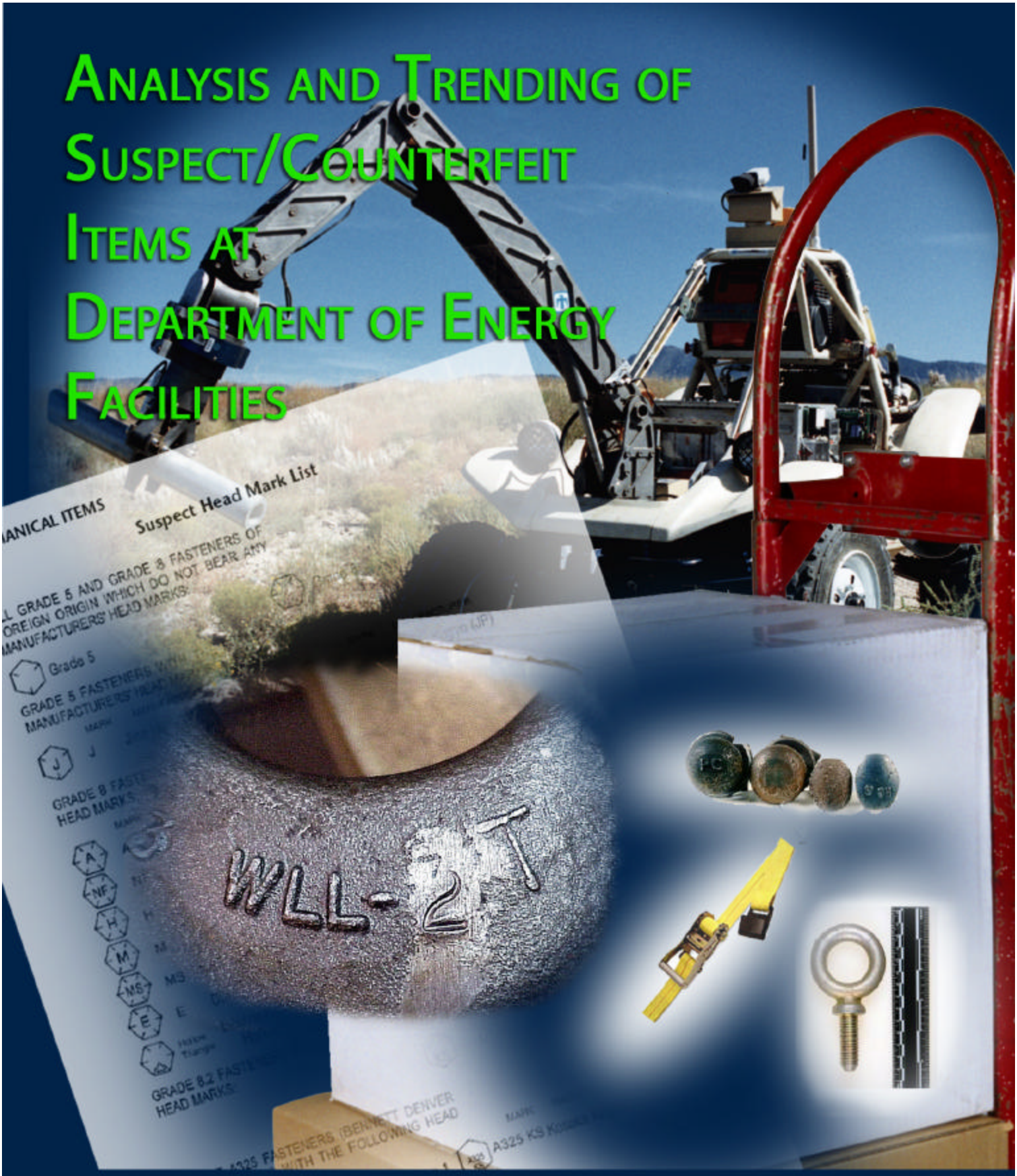
Analysis and Trending of Suspect/Counterfeit Items at Department of Energy Facilities



Office of Corporate Performance Assessment

Environment, Safety and Health

April 2005

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DOE/EH-0674

ANALYSIS AND TRENDING OF SUSPECT/COUNTERFEIT ITEMS AT DEPARTMENT OF ENERGY FACILITIES

April 2005

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EXECUTIVE SUMMARY

The Office of Environment, Safety and Health (EH) prepared this report to disseminate information on Department of Energy (DOE) suspect/counterfeit items (S/CI) and defective items (DI) or S/CI-DI. This annual report updates the S/CI report issued in April 2004 and includes data on S/CI-DI events reported in the Occurrence Reporting and Processing System (ORPS) between January 1, 2004 and December 31, 2004, as well as through the Government-Industry Data Exchange Program (GIDEP), the Institute for Nuclear Power Operations (INPO), and other miscellaneous sources. Because of these additional data sources, we are now able to identify more S/CI-DI events.

Within EH, the Office of Corporate Performance Assessment (EH-3) routinely collects, screens, dispositions, and communicates information on S/CI-DI that could potentially impact operations at DOE facilities. The following is a summary of current S/CI-DI and related activities for calendar year 2004:

? S/CI-DI training sessions conducted at 14 sites in 2004 led to increased awareness of S/CI-DI issues and activity in accessing the S/CI-DI web site, which, in turn, is most likely responsible for the increased event reporting in ORPS during 2004.

? The number of S/CI events reported in ORPS during 2004 (113 reports) more than doubled over the number reported in 2003 (48 reports).

? No injuries or near misses resulted from S/CI-DI within the DOE complex.

? In 2004, as in previous years, most of the S/CI reported in ORPS were fasteners, including those in ratchet straps or tie-downs.

? The percentage of ORPS-identified DI increased 8 percent in 2004.

? EH-3 conducted one investigation and issued two Safety Alerts in 2004. The investigation related to potentially defective 1-inch UF_6 cylinder valves. One Safety Alert related to a supplier removed from approved vendor list for allegedly falsifying certifications. The other Alert related to defective scaffold clamps.

EH-3's achievements in 2004 in implementing the S/CI-DI process included the following:

? Conducted the Hunt UF_6 Valve investigation and prepared a report of our findings.

? Addressed Defense Nuclear Facilities Safety Board (DNFSB) findings by:

- Updating the SCI Process Guide and Awareness Training Manual.

? Revising DOE O 414.1B, *Quality Assurance*, and the accompanying guide, DOE G 414.1-3 to include S/CI.

An electronic version of this report is also available from the S/CI-DI website (http://www.eh.doe.gov/sci).

1.0 INTRODUCTION

The Office of Environment, Safety and Health (EH) prepared this report to disseminate information on Department of Energy (DOE) suspect/counterfeit items (S/CI) and defective items (DI) or S/CI-DI. The Office of Corporate Performance Assessment (EH-3) routinely collects, screens, and disseminates information on S/CI-DI that could potentially impact operations at DOE facilities.

1.1 Background

This report updates S/CI summary information and associated trends for S/CI-DI identified at DOE facilities in 2004 and provides historical data and trending information regarding S/CI-DI discovery and disposition. EH-3 searched the Occurrence Reporting and Processing System (ORPS) database and other data sources to identify S/CI-DI. These added sources included, but were not limited to, the Government-Industry Data Exchange Program (GIDEP) and the Institute for Nuclear Operations (INPO). EH-3 informed the DOE complex of all S/CI-DI identified from these sources that it deemed applicable to DOE operations and used the information from the search results to trend and analyze S/CI-DI for calendar year 2004.

1.2 2004 Accomplishments

- EH-3 staff review of 4,516 reports led to the issuance of 206 Data Collection Sheets (DCSs) (4.6 percent of the total) that were posted on the SC-DI website in 2004.
- No near misses or injuries involving S/CI-DI were reported in 2004.
- EH-3 conducted one investigation and issued two Safety Alerts in 2004. The investigation related to potentially defective UF_6 cylinder valves (DCS 518). The Safety Alerts related to a supplier who was removed from the approved vendor list for allegedly falsifying metal testing certifications (DCS 582) and for defective scaffold clamps (DCS 789). Six DOE sites reported having the type of UF_6 valves identified in the Alert in their inventory at some time. Three DOE sites responded that they had made purchases from the vendor identified in DCS 582. Three DOE sites reported that they had made purchases of the scaffold clamps identified in DCS 789.
- During 2004, the number of SCI-related ORPS reports increased significantly (113 in 2004 versus 48 in 2003), suggesting greater awareness and understanding of the need to report.
- EH-3 conducted 14 S/CI training sessions in 2004, resulting in 2,724 persons receiving the training. EH-3 noticed a marked increase in questions from the field on S/CI issues and ORPS reporting from sites that were trained.
- The S/CI-DI website reflected significant use with 7,295 downloads of 300 different website documents. The number of registered users increased to 257 from 43 sites by the end of 2004, up from 100 at 25 sites by the end of 2003.
- EH-3 addressed Defense Nuclear Facilities Safety Board (DNFSB) findings associated with the S/CI process raised in 2003 by:
  - completing an EH self-assessment (Temperform) in January 2004 and implementing recommendations
  - updating the S/CI Process Guide and Awareness Training Manual

  - revising DOE O 414.1B, *Quality Assurance*, and its accompanying Guide, DOE G 414.1-3 to include S/CI
- EH-3 issued the first dual-language Safety Alert on defective scaffold clamps (DCS 789).
- During 2004, the Office of Inspector General and EH-3 established a process for communicating S/CI issues to each other for items not reported through ORPS.
- EH-3 updated the S/CI website to promote a more user-friendly experience.
- EH-3 instituted a push-mail system to inform S/CI website users of important new issues and information.
- EH-3 routinely updated the list of S/CI coordinators across the DOE complex to improve the S/CI communications network.

