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Report No. DODIG-2012-132 September 14, 2012

Inspector General
United States Department of Defense

Project Planning Resulted in Outstanding Building Deficiencies and Decreased Functionality of the Main Fire Station at Naval Station Great Lakes

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Acronyms and Abbreviations

HVAC	Heating, Ventilation, and Air Conditioning
IPT	Integrated Product Team
LEED	Leadership in Energy and Environmental Design
MILCON	Military Construction
NAVFAC	Naval Facilities Engineering Command
PPE	Personal Protective Equipment
PRV	Plant Replacement Value
PWD	Public Works Department
RFP	Request for Proposal
UFC	Unified Facilities Criteria

INSPECTOR GENERAL
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SEP 14 2012

MEMORANDUM FOR NAVAL INSPECTOR GENERAL
COMMANDER, NAVY REGION MIDWEST
COMMANDING OFFICER, NAVAL FACILITIES ENGINEERING COMMAND, MIDWEST
PUBLIC WORKS OFFICER, PUBLIC WORKS DEPARTMENT GREAT LAKES, NAVAL FACILITIES ENGINEERING COMMAND, MIDWEST
REGIONAL FIRE CHIEF, NAVY REGION MIDWEST

SUBJECT: Project Planning Resulted in Outstanding Building Deficiencies and Decreased Functionality of the Main Fire Station at Naval Station Great Lakes (Report No. DODIG-2012-132)

We are providing this report for your information and use. We performed the audit in response to allegations in a Defense Hotline complaint concerning the planning and execution of the fire station renovation project. We determined that although improvements to the main fire station at Naval Station Great Lakes were justified, the renovation did not mitigate all potential health and safety risks to fire station personnel, and emergency response times were worse because of the reduced functionality of the fire station. The Navy incorrectly estimated that a renovation project was the most economical method to address building deficiencies. However, building a new fire station would have saved approximately $6.16 million over the life of the project. We considered management comments on a draft of this report when preparing the final report.

Comments on the draft of this report conformed to the requirements of the DoD Directive 7650.3 and left no unresolved issues. Therefore, we do not require any additional comments.

We appreciate the courtesies extended to the staff. Please direct questions to me at (703) 604-8866 (DSN 664-8866).

Alice F. Carey
Assistant Inspector General
Readiness, Operations, and Support

Results in Brief: Project Planning Resulted in Outstanding Building Deficiencies and Decreased Functionality of the Main Fire Station at Naval Station Great Lakes

What We Did

We initiated this audit in response to allegations to the Defense Hotline. Our overall objective was to determine whether Project RM-005-07, "Repair Fire Station Building 106," at Naval Station Great Lakes was adequately justified and properly planned. We also addressed the Defense Hotline allegations and determined whether the fire station renovation design incorporated the appropriate criteria; whether replacing the fire station would have been more economical than the renovation project; and whether the Navy would incur additional costs for basic items not included in the renovation.

What We Found

Facility improvements to the main fire station at Naval Station Great Lakes were justified; however, after the renovation, fire station personnel were still subject to potential health and safety risks, and emergency response times were worse because of the reduced functionality of the fire station. In addition, we substantiated the complaint's Hotline allegations.

The Navy incorrectly estimated that a renovation project was the most economical method to address building deficiencies. Personnel from the Navy Facilities Engineering Command (NAVFAC) Midwest and Public Works Department, Naval Station Great Lakes, did not properly plan efforts to rebuild or renovate the fire station. Officials included inaccurate information on the DD Form 1391 to justify the renovation project, excluded several design requirements for fire stations, and performed ineffective reviews of planning documentation. Additionally, Great Lakes Public Works Department officials overstated the costs for building a new fire station. However, building a new fire station would have saved approximately $6.16 million over the life of the project. In addition, the renovation resulted in changes to the fire station layout, which caused firefighters' average emergency response time to increase by approximately 17 to 18 percent. NAVFAC Midwest officials initiated action to address deficiencies covered under the contractor's warranty for the repair project; however, building deficiencies remain.

What We Recommend

We recommend that the Regional Fire Chief, Navy Region Midwest, and the Public Works Officer, Public Works Department Great Lakes, identify existing building deficiencies and initiate appropriate actions to correct the deficiencies. We also recommend that Commander, Navy Region Midwest, and Commanding Officer, NAVFAC Midwest, review the actions of personnel involved in preparing and reviewing project documentation, determine who did not exercise due diligence in planning a project to correct existing fire station problems, and take appropriate administrative actions.

