

**Office of Health, Safety and Security
Special Review of the
Suspect/Counterfeit Items Program at the
Bechtel Jacobs Company, LLC at the
Oak Ridge Reservation**



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**Office of Enforcement and Oversight
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Acronyms

AQL	Acquisition Level
BJC	Bechtel Jacobs Company, LLC
DOE	U.S. Department of Energy
HSS	Office of Health, Safety and Security
ORO	Oak Ridge Operations Office
ORPS	Occurrence Reporting and Processing System
QA	Quality Assurance
S/CI	Suspect/Counterfeit Items
SRIR	Special Receipt Inspection Report
SSCs	Structures, Systems, and Components

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at the Oak Ridge Reservation**

1.0 PURPOSE AND SCOPE

The Office of Safety and Emergency Management Evaluations, within the Office of Health, Safety and Security (HSS), conducted an independent review of the Bechtel Jacobs Company, LLC (BJC) suspect/counterfeit items (S/CI) management system during March and May 2011. This review was requested by the Manager of the U.S. Department of Energy (DOE) Oak Ridge Operations Office (ORO) and the ORO Assistant Manager for Environmental Management. In addition to the evaluation of the effectiveness of the S/CI management system, the ORO managers requested that HSS identify specific opportunities for improvement in the S/CI management system processes.

BJC's contract with DOE invokes DOE Order 414.1C, *Quality Assurance*, which requires contractors to establish and implement an S/CI prevention process as part of their quality assurance (QA) program. The S/CI prevention process must include mechanisms for identifying, preventing entry, removing, controlling, dispositioning, and reporting S/CIs that are commensurate with the facility/activity hazards and mission impact. The S/CI process elements apply to applications with the potential to affect public or worker safety to structures, systems, and components (SSCs) designated as safety class or safety significant.

The HSS team evaluated the BJC S/CI process by reviewing pertinent documentation (e.g., plans, procedures, and records) and interviewing personnel responsible for implementation of the process requirements to determine whether the process had been established and was being implemented as specified in DOE Order 414.1C. The team evaluated the BJC S/CI management system in four topical areas based on the requirements in DOE Order 414.1C: procurement and inspection; evaluation and reporting; training; and assessment and oversight.

2.0 RESULTS

Program Description. The BJC S/CI management system is described in BJC-PQ-1445, *Suspect/Counterfeit Items*, which was initially issued in March 2007. The document was revised in January 2011 to address weaknesses identified in a May 2010 BJC independent assessment. S/CI process elements are also incorporated into the QA criteria for quality improvement, design control, procurement, and inspection and acceptance testing in BJC/OR-43, *Bechtel Jacobs Company LLC Quality Assurance Program Plan*.

In general, the BJC procedures (BJC-PQ-1445 and BJC/OR-43) detail a management system that includes most of the necessary elements required to identify and control S/CI. However, strengthening in some areas is warranted. For example, procedure BJC-PQ-1445 does not adequately address the S/CI subject matter expert's review, evaluation for action, and communication of bulletins and notifications related to S/CI from DOE and other sources. In addition, Section B.3 and Attachment B of this procedure do not sufficiently define the terms, scope, or process for system engineers' and safety representatives' inspections of "safety applications," "non-safety systems," and "items and materials as appropriate" for S/CI. Worker and public safety applications where S/CI has been identified many times in the DOE complex, such as below-the-hook hoisting and rigging gear, scaffolding, and load tie-down devices, are not included in the Attachment B listing of "Safety Systems" (i.e., safety applications that are required to be inspected for S/CI).

The requirements and processes for implementing S/CI management system elements delineated in BJC-PQ-1445 and the Quality Assurance Program Plan are defined in various BJC procedures as discussed in the following subsections, which cover the four major topical areas that were evaluated.