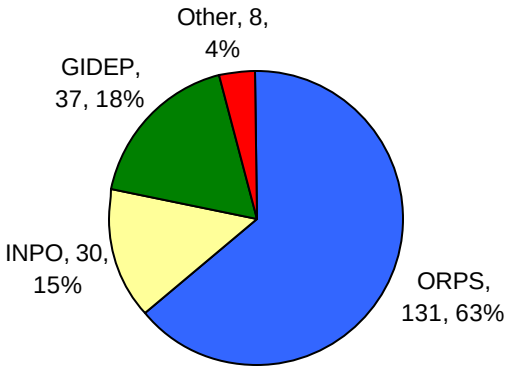
2.0 CURRENT STATUS OF S/CI-DI IN DOE FACILITIES

DOE Orders require sites to report discoveries of S/CI-DI in the Occurrence Report Processing System (ORPS). In 2004, the number of S/CI occurrences reported more than doubled complex-wide compared with 2003. The average over the past several years has been about 50 per year, with 48 reported in 2003. In 2004, 113 ORPS reports were issued for S/CI. The number of ORPS reports for DI was 18, slightly higher than the 14 reported in 2003. The significant increase in S/CI reporting related to S/CI process improvements; hands-on training provided to DOE and contractor management, crafts, and procurement personnel; visibility afforded with the two Safety Alerts; and S/CI website activity.

2.1 Sources of S/CI-DI

EH-3 monitors two types of S/CI-DI events: those that occur at DOE facilities and are reported through the ORPS; and those at other governmental and industry locations that are reported primarily by GIDEP and INPO. EH-3 reviews these events to determine DOE applicability and their potential impact on safety. For events that have potential safety impact at DOE sites, a data collection sheet (DCS) is prepared capturing relevant information and is posted on the S/CI-DI website (discussed in section 4) to summarize the events from ORPS, GIDEP, INPO and other sources and to communicate beneficial lessons-learned information. Other vehicles for disseminating S/CI-DI information are discussed in section 2.3. Figure 1 shows the distribution of posted DCSs by reporting agency.

Figure 1. SCI/DI DCSs by Reporting Agency, 2004



2.1.1 ORPS

The DOE complex submitted 1,774 ORPS reports in 2004, all of which EH-3 reviewed. DCSs were prepared and posted for 113 for S/CI and 18 for DI.

2.1.2 GIDEP

During calendar year 2004, EH-3 reviewed 514 reports to GIDEP from which it identified and posted 37 DCSs describing events that had the potential to impact safety at DOE sites on the S/CI-DI website. Of those posted, 9 were categorized as suspect/counterfeit items and 28 were categorized as defective. Twenty-two of the defective items identified Consumer Product Safety Commission (CPSC) recalls. EH-3 has now provided a hyperlink on the S/CI-DI website that takes users directly to the CPSC website to view the recalls directly. As a result, postings related to CPSC recalls will be limited to those deemed of critical importance. This will likely cause a decrease in the total number of GIDEP-related DCSs EH-3 generates in 2005.

EH-3 prepared 68 DCSs as it screened GIDEP submissions for potential safety impact and DOE applicability. This review includes an interactive review by an EH-3 team and, where appropriate, by subject matter experts. The review resulted in 24 DCSs being marked for no further action. Another seven events reported initially in ORPS and through the lessons-learned process were later submitted to GIDEP. Although the DCSs were updated to include the GIDEP identification number, the DCSs were analyzed under their original ORPS reporting category in this report.

2.1.3 INPO

During calendar year 2004, EH-3 reviewed 2,222 INPO reports, from which 30 DCSs were posted. Only two of these items were categorized as suspect/counterfeit items, and the other 28 were categorized as defective. The safety impact/applicability review determined that three additional DCSs merited no further action.

2.1.4 Other Sources

EH-3 posted eight DCSs from other miscellaneous sources, including the DOE lessons-learned system and informal communications from other DOE offices and other federal agencies. These DCSs all addressed defective items, including several manufacturers' product notices.

The presence of miscellaneous data sources is an indicator of the routine communication occurring among EH-3, the S/CI coordinators in the field, the staff of the Office of Inspector General, and other interested parties. In addition to reported events, this communication has contributed to improvements in training materials and, in general, a better understanding of S/CI-DI issues.

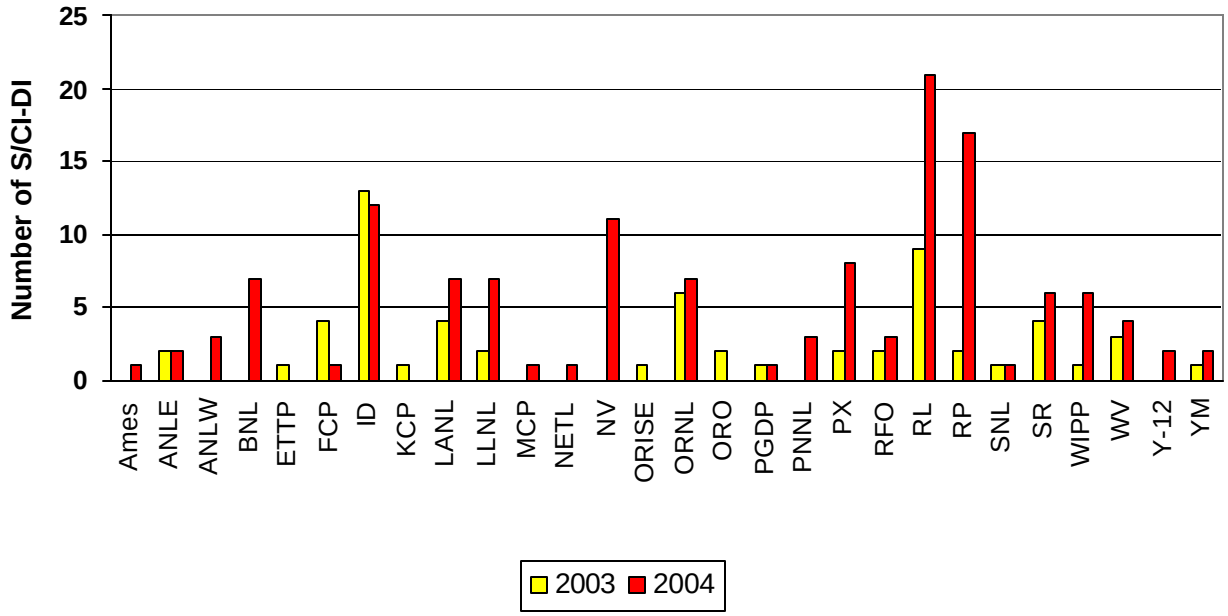
2.2 Recent S/CI-DI Occurrences in DOE

Because S/CI-DI events are required to be reported in ORPS, the data can be analyzed and used for lessons learned and process improvement. Events reported in 2004 are categorized in this section by the site where the items were found, status of use, and item type.

2.2.1 Distribution of S/CI-DI by Operations/Field Office

Twenty-four DOE Site Offices reported S/CI-DI for 2004, a figure that is up slightly from the 20 sites reporting in 2003. Sites submitting more than 10 reports included Richland, the Office of River Protection, Idaho, and Nevada. Six other sites submitted between five and nine reports. In contrast, only one site had more than 10 S-CI-DI reports in 2003, and only two sites filed between two and nine reports. The number of sites reporting and the significant numbers of reports filed suggests an increased S/CI-DI issue awareness within DOE. Four sites reporting S/CI-DI in 2003 did not report any S/CI-DI in 2004. None of these four sites received S/CI training in 2004; they are scheduled to receive training in 2005. Figure 2 shows reporting for 2003 and 2004.

Figure 2. S/CI-DI by Site Office in 2003 and 2004



2.2.2 Use Status of S/CI-DI When Discovered

S/CI-DI events reported in ORPS were analyzed to determine at what stage of use they were found in the field. EH-3 categorized events into three areas: found during receipt inspection, found before installation, and found in-service. Figures 3 and 4 display S/CI-DI by use status when found in the field during 2004 and 2003, respectively.

