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Report to the Chairman, Subcommittee on Oversight and Investigations, Committee on Energy and Commerce, House of Representatives

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NUCLEAR SAFETY AND HEALTH

Counterfeit and Substandard Products Are a Governmentwide Concern

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GAO
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Resources, Community, and
Economic Development Division

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The Honorable John D. Dingell
Chairman, Subcommittee on Oversight
and Investigations
Committee on Energy and Commerce
House of Representatives

Dear Mr. Chairman:

At your request, we identified incidents where the Nuclear Regulatory Commission (NRC) found that suppliers have provided nonconforming products, including counterfeit and substandard parts, to commercial nuclear power plants and the measures NRC has taken to reduce the number of such incidents in the future. Subsequently, we agreed to obtain a broader perspective on the issue of nonconforming parts by contacting the Departments of Defense, Energy, and Transportation; National Aeronautics and Space Administration; and Federal Aviation Administration. This report presents the results of our efforts.

Unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days from the date of this letter. At that time, we will send copies to the appropriate congressional committees; the Chairman, NRC; the Secretaries of Defense, Energy, and Transportation; the Administrators of the Federal Aviation Administration and the National Aeronautics and Space Administration; and the Director, Office of Management and Budget. We will also make copies available to others upon request.

This work was performed under the direction of Victor S. Rezendes, Director, Energy Issues, who can be reached at (202) 275-1441. Other major contributors are listed in appendix III.

Sincerely yours,

J. Dexter Peach
Assistant Comptroller General

Executive Summary

Purpose

Nonconforming products, such as fasteners, pipe fittings, electrical equipment, and valves, have been installed in nuclear power plants, naval submarines, commercial and military aircraft, and the space shuttle. Such products include those that are fraudulently produced (counterfeit) and/or substandard because they do not conform in quality to design or other specifications. Nonconforming products can fail and result in death or injury to the public and workers, increase government program costs significantly, and waste tax dollars.

The Chairman, Subcommittee on Oversight and Investigations, House Committee on Energy and Commerce, asked GAO to determine the extent to which nonconforming products have been supplied to nuclear power plants and the measures the Nuclear Regulatory Commission (NRC) has taken to reduce the number of such incidents. Subsequently, the Chairman asked GAO to obtain a broader perspective on nonconforming products from the Department of Defense (DOD); Department of Energy (DOE); Department of Transportation (DOT), including the Federal Aviation Administration (FAA); and National Aeronautics and Space Administration (NASA).

Background

Under the Atomic Energy Act of 1954, as amended, NRC oversees the operation of nuclear power plants to ensure that they do not pose undue public health and safety risks. NRC requires utilities to (1) purchase products that meet standards set by industry groups or (2) upgrade commercial products to meet the standards and establish programs to ensure the quality of the parts that will be installed in the plants—from nuts and bolts to electrical components. NRC periodically inspects the utilities' quality assurance programs. In addition, the five other agencies GAO contacted purchase a variety of products; many have been found to be nonconforming. (See ch. 1.)

Results in Brief

Utilities have installed nonconforming products in, or are suspected of having received them for, about 64 percent of the 113 domestic nuclear power plants. Also, during the past 5 years, NRC's inspections of 13 utilities' quality assurance programs found problems with 12. As a result of the inspections, NRC took enforcement actions against eight utilities, but in April 1990 the Commission withdrew the actions against two utilities and deferred quality assurance program inspections for at least 1 year.

Nonconforming products are a governmentwide problem, but consolidated data do not exist to help prevent the purchase of these products

by government and utility officials. Further, the magnitude of the problem, cost to the taxpayers, and potential dangers resulting from using such products are not known. Incidents have occurred that illustrate the need for an information clearinghouse for these products. For instance, 5 years after DOD had identified certain vendors as suspect, utilities installed steel from these companies in safety systems designed to prevent or mitigate an accident at a nuclear plant. NRC warned utilities about these vendors only after they were indicted for selling nonconforming products. In 1988 the Office of Management and Budget (OMB), which provides management leadership to the executive branch, agreed to act as a clearinghouse for information on nonconforming products. OMB has not fulfilled its commitment.

Principal Findings

NRC Is Deferring Its Regulatory Responsibility

Utilities operating at least 72 of the 113 domestic nuclear power plants have installed or are suspected of having received nonconforming products. Substandard fasteners (nuts, bolts, and screws) have been found in 58 percent of the plants; 8 percent of the fasteners were installed in safety systems designed to prevent or mitigate an accident and the escape of radiation if an accident occurs. Utilities have also found nonconforming steel, fuses, pumps, valves, and circuit breakers; some were installed in safety systems. Since 1985 NRC has found numerous weaknesses in 12 of 13 utility programs designed to ensure the quality of the products utilities purchase. NRC initially took enforcement actions, such as imposing financial penalties, against 8 of the 12 utilities. NRC subsequently concluded that nonconforming products are an industrywide problem and in March 1990 decided to give utilities time to implement an industry program for improving their procurement practices. As a result of this decision, in April 1990 the Commission withdrew enforcement actions against two utilities, approved a staff request to defer quality assurance inspections for 1 year, and delayed moving forward with regulations to improve utilities' quality assurance programs. Although NRC has not identifed major safety problems resulting from nonconforming products, it recognizes that unchecked the problem could have a significant impact on safe plant operations. NRC's actions during the spring of 1990 seem to conflict with the need for continuous and aggressive oversight of this problem. (See chs. 2 and 3.)

Nonconforming Products Are a Governmentwide Problem

In July 1990 OMB's President's Council on Integrity and Efficiency reported that substandard and counterfeit products were a serious concern to about 11 federal agencies that it surveyed. Likewise, all six federal agencies GAO contacted have identified an increasing number of nonconforming products. In addition to NRC's finding such parts in most nuclear power plants, DOD has found nonconforming parts in radar, sonar, and communication systems; guidance systems for aircraft, ships, and missiles; and weapons systems. In 1989 DOD's Inspector General estimated that the Air Force paid over $100 million between September 1986 and 1988 for substandard parts. Also, DOE has found nonconforming circuit breakers in several of its nuclear weapons facilities, including the Rocky Flats, Colorado, plant and the Tonopah Test Range, Nevada. FAA has found defective helicopter parts, and a DOT and NASA investigation resulted in guilty pleas by a company that sold nonconforming fasteners for commercial aircraft and the space shuttle. (See chs. 2 and 4.)

No Governmentwide Effort Exists to Address Nonconforming Products

Although nonconforming products are widespread throughout the government, consolidated data do not exist to help prevent the purchase of these products. Also, the magnitude of the problem, cost to the taxpayers, or potential dangers resulting from using such products are not known. In 1988 OMB agreed to develop a plan for distributing information on nonconforming products. Except for surveying federal agencies to determine the extent of the problem, OMB has not followed through on its commitment. According to officials, OMB does not have the resources to meet its commitment; an official noted that federal agencies should collect and disseminate the information.

In its July 1990 survey report, OMB recommended further studies to determine whether reported product substitution really is a problem. GAO believes that a more aggressive approach is needed. All six agencies have individually or jointly investigated vendor or product fraud allegations; the Department of Justice has obtained convictions in some cases. NRC's Office of Investigations and NASA's Inspector General joined forces against two companies for falsely identifying reconditioned circuit breakers as new. The Palo Verde, Arizona, nuclear power plant had installed the circuit breakers, and the Diablo Canyon, California, plant had purchased—but not installed—them. The court ordered the circuit breaker companies to pay Palo Verde's owner $1.3 million for, among other things, costs incurred to replace the products. The investigations and convictions support the need for an aggressive governmentwide

approach to help resolve the problem of nonconforming parts. (See ch. 4.)

Centralized Information Exchange System Would Benefit Federal Agencies

Although OMB has been slow to take actions, the six federal agencies met in January, April, and July 1990 to discuss and develop a mechanism to exchange information on nonconforming products. Officials from the six agencies agree that they need consolidated information to manage their programs effectively, and a nonconforming product clearinghouse would allow them to share information critical to procurement decisions. Without such a system, many years may elapse before information one agency has about a problem company is shared with other concerned agencies. GAO found, for instance, that DOD had identified two companies suspected of selling nonconforming steel products for use in submarines and surface ships almost 5 years before NRC warned utilities about the companies. Utilities had bought from these companies products that were installed in safety systems designed to prevent or mitigate a nuclear plant accident or the escape of radiation if an accident occurs.

Centralized information could also increase the number of joint investigations of vendors suspected of selling nonconforming products. For example, a federal task force investigated a 15-year scheme by the largest manufacturer of aerospace fasteners for, in part, falsifying some product quality test results. In May 1990 the company pleaded guilty to fraud charges and agreed to pay $18 million in penalties. (See ch. 4.)

