

Ownership matrix	RPP-27195
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## **1.0 PURPOSE AND SCOPE**

(7.1.3, 7.1.4)

This procedure describes the process for the identification, prevention, evaluation, notification, and disposition of suspect/counterfeit items (S/CIs) at Washington River Protection Solutions, LLC (WRPS). This procedure applies to items that are:

- In the procurement cycle
- In receiving inspection
- In inventory at warehouses and staging areas
- Installed
- In operation.

This procedure also applies to:

- Company ordered material
- Material supplied by subcontractors
- Material and test equipment supplied by test sponsors
- Construction
- Fabrication shops
- Laboratory work and experiments
- Surplus/excess property
- Government property
- Material obtained from U.S. Department of Energy (DOE) sources.

## **2.0 IMPLEMENTATION**

This procedure is effective on the date shown in the header.

## **3.0 RESPONSIBILITIES**

### **3.1 Procurement Personnel**

Maintain awareness of S/CI and support implementation of the S/CI process.

### **3.2 WRPS QA Technician (WRPS QAT)**

Perform inspections for conformance or acceptance of material including verifications that the item(s) being inspected do not exhibit indications attributed to potential suspect/counterfeit items.

### **3.3 Quality Assurance Engineer**

1. Ensures appropriate procurement controls are implemented to preclude entry of S/CI to the site through review of procurement documents.
2. Notifies the S/CI coordinator of nonconformance reports (NCRs) associated with S/CI.
3. Controls potential S/CI in a secure location.

### 3.4 S/CI Coordinator

1. Apprises company, and DOE S/CI Point of Contact (POC) of S/CI status and final NCR disposition.
2. Reviews potential sources of S/CI information for applicability and distribution.
3. Supports the S/CI biennial independent assessment as the audit team subject matter expert (SME).
4. Coordinates with DOE Office of Inspector General (OIG) for disposal of S/CI.

### 3.5 Assigned Engineering Personnel

1. Evaluate S/CI information for applicability to design and procurement specifications, system configuration, and operating conditions.
2. Provide technical specifications, critical characteristics, and acceptance methods in support of procurement and inspection activities to prevent introduction of S/CI.

### 3.6 Responsible Managers and Supervisors

1. Maintain awareness of S/CI.
2. Determine personnel S/CI training needs.

## 4.0 PROCEDURE

### 4.1 Introduction

The two most common S/CI's found at DOE facilities have been threaded fasteners fraudulently marked as high-strength bolts, and refurbished electrical circuit breakers sold and distributed under false certifications. Purchasers have also been misled into accepting S/CI's that do not conform to specified requirements by falsified documentation.

Questions pertaining to S/CI should be referred to the S/CI coordinator. Attachment A provides a historical listing of suspect components. Equipment/material types or classes have been established to identify those specific items which are classified as potentially misrepresented or S/CI. Attachment B provides a listing of those classifications and items subject to S/CI control at tank farm facilities.

### 4.2 Procurement

- |                                |  |
|--------------------------------|--|
| Material Requisition Preparers | 1. For items listed in Attachment B that may be purchased as quality level 0 and P-Card, designate a Code 941 in the "Instructions" section of the Catalog ID in Asset Suite in accordance with the requirements of TFC-BSM-CP_CPR-C-06. |
| Engineering                    | 2. Ensure material requirements are specified in subcontracts via Statement of Work and/or by means of a technical specification, to preclude the purchase or introduction of S/CI.  |

- a. Use the information in Attachments A through I, as applicable, to identify specific components, characteristics, precautions, and other considerations that are to be addressed during the procurement process.
  - 3. Ensure material requests for quality level 1, 2, and 3 items include appropriate technical specifications, procurement quality clauses, documentation, and inspection requirements to prevent introduction of S/CI.
  - 4. With the QA Engineer, develop and approve a QA Inspection Plan (for QL-1, 2, or 3 items) defining inspection attributes, including S/CI when applicable.
  - 5. In maintenance and construction/fabrication subcontracts, specify appropriate requirements to preclude the purchase or introduction of S/CI.
  - 6. Review procurement documents to ensure they contain the appropriate procurement controls to preclude entry of S/CI to the site.
  - 7. Ensure vendor selection complies with qualification requirements for the quality level of the items and services and is based on the vendor's ability to demonstrate the capability of delivering acceptable items.
- Quality Assurance Engineer
- Procurement Personnel

### 4.3 Inspection for Potential S/CI

NOTE: Receipt Inspection for QL-1, 2, or 3 items is subcontracted to Mission Support Alliance – Acquisition Verification Services (MSA-AVS). MSA-AVS reviews items for S/CI when listed on a QA Inspection Plan.

- 1. Upon receipt of material request, WRPS QAT to inspect quality level 0 and P-Card items procured as Q\* in accordance with steps below.
  - 2. Ensure S/CI detection criteria are incorporated into QA inspection planning activities.
  - 3. Use applicable Attachments as resources for detecting S/CIs during walk downs and inspections. Specific items are subject to inspection.
  - 4. Verify and document that the items being inspected do not exhibit indications attributed to potential S/CIs.
  - 5. If an S/CI is detected during inspection activities, document and control the S/CI in accordance with TFC-ESHQ-Q\_ADM-C-02.
- Material Coordinator
- Quality Assurance Engineer
- QA Technician

#### 4.4 Control of Material Identified as S/CI

- |                                 |   |
|---------------------------------|---|
| Responsible Manager or Delegate | 1. Ensure items identified as potential S/CI are documented as nonconforming and controlled in accordance with TFC-ESHQ-Q_ADM-C-02. |
|                                 | 2. Transfer tagged S/CIs to the QC Hold cage in either 2101-HV or 218A for storage.   |
| Cognizant Quality Engineer      | 3. Notify the S/CI coordinator of all NCRs associated with the S/CI.  |

#### 4.5 Reporting of S/CI (7.1.1, 7.1.2)

- |                  |   |
|------------------|---|
| S/CI Coordinator | <ol style="list-style-type: none"> <li>1. Report S/CIs to management regardless of safety classification, location (receiving inspection, inventory/storage areas, fabrication and maintenance areas, installed, etc.), or their operating status.</li> <li>2. When S/CI are discovered during “receipt inspection,” (still considered within the supply chain process) initiate, and process the NCR in accordance with TFC-ESHQ-Q_ADM-C-02. <ul style="list-style-type: none"> <li>• S/CI, when found during receipt inspection, shall not be classified as reportable in the Occurrence Reporting &amp; Processing System (ORPS).</li> </ul> </li> <li>3. Ensure the Shift Office has been contacted to determine if the item is reportable in ORPS based on either of the following criteria: <ul style="list-style-type: none"> <li>• Discovery of any S/CI found in a Safety Class (SC) or Safety Significant (SS) Structure, System or Component (SSC).</li> <li>• Discovery of any S/CI in a non-SC or SS SSC that is found in any application whose failure could result in a loss of safety function, or present a hazard to the public or to worker health and safety.</li> </ul> </li> <li>4. If S/CI needs to be reported into ORPS, refer to TFC-OPS-OPER-C-24 for specific timelines regarding categorization, notification, and final report.</li> <li>5. On receipt of an S/CI NCR from MSA/AVS, process in accordance with TFC-ESHQ-Q_ADM-C-02 and notify the Shift Office (373-2689) to determine if the possibility exists for similar items identified in operating systems.</li> <li>6. Upon determination that an item is counterfeit, notify the DOE S/CI POC.</li> </ol> |
|------------------|---|

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7. When notifying the DOE S/CI POC, include a copy of the occurrence report (if applicable).

Transmit a copy of the NCR and other applicable documentation/information, e.g.:

- NCR number
- Date NCR was written
- Purchase order/job control number (if known)
- End use of product
- Name of manufacturer, distributor, supplier
- Safety class (if known)
- Occurrence report number, if available
- Value of item(s), if known
- Point(s) of contact
- Description of item(s)
- Quantity
- Description of nonconformance.
- Any other pertinent information that would help the DOE S/CI POC and the local OIG.

#### **4.6 Acceptance, Removal, and Disposition of S/CI**

NOTE 1: S/CI may not be destroyed or disposed of without written release from the DOE OIG.

NOTE 2: Burying S/CIs may be acceptable if they do not contain hazardous material or material prohibited by federal, state, or local regulations.

NOTE 3: S/CI shall not be returned to the supplier.

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- S/CI Coordinator
1. Prior to destroying or disposing of S/CIs, consult the Inspector General to determine if there is a need to retain the items as evidence for potential litigation. Based on the OIG's decision, either:
    - a. Retain S/CI material as evidence for potential litigation, or
    - b. Release S/CI material for final disposition and/or disposal as directed by the S/CI coordinator, or
    - c. Release material for training use.

NOTE 1: If required, the evaluation must consider potential risks to the environment, the public and workers along with a cost/benefit impact, and a schedule for replacement.

NOTE 2: Examples of S/CI that were previously evaluated to remain in place include:

- Tank riser blind flange fasteners
- Panel enclosure fasteners.

- Engineering Personnel
2. Evaluate S/CI to determine if it remains in the current/proposed application, could it create a safety hazard.

- Engineering/QA/QC
3. If the engineering evaluation of the S/CI has determined that its continued use would not create a safety hazard in its current/proposed application, then:

- a. Disposition the NCR to Use-As-Is, allowing the S/CI to remain in place and reference the engineering evaluation with the disposition.

- QC
- b. When S/CI has been dispositioned to remain in place, based on the engineering evaluation, identify the accepted S/CI by marking with paint (i.e., torque paint) or other appropriate methods.

Engineering

NOTE: There may be an instance when the authorized S/CI is not directly associated with a piece of equipment linked to an EIN.

- c. If the S/CI is integral to equipment with a recognized Equipment Identification Number (EIN), then note the physical location of the S/CI in the Master Equipment List (MEL) within SmartPlant by including the NCR number as reference. See TFC-ENG-FACSUP-C-23 for updating the MEL.

- d. Identify a way to prevent its reuse in an application it may not be suitable for.

- Engineering/QA/QC
- e. If the S/CI is removed, replace it with an acceptable item and prepare the S/CI for disposal, following OIG approval.

4. If the engineering evaluation of the S/CI has determined that its use could create a safety hazard in its current/proposed application:
  - a. Contact Production Operations Shift Operations to secure the equipment.
  - b. Remove the S/CI as soon as practical.
  - c. Tag, segregate, or otherwise control the S/CI to prevent inadvertent use.
  - d. Prepare the S/CI for disposal, following OIG approval.