Management Comments and Our Response

We received comments from the Commanding Officer, NAVFAC Midwest, in coordination with the Commander, Navy Region Midwest. Although not required to comment, the Inspector General, Commander, Navy Installations Command, also provided comments to the report.

All comments were responsive to the recommendations. Therefore, no additional comments are required. Please see the recommendations table on the back of this page.

Recommendations Table

Management	Recommendations Requiring Comment	No Additional Comments Required
Commander, Navy Region Midwest		2.a, 2.b, 3.a, 3b
Commanding Officer, Naval Facilities Engineering Command, Midwest		3.a, 3.b
Regional Fire Chief, Navy Region Midwest		1
Public Works Officer, Public Works Department Great Lakes, Naval Facilities Engineering Command, Midwest		1

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Introduction

Objective

We initiated this audit in response to allegations in a Defense Hotline complaint concerning the planning and execution of the fire station renovation project.[1] Our overall objective was to determine whether Project RM-005-07, "Repair Fire Station Building 106" at Naval Station Great Lakes (renovation project), was adequately justified and properly planned. See Appendix A for a discussion of our scope and methodology.

Defense Hotline Allegations Related to the Renovation of the Fire Station

We received a Defense Hotline complaint related to the renovation of the Great Lakes Fire Station. The complainant made three main allegations.

1. The renovation project will result in a fire station that does not meet the fire department's needs because the contract design did not incorporate the Unified Facilities Criteria 4-730-10, "Fire Stations," June 15, 2006 (UFC for Fire Stations).

2. Replacing the fire station was more economical than renovating it because a new facility would cost the same as or less than a renovation.

3. The Navy will incur additional costs for basic infrastructure items that were not included in the contract.

Our audit substantiated the complainant's allegations. See the finding for a discussion of each allegation.

Mission of the Naval Station Great Lakes Fire Department

The main fire station, Building 106, at Naval Station Great Lakes was built in 1939. The Great Lakes Fire Department provides a broad range of mission-essential services, including fire protection and prevention, to Navy personnel and assets at Naval Station Great Lakes, as well as the surrounding Lake County communities through a mutual aid agreement. The Great Lakes Fire Department also serves as the first responders to hazardous material incidents and, in FY 2008, began providing emergency medical services.

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[1] We obtained documentation that refers to the project as a "repair" of the fire station. Throughout the report, we used the term "renovation" in place of "repair."

Required Documentation and Processes for Planning Facilities Projects, Including Renovations

Office of the Chief of Naval Operations Instruction 11010.20G, "Facilities Projects Instruction," October 14, 2005 (Navy Instruction 11010.20G), provides policy related to the planning requirements for the construction, maintenance, and repair of Navy facilities. Navy Instruction 11010.20G also requires all facility projects to be accomplished through the most economic means. To plan a facilities project, Navy Instruction 11010.20G requires the following documentation.

- A DD Form 1391 (Form 1391)[2] should describe the project requirements for all special projects estimated to cost more than $500,000. The project justification must clearly describe the impact to mission, life-cycle economics, health and safety, environmental compliance, and quality of life if the project is not funded.

- Supporting documentation for the Form 1391 should fully communicate the location, scope, complexity, cost, and urgency of the project. Supporting documentation commonly includes a detailed cost estimate and environmental evaluations.

- An economic analysis should support the Form 1391 by identifying and comparing alternatives for achieving project objectives; and a verifiable cost estimate that correlates to the project description and scope.

The installation Public Works Department (PWD) generally prepares the Form 1391, which goes through several levels of review, including the Regional Engineer, Naval Facilities Engineering Command (NAVFAC) Midwest, and the Commander, Navy Region Midwest. Navy Instruction 11010.20G states that the Regional Commander is responsible for the validity and accuracy of facilities projects.[3] Navy Instruction 11010.20G also requires the Regional Commander to validate any projects that are estimated to cost more than $500,000 and have an estimated cost that exceeds 50 percent of the plant replacement value (PRV).

Once the Form 1391 for the fire station renovation was approved, the NAVFAC Midwest PWD and Integrated Product Team (IPT) were responsible for planning the project, to include development of specific project requirements and the request for proposal (RFP). Figure 1 (on page 3) shows the organizational structure of Navy Region Midwest.