Recommendations

To help ensure an aggressive regulatory posture concerning products used in plant safety systems, GAO recommends that the Chairman, NRC, reinstitute inspections of utilities' quality assurance programs and take appropriate enforcement actions when violations occur.

Also, GAO recommends that the Director, OMB, develop an action plan and designate a lead agency to give priority to implementing the plan and developing a computerized system that allows federal agencies easy access to information on these products.

Agency Comments

GAO discussed the facts presented in this report with officials from the six federal agencies and OMB. They generally agreed with the facts but offered some clarifications, which were incorporated where appropriate. As requested, GAO did not ask these agencies to comment officially on this report.

Contents

Figures

Abbreviations

DOD	Department of Defense
DOE	Department of Energy
DOT	Department of Transportation
FAA	Federal Aviation Administration
GAO	General Accounting Office
GIDEP	Government-Industry Data Exchange Program
NASA	National Aeronautics and Space Administration
NRC	Nuclear Regulatory Commission
OMB	Office of Management and Budget
PCIE	President's Council on Integrity and Efficiency

Introduction

During the early 1960s and 1970s, the demand for electric energy increased at a rate of about 7 percent a year and showed no signs of slowing down. Utilities ordered over 200 nuclear power plants to help meet this demand, and an infrastructure developed to supply the parts and components needed to build and operate the plants. Utilities subsequently canceled more than 100 orders for new plants. As a result, during the 1980s many suppliers (vendors) left the market, and utilities began to increase their purchases of overseas and commercial products that could be upgraded to meet the Nuclear Regulatory Commission's (NRC) requirements.

Under the Atomic Energy Act of 1954, NRC oversees the construction and operation of nuclear power plants and issues regulations to protect public health and minimize danger to life and property. Since 1970 NRC has required utilities to establish programs to ensure the quality of structures, systems, and components designed to ensure safe plant operations. Commercial nuclear plants have primary and secondary systems. The primary system includes the nuclear reactor and the safety features that support its operation. These systems are designed to prevent and/or mitigate an accident and protect public health and safety from the escape of radiation if an accident occurs. The secondary system contains the turbine and generator that produce electricity. Some equipment in the secondary system helps ensure the integrity of the reactor and other plant operations. Most of NRC's effort is directed toward the primary system.

To provide guidance to the industry, the American Society of Mechanical Engineers and Institute of Electrical and Electronic Engineers have developed standards for products used in large industrial installations, including nuclear plants. NRC has incorporated pertinent sections of these standards into its regulations governing safety-related equipment. Under NRC's regulations, utilities can purchase (1) parts and components that meet applicable safety standards or (2) commercial products and upgrade them to meet the standards. According to NRC staff, nuclear utilities, although not required to do so, also maintain lists of vendors qualified to supply nuclear-grade products.

Objectives, Scope, and Methodology

In August 1988 the Chairman, Subcommittee on Oversight and Investigations, House Committee on Energy and Commerce, asked us to identify the (1) number of incidents where vendors had supplied to nuclear utilities stainless steel pipe that did not meet specifications and (2) measures taken to ensure that such incidents will not occur in the future. Subsequently, we agreed to gather information on the extent to which the Department of Defense (DOD); Department of Energy (DOE); Department of Transportation (DOT); including the Federal Aviation Administration (FAA); and the National Aeronautics and Space Administration (NASA) have experienced problems with nonconforming products. Although we gathered data from these agencies, we did not assess the adequacy or implementation of their quality assurance programs.

To develop the information for this report, we reviewed the Atomic Energy Act and NRC's regulations pertaining to utilities' quality assurance procedures (10 C.F.R. part 50, app. B) and responsibilities for reporting defects and product nonconformance (10 C.F.R. part 21). We also reviewed NRC's internal policies set out in (1) Regulatory Guide 1.123, Quality Assurance Requirements for Control of Procurement of Items and Services for Nuclear Power Plants; (2) Regulatory Guide 1.28, Quality Assurance Program Requirements (Design and Construction); and (3) Regulatory Guide 1.33, Quality Assurance Program Requirements (Operation). We also obtained almost 40 different generic communications (bulletins and supplements, notices, and letters) that NRC sent utilities concerning nonconforming products, and we examined NRC inspection reports since 1985 of 13 utilities' quality assurance programs to determine the types of problems found and enforcement actions taken.

Further, we interviewed NRC staff in the Offices of Investigations, Executive Director for Operations, Nuclear Reactor Regulation, and Nuclear Regulatory Research, and, where possible, we obtained documentation to support the oral evidence provided. For example, we interviewed staff from the Office of Investigations to obtain information on (1) the number and types of nonconforming product cases pursued since its inception in 1982 and (2) those sent to the Department of Justice for prosecution. We also reviewed the 64 comments that NRC received on an advance notice of proposed rulemaking concerning the need for utilities to improve their quality assurance programs, and we attended a March 1990 Commission meeting at which NRC staff presented their recommended actions on the advance notice. In addition, we met with officials from the Nuclear Management and Resources Council, which serves as an interface between the nuclear industry and NRC, and from the

Vendor Inspection Branch Oversees Quality Assurance

Nuclear power is a complex and potentially hazardous technology; therefore, ensuring quality in the design, construction, and operation of these plants is essential for protecting public health and safety. Since 1970 utilities building and operating nuclear plants have been required to adopt quality assurance programs for structures, systems, and components that prevent or mitigate an accident. Quality assurance refers to the policies and procedures designed to minimize human error, equipment malfunctions, other mistakes, and the use of products not conforming to applicable standards or specifications. In a broad sense, quality assurance includes all of the utilities' activities related to building and operating a nuclear plant; in a narrower sense, it pertains to utilities' programs and activities required by NRC for designing, purchasing, installing, inspecting, testing, repairing, and modifying those structures, systems, and components that prevent or mitigate an accident.

NRC's five regional offices have primary responsibility to inspect utilities' activities, including utilities' quality assurance programs, and the Vendor Inspection Branch within headquarters periodically conducts inspections to support the regional efforts. The Branch inspects utilities' (1) implementation of quality assurance programs required by 10 C.F.R. part 50, app. B; (2) defect evaluation and reporting required by 10 C.F.R. part 21; and (3) conformance to national industrial standards required by NRC or by the procurement specifications. The Branch inspects, in addition to utilities, nuclear steam supply companies; architect-engineering firms; and vendors of nuclear equipment, materials, and services.

Once NRC finds a regulatory violation, it can take one or more enforcement actions against a utility: issue a Notice of Violation, impose a civil penalty, or issue an order requiring the utility to stop plant operations. NRC can also issue a notice of violation as well as impose a civil penalty against a vendor. The Branch also provides technical support to NRC's Office of Investigations, which pursues allegations of wrongdoing by utilities or vendors that supply products to them. Since its inception in 1982, this office has investigated 60 cases of nonconforming products.[1]

[1]For the purposes of this report, nonconforming products include those that are substandard because they do not conform in quality to manufacturing, design, or material specifications and/or are fraudulently produced (counterfeit) or otherwise intentionally misrepresented by manufacturers or suppliers. However, where appropriate, we have used the agencies' terminology for such products. Agencies we visited used various terms, including "bogus," "suspect," and "fraudulent."

Nuclear Procurement Issues Committee, which audits utilities' quality assurance programs, to discuss the actions that the industry is taking concerning nonconforming products.

To obtain a governmentwide perspective, we met with officials from DOD, DOE, DOT, FAA, and NASA (app. I lists the offices that we contacted). From these officials, we obtained information on their quality assurance programs, systems for reporting suspect vendors within their agency or among federal agencies, and investigations conducted and cases prosecuted. We also reviewed notices, bulletins, alerts, data bases, and other methods used by these agencies to notify others about nonconforming products. Further, we compared information from DOD, DOE, DOT, FAA, and NASA with information from NRC to determine whether any suspect companies had done business with both the agencies and nuclear utilities. Also, we contacted the district attorney's office in Seattle, Washington, which has investigated product fraud cases with several federal agencies. We also attended a January 1990 meeting, sponsored by NASA and attended by six other federal agencies, on problem parts and suppliers of them.

Further, we reviewed a November 1988 report by DOD's Inspector General on the Government-Industry Data Exchange Program (GIDEP), a November 1988 report on DOD's quality assurance efforts, and a May 1989 report examining the Office of Management and Budget's (OMB) effectiveness in providing management leadership across the executive branch.[2] Also, we met with OMB officials to discuss their plans to act as a clearinghouse for information on nonconforming parts. Finally, we reviewed transcripts of (1) June 1988 hearings on counterfeit fasteners before the Subcommittee on Oversight and Investigations, House Committee on Energy and Commerce; (2) March 1989 hearings on fastener quality assurance before the Subcommittee on Commerce, Consumer Protection, and Competitiveness, House Committee on Energy and Commerce; and (3) April 1989 hearings on counterfeit bolts and fasteners before the House Committee on Science, Space, and Technology.