S/CI Coordinator

5. Upon receipt of notification from the DOE/OIG authorizing disposal, ensure that all S/CI material dispositioned for disposal is properly controlled and arranged for the material to be permanently and irrevocably altered so that it cannot be used. Examples of alterations include:
  - Melting
  - Shredding
  - Destroying the threads on fasteners.
6. Provide a copy of all correspondence with DOE/OIG to the WRPS Internal Audit (IA) department.

#### 4.7 Surplus/Excess Material

NOTE: Surplus/excess material is controlled in accordance with TFC-BSM-FPM\_PR-C-20.

Responsible Personnel

1. Remove S/CI from surplus/excess material before the surplus/excess material is released for sale or transfer of accountability.
2. Ensure surplus items received from DOE or other facilities are inspected for S/CI prior to installation or placement in warehouse.

#### 4.8 Assessments

Quality Assurance Manager

1. Ensure that an assessment on the effectiveness of the S/CI process is conducted and reported biennially.

#### 4.9 Training

Personnel within the following functional groups shall attend S/CI training:

- Operations Person-in-Charge/Field Work Supervisor (PIC/FWS)
- Maintenance (Craft and PIC/FWS)
- Engineer (System & Project)
- QA Engineer
- Procurement Specialist
- Material Coordinator

- Truck Driver (Standard & Light Duty).

- |                                   |   |
|-----------------------------------|---|
| Responsible Manager or Supervisor | <ol style="list-style-type: none"> <li>1. Ensure that applicable personnel, within your area (see below for list), are assigned S/CI training Course 350720, Suspect/Counterfeit Items, or approved equivalent so as to understand the basic concepts for awareness, prevention, detection, and reporting of S/CI items (e.g., Course 170720 is a preapproved equivalent).</li> <li>2. Coordinate with your respective Training Coordinator to ensure S/CI training is on the employees training plan.</li> <li>3. For S/CI training classes taken outside of Hanford, ensure that requests for equivalency are approved by the Training Manager in accordance with TFC-BSM-TQ_MGT-C-01 prior to taking the class.</li> </ol>   |
| S/CI Coordinator                  | <ol style="list-style-type: none"> <li>4. Monitor S/CI training to ensure it provides: <ul style="list-style-type: none"> <li>• Basic introductory information for S/CI awareness</li> <li>• Actions and responsibility for notification and reporting of S/CIs are identified</li> <li>• Responsibility to control S/CIs when identified.</li> </ul> </li> </ol>   |
| Responsible Personnel             | <ol style="list-style-type: none"> <li>5. Attend training class when scheduled and complete additional assignments when requested.</li> </ol>   |
| S/CI Coordinator                  | <ol style="list-style-type: none"> <li>6. Collect, maintain, disseminate, and use the most accurate, up-to-date information on S/CIs and suppliers using all available sources, including: <ul style="list-style-type: none"> <li>• Government-Industry Data Exchange Program (GIDEP) <a href="http://www.gidep.org">www.gidep.org</a></li> <li>• Institute of Nuclear Power Operations (<a href="http://www.inpo.info">www.inpo.info</a>) (available to INPO members only)</li> <li>• DOE Occurrence Reporting and Processing System (ORPS)</li> <li>• DOE Suspect/Counterfeit Item web site <a href="http://energy.gov/ehss/policy-guidance-reports/databases/suspectcounterfeit-and-defective-items">http://energy.gov/ehss/policy-guidance-reports/databases/suspectcounterfeit-and-defective-items</a>.</li> </ul> </li> <li>7. When available, provide applicable information on suspect/counterfeit items to the appropriate personnel using one of the following methods: lessons learned, required reading, briefings, or training.</li> </ol> |

#### 4.10 QA Technician Training

The WRPS QA Technician (QAT) is certified by Mission Support Alliance (MSA) to perform inspection activities within various disciplines. The certification is provided in accordance with MSC-PRO-QA-263.

Training for Suspect/Counterfeit Items is one of the required training types under “Basic Inspection”. This requires the one-time initial training, followed by annual refresher training, so as to maintain the “Basic Inspection” certification.

Training records are controlled and reported in accordance with MSC-PRO-QA-263.

- |               |   |
|---------------|---|
| QA Technician | 1. Complete initial S/CI training (Course 170720).          |
|               | 2. Complete annual S/CI refresher training (Course 170724). |

#### 4.11 Trend Analysis

- |                  |   |
|------------------|---|
| S/CI Coordinator | 1. Report S/CI issues to the QA Manager.                          |
| QA Manager       | 2. Report S/CI trend issues in accordance with TFC-ESHQ-Q_C-C-06. |

#### 5.0 DEFINITIONS

Counterfeit part. A part made or altered so as to imitate or resemble an “approved part” without authority or right, and with the intent to mislead or defraud by passing the imitation as original or genuine.

Critical Load Path. A structural component (e.g., a bolt) in a crane, hoist, transporter, or other handling/lifting equipment that bears the load being lifted or moved, and whose failure could result in an operational safety problem or an unacceptable risk of injury.

Fastener (regardless of the safety classification).

- A screw, nut, bolt, or stud with internal or external threads or a load-indicating washer with a nominal diameter of 5 millimeters or greater in the case of such items described in metric terms; or 1/4 inch or greater in the case of such items in terms of the English system of measurement which contains any quantity of metal and held out as meeting a standard or specification which requires through-hardening; or
- A screw, nut, bolt, or stud having internal or external threads which bears a grade identification marking required by a standard or specification; or
- A washer to the extent that it is subject to a standard or specification applicable to a screw, nut, bolt, or studs described above, except that such term does not include any screw, nut, bolt, or stud that is produced and marked as American Society for Testing and Materials (ASTM) A 307 Grade A or produced in accordance with ASTM F432.

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Grade identification. Any symbol appearing on a fastener purporting to indicate that the fastener's base material, strength properties, or performance capabilities conform to a specific standard of a consensus standards organization or government agency.

Graded classifications. System used to determine minimum requirements for structures, systems and components (e.g., design, operation, procurement, and maintenance requirements). The graded classifications in order of precedence are safety class, safety significant, and enhanced quality general services.

High strength graded fastener. Fasteners having a minimum tensile strength of 75 ksi, including those produced and procured in accordance with the Society of Automotive Engineers Standard J429, Grades 5, 5.2, 8, and 8.2; ASTM Standard A325, Types 1 and 3; ASTM A490, ASTM A354, ASTM A449 (Types 1 and 3), and some ASTM F468.

Item. An all-inclusive term used in place of any of the following: appurtenance, assembly, component, equipment, material, module, part, structure, subassembly, subsystem, system, or unit.

Substantial safety hazard. A loss of safety function to the extent that there is a major reduction in the degree of protection to the public or employee health and safety.

Suspect/counterfeit items. A suspect item is one in which there is an indication by visual inspection, testing, or other information that it may not conform to established Government or industry-accepted specifications or national consensus standards or whose documentation, appearance, performance, material, or other characteristics may have been misrepresented by the vendor, supplier, distributor, or manufacturer. A counterfeit item is one that has been copied or substituted without legal right or authority or whose material, performance, or characteristics are knowingly misrepresented by the vendor, supplier, distributor, or manufacturer. An item that does not conform to established requirements is not normally considered S/CI if the nonconformity results from one or more of the following conditions, which should be controlled by site procedures as nonconforming items:

- Defects resulting from inadequate design or production quality control
- Damage during shipping, handling, or storage
- Improper installation
- Deterioration during service
- Degradation during removal
- Failure resulting from aging or misapplication, or
- Other controllable causes.

## 6.0 RECORDS

The following records are generated during the performance of this procedure:

- Training Records
- Correspondence with DOE/OIG.

The record custodian identified in the Company Level Records Inventory and Disposition Schedule (RIDS) is responsible for record retention in accordance with TFC-BSM-IRM\_DC-C-02.

## **7.0 SOURCES**

### **7.1 Requirements**

- 7.1.1 DOE O 221.1A, “Reporting Fraud, Waste, and Abuse to the Office of the Inspector General.”
- 7.1.2 DOE O 232.2A, “Occurrence Reporting and Processing of Operations Information.”
- 7.1.3 DOE O 414.1D, “Quality Assurance – Change 1.”
- 7.1.4 TFC-PLN-02, “Quality Assurance Program Description.”

### **7.2 References**

- 7.2.1 DOE G 414.1-3, “Suspect/Counterfeit Items Guide for Use with 10 CFR 830 Subpart A, QA Requirements and DOE O 414.1B, Quality Assurance.”
- 7.2.2 DOE-HDBK-1221-2016, “Suspect/Counterfeit Items Resource Handbook.”
- 7.2.3 DOE-STD-1090-2007, DOE STANDARD, “Hoisting and Rigging.”
- 7.2.4 EPRI Technical Report 1019163, Rev. 1, “Plant Support Engineering: Counterfeit and Fraudulent Items.”
- 7.2.5 IAEA-TECDOC-1169, “Managing Suspect and Counterfeit Items in the Nuclear Industry”, dated August 2000
- 7.2.6 MSC-PRO-QA-263, “Qualification and Certification of QA/QC Inspection and Test Personnel.”
- 7.2.7 NRC Information Notice 89-70: “Possible Indications of Misrepresented Vendor Products.”
- 7.2.8 NRC Information Notice 89-70, Supplement 1: “Possible Indications of Misrepresented Vendor Products.”
- 7.2.9 TFC-BSM-CP\_CPR-C-01, “Purchasing Card (P-Card).”
- 7.2.10 TFC-BSM-CP\_CPR-C-06, “Procurement of Materials.”
- 7.2.11 TFC-BSM-CP\_CPR-C-09, “Supply Chain Process.”
- 7.2.12 TFC-BSM-CP\_CPR-C-18, “Material Control.”
- 7.2.13 TFC-BSM-FPM\_PR-C-20, “Management of Government Property with Subcontractors/Suppliers.”
- 7.2.14 TFC-BSM-TQ\_MGT-C-01, “Training Equivalencies and Extensions.”
- 7.2.15 TFC-ENG-FACSUP-C-23, “Equipment Identification and Data Management.”

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7.2.16 TFC-ESHQ-Q\_ADM-C-02, “Nonconforming Item Reporting and Control.”