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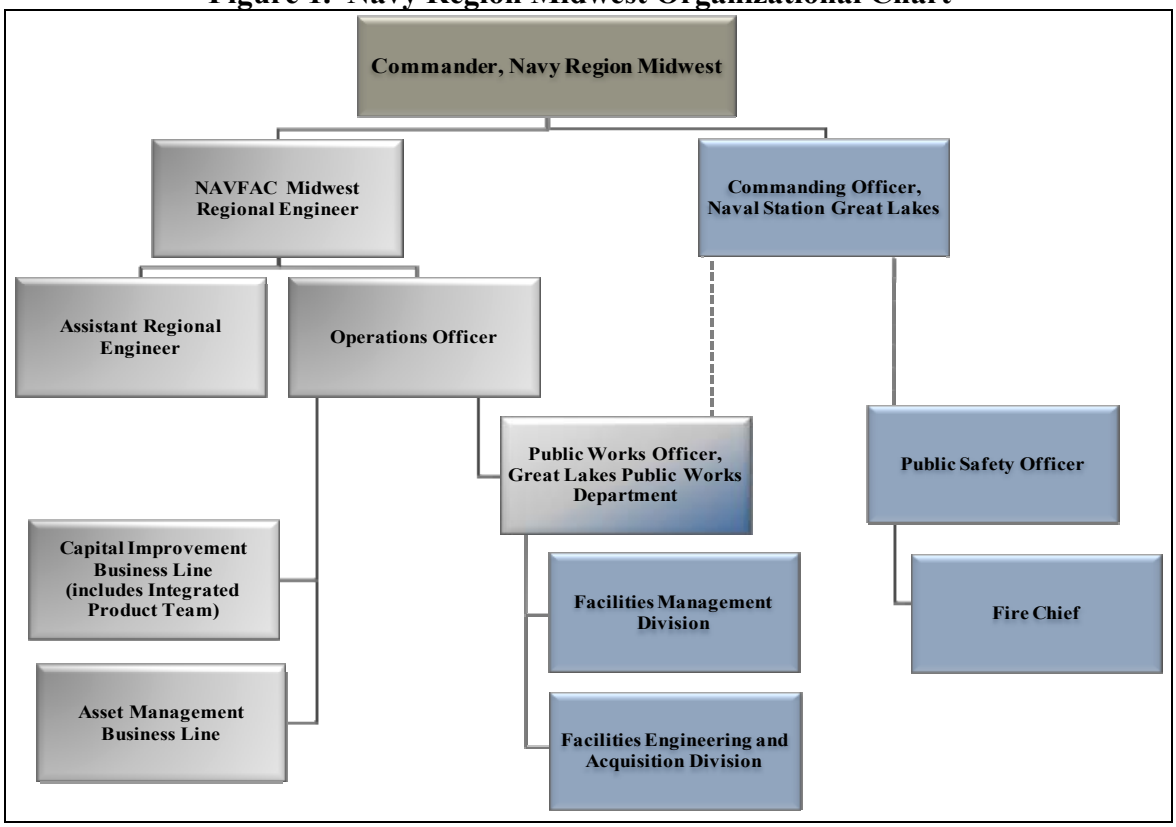
[2] The title of the Form 1391 changes based on the current fiscal year and the type of funding an activity requests. For operations and maintenance funds, the title of the Form 1391 is "FYXX Special Projects Program," and for military construction funds, the title is "FYXX Military Construction Program." In this report, we discuss operations and maintenance and military construction funding requests over multiple fiscal years; therefore, we refer to this document as the Form 1391 throughout this report.

[3] Navy Instruction 11010.20G allows the Regional Commander to delegate his responsibilities to the Regional Engineer. We did not identify a delegation of responsibilities for the renovation project.

Figure 1. Navy Region Midwest Organizational Chart



Source: DoD OIG Audit Team

History of the Fire Station Renovation

PWD officials tried several times to obtain funding to address deficiencies in the fire station. In 2005 and 2006, PWD officials prepared Forms 1391 requesting military construction (MILCON) funds to construct a new fire station because of deficiencies affecting fire station functionality, as well as firefighter safety and quality of life. However, the Navy did not select these projects for funding.