We discussed the facts in this report with officials from NRC, DOD, DOE, DOT, FAA, NASA, and OMB. They generally agreed with the facts but offered some clarifications, which were incorporated where appropriate. As requested, we did not ask the agencies to comment officially on this

[2]Government-Industry Data Exchange Program, Office of Inspector General, DOD (89-INS-01, Nov. 18, 1988); Procurement: Department of Defense Quality Assurance Efforts (GAO/NSIAD-89-28FS, Nov. 2, 1988); and Managing the Government: Revised Approach Could Improve OMB's Effectiveness (GAO/GGD-89-65, May 4, 1989).

report. Our work was conducted between May 1989 and June 1990 in accordance with generally accepted government auditing standards.

Nonconforming Products: A Governmentwide Problem

All six of the federal agencies we contacted have found nonconforming parts installed in various components and systems. Utilities have installed nonconforming products in, or are suspected of having received them for, at least 72 of the 113 licensed domestic nuclear power plants. For example, nonconforming fasteners (nuts, bolts, and screws) were found in 58 percent of the plants—8 percent of the fasteners were installed in safety systems. In addition, DOD, DOE, DOT, FAA, and NASA have found nonconforming products in weapons systems, submarines, aircraft, and the space shuttle. DOD's Inspector General estimated that the Air Force paid over $100 million between September 1986 and 1988 for substandard spare parts and concluded that such products can adversely affect the readiness of forces and safety of personnel.

Who Sells Nonconforming Products?

Large and small companies, both domestic and foreign, have sold nonconforming parts to the federal government, its contractors, and nuclear utilities. Most of the agency officials we contacted said distributors and suppliers, not manufacturers of equipment, are the major sources of such products. Beyond that, we found little agreement on the characteristics that identify likely suppliers of nonconforming products. For example, in 1988 DOD found that the typical company in product substitution fraud schemes had fewer than 120 employees and sales of between $1 million and $3 million annually. DOD data also showed that several large, well-known domestic companies had sold nonconforming products to the government. According to many officials we contacted, companies that intentionally sell these products do so to save money.

Nonconforming Parts Have Been Sold to Many Nuclear Power Plants

Utilities have installed nonconforming parts in, or are suspected of having received them for, at least 72 of the 113 licensed domestic nuclear power plants. The total may be higher because utilities did not always delineate the number of plants affected at multi-unit sites. Utilities reported finding nonconforming fasteners, such as nuts, bolts, and screws, in 58 percent of the plants—some were installed in systems needed to shut down the reactor or mitigate an accident. Many other plants have or are suspected of having nonconforming pipe fittings and flanges, pumps, fuses, valves, valve replacement parts, and electrical equipment (circuit breakers)—some were installed in safety systems. A reduction in the number of nuclear suppliers, vendors' cost-cutting measures, and a heightened awareness of nonconforming parts have led to the increased detection of such products.

NRC obtains information about nonconforming products from such sources as utilities and other federal agencies and provides this information to utilities through information notices or bulletins that require actions by utilities and written responses documenting the actions taken. Appendix II lists some information notices and bulletins that NRC has sent to utilities since 1986. Table 2.1 shows the types of nonconforming products that 73 plants holding operating licenses and 2 plants under construction have received or are suspected of having received.

Table 2.1: Nonconforming Products That Nuclear Power Plants Have Received or Are Suspected of Having Received

Plant	State	Fasteners[a]	Pipe fittings/ flanges[b]	Circuit breakers[a]	Fuses[b]	Other material[c]
Arkansas	AR		X	X		
Beaver Valley	PA	X				X
Bellefonte[d]	AL	X			X	X
Big Rock Point	MI	X				
Braidwood[d]	IL		X	X		
Browns Ferry	AL	X			X	X
Brunswick	NC	X	X	X		
Byron	IL				X	
Callaway	MO	X				X
Calvert Cliffs	MD	X				X
Catawba	SC	X	X	X		
Clinton	IL	X	X	X	X	
Comanche Peak	TX	X				
D. C. Cook	MI	X				X
Cooper	NE					X
Crystal River	FL	X	X	X	X	
Davis-Besse	OH	X	X	X		
Diablo Canyon	CA	X		X	X	X
Dresden	IL	X		X	X	
Duane Arnold	IA	X				X
Farley	AL	X		X		
Fermi	MI	X		X		X
Fitzpatrick	NY	X	X		X	
Fort Calhoun	NE	X	X	X	X	
Fort St. Vrain[e]	CO	X				
Ginna	NY	X	X	X		
Grand Gulf	MS	X	X	X	X	
Haddam Neck	CT				X	
Hatch	GA					X
Hope Creek	NJ		X		X	
Indian Point	NY	X			X	
Kewaunee	WI	X			X	
La Salle	IL	X		X	X	
Limerick	PA	X	X			
Maine Yankee	ME	X			X	
Mcguire	NC	X	X	X		
Millstone	CT	X	X		X	

(continued)

Plant	State	Fasteners[a]	Pipe fittings/ flanges[b]	Circuit breakers[a]	Fuses[b]	Other material[c]
Monticello	MN	X				X
Nine Mile Point	NY	X	X	X	X	
North Anna	VA	X				X
Oconee	SC		X	X		
Oyster Creek	NJ	X				
Palisades	MI	X	X	X		
Palo Verde	AZ	X	X	X		
Peach Bottom	PA	X	X	X		
Perry	OH	X	X			
Pilgrim	MA	X	X	X	X	
Point Beach	WI	X				
Prairie Island	MN	X		X		X
Quad Cities	IL	X		X		X
Rancho Seco[e]	CA	X	X	X	X	
River Bend	LA	X	X			
Robinson	SC	X				
Salem	NJ	X	X		X	
San Onofre	CA	X	X	X		
Seabrook	NH	X	X		X	
Sequoyah	TN	X	X		X	
Shearon Harris	NC	X	X	X		
Shoreham[e]	NY	X		X	X	X
South Texas	TX	X	X	X		
St. Lucie	FL	X		X	X	
Summer	SC	X	X			
Surry	VA	X		X	X	
Susquehanna	PA	X	X			
Three Mile Island	PA	X				
Trojan	OR	X				
Turkey Point	FL	X			X	X
Vermont Yankee	VT	X			X	
Vogtle	GA	X	X			
Washington Nuclear	WA	X	X			
Waterford	LA	X		X		X
Watts Bar	TN	X	X		X	
Wolf Creek	KS		X		X	

(continued)

Plant		State	Fasteners[a]	Pipe fittings/ flanges[b]	Circuit breakers[a]	Fuses[b]	Other material[c]
Yankee-Rowe		MA	X			X	
Zion		IL				X	
Total	**75**		**65**	**36**	**32**	**32**	**18**

[a]Product received by utilities.

[b]Product suspected of having been received by utilities.

[c]Other material includes, among other things, couplings, rings, plugs, nozzles, lugs, valves, and spacers. Products received by utilities.

[d]Plant is under construction or indefinitely deferred.

[e]Plant is permanently shut down but still holds an operating license.

Fasteners

In 1985 a supplier of fasteners to the nuclear industry raised concerns to NRC about the origin and quality of bolts in the supplier's inventory. Subsequently, the Industrial Fasteners Institute tested a sample of bolts from across the country and found that 70 percent did not meet required specifications. Because of increasing reports of counterfeit fasteners throughout the government and industry, in 1987 NRC required all nuclear utilities to test samples of certain safety- and non-safety-related fasteners in their inventories to determine whether they met mechanical and chemical specifications.

NRC's analysis of the utilities' responses showed that 8 percent of the fasteners installed in safety-related systems and 12 percent installed in non-safety-related systems did not meet specifications. In all, utilities operating 59 plants reported having nonconforming safety-related fasteners. However, NRC concluded that the products did not pose a significant safety hazard because only 2 percent of the safety-related fasteners were sufficiently out of specification to cause a concern about their ability to perform as intended. Table 2.2 shows the plants that reported such fasteners.