Procurement and Inspection. Engineering procedure BJC-DE-1005, *Requisition Process for Materials and Services*, specifies the requirements and processes for the development, preparation, and approval of requisitions for materials and/or services. BJC-DE-1021, *Material Requisition Package Requirements*, identifies the engineering processes and rigor of assurance to be applied to the requisition of equipment and materials used in BJC projects and BJC-operated facilities. Collectively, these procedures adequately establish the processes for personnel requisitioning items and materials to determine and specify needed S/CI controls. These procedures provide expectations for the determination of acquisition levels (AQLs) – i.e., AQL-I, II or III – which dictate the rigor of required inspections, documentation, and certifications, including those relevant to S/CI.

The procedures require materials and equipment for safety class and safety significant systems and most safety applications to be procured as AQL I or II. These designations require receipt inspection and documentation on a Special Receipt Inspection Report (SRIR), which includes a field for inspection for S/CI. However, neither the procedures nor the instructions for the SRIR form address the intent of the “N/A” block in this field. While the S/CI subject matter expert indicated that this block was intended to be used by engineering or other requisitioning personnel to exempt an item from the S/CI inspection, no justification is required by procedure or form instructions, and use of the “N/A” block caused some confusion for Quality Control inspectors conducting receipt inspections, as discussed below.

Additionally, BJC-PQ-1445 specifies that procurement documents require suppliers to certify that no S/CI items are contained in the items or materials being supplied and provides a standard clause for use in procurement documents. However, neither BJC-DE 1005 nor BJC-DE-1021 specifies including this clause in procurement documents.

An additional weakness in procedure BJC-DE-1021 is that it allows the use of other inspection procedures in specific functional or project level procedures that require different equipment inspections in lieu of the SRIR, before release of these items to inventory or use. Cited as examples of these procedures are BJC-FS-1037, *Hoisting and Rigging Hardware Inspection and Testing*, and BJC-FS-1039, *Construction Equipment Inspection and Maintenance Program*. However, BJC-FS-1037 does not reference the S/CI program procedure or specific criteria for S/CI in the attached inspection checklists for various types of hardware. In addition, BJC-FS-1008, *Hoisting and Rigging Operations*, and the associated hoisting and rigging checklist (BJCF-971) for pre-lift inspections do not address inspection of hardware for S/CI. Also, BJC-FS-1037 allows subcontractors to conduct their own inspection program, approved by the BJC Field Services Hoisting and Rigging Manager, but does not address the need for S/CI inspection by subcontractors. BJC-FS-1039 only requires that construction equipment purchased, leased, or brought on site by subcontractors be supplied with a “Certificate of Conformance” of NOT having counterfeit items. The associated Inbound Equipment Safety Inspection Form (BJCF-830) only requires verification of receipt of this certificate, with no independent inspection for S/CI by a qualified/trained individual.

The HSS review team examined two recently completed SRIRs and the associated Certificates of Conformance, one for hoisting and rigging gear and one for a leased aerial lift. Although both SRIRs indicated that the required Certificates of Conformance were acceptable, neither of the certificates clearly stated that no S/CI was supplied; one stated that purchase order requirements were met, and the other stated that only original equipment manufacturer items were provided, disregarding the fact that manufacturers can use S/CI in fabrication of components and equipment. These discrepancies indicated a

lack of attention to detail and insufficient procedural direction for evaluating and accepting Certificates of Conformance or for determination of the contactor's ability to inspect for or identify S/CI.

Another procedure that specifies inspection requirements for quality or safety, BJC-FS-1015, *Scaffolds and Portable Ladders*, does not address S/CI as part of the inspection. It requires requestors to "request" suppliers submit a Certification of Compliance that no "counterfeit material items" have been supplied in the Material Requisition documentation, and it requires receipt inspection. However, scaffolding is not identified as a safety application item/material in BJC-PQ-1445 and thus might not be classified as AQL-II or require completion of an SRIR.