Since efforts to build a new fire station were unsuccessful, PWD officials prepared a Form 1391 for a renovation project in 2007 but did not obtain funds for the renovation project at that time. In April 2008, the Public Works Officer prepared a Form 1391 for the renovation project, estimating that the project would cost approximately $7.41 million. In October 2008, the Commander, Naval Installations Command, informed NAVFAC Midwest that the Navy selected the project for funding. In November 2008, PWD and IPT officials began preparing the RFP and finalizing the Form 1391. In January 2009, the Commander, Naval Installations Command, and the Deputy Assistant Secretary of the Navy for Installations and Facilities, approved the final Form 1391, dated December 31, 2008, and sent the Form 1391 to Congress.[4] The final

[4] Title 10 U.S.C. 2811 requires all repair projects estimated to exceed $7.5 million to be sent to Congress for notification. Congressional notification is a period of 21 calendar days in which Congress has the opportunity to comment on the project.

Form 1391, which had an estimated project cost of $7.80 million, stated that the scope of the renovation project included bringing the facility into compliance with required building codes and facilitating the relocation of the fire station emergency medical technicians[5] to the main fire station. The scope of the project also included replacing the roofing, insulation, doors, fire sprinklers, emergency lighting, and fire alarms. In addition, the scope included repairing water and wastewater piping and mechanical systems to meet appropriate standards. In April 2009, the IPT prepared the final RFP and awarded the contract on September 30, 2009, for approximately $5.48 million.

Review of Internal Controls

DoD Instruction 5010.40, "Managers' Internal Control Program (MICP) Procedures," July 29, 2010, requires DoD organizations to implement a comprehensive system of internal controls that provides reasonable assurance programs are operating as intended and to evaluate the effectiveness of the controls. Although the Navy had internal controls over the planning process to ensure the project was properly planned, responsible personnel did not effectively implement these controls. Navy Instruction 11010.20G outlines the planning process; however, NAVFAC Midwest and Great Lakes PWD officials did not follow this policy when planning efforts to renovate the fire station. For example, officials did not consider all required design criteria when planning the renovation project.

Further, NAVFAC Midwest and Naval Station Great Lakes did not have controls for ensuring responsible officials performed effective reviews of project justification and supporting documentation, which were inaccurate. Navy Instruction 11010.20G requires documentation reviews before submitting projects for higher-level review and approval, and NAVFAC has a checklist to assist analysts and reviewers in determining whether economic analyses are correct, complete, and well-documented. However, NAVFAC Midwest and Naval Station Great Lakes did not complete effective reviews using the NAVFAC checklist when reviewing the renovation project documentation; therefore, inaccurate information went forward for congressional review.

We discuss these deficiencies in the finding. We will provide a copy of the report to the senior official responsible for internal controls at the NAVFAC Midwest and Naval Station Great Lakes.

[5] Throughout the report, our reference to "firefighters" includes emergency medical technicians.

Finding. Project Planning Resulted in Outstanding Building Deficiencies and Decreased Functionality of the Main Fire Station at Naval Station Great Lakes

Facility improvements to the main fire station at Naval Station Great Lakes were justified; however, the renovation project did not mitigate all potential health and safety risks to fire station personnel. This occurred because NAVFAC Midwest and Great Lakes PWD officials did not properly plan efforts to rebuild or renovate the fire station. For example, officials did not:

- provide accurate information on the Form 1391 and supporting documents to justify funding for the renovation project;
- include design requirements for fire stations, such as multiple unified facilities criteria (UFCs) and NAVFAC requirements; and
- perform effective reviews of planning documentation to identify errors and inaccurate data on the Form 1391 and supporting documentation.

As a result, we determined that, over a 32-year period,[6] building a new fire station would have cost approximately $6.16 million less than renovating the existing 70-year old[7] structure. The Navy will need to invest additional funds to make the fire station compliant with the required design criteria, address remaining maintenance problems, and improve fire station functionality. For example, because NAVFAC Midwest officials did not include proper storage requirements for personal protective equipment (PPE) during project planning, the equipment was exposed to direct sunlight, which will cause it to deteriorate faster and may increase risk of injury to firefighters. In addition, the renovation resulted in changes to the fire station layout, causing firefighters' average emergency response time[8] to increase by approximately 17 to 18 percent.

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[6] NAVFAC P-442, "Economic Analysis Handbook," October 1993, establishes economic lives for permanent buildings like a fire station, and states that the economic life for these structures should not exceed 25 years. However, the Planner, PWD, used a 32-year economic life for the economic analysis.
[7] The fire station was 70 years old when the renovation project began in 2009.
[8] Emergency response time includes time for dispatch, turnout, and travel time. Turnout time is the amount of time starting when units are notified of the emergency to the beginning point of travel time. Because there are many variables that can affect the total average response time, we used turnout time as emergency response time for the purposes of this report.