Figure 3. S/CI-DI by Category, 2004

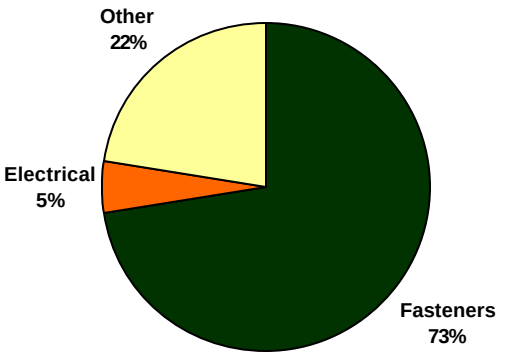
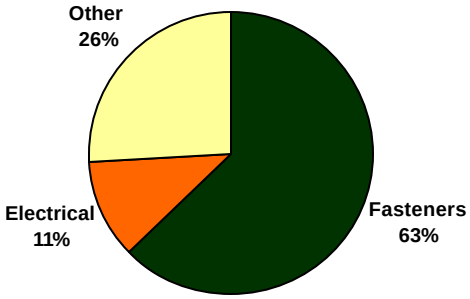


Figure 4. S/CI-DI by Category, 2003



Of the 131 S/CI-DI reported in ORPS in 2004, 70 (53 percent) were found during receipt inspection or before installation, and 61 (47 percent) were found in-service. For 2003, 38 (61 percent) were found during receipt inspection or before installation and 24 (39 percent) were found in-service. There is a notable increase in finding items after they are committed to service. Application of lessons learned from the S/CI web page may have enabled sites to identify in-

service S/CI fasteners in forklifts and other heavy equipment. Twenty-three reports dealt with S/CI fasteners in heavy equipment (e.g., crane, forklifts, manlifts, tractors). A total of 72 equipment items were identified as having installed S/CI fasteners. Generally, fasteners in a load-bearing path were removed and replaced. Fasteners in non-load-bearing applications were labeled and left in place. Four reports reference the S/CI process. One report mentioned a previous DCS (673) and two mentioned S/CI training. A fourth report described S/CI bolts that were found in forklifts at another site.

2.2.3 Categories of S/CI-DI Found in the Field

As in previous years, fasteners dominated S/CI reporting in ORPS with 97 of 113 posted DCSs. Twenty-four of the fastener DCSs addressed ratchet straps or tie-downs, also a continuation of past observation. As discussed in section 2.2.2 above, another 23 addressed fasteners that had been installed in heavy equipment. Other ORPS DCSs reporting S/CI included eight identifying valves and fittings, seven concerning hoisting and rigging equipment, and three dealing with electrical equipment. The one remaining DCS identified suspected substitution of counterfeit parts (vanes) in a maintenance kit for vacuum pumps. Three of the ORPS DCSs identified multiple equipment categories (e.g., fasteners and rigging).

Again, as in previous years, the number of DI reported through ORPS was considerably fewer (18 DCSs) than S/CI. The two largest categories were safety equipment and specialty fabrication, with five posted DCSs each. The specialty items included spent fuel storage canister lids, instrument housings, a leaking check source, shipping containers, and ventilation dampers. Other categories with posted DCSs were electrical equipment (2), electronics (2), security equipment (1), and miscellaneous (3). Miscellaneous items included an argon cylinder containing gasoline, a high-efficiency particulate air (HEPA) filter gasket leak, and leaking centrifuge tube caps. Informal notifications from the field led to "push mails" for defective fall protection lanyards and a Safety Alert for defective scaffold clamps. Figures 5 and 6 compare the categories reported in ORPS for S/CI-DI for 2004 and 2003 respectively. No real shift in types of items reported is apparent. Table 1 provides a more detailed breakdown of categories.

Figure 5. ORPS-Reported S/CI-DI by Found Status in 2004

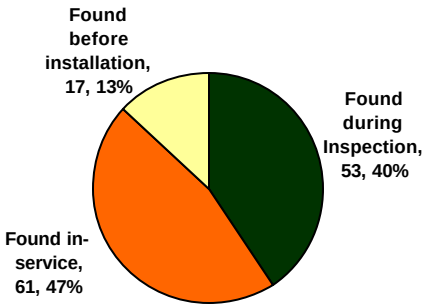


Figure 6. ORPS-Reported S/CI-DI by Found Status in 2003

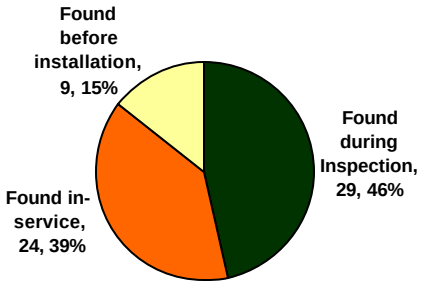


Table 1. Categories of ORPS-Related SCI-DI Found in the DOE Complex (2004 DCSs)		
Equipment Category	**ORPS SCI**	**ORPS DI**
Fasteners (bolts, brackets)	97	0
Electrical Equipment (Breakers, switches, motors, relays, fixtures)	3	2
Electronics/Computer/Small Appliances (Software, batteries, adapters surge protectors, space heaters)	0	2
Safety Equipment/PPE (Alarms, lanyards, scaffold clamps, lamps, respirators)	0	5
Hoisting & Rigging (Slings, hooks, shackles)	7	0
Valves and fittings (valves, flanges)	8	0
Security Equipment (Ammunition, rifle and pistol accessories, bulletproof vests)	0	1
Specialty Fabrication (Fuel storage canisters, ion chamber housing, dampers)	0	5
Material Certifications (Aluminum bars, titanium bars and plates)	0	0
Other (hand tools, aircraft parts, gas furnace, office chair)	1	3
	0	0
Totals	116*	18

* Total equipment item S/CI reports (116) exceeds total S/CI DCSs (113) because some ORPS reports address items in more than one equipment category; e.g., fasteners and hoisting and rigging gear.

2.2.4 Categories of S/CI-DI from Non-ORPS sources

Items posted from non-DOE sources were generally more diverse. Relatively fewer items were S/CI (11) compared to DI (65). Electrical equipment was the largest category (25), closely followed by electronic and small appliances (16). This is relatively unchanged from previous years. Other significant categories from non-ORPS sources included safety equipment (12) and security equipment (7). Several of these items prompted push mail notification to the S/CI website users, and one Safety Alert was issued for defective scaffold clamps. Other categories and their distribution are shown in Table 2.

Table 2. Categories of S/CI-DI Posted from Non-ORPS Sources (2004 DCSs)		
Equipment Category	**Non ORPS S/CI**	**Non ORPS DI**
Fasteners (bolts, brackets)	1	0
Electrical Equipment (breakers, switches, motors, relays, fixtures)	5	20
Electronics/Computer/Small Appliances (software, batteries, adapters surge protectors, space heaters)	1	14
Safety Equipment/PPE (alarms, lanyards, scaffold clamps, lamps, respirators)	0	12
Hoisting & Rigging (slings, hooks, shackles)	1	1
Valves and fittings (valves, flanges)	0	1
Security Equipment (ammunition, rifle and pistol accessories, bulletproof vests)	0	7
Specialty Fabrication (fuel storage canisters, ion chamber housing, dampers)	0	1
Material Certifications (aluminum bars, titanium bars and plates)	1	2
Other (hand tools, aircraft parts, gas furnace, office chair)	2	6
Totals	11	64

The absence of ORPS reports stemming from the posted INPO and GIDEP reviews is still not well understood. However, data relating to S/CI website access reveal that there is a following of DOE staff personnel who are routinely viewing or downloading newly posted GIDEP and INPO DCSs. This suggests that, at minimum, these personnel consider the potential applicability of these items at their facilities. The intent of searching the INPO database is to find lessons learned in the S/CI-DI area from the commercial nuclear industry that may apply to DOE. INPO data are generally similar to the ORPS DI including electrical equipment, security-related items, and specialty fabrication. This suggests that there is a potential for DOE sites to identify like items and report through ORPS. Based on the posted INPO DCSs, however, the lack of ORPS reports stemming from INPO DCSs suggests that these items are not used at DOE facilities. The intent of GIDEP searches is to find lessons learned in the S/CI-DI area from other government agencies and private industry that may be applicable to DOE. GIDEP DCSs lean heavily to defective electrical equipment and electronics. S/CI does not figure prominently in either INPO or GIDEP data.

The most striking difference in comparing ORPS to the non-ORPS data is the absence of S/CI fasteners in the non-ORPS data. This is most likely due to a strong historical emphasis on identifying suspect bolts in the DOE complex, starting in 1993 and continuing to the present. This emphasis has included both training and distribution of visual identification aids such as headmark lists and cards. Recent training has expanded the field of emphasis to include valves and rigging equipment, and those areas are both represented in the ORPS S/CI data.

2.3 Focused SCI-DI Communication

The S/CI-DI web site forms the backbone for disseminating S/CI-DI to the DOE complex for lessons-earned use. However, some events are more urgent or are of interest to a large audience so that a more active communication vehicle than web browsing is warranted. EH-3 has used some focused communications vehicles in 2004 including push mails, OE Summary articles, Safety Alerts, and investigations, as discussed below.

2.3.1 Push Mail Notices

During 2004, EH-3 e-mailed selected DCSs directly to the S/CI-DI website registered users by push mail. Six push mails were sent, including two updates. These push mails described items that EH-3 judged to be worthy of immediate attention, but generally not so urgent or significant as to warrant a Safety Alert (although one push mail was also used to notify the complex of an impending Alert). These push mail notices are summarized below.