BJC has established procedures for performing and reporting inspections (BJC-PQ-1080) and control of nonconforming materials (BJC-PQ-1440). Both of these procedures address requirements for inspecting for and documenting S/CI, including development of inspection/test plans or procedures by engineering, inspection for S/CI, qualification requirements for inspectors, and documentation of S/CI on nonconformance reports. The HSS team interviewed two subcontractor Quality Control inspectors performing receipt inspections in the BJC central receiving facility and their subcontractor supervisor. These inspection personnel, working for BJC for almost a year, were very experienced and knowledgeable of inspection processes. However, they had not received training on identification of S/CI until they attended the newly developed BJC S/CI training the week before this HSS review. Prior to the recent training, they had not identified any S/CI, but they subsequently identified a pump they considered to be S/CI. Just before the HSS team visit, they were completing the SRIR but had not yet written a nonconformance report. In reviewing the associated SRIR, the HSS team noted that the inspectors had checked the "N/A" block in the S/CI field, but could not explain why or what that meant. In addition, the inspectors were unaware of the DOE S/CI website or the process for obtaining access (password protected) to DOE S/CI bulletins or online training materials. Although some documents related to prior bulletin information were provided by the S/CI subject matter expert and were being maintained by the supervisor, no information was readily accessible in the central receiving facility for ready access by inspection personnel.

S/CI Evaluation and Reporting. DOE Order 414.1C requires that S/CI be reported to DOE in accordance with DOE Order 231.1A, *Environment, Safety, and Health Reporting*, and DOE Order 221.1, *Reporting Waste, Fraud and Abuse*. DOE Manual 231.1-2, *Occurrence Reporting and Processing of Operations Information*, includes a listing of facility status occurrence reporting criteria for S/CI. In requesting the HSS review, one of the concerns cited by ORO management was that BJC had not been reporting the identification of any S/CI through the Occurrence Reporting and Processing System (ORPS), while many other DOE contractors were identifying numerous instances of S/CI.

BJC has established adequate requirements and processes for reporting S/CI in BJC-PQ-1445 and in BJC-PQ-1220, *Occurrence Notification and Reporting*. Procedure BJC-PQ-1440 adequately addresses the evaluation and reporting of nonconformance reports documenting S/CIs. However, more than 400 S/CI-related ORPS reports were issued by 30 DOE organizations from 2007 to April 2011, none of them from BJC. These statistics would indicate that S/CI management system implementing procedures did not provide BJC personnel sufficient direction to perform inspections, inspections were not sufficiently rigorous, or identified S/CI was not being documented, evaluated, and reported as required. Based on the review of procedures and interviews with personnel, the review team concluded that weaknesses in inspection processes (i.e., implementing procedures) and ineffective training were the likely causes for lack of identification and reporting of S/CI by BJC. On April 27, 2011, S/CI hardware was identified by a DOE Facility Representative on the Tank W1A Safety Significant tent and was reported to ORPS by BJC. Investigation of the event was ongoing during the team's review.

Training. As is apparent from the previous section, one of the most essential elements of an effective S/CI management system is the ability of site personnel to identify S/CI. Prior to March 2011, training related to S/CI for BJC personnel consisted of required reading of the overall program procedure BJC-PQ-1445 and individual implementing procedures as listed on Training Position Descriptions (TPDs) established for the various position titles. BJC identified approximately 14 positions, encompassing about 160 BJC personnel who were required to read BJC-PQ-1445.

The corrective actions for a finding from the December 2010 ORO Integrated Safety Management System Phase I and II Verification Assessment, which cited weaknesses in the BJC S/CI process, was to develop an S/CI classroom training module and establish a training schedule for “personnel that will have the greatest impact on the implementation of the S/CI Program.” BJC closed these actions in March 2011. Two pilot classroom training sessions were conducted, in March and April 2011, for approximately 30 students.

The HSS team examined the course material and discussed the training with the BJC training manager and the S/CI subject matter expert. The HSS team considers the pilot classroom training provided by the S/CI subject matter expert to be much more effective than the previous “required reading” approach and served as a good overall program familiarization. However, several weaknesses were identified. The pilot class content insufficiently addressed implementing processes and practical applications. The class, which was approximately an hour and a half long, did not address non-system related safety applications, methods for performing inspections of hoisting and rigging or construction equipment for S/CI, the responsibilities of subcontractors, or engineering and requestor responsibilities for requisitioning material. The class did not provide for any practical exercises, did not have physical examples of S/CI for students to examine, and did not have examples of S/CI notifications from DOE Headquarters and other organizations, such as the Institute for Nuclear Power Operations and the Government-Industry Data Exchange Program. Further, the population of BJC personnel who must attend the S/CI classroom training has not yet been established.