Table 2.2: Nuclear Power Plants That Received Fasteners Sufficiently Out of Specification to Cause Concerns

Plant	State	Number of fasteners reported
Beaver Valley	PA	1
Bellefonte	AL	1
Big Rock Point	MI	1
Brunswick 2	NC	1
Calvert Cliffs 1	MD	2
Clinton	IL	1
Crystal River 3	FL	2
Davis-Besse	OH	2
Diablo Canyon 1	CA	1
Farley	AL	1
Ft. Calhoun	NE	2
Ginna	NY	1
Harris	NC	2
Limerick 1, 2	PA	5
Maine Yankee	ME	5
Nine Mile Point 1, 2	NY	3
North Anna 1	VA	4
Oyster Creek	NJ	1
Palisades	MI	1
Peach Bottom 2	PA	1
River Bend	LA	2
Robinson 2	SC	1
Sequoyah	TN	1
Surry 1	VA	3
Trojan	OR	1
Vermont Yankee	VT	1
Watts Bar	TN	3
Total 29		**50**

Nonconforming Parts Other Than Fasteners

As shown in table 2.1, many nuclear utilities received or are suspected of having received other kinds of nonconforming products, such as pipe material, fuses, and circuit breakers. In 1988, for example, utilities reported that 38 nuclear plants had received substandard pipe fittings and flanges from two New Jersey companies. NRC determined that the companies did not provide evidence showing they had performed the required tests to certify that foreign and domestic steel could be used in plant safety systems.

Also in 1988, the utility that owns the Wolf Creek, Kansas, plant notified NRC that Planned Maintenance Systems, Mt. Vernon, Illinois, delivered fuses without performing required seismic, environmental, and other tests. NRC confirmed the allegation and determined that 10 other plants received the parts. Later, Planned Maintenance Systems' president pleaded guilty to 12 counts, including making false statements and claims regarding the fuses.

Furthermore, in May 1989 a federal grand jury indicted two companies on 27 counts of substituting commercial-grade for military-grade steel and fraudulently marking the substitutions as meeting DOD's specifications. The steel was used in Navy submarines and surface ships. Subsequently, Virginia Power and General Public Utilities Nuclear Corporation found that steel they purchased from the companies for the Surry and Oyster Creek plants, respectively, did not meet certain chemical and mechanical specifications.

Reasons for the Increase in Nonconforming Products

Recently, NRC and the nuclear industry have reported an increasing number of instances where utilities received nonconforming products. According to NRC documentation, several reasons exist for the increase:

- Companies save money if they "cut corners" in engineering and manufacturing or refurbish old components and represent them as new rather than manufacture new ones.
- The reduction in the number of new plants ordered has caused suppliers to leave the nuclear market, go out of business, or reduce product lines that are subject to nuclear quality assurance production standards. As a result, NRC believes that some utilities purchase from vendors that may not be familiar with, or appreciate the need for, strict conformance with nuclear quality requirements.
- Intermediate suppliers buy commercial products and upgrade them to meet NRC's requirements for use in safety-related systems. However, these suppliers may not have the necessary specifications or engineering, design, and material drawings to upgrade the products. In addition, intermediate suppliers may not have information to determine whether the product has been altered since originally manufactured.
- An increased awareness of substandard or counterfeit parts by NRC and nuclear utilities has resulted in the more diligent examination of products.

Federal Agencies Have Found Nonconforming Products

In addition to NRC, all of the five other agencies we contacted—DOD, DOE, DOT, FAA, and NASA—have found nonconforming products. For example, DOD found nonconforming products installed in military aircraft, surface ships, and submarines. DOE found nonconforming circuit breakers in nuclear weapons production facilities. Also, FAA found defective helicopter parts, and DOT and NASA investigated cases of nonconforming fasteners in commercial aircraft and the space shuttle, respectively. The following briefly describes some problems that the five agencies have identified.

DOD

DOD maintains extensive information on problem vendors and suspect products. Some recent conclusions by DOD officials illustrate the potential effects on health, safety, and finances:

- In 1988 the Defense Criminal Investigative Service reported that about 16 percent of its cases from October 1984 through September 1987 involved product substitution that could have an impact on the readiness of forces or the safety of personnel. The Service found that nonconforming products were frequently installed in systems important to the proper functioning of aircraft, ships, and weapons—radar, sonar, and communication systems and guidance systems for aircraft, ships, and missiles.
- During a June 1988 conference on fastener quality, a Defense Industrial Supply Center[1] official estimated that between 1984 and 1987, reordering products to replace nonconforming bolts, bulk steel, wire, and cable cost the government over $13 million. This amount probably represents only a small portion of the total DOD will spend to replace nonconforming products because, as we noted in November 1988, DOD did not have enough data to estimate the total amount or value of nonconforming products in its inventory.[2]
- In 1989 DOD's Inspector General estimated that an Air Force logistics center paid over $100 million between September 1986 and 1988 for substandard spare parts for certain classes of guns, bearings, and hardware. In commenting on the report, DOD officials noted that some of the parts could be used.

[1]The Defense Industrial Supply Center purchases wholesale industrial items, such as fasteners, cable, and hardware, for the military services and several federal civilian agencies.

[2]Procurement: Department of Defense Quality Assurance Efforts (GAO/NSIAD-89-28FS, Nov. 2, 1988).

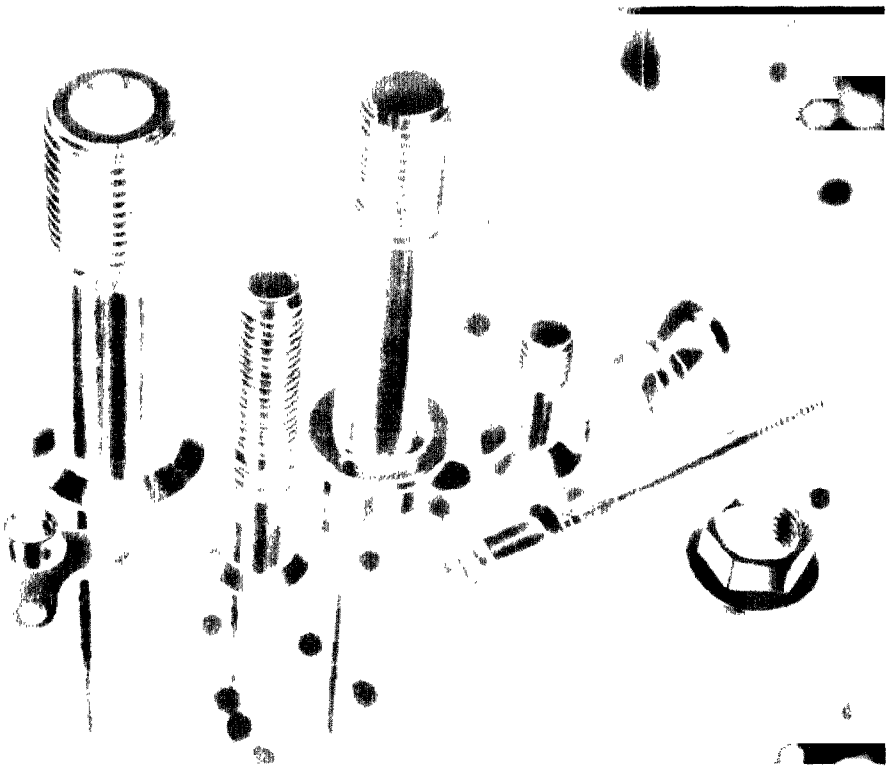
DOE

In 1989 DOE's Inspector General found nonconforming fasteners, including two counterfeit circuit breakers at Rocky Flats, Colorado, where the agency recovers plutonium from retired weapons and scrap metal. The circuit breakers were sold as new but were actually 35 years old. The Inspector General found an additional 102 nonconforming circuit breakers at the Tonopah Test Range, Nevada, where DOE conducts underground weapons tests, and 12 at the Idaho National Engineering Laboratory, where DOE conducts research for the naval propulsion program. All 114 circuit breakers had been refurbished but sold to DOE as new products. In addition, DOE has investigated cases of nonconforming concrete, steel, computer equipment, and valves.

FAA

Various FAA officials expressed differing opinions about the severity of the problem of nonconforming parts in the airline industry. According to FAA officials, nonconforming parts in commercial aircraft now in production have not been a significant problem. In contrast, FAA staff told DOT's Inspector General in 1987 that counterfeit parts had been a growing and significant problem with aircraft now in service. The Inspector General determined that FAA leaves itself open to purchasing and using substandard products because the agency buys parts without evidence that they originated from FAA-approved sources. As of January 1990, FAA had received 10 reports from commercial aviation manufacturers and other government agencies alleging the sale of counterfeit fasteners, rivets, ball bearings, and helicopter tail rotor parts, but FAA had not completed its investigations of the allegations. Figure 2.1 shows certain types of surplus aircraft parts, some of which were found to be nonconforming.

Figure 2.1: Types of Surplus Parts for Aircraft



Source: DOT.