7.2.17 TFC-ESHQ-Q\_C-C-01, “Problem Evaluation Request.”

7.2.18 TFC-ESHQ-Q\_C-C-06, “Trending Analysis Process.”

7.2.19 TFC-OPS-OPER-C-24, “Occurrence Reporting.”

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**ATTACHMENT A - SUSPECT COMPONENTS LIST**

This list was extracted from the U.S. Department of Energy Quarterly Reports (DOE/EH-0674) on the “Analysis and Trending of Suspect/Counterfeit Items at Department of Energy Facilities,” July 1997.

NOTE: It is not necessarily a negative reflection on a supplier or manufacturer if S/CIs are reported regarding its particular product. Reputable manufacturers and suppliers have a vital interest in preventing the manufacture or distribution of S/CI associated with themselves. It may be that the supplier or manufacturer was victimized and is pursuing S/CI associated with its products in an aggressive, prudent, and professional manner in order to get such items off the market. Therefore, each particular case regarding the manufacture or supply of S/CI must be examined on its own merit without making premature conclusions regarding fault or culpability of the manufacturer or supplier whose name is associated with the S/CI. In short, what follows is a “suspect components list” and not a “suspect manufacturer or supplier list.” The manufacturer or supplier identified in the following table should not be considered to have engaged in any wrongdoing without additional information.



## ATTACHMENT A - SUSPECT COMPONENTS LIST (cont.)

Component	Manufacturer/Type	Description	Supplier	References
Circuit Breakers	Westinghouse (Component Examples)			
	<ul style="list-style-type: none"> <li>• TF136090</li> <li>• TF361050WL</li> <li>• TED1130020</li> </ul>	Commercial Grade	Westinghouse Electric Supply Co. (WESCO)	NRC I.N. 91-48
	<ul style="list-style-type: none"> <li>• Not Provided</li> </ul>	Low Voltage	Satin America & Circuit Breaker Systems, Inc.	NRC I.N. 89-45 & Supplement #2
	<ul style="list-style-type: none"> <li>• DB-25 &amp; DS-416</li> </ul>	Trip units; Navy Trip units; 1, 2, & 3 pole various amp. ratings	General Circuit Breaker & Electrical Supply	NRC I.N. 88-46, Supplements and Attachments
	<ul style="list-style-type: none"> <li>• FSN-5925-628-0641</li> <li>• DB-25</li> <li>• DB-50</li> <li>• HKB3150T</li> <li>• FB3020</li> <li>• FB3070</li> <li>• FB3050</li> <li>• EHB3025</li> <li>• LBB3125</li> <li>• HKA31250</li> <li>• JA3200</li> <li>• EHB2100</li> <li>• 225N</li> </ul>		HLC Electrical Supply	Office Of Nuclear Safety 93-9
	<ul style="list-style-type: none"> <li>• EB 1020</li> <li>• HDEA 2030</li> <li>• MCP331100R</li> <li>• MCP431550CR</li> <li>• BAB3060H</li> <li>• 656D14 8G03</li> <li>• FA-2100</li> <li>• EH-2050</li> <li>• HFB-3050</li> <li>• HFD(B)-3020</li> <li>• MA3600</li> <li>• F2020</li> <li>• EH2100</li> <li>• EB3050</li> <li>• HMC3800F</li> <li>• EA2090</li> <li>• FA3125</li> <li>• HMCP 150</li> </ul>		California Breakers, Inc.	
			PENCON International (DBA) General Magnetics/Electric Wholesale	
			ANTI THEFT Systems, Inc. (DBA) ATS Circuit Breakers and AC Circuit Breaker - Electrical Supply	
			Molded Case Circuit Breakers	
			NSSS, Inc.	
			Spectrum, Tech.	
			Rosen Electric	
			Luckow Circuit Breaker	

## ATTACHMENT A - SUSPECT COMPONENTS LIST (cont.)

Component	Manufacturer/Type	Description	Supplier	References
Circuit Breakers	Westinghouse (cont.) (Component Examples) <ul style="list-style-type: none"> <li>• HFD</li> <li>• EH2070</li> <li>• FA2050</li> <li>• JA2225</li> <li>• JL3B125</li> <li>• JL3B070</li> <li>• JL3B150</li> <li>• JL3B200</li> <li>• JL3B090</li> <li>• JL3B100</li> <li>• HLM3800T</li> <li>• F3100N</li> <li>• MA3500</li> <li>• EH2015</li> <li>• FA3035</li> <li>• FA2100</li> <li>• HLA2125OTM</li> <li>• EH2070</li> <li>• JB3100</li> <li>• EB2030</li> <li>• 8MC800</li> <li>• CAH3200</li> <li>• EHB3040</li> <li>• JL3-B150</li> <li>• JL3-B200</li> <li>• JL3-B090</li> <li>• JL3-B1000</li> <li>• HFA, HFB, FA</li> <li>• JL3-(B)8070</li> <li>• JL3-B125</li> <li>• EH-2020</li> <li>• FA-3035</li> <li>• EH-2050</li> <li>• FA-2100</li> <li>• FA-2050</li> <li>• HFB-3050</li> <li>• JA-2225</li> <li>• HLM3800T</li> <li>• F3100N</li> <li>• MA3500</li> <li>• EH2015</li> <li>• LA3200WL</li> <li>• HLA3200T</li> <li>• 2602D58U9</li> </ul>	Shunt Trips Aux. Contacts 2 & 3 pole circuit breakers of various amperages	General Circuit Breaker & Electrical Supply  HLC Electrical Supply  PENCON International (DBA) General Magnetics/ Electric Wholesale  ANTI THEFT Systems, Inc. (DBA) ATS Circuit Breakers and AC Circuit Breaker - Electrical Supply  Molded Case Circuit Breakers Co. (MCCB)	NRC I.N. 88-46 Supplements and Attachments



## ATTACHMENT A - SUSPECT COMPONENTS LIST (cont.)

Component	Manufacturer/Type	Description	Supplier	References
Circuit Breakers	ITE (cont.) (Component Examples) <ul style="list-style-type: none"> <li>• HE9B040</li> <li>• EE3B050</li> <li>• BQ2B030</li> <li>• EE3B070</li> <li>• EE2B100</li> <li>• EE2B050</li> <li>• EE2B030</li> <li>• FJ3B225</li> <li>• ET</li> <li>• KA</li> <li>• EH-313015</li> <li>• JL-3B070</li> <li>• JL-3B150</li> <li>• E43B015</li> <li>• EF2-B030</li> <li>• EH3B100</li> <li>• QP1B020</li> <li>• QJ3B200</li> <li>• EF3B100</li> <li>• 1193</li> </ul>		California Breakers, Inc.  PENCON International (DBA) General Magnetics/ Electric Wholesale  ATS Circuit Breakers, Inc.  Panel Board Specialties  Rosen Electric Equipment	
Circuit Breakers	ITE, Gould & ITE Imperial  Brown Boveri Elect. (BBE) ASEA Brown Boveri (Component Examples) <ul style="list-style-type: none"> <li>• Type HK</li> <li>• 5 HK</li> <li>• 7.5 HK</li> <li>• 15 HK</li> <li>• 38 HK</li> <li>• ITE 62-6</li> </ul>	Not Provided ID-4KV Not Provided Not Provided Not Provided	Brown Boveri ASEA Brown Boveri	NRC I.N. 89-86  NRC I.N. 87-41  Office of Nuclear Safety, 92-25
Circuit Breakers	Square "D" Co. Component Examples <ul style="list-style-type: none"> <li>• KHL 36125                (Any Type)</li> </ul>	Molded Case	General Circuit Breaker & Electrical Supply  HLC Electric Supply  California Breakers, Inc.  PENCON International (DBA) General Magnetics/Electric Wholesale	NRC I.N. 88-46 Supp. & Attach.  NRCB 88-10  NRC I.N. 90-46

## ATTACHMENT A - SUSPECT COMPONENTS LIST (cont.)

Component	Manufacturer/Type	Description	Supplier	References
Circuit Breakers	Square "D" Co. Component Examples (cont.)  <ul style="list-style-type: none"> <li>• QOB220</li> <li>• QO220</li> <li>• LO-3</li> <li>• SBW-12</li> <li>• 989316</li> <li>• FAL3650-16M or</li> <li>• FAL36050-16M</li> <li>• KA36200</li> <li>• 999330</li> </ul> Manufacturer not Provided  <ul style="list-style-type: none"> <li>• EHB3025</li> </ul>	1 pole, 15 amp  2 & 3 pole 20 & 50 amp breakers  3 pole - 200 amp breaker 30A/600V  Not Provided  Not Provided	ANTI THEFT Systems Inc. (DBA) ATS Circuit Breakers and AC Circuit Breaker - Electrical Supply  Not Provided  General Circuit Breaker & Electrical Supply  HLC Electric Supply California Breakers, Inc.  PENCON International (DBA) General Magnetics/Electric Wholesale  Stokely Enterprises  Molded Case Circuit Breakers	SENS ID #10 3-17-89  NRC I.N. 89-45 & Supplement #2          DOE Letter 8-26-91 Reprinted NuVEP: Bulletin 7-26-91
Circuit Breakers	Fed. Pacific (Component Examples)  <ul style="list-style-type: none"> <li>• NEF431020R</li> <li>• NE111020</li> <li>• NE</li> </ul>	3 pole, 20 amp 1 pole, 20 amp 1 pole, 15 amp	General Circuit Breaker & Electrical Supply  HLC Electric Supply  California Breakers, Inc.  PENCON International (DBA) General Magnetics/Electric Wholesale	SENS ID. #10 3-17-89

## ATTACHMENT A - SUSPECT COMPONENTS LIST (cont.)

Component	Manufacturer/Type	Description	Supplier	References
Circuit Breakers	Fed. Pacific (Component Examples) (cont.) <ul style="list-style-type: none"> <li>• NF63-1100</li> <li>• NE22-4060</li> <li>• NE22-4100</li> <li>• NEF-433030</li> <li>• 2P125</li> </ul>	1, & 3 pole - 30, 60 & 100 amp breakers	ANTI THEFT Systems, Inc. (DBA) ATS Circuit Breakers and AC Circuit Breaker - Electrical Supply  General Circuit Breaker & Electrical Supply  HLC Electric Supply  California Breakers, Inc.	SENS ID. #11 3-3-89     NRC I.N. 88-46, Supp. & Attach.
	Jefferson (Component Examples)	Not Provided	PENCON International (DBA) General Magnetics/electric Wholesale  ANTI THEFT Systems, Inc. (DBA) ATS Circuit Breakers and AC Circuit Breaker - Electrical Supply  Mid West Co.	NRC I.N. 88-46, Supp. & Attach.
Circuit Breakers	Superior (Component Examples) <ul style="list-style-type: none"> <li>• 246U-3</li> </ul>	Not Provided	General Circuit Breaker & Electrical Supply  Rosen Electric  HLC Electric Supply  California Breakers, Inc.  PENCON International (DBA) General Magnetics/Electric Wholesale  ANTI THEFT Systems, Inc. (DBA) ATS Circuit Breakers and AC Circuit Breaker - Electrical Supply	NRC I.N. 88-46 Supp. & Attach.