Procedure BJC-PQ-1240, *BJC Operating Experience/Lessons Learned Program*, identifies DOE S/CI data collection sheets (bulletins of identified S/CI by DOE HSS) as one of the specific examples of operating experience sources that are screened for applicability evaluations and action by the BJC operating experience/lessons learned coordinator. Records show that data collection sheets have been screened and reviewed by subject matter experts for applicability to BJC. However, there is no evidence that S/CI identified by other DOE sites and reported in ORPS reports are being screened and evaluated for applicability to BJC facilities and activities. Further, BJC-PQ-1445 does not address the screening, evaluation, and communication of S/CI information by the S/CI subject matter expert or the BJC operating experience/lessons learned coordinator.

Assessment and Oversight. BJC has established and implemented formal procedures for conducting management and BJC independent assessments of safety management systems and processes and their implementation. However, BJC has not conducted management assessments or program-level assessment of the S/CI management system.

In May 2010, a BJC-initiated independent assessment of the procurement program included evaluation of S/CI identification and controls and vendor surveys. This assessment identified a finding related to inconsistent application and implementation of engineering and QA processes for S/CI requirements, receipt inspection, and acceptance of supplier submittals (e.g., Certificates of Conformance and supplier nonconformances). Corrective actions to this findings included development of a process flow chart for receipt inspection and updating of nonconformance reporting, S/CI program, procurement, and engineering procedures to address the process flow elements, as well as development of the classroom training module discussed above. Most of these corrective actions were completed and closed by

December 2010. However, no action has been taken to validate the adequacy or effectiveness of these corrective actions, and no effectiveness review has been planned or conducted by BJC. While the effectiveness of the corrective actions was not evaluated by the HSS team, the observations of the inadequate Certificates of Conformance related to S/CI, discussed above, indicate continuing receipt inspection deficiencies that are similar to those listed in the BJC independent assessment.

Recently revised procedure BJC-PQ-1208, *Supplier Quality Assurance Assessment Program*, details a comprehensive set of requirements and processes for evaluating supplier QA programs. However, it does not specifically identify any S/CI inspection criteria that would ensure evaluation of suppliers' programs for preventing the introduction of S/CI in equipment and materials supplied to BJC.

3.0 CONCLUSIONS

BJC has established and is implementing a management system for controlling the introduction and use of S/CI in safety systems and applications. Many BJC procedures have been developed to address requirements and processes for preventing, identifying, controlling, and reporting S/CIs.

However, the management system has not always been rigorously implemented, as indicated by the lack of identification and reporting of any S/CIs until the week before this review. In addition, the procedures and processes describing and providing implementation details in this management system are not sufficiently robust in defining requirements for procurement, inspection, and training to ensure effective implementation by BJC personnel, subcontractors, and suppliers. Detailed classroom training for affected BJC personnel on identification of S/CI and implementation of the S/CI management system requirements has only been recently initiated and remains insufficiently robust, and the training target population has yet to be established. Fundamental knowledge of and tools for recognition and reporting of S/CI have not yet been conveyed to all individuals in the positions most likely to encounter S/CI. Self-assessment of the S/CI management system has been minimal and generally ineffective in identifying process and performance weaknesses.

In response to a BJC independent assessment, much effort has been applied in recent months to strengthen the S/CI management system processes, but significant work remains. Completion of the flowdown of the inspection processes into the supporting procedures, as well as full training of appropriate personnel in the recognition and reporting of S/CI, will be essential to assure an effective system. Until these initiatives result in effective and repeatable S/CI management system processes, BJC will be unable to reliably ensure that S/CI is not used in items, equipment, or systems important to safety.

4.0 OPPORTUNITIES FOR IMPROVEMENT

This HSS review identified the following opportunities for improvement. These potential enhancements are not intended to be prescriptive or mandatory. Rather, they are offered for review and evaluation by responsible line management organizations and accepted, rejected, or modified as appropriate, in accordance with site-specific program objectives and priorities.