Fire Station Needed Improvements to Meet Fire Station Mission Requirements

Facility improvements to the main fire station at Naval Station Great Lakes were justified. In 2008, the Navy Bureau of Medicine transferred the responsibility for emergency medical services to the Commander, Navy Installations Command, expanding the mission of the Naval Station Great Lakes Fire Department and requiring additional living quarters and office spaces in the main fire station. The fire station was not gender-compliant, as required by the Equal Employment Opportunity Act of 1972, and according to fire station maintenance logs, had significant deficiencies with the roof and exterior walls and recurring problems with the heating, ventilation, and air conditioning (HVAC), plumbing, and electrical systems. The maintenance logs also indicated that asbestos was present in the building. Therefore, the main fire station needed improvements.

Renovation Did Not Mitigate All Potential Health and Safety Risks

The renovation project did not mitigate all potential health and safety risks. One of the three Defense Hotline allegations related to whether the fire station was compliant with the UFC for Fire Stations after the renovation. The complainant alleged that the fire station renovation did not bring the facility into compliance with the UFC for Fire Stations. We substantiated this allegation and identified additional design criteria, which officials did not consider when planning the renovation project.

We substantiated this allegation…

On May 29, 2002, the Under Secretary of Defense for Acquisition, Technology, and Logistics, issued a memorandum stating that the Department of Defense MIL-STD-3007F, "Standard Practice for Unified Facilities Criteria (UFC) and Unified Facilities Guide Specifications," April 1, 2002,[9] sets forth guidance for developing and maintaining unified facilities design and construction criteria. The memorandum also states that officials are required to use the UFC to plan, design, construct, sustain, restore, and modernize facilities. The UFC for Fire Stations states that it is crucial for the fire station design to accommodate the equipment, functional requirements, and safety of firefighters. The UFC for Fire Stations also states that planning personnel must use the standards outlined in the UFC when assessing the extent of improvements needed to existing fire stations. The UFC for Fire Stations requires planners to use the standards outlined in it to plan all renovation projects, regardless of budgetary constraints. Therefore, officials must plan renovation projects in accordance

[9] The Defense MIL-STD-3007F was updated in February 2006 and again in December 2006. However, the memorandum for the Under Secretary of Defense for Acquisition, Technology, and Logistics, mentioned the 2002 version of the policy.

with the UFC for Fire Stations. However, the Navy's failure to comply with the UFC for Fire Stations exacerbated health and safety risks to the firefighters related to storage for PPE, laundry facilities, wash and disinfection rooms, alert systems, and dorm rooms.

PPE Storage Was Inadequate

The storage area for PPE in the fire station did not comply with the manufacturer's requirements for storage and maintenance of equipment or the UFC for Fire Stations, which increased the firefighters' risk of injury. PPE, which includes protective garments worn by firefighters, was designed to protect individuals against health and safety hazards. According to the Fire and Emergency Manufacturers and Services Association, Inc., exposure to direct sunlight will cause the materials in the protective ensemble to deteriorate, and proper storage of the PPE can extend its life, maintain its performance, and reduce potential health hazards. The manufacturer for the PPE worn by Great Lakes firefighters stated that improper storage may result in damaged PPE and could increase the risk of death, burns, injuries, diseases, and illnesses. The UFC for Fire Stations requires PPE to be stored in a negatively pressurized[10] room with a dedicated exhaust vented to the outside to ensure emissions from the equipment are vented directly outside, instead of into the fire station. Before the renovation project, firefighters stored PPE in enclosed lockers located inside the physical training room. While the training room was not a negatively pressurized room, the PPE was not exposed to sunlight when stored. However, after the renovation project, the storage area for firefighters' PPE was relocated to open areas in the apparatus bay, where the PPE was directly exposed to sunlight, as shown in Figure 2. Therefore, to meet the UFC for Fire Stations and the manufacturer's guidelines for proper care, and prevent increased risks to the health and safety of the firefighters, the PPE should be in a negatively pressurized room with a dedicated exhaust system vented outside.

Figure 2. PPE in Stored in Open Bay and Exposed to Direct Sunlight After the Renovation

Source: DoD OIG Audit Team.

[10] Negative pressure refers to a ventilation system designed so air flows into an isolation room, but contaminated air from the isolation room does not pass to other parts of the facility.

