Implementation Guide
for use with
Suspect/Counterfeit Items Requirements of DOE O 440.1, WORKER PROTECTION MANAGEMENT; 10 CFR 830.120; and DOE 5700.6C, QUALITY ASSURANCE

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Assistant Secretary for
Environment, Safety and Health

FOREWORD

This Department of Energy (DOE) Guide is approved by the Office of Environment, Safety, and Health (EH), Office of Nuclear Safety Policy and Standards, and is available for use by all DOE elements and their contractors. This Guide supersedes earlier guidance identified in Appendix 2.

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Guides are part of the DOE directives system and are used to provide supplemental information regarding DOE's expectations for fulfilling requirements contained in Policies, Rules, Orders, Manuals, Notices, and Regulatory Standards. Guides are also used to identify Government and non-Government standards and acceptable methods for implementing DOE requirements. Guides are not substitutes for requirements, nor do they introduce new requirements, and should not replace technical standards used to describe established practices and procedures.

BACKGROUND

Some manufacturers and suppliers use inferior materials and processes to make substandard items whose properties can vary significantly from established standards and specifications. Substandard materials known as suspect/counterfeit items (S/CIs) pose immediate and potential threats to the safety of DOE and contractor workers, the public, and the environment. Failure of a safety system due to an S/CI could also have security implications at DOE facilities.

The most common S/CIs 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 by falsified documentation into accepting S/CIs that do not conform to specified requirements.

DOE first addressed the S/CI issue in July 1988, upon receipt of the U.S. Nuclear Regulatory Commission (NRC) Notice 88-96. Because of NRC discoveries of suspect electrical equipment at commercial nuclear facilities, DOE directed its contractors to conduct sitewide S/CI

inspections and advise DOE of their findings. Other significant efforts to control S/CIs include the following.

- The Fastener Quality Act of 1990 [1][1] requires that fasteners conform to the specifications to which they are represented to be manufactured. It also provides for the accreditation of laboratories engaged in fastener testing and requires inspection, testing, and certification of fasteners used in critical applications.

- The DOE Office of the Inspector General (OIG) report DOE/IG-0304, *Concerns with the Effectiveness of the Department's Quality Assurance Program Regarding Production Substitution Issues*, [2] issued in November 1991, identified numerous suspect bolts and electrical equipment at DOE facilities during OIG inspections in 1989 and 1990.

- EH Quality Alert Bulletin 92-4 [3], issued in August 1992, summarized previously disseminated U.S. Customs Office information on S/CIs.

- The Office of Nuclear Energy S/CI plan of 1993 [4], issued to DOE field managers with the concurrence of program offices, provided a comprehensive approach and schedule for resolving S/CI issues across the DOE complex.

- An EH study, *Independent Oversight Analysis of Suspect/Counterfeit Parts Within the Department of Energy* [5], published in November 1995, noted a high degree of inconsistency and incompleteness among some DOE sites in addressing S/CI issues.

Though DOE made considerable progress in implementing the 1993 plan to resolve S/CI issues, the DOE/IG-0304 report findings remained open, and the EH study pointed to the need for additional actions. The Under Secretary of Energy appointed a DOE Senior Managers' Task Group to resolve these S/CI issues. The task group report, issued in June 1996 [6], stressed the importance of effective quality assurance (QA) programs for mitigating the impact of S/CIs on DOE's mission. It outlined specific actions for resolving identified S/CI issues, one of which was to establish a QA working group to propose revisions to DOE Orders and Guides.

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[1] Referenced documents shown in brackets are listed in Appendix 2.

ACKNOWLEDGMENTS

DOE received numerous constructive comments during the review process from both DOE and contractor personnel involved in managing, implementing, and assessing effective S/CI controls in the DOE complex. DOE acknowledges and thanks the following individuals and organizations for their expert contributions to and support of this Guide.

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ACRONYMS

AC	alternating current
ANSI	American National Standards Institute
ASCQ	American Society for Quality Control
ASME	American Society for Mechanical Engineers
ASTM	American Society for Testing and Material
CAS	condition assessment survey
CMTR	certified material test report
DC	direct current
DOE	U.S. Department of Energy
DOE O	DOE Order
DP	Defense Programs
EH	Office of Environment, Safety, and Health
EPRI	Electric Power Research Institute
GIDEP	Government-Industry Data Exchange Program
IAEA	International Atomic Energy Agency
ISO	International Organization for Standardization
NRC	U.S. Nuclear Regulatory Commission
OIG	Office of the Inspector General
ORPS	Occurrence Reporting and Processing System
QA	quality assurance
SAE	Society of Automotive Engineers
S/CI	suspect/counterfeit item
SQIG	DOE Supplier Quality Information Group

1. INTRODUCTION

Department of Energy (DOE) Order (O) 440.1, WORKER PROTECTION MANAGEMENT FOR DOE FEDERAL AND CONTRACTOR EMPLOYEES, [7] sets forth requirements for DOE and its contractors to implement suspect and counterfeit items (S/CI) controls as part of the quality assurance (QA) programs required by 10 Code of Federal Regulations (CFR) 830.120 [8] or DOE 5700.6C, QUALITY ASSURANCE [9]. DOE G-830.120, IMPLEMENTATION GUIDE FOR USE WITH 10 CFR PART 830.120, QUALITY ASSURANCE, [10] provides additional guidance on establishing and implementing effective QA processes to control S/CIs. DOE O 232.1, OCCURRENCE REPORTING AND PROCESSING OF OPERATIONS, [11] specifies requirements for reporting S/CIs under the DOE Occurrence Reporting and Processing System (ORPS). DOE promulgated the requirements and guidance to control or eliminate the hazards posed by S/CIs, which can lead to unexpected equipment failures and undue risks to the DOE mission, the environment, and personnel.

This Guide is a compendium of information contained in the referenced DOE directives and other documents concerning S/CI controls. It incorporates, updates, and supersedes earlier guidance issued in *Plan for the Suspect/Counterfeit Products Issue in the Department of Energy*, dated October 1993, [4] and in memoranda issued by Defense Programs (DP) [12-16] and other DOE program offices. This guidance was developed to strengthen the procurement process, identify and eliminate S/CIs , and improve the reporting of S/CIs. The information in this Guide, when implemented by DOE and its contractors, will satisfy the S/CI requirements contained in the referenced DOE directives.

A list of acronyms used in this Guide is included on page vii. Terms used in this Guide are defined in Appendix 1. Referenced documents shown in brackets are listed in Appendix 2.

2. APPLICATION

This Guide is intended for use by all DOE organizations and contractors to assist them in developing site- and facility-specific QA policies, programs, and procedures to address the following S/CI controls:

- procurement;
- item inspection and acceptance;
- engineering involvement;
- safety systems, nonsafety systems, and critical load paths;
- disposition and disposal;
- reporting;
- trend analysis;
- training; and
- assessment and oversight.

The controls described in this Guide are based on good field practices and the current requirements of the referenced DOE directives. Additional or alternative methods of controlling S/CIs may be acceptable if the methods adequately ensure both worker and public safety and product quality. This Guide may be used in assessing the adequacy of DOE and contractor QA programs, implementation plans, integrated safety management systems [17], and work smart standards [18] prepared in response to DOE S/CI requirements. Existing DOE and contractor S/CI controls should be compared with this Guide to ensure that they address DOE requirements and expectations.

3. GENERAL INFORMATION

3.1 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. A counterfeit item is a suspect item that is a copy or substitute without legal right or authority to do so or one 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 an 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.

3.2 OBJECTIVES FOR THE CONTROL OF S/CIS

DOE is committed to effective controls for the prevention, detection, and disposition of S/CIs to mitigate any potential safety threat in the DOE complex. In accordance with the requirements of DOE O 440.1, the principal objectives of S/CI controls are as follows.

- Ensure that items intended for application in safety systems comply with design and procurement documents.

- Maintain current, accurate information on S/CIs and associated suppliers using all available sources within the Government and industry and disseminate relevant information on S/CIs to field organizations and contractors.

- Identify, control, and disposition S/CIs that create potential hazards in safety systems and applications.

- Report discoveries of and disseminate information about S/CIs.

- Train and inform managers, supervisors, and workers of S/CI controls, including prevention, detection, and disposition of S/CIs.

These controls can also support obtaining contractual remedies from suppliers of S/CIs.