In addition, FAA's incident and accident report since 1973 attributes hundreds of accidents to bogus parts. According to FAA headquarters officials, they have not verified this information, which is reported by field offices. As a result of publicity about some of these parts, FAA plans to reexamine this information, clearly delineate those incidents that were caused by nonconforming products, and issue a report by October 1990.

NASA

Although NASA officials told us that they have an aggressive quality assurance program and routinely inspect 100 percent of the products they receive, NASA's Inspector General found otherwise. In 1988 the Inspector General reviewed the procedures employed by NASA, its prime contractors, and suppliers to ensure product safety and compliance with fastener certification standards. The Inspector General concluded that the potential exists for unsafe fasteners to be used in flight hardware because of deficiencies in NASA's procedures for disposing of uncertifiable (not meeting National Aerospace Standards) fasteners.

According to the report, one of NASA's prime contractors purchased fasteners that had been certified for use in flight hardware. However, the contractor did not have the manufacturer's certifications or information on the tests conducted to ensure that the fasteners met required specifications. NASA's Inspector General found that DOD sold the fasteners as surplus in 1967 and that 18 years later a supplier sold the parts to NASA's prime contractor. As a result of this experience, NASA plans to purchase fasteners only from qualified suppliers and destroy surplus items.

Conclusions

An accident caused by using a nonconforming part in a nuclear power plant or on a commercial or military airplane, the space shuttle, or a naval ship could result in death or injury to the public and civilian and military personnel. Also, federal agencies, their contractors, and nuclear utilities continually order equipment, parts, and components for repairs and maintenance. Therefore, nonconforming products sold to federal agencies, their contractors, or nuclear utilities represent a health and safety as well as procurement issue. Finally, such products waste tax dollars.

NRC Is Deferring Its Regulatory Responsibility

During the past 5 years, NRC has taken steps to lessen the impact of nonconforming parts in nuclear power plants, including conducting inspections of utilities' quality assurance programs. However, at a time when utilities are buying increasing numbers of commercial-grade products for plants and NRC has found problems with 12 utilities' procurement and dedication programs that it reviewed, the Commission voted to defer such inspections for at least 1 year. In addition, the Commission agreed to withdraw enforcement actions against 2 of the 12 utilities, including $50,000 in civil penalties. In the interim, NRC plans to monitor utilities' actions to meet industry-developed guidelines, after which NRC will decide whether to reinstitute quality assurance program inspections and/or move ahead with proposed regulations to improve utilities' programs.

NRC Has Taken Some Actions to Detect and Minimize the Incidence of Nonconforming Parts

NRC has not identified major safety problems resulting from nonconforming parts but believes that unchecked the problem could have a significant impact on safe plant operations. As a result, NRC has taken several actions to help minimize the use of nonconforming products. In 1988 NRC developed an action plan that includes communicating its concerns about nonconforming products to utilities, investigating allegations of misrepresented products, conducting inspections of utilities' quality assurance programs, and issuing an advance notice of proposed rulemaking to change its regulations concerning upgrading commercial products that are used in plant safety systems.

Action Plan

By 1988 NRC and the industry had identified numerous instances of nonconforming products. In addition to finding breakdowns in traditional elements of utilities' quality assurance programs, such as missed inspections, NRC had found an increasing number of counterfeit products. To help address the issue, in 1988 NRC developed an action plan, under which the agency has undertaken various tasks.

- NRC issues bulletins, information notices, and generic letters to alert utilities about specific products and, in some cases, directs the utilities to correct the problems identified. For example, NRC has issued bulletins requiring utilities to test and report on fasteners, pipe material, and molded case circuit breakers.
- The agency coordinates and cooperates with other federal agencies on nonconforming product issues. Since August 1988 NRC staff have established contacts at DOE, DOD, FAA, and NASA and routinely send them copies of information notices and bulletins regarding such products.

- In March 1988 NRC issued an advance notice of proposed rulemaking to change utilities' procedures to detect fraudulent products (discussed later).

In addition, NRC's Vendor Inspection Branch and Office of Investigations have cooperated on cases involving vendors suspected of, or identified as, supplying counterfeit products to utilities. During the past 2 years, NRC has investigated cases involving fasteners, pipe material, valves, and such electrical equipment as circuit breakers. According to Office of Investigation staff, they have investigated 60 cases of nonconforming products and have referred 5 cases to the Department of Justice for prosecution. Four vendors were convicted. A recent NRC investigation led to a conviction against Planned Maintenance Systems, which not only sold substandard electrical items to nuclear utilities but also to DOE's Hanford, Washington, facility.

NRC Has Rescinded Penalties and Has Postponed Inspections

Since 1985 NRC's Vendor Inspection Branch has found weaknesses in 12 of the 13 utilities' procurement and dedication programs it has reviewed. Dedication is a process by which commercial-grade parts are certified as suitable for use in nuclear power plant safety systems. According to NRC draft guidance, a utility must perform, among other things, the following steps as part of an effective dedication program:

- identify and document the safety functions the commercial-grade item will perform and the design requirements that must be met;
- identify and document those characteristics that are critical to performing the safety functions and establish acceptance criteria for the critical characteristics;
- determine the methods used to verify critical characteristics including traceability, source audits, receipt inspection, receipt testing, and functional testing; and
- verify and document that the critical characteristics meet the acceptance criteria.

In 12 inspections, NRC found that the utilities did not have effective procedures to upgrade commercial-grade parts for safety-related uses. Some common weaknesses found were that utilities did not (1) verify that parts from unapproved vendors were of sufficient quality, (2) ensure that items purchased would function under all design conditions, and (3) show that replacement parts were identical to the ones being replaced. NRC took some form of enforcement action against 8 utilities, including imposing civil penalties totalling $275,000 against the 5 that operate the

Crystal River, Farley, Prairie Island, Trojan, and Washington Nuclear plants. Table 3.1 shows the 13 plant sites inspected and enforcement actions that NRC took against the 8.

Table 3.1: Enforcement Actions Resulting From NRC's Procurement Inspections

Plant	Enforcement actions		
	Notices of violation	Civil penalties	Action withdrawn
Trojan	Yes	$75,000	No
Sequoyah	Yes	No	No
San Onofre	No	No	N.A.[a]
Farley	Yes	$75,000	No
Waterford	Yes	No	No
Rancho Seco	No	No	N.A.
Maine Yankee	Yes	No	No
Prairie Island	Yes	$25,000	No
Haddam Neck	No	No	N.A.
Crystal River	Yes	$50,000	Yes
River Bend	No	No	N.A.
Washington Nuclear	Yes	$50,000	Yes
Zion	No	No	N.A.

[a]"N.A." indicates "Not applicable."

Although NRC staff recognize that additional programmatic inspections would find more and similar violations, in March 1990 the staff recommended to the Commission that NRC suspend quality assurance program inspections for a least 1 year to give utilities time to implement industry guidelines concerning the use of commercial-grade products in nuclear power plants. Through its regular inspections, the staff plans to assess the utilities' progress in implementing the industry's program. After that, the Commission will decide whether to reinstate the programmatic inspections and/or move forward with proposed regulations.

In April 1990 the Commission voted to withdraw the most recent enforcement actions against some utilities because NRC staff concluded that quality assurance program deficiencies may be generic and industrywide. The Commission withdrew proposed $50,000 civil penalties against Florida Power and Light (Crystal River) and Washington Public Power Supply System (Washington Nuclear) and decided not to pursue the Notice of Violation that had been issued to Maine Yankee. According to NRC staff, they had also considered taking enforcement actions

against Sacramento Municipal Utility District (Rancho Seco), Commonwealth Edison (Zion), and Gulf States Utilities (River Bend) but, as a result of the Commission's decision, did not do so.

NRC Is Considering Changing Its Regulations

As a result of the quality assurance inspections, NRC realized that utilities had not detected many cases of counterfeit products. The utilities had not done so, according to NRC staff, because the regulations focus on detecting substandard and poor quality products rather than fraud. To correct this, NRC has been considering a regulatory change to help ensure that utilities detect fraudulent products. On March 6, 1989, NRC published in the Federal Register an advance notice of proposed rulemaking that focuses on utilities' procurement and dedication programs. NRC asked for public comments on, for example, the scope of utilities' audits of vendors and the need for more prescriptive criteria for upgrading, testing, and tracking commercial-grade products.

NRC received 64 comments on the notice. Nuclear utilities; industry organizations, such as the Nuclear Management and Resources Council; and industrial organizations, such as the American Society of Mechanical Engineers, provided most of the comments. Nuclear utilities and industry groups strongly opposed additional regulations; many favored NRC's endorsing industry codes, standards, and guidance to detect counterfeit products. However, Ohio Citizens for Responsible Energy, Inc., stated that NRC should impose highly prescriptive requirements to ensure that utilities detect counterfeit products before they are used in plants.

