process on all fasteners marked with a property class symbol (I.e 8.8 & 10.9).

Property class symbols provide important relevant information such as nominal tensile and yield strength characteristics of the fasteners and should be kept in consideration when procuring metric type fasteners or equipment which could use these types of fasteners.

Marking Details for Metric Fasteners:



- a Manufacturer's identification mark.  
b Property class.

1. Does this TCR significantly alter the intent or scope of the document? YES: \_\_\_\_\_ NO: **X** \_\_\_\_\_

2. Does this TCR significantly impact **ES&H**? YES: \_\_\_\_\_ NO: **X** \_\_\_\_\_

If 1 or 2 is **YES**, Explain why the changes should not be routed for Department Head review:

**Jim Graham**  
\_\_\_\_\_  
Department/Division Head Approval

**5/2/2017**  
\_\_\_\_\_  
Date

**Jim Graham**  
\_\_\_\_\_  
Head, Quality Assurance/Quality Control/designee

**5/2/2017**  
\_\_\_\_\_  
Date

Release/Effective date of this TCR: **5/2/2017**

Incorporate this TCR into next revision of this document? YES: **X** NO: \_\_\_\_\_

<b>Subject:</b>  <b>Suspect &amp; Counterfeit Items Control and Dispositioning</b>	<b>Effective Date:</b>  March 11, 2016	<b>Initiated by:</b>  Head, Quality Assurance/Quality Control
	<b>Supersedes:</b>  Rev. 1, dated February 21, 2014	<b>Approved:</b>  Director

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**Management System (Primary):** 12.00 Assurance and Improvement  
**Management System Owner:** Head, Quality Assurance/Quality Control  
**Management Process:** 12.31 QA Audits of Quality Management Systems  
**Process Owner:** Head, Quality Assurance/Quality Control  
**Sub Process:** 12.31.11 Suspect/ Counterfeit Items  
**Sub Process Owner:** Head, Quality Assurance/Quality Control  
**Subject Matter Experts (SMEs):** Head, Quality Assurance/Quality Control; Procurement QA Engineers TCR-QA-020, R2-001

**APPLICABILITY**

This procedure applies to all PPPL equipment, projects and facilities on C- and D-Sites, and to any items provided by PPPL to external collaborators.

**Definitions**

**Suspect Items** A part or item whose documentation, appearance, performance, material, or other characteristics may have been knowingly misrepresented by the vendor, supplier, distributor, or other manufacturer. (Further investigation is required to determine if suspect items are, in fact, counterfeit).

**Counterfeit Parts** A part or item whose documentation, appearance, performance, material, or other characteristics are knowingly misrepresented by the vendor, supplier, distributor, or manufacturer.

**Introduction**

There is a long history of suspect and counterfeit items (S/CI) being provided in industry and the problem continues to grow. Counterfeit bolts are the most well-known S/CI, but other common examples include flanges, fittings, struts, used or refurbished electrical components, and other items supplied as new. There is potential that virtually any type of part or equipment could be S/CI. All PPPL personnel must be watchful for S/CI in the workplace. This procedure establishes the practices to ensure that S/CI are identified and dispositioned to remove them from applications that compromise safety and to prevent their reuse.

PPPL has instituted the measures described in this procedure to:

- Prevent introduction of suspect or counterfeit items (S/CI) to PPPL, and
- Control and disposition S/CI that is found.

The PPPL S/CI Committee has determined restrictions and controls meant to keep S/CI from coming on-site as part of legitimate PPPL procurements. The committee designated categories of items where S/CI are most likely and where procurement controls are appropriate. These

categories and the associated restrictions are detailed in Attachment 1 and summarized on the Procurement web site at: [Procurement Web Site S/CI Restrictions](#).

### **Reference Documents**

P-041	Suspect Parts
QA-005	Control of Nonconformances
GEN-006	Occurrence Reporting and Processing of Operations Information
ES-MECH-007	Hoisting and Rigging Standard

### **Procedure for Identifying and Dispositioning S/CI**

#### **Responsibility**

#### **Action**

Any Individual

1. Identifies Suspect/Counterfeit Item(s).

*Bolts listed on the DOE Headmark List (attached) are presumed to be counterfeit.*

*For S/CI identification information contact QA or access the QA web page*

<http://www-local.pppl.gov/qa/SCI/SCIintro.html>

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2. Promptly contacts QA (ext. 2203) and informs their supervisor.