3.3 PRINCIPLES OF DEFENSE-IN-DEPTH AND GRADED APPROACH

S/CI controls are based on two longstanding DOE safety principles: defense-in-depth and graded approach. Defense-in-depth refers to the multiplicity of design features, controls, and actions taken to ensure public and worker safety. Under an effectively implemented QA program, a comprehensive network of controls and verification provides for defense-in-depth by preventing the introduction of S/CIs through the design, procurement, construction, operation, maintenance, or modification processes of DOE sites and facilities. Though the graded approach generally applies to both safety systems and nonsafety systems, DOE organizations and contractors should focus their resources and priorities on those safety systems and other systems, including critical load paths of lifting equipment, where the introduction of S/CIs would have the greatest potential for creating unsafe conditions.

3.4 Indicators

DOE and its contractors have learned that S/CIs can encompass a broad range of items, such as:

- threaded fasteners;
- electrical components: circuit breakers, current and potential transformers, fuses, resistors, switchgear, overload and protective relays, motor control centers, heaters, motor generator sets, DC power supplies, AC inverters, transmitters;
- piping components: fittings, flanges, valves and valve replacement products, couplings, plugs, spacers, nozzles, pipe supports; and
- preformed metal structures, computer components, semiconductors, elastomers (O-rings, seals), spare/replacement kits from suppliers other than original equipment manufacturers, weld filler material, diesel generator speed governors and pumps.

Appendix 4 contains a list of some common S/CIs and their indicators. DOE maintains a list of S/CIs on the DOE S/CI home pages at **http://www.fm.doe.gov** under “Suspect/Counterfeit Items (S/CI)” or at **http://www.sci.doe.gov**.

Examples of locations in which S/CIs have been discovered include:

- cranes, elevators, and fork lifts: critical load paths of lifting equipment;
- aircraft: engines and attachments, wings, tails, or landing gear;
- vehicles: engines, brakes, or steering mechanisms; and
- facilities: valves, compressors, and vessels used to contain radioactive fluids, high-temperature or high-pressure steam or fluids, or other hazardous material or safety systems supporting safe operation or shutdown of a facility or process.

4. CONTROLS

4.1 PROCUREMENT

4.1.1 General

DOE directives—principally DOE O 440.1, 10 CFR 830.120, and DOE 5700.6C—specify requirements to prevent the introduction of S/CIs into the DOE complex during the procurement process. Additional information on procurement controls is contained in other referenced sources, including Supplements 4S-1 and 7S-1 of the American Society for Mechanical Engineers (ASME) standard ASME NQA-1 [19]; Sections 4.6 and 4.7 of the International Organization for Standardization (ISO) standard ISO 9001 [20]; and the International Atomic Energy Agency (IAEA) document IAEA-TECDOC-919 [21].

The underlying principles in procurement are (1) suppliers have demonstrated they are capable of delivering acceptable items and (2) the extent of procurement controls and verification are commensurate with the items' importance to safe and reliable operation. The procurement process begins with specification of what is needed and establishment of procurement requirements; it ends with receipt of an acceptable item. A graded approach is applied to specific quality controls and verification methods, such as vendor surveillance.

Items requiring traceability in safety systems should be procured directly from their manufacturers or through other DOE facilities or suppliers who are dedicated or qualified by the procuring organization. Items that must be traceable, which are procured for use in nonsafety systems and subsequently upgraded for use in safety systems, should be subjected to the same controls and verification (including inspection and acceptance testing) applied to safety systems. Items procured through surplus or other uncontrollable channels for use in safety systems that require traceability should be supported by documentation of their conformance or, in the absence of such documentation, verified for acceptability by inspection or acceptance testing. DOE and its contractors should be cautious about accepting items based solely on supplier-generated documentation or part-number verification, unless the supplier's quality system can provide traceability back to the manufacturer or the item has been previously verified through performance-based evaluations.

To prevent procurement of S/CIs, contractor QA programs should implement procedures for using:

- procurement specifications;
- quality clauses;
- procurement document technical review;
- supplier past performance information;

- lists of qualified or dedicated suppliers and approved suppliers;
- source or receipt inspection, surveillance, or performance-based audits; and
- technical validation of product acceptability.

Technical validation may necessitate product-specific inspections and acceptance tests in addition to tracing the paperwork.

4.1.2 Qualified Suppliers

Any item known to have been counterfeited in the past (e.g., Grades 5 and 8 high-strength bolts, circuit breakers, and other S/CIs listed in Appendix 4 or on the DOE S/CI home page) should be procured from qualified or dedicated suppliers, particularly items intended for use in safety systems.

Supplier qualification may be achieved by the following means.

- Conducting QA surveys or evaluations (i.e., performance-based audits, assessments, or surveillances of a supplier's QA program). The results should be factored into source or site inspection and testing to validate product acceptability.

- Accepting evidence of a supplier's capabilities from another DOE facility, the DOE Supplier Quality Information Group (SQIG), or other similarly chartered and nationally recognized organizations. Exchanging procurement information should optimize the use of audit resources and experiences and facilitate timely identification of potentially substandard items.

Note: SQIG audits are a DOE-wide cooperative effort to obtain QA information on suppliers. Though such audits should simplify the process for qualifying suppliers, they may not reflect the current status of the supplier's QA program nor do they represent SQIG endorsement. The procuring organization is responsible for qualifying suppliers and ensuring the adequacy of the QA program. Further information can be obtained from the SQIG home page at **http://www.lanl.gov/sqig/sqighome.htm**.

Items may also be procured from dedicated suppliers through Basic Ordering Agreements, which provide for pre-established technical and administrative controls and quality verification for the items to be purchased. When no qualified or dedicated supplier exists, the potential supplier's capabilities and the adequacy of its QA program should be verified by performance-based evaluations.

Guidance on supplier qualification and dedication and other procurement controls is provided in DOE G-830-120, DOE 4330.4B, MAINTENANCE MANAGEMENT PROGRAM [22], ASME NQA-1 [19], and ASME FAP-1-1990 [23]. Additional information on procurement and receipt

of items is included in the Electric Power Research Institute (EPRI) guidelines, NP-6629 [24]. EPRI NP-6630 [25] contains information on performance-based supplier audits.

4.1.3 Collection and Use of Past Performance Information

Section 10.91 of the Federal Acquisition Streamlining Act of 1994 [26] encourages consideration of past performance information in evaluating suppliers. This law represents a change from evaluating offers based primarily on low costs to procuring products from qualified suppliers that represent the best offer to the Government. DOE Acquisition Regulation Acquisition Letter 95-08 [27] defines policy and procedures for the collection, evaluation, and use of past performance information in contracts expected to exceed $100,000. In addition, the regulations allow DOE to consider a history of poor performance as a basis for excluding suppliers who continue to deliver substandard products, including those containing S/CIs, after providing certain due process rights to those suppliers.

4.1.4 Purchase Orders and Contracts

Where possible, purchase orders and contracts should identify the applicable technical specification for the item being procured. Purchase orders and contracts should require that items be new—not reconditioned, used, or repaired—unless otherwise specified by the contracting organization.

4.1.5 Quality Clauses and Controls

Purchase orders and contracts should contain quality clauses prohibiting delivery of S/CIs. Quality clauses should also prohibit subcontractors from bringing S/CIs on site and hold subcontractors accountable for replacing S/CIs at their expense. Following is an example of a quality clause for procuring fasteners which requires the supplier to confirm that an end item does not contain S/CIs.

> The supplier assures that suspect or counterfeit fasteners are not provided as part of the end item for delivery under this purchase order. Items containing suspect/counterfeit parts will not be accepted. Suspect or counterfeit fasteners are those identified by the combined headmark list/chart attached.

Procurement documents for items should specify the appropriate technical specifications, QA standards, and documentation requirements [e.g., Certified Material Test Reports (CMTRs)]. Procurement documents also should be subjected to engineering reviews to ensure their adequacy.

Items intended for use in safety systems should not be purchased by credit/purchase cards, a practice that permits bypassing quality clauses and other procurement controls needed to prevent the receipt of S/CIs.

4.2 INSPECTION AND ACCEPTANCE

Item number verification and certification documentation (e.g., CMTRs) alone may not be sufficient to verify the quality of purchased items; engineering attributes and QA criteria should also be specified and verified. Consideration should be given to the following:

- intended safety function of the item;
- attributes required to perform the function;
- processes that impart these attributes;
- supplier past performance information;
- source inspection, surveillance, assessments, or QA audit results;
- receipt inspection and acceptance testing results;
- special test and examination methods (e.g., chemical analysis, hardness and tensile testing); and
- post-installation testing.