On March 20, 1990, NRC staff briefed the Commissioners on the results of the public comments and recommended that they continue to develop regulations concerning the actions utilities should take to ensure the quality of commercial-grade products that have been certified for use in plant safety systems. However, the staff noted that regulations may not be needed if utilities comply with the industry's initiatives to improve their procurement and dedication programs.

In this regard, the Electric Power Research Institute—an industry-funded research organization—has developed two sets of guidelines. The first specifies the types of tests, inspections, and product source verification that utilities can follow before accepting commercial-grade products. The second set of guidelines calls for improved (1) audits of vendors by utilities, (2) methods of inspecting for counterfeit parts and

replacing obsolete products, and (3) information exchange among utilities. The Nuclear Management and Resources Council endorsed these guidelines, and all nuclear utilities implemented the first set in January 1990 and expect to implement the second set by July 1992. NRC plans to monitor the utilities' progress in implementing the guidelines and make a recommendation to the Commission concerning the need for regulations at a later date.

Conclusions

Although utilities are buying an increasing number of commercial-grade products for nuclear power plants and concern exists about the reliability of these products, NRC is reducing its regulatory influence over the nuclear industry. During the past 5 years, NRC inspectors found problems with 12 utilities' quality assurance programs that they reviewed. Despite this, in April 1990 the Commission approved a staff request to defer such inspections for at least 1 year, withdraw enforcement actions against two utilities and not pursue anticipated actions against another, and delay moving forward with regulations to improve utilities' quality assurance programs. Instead, NRC is giving utilities time to implement an industry-developed program to improve their procurement and dedication programs before deciding whether additional regulatory action is needed. On the other hand, NRC recognizes that nonconforming products could have a significant impact on safe plant operations and has taken several actions to help minimize the use of such products. However, NRC's actions during the spring of 1990 seem to conflict with the need for continuous and aggressive oversight of this problem.

Recommendation to the Chairman, NRC

To help ensure an aggressive regulatory posture concerning the upgrading of commercial products that will be used in nuclear power plants, we recommend that the Chairman, NRC, reinstitute inspections of utilities' quality assurance programs and take appropriate enforcement actions when violations occur.

No Governmentwide Effort Exists to Address Nonconforming Products

Although nonconforming products are a governmentwide problem, OMB, which provides management leadership across the executive branch, has not aggressively pursued actions to address this concern. For example, OMB has not convened interagency meetings or developed a centralized system for agencies to exchange information on nonconforming products and problem vendors. Without such a system, many years may elapse before information that one agency may have on such products is shared with other concerned agencies, contractors, or nuclear utilities. We found, for example, that DOD had identified two vendors suspected of selling nonconforming steel products almost 5 years before NRC received derogatory information about the companies.

In addition, the full extent of the problem is not known, and consolidated data do not exist on the magnitude of the problem. In 1988 OMB agreed to develop a plan for distributing information on nonconforming products. Except for asking DOD's Inspector General to survey federal agencies to determine the extent of the problem, OMB has not followed through on its commitment because, according to officials, resources are not available. Also, OMB's July 1990 report concluded that product substitution was a concern to almost half of the 22 agencies surveyed but recommended further studies to determine whether a problem really exists.

Realizing that nonconforming parts can cause accidents or significantly increase program costs, federal agencies have attempted to do what OMB agreed to do. They have initiated actions to exchange information on suspect products and have cooperated on investigations of vendor fraud. Despite these initiatives, a better approach is needed to help solve the problem of nonconforming parts. Officials from the six agencies we contacted agree that having comprehensive information on nonconforming products, including counterfeit parts, is vital to carrying out their responsibilities effectively.

Agencies' Actions Concerning Nonconforming Products

All of the agencies we contacted—DOD, DOE, DOT, FAA, NASA, and NRC—have systems that allow them to, among other things, obtain information on nonconforming products and vendors suspected of selling them. DOD has several systems. For example, DOD's counterfeit material and unauthorized product substitution program attempts to eliminate such materials by purging substandard items from inventories and expanding receipt verification and inspections. Also, the Defense Logistics Agency has a system that provides a monthly list of contractors and subcontractors having serious quality assurance problems. The Navy maintains a

vendor data analysis report concerning contractors that have not complied with contractual requirements, have received numerous unsatisfactory material reports, have had an excessive number of their products rejected, or have shown severe problems with quality assurance. The following summarizes the systems used by the other agencies that we contacted.

- A DOE official said the agency uses bulletins and notices to transmit nonconforming product information among its facilities. In addition, DOE has developed a centralized computer data base—one subsystem includes information on suspect equipment. DOE officials told us that this system could be used to identify defective equipment before accidents occur, but DOE offices have shown little interest in using the system.
- FAA has several systems for reporting defective and nonconforming products, including daily summaries of service difficulty reports, malfunction or defect reports, and system analysis reports. Also, each month, FAA uses airworthiness alerts to reach approximately 26,500 FAA-licensed mechanics and repair facilities about suspect products. Finally, FAA is drafting an advisory circular that provides information for reporting and investigating allegations of the sale of counterfeit parts. Such information will be included in a counterfeit parts data base that FAA is developing.
- NASA has an internal system to report problems agencywide. According to NASA officials, such information generally remains within the agency.

In addition to the systems that each agency has to alert its employees about nonconforming products or suspect vendors, GIDEP, which has the potential to provide information to government and industry users, is operated by the Navy. NRC began to participate in this program in 1989.

Government-Industry Data Exchange Program

In 1970 DOD established GIDEP as a voluntary information exchange system between government and industry. The program seeks to reduce or eliminate duplicate expenditures of time and money by maximizing the use of existing information among its members. Today, GIDEP has almost 1,200 members, including nine federal agencies, contractors, educational institutions, manufacturers, and public and private utilities. According to the program manager, DOD funds about 85 percent of GIDEP's $3.7 million annual operating budget; other members contribute the remaining 15 percent. GIDEP has four data bases; one—failure experience—has six subsystems that alert members about parts, materials, manufacturing processes, test equipment, and safety problems.

In a 1988 report, DOD's Inspector General concluded that GIDEP provided beneficial information to its members. According to the Inspector General, GIDEP helped DOD eliminate about $40 million of defective parts from its inventory in 1986 and possibly saved lives. In addition, the report noted that although several DOD offices have their own alert systems, GIDEP appeared to be the only system that could notify all DOD offices about nonconforming parts.

The Inspector General also found that despite these benefits, GIDEP was not totally effective and was not completely meeting its objectives. The report noted that DOD does not require the military services or their contractors to participate in GIDEP and that many members did not submit alerts because they were concerned about nuisance lawsuits and time-consuming administrative procedures to process the alerts. Nonconforming parts continue to proliferate throughout DOD, the report concluded, because only 20 percent to 50 percent of such parts were being reported through GIDEP. As a result, the Inspector General recommended, among other things, that the military services and Defense Logistics Agency include in their contracts provisions requiring (1) monthly alerts on suspect products or vendors and (2) in-plant representatives to track the alerts and review the contractors' policies and procedures to strengthen the contractors' quality assurance programs.

Agency officials we contacted have differing opinions about GIDEP's usefulness. For example, NRC, NASA, and the Defense Criminal Investigative Service officials advocate GIDEP and said they use the system frequently. A NASA quality assurance official told us that GIDEP may be the best system to exchange nonconforming parts information among agencies. On the other hand, other agency officials said they were concerned about using GIDEP because companies may be "blackballed" without due process if agencies publish data on suspect vendors; such a practice, they feared, could lead to lawsuits. Further, a DOE investigative official said GIDEP was burdensome to use because it takes several months to process an alert.

In this regard, we noted that GIDEP's failure experience data base has six subsystems to report problems with parts and materials and that alerts must be prepared and distributed manually, a process that, according to a NASA official, can take between 6 and 9 months because GIDEP allows companies to refute adverse information. According to GIDEP's manager, the Navy recognizes these problems and is redesigning the system to allow for more direct entry and retrieval of data.

Other Actions to Address Nonconforming Parts

The federal agencies that we contacted have taken other actions to address the problem of nonconforming parts. On January 19, 1990, NASA hosted a meeting attended by officials from six agencies to discuss a unified approach for exchanging information and avoiding duplication of efforts. The meeting confirmed the need for (1) greater exchange of information on problem parts and suppliers and (2) a common system to transfer such information efficiently. At the meeting, NRC staff said that they had sent information to about 30 agencies as part of their efforts to address this problem. The agency officials agreed to establish a working group on problem parts and suppliers.