Short Battery Life Problem with Powered Air Purifying Respirators (DCS 746) provided information regarding a problem with short battery life in 3M GVP Powered Air Purifying Respirators reported at the Plutonium Finishing Plant at Hanford. These respirators were removed from service. (August 13, 2004)

Radiation Detection -- Software Problem with Eberline HandECount® Program (DCS 785) provided information regarding the discovery at Savannah River of a potential software problem in the Eberline HandECount Program. When performing an "Update Background," the background log is not updated unless the full 10- minute count is performed. Interruption of the count may result in incorrect background values being used for subsequent measurements. The Eberline HandECount Program will not indicate an incomplete background update (October 04, 2004)

Update on Software Problem with Eberline HandECount Program (DCS 785 Update) is a follow-up to the previous e-mailing on the Eberline HandECount Software issue to incorporate the lessons learned developed by Westinghouse Savannah River Company. Mitigating actions have been developed for use with the existing HandECount program until a software update is available from the manufacturer. (October 13, 2004)

Defective Scaffold Clamps with Potentially Catastrophic Failure (DCS 789) provided notification that the Hanford Site had identified a potential installation problem with scaffold clamps that could lead to catastrophic failure. Further investigation by our office, with assistance from Safway, the vendor of these clamps, indicated other vendors who are likely to sell clamps to DOE contractors purchased them from the same manufacturer and have the same defect. These clamps may appear to be fully tight (even reaching design torque values), but they are not because of manufacturing defects. Consequently, the clamp will be loose and subject to failure in use. Safway has been very helpful in providing technical information and developing their own Safety Alert. (October 12, 2004)

Mine Safety Appliances Company (MSA) Stop-Use and Inspect/Return Notices for Self-Retracting Lanyards and Rescuers (DCSs 821 and 822) notified users of **Stop-Use and Return** and **Stop-Use and Inspect Notices** issued by MSA for certain models of their self-retracting lanyards and rescuers. These models may have a manufacturing defect that allows a free fall of more than 40 inches before locking, which exceeds the manufacturer's specification. (December 02, 2004)

MSA Stop-Use and Return Notice for Aptura LT 30 Self-Retracting Lanyards (DCS 829) informed users of an additional **Stop-Use and Return Notice** issued by MSA for their self-retracting lanyards. This notice is for the Aptura LT30 Self-Retracting Lanyard. A manufacturing defect in the sperrads (gear teeth) may result in ***the failure of the unit to arrest a fall***. MSA requested careful review of this notice and ***immediate removal from service*** of all affected self-retracting lanyards. (December 09, 2004)

2.3.2 Operating Experience Summaries

During 2004, EH-3 published four Operating Experience (OE) Summary articles related to S/CI-DI. The OE Summary articles are intended to reach a broader audience than the registered S/CI-DI web site users, generally including facility management and safety personnel. The articles presume minimal knowledge of S/CI-DI requirements. These articles are summarized below.

Some MSA Fall Protection Products May Be Defective provided information on the Stop-Use and Inspect and Stop-Use and Return Notices issues by MSA for several models of self-retracting lanyards. These notices were posted on the defective items web page as DCSs 821 and 822. (OE Summary 2004-23, published 11/20/04)

Suspect Counterfeit Items Awareness discussed S/CI reporting in 2003 and the first five months of 2004 (26 reports). Reports discussed generally focused on S/CI fasteners, as did the lessons-learned summary at the end of the article. The article highlighted the "bad news/good news" aspect of S/CI reporting. Getting fasteners that fail to meet government specifications and may fail in service causing injury of equipment damage is the "bad news." An atmosphere where personnel have S/CI awareness and discover S/CI early in the process is the "good news." (OE Summary 2004-11, published 05/31/04)

AZTEC Battery Chargers May Apply Voltage to Metal Cases discussed defective battery chargers found at Hanford. The units were first discovered when a staff member received a shock while unplugging a charger. Subsequent investigation identified a total of four chargers that exhibited a shock hazard. The cause of the shock potential was traced to use of two-prong plugs and cord sets rather than grounded three-prong plug and cord sets. The original discovery was posted as DCS 661. (OE Summary 2004-06, published 04/05/04)

Good Practice: Impound Salvaged Suspect/Counterfeit Bolts to Prevent Reuse Discussed good practices in disposition of suspect/counterfeit items, highlighting the program in place at Idaho's Specific Manufacturing Capability. The article also included a reminder that the local Inspector General must be notified whenever S/CI is discovered. (OE Summary 2004-02, published 01/26/04)

2.3.3 EH Safety Alerts and Investigations

During 2004, EH-3 issued two Safety Alerts. Safety Alerts are items that EH-3 believes command immediate attention from the Complex. Safety Alerts are issued under the authority

of the Deputy Secretary and require formal response or action. Summaries of the 2004 Safety Alerts and the responses to them are summarized below.

Safety Alert 2004-1, Supplier Removed from Approved Vendor List for Allegedly Falsifying Certifications (March 12, 2004) informed the DOE complex of a procurement issue. The supplier had furnished the Kansas City Plant (KCP) 48 bars of alloy steel and test certifications for each bar. However, only one bar in the lot had actually been tested. KCP has removed the supplier from their approved vendors list. The Alert directs DOE sites to search for purchases from the supplier in question and evaluate any material purchased for use in a critical application. The Alert required sites to notify EH-3 of the results of their investigation. Purchases from the supplier in question were identified at Oak Ridge National Laboratory and Savannah River, along with additional purchases at KCP. No critical applications beyond the first KCP event were impacted. DCS 582 was prepared and posted for this issue.

Safety Alert 2004-2, Defective Scaffolding Clamps (October 22, 2004) informed the DOE complex of a manufacturing defect in some scaffold clamps that could lead to improper assembly and potentially catastrophic failure of the scaffolding. The clamps discussed may appear to be fully tight (and even reach design torque), but they are not, due to manufacturing defects. The clamps initially identified at Hanford were manufactured in Italy by Stamperia Prealpi S.R.L., and distributed by Safway Services, Inc. Other U.S. distributors may have obtained similar defective clamps from the same manufacturer. The Alert provided direction to search for Safway clamps in service at DOE sites and to remove any defective clamps found from service. The Alert required notification of the search results. Defective clamps were found at only three DOE sites. A Spanish-language translation of this Safety Alert was also prepared and posted to the S/CI-DI web site. (DCS 789 was also prepared for this issue, posted, and distributed via push mail.)

2.3.4 Investigation – Hunt Valve Company Products

During 2004, EH-3 continued and completed an investigation of products manufactured by the Hunt Valve Company. Investigations are conducted under the authority the Deputy Secretary and require formal response action, much like Safety Alerts. However, investigations also require that lines of inquiry be developed and transmitted to program offices for use in responding to the investigation request.

The Hunt Valve Company investigation was initiated because ongoing Justice Department litigation resulted in an indictment which alleged that the company's quality manager had falsified valve certifications. Suspect Hunt valves were previously identified as defective for uranium hexafluoride storage based on NRC notices issued in October 2002 (posted as DCS 518). The investigation expanded the scope of review to include all products from Hunt, including items sold under other names including P. J. valves, WAECO Valves, Union Flonetics Valves, and Morland and Mega Flow Valves. Sites were asked to search their records and inventories for Hunt Valve products, report whether or not products were found, document the steps taken to look for Hunt Valve products, and document the disposition of any products found. The lines of inquiry also included questions about the S/CI process at the responding sites including identification of contacts, training, and any planned process or procedure improvements.

The depleted uranium hexafluoride storage sites (Oak Ridge, Paducah, and Portsmouth) were known to have Hunt valves in service because of earlier activities related to DCS 581. These

sites all provided guidelines for use of these valves. In general, the guidelines permit continued use until the site decides to discontinue cylinder use or until they ship the cylinder offsite. After the valves are removed from use, they are to be destroyed. If the cylinder is shipped offsite, the valves are to be destroyed and replaced with certified valves. Three other sites reported finding Hunt valves: 16 instrument valves at Savannah River, 2 gas regulators at Y-12, and 1 wastewater valve at the National Renewable Energy Laboratory. All of these items were evaluated and determined to be acceptable for their respective applications.

From the responses to the lines of inquiry, EH-3 learned that:

- All sites have an established S/CI program and contact information for each site was supplied as requested in the lines of inquiry.
- Approaches to communicating S/CI information are highly variable. Some sites use formal letters and contract clauses; others use e-mail and direct notification of key personnel. Alerts and investigations tend to be handled more formally than dissemination of information from DCSs.
- The search for Hunt valves normally included a search of procurement records and a warehouse walkdown.
- Most sites have had the current EH S/CI training or similar training within the last several years. Eight sites identified local training for S/CI (two indicated computer-based training). Two sites indicated that they maintain local web sites for S/CI. One site identified S/CI - elated pamphlets, laminated cards, and signs in the warehouse.
- Several sites identified various planned changes in the program; e.g., refresher training, updating contract requirements to the new Quality Assurance Order, adding the Hunt Valve Company to "do not buy" lists and updating procedures.
- DOE sites have undertaken measures to prevent reuse of S/CI, including: non-conforming requirement process procedures, receipt inspection, hoisting and rigging inspection, use of a controlled vendors list, contractual clauses, and increased SCI awareness (e-mails, web pages). Most of these measures appear to be part of the sites' quality assurance program.