On-site stores and inventories should be inspected to ensure they have been purged of S/CIs.

Large lots of received items may be sampled using the criteria of ANSI/ASQC Z1.4 [28]. If S/CIs are discovered during inspection or sampling, the lot should be controlled and dispositioned in accordance with site procedures. Items listed in the DOE S/CI home pages should be presumed to be defective and should be rejected.

S/CIs, including those items lacking appropriate documentation, should be identified, documented, controlled, dispositioned, and reported as early as possible in the inspection process.

Representative samples of items should be inspected before they are accepted to verify conformance to specified requirements. Items should be inspected for attributes common to S/CIs (i.e., those S/CI attributes or indicators listed in Appendix 4) by personnel who are trained to recognize S/CIs. Observations that a product appears to be an S/CI should be documented in the inspection process. If a suspect item is found to be acceptable (through engineering evaluation, verification testing, or the disposition process), the item may be installed or used. Verification testing may be conducted on a sampling basis, either at the purchaser's facility or a qualified independent test laboratory. Purchased equipment that is found at any time to contain S/CIs should be withheld from installation or use pending engineering evaluation. If the evaluation determines that the S/CI has the potential to adversely affect the safe performance of the equipment, the S/CI should be replaced at the supplier's expense and the manufacturer

notified. If it is determined (through engineering evaluation, verification, or disposition process) that the item conforms to specified requirements and will not create a potential safety hazard, the item may be installed or used.

When the design specifies the use of commercial-grade items[1] in safety systems, one or more of the following methods described in ASME NQA-1, Supplement 7S-1, [19] should be used by the purchaser to provide reasonable confidence that the items meet the acceptance criteria:

- special tests and inspections on receipt and post-installation;
- survey of the commercial-grade supplier;
- source verification; and
- past performance record of supplier or item.

4.3 ENGINEERING INVOLVEMENT

During several special inspections of nuclear power plants, the NRC noted that those plants most effective in detecting suspect parts had three common characteristics [29, 30]:

- Engineering staff involvement in procurement and product acceptance.

- Effective source inspection, receipt inspection, and testing programs.

- Thorough, engineering-based programs for review, testing, and dedication of commercial-grade products for suitability in safety systems.

The objective of engineering involvement is to prevent or mitigate potential risks to public and worker safety attributable to S/CIs. Engineering involvement is generally warranted to support procurement, product inspection and acceptance testing, and the dispositioning process, particularly when items are known to have been previously counterfeited.

The extent of engineering involvement should be determined by the nature and intended application of the purchased product (i.e., graded approach). Engineering involvement in procurement and product acceptance may be minimal when existing acceptable items are to be replaced during maintenance or modification with like items or if the safety risk is obviously low. Engineering involvement is generally warranted to support procurement and product acceptance activities, particularly in testing products known to have been counterfeited previously.

Engineering involvement may include the following activities.

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[1] See ASME NQA-1 for definition of commercial-grade item.

- Developing technical specifications for the procurement of facility items. EPRI NP-5638 contains information for ensuring that appropriate requirements are specified in purchase orders [31].

- Determining critical characteristics of purchased items that should be specified in the purchase order and selecting those characteristics to be verified during receipt inspection or prior to use.

- Determining specific verification testing requirements and methods applicable to the acceptance of products. The extent of verification testing should be based on the possibility of the item's being counterfeited, the sample size and dollar value of the shipment, and the item's function in safety systems. Without a performance-based audit, verification testing or inspection is appropriate, particularly when purchasing from suppliers who are neither the original manufacturers nor authorized distributors and for whom there is no past performance information. Verification testing may be performed during receiving inspection or post-installation inspection.

- Evaluating acceptance test results and dispositioning S/CIs.

- Reviewing technical changes to and deviations from procurement documents.

- Developing methods for use by maintenance or inspection personnel to indicate the acceptability of suspect items determined by engineering evaluation to be acceptable for use in their current application (e.g., painting bolt heads a distinctive color).

- Participating in audits, surveillances, and source inspections to verify the technical performance capability of suppliers of items for safety systems.

- Maintaining, modifying, or justifying the replacement of equipment involving design changes. Guidelines on engineering evaluation to justify equipment replacement are provided in EPRI NP-6406 [32].

An engineering evaluation should be conducted to determine whether a system can be operated in its present configuration without modification or replacement of a suspect item, or whether the system must be locked out, tagged out, and removed from service immediately. Engineering evaluation results should specify any conditional use of the system and any compensatory actions that will ensure the least possible threat to public and worker safety. Results should be communicated to the local DOE field office in accordance with site procedures.

4.4 INSTALLED ITEMS

4.4.1 General

DOE O 440.1 requires DOE and its contractors to implement QA programs with procedures for inspecting, identifying, evaluating, testing, removing, replacing, and dispositioning S/CIs installed in safety systems, nonsafety systems, and critical load paths of lifting equipment. DOE O 232.1 further requires that all installed S/CIs, regardless of their application, be reported by means of ORPS and reported to the Office of the Inspector General (OIG).

Contractors should ensure that S/CIs dispositioned either to remain in place or be removed later during planned or routine maintenance are clearly identified by marking or other appropriate means as determined by site procedures. Installed S/CIs that could be removed from their current acceptable applications should be marked to preclude their reuse.

Criteria for dispositioning S/CIs by removal, replacement, or acceptance after an engineering evaluation should be based on the deficient characteristic of the particular item.

Note: 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 suspect/counterfeit bolts should be replaced prior to further use of the equipment. Additional information on fastener properties is provided in ASTM A325-89 [33] and SAE standard J429k appendix [34]. Information on inspection and QA of fasteners is provided in the ASME B18.8 series of standards [35-38].

4.4.2 Safety Systems

DOE O 440.1 requires that contractor management systems identify and disposition S/CIs in safety systems and applications that could create potential hazards. To this end, contractors should establish and maintain current lists of safety systems. Such lists should provide a basis for establishing priorities, for conducting inspections, and for identifying and dispositioning S/CIs discovered in safety systems. Figure 1 illustrates a process for controlling S/CIs discovered in safety systems. This process may vary according to local procedures.

S/CIs should be reported by means of ORPS and to the local OIG.