## ATTACHMENT A - SUSPECT COMPONENTS LIST (cont.)

Component	Manufacturer/Type	Description	Supplier	References
Circuit Breakers	Manufacturer Not Provided (Component Examples)  50DHP250	2 pole - 50 amp	General Circuit Breaker & Electrical Supply  HLC Electric Supply  California Breakers, Inc.  PENCON International (DBA) ATS Circuit Breakers and AC Circuit Breaker - Electrical Supply	NRC I.N. 88-46, Supp. & Attach.
Circuit Breakers  Heaters	Cutler Hammer (Component Examples)  <ul style="list-style-type: none"> <li>• 10177H13</li> <li>• 10177H21</li> <li>• 10177H32</li> <li>• 10177H036</li> <li>• 10177H1049</li> </ul>	Not Provided	AAKER  General Circuit Breaker & Electrical Supply  HLC Electrical Supply  California Breakers, Inc.  PENCON International (DBA) General Magnetism/Electric Wholesale  ANTI THEFT Systems, Inc. (DBA) ATS Circuit Breakers and AC Circuit Breaker - Electrical Supply	NRC I.N. 88-46, Supp. & Attach.

## ATTACHMENT A - SUSPECT COMPONENTS LIST (cont.)

Component	Manufacturer/Type	Description	Supplier	References
Switches	(Component Examples)  Crouse Hinds #EDSC2129  Sq. D Type G. Class 9012, 9025, 9016	Tumbler, ft. op	Platt Electric Supply Co.  Gen. Motors, Electro-Motive Design	SENS ID #16 1-27-92  Office of Nuclear Safety 93-24 & 93-27
Transmitters	Rosemount	(Component Examples)  • Model 1151 GP • Model 1151 DP	Venetech	E.L. Wilmot letter dated 8-1-91  H. Richardson letter HR-81-91 dated 8-15-91
Motors	Siemen & Allis (Component Examples)  INP 143 T 215 T	10 H.P.	General Circuit Breaker & Electrical Supply  HLC Electric Supply  California Breakers, Inc.  PENCON International (DBA) General Magnetics/Electric Wholesale  ANTI THEFT Systems, Inc. (DBA) ATS Circuit Breakers and AC Circuit Breaker - Electrical Supply  Rosen Electric Equipment	NRC I.N. 88-46, Supplements and Attachments

## ATTACHMENT A - SUSPECT COMPONENTS LIST (cont.)

Component	Manufacturer/Type	Description	Supplier	References
Relays	Potter & Brumfield (Component Examples)  MDR-138, 173-1 134-1, 142-1	Not-latching rotary	Stokely Enterprises  Spectronics, Inc.  Nutherm International  The Martin Co.	NRC I.N. 90-57 & Attach.
	Teledyne	All qualified to MIL-R-28776 and MIL-R-39016	Not Provided	DOE-ID Wilmot letter, 7-16-91
	G.E. & Exide (Component Examples)  • 12HGA-11S52 • NX 400	Overload & Aux.	General Circuit Breaker & Electrical Supply  HLC Electric Supply  California Breakers, Inc.  PENCON International (DBA) General Magnetics/Electric Wholesale  ANTI THEFT Systems, Inc. (DBA) ATS Circuit Breakers and AC Circuit Breaker - Electrical Supply	NRC I.N. 88-46, Supp. & Attach.
	Manufacturer not provided  • FSC-5945	Not Provided	Stokely Enterprises	DOE Letter 8-26-91 Reprinted NuVEP: Bulletin 7-26-91
	Amerace (or Agastat) (Component Examples)  Models: E7024 E7022	Electro Pneumatic Timing Relays	Amerace  Control Components Supply	SENS ID #1 11-1-91  NRC I.N. 92-24
	A through L Series Model 7032	PRB		

## ATTACHMENT A - SUSPECT COMPONENTS LIST (cont.)

Component	Manufacturer/Type	Description	Supplier	References
Fuses	Bussman Co. (Component Examples)  REN 15 & NOS-30          Class 1E	15A-250V & 30A-600V          All Supplied by PMS	General Circuit Breaker & Electrical Supply  HLC Electric Supply  California Breakers, Inc.  PENCON International (DBA) General Magnetics/Electric Wholesale  ANTI THEFT Systems, Inc. (DBA) ATS Circuit Breakers and AC Circuit Breaker - Electrical Supply  Preventive Maintenance Systems (PMS)	NRC I.N. 88-46, Supp. & Attach.          NRC I.N. 88-19
Controllers	Manufacturer Not Listed (Component Examples)	Motor Controllers	Stokely Distributors & Stokely Enterprises, Inc.	DOE letter 8-26-91 & NUVEP Bulletin 7-26-91
Starters	Westinghouse (Component Examples)  626B187G17 626B187G13	Not Provided	General Circuit Breaker & Electrical Supply  HLC Electric Supply  California Breakers, Inc.  PENCON International (DBA) General Magnetics/Electric Wholesale  ANTI THEFT Systems, Inc. (DBA) ATS Circuit Breakers and AC Circuit Breaker - Electrical Supply	NRC I.N. 88-45 Supp. & Attach.
Resistors	Unknown	All	Impala Electronics	NRC I.N. 91-01

## ATTACHMENT A - SUSPECT COMPONENTS LIST (cont.)

Component	Manufacturer/Type	Description	Supplier	References
Semiconductors	Solid State Devices Inc. (SSDI) SFF 9140  SPD 1511-1-11  2A14/18 or 2A14/52  SSR4045CTTXV  SFF9140TWX  SPMF106ANH  SPD 5818 or IN5858JTXV  2N797  Unknown	P-Channel MOSFET  Pin Diode (SA3059)  Ion Implanted Diode  SCHOTTKY Diodes  Power Transistors  Special Pack MOSFET Switch  Axial Leaded SCHOTTKY Diode  Transistor  Diode (SA 3436)	SSDI	DOE Albuquerque Letter, 06-25-96 to DOD Inspector General
Starter Controls	Westinghouse (Component Examples)  • A200MICAC  • A201KICA  • A201L2CA  • AN13A	Not Provided	General Circuit Breaker & Electrical Supply  HLC Electric Supply  California Breakers, Inc.  PENCON International (DBA) General Magnetics/Electric Wholesale  ANTI THEFT Systems, Inc. (DBA) ATS Circuit Breakers and AC Circuit Breaker - Electrical Supply	NRC I.N. 88-48

## ATTACHMENT A - SUSPECT COMPONENTS LIST (cont.)

Component	Manufacturer/Type	Description	Supplier	References
Gauge Glasses	Siemen & Allis (Component Examples)  #00-737-637-118 215 T	Not Provided	Rosen Electric Co.	NRC I.N. 88-46 Supp. & Attach.
Mercury Lamps	Spectro Inc. (Component Examples)  V00014	Not Provided	General Circuit Breaker & Electrical Supply  HLC Electric Supply  California Breakers, Inc.  PENCON International (DBA) General Magnetics/Electric Wholesale  ANTI THEFT Systems, Inc. (DBA) ATS Circuit Breakers and AC Circuit Breaker - Electrical Supply	NRC I.N. 88-46
Electrical Frames	Westinghouse (Component Examples)  LA2600F LA3600F MA2800F	Not Provided	General Circuit Breaker & Electrical Supply  HLC Electric Supply  California Breakers, Inc.  PENCON International (DBA) General Magnetics/Electric Wholesale  ANTI THEFT Systems, Inc. (DBA) ATS Circuit Breakers and AC Circuit Breaker - Electrical Supply	NRC I.N. 88-46
Push button station	Crouse Hinds (Component Examples)  #00-737-637-118	Single gang, pushbutton	Platt Electric Supply Co.	SENS Report ID #16 1-27-92

## ATTACHMENT A - SUSPECT COMPONENTS LIST (cont.)

Component	Manufacturer/Type	Description	Supplier	References
Overload Relay Thermal Unit	Square D (Component Examples)  B19.5, B22	Not Provided	Not Provided	NRC I.N. 88-46
Piping, Fittings Flanges, and Components	Tube-line Corp. Ray Miller, Inc.	Subassemblies, fittings, flanges, & other components  (Carbon and Stainless Steel components)	Tube-line  Ray Miller, Inc.	NRC IEB 83-06 NRC I.N. 89-18 NRC IEB 83-07 NRC I.N. 83-01
Piping, Fittings, Flanges, and Components	Piping Supplies, Inc. & West Jersey Mfg. & Chews Landing Metal Mfg.	Carbon and Stainless Steel Fittings and Flanges	Piping Supplies, Inc. & West Jersey Mfg. & Chews Landing Metal Mfg.	NRC Bulletin 88-05 & Supplements
Valves	VOGT  Crane  ITT Grinnell Valve Co., Inc.  Crane, Pacific, Powell, Walworth & Lunkenheimer  Pacific  Crane Chapman  Pacific	Full port design 2-inch Model SW-13111 & 1023  4"-1500psi, pressure sealed  Diaphragm valves  Gate Valves  8" & 3" Globe Valve  24" Check Valve  Check Valve	CMA International IMA Valve Refurbisher  Southern Cal. Valve Maintenance co., Welding Service & CMA Int.  ITT Grinnell Valve Co. Inc. Div. of Diaflo & ITT Engineered Valves  Coffeyville Valve Inc.  CMA & IMA Valve Refurbisher  CMA & IMA Valve Refurbisher  CMA & IMA Valve Refurbisher	NRC I.N. 88-48 & Supplements  NRC I.N. 91-09  NRC Comp. Bulletin 87-02  NRC I.N. 92-56  NRC I.N. 88-48, Supp. & Attach.  NRC I.N. 88-48, Supp. & Attach.  NRC I.N. 88-48, Supp. & Attach.