2.4 DOE S/CI-DI Process

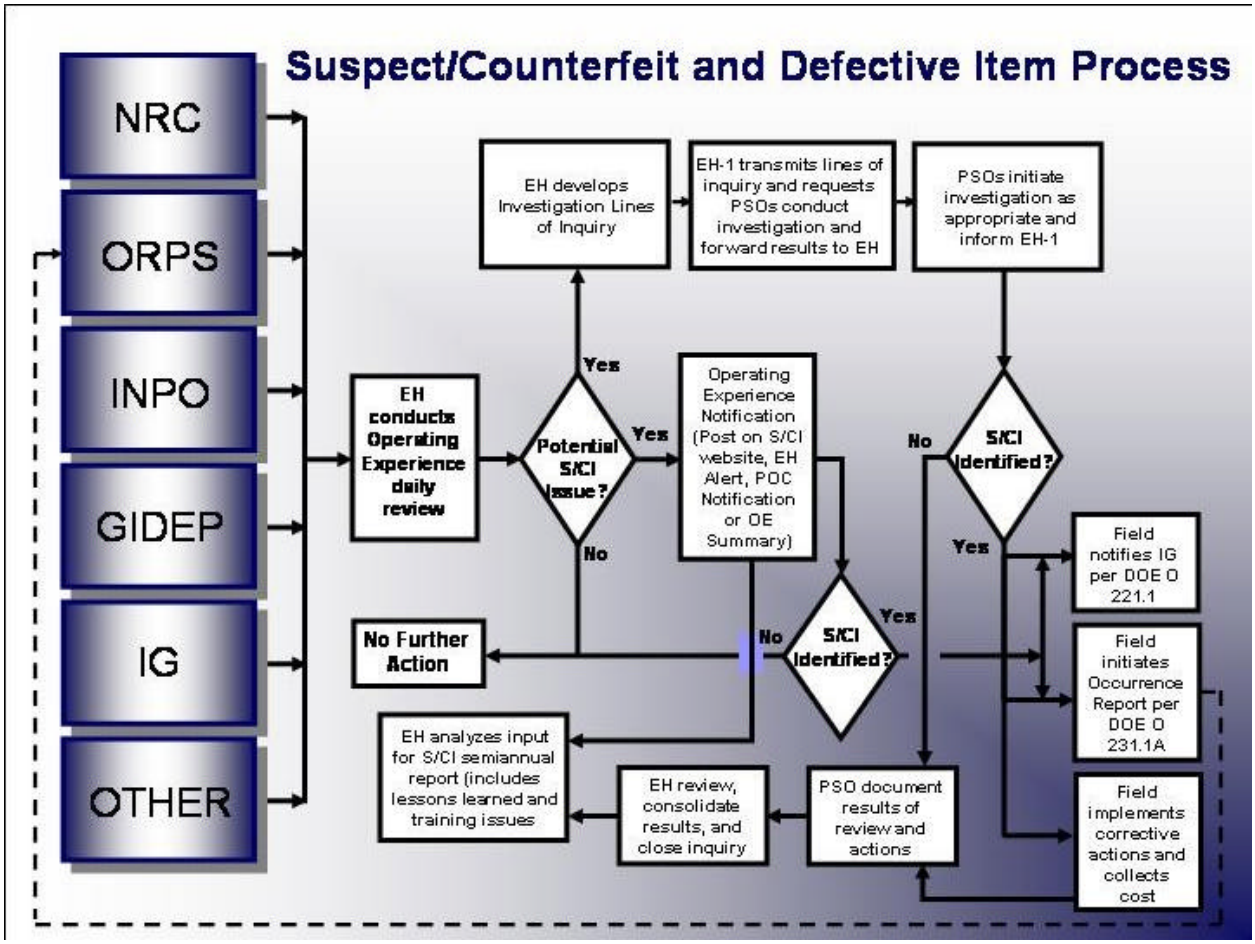
EH developed a Process Guide and Manual to provide direction on implementing the S/CI-DI process to collect, screen, disposition, and communicate information on S/CI-DI that could potentially impact operations at DOE facilities. The following is a brief description of the S/CI-DI process, as depicted in Figure 7. A more detailed explanation of the entire process is provided in the *Process Guide for the Identification and Disposition of Suspect/Counterfeit Items at Department of Energy Facilities*. The Process Guide was updated in December 2004, and is posted on the S/CI-DI website at http://www.eh.doe.gov/sci/SC-IGuide.pdf.

Operating Experience Daily Review – EH-3 routinely reviews and screens various data sources to identify potential S/CI-DI. These sources of information include, but are not limited to, the following:

- ORPS
- INPO

- GIDEP
- Other sources

Figure 7. S/CI-DI Process



Potential S/CI-DI Issues – S/CI-DI issues that are determined to affect more than one program secretarial office (PSO) or present a potentially significant concern to the Complex will be elevated to EH-1. Other items of potential concern are documented through the Operating Experience program for review by field and Headquarters points of contact and posting on the S/CI-DI website. An EH Safety Alert may also be issued as a way of notifying potentially affected organizations and to provide guidance or recommendations to deal with the potential issue. If EH-3 determines that the issue does not impact the Department, no further action is taken.

Screening criteria and checklists have been established to assist EH-3 in making this determination. EH-3 may also obtain advice and assistance from other subject matter experts in the Department to assist them in making this determination.

Operating Experience Notification (EH Safety Alert, Notification, Website Posting, or OE Summary) – The EH-3 OE Group analyzes potential S/CI issues and documents the results using a DCS. The DCS includes a description of the issue and may indicate the potential impact on DOE facilities. Depending on the results of the analysis, the information may be provided to

the DOE complex using one of several methods: an EH Safety Alert, a notification to specific points of contact in the field or at Headquarters, posting on the S/CI-DI website, or an article in the OE Summary. Regardless of how the information is disseminated, field and Headquarters organizations review the information for potential applicability to their own facilities and operations. When an organization identifies an S/CI-DI issue, it submits an ORPS report and notifies the Office of Inspector General (IG). The ORPS Report is then reviewed by the OE Group as part of its daily review of ORPS Reports. If the OE Group determines that the issue is crosscutting and/or of significant concern, it will be elevated to EH-1.

EH Develops Investigation Lines of Inquiry – S/CI or DI that are determined to be crosscutting or of significant concern are elevated to EH-1. A support group convenes with applicable representatives from the line and the Offices of General Counsel (GC) and IG when necessary. This support group assists EH in developing lines of inquiry to investigate and disposition the S/CI-DI issue. Members of the support group are designated by their management and have the means and authority to act on behalf of the organization.

EH-1 Transmits Lines of Inquiry and Requests PSOs to Conduct Investigation – EH-1 sends a memorandum to the applicable PSOs describing the issue and requesting an investigation in accordance with the lines of inquiry. This memorandum will also include a request to respond to EH-1 with a plan, schedule for completing the investigation, the results of the investigation, and the PSO evaluation of the results.

PSOs Initiate Investigation – PSOs direct their field organizations to conduct an investigation of the S/CI issue as they deem necessary and inform EH-1 of their schedule and activities.

PSOs Document Results of Review and Actions – PSOs evaluate and document the results of their investigation whether or not an S/CI-DI is identified. If an S/CI-DI is identified, an ORPS Report is submitted, and the IG notified, per the requirements dictated in the Department's directive. PSOs also initiate the appropriate corrective measures to remedy the S/CI-DI issue and collect the costs associated with this effort. The documented results of the investigation, including any corrective actions, are forwarded to EH-1 for information.

EH Reviews, Consolidates Results, and Closes Inquiry – EH consolidates the results of the PSO reports and reviews them for completeness. EH may make recommendations to the PSOs regarding the report results. EH forwards consolidated information such as cost data and other information to the IG or other organizations as appropriate to close out the investigation.

3.0 TRAINING

EH-3 conducted training at 14 sites during 2004, with 2,724 persons in attendance. Table 4 shows training conducted in 2003 and 2004 and scheduled in 2005, and Figure 8 depicts training attendance by site. The rotation for sites to receive training again will commence in fiscal year 2006.

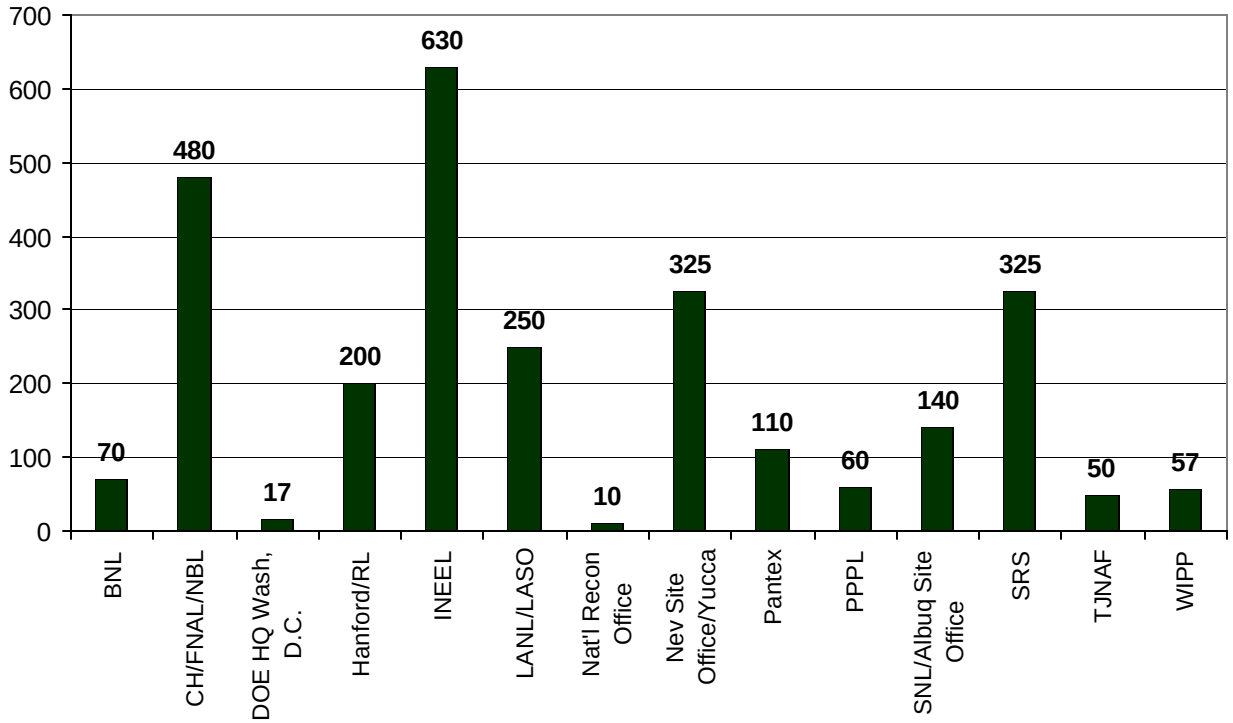
Three separate training modules have been developed for craftspeople, management, and procurement/inspection personnel to emphasize each group's specific role in implementing the S/CI-DI process. Each site selects the desired modules and number of sessions.