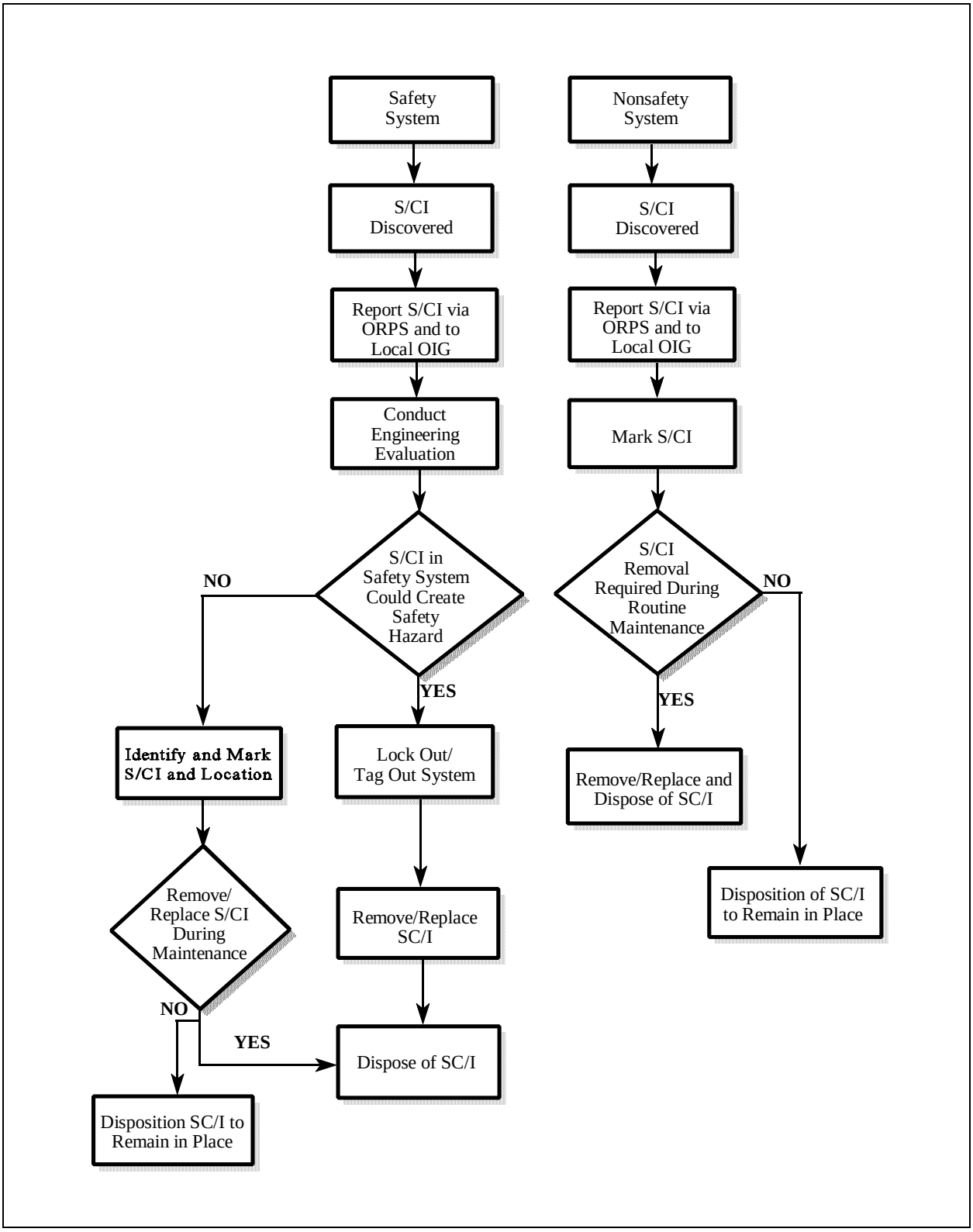

Figure 1. Controlling S/CIs in Safety and Nonsafety Systems.

An engineering evaluation should be conducted by authorized technical personnel using recognized methods and site procedures to determine where and how the S/CI is used in a safety system, its potentially adverse effect on safety, and its proposed disposition. Potential hazards to workers during S/CI removal should be recognized.

If the S/CI discovered in a safety system could create a potential safety hazard, an engineering evaluation should determine whether:

- the system should be removed from service immediately, locked out, and tagged out until the S/CI has been replaced with an acceptable item; or

- the system can be used, with limitations on operation, until the item can be replaced.

If an engineering evaluation determines that an S/CI does not pose a potential safety hazard, the item may remain in place, provided it is properly identified and marked by painting or controlled by other suitable means, according to site procedures, to prevent its reuse in an application where it may not be suitable. Sampling inspection and special inspection techniques, (e.g., portable testing equipment) may be used to locate and evaluate S/CIs installed in safety systems.

4.4.3 Nonsafety Systems

If an S/CI is discovered in a nonsafety system, it should be handled as follows (see Figure 1).

- Report the S/CI by means of ORPS and to the local OIG.

- Paint or otherwise identify the S/CI as determined by local procedures.

- Remove, replace, and dispose of the S/CI during routine maintenance or repair or disposition it to remain in place.

An S/CI similar to one discovered in a nonsafety system should prompt inspection of similar items in a safety system. Also, an S/CI discovered in nonsafety system applications could create personnel hazards, which should be treated in accordance with Section 4.4.2.

4.4.4 Critical Load Paths in Lifting Equipment

Lifting equipment, including both fixed and mobile cranes and other devices (e.g., forklifts, scissor 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. Crane 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. Figure 2 illustrates a process for controlling S/CIs discovered in the critical load path of lifting equipment.

S/CIs discovered in lifting equipment should be reported by means of ORPS and to the local OIG field office. An engineering evaluation should be conducted to determine the critical load paths in lifting equipment based on information provided by the equipment manufacturer. If the evaluation determines that an S/CI discovered in a critical load path of lifting equipment could create a safety hazard, site or facility management should be notified and the lifting equipment locked out and tagged out or otherwise removed from service according to site procedures. The S/CI should be removed, disposed of, and replaced by an acceptable item. If the evaluation determines that the S/CI in a critical load path could not create a safety hazard in its current application, the S/CI should be identified by marking or other appropriate methods and its location noted; the S/CI should either be removed and replaced during future maintenance or repair or allowed to remain in place.

An S/CI discovered outside the critical load path of lifting equipment should be reported and controlled according to the guidance provided in Subsection 4.4.3 above for nonsafety systems.

4.4.5 Capital Assets

Condition assessment survey (CAS) inspectors should verify that contractors have taken prescribed actions to control S/CIs for those facilities and equipment defined in DOE O 534.1, ACCOUNTING [39], as capital assets.

4.5 REMOVAL AND DISPOSITION

Consistent with the guidance provided above, all known S/CIs should be removed as soon as practicable from any location within the DOE complex when an engineering evaluation has determined that the S/CI could create a safety hazard.

An S/CI should be destroyed, provided the item:

- cannot be traced to a supplier, manufacturer, or distributor; and

- is not required as material evidence by the local OIG. Before disposing of the S/CI, the local OIG should be consulted to determine whether the item should be retained as evidence in the event of litigation. (See Section 6.2.8.)

If the above conditions are met, permanently and irrevocably alter the S/CI so that it cannot be used. Examples of alteration include melting, shredding, or destroying the threads on fasteners; crushing circuit breaker casings; or embedding fasteners in concrete or other media, rendering them useless.

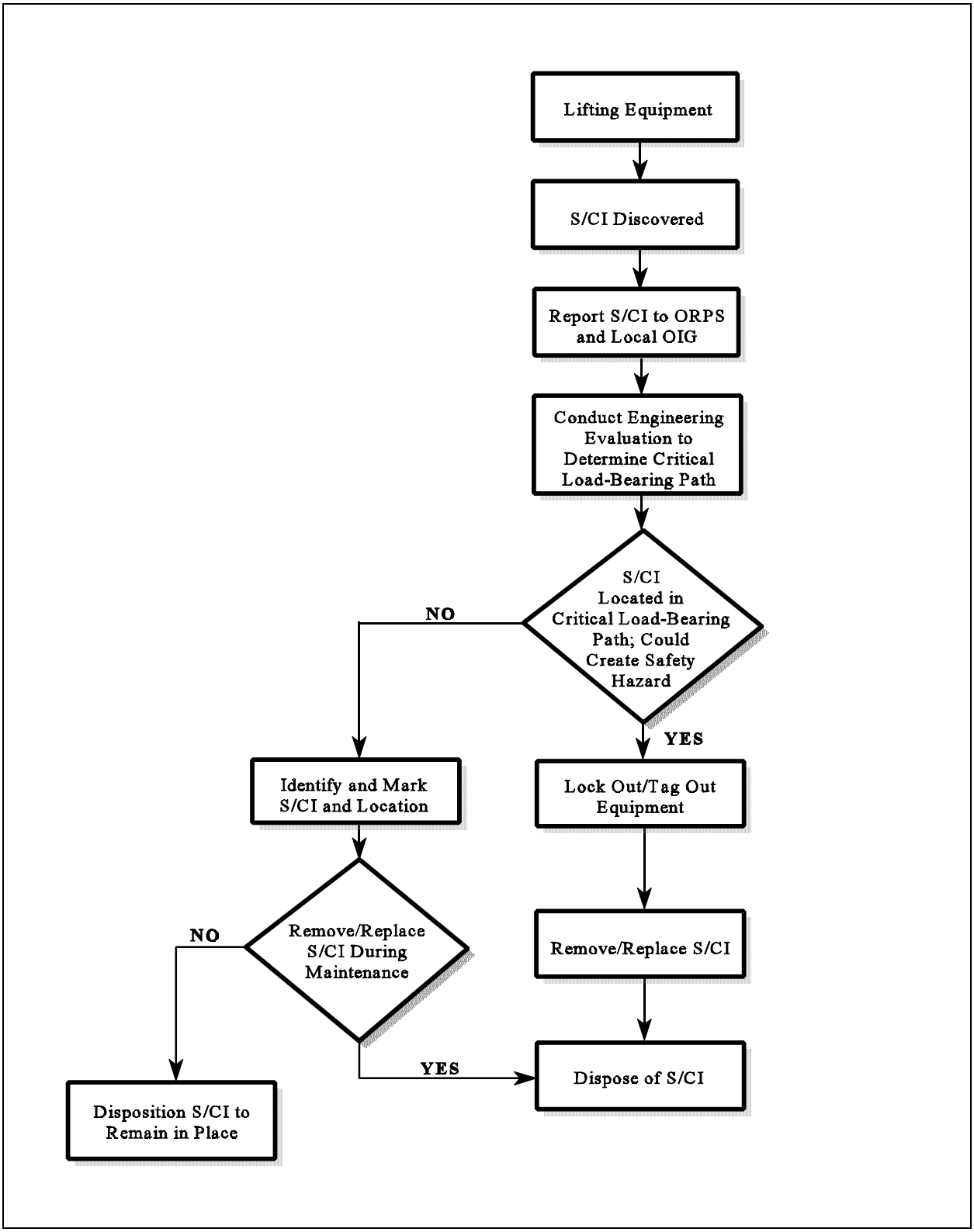

Figure 2. Controlling S/CIs in Critical Load Paths of Lifting Equipment.