3. Tags and/or segregates items as practicable.

*Unless adverse conditions would result, the Supervisor/Cog/ATI, as appropriate, removes in-service equipment from service.*

QA

4. Verifies that the item is S/CI.

5. Notifies PPPL Facility Manager of a possible occurrence per GEN-006. If this is determined to be an occurrence, the Facility Manager will follow GEN-006 notification requirements.

6. Notifies Germantown DOE Office of Inspector General (OIG) using contact information at: <http://energy.gov/ig/contact-us/field-offices>.

7. Issues a Nonconformance Report, per procedure QA-005, to document the discovery and the final disposition of the S/CI.

- Cognizant Individual 8. Determines whether items will be promptly removed and replaced (“REPAIR” on the NCR) or marked and left in place (“USE-AS-IS” on the NCR). An engineering evaluation, documented on the NCR, is required for decisions to leave S/CI in-place for lift equipment and the Lift Manager must concur.

S/CI left in place must be clearly and permanently marked (typically with red paint or ink). Where practicable, signage shall indicate that the painted items are S/CI and that QA must be notified prior to removal. The marking method shall be documented on the NCR. Bolts left in place, shall be replaced when they are next removed for other purposes (maintenance, disassembly, etc.). High strength fasteners removed from other equipment shall not be used in for any other application requiring high strength fasteners.

*The disposition must be documented on or with the NCR. Engineering evaluations must indicate the name of the engineer performing the evaluation and should have the engineer’s signature. However, the disposition process need not be delayed while the NCR is being written or otherwise processed. For example, a suspect bolt in the load path can be removed and replaced on the spot, minimizing time that the equipment is out-of-service. Similarly, when there is no doubt that suspect bolts are not in the load path, they can be marked and the equipment returned to service while the paperwork is being processed.*

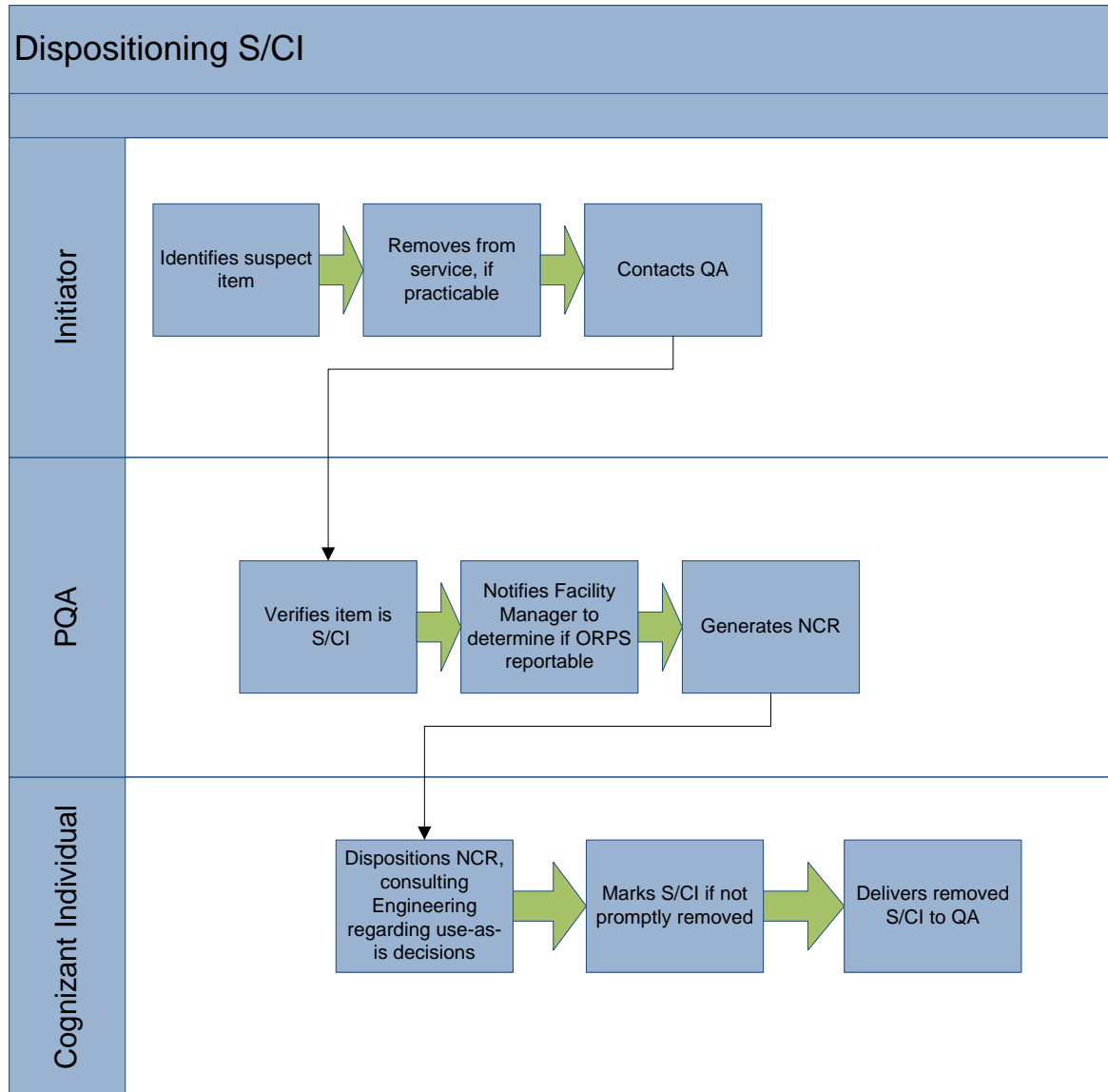
9. Delivers all removed S/CI to QA for ultimate disposal.