A *Suspect Counterfeit Items Awareness Training Manual* was last updated in December 2004, and is available on the S/CI-DI website at (http://www.eh.doe.gov/sci/SCI_Awareness_Training_Manual_12-07-04.pdf). This manual is updated as new information becomes available.

Table 3. S/CI Training Conducted and Scheduled Under the Office of Corporate Performance Assessment S/CI Process

Date of Training	Site	Number Present
2003 Schedule		
July 15, 2003	DOE Headquarters Germantown, MD for EH	40
October 15, 2003	DOE Headquarters Wash., D.C. SCI Kickoff Conference	100
2004 Schedule		
April 12-16, 2004	Nevada Site Office/Yucca Mountain	325
April 27-29, 2004	Savannah River Site	325
May 18-19, 2004	Hanford/Richland	200
June 2, 2004	Princeton Plasma Physics Lab	60
June 3-4, 2004	Brookhaven Nat'l Lab	70
June 14-15, 2004	Sandia Nat'l Lab/Albuquerque Site Office	140
June 16-17, 2004	Pantex	110
August 9-13, 2004	Idaho Nat'l Engineering and Environmental Lab	630
September 20, 2004	Waste Isolation Pilot Plant	57
October 19-21, 2004	Chicago Operations Office/Fermilab/New Brunswick Lab	480
November 3, 2004	DOE Headquarters Germantown, MD	17
November 4, 2004	Thomas Jefferson Lab	50
November 5, 2004	National Reconnaissance Office	10
November 15-18, 2004	Los Alamos Nat'l Lab/Los Alamos Site Office	250
2005 Schedule		
January 10, 2005	Lawrence Berkeley Nat'l Lab	34
January 11-13, 2005	Lawrence Livermore Nat'l Lab	142
March 7-10, 2005	Strategic Petroleum Reserve (4 sites – Big Hill, West Hackberry, Bryan Mound, New Orleans HQ)	197
March 14-18, 2005	Oak Ridge Nat'l Lab/Y-12/East Tennessee Technology Park	760
April 18-19, 2005	West Valley Demonstration Project	
May 9-10, 2005	Kansas City Plant	

Figure 8. 2004 S/CI Training Attendance by Site



4.0 S/CI-DI WEBSITE

EH-3 set up the S/CI-DI website in September 2003 to facilitate communication of S/CI-DI information to DOE and its contractor employees. This web site is maintained at (http://www.eh.doe.gov/paa/sci). Users must register for a password to gain access to restricted information. Each DCS generated is posted to the website under S/CI or DI, and is archived (but still retrievable) after 6 months. New items are highlighted, and the site features topical search capability.

DCSs generated from ORPS reports contain the information taken from the initial report. Because of this, EH-3 checks final ORPS reports and updates information on the website as necessary.

Figures 9 and 10 below illustrate the numbers of registered users having access to the password-protected areas of the S/CI-DI website as of December 31, 2004. This number has risen 257 percent, from 100 users of the website in 2003 to 257 by December 31, 2004. The number of sites with registered users has risen 72 percent from 25 in 2003 to 43 (41 DOE sites plus 2 military sites) through 2004. Representatives from DOE Headquarters in Washington, D.C. and the IG's Office have registered users of the website but are not included in this total of 43 sites. Website registration requests increased at various times during 2004, roughly correlating to the completion of S/CI training, as shown in Figure 11 below. Registration requests are approved case by case, based on justification and information provided by the applicant. In cases where concerns are raised, applications are not approved and ensuing actions may occur. During 2004,

Figure 9. Number of DOE and Non-DOE S/CI-DI Registered Website Users through 2004

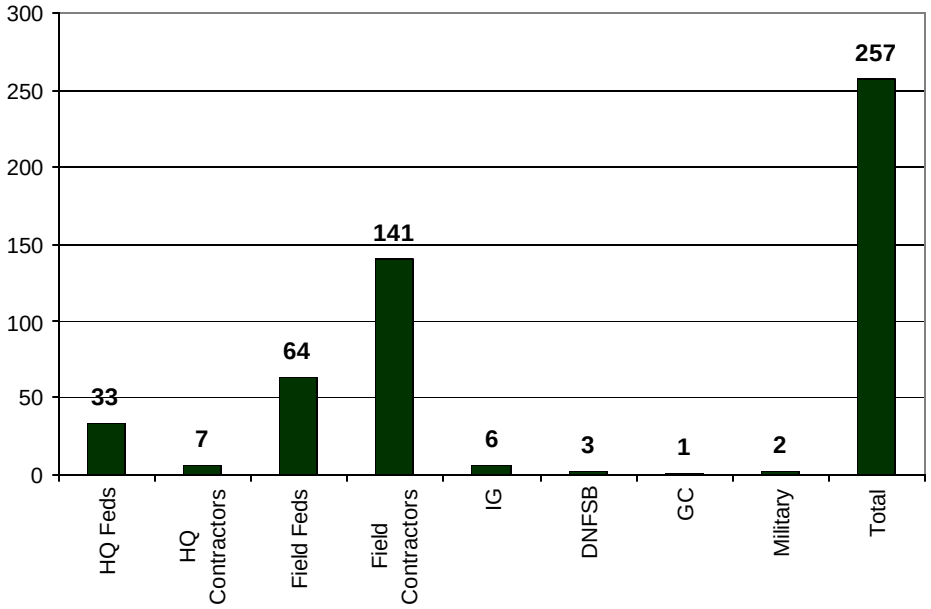


Figure 10. Number of Registered Users of the EH S/CI-DI Website by DOE Facility through 2004