## ATTACHMENT A - SUSPECT COMPONENTS LIST (cont.)

Component	Manufacturer/Type	Description	Supplier	References
Valves	Kerotest	8" Valve	CMA & IMA Valve Refurbisher	NRC I.N. 88-48 Supp. & Attach.
	Pacific	4" Gate Valve	CMA & IMA Valve Refurbisher	NRC I.N. 88-48 Supp. & Attach.
	Lukenheimer	6" Model 1542 20" Model 3013	CMA & IMA Valve Refurbisher	NRC I.N. 88-48 Supp. & Attach.
	Crane	All	CMA & IMA Valve Refurbisher	NRC I.N. 88-48 Supp. & Attach.
Flanges	China Ding Zinang Nan Xi Li Flange Co. Shou Gang Mach. Eng. Co.	Flanges, ASTM A105, ASME SA105	Billiongold Co. LTD. Tain Gong Co. Sanxi Province Overseas Trading Corp	NRC I.N. 92-68 and Attachments  Office of Nuclear Safety 92-25, 93-23, and 92-35  National Board of Boiler and Pressure Vessel Inspectors (NBBI) Bulletin: Special Report, 1992, Volume 48, Number 2, The Chinese Flange Investigation
Valve Replacement Parts	Masoncelian-Dresser Industries	Plug stem, stem to plug anti-rotation pin, seat ring, valve plugs, bushings, cages & packing box components	Cor-Val, Control Valve Specialists, H.H. Barnum & M.D. Norwood, Sample Webtrol Controls, Inc.	NRC I.N. 88-97 Supp. & Attach.
Pumps & Replacement Parts	Hayward Tyler Pump Co.	HTPC ASME Nuclear Code	Hayward Tyler Pump Co.	IEB 83-05 & Attachments
Channel Members	Unistrut Corporation	Continuously slotted channels, structural framing members, fasteners, nuts, fittings, pipe clamps	Unistrut Corporation	NRC I.N. 91-25
Fire Barriers	Thermal Science Inc.	Thermo-Log 330	None Listed	ES&Q Update #8 NRC I.N. 92-55
Valve Actuator	Limitorque	Eyebolts on housing cover	None Listed	Office of Nuclear Safety 93-25  NRC I.N. 93-37

## ATTACHMENT A - SUSPECT COMPONENTS LIST (cont.)

Component	Manufacturer/Type	Description	Supplier	References
Steel	Alloy & Carbon Steel Co. Inc., Atlantic Steel Co., Levingston Steel Co., & Copperweld Steel co.	Plate Angle Flat Bar Bar	Meredith Corporation Pressure Vessel Nuclear Alloy & Carbon Steel Co., Inc.	NRC I.N. 89-56, Attachments and Supplements
Fasteners (Bolts, Screws, Nuts, and Washers)	(parentheses designated headmark)  Asahi (A) Daiichi (D) Daiei (E) Fastener Co. of Japan (FM) Hinomoto Metal (H) Jin Her (J) Kyowa (K) Kosaka Kogyo (KS) Kyoei Minamida Seiybo (M) Mnato Kogyo (MS) Nippon (NF) Takai (RT) Tsukimori (S) Unytte (UNY) Yamadai (Y) Ivaco, Infasco (hollow triangled)	<ul style="list-style-type: none"> <li>• Those with suppliers or manufacturers</li> <li>• Those that are improperly marked</li> <li>• Those of foreign manufacture that do not meet Public Law 101-592. Fastener Quality Act</li> </ul>	Note: Listed suppliers may also be manufacturers  Lawrence Engineering & Supply Co. Metal Building Bolts Nichimin Corporation UNICO Ace Corporation E. K. Fasteners, Inc. H. Y. Port Fasteners Co. Kobayashi Metals, LTD. Takai Screw Mfg. Co. LTD. Yamaguchi Sesakusho Co. LTD. Highland Bolt & Nut Porteous Fastener Co. Northwest Fasteners Ziegler Bolts & Parts Co. Edgewater Fasteners, Inc. Reynolds Fasteners A & G Engineering	Commercial Carrier Journal Articles for: 6/88, 1/90, 2/90, 3/90, 4/90, 6/90, 7/90, 12/90  INEL Suspect Headmark List  SENS Report #5 2/6/91  SENS Report #13 2/6/91  HR 3000, U.S. House of Representatives, July 1988  J. A. Jones, Ltr, 9/23/92  Memo from L. Kubicek, 3/28/91  Memo from D. Sanow, 3/8/91  "Fastener Technology International," Feb., April, and June 1993  Rep. J. Dingell Ltr to Comm. Dept. & NRC June 18, 1993  Office of Nuclear Safety 93-26, 93-22, 93-11  DOE Quality Alert, Bulletin, Issue No. 92-4, August 1992  FDH Hanford Suspect Headmark List

**ATTACHMENT A - SUSPECT COMPONENTS LIST (cont.)**

Component	Manufacturer/Type	Description	Supplier	References
Fasteners (Bolts, Screws, Nuts, and Washers)	NUCOR	1-1/4" x 2" Zinc Chromate plated surface Hexhead cap screws	Cordova Bolt, Inc.	SENS ID #13 11-6/91
	Any	Any	Aircom Barnett Bolt Works Bolts & Nuts, Inc. Glasser & Assoc. Knoxville Bolt & Screw Metal Fastener Supply Phoell Mfg. Co. Service Supply Co. Southeastern Bolt & Screw Sure Loc Victory Bolt	NRC Compliance Bulletin 87-02 NRC I.N. 89-59

<b>Control Of Suspect/Counterfeit Items</b>	<b>Manual Document</b>	<b>ESHQ TFC-ESHQ-Q_C-C-03, REV C-16</b>
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**ATTACHMENT B - CLASSIFICATION OF POTENTIALLY SUSPECT/COUNTERFEIT ITEMS**

**(Reprinted in part from NRC IN 89-70, Supplement 1)**

**Consider information on square D breakers from Square D Website and DOE Bulletins.**

**A. ELECTRICAL ITEMS**

- Molded Case Circuit Breakers
- Motor Control Centers
  - Complete Units
  - Components
  - Starters
  - Starting coils
  - Contactors
  - Overload relays
  - Starter control relays
  - Overload heaters
- Protective/control relays
- DC power supplieschargers
- AC inverters
- Current/potential transformers
- Exciters/regulators
- Bus transfers/auto bus transfers
- Motor generator sets
- Generators
- Rewindable motors
- Printed circuit boards
- Bulk commodity items
  - Fuses
  - Splices
  - Electrical connectors
- Indicators/controllers
- Panel lights/switches
- Transmitters/instrument switches
- Isolation devices
- Batteries.

The following items are excluded unless required by the applicable program/project: 600V or less: motors; outlets, switches, and plugs; boxes, conduit (i.e., bodies and covers, nipples, fittings, EMT, flex, liquid tight, rigid); wire; miscellaneous wire connections #10 and below; fixtures; lights.

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**ATTACHMENT B - CLASSIFICATION OF POTENTIALLY SUSPECT/COUNTERFEIT ITEMS (cont.)**

**B. MECHANICAL ITEMS**

- Welding materials
  - Rod
  - Wire
  - Flux
- Structural members (pipe supports)
- Channel members (UNISTRUT or B-Line)
  - Slotted Channels
  - Structural framing members
  - Fasteners
  - Fittings
  - Pipe clamps
  - Spring nuts
- Sheet
- Plate
- Bars
- Round stock
- Other raw material which requires an ASTM or national standard
- All lifting/rigging gear (Slings, hooks, cables, shackles)
- Wire rope (wire rope shall be made in the United States by a member of the Wire Rope Technical Board (WRTB) or the Associated Wire Rope Fabricators (AWRF) (except stainless steel, and unless recommended otherwise by a crane or hoist manufacturer); stainless steel wire rope shall be made in the United States and shall be 302 or 304 grade stainless steel unless otherwise recommended by a crane or hoist manufacturer)
- Ratchet tie-downs/strapping devices and come-a-longs, with fasteners.

The following materials are excluded unless required by the applicable program/project:  
ASTM-A36, brass, copper, sheet metal 7 GA or less, and aluminum.

**C. PIPING - which requires an ASTM or ASME standard**

- Fittings
- Flanges
- Valves
- Pipe
- Components.

The following materials are excluded unless required by the applicable program/project:  
ASTM-A-53, Swagelok; cast iron, galvanized, copper, bronze, and brass; PVC; and gaskets.

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**ATTACHMENT B - CLASSIFICATION OF POTENTIALLY SUSPECT/COUNTERFEIT ITEMS (cont.)**

D. FASTENERS - All high-strength fasteners 1/4" and above in diameter

- Bolts
- Studs
- Cap screws
- High-strength washers
- Nuts
- Anchors.

Attachment H identifies headmarkings for stainless steel and carbon steel high strength fasteners that are considered counterfeit. Fasteners exhibiting these headmarks are counterfeit and no further testing is required.

In areas where operating temperatures are 500°F and above or are subject to cyclic loading where fatigue failure is likely to occur, all grades 8 and 8.2 S/CI fasteners must be replaced prior to further use of equipment.

The following items are excluded, unless required by the applicable program/project: sheetmetal screws, wood screws, stove bolts, pan heads, machine screws, lag bolts, threaded rod, rivets, and carriage bolts.

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## ATTACHMENT C - SUSPECT/COUNTERFEIT ITEMS INFORMATION SOURCE LIST

A wide variety of industry and Government sources publish information relative to suspect/counterfeit products. The following sources provide information which is available on a continuing basis:

### Industrial Fasteners Institute (IFI)

The following information is available from IFI via subscription:

- “Fastener Application Advisory” (Published Monthly)
- “North American Manufacturers Identification Markings for Fasteners”
- Fastener-related video cassettes.

### The National Board of Pressure Vessel Inspectors (NBBI)

The NBBI publishes "National Board Bulletins" to alert manufacturers and users of misrepresented products as they are discovered.

### National Highway Traffic Safety Administration (NHTSA)

The NHTSA's Office of Defects Investigation issued a “Suspect Bolt List” in late 1990 identifying numerous fasteners, which they determined to be misrepresented.

### Trade Journals and Magazines

There are numerous trade-oriented magazines which have carried articles identifying incidents of failure of substandard parts in industry applications which have caused personal injury and death, as well as serious property damage.