### **TRAINING (Reference P-041)**

Personnel specifying, ordering, receiving, inspecting, or installing hardware or electrical items that are susceptible to counterfeiting must take Suspect/Counterfeit Items Awareness Training (see Policy P-041). Managers are responsible to see that the training is taken. The training has been developed by QA and is available online at the Human Resources’ e-Learning site at <http://hr.pppl.gov/OnlineTrainingList.html>. The training must be renewed every three years.

### **RECORDS REQUIREMENTS SPECIFIC TO THIS PROCEDURE**

S/CI discoveries are documented on Nonconformance Reports, which are processed and retained in accordance with the nonconformance procedure, QA-005. No other unique record requirements are imposed by this procedure.



**Attachments**

1. S/CI Information
2. DOE Headmark List


<b>PPPL</b>	<b>PRINCETON PLASMA PHYSICS LABORATORY</b>	<b>PROCEDURE</b>	<b>No. QA-020 Rev 2 page 1 of 2</b>
	<b>S/CI Information</b>		<b>Attachment 1</b>

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Potential S/CI\*:

- High Strength Fasteners – those rated at 100,000 psi (or greater) Tensile

*Strength and those that require grade marking in accordance with the applicable national standards (Some examples are: SAE grades 5 & 8, 8.2; ASTM grades A193, A325, A490, A453, F593 (and many others); and Metric fasteners (grades 8.8 & 10.9).*

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- Molded Case Circuit Breakers (and similar electrical equipment)
- Code-stamped Components (Flanges, Valves, etc.)
- Hoisting and Rigging (Lift) Equipment - *Procurement and inspection requirements are in the Hoisting and Rigging Program*
- Ratchet tie-down assemblies - (These are often assembled using high strength fasteners).

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\* Incidents involving semiconductors are also frequently reported by DOE labs. Suspect semiconductors are usually specialty items for the defense and aerospace industries and elaborate equipment is often needed to detect the counterfeits. At PPPL we rely on inspection by experienced personnel and board testing to detect such items before they become part of systems.

All of these items are required to be purchased through the requisition system. Procurement Cards (P-Cards) cannot be used for these items.

- 1) All requisitions for these items MUST specify Receipt Inspection.
- 2) All requisitions (including spare parts requisitions) for electrical materials (e.g., Molded case circuit breakers or larger circuit breaker components) MUST:
  - a. Require AC Power review;
  - b. Contain a note from the Requisitioner requiring that "Materials must be directly delivered from, and be traceable to, an OEM-authorized distributor."
- 3) All requisitions for high strength fasteners (including fastener material) or for code-stamped components MUST:
  - a. Require the manufacturer's Certified Material Test Reports (CMTR's) showing actual chemical & physical properties.
  - b. Require traceable markings tying the product to the CMTR's.