- 1. Strengthen procurement processes and procedures.** Specific actions to consider include:
 - Formally identify the types of material that are considered to have safety applications and are subject to inspection and documentation for S/CI, especially those that are not already identified as AQL-I or II materials, such as scaffolding, fall protection gear, personal protective equipment, fasteners, and anchors. Incorporate the results of this determination into procurement procedures.

- Provide specific instructions for the use of the “N/A” block in the S/CI field of the SRIR, including the need for a specific signature line in this field or clarification that field is not to be marked by inspection personnel.
- More clearly define the expectations of the “Inspection Results” block of the SRIR with respect to the disposition if results are “acceptable” or if problems are identified. Clear explanation of the basis for an “Acceptable” or “Not Acceptable” disposition by the Authority Having Jurisdiction should be included if problems are identified.
- Review and revise, as needed, the procedures (i.e., BJC-FS-1039 and BJC-FS-1015) governing procurement/inbound inspection of supplied construction equipment and scaffolding to better address inspection for S/CI by trained BJC and/or subcontractor personnel.
- Define, in procurement and inspection procedures, the expectations and acceptance criteria for certifications of conformance with S/CI requirements that are contractually required of suppliers and subcontractors.
- Evaluate the need to specifically identify S/CI in the inspection criteria of the recently developed supplier assessment program to provide assurance that suppliers’ programs adequately prevent the introduction of S/CI.

2. Strengthen inspection and reporting procedures and practices. Specific actions to consider include:

- Ensure that the requirements and processes for receipt and incoming equipment inspection regarding S/CI are clearly detailed in procedures for “requesters,” subcontractors, and craftsmen (i.e., procedure BJC-FS-1015 for scaffolding).
- Define, in formal procedures, the requirements, expectations, and processes for systematic or routine inspection for and reporting of S/CI on installed safety application equipment or stock supplies by field personnel (i.e., craft and engineers) and subject matter experts.
- Review and revise hoisting and rigging inspection and testing procedure BJC-FS-1037 to address S/CI.
- Clarify DE-1021 regarding use of hoisting and rigging construction inspection processes in lieu of an SRIR to ensure that appropriate S/CI inspections are performed and documented.

3. Continue to strengthen S/CI training. Specific actions to consider include:

- Formally define and expand the target population for classroom training to include the positions most likely to encounter and evaluate S/CI.
- Strengthen the practical applications elements of the course for subject matter experts and field personnel (i.e., inspectors, engineers, crafts, and craft supervisors) with actual counterfeit and suspect items and inspection exercises.
- Include in training the responsibilities and processes for requisitions requiring S/CI controls; field inspection of hoisting and rigging, scaffolds, and construction equipment; system inspections by engineering; and oversight of subcontractor S/CI inspections and certifications

4. Strengthen assessment and oversight procedures and activities. Specific actions to consider include:

- Revise procedure BJC-PQ-1445 to better define the process and expectations for evaluation and communication of S/CI alerts from outside information sources.
- Ensure that personnel responsible for receiving/incoming material inspections have easy access to historical S/CI information (e.g., DOE S/CI and ORPS website access and internal BJC data collections). Encourage inspection personnel to subscribe (including obtaining user IDs and passwords) to DOE S/CI data sources.

- Ensure that procedures for inspection of subcontractor-supplied and construction equipment adequately address the processes for timely and formal documentation and reporting (e.g., the use of nonconformance reports) when S/CIs are identified.
- Ensure that future management self-assessments and integrated safety management system and QA program reviews include criteria evaluating the adequacy and effectiveness of the BJC S/CI program.
- Schedule and perform timely and periodic compliance and effectiveness assessments of the new and strengthened S/CI program elements to ensure that management expectations are being met. Conduct a comprehensive independent review/walkthrough of all BJC procedures that address S/CI to ensure that requirements and processes are adequately detailed and that any omissions or conflicts have been addressed.

Appendix A Supplemental Information

Dates of Review

Scoping: March 21-25, 2011
Data Collection: May 2-5, 2011

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