### Newspaper and Television Reports

Another good source of information is news reports, which provide current accounts of problems encountered as a result of misrepresented products.

### U.S. Nuclear Regulatory Commission (NRC)

The NRC issues bulletins, notices, and regulatory guidance on a continuing basis to alert nuclear power utilities of potential intrusion of misrepresented products into the operations environment of operating nuclear power plants.

U.S. Department of Defense (DOD) and U.S. Department of Commerce publications are also monitored by the DOE to assure that the deficiencies identified do not contaminate DOE facilities.

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**ATTACHMENT C - SUSPECT/COUNTERFEIT ITEMS INFORMATION SOURCE LIST  
(cont.)**

Government Industry Data Exchange Program (GIDEP)

The mission of this program, established by the Office of Management and Budget, is to support government systems readiness, logistics effectiveness, productivity, and cost reduction through timely retrieval, storage, and distribution of data among government and industry organizations.

U.S. Department of Energy

The following documents are issued by the DOE to provide information and guidance relative to the suspect/counterfeit parts issue:

- DOE Orders
- Letters of Direction
- Bulletins and Quality Alerts

(In addition, the DOE periodically sponsors seminars/workshops relative to the detection and control of suspect/counterfeit parts).

U.S. Customs Service

The U.S. Customs Service has published the Suspect Headmark List (Attachment H) identifying graded fasteners determined to be of indeterminate quality, which has been adopted by DOE and, ultimately, Project Hanford, as a formal guide for use when evaluating currently installed and newly procured graded fasteners to assure their fitness for use on the Hanford Site.

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**ATTACHMENT D - CHARACTERISTICS THAT MAY MAKE PRODUCTS VULNERABLE TO MISREPRESENTATION, FRAUDULENT PRACTICES, AND COUNTERFEITING  
(Reprinted in part from NRC IN 89-70, Supplement 1)**

- High-turnover usage rate.
- No easy or practical way to uniquely mark the component itself.
- Critical characteristics, including environmental qualification not easily discernible in external visual inspection, or characteristics that are difficult to verify through receipt testing.
- May be widely used in non-critical and critical applications.
- Use may not result in used appearance.
- Often marketed through a supplier and dropped shipped from locations other than that of the original supplier.
- Special processes for ASME materials may be subcontracted (heat treating, testing, and inspections).
- Easily copied by secondary market suppliers.
- Viable salvage market.
- Reduced number of original equipment manufacturers.
- Obsolete or hard-to-get components.
- Components manufactured by a company that is no longer in business.
- Items with documentation from a plant where construction has been suspended, canceled, or deferred.
- Moderate or low cost.
- High potential for profit (rejected heats of material are purchased and decertified).

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## ATTACHMENT E - WHERE TO LOOK FOR SUSPECT/COUNTERFEIT ITEMS

The following areas should receive increased scrutiny to assure that suspect/counterfeit items are not evident:

### Items in Supply

- Company supply stock
- Wagon stock
- Other sources of supply contamination.

### Items in Use

- Plant facilities, components, and systems
- Equipment
- Operations and maintenance.

### Items Being Procured

- “Known” critical items
- Critical equipment and assemblies
- Non-critical “known” purchases.

### Operations Decisions

- Major disaster risks
- Personnel safety risks
- Program/mission risks (cost and schedule).

### Cost of Implementation

- Potential consequential costs
- Management risk assessment
- Cost of focusing established controls
- Impact on schedule and program mission.

### Cost of Focus on Known Suspect/Counterfeit Parts

- Uses existing procurement program
- Focuses on “known parts first”
- Reduction in major disaster potential
- Program costs low/benefits high.

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**ATTACHMENT F - SUSPECT/COUNTERFEIT PARTS DETECTION  
(Reprinted in part from IAEA-TECDOC-1169 & DOE G 414.1-3)**

It is very important to remember that just because an item is identified as being “suspect/counterfeit” it may not be appropriate to simply reject it. A review should be performed prior to formal disposition of the item to assure that it is indeed unfit for the intended application.

**DETECTION METHODS**

**Visual Inspection**

Items may be substandard or fraudulent when:

- Nameplates, labels, or tags have been altered, photocopied, painted over, are not secured well, show incomplete data, or are missing (e.g., preprinted labels normally show typed entries).
- Obvious attempts at beautification have been made, e.g., excess painting or wire brushing, evidence of hand painting (touch-up), or stainless steel is painted.
- Handmade parts are evident, gaskets are rough cut, shims and thin metal part edges show evidence of cutting or dressing by hand tools (filing, hacksaw marking, use of tin snips or nippers).
- Hand tool marks on fasteners or other assembly parts (upset metal exists on screw or bolt heads) or dissimilar parts are evident (e.g., seven or eight bolts are of the same material and one is a different material).
- Poor fit between assembled items.
- Configuration is not consistent with other items from the same supplier or varies from that indicated in supplier literature or drawings.
- Unusual box or packing of component or item.
- The supplier is not a factory-authorized distributor.
- Dimensions of the item are inconsistent with the specifications requested on the purchase order and/or those provided by the supplier at the time of shipment.
- The item or component matches the description of one that is on a suspect items list (e.g., U.S. Customs Service “Suspect Headmark List,” National Board of Boiler and Pressure Vessel Inspectors (NBBI) “Special Bulletin,” etc.).

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## **ATTACHMENT F - SUSPECT/COUNTERFEIT PARTS DETECTION (cont.)**

### Documentation

Documents may be suspect/counterfeit when:

- The use of correction fluid or correction tape is evident. Type or pitch change is evident.
- The document is not signed or initialed when required, is excessively faded or unclear (indicating multiple, sequential copying), or data are missing.
- The name or title of the document approved cannot be determined.
- Technical data is inconsistent (e.g., chemical analysis indicates one material and physical tests indicate another).
- Certification or test results are identical between items when normal variations should be expected.
- Document traceability is not clear. The document should be traceable to the item(s).
- Technical data are not consistent with code or standard requirements (e.g., no impact test results provided when impact testing is required or CMTRS physical test data indicate no heat treatment and heat treatment is required).
- Documentation is not delivered as required on the purchase order or is in an unusual format.
- Lines on forms are bent, broken, or interrupted indicating data has been deleted or exchanged (cut and paste).
- Handwritten entries of data are on the same document where typed or preprinted data exists.
- Data on a single line located at different heights indicate the possibility of retyping.

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## ATTACHMENT F - SUSPECT/COUNTERFEIT PARTS DETECTION (cont.)

### Fasteners

- Headmarkings are marred, missing, or appear to have been altered.
- Threads show evidence of dressing or wear (threads should be of uniform color and finish).
- Headmarkings are inconsistent with a heat lot.
- Headmarkings matching one of those identified on the U.S. Customs Service, “Suspect Headmark List” (Attachment H).
  - Headmarkings which depict both raised and hand-stamped markings, such as those described in WHC Quality Assurance Bulletin # 94-01, “Discrepant Dual Head Stamped Stainless Steel Bolts.” This bulletin documents the results of internal inspections and independent testing of stainless steel bolts purchased to ASTM A193, Grade B8, which were found to be substandard.
  - Only manufacturers listed on the “Suspect Headmark List” (Attachment H) are known to produce substandard graded fasteners. If graded fasteners are discovered which exhibit headmarks matching those on the Suspect Headmark List, they shall be considered to be defective without further testing, unless traceable manufacturer’s certifications are received which provide documented evidence that the fasteners were not produced by the manufacturer listed on the Suspect Fastener Headmark List.
  - Interpretation of headmark/manufacturers listed on the “Suspect Headmark List,” including newly discovered variations thereto, shall only be provided by the designated S/CI coordinator based on guidance received from the DOE.

### Electrical Devices

- Connections show evidence of previous attachment (metal upset or marring).
- Connections show arcing or discoloration.
- Fasteners are loose, missing, or show metal upset.
- Molded case circuit breakers are consistent with manufacturer-provided checklists for detecting substandard/fraudulent breakers.
- Missing or photocopied Underwriters Laboratories (UL) labels on products requiring such.
- Electrical leads are of different lengths or not as long as stated in the vendor catalogue.
- Item shows evidence of wear prior to use.
- Item has scratches or nicks in factory paint or coating.

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## ATTACHMENT F - SUSPECT/COUNTERFEIT PARTS DETECTION (cont.)

### Rotating Machinery and Valve Internal Parts

- Shows marring, tool impressions, wear marks, traces of Prussian blue or lapping compound, or other evidence of previous attempts at fit up or assembly.
- Heat discoloration is evident.
- Evidence of erosion, corrosion, wire-drawing or “dimples” (inverted cone-shaped impressions) on valve discs, seats, or pump impellers.

### Valves

- Paint
  - Valve appears to be freshly painted and valve stem has paint on it
  - Wear marks on any painted surface
  - Valve stem is protected, but protection has paint on it
  - Paint does not match standard Original Equipment Manufacturer (OEM) color.
- Valve Tags
  - Tags attached with screws instead of rivets
  - Tags attached in a different location than normal
  - Tags appear to be worn or old
  - Tags with paint on them
  - Tags that look newer than the valve
  - Tags with no part numbers
  - Tags with irregular stamping.
- Hand Wheels
  - Old looking hand wheels on new looking valves
  - Hand wheels that look sand blasted or newer than the valve
  - Different types of hand wheels on valves of the same manufacturer.
- Bolts and Nuts
  - Bolts and nuts have a used appearance (excessive wrench marks on flats)
  - Improper bolt/nut material (e.g., a bronze nut on a stainless stem).

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## ATTACHMENT F - SUSPECT/COUNTERFEIT PARTS DETECTION (cont.)

- Valve Body
  - Ground off casting marks with other markings stamped in the area (OEM markings are nearly always raised, not stamped)
  - Signs of weld repairs
  - Incorrect dimensions
  - Freshly sand-blasted appearance, including eye bolts, grease fittings, stem, etc.
  - Evidence of previous bolt head scoring on backsides of flanges, or evidence that this area has been ground to remove such marks
  - On a stainless valve, a finish that is unusually shiny indicates bead-blasting. A finish that is unusually dull indicates sand-blasting. The finish on a new valve is in-between.

### Manufacturer's Logo

- Missing.
- Logo plate looks newer than the valve.
- Logo plate shows signs of discoloration from previous use.