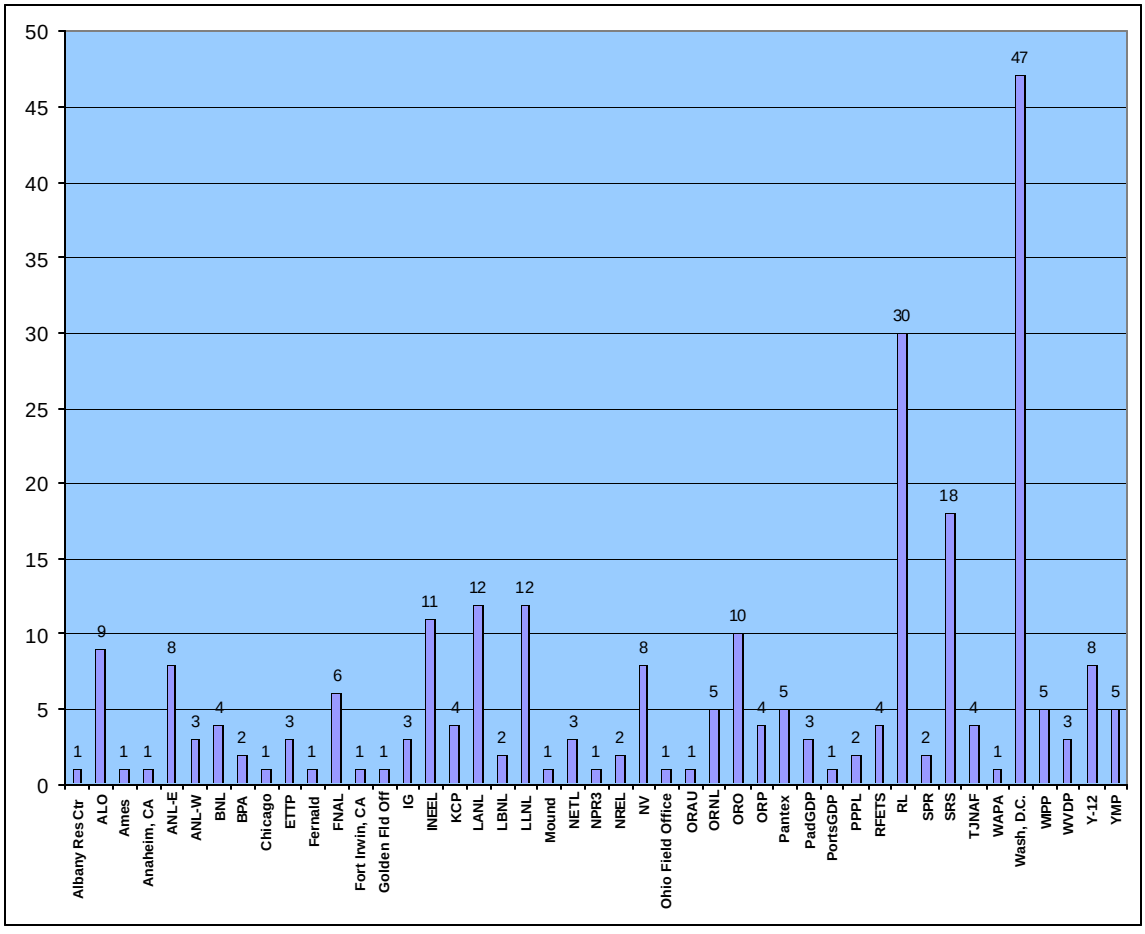
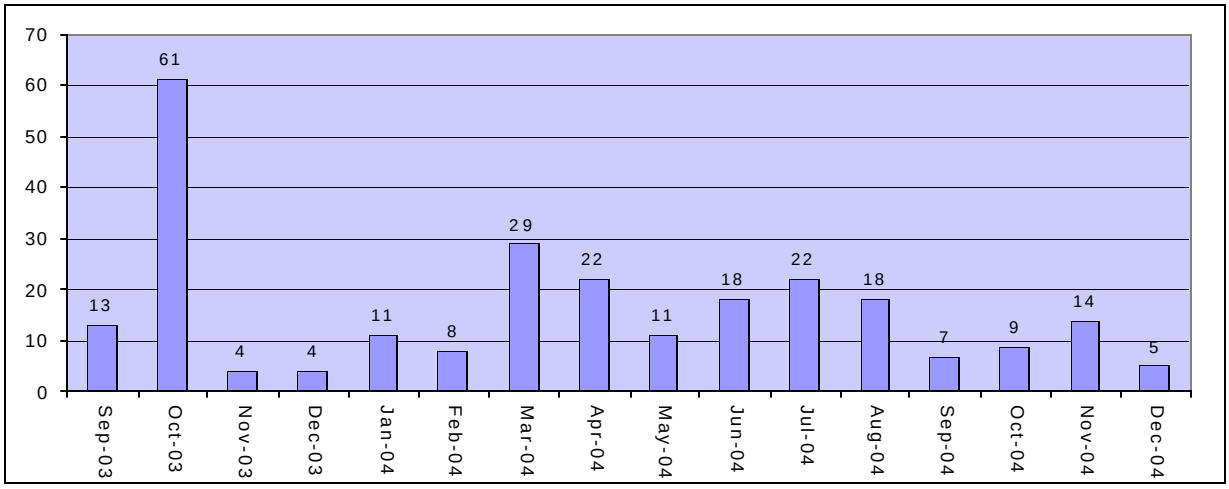


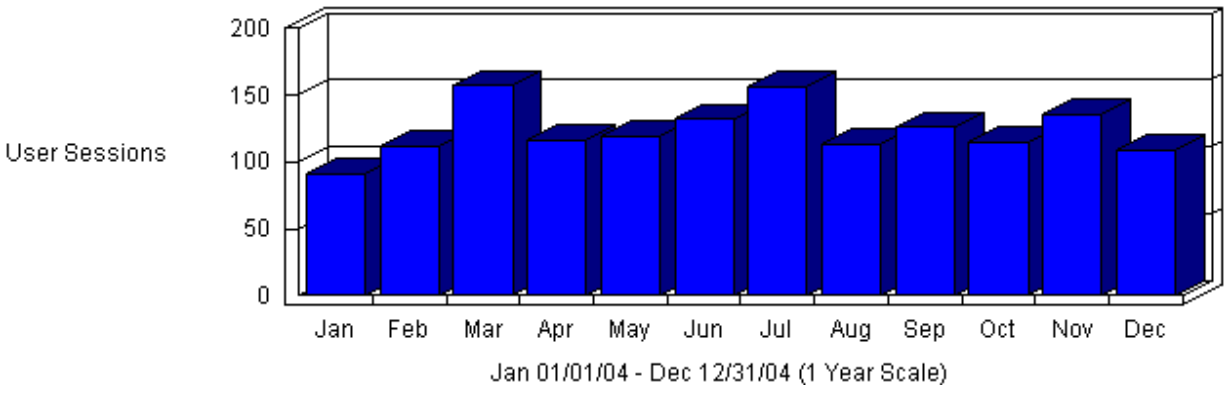
Figure 11. S/CI Website Registration Applications Received Through 2004



two applications were received from persons in foreign countries and contained questionable information. Both applications were referred to the Office of Counterintelligence.

Figure 12 below reflects a fairly even monthly distribution of number of times the S/CI website was accessed during 2004. Such a distribution suggests that there may be individuals performing S/CI work activities on a routine basis, indicating that such activity is integrated into their daily work processes.

Figure 12. Number of Times the S/CI Website was Accessed per Month during 2004



Figures 13 and 14 below display the DOE sites that accessed the website and the number of sessions conducted in 2004. During 2004, personnel from 32 DOE and military sites conducted user sessions on the website, compared with 9 sites during 2003. Personnel from 21 of the 41 DOE sites accessed the S/CI website in 2004 at least 10 times, and personnel from another 10 DOE and 1 military site accessed the S/CI website between 2 and 9 times. Through 2003, 9 of the 25 DOE sites with registered website users conducted sessions to read or download information at least three times. The data suggest that the increase in website usage is, in part, due to the significantly increased number of registered users accessing the website and the

increased awareness and interest resulting from S/CI training conducted across the DOE complex.

Figure 13. 2004 S/CI Website Access Sessions by Site (at least 10 in 2004)

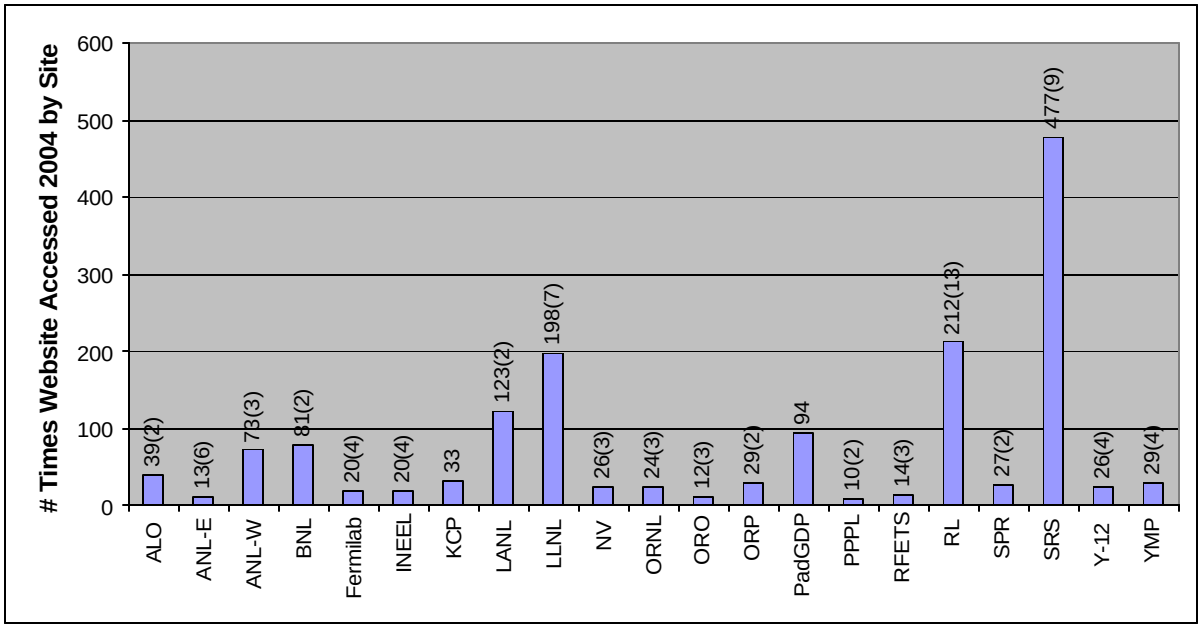
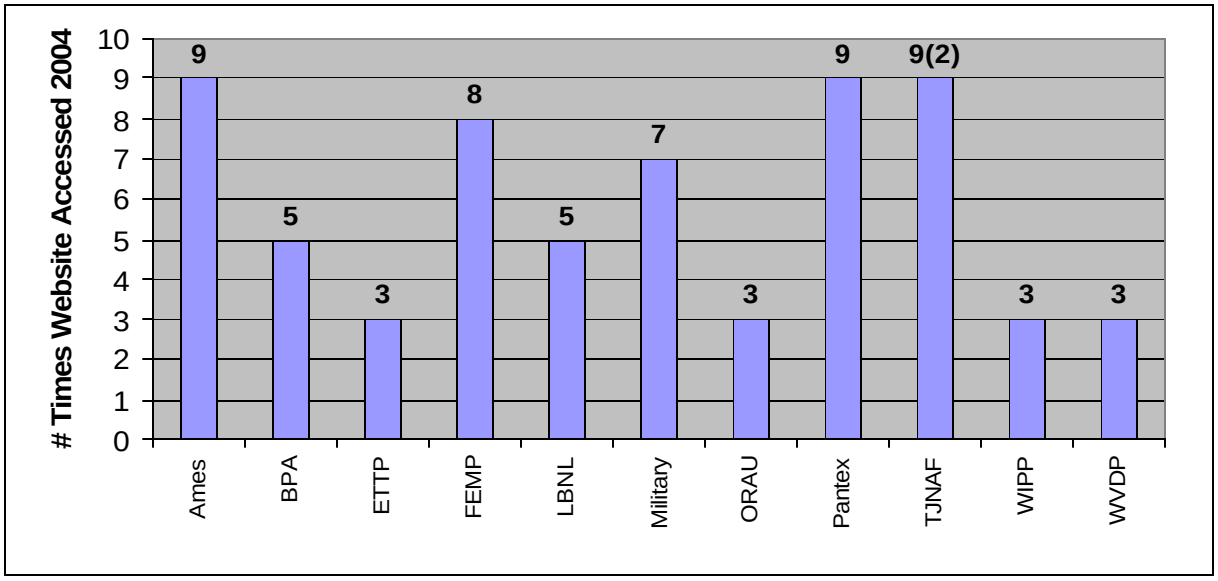