Note on Grade B8 fasteners:

ASTM standards allow A320, Grade B8 and A193, Grade B8 fasteners to have raised or recessed manufacturer's and grade markings. This means that a manufacturer's mark may be raised, formed into the head, while the B8 grade marking is hand-stamped afterwards.


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S/CI Information			<b>Attachment 1</b>

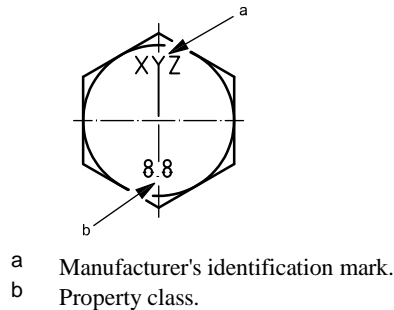
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Although this marking approach is acceptable to the standard, it opens the door to fraudulent hand stamping of fasteners without the required properties. The Industrial Fastener Institute has warned about such incidents.

Requisitions for Grade B8 fasteners should stipulate “no hand stamped grade markings.” The Requisitioner, however, should be aware that compliant fasteners may not be readily available and so they may have to waive this requirement. In this case, testing of a few sample pieces is recommended to assure that the hand-stamped grade is valid.

Note on “Metric Fasteners”: [TCR-QA-020, R2-001](#)

ISO 898-1 standard, section 10 “Marking”, identifies when and how manufacture’s symbols should be applied to metric fasteners. A manufacture’s identification mark shall be included during the manufacturing process on all fasteners marked with a property class symbol (i.e. 8.8 & 10.9). Marking Details for Metric Fasteners:



**Figure 1 - Example of Marking**

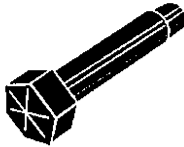
For High Strength fasteners procured as part of manufactured products, not custom fabrications for PPPL, the cognizant individual shall have receipt inspection done to ensure that the products do not contain known S/CI. For these items, the material certification requirement does not apply unless the cognizant individual deems it appropriate due to safety concerns associated with the product. Otherwise, it is presumed that the manufacturer has in some way qualified their design and used appropriate parts.

High strength fasteners removed from other equipment shall not be used in for any other application requiring high strength fasteners.



## DOE Headmark List

ANY BOLT ON THIS LIST SHOULD BE TREATED AS DEFECTIVE WITHOUT FURTHER TESTING.



ALL GRADE 5 AND GRADE 8 FASTENERS OF FOREIGN ORIGIN WHICH DO NOT BEAR ANY MANUFACTURERS' HEADMARKS:





GRADE 5
















GRADE 8


GRADE 5 FASTENERS WITH THE FOLLOWING MANUFACTURERS' HEADMARKS:

<u>MARK</u>	<u>MANUFACTURER</u>	<u>MARK</u>	<u>MANUFACTURER</u>
 J	Jinn Her (TW)	 KS	Kosaka Kogyo (JP)




GRADE 8 FASTENERS WITH THE FOLLOWING MANUFACTURERS' HEADMARKS:

<u>MARK</u>	<u>MANUFACTURER</u>	<u>MARK</u>	<u>MANUFACTURER</u>
 A	Asahi Mfg (JP)	 KS	Kosaka Kogyo (JP)
 NF	Nippon Fasteners (JP)	 RT	Takai Ltd (JP)
 H	Hinomoto Metal (JP)	 FM	Fastener Co of Japan (JP)
 M	Minamida Sleybo (JP)	 KY	Kyoel Mfg (JP)
 MS	Minato Kogyo (JP)	 J	Jinn Her (TW)
 Hollow Triangle	Infasca (CA TW JP YU) (Greater than 1/2 inch dia.)		
 E	Dalai (JP)	 UNV	Unytite (JP)

GRADE 8.2 FASTENERS WITH THE FOLLOWING HEADMARKS:

<u>MARK</u>	<u>MANUFACTURER</u>
 KS	Kosaka Kogyo (JP)

GRADE A325 FASTENERS (BENNETT DENVER TARGET ONLY) WITH THE FOLLOWING HEADMARKS:

	<u>MARK</u>	<u>MANUFACTURER</u>
Type 1	 A325 KS	Kosaka Kogyo (JP)
Type 2	 A325 KS	
Type 3	 A325 KS	

Key: CA-Canada, JP-Japan, TW-Taiwan, YU-Yugoslavia