### Other

- Foreign material inside the valve (e.g., metal shavings).
- Valve stem packing that shows all the adjustments have been run out.
- In gate valves, a gate that is off-center when checked through the open end of the valve.
- Obvious differences between valves in the same shipment.

### Price

- Price is significantly less than that of the competition.

### Wire Rope

- No or incomplete documentation
- Noticeable alteration of documentation

### Lifting Material (Also refer to DOE-STD-1090-2007 for lifting device marking requirements)

- General Indications
  - Original markings ground off and re-stamped
  - Altered markings on identification tags
  - Used Appearance
  - Parts identified as "China," "Korea," "Mexico," "Thailand," or "India"
  - No or incomplete documentation
  - Red hooks not labeled with Crosby Group markings ("Crosby" or "CG").

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**ATTACHMENT F - SUSPECT/COUNTERFEIT PARTS DETECTION (cont.)**

- Hooks
    - Shall be in accordance with ASME B30.10
    - The manufacturer's identification shall be forged, cast, or die-stamped on a low stress or non-wearing area of the hook.
  
  - Shackles
    - Each shackle shall be permanently and legibly marked by the manufacturer. Raised or stamped letters on the side of the bow shall be used to show:
      - a. Manufacturer's name and trademark
      - b. Size
      - c. Rated Capacity.
  
    - Each pin for shackles manufactured after May 20, 2006 shall be marked by the manufacturer with raised or stamped letters showing:
      - a. Manufacturer's name or trademark
      - b. Grade, material type, or load rating.
- (NOTE: A bolt shall not be used as a substitute for a shackle pin.)

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**ATTACHMENT G - FASTENERS  
(Reprinted in part from DOE G 414.1-3 & DOE S/CI Awareness Training Manual)**

1.0 Counterfeit/Substandard High-Strength Bolts

1.1 General Background

Counterfeit bolts have been found in military and commercial aircraft, surface ships, submarines, nuclear weapon production facilities, bridges, buildings, and the space shuttle. These bolts often do not possess the capabilities of the genuine bolts they counterfeit and can threaten the reliability of industrial and consumer products, National Security, or lives. At Congressional hearings in 1987, the Army testified that they had purchased bolts that bore the headmarks of Grade 8 high-strength bolts, but that were actually inferior Grade 8.2 bolts.

The International Fasteners Institute (IFI) reported finding substandard, mis-marked, and/or counterfeit high-strength Grade 8 bolts in the United States commercial marketplace. In 1988, IFI reported that counterfeit medium-strength Grade 5 bolts had also been found.

Foreign bolts dominate the American marketplace due to their price advantage, and the majority of suspect/counterfeit bolts are imported. Identifying, testing, and replacing these bolts has proven expensive and difficult, both mechanically and technically. Not finding and replacing these bolts, however, has proven fatal in some instances.

1.2 Headmarks

Attachment H may be removed and photocopied, as needed, for use as a poster and reference to known suspect fastener headmarks. Bolts with the headmarkings shown have a significant likelihood of being found to be inferior to standards. Generally, the cost of replacement of these bolts is less than the cost of chemical, hardness, and tensile strength testing. Note also that counterfeit bolts can be delivered with counterfeit certificates. Documentation alone is insufficient to demonstrate compliance with standards.

1.3 Consensus Standards

There are several consensus organizations that have published standards for the properties of fasteners. One of these is the Society of Automotive Engineers (SAE). The SAE grade (or alleged grade on a suspect item) of a bolt is indicated by raised or indented radial lines on the bolt's head, as shown in Attachment H. These markings are called headmarks. DOE is currently concerned with two different grades of fasteners: one has three equally spaced radial lines on the head of a bolt which indicate that it should meet the specifications for a Grade 5 bolt; the other has six equally spaced radial lines which indicate a Grade 8 bolt. Letters or symbols on the head of a bolt indicate the manufacturer.

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## ATTACHMENT G - FASTENERS (cont.)

Attachment H is a Suspect Headmark List that was prepared by the United States Customs Service after extensive testing of many samples of bolts from around the nation. Any bolts anywhere in the DOE community that are currently in stock, in bins, or installed that are on the Suspect Headmark List should be considered suspect/counterfeit. The headmarks on this list are those of manufacturers that have often been found to have sold bolts that did not meet the indicated consensus standards. Sufficient testing has been done on the bolts on this list to presume them defective without further testing.

### 1.4 Precautions: Selective Testing

Some facilities (manufacturers, distributors, etc.) perform selective testing of sample bolts rather than have an independent testing laboratory run all the tests required by consensus standards. In many cases, a new counterfeit bolt has roughly the same physical strength as the graded bolt it mimics, but does not have either the chemical composition or the heat treatment specified by the consensus standards. As a result, it will stretch, exhibit metal fatigue, or corrode under less harsh service than the genuine bolt. Simple tensile strength tests cannot be used to identify substandard high-strength fasteners and should not be solely relied upon in performing acceptance test.

### 1.5 Using Suspect/Counterfeit Grade 5 Bolts in Grade 2 Applications

Some sites use suspect/counterfeit Grade 5 bolts in applications that only call for Grade 2 bolts. Eventually, the suspect/counterfeit Grade 5 bolts may find its way into an application that requires a genuine Grade 5 bolt and that application may fail. In some cases, cheap imported graded bolts have been purchased in place of upgraded bolts because the small price differential made the extra quality seem to be a bargain. Given the expense of removing suspect bolts from DOE facilities, the practice of using suspect bolts for any application should be discontinued.

### 1.6 Keep Bolts in Original Packages

All bolts purchased should be kept in the original packages, not emptied into bins. The packages should have labels or other markings that would permit them to be associated with a particular procurement action and a specific vendor. Approved supplier lists should be checked to assure that fastener suppliers on that list have been recently qualified/audited for adequacy of their quality programs.

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## ATTACHMENT G - FASTENERS (cont.)

### 2.0 Stainless Steel fasteners

#### 2.1 Purpose

To provide follow-up information to the previous notification sent to the DOE field and contractor organizations in late 1996.

#### 2.2 Background

In November 1993, the Industrial Fastener Institute (IFI) issued a Fastener Advisory regarding 18-8 stainless steel bolts. The advisory warned about a “bait and switch” tactic in which a distributor takes an 18-8 bolt (indicated by two radial lines 90 degrees apart), but no manufacturer’s marking, and sells them as ASTM A320 Grade B8 bolts after hand-stamping B8 on to the heads.

As a result of this IFI Advisory, DOE sites conducted a search of facility stores for stainless steel fasteners with hand-stamped B8 grade marks. Hundreds of stainless steel bolts with hand-stamped B8 grade markings, along with a variety of other raised and depressed head and manufacturer's markings were identified in facility stores throughout the DOE complex.

For example, an inspection of shop stock at a Hanford Site facility revealed bolts with three different raised grade markings, 18-8, 304, and F593C, along with raised manufacturer’s identifications of CK, H, HP, C, SO, CS, PMC, TH, THE, and a STAR. The majority of the remaining samples found at Hanford exhibited raised grade markings of 18-8 and 304, with a B8 grade marking and manufacturer’s identification hand-stamped into the head of the bolt.

Finally, a few samples did not display any manufacturer’s markings. Most of the bolts discovered were purchased with the specification to meet a national consensus standard, American Society for Testing and Materials (ASTM) A193, B8 Class 1 rather than the ASTM A320 standard discussed in the IFI warning.

The Savannah River Site also conducted a site-wide search of facility stores with similar results. A total of 159 stainless steel fasteners with hand-stamped B8 grade marks and raised or hand-stamped manufacturer’s symbols were found. Fifteen stainless steel fasteners that had no manufacturer’s symbol were also found.

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## ATTACHMENT G - FASTENERS (cont.)

### 2.3 Issue

The requirements of the ASTM A193 standard regarding fastener marking and certification are very similar to those required by the ASTM A320 standard discussed in the IFI advisory. The ASTM A193 standard requires that grade and manufacturer's identification symbols be applied to the heads of bolts that are 1/4" in diameter and larger. The standard, however, does not specifically differentiate between raised and depressed headmarkings, but by reference to ASTM A962 states only that "for the purposes of identification marking, the manufacturer is considered the organization that certifies the fastener was manufactured, sampled, tested, and inspected in accordance with this specification." In other words, the standard allows for some of the required markings to be formed into the head of the bolt (either raised or lowered) during manufacturing, and the rest to be applied later on via hand-stamping.

Since ASTM A193 does not differentiate between raised and depressed markings, these fasteners can be counterfeited in the same way as the ASTM A320 fasteners discussed in the November 1993 IFI warning. For example, distributors can procure 18-8 stainless steel bolts that were manufactured by an anonymous party, and without conducting the necessary upgrading process or certification testing, a second party could hand-stamp B8 and a manufacturer's marking into the heads to indicate that the fasteners exhibit the mechanical and chemical properties required of ASTM A193 Grade B8 Class 1.

When a fastener is discovered with dual Headmark stamping (both raised and depressed), the fastener should be considered suspect.

The first figure in Figure H provides examples of stainless steel fasteners that have been upgraded from 18-8 to ASTM A320 or ASTM A193 Grade B-8 after hand stamping. The last three examples show samples of fasteners to indicate conformance to two non-compatible standards: ASTM A193 and ASTM F593C. Any bolt on this figure with the black background should be treated as suspect without further testing.

Unless the certification documentation is specifically requested, and in most cases it is not, there is no way to determine by visual inspection whether these fasteners were properly certified and tested to meet the requirements of the ASTM standard.

ATTACHMENT H - SUSPECT HEADMARK LIST



# Help Stamp Out Suspects/Counterfeits

## Suspect Stainless Steel Fastener Headmark List

Examples of stainless steel fasteners that have been upgraded from 18-8 to ASTM A320 or ASTM A193 Grade B8 after hand stamping. The last three examples show samples of fasteners to indicate conformance to two non-compatible standards, ASTM A193 and ASTM F 593C.

Any bolt on this list should be treated as defective without further testing and process in accordance with HNF-PRO-301. Note: This list was originally Published by DOE /EH-0196, Issue No. 97-6

If any of these fasteners are located, contact your facility S/CI Point of Contact (POC) for instructions. The POC list is on the Hanford Intranet at: <http://docs.rl.gov/han.info/hlansci/hlansci.doc>. Scroll to the end of the document for the list.