On April 11, 1990, the working group[1] tentatively approved a charter to develop a system to provide for the timely exchange of information on substandard performance by government suppliers and regulated commercial manufacturers and their suppliers. According to a NASA official, the group agreed to use GIDEP as an early warning system to alert members of potential problem parts and suppliers. However, recognizing the problems with processing GIDEP alerts and the need to control sensitive data, the group is developing its own GIDEP alert to exchange information. For now, information will be exchanged only among the working group members and will not be made available to private companies. The working group eventually plans to encourage other federal agencies to use this approach. The working group met again on July 20, 1990, and reaffirmed its commitment to address the issue of nonconforming parts.

In addition to the efforts by the agencies' technical staff, in May 1990 DOD's Defense Criminal Investigative Service convened a meeting with the Naval Investigative Service, NRC's Office of Investigation, DOT's Inspector General, NASA's Inspector General, and Customs' Commercial Fraud Division to form a federal law enforcement interagency working group on product substitution fraud. The primary focus of the meeting was to devise a system for exchanging criminal investigative data on a governmentwide, real-time basis. Most of the attendees supported providing such information to the Defense Criminal Investigative Service's data base that now lists about 1,100 former and current product substitution cases.

[1]The working group includes officials from DOD, DOE, FAA, NASA, NRC, and the National Institute of Standards and Technology.

Benefits Would Be Derived From Sharing Information

Federal agencies could reap substantial benefits from sharing information. Without such information, many years may elapse before agencies that identify problems with a company provide that information to other potential purchasers. The examples discussed below illustrate the situations that can occur when federal agencies do not receive information about nonconforming products.

Between November 1984 and 1987, DOD identified and disseminated information on four companies—two supplied steel and two supplied fasteners—that had delivered counterfeit and/or substandard products for Navy submarines and surface ships or that had serious problems with their inspection and quality assurance programs. Between March and July 1989, NRC learned that the companies had been indicted for delivering nonconforming products and warned utilities that the companies were suspected of delivering the products to 66 nuclear power plants. Table 4.1 shows the lag between DOD's and NRC's alerts about the companies' products.

Table 4.1: The Lag in Time Between DOD's and NRC's Alerts Identifying Nonconforming Products

Type of product	Date of DOD's alert	Date of NRC's alert	Elapsed time
Steel	November 1984	July 1989	4 years, 8 mos.
Steel	February 1985	July 1989	4 years, 6 mos.
Fasteners	November 1986	March 1989	2 years, 3 mos.
Fasteners	November 1987	June 1989	1 year, 7 mos.

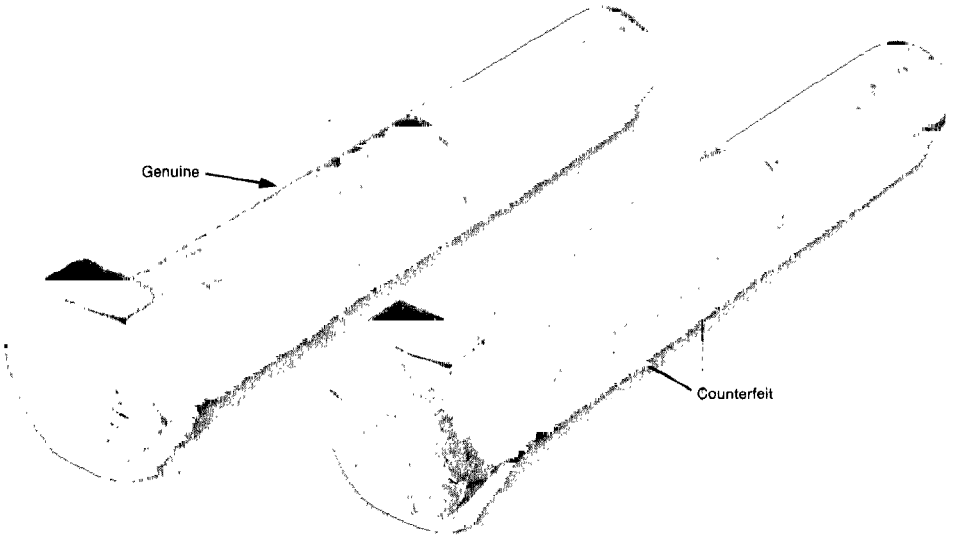
In another instance, NASA issued a GIDEP alert in October 1987 about a company suspected of delivering nonconforming fasteners. Almost 20 months later, NRC listed the company as a manufacturer of nonconforming fasteners.

Further, our comparison of the information from several alert systems showed that DOD had identified five fastener vendors with serious quality assurance problems that did not appear in NRC notices and bulletins, although the vendors sold to utilities. On the other hand, NRC has identified many fastener suppliers and manufacturers not appearing in DOD's reporting systems.

Also, without a clearinghouse, a likelihood exists that products rejected by one agency or its contractors could be purchased by other agencies or nuclear utilities. As discussed in chapter 2, a NASA contractor purchased fasteners in 1985 that DOD had sold as surplus 18 years earlier. In addition, in 1987 the Defense Industrial Supply Center began testing high-

strength fasteners and found that 30 percent did not meet specifications. Since testing began, the center reports that the number of nonconforming fasteners has dropped to 4 percent. According to center officials, manufacturers and suppliers who sold them substandard fasteners are likely selling them to others who do less testing. Figure 4.1 shows a type of fastener tested; one is genuine, and the other is counterfeit.

Figure 4.1: Fasteners Tested by the Defense Industrial Supply Center

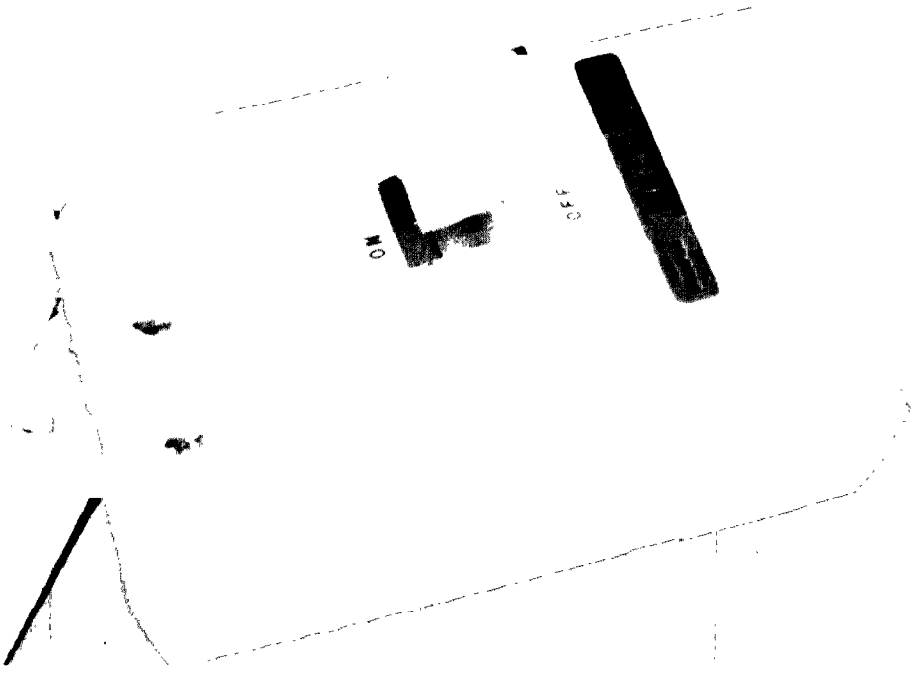


A Clearinghouse Would Foster Joint Investigations

Centralized information on nonconforming products could also assist federal agencies' investigations of suspect vendors. Some agencies have started to combine their resources to investigate vendors suspected of selling common nonconforming products, such as fasteners and circuit breakers. For example, in February 1989 a joint investigation by the Defense Criminal Investigative Service, Air Force Office of Special Investigations, NASA's Inspector General, the Naval Investigative Service, and DOT's Inspector General resulted in a 33-count indictment against Lawrence Engineering and Supply, Incorporated, its vice president, and its former quality control manager for delivering substandard fasteners for use in commercial aircraft, military hardware, and equipment for NASA's manned space flight programs, including the space shuttle. Subsequently, company officials pleaded guilty to five of the counts and were ordered to pay fines and restitution totaling $625,000.