S/CIs should be removed from surplus safety systems before they are released for sale or transfer of accountability. Conversely, surplus items received from DOE or other facilities should be inspected for S/CIs prior to installation. Burying S/CIs may be acceptable if they do not contain hazardous material or material prohibited by Federal, State, or local regulations (e.g., cadmium-plated bolts).

5. OCCURRENCE REPORTING AND INFORMATION EXCHANGE

5.1 OCCURRENCE REPORTING

DOE O 232.1 requires that the contractor promptly report all S/CIs, regardless of their locations, to the cognizant DOE operations office manager, the program manager by means of ORPS, and the local OIG. Reporting an S/CI to ORPS does not substitute for reporting to the OIG, and vice versa. Information reported should be sufficient to alert other DOE facilities of an S/CI problem. DOE O 232.1 permits an S/CI to be reported either as a single occurrence or in a roll-up report for identical items.

5.2 TRENDING AND ANALYSIS REPORTING

DOE issues an S/CI information trending and analysis report [40] which is available electronically on the Internet at **http://www.sci.doe.gov** under "S/CI Quarterly Trending Report."

5.3 GOVERNMENT-INDUSTRY DATA EXCHANGE PROGRAM

Office of Management and Budget Policy Letter No. 91-3 [41] requires DOE and its contractors to participate in the exchange of failure experience information concerning suspect parts. Accordingly, DOE and its contractors participate in the Government-Industry Data Exchange Program (GIDEP), **http://www.gidep.corona.navy.mil/**.

5.4 CONSULTATION WITH OFFICE OF GENERAL COUNSEL

Program managers should consult with DOE's Office of General Counsel regarding legal questions arising from any S/CI occurrence. Typical legal questions involving an S/CI report include disclosure restrictions; procedures to protect Government rights against S/CI suppliers; and proper liaison procedures among DOE programs and investigative, law enforcement, or prosecuting agencies (e.g., the Office of Inspector General Defense Criminal Investigative Service, Federal Bureau of Investigation, U.S. Department of Justice, and U.S. Attorneys). Within the Office of General Counsel, the Office of Assistant General Counsel for Defense Programs and National Security is the single point of contact for S/CI matters. That office is located at DOE Headquarters in the Forrestal Building in Washington, D.C., and can be reached by phone at 202-586-0806 or by fax at 202-586-7373.

5.5 DOE QUALITY ALERT PROCESS

Figure 3 depicts the DOE quality alert process for S/CIs. DOE/EH screens information on S/CIs collected from various internal and external sources, including ORPS, GIDEP, and the QA

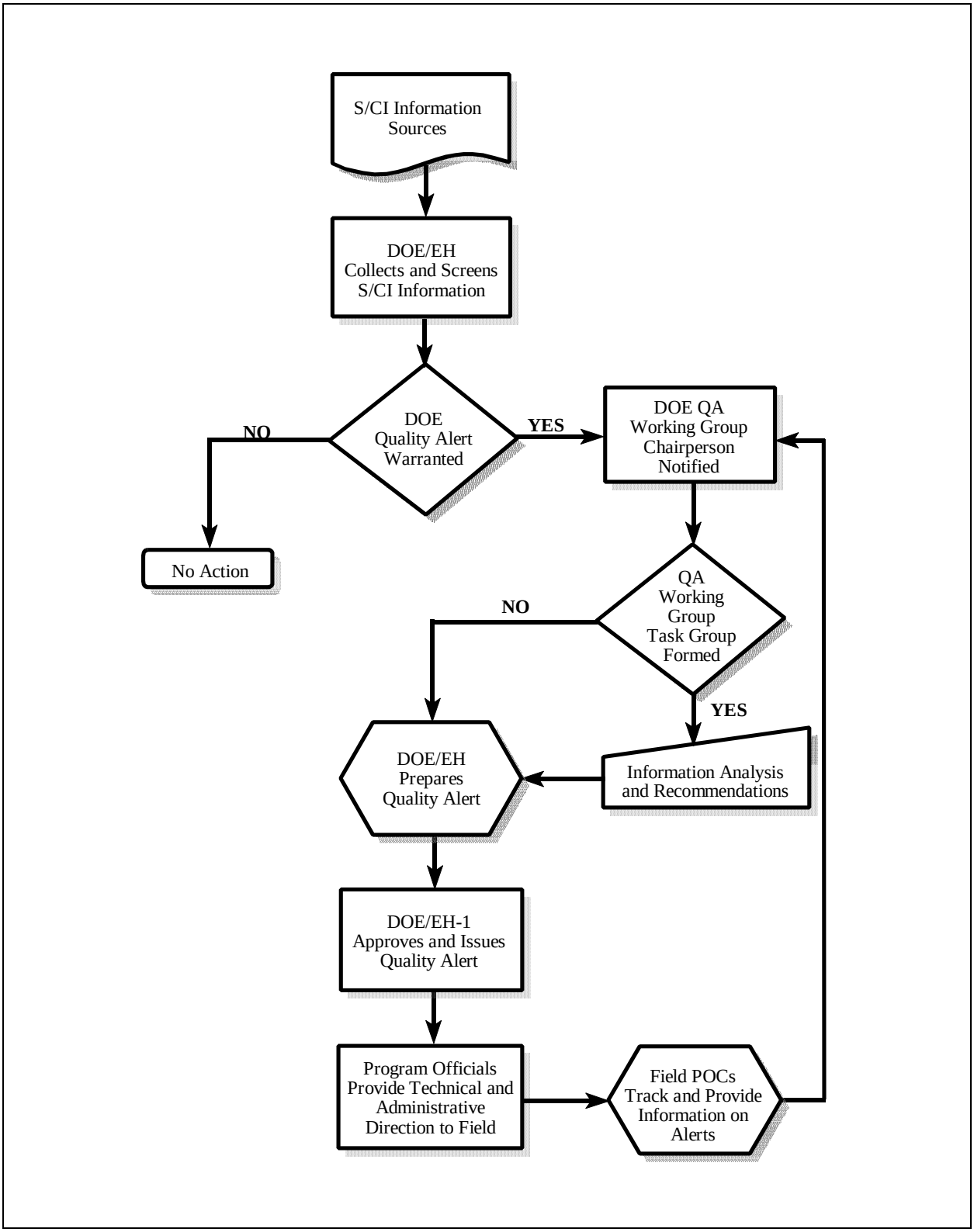

Figure 3. Quality Alert Process for S/CIs.

working group. The QA working group chairman consults with DOE/EH to determine whether an alert should be prepared. The QA working group forms a task group, if needed, to help DOE/EH analyze S/CI information and provide recommendations for the alert. The QA working group chairman monitors the process and supports the timely release and distribution of the alert. Depending on the urgency of the situation, QA working group members may act on the alert during its preparation.

The appropriate program officials should provide, through the cognizant DOE field elements, technical and administrative direction regarding the location, analysis, and disposition of the S/CI. To facilitate timely communication, DOE field managers should designate central points of contact for receipt, distribution, and tracking of alert actions. When requested, information on alert actions should be provided by field points of contact to the DOE QA working group chairman.

The purpose of an alert is to promptly notify affected users of an S/CI issue. An alert should typically include a brief description of the S/CI, safety and operational impacts, applicable specifications and standards, the supplier, and a technical point of contact for additional information.