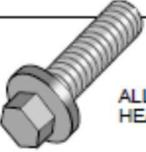

Surrounding White Color Illustrates Head Markings Before Hand Stamping

Surrounding Black Color Illustrates Head Markings After Hand Stamping

Suspect

ATTACHMENT H - SUSPECT HEADMARK LIST (cont.)

SUSPECT/COUNTERFEIT PART HEADMARK LIST:  
A Resource Aid for Identifying Legacy Fasteners



ALL GRADE 5 AND GRADE 8 FASTENERS WHICH DO NOT BEAR ANY MANUFACTURERS' HEADMARKS

 Grade 5       Grade 8

GRADE 5 FASTENERS WITH THE FOLLOWING MANUFACTURERS' HEADMARKS:

	MARK J		MARK KS
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GRADE 8 FASTENERS WITH THE FOLLOWING MANUFACTURERS' HEADMARKS:

	MARK A		MARK KS
	MARK NF		MARK RT
	MARK H		MARK FM
	MARK M		MARK KY
	MARK MS		MARK J
	Hollow Triangle (CA TW JP YU) (Greater than 1/2 inch dia)		
	MARK E		MARK UNY

GRADE 8.2 FASTENERS WITH THE FOLLOWING HEADMARKS:

	MARK KS
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GRADE A325 FASTENERS WITH THE FOLLOWING HEADMARKS:

Type 1		MARK A325 KS
Type 2		
Type 3		

Headmarkings are usually raised – sometimes indented.  
KEY: CA-Canada, JP-Japan, TW-Taiwan, YU-Yugoslavia

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**ATTACHMENT I - REFURBISHED MOLDED CASE CIRCUIT BREAKERS  
(Reprinted in part from DOE G 414.1-3)**

Investigations thus far of electrical components at DOE facilities uncovered over 700 suspect/counterfeit molded-case circuit breakers that were previously used, refurbished and sold to DOE contractors.

1. Recognition Factors

The following factors should be recognized regarding suspect or refurbished circuit breakers:

- A. The quality and safety of refurbished molded-case circuit breakers is questionable since they are not designed to be taken apart and serviced or refurbished. There are no electrical standards established by Underwriters Laboratory (UL) for the refurbishing of molded-case electrical circuit breakers, nor are there any “authorized” refurbishes of molded case circuit breakers. Therefore, “refurbished” molded-case circuit breakers should not be accepted for use in any DOE facility.
- B. One source of refurbished molded-case circuit breakers is from the demolition of old buildings. Some refurbishes are junk dealers who may change the amperage labels on the circuit breakers to conform to the amperage ordered and then merely clean and shine the breakers.

This situation was brought to DOE’s attention by the Nuclear Regulatory Commission (NRC), which, in turn, had been informed of the practice by the company that manufactures circuit breakers. In early 1988, a sales representative identified “refurbished” circuit breakers at Diablo Canyon Nuclear Power Plant. A subsequent investigation confirmed that circuit breakers sold to the power plant as new equipment were actually refurbished. The managers of the two firms that refurbished and sold these breakers have been convicted of fraud and have paid a substantial fine.

- C. NRC published information Notice No. 88-46 dated July 8, 1988, on the investigation findings and circulated it to all applicable government agencies, including DOE. On July 20, 1988, DOE notified all field offices that refurbished circuit breakers may have been installed in critical systems. Shortly thereafter, DOE established the Suspect Equipment Notification System (SENS), a sub-module of ES&H Events and News on the Safety Performance Measurement System (SPMS). SENS has since been replaced by the Supplier Evaluation and Suspect Equipment (SESE) sub-module which includes Suspect Equipment Reports.
- D. Some of DOE’s older sites have circuit breakers in use that are no longer manufactured. According to the Nuclear Management and Resources Council (NUMARC), examples of such breakers are Westinghouse breakers with frames E, EA, F, and FA. If a DOE contractor has an electrical box that requires a breaker with one of these frame sizes, that contractor would not have been able to purchase it from Westinghouse for several years. If the contractor were to order a replacement breaker from an authorized Westinghouse dealer, the dealer could not get a new replacement breaker from the manufacturer. To fill the order, the dealer had to turn to the secondary or refurbished market.

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## **ATTACHMENT I - REFURBISHED MOLDED CASE CIRCUIT BREAKERS (cont.)**

Dealing with an authorized distributor does not preclude ending up with refurbished circuit breakers. Westinghouse has announced that it is considering satisfying this market by manufacturing circuit breakers that will fit in these applications.

The solution, as recommended by NUMARC, is not to focus on the credentials of the distributor but on the traceability of the circuit breaker itself. A purchaser can be assured of having a new circuit breaker only if the breaker can be traced back to the original manufacturer.

### 2. Indicators of Refurbished Breakers

Typically, refurbished circuit breakers sold as new equipment have one or more of the following characteristics:

The style of breaker is no longer manufactured.

The breakers may have come in cheap, generic-type packaging instead of in the manufacturer's original boxes.

Refurbished circuit breakers are often bulk-packaged in plastic bags, brown paper bags, or cardboard boxes with handwritten labels. New circuit breakers are packed individually in boxes that are labeled with the manufacturer's name, which is usually in two or more colors, and are often date stamped.

The original manufacturer's labels and/or the Underwriter's Laboratory (UL) or Factory Mutual (FM) labels may have been counterfeited or removed from the breaker. Refurbishing operations have been known to use copying machines to produce poor quality copies of the original manufacturer's and the certifying body's labels.

Breakers may be labeled with the refurbisher's name rather than the label of a known manufacturer.

The manufacturer's seal (often multicolored) across the two halves of the case of the breaker is broken or missing.

Wire lugs (connectors) show evidence of tampering.

The surface of the circuit breaker may be nicked or scratched yet have a high gloss. Refurbishers often coat breakers with clear plastic to produce a high gloss that gives the casual observer the impression that the breaker is new. The plastic cases of new circuit breakers often have a dull appearance.

Some rivets may have been removed and the case may be held together by wood screws, metal screws, or nuts and bolts.

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## **ATTACHMENT I - REFURBISHED MOLDED CASE CIRCUIT BREAKERS (cont.)**

Contradictory amperage ratings may appear on different parts of the same refurbished breaker. On a new breaker, the amperage rating is stamped into, raised from, or machine-painted on the handle of the circuit breaker. In order to supply a breaker with a hard-to-find rating, refurbishers have been known to file down the surface of the handle to remove the original rating and hand-paint the desired amperage rating.

### **3. Testing**

In a news release dated February 6, 1989, the National Electrical Manufacturers Association (NEMA) announced the cancellation of its Publication AB-2-1984 entitled, "Procedures for Field Inspection and Performance Verification of Molded-Case Circuit Breakers used in Commercial and Industrial Applications," and stated the following:

"These procedures were intended for use with breakers that had been originally tested and calibrated in accordance with NEMA Standards Publication AB 1 or Underwriters Laboratories Standard UL 489, and not subsequently opened, cleaned or modified...Therefore, the Standards Publication contained none of the destructive test procedures...necessary to verify the product's ability to withstand such conditions as full voltage overload or short circuit. Without such tests, even if a rebuilt breaker had passed the tests specified in AB-2, there would be no assurance that it would not fail under overload or short circuit conditions. It is NEMA's position that regardless of the results of electrical testing, refurbished electrical circuit breakers are not reliable and should not be used."

### **4. Precautions**

Follow these precautions regarding suspect or refurbished circuit breakers.

- A. Require that molded-case breakers be new and unaltered. Proof that they are new and unaltered requires the vendor to show traceability back to the original manufacturer.
- B. Do not rely completely on dealing with authorized dealers for protection from purchasing refurbished molded-case circuit breakers.
- C. Approve formal procedures for inspecting circuit breakers that are received and installed according to the indicators of refurbished breakers listed above.
- D. Contact the original manufacturer if any indication of misrepresentation is encountered. There are many original manufacturers of molded-case circuit breakers whose products are being refurbished and sold as new. These manufacturers have the most specific information about how to ensure that their products have not been refurbished.

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**ATTACHMENT I - REFURBISHED MOLDED CASE CIRCUIT BREAKERS (cont.)**

5. Disposition
  - A. Segregate and retain all circuit breakers found with indications that they may be refurbished. These will be retained as potential evidence until specifically released by the Office of Inspector General and the Office of Nuclear Safety for Price Anderson Enforcement. Circuit breakers that may be refurbished may only be disposed of when the above organizations no longer need them as evidence.
  - B. Report suspect electrical components to Occurrence Reporting and Processing System (ORPS). The ORPS categorization group should be identified as “Cross-Category items, Potential Concerns or issues.” The description of cause section in the ORPS report should include the text “suspect counterfeit parts.”
  - C. Witness and document the destruction of all suspect/counterfeit circuit breakers when approval is given for disposal.

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**ATTACHMENT J - S/CI IN CRITICAL LOAD PATHS FOR LIFTING EQUIPMENT  
(Reprinted in part from DOE-HDBK-1221-2016)**

Lifting equipment, including both fixed and mobile cranes and other devices (e.g., forklifts, scissor lifts, man lifts, balers, truck and dock lifts, elevators, conveyors, and slings) have many bolted connections that rely on the integrity of the fasteners and structural components to meet specifications for safe operation. Cranes and other equipment manufacturers have identified the critical load paths for their key structural components. Examples of critical load paths for fixed cranes include the bottom and top blocks, trolley system, bolted connections on main bridge supports, bolted rod connections, and end stops.

S/CI discovered on lifting equipment or outside the critical load path shall be:

- Controlled and documented in accordance with TFC-ESHQ-Q\_ADM-C-02
- Reported in ORPS
- Reported to the local DOE Field Office
- Reported to the local OIG Office

An engineering evaluation shall be conducted to determine the critical load paths in lifting equipment based on information provided by the equipment manufacturer. If the evaluation determines that if S/CI is discovered within the critical load path of the lifting equipment and it can create a safety hazard, then site or facility management shall be notified and the lifting equipment locked out and tagged out or otherwise removed from service according to applicable procedure(s). The S/CI shall be removed and replaced by an acceptable item. Once removed, the S/CI shall be placed in the nonconformance hold area until authorized for disposal by the OIG. If the evaluation determines that the S/CI within the critical load path could not create a safety hazard in its current application, the S/CI shall be identified by marking or other appropriate methods and its location noted; the S/CI shall either be removed and replaced during future maintenance, repairs, or allowed to remain in place.