Also, a joint investigation by NASA's Inspector General and NRC's Office of Investigations resulted in guilty pleas by the owners of California Circuit Breakers and ATS Circuit Breakers, Incorporated, to two felony counts of using counterfeit labels to falsely identify circuit breakers. NRC and NASA staff determined that the companies bought used circuit breakers, reconditioned them, and sold them as new products. The utility that owns the Palo Verde, Arizona, plant had installed the circuit breakers and the utility that owns the Diablo Canyon, California, plant had purchased—but had not installed—them. According to available documentation, the circuit breakers could have caused fires in the plants. On April 30, 1990, the U.S. District Court ordered the circuit breaker companies to pay over $1.3 million to Palo Verde's owners to cover the costs of shutting down the plant and removing the potentially dangerous parts. Figure 4.2 shows a counterfeit circuit breaker found in Diablo Canyon's inventory.

Figure 4.2: Counterfeit Circuit Breaker



Source: NRC.

Finally, a federal task force investigated a 15-year scheme by the world's largest manufacturer of aerospace fasteners to sell nonconforming products to the government and industry.[2] According to the Department of Justice, VSI Corporation did not conduct many required certification tests and falsified some test results. DOD purchased the fasteners for various military aircraft, including bombers and fighters. In May 1990 VSI Corporation pleaded guilty to four fraud charges and agreed to pay $18 million in damages, civil penalties, fines, and prosecution costs.

Federal Responsibility for Coordinating Information on Nonconforming Products

OMB provides management leadership across the executive branch. In the early 1980s, the administration established the President's Council on Integrity and Efficiency (PCIE) and the President's Council on Management Improvements within OMB to coordinate governmentwide improvement initiatives. OMB's Deputy Director chairs both Councils. Previously, we found that PCIE had fostered communications about common management issues among agencies and between the agencies and OMB and had enlisted the talents and resources of the agencies to address management issues and commit to needed improvements.[3] We also found that OMB effectively used the Councils to promote projects that combat entitlement fraud.

Following June 1988 hearings before the Subcommittee on Oversight and Investigations, House Committee on Energy and Commerce, concerning counterfeit fasteners, NRC urged OMB to convene a meeting of government agencies to coordinate and share information on nonconforming products. In August 1988 OMB hosted the interagency meeting, which 18 agencies attended. At that time, OMB agreed that PCIE would coordinate the governmentwide exchange of information on counterfeit and fraudulent procurement practices.

On behalf of PCIE, in 1988 DOD's Inspector General undertook a survey of executive agencies to determine the scope of such problems in the federal government. PCIE issued a report in July 1990 on the questionnaire results. Other than administering the questionnaire and reporting the

[2]The task force includes officials from the Federal Bureau of Investigation, Internal Revenue Service, Defense Criminal Investigative Service, Air Force Office of Special Investigations, Naval Investigative Service, DOT's Inspector General, and NASA's Inspector General.

[3]Managing the Government: Revised Approach Could Improve OMB's Effectiveness (GAO/GGD-89-65, May 4, 1989).

results, PCIE has done little to ensure that federal agencies receive timely information on nonconforming products.

A senior OMB management associate told us that the agency lost direction on this issue because several key attendees at the August 1988 meeting subsequently left the agency following the change in administrations. In addition, OMB officials that we contacted in February 1990 were not aware of a draft report by DOD's Inspector General on the results of a product substitution questionnaire initiated on behalf of PCIE. Further, OMB's Nuclear Energy Branch Chief told us that OMB does not have the resources to collect and distribute information on nonconforming products. The official noted that federal agencies should devise a method to do so.

PCIE Concluded Problem May Be Widespread but Recommended Further Study

DOD sent questionnaires to 184 individuals from 22 different agencies and received 88 responses.[4] In its July 1990 report on the questionnaire results, PCIE made the following observations.

- Product substitution presents a risk to many federal agencies. For example, 48 percent who responded said their agency experienced product substitution problems.
- Most said product substitution affected their agency in more than one way. About 50 percent of the respondents indicated that substituted products resulted in the need to pay for unexpected replacements or maintenance. Almost 33 percent said that such products adversely affected the agency's missions, and 18 percent said that the products affected employees' or customers' health or safety.
- Thirty-eight percent of the respondents reported product substitution problems with equipment and materials, such as fasteners.
- About 44 percent of those responding did not know if their agency developed information on product substitution problems.

The report also concluded that quality assurance reviews by agencies detect most product substitution problems but recommended that more detailed information should be developed—either collectively or by individual agencies. In addition, the report recommended that such studies should (1) determine whether reported product substitution problems are valid, (2) analyze the effectiveness of quality control and quality

[4]The Inspector General did not send questionnaires to DOD employees because the office had ample historical evidence of product substitution problems at the agency.

assurance programs, and (3) assess the effectiveness of product substitution alert systems within the agencies. Despite PCIE's effort, consolidated data do not exist on the magnitude of the problem of nonconforming products, cost to the taxpayers, or potential dangers resulting from using such products.

Conclusions

Despite the potential adverse health, safety, and financial effects from purchasing and using nonconforming products, the full extent of the problem is not known. OMB agreed that PCIE would coordinate federal agencies' efforts concerning such products, but OMB has not followed through on its commitment, citing limited resources as a problem. Also, PCIE's report recommended further study and analysis to determine if reported product substitution really is a problem. We believe that a more aggressive approach is needed. Investigations conducted by the six agencies and resulting convictions obtained by the Department of Justice support the need for an aggressive governmentwide approach to help eliminate the problem of nonconforming products.

Also, no comprehensive, easily accessible system exists whereby federal agencies can obtain up-to-date information that others may have concerning nonconforming products or vendors suspected of supplying such products. Although all of the agencies that we contacted have methods to alert their employees about suspect vendors or nonconforming products, the information generally stays within each agency. However, recognizing the significance of the issue and responding to a common need, the six agencies are attempting to do what OMB agreed to do. They have initiated meetings to exchange information and have conducted joint investigations of suspect vendors. Also, some agencies provide information to GIDEP, but the system is manual and burdensome to use. The Navy expects to automate the system and make it more "user friendly," but some agency officials may be reluctant to use it. Most recently, the investigative offices of five federal agencies agreed to devise a method to exchange criminal investigative data.

Even with these efforts, the potential exists that an agency can purchase products that have been rejected by another agency or that all concerned agencies do not receive critical information on companies that sell nonconforming products, as was the case where DOD raised concerns about four companies almost 5 years before NRC warned utilities about them. The potential also exists for suspect vendors or nonconforming products to "fall through the cracks" because no mechanism exists to

coordinate the various agencies' efforts and the exchange of information among the agencies.

Therefore, we believe that a better approach is needed to help resolve the problem of nonconforming products and ensure that federal agencies work together effectively to receive and disseminate information about this problem. A centralized information exchange system may not stop the proliferation of nonconforming products throughout the federal government or nuclear utilities but would provide purchasers with information to help make informed decisions about potential suppliers and products.

Also, a system solely for the use of federal agencies would eliminate some of the concerns about sensitive proprietary business information, the private sector's access to the data, and the potential for lawsuits. OMB already has a number of options that it can consider, including GIDEP, the approach developed by the agencies' technical staff, or a totally new system. OMB currently has the authority to develop a plan of action and decide on the most effective, appropriate, and cost-beneficial mechanism to help resolve the problem of nonconforming products.

Recommendation to the Director, OMB

The Director, OMB, should develop an action plan and designate a lead agency to give priority to implementing the plan. The Director, OMB, should also direct the lead agency to develop a computerized information exchange system that provides on-line data entry and retrieval that all federal agencies can easily access on a day-to-day basis. The system should have appropriate safeguards to protect sensitive information.

List of Agencies and Officials Contacted

Offices contacted	DOD	DOE	DOT	FAA	NASA
Inspector General					
Audits	X		X		X
Investigations	X	X	X		X
Inspections/analysis	X	X			
Contracting/procurement	X	X		X	
Government-Industry Data Exchange Program	X				
Quality assurance	X	X			X
Standards	X			X	
Supply	X				
Test/evaluation	X				

Some NRC Communications to Utilities Regarding Nonconforming Products

Subject	Communication Used
Fasteners	Information Notice 86-25
Fasteners	Bulletin 87-02, Supplements 1, 2
Fasteners	Information Notice 89-22
Fasteners	Information Notice 89-59, Supplement 1
Fittings and flanges	Bulletin 88-05, Supplements 1, 2
Molded case circuit breakers	Bulletin 88-10, Supplement 1
Circuit breakers	Information Notice 88-46, Supplements 1, 2, 3, 4
Metalclad circuit breakers	Information Notice 89-45, Supplements 1, 2
Fuses	Information Notice 88-19
Valves	Information Notice 88-48, Supplements 1, 2
Valve replacement parts	Information Notice 88-97, Supplement 1
Steel	Information Notice 89-56, Supplement 1

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