6. REPORTING S/CIs TO DOE OIG

6.1 AUTHORITY

DOE 2030.4B requires DOE and contractor personnel to report instances of suspected fraud, waste, and abuse to OIG. This all-encompassing requirement includes S/CIs. Other DOE pronouncements also mention the need to report S/CIs to OIG, but the reporting requirement stems from DOE 2030.4B, which also requires the reporting of S/CIs [42]. Reporting S/CIs pursuant to other DOE pronouncements (e.g., reporting into ORPS) does not substitute for reporting S/CIs to OIG.

6.2 REPORTING S/CIs TO OIG

6.2.1 General

DOE or its contractors should report any S/CI that is discovered during receipt, maintenance, testing, inspection, or use and when there is reason to believe that a fraudulent act occurred during the manufacture, shipping, testing, or certification of the S/CI. The following are some, but not all, of the indicators that should cause suspicion of fraud.

- Though Item X was ordered and billed for evidence exists that the supplier intentionally provided Item Y.
- The S/CI, sold as new, shows evidence of prior use.
- Evidence shows that the manufacturer or supplier (1) intentionally provided altered or incomplete testing data or (2) did not disclose that some testing data were missing.
- Performance is inconsistent with certification or testing data furnished by the manufacturer or supplier.
- Product failure rate exceeds expectations.
- The manufacturer’s name, logo, serial number, or manufacture date appear to have been altered.
- Product must be certified as meeting specified criteria but fails independent QA test.

For more information on identifying potential fraud, see the DOE Field Management home page, **http://www.fm.doe.gov**.

6.2.2 Who Should Report S/CIs to OIG

DOE or its contractors at the site (i.e., location) where the S/CIs are initially *discovered* should report directly to OIG. Responsibility for reporting S/CIs to OIG, as described in this Guide, should be fixed at each location.

6.2.3 Where to Report

All reports to OIG should be made to the local OIG office nearest to the location where the S/CIs were initially discovered. Communicating directly with the local OIG office enhances the chance of successful prosecution. Appendix 3 contains the location, mailing address, telephone number, fax number, and electronic mail address of the local OIG offices.

6.2.4 What to Report

Report specifics regarding:

- characteristics of the potential fraud;
- description of the S/CI (e.g., quantity and size of bolt, quality and rating of circuit breaker);
- name of manufacturer, distributor, and supplier;
- identifying numbers (e.g., serial number, model number, product code);
- location, point of contact, and telephone number where S/CI and paperwork are being held;
- date S/CI discovered;
- occurrence report number (if available);
- intended end use for the S/CI (e.g., facility construction, component or equipment assembly);
- significance of the S/CI;
- dollar value of the S/CI; and
- other pertinent information.

6.2.5 When to Report

An S/CI that meets the broad factual situations or characteristics for reporting to OIG should be reported within 3 working days following its discovery.

6.2.6 How to Report

You may report an S/CI by letter, telephone, fax, or electronic mail to the appropriate OIG field office. (See Appendix 3.)

6.2.7 How to Secure the S/CI

Place the S/CI and the corresponding paperwork on hold in a secure area until OIG has been notified and has responded to the notification.

6.2.8 What to Expect from OIG

Once the local OIG office has been notified, OIG will respond in writing within 10 calendar days of the notification as to its intent regarding opening an investigation. If OIG opens an investigation, DOE and its contractors will receive a written request to cooperate with OIG by retaining and securing the S/CI and related paperwork until the investigation is completed. In some instances, OIG may take custody of the S/CI and paperwork for investigative purposes. OIG will provide written notification when an investigation has been opened but the need to hold the S/CI no longer exists. If the S/CI is no longer on hold and is not returned to the sender, DOE recommends disposing of the S/CI as described in Subsection 4.5 of this Guide. If OIG does not respond as described in this paragraph, DOE and contractor personnel should feel free to contact OIG.

An OIG decision not to pursue a criminal investigation of an S/CI matter should not preclude DOE or its contractors from denying payment; returning substandard or otherwise defective items to the sender; or seeking other contractual remedies, as appropriate. OIG's decision to release an S/CI from a hold status should not be interpreted as having any bearing on the safety or usability of the product in question.

6.3 SUCCESSFULLY PROSECUTING S/CI CASES

The best defense against the introduction of S/CIs into the DOE complex is a well-managed and up-to-date QA program. Prosecution of S/CI offenders is an integral part of DOE's internal control structure and is used to discourage would-be offenders; however, prosecution without an effective QA program, will not prevent the introduction of S/CIs into the DOE complex. Implementing the following suggestions will enhance the chances for successful prosecution of an S/CI offender.

- Identify the S/CI during initial receipt at its point of entry into the DOE complex (i.e., where the goods ordered are opened, inspected, tested (when applicable), and compared to the requisition and shipping paperwork).

- Limit and document the chain of custody of the S/CI and paperwork from receipt until OIG releases the S/CI from a hold status.

- Ensure that requisitions or purchase orders contain specific product requirements.

- Require the manufacturer and supplier to certify that the products supplied conform to contract requirements and specifications.

- Conduct an independent test (or evaluation) to show that the product does not conform to the contract requirements.

7. TRAINING

DOE and its contractors should train personnel, within their respective areas of responsibility, to prevent, detect, and eliminate the introduction of S/CIs into the DOE complex. Training should include pertinent DOE directives, processes, and procedures, including the contents of this Guide.

Supervisors should evaluate the individual training needs of their personnel to ensure that they are proficient in S/CI identification and control procedures within their areas of responsibility (i.e., engineering; procurement; environment, safety, and health; QA; receipt inspection; warehouse and storage; and maintenance and operations).

Management personnel should be trained to ensure that:

- procurement and other procedures adequately control the receipt, inspection, and acceptance of S/CIs;

- all personnel involved in resolving S/CI issues receive S/CI training;

- management systems report and evaluate all S/CIs discovered within the DOE complex; and

- corrective and preventive actions are institutionalized within the DOE complex.

The following DOE-sponsored courses and training workshops are available for presentation to DOE and contractor personnel:

- S/CI Awareness and Identification;
- Design and Specification Prevention Tools;
- Procurement Prevention Tools;
- S/C Fasteners in Cranes; and
- Vendor Development and Evaluation.

Contact the Clearinghouse for Training and Education Development home page at **http://cted.inel.gov/cted/** or the Quality Training Resource Center in Hanford for information on course availability.

8. ASSESSMENT AND OVERSIGHT

8.1 GENERAL

DOE assessment requirements of the QA Rule [8] and Order [9] should be applied to S/CI management and control issues. DOE G 414.1-1 [43] contains guidance on independent and management assessment.

8.2 DOE AND CONTRACTOR ASSESSMENT

DOE should assess the effectiveness of its actions in resolving S/CI issues and evaluate the adequacy and implementation effectiveness of contractor S/CI controls. DOE G 414.1-1 [43] contains guidance on independent and management assessment.
Contractors are expected to assess the adequacy and effectiveness of their S/CI controls in accordance with DOE G 414.1-1 and this Guide.

8.3 DOE INDEPENDENT OVERSIGHT

The DOE Office of Oversight and the OIG are responsible for conducting independent oversight of DOE actions related to S/CI issues.

APPENDIX 1
DEFINITIONS

Certificate of Conformance. A document signed or otherwise authenticated by an authorized individual certifying the degree to which items or services meet specified requirements.

Certified Material Test Report (CMTR). A written and signed document that is approved by a qualified party and contains data and information that attests to the actual properties of an item and the actual results of all required tests.

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

Engineering Evaluation. A technical review conducted by qualified engineering and other technical personnel using accepted methods to determine the actual or potential cause of a substantial safety hazard and the effect of an S/CI.

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

Nonconformance. A deficiency in characteristic, documentation, or procedure that renders the quality of an item or activity unacceptable or indeterminate.

Safety Margin. That margin built into the safety analyses of the facility as set forth in the authorization basis acceptance limits.

Safety System. A DOE nuclear and nonnuclear facility structure, system, or component whose preventive or mitigative function is a major contributor to defense-in-depth (i.e., prevention of uncontrolled material release) or worker safety as determined from hazard analysis. Also, a DOE structure, system, or component, including a primary environmental monitor or a portion of a process system, whose failure could adversely affect the environment, safety, or health of the public or workers.