Washers and Dryers Should Be in a Protective Clothing Laundry Room

The poor location of the fire station equipment used to wash and disinfect the firefighter protective clothing and gear increased the firefighters' risk of exposure to gaseous emissions and hearing loss. The UFC for Fire Stations documents specific requirements related to the equipment used to wash and disinfect firefighters' protective clothing and gear. The fire station renovation design did not meet these requirements. For example, the UFC for Fire Stations requires a room that is accessible from the apparatus bay for large commercial-grade washers and dryers to wash and disinfect firefighters' PPE. The UFC for Fire Stations also requires this room to have negative-pressure ventilation with direct vents to the outside for each dryer. Before the renovation, the PPE washer was located in a room adjacent to the apparatus bay, which did not have negative-pressure ventilation, and the dryer was located in the apparatus bay. After the renovation project, the washer remained in its original location and the dryer remained in the apparatus bay, which was not compliant with the UFC for Fire Stations. Additionally, fire station personnel passed by the dryer in the apparatus bay, and were exposed to loud noise when the dryer was in use. This created potential health risks for fire station personnel and increased the potential exposure to gaseous emissions. Fire station personnel often wore ear protection when the dryer was operating to minimize the potential for hearing loss; however, this affected their ability to hear each other and the alert system during an emergency. Therefore, to mitigate the risk of hearing loss and ensure effective communication during emergencies, the washers and dryers should be in a laundry room that meets the requirements of the UFC for Fire Stations.

Fire station personnel often wore ear protection when the dryer was operating to minimize the potential for hearing loss; however, this affected their ability to hear each other and the alert system during an emergency.

Lack of a Wash and Disinfection Room Created Potential Health Risks

The fire station did not have an adequate wash and disinfection room where firefighters could safely clean equipment without being exposed to potentially hazardous materials. The UFC for Fire Stations requires fire stations to have a negatively pressurized wash and disinfection room adjacent to the maintenance area with a dedicated wash-off area where firefighters can wash, desalinate, and dry incoming equipment. In addition, the wash and disinfection room must have at least a three-compartment stainless steel sink and a stainless steel work table. Before the renovation, the fire station had a wash and disinfection room located adjacent to the apparatus bay. After the renovation, the fire station did not have a dedicated room to safely clean equipment. Instead, the fire station had a wash and disinfection area with a single-compartment sink in the apparatus bay, which was an open area. Fire station officials stated that they use this sink to wash and disinfect equipment, as well as wash mops and brooms that they use to clean the fire station. Figure 3 (on page 9) shows the wash and disinfection area in an open bay with mops and brooms that firefighters used to clean the fire station.

Figure 3. Wash and Disinfection Area Located in an Open Bay

Source: DoD OIG Audit Team.

The wash and disinfection room did not meet the requirements of the UFC for Fire Stations and increased firefighters' exposure to potentially harmful chemicals. The fire station should have a wash and disinfection room that meets the requirements of the UFC for Fire Stations to mitigate health and safety risks for firefighters.

Firefighter Alert System Was Outdated

The alert system at the fire station was outdated, and according to firefighters, the outdated system contributed to delays in firefighter response to emergency calls. The UFC for Fire Stations requires an alert system that provides simultaneous light and audible control for the dorm rooms, corridors, and apparatus bay. In addition, the dorm rooms must have a dedicated alert light fixture with a red-tinted bulb or lens that is controllable from dispatch and tied into the alert system.

Firefighters stated that the lights did not always operate as needed, especially during late hours of the night when firefighters responded to emergencies. They explained that failure or lag of automatic lighting activation and automatic lighting that makes a dark space immediately bright often resulted in loss of night vision. Firefighters stated that inadequate lighting often causes them to stumble over gear and risk injuries while trying to respond as quickly as possible. In addition, firefighters explained that the alert sounded before lights turn on, which increased their stress before responding to emergency calls. An updated alert system that includes adequate lights and audible alerts would improve firefighter response to emergency calls.