Figure 14. 2004 S/CI Website Access Sessions by Site (between 2 and 9 in 2004)



*Note – Numbers in parentheses in Figures 13 and 14 represent the number of individuals at the site conducting the total listed website sessions.

Figure 15 below shows the eight most downloaded documents from the website, where the document was downloaded on the order of about 100 or more times in 2004. During 2004, there were 2,206 downloads of the top eight discrete documents posted on the website — representing about 30 percent of the total downloads for the year, but only 2.6 percent of the

discrete documents. There were 7,295 total downloads of 300 documents during the year. Between September 2003 and January 2004, there were 696 downloads of 23 documents, including 19 discrete DCSs that addressed 390 of the downloaded documents.

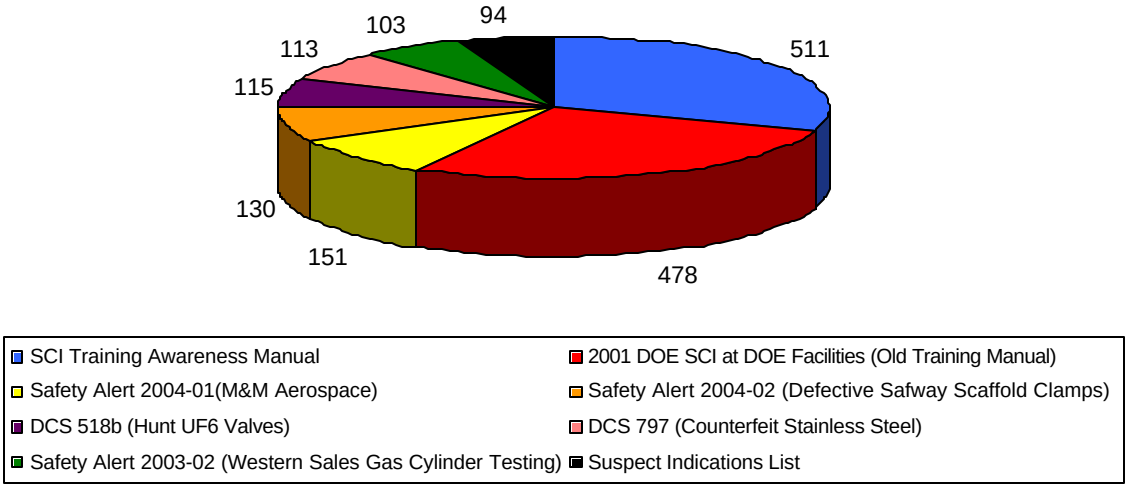


Figure 15. Most Downloaded Documents from the S/CI Website in 2004

APPENDIX A. ACRONYMS

ANL-E	Argonne National Laboratory – East
ANL-W	Argonne National Laboratory – West
BNL	Brookhaven National Laboratory
CH	Chicago Operations Office
DCS	Data Collection Sheet
DI	Defective Item
DNFSB	Defense Nuclear Facilities Safety Board
DOE	Department of Energy
EH	Office of Environment, Safety and Health
EH-3	Office of Corporate Performance Assessment
ETTP	East Tennessee Technology Park
FCP	Fernald Closure Project
FEMP	Fernald Environmental Management Project
FNAL	Fermi National Accelerator Laboratory
GC	Office of General Counsel
GIDEP	Government-Industry Data Exchange Program
ID	Idaho Operations Office
IG	Office of the Inspector General
INPO	Institute of Nuclear Power Operations
KCP	Kansas City Plant
LANL	Los Alamos National Laboratory
LLNL	Lawrence Livermore National Laboratory
MCP	Mound Closure Project
MSA	Mine Safety Appliances Company
NBL	New Brunswick Laboratory
NETL	National Energy Technology Laboratory
NRC	Nuclear Regulatory Commission
NV	Nevada Operations Office
OE	Operating Experience
ORISE	Oak Ridge Institute for Science and Education

ORNL	Oak Ridge National Laboratory
ORO	Oak Ridge Operations
ORPS	Occurrence Reporting and Processing System
PGDP	Paducah Gaseous Diffusion Plant
PortsGDP	Portsmouth Gaseous Diffusion Plant
PNNL	Pacific Northwest National Laboratory
PPE	Personal protective equipment
PPPL	Princeton Plasma Physics Laboratory
PSO	Program Secretarial Office
PX	Pantex Plant
RFO	Rocky Flats Closure Project
RL	Richland Operations Office
RP	Hanford Office of River Protection
S/CI	Suspect/counterfeit item
SNL	Sandia National Laboratory
SR	Savannah River Site
TJNAF	Thomas Jefferson National Accelerator Facility
UF_6	Uranium hexafluoride
WIPP	Waste Isolation Pilot Project
WV	West Valley Demonstration Project
Y-12	Y-12 Plant, Oak Ridge, TN
YM	Yucca Mountain Project

APPENDIX B. DEFINITIONS

Suspect/Counterfeit Items: An item is suspect when visual inspection or testing indicates 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 supplier or manufacturer. A counterfeit item is one that has been copied or substituted without legal right or authority or whose material, performance, or characteristics have been misrepresented by the supplier or manufacturer. Items that do not conform to established requirements are not normally considered S/CIs if nonconformity results from one or more of the following conditions (which must 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.

An item identified as S/CI may have one or more of the indications described above and not be fraudulent. If an item exhibits some of the indications listed above it may warrant further investigation and be considered suspect. Contact with the supplier and/or manufacturer may help establish whether the item in question has a quality control problem or is actually fraudulent. (Reference: DOE Order 414.1B, *Quality Assurance*, and DOE Guide 414.1-3 for Suspect Counterfeit Items to accompany the Order 414.1B (2004) and 10 CFR 830.120).

Defective: A defective item or material is any item or material that does not meet the commercial standard or procurement requirements as defined by catalogues, proposals, procurement specifications, design specifications, testing requirements, contracts, or the like. It does not include parts or services that fail or are otherwise found to be inadequate because of random

failures or errors within the accepted reliability level (Reference: DOE M 231.1-2, *Occurrence Reporting and Processing of Operations Information*, August 2003).

Event: Something significant and real-time that happens (e.g., pipe break, valve failure, loss of power, environmental spill, earthquake, tornado, flood). (Reference: DOE M 231.1-2, *Occurrence Reporting and Processing of Operations Information*, August 2003).

Occurrence: One or more (i.e., recurring) events or conditions that adversely affect, or may adversely affect, DOE (including the National Nuclear Security Administration) or contractor personnel, the public, property, the environment, or the DOE mission (Reference: DOE M 231.1-2, *Occurrence Reporting and Processing of Operations Information*, August 2003).

Safety System: A safety system is a nuclear facility structure, system, or component, including a primary environmental monitor or portion of a process system, whose failure could adversely affect the environment, safety, or health of the public as identified by safety analyses (Reference: DOE Order 5480.30, *Nuclear Reactor Safety Design Criteria,* Change 1, March 2001).

APPENDIX C. SUSPECT INDICATIONS LIST

A useful list that describes components with indications that are considered suspect can be found at http://www.eh.doe.gov/sci/ under the title *S/CI Training Awareness Manual.*

APPENDIX D. EXAMPLES OF SUSPECT/COUNTERFEIT ITEMS FOUND AT DOE SITES

A photographic inventory of suspect items can be found at http://www.eh.doe.gov/sci/ under the title *S/CI Training Awareness Manual*. It highlights the recent discoveries at DOE and many of the S/CI found at DOE sites.

APPENDIX E. REFERENCES

1. DOE Order 414.1B for Quality Assurance and DOE Guide 414.1-3 for Suspect Counterfeit Items to accompany the Order http://www.directives.doe.gov/
2. Suspect Counterfeit Items Process Guide http://www.eh.doe.gov/sci/
3. Office of Management and Budget Circular 91-3 http://www.eh.doe.gov/sci/
4. Suspect Counterfeit Items Training Awareness Manual http://www.eh.doe.gov/sci/