APPENDIX 2
REFERENCES

The following referenced documents were used in developing the information contained in this Guide. Some of these documents, such as the DOE Orders and Rule, are linked to the DOE home page. Other documents, such as the ASME standards, may be purchased or obtained from another Government agency. Some DOE documents, such as the 1993 S/CI Plan [4] and DP memoranda [13-15] have been superseded, either totally or in part, by the more current information included in this Guide. Formal cancellation of these documents is not required because they are not part of the DOE directives system. EPRI guidelines [22-24, 30, 31] are available to subscribing members.

1. Public Law 101-592, Fastener Quality Act of 1990, 11-16-90.

2. Department of Energy (DOE) Office of the Inspector General Report, *Concerns with the Effectiveness of the Department's Quality Assurance Program Regarding Production Substitution Issues,* DOE/IG-0304, November 1991.

3. DOE, Office of Environment, Safety and Health, Quality Alert Bulletin No. 92-4, August 1992.

4. DOE Office of Nuclear Energy, *Plan for the Suspect/Counterfeit Products Issue in the Department of Energy,* October 1993, superseded.

5. DOE Office of Environment, Safety and Health, *Independent Oversight Analysis of Suspect/Counterfeit Parts Within the Department of Energy,* November 1995.

6. DOE Office of Field Management, Resolution of Outstanding Issues Identified from Inspector General Report DOE/IG-0304, *Concerns with the Effectiveness of the Department's Quality Assurance Program Regarding Production Substitution Issues,* November 1991; *Report of the Senior Managers' Task Group to Resolve Outstanding Issues Concerning Suspect/Counterfeit Items in the Department of Energy*, 6-21-96.

7. DOE O 440.1, WORKER PROTECTION MANAGEMENT FOR DOE FEDERAL AND CONTRACTOR EMPLOYEES, Paragraph 4i(5), Attachment 1, Paragraph 8a and b, and Attachment 2, Paragraph 9e, 9-30-95.

8. Title 10, Code of Federal Regulations, Part 830, Nuclear Safety Management, Section 830.120, Quality Assurance Requirements, 4-5-94.

9. DOE 5700.6C, QUALITY ASSURANCE, 8-21-91. [This Order is being revised and will be reissued as DOE O 414.1.]

10. DOE G-830-120, IMPLEMENTATION GUIDE FOR USE WITH 10 CFR PART 830.120, QUALITY ASSURANCE, Rev. 0, 4-15-94. [This Guide will be renumbered within the DOE G 414.1-X series.]

11. DOE O 232. 1, OCCURRENCE REPORTING AND PROCESSING OF OPERATIONS INFORMATION, 9-25-95.

12. Defense Programs Memorandum, *Suspect Parts*, 4-22-91, superseded.

13. Defense Programs Memorandum, *Requirements for Reporting of Suspect Counterfeit Parts*, 3-5-93, superseded.

14. Defense Program Memorandum, *Suspect/Counterfeit Bolts Installed in Critical Lifting Equipment*, 3-7-94, superseded.

15. Defense Programs Memorandum, *Reporting of Suspect/Counterfeit Parts at Department of Energy Defense Programs Facilities*, 10-27-95, superseded.

16. DOE Defense Programs, *Strengthening the Procurement Process to Preclude the Acceptance of Suspect Parts*, Safety Information Letter 93-01, January 1993, superseded.

17. DOE P 450.4, SAFETY MANAGEMENT SYSTEM POLICY, 10-15-96.

18. DOE P 450.3, AUTHORIZING USE OF THE NECESSARY AND SUFFICIENT PROCESS FOR STANDARDS-BASED ENVIRONMENT, SAFETY AND HEALTH MANAGEMENT, 1-25-96.

19. American Society for Mechanical Engineers (ASME), *Quality Assurance Requirements for Nuclear Facility Applications*, ASME NQA-1-1994 and ASME NQA-1a-1995 Addenda, 1-19-96.

20. International Organization for Standardization (ISO), *Quality Systems—Model for Quality Assurance in Design, Development, Production, Installation, and Servicing*, ISO 9001-1994 [American National Standards Institute (ANSI)/American Society for Quality Control (ASQC) Q9001-1994 in United States].

21. International Atomic Energy Agency (IAEA), *Management of Procurement Activities in a Nuclear Installation*, TECDOC-919, December 1996.

22. DOE 4330.4B, MAINTENANCE MANAGEMENT PROGRAM, 10-17-90.

23. ASME, *Quality Assurance Program Requirements for Fastener Manufacturers and Distributors,* ASME FAP-I-1990, 5-31-90.

24. Electric Power Research Institute (EPRI), *Guidelines for the Procurement and Receipt of Items for Nuclear Power Plants,* (NCIG-15), EPRI/NP-6629.

25. EPRI, *Guidelines for Performance-Based Supplier Audits,* (NCIG-16), EPRI/NP-6630.

26. Federal Acquisition Streamlining Act of 1994, 10-13-94.

27. *Department of Energy Acquisition Regulation,* Acquisition Letter 95-08, 10-2-95.

28. American National Standards Institute/American Society for Quality Control (ANSI/ASQC), *Sampling Procedures and Tables for Inspection by Attributes,* ANSI/ASQC Z1.4-1993.

29. Nuclear Regulatory Commission (NRC), *Actions to Improve the Detection of Counterfeit and Fraudulently Marketed Products,* Generic Letter 89-02.

30. NRC, *Licensee Commercial-Grade Procurement and Dedication Programs,* Generic Letter 91-05.

31. EPRI, *Guidelines for Preparing Specifications for Nuclear Power Plants,* (NCIG-04), EPRI/NP-5638.

32. EPRI, *Guidelines for the Technical Evaluation of Replacement Items in Nuclear Power Plants,* (NCIG-11), EPRI/NP-6406.

33. American Society for Testing and Materials (ASTM), *Specification for High-Strength Bolts for Structural Steel Joints,* ASTM A325-89, 1990 Annual Publication of ASTM Standards.

34. Society of Automotive Engineers (SAE), *Mechanical and Material Requirements for Externally Threaded Fasteners,* SAE standard J429k, Appendix, January 1980.

35. ANSI/ASME, *Inspection and Quality Assurance for General Purpose Fasteners,* ANSI/ASME B18.18.1-1987 (R 1994), 3-31-87.

36. ANSI/ASME, *Inspection and Quality Assurance for High-Volume Machine Assembly Fasteners,* ANSI/ASME B18.18.2M-1987 (R1993), 3-31-87.

37. ANSI/ASME, *Inspection and Quality Assurance for Special Purpose Fasteners,* ANSI/ASME B18.18.3M-1987 (R1993), 3-31-87.

38. ANSI/ASME, *Inspection and Quality Assurance for Fasteners for Highly Specialized Engineering Applications,* ANSI/ASME B18.18.4M-1987 (R1993), 3-31-87.

39. DOE O 534.1, ACCOUNTING, 9-25-95.

40. DOE Report, *Analysis and Tending of Suspect/Counterfeit Items at Department of Energy Facilities,* quarterly.

41. Office of Manpower and Budget, *Reporting Nonconforming Products,* Policy Letter No. 91-3, 4-9-91.

42. DOE 2030.4B, REPORTING FRAUD, WASTE, AND ABUSE TO THE OFFICE OF INSPECTOR GENERAL, 5-18-92.

43. DOE G 414.1-1, IMPLEMENTATION GUIDE FOR USE WITH INDEPENDENT AND MANAGEMENT ASSESSMENT REQUIREMENTS OF 10 CFR PART 830.120 AND DOE 5700.6C, QUALITY ASSURANCE, 10-11-96.

APPENDIX 3
OFFICE OF INSPECTOR GENERAL
OFFICE OF INVESTIGATIONS FIELD OFFICES[1]

Location/Address	Telephone	Fax	Electronic Mail Address
ALBUQUERQUE, NM			
Special Agent Office of Investigations Office of Inspector General U.S. Department of Energy P.O. Box 5657 Albuquerque, NM 87185	505-845-4009	505-845-4663	E581@doe.dt.navy.mil EALI@warp8.dt.navy.mil
CHICAGO, IL			
Special Agent Office of Investigations Office of Inspector General U.S. Department of Energy 9800 South Cass Avenue, Bldg. 33 Argonne, IL 60439	630-252-2826	630-252-3650	byron.hoekstra@ch.doe.gov ECHI@warp8.dt.navy.mil
CINCINNATI, OH			
Special Agent Office of Investigations Office of Inspector General U.S. Department of Energy P.O. Box 549 Ross, OH 45061-0549	513-648-4809	513-648-4833	E302@warp8.dt.navy.mil ECNI@warp8.dt.navy.mil
DENVER, CO			
Special Agent Office of Investigations Office of Inspector General U.S. Department of Energy P.O. Box 150606 Lakewood, CO 80215	303-275-1757	303-275-1766	E321@warp8.dt.navy.mil EDNI@warp8.dt.navy.mil

[1] All data are current as of November 1996. Contact the DOE Office of Investigations at 202-586-4143 for directions if you are unable to contact the above offices. You may also check the Field Management home page for the most current contact information.