Firefighter Dorm Rooms Did Not Meet UFC Requirements

The firefighters' dorm rooms did not meet UFC for Fire Stations specifications, which require a comfortable and relaxing environment so firefighters can be well rested before responding to emergencies. Firefighters use the dorm rooms for sleeping during 24-hour shifts, and the UFC for Fire Stations has specific design requirements for these rooms. For example, UFC for Fire Stations requires acoustical privacy between rooms and individual thermostats to control the dorm room temperatures. However, the renovation did not improve the acoustics in the dorm rooms and firefighters stated that they could not properly rest because of the noise from adjacent rooms. In addition, firefighters stated that they were unable to rest properly because of unregulated temperatures in the dorm rooms. For example, firefighters stated that during the winter, temperatures inside the dorm rooms reached 55 degrees Fahrenheit and, during the summer, temperatures reached 112 degrees Fahrenheit, as shown in Figure 4. Before the renovation, a radiator regulated the temperature in the fire station. After the renovation, the dorm rooms had a centralized thermostat control, but problems with the heating and air conditioning made the rooms extremely uncomfortable and almost uninhabitable. When firefighters respond to emergency calls, their ability to perform their work is directly tied to how rested they are. Living conditions in the fire station did not provide a comfortable and relaxing environment, which may affect the performance of the firefighters when responding to emergencies. According to the Naval Station Great Lakes Fire Chief, NAVFAC Midwest and the contractor repaired the condenser, condenser fan, and computer board for the HVAC system. Additionally, NAVFAC Midwest officials and the contractor verified temperature readings in September 2011. However, according to the Naval Station Great Lakes Deputy Fire Chief, as of April 2, 2012, neither the contractor nor NAVFAC Midwest corrected the HVAC issues. The Deputy Fire Chief stated that firefighters continue to experience problems with the temperatures throughout the fire station. On April 11, 2012, NAVFAC Midwest officials stated that they would work with the Great Lakes Fire Department to address the temperature issues in the dorm rooms.

> *Firefighters stated that during the winter, temperatures inside the dorm rooms reached 55 degrees Fahrenheit and, during the summer, temperatures reached 112 degrees Fahrenheit...*

Figure 4. Temperature Inside a Dorm Room Exceeded 100 Degrees Fahrenheit

Source: Naval Station Great Lakes Fire Department.

Additional Design Requirements Were Not Included in the Renovation Project

In addition to the UFC for Fire Stations, NAVFAC Midwest officials did not include other applicable UFCs and policies during project planning. When planning a project and identifying all applicable design criteria, officials must consider the ratio of the PRV for the building to the overall project cost. If the total cost of a major renovation project exceeds 50 percent of the PRV, officials must plan the project in compliance with additional design requirements. However, the design of the renovation project did not meet the following required design criteria:

- ~~(FOUO)~~ [redacted]
- NAVFAC Capital Improvements Engineering and Construction Bulletin, Issue Number 2008-01, "Energy Policy Act of 2005 Implementation and United States Green Building Council Leadership in Energy and Environmental Design (LEED)," December 13, 2007.

(~~FOUO~~) Based on the Form 1391 for the renovation project, the PRV was $9.75 million, and the estimated cost of renovating the fire station was $7.78 million. Because the total cost of the project was 79.8 percent of the PRV, during project planning, NAVFAC Midwest officials should have also considered [redacted] and the requirements to achieve a LEED Silver certification. However, officials did not consider these requirements when planning the renovation project. These requirements were necessary to improve the efficiency of the building. For example, according to the U.S. Green Building Council, LEED certified buildings cost less to operate and maintain, are energy and water efficient, and are healthier and safer for occupants. Had NAVFAC Midwest officials planned the renovation project to achieve a LEED Silver certification, the fire station would have been more efficient and less costly to operate and maintain.

Firefighters Claimed the Renovation Made Fire Station Conditions Worse

Firefighters responding to a voluntary DoD Office of Inspector General (OIG) survey claimed that their safety and quality of life, as well as the functionality of the fire station, decreased after the renovation project. We distributed a survey to 56 firefighters and the 21 firefighters that responded identified several concerns with the fire station renovation. Refer to Appendix C for the survey questions and consolidated responses.

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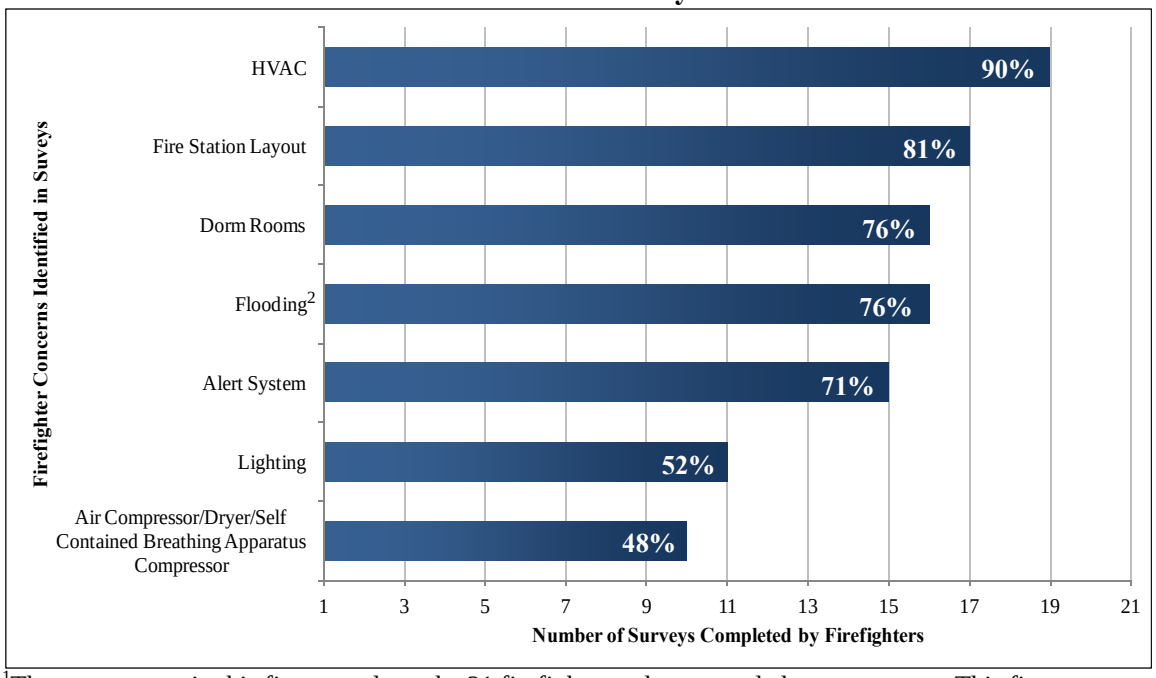
[11] NAVFAC Capital Improvements Engineering and Construction Bulletin, Issue Number 2008-01, requires all major renovation project with an estimate project cost that exceeds 50 percent of the PRV to meet the requirements of Public Law 109-58, "Energy Policy Act of 2005," August 8, 2005. After completing the renovation project, the fire station should have been, at a minimum, certified at a LEED Silver level.

The DoD OIG survey asked firefighters to rank their safety, ability to respond to emergencies, the functionality of the fire station, and their quality of life after the renovation. Firefighters responded on a scale of one to five, one indicating conditions were worse after the renovation; three indicating the renovation had no impact; and five indicating the renovation provided better conditions. We averaged the responses for each of these questions, and the highest average was 1.67. This strongly indicates that the firefighters felt each of these conditions worsened after the renovation. Firefighters provided additional details about concerns or conditions in the fire station after the renovation. The firefighters identified several concerns, including problems with the HVAC system, fire station layout, dorm rooms, flooding, firefighter alert system, lighting, and dryer. Figure 5 identifies the top seven concerns identified in the surveys and the percentage of surveys that identified the issue.

Figure 5. Top Concerns That21 Firefighters Identified in the DoD OIG Survey[1]



[1]The percentages in this figure apply to the 21 firefighters who responded to our survey. This figure reflects the number of surveys that identified each concern.
[2] Firefighters identified flooding as a top concern on the surveys. However, NAVFAC Midwest officials explained that this problem was not specific to the fire station; rather it was an installation infrastructure problem. See report page 22 for additional discussion and planned corrective actions.

The biggest concern, identified in almost all of the surveys we received, related to the HVAC system. Firefighters explained that the HVAC system was poor because of improper ventilation, improper climate control, or no air circulation. In addition, the survey responses identified heat control problems in the dorm rooms. Firefighters stated that rooms were so cold, some below 55 degrees Fahrenheit during the winter, that people were displaced from their rooms.

Project Planning Documentation Was Incomplete and Inaccurate

PWD and IPT officials included inaccurate information and did not include all applicable building requirements in project planning documentation. During project planning in 2005 and 2006, PWD officials did not adequately emphasize the mission impact if the construction project for a new fire station was not funded. After several requests for MILCON funding, PWD officials prepared documentation to request operations and maintenance funds to renovate the existing fire station, but officials justified the project with inaccurate information. Improved planning could have ensured that officials considered all required UFCs and design criteria.

Mission Impact for New Construction Needed Additional Details

In 2005 and 2006, NAVFAC