OFFICE OF INSPECTOR GENERAL
OFFICE OF INVESTIGATIONS FIELD OFFICES (continued)

IDAHO FALLS, ID			
Special Agent Office of Investigations Office of Inspector General U.S. Department of Energy P.O. Box 51566 Idaho Falls, ID 83405-1566	208-526-4225	208-526-4175	E356@warp8.dt.navy.mil EIFI@warp8.dt.navy.mil
LIVERMORE, CA			
Special Agent Office of Investigations Office of Inspector General U.S. Department of Energy P.O. Box 2270 Livermore, CA 94551	510-422-3245	510-422-3230	E446@warp8.dt.navy.mil ELLI@warp8.dt.navy.mil
OAK RIDGE, TN			
Special Agent Office of Investigations Office of Inspector General U.S. Department of Energy P.O. Box 62 Oak Ridge, TN 37831	423-576-8148	423-576-8111	E059@warp8.dt.navy.mil EORI@warp8.dt.navy.mil
PITTSBURGH, PA			
Special Agent Office of Investigations Office of Inspector General U.S. Department of Energy P.O. Box 10940 Pittsburgh, PA 15236-0940	412-892-4971	412-892-4871	E357@warp8.dt.navy.mil EPTI@warp8.dt.navy.mil
RICHLAND, WA			
Special Agent Office of Investigations Office of Inspector General U.S. Department of Energy P.O. Box 754 Richland, WA 99352	509-376-8828	509-376-7458	E075@warp8.dt.navy.mil ERLI@warp8.dt.navy.mil

OFFICE OF INSPECTOR GENERAL
OFFICE OF INVESTIGATIONS FIELD OFFICES (continued)

Location/Address	Telephone	Fax	Electronic Mail Address
SAVANNAH RIVER, SC			
Special Agent Office of Investigations Office of Inspector General U.S. Department of Energy P.O. Box 447 New Ellington, SC 29809	803-725-4720	803-725-7592	E489@warp8.dt.navy.mil ESRI@warp8.dt.navy.mil
WASHINGTON, D.C.			
Special Agent Office of Investigations Office of Inspector General U.S. Department of Energy 950 L'Enfant Plaza; Rm 110 Washington, D.C. 20585	202-426-1011	202-426-1006	EHQI@warp8.dt.navy.mil

APPENDIX 4
SUSPECT/COUNTERFEIT ITEMS AND THEIR INDICATORS

The following examples of some common suspect/counterfeit items (S/CIs) and their indicators were compiled from field experience.

General

- Nameplates, labels, or tags have been altered, photocopied, or painted over; are not secured well; are unusual in location and method of attaching; show incomplete data; or are missing. Preprinted labels normally show typed entries.

- Item has wear marks or scratches on external surfaces.

- Obvious attempts at repair or beautification have been made—excess painting or wire brushing, evidence of hand painting (touch-up), painted stainless steel.

- 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, tin snips, or nippers

- Hand tool marks exist on fasteners or other assembly parts—upset metal exists on screw or bolt head or dissimilar parts are evident—seven or eight bolts are of the same material and one is of different material.

- Assembled items fit poorly.

- Metallic items are pitted or corroded.

- Casting markings have been ground off and item has been restamped with other markings.

- Configuration is inconsistent with other items from the same supplier or varies from that indicated in supplier literature or drawings.

- Component or item is unusually boxed or packed.

- Supplier is not a factory-authorized distributor.

- Dimensions of the item are inconsistent with the specification requested on the purchase order and those provided by the supplier at the time of shipment.

- Item or component matches the description of one that is listed on a suspect item list (e.g., U.S. Customs Service, “Suspect Headmark List”).

Circuit Breakers

- Case is cracked or appears used.
- Underwriters Laboratory (UL), Factory Mutual, or the original manufacturer’s label shows signs of being altered or copied (e.g., black and white, poor legibility).
- Circuit breaker rating shows signs of being altered (e.g., rating painted on instead of being impressed into the case) or contradictory amperage ratings appear on different parts of the same refurbished breaker.
- Rivets or other connectors used to hold the case together are not proper type or size or rivets have been removed; the case may be held together with wood screws, metal screws, or nuts and bolts.
- Certifications are copied or show evidence of falsification (where possible, original certification forms should be obtained from the distributor).
- Style of the breaker is no longer manufactured or is old.
- Breaker comes in cheap, generic-type packaging (e.g., bulk-packaged in plastic bags, brown paper bags, or cardboard boxes with handwritten labels) instead of the manufacturer's original boxes.
- Data on carton or label have been altered or are inconsistent.
- Manufacturer's seal across the two halves of the case of the breaker is broken or missing.
- Manufacturer's date code is not stamped on the breaker.
- Wire lugs show evidence of tampering.
- Surface of the circuit breaker may be nicked or scratched yet have a high gloss.
- Rating stamp is in the wrong place.
- Third-party markings are on item.
- Item has Canadian manufacturer label but no UL label.
- Terminal lugs are on both ends.

- Terminal hardware is wrong size or type or is mismatched.
- Cover screw seals are missing or rough or are poorly resealed.

Electrical Devices, General

- Connections show evidence of previous attachment (upset metal or marring).
- Electrical leads are of different lengths or are not as long as stated in vendor product catalog.
- Connections show arcing or discoloration.
- Fasteners are loose, missing, or show upset metal.
- Molded case circuit breakers are consistent with manufacturer-provided checklists for detecting substandard/fraudulent breakers.
- On products requiring them, UL labels are missing or photocopied.
- Manufacturer's labels are discolored or faded, indicating they may have been photocopied.
- Item shows evidence of wear or prior use.
- Item has scratches or nicks in factory paint or coating.

Fasteners

- Headmarkings are marred, missing, or appear to have been altered.
- Threads show evidence of dressing or wear (threads should be uniform in color and finish).
- Headmarkings are inconsistent within a heat lot.
- Headmarkings appear to be impression-stamped from post production.

Rotating Machinery and Valve Internal Parts

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

- **Valves**
  - **Paint**
    - Valve appears freshly painted and valve stem has paint on it.
    - Item has wear marks on any painted surface.
    - Valve stem is protected, but protection has paint on it.
    - Paint does not match standard original equipment manufacturer's color.
  - **Tags**
    - Tag are attached with screws instead of rivets.
    - Tag are attached in a different location than normal.
    - Tags appear old, worn, or newer than the valve.
    - Tags have paint on them.
    - Tags have irregular stamping.
    - Screw heads affixing tags to part are marred from use.
  - **Hand Wheels**
    - Hand wheels appear to be older than the valve.
    - Hand wheels appear sand-blasted or newer than the valve.
    - Different types of hand wheels are on valves of same manufacturer.
  - **Bolts and Nuts**
    - Bolts and nuts appear used (e.g., wrench marks on flats).
    - Item has improper bolt and nut material (e.g., bronze nut on stainless stem).

– **Body**

- Item shows evidence of ground-off casting marks; other markings are stamped in the area (original equipment manufacturer's markings are nearly always raised, not stamped).
- Item shows signs of weld repairs.
- Incorrect dimensions are obvious.
- Item shows evidence of fresh sand-blasted appearance, including eye bolts, grease fittings, stem, etc.
- Item shows evidence of previous bolt head scoring on backside of flanges (or this area has been ground to remove such marks).
- The finish on a new stainless steel valve is between dull and shiny—a shiny finish usually indicates bead blasting; a dull finish usually indicates sand blasting.

Manufacturer's Logo

- Manufacturer's logo may be missing.
- Logo plate appears to be newer than the valve.
- Logo plate shows signs of discoloration from previous use.

Price

- Price is significantly lower than that of the competition.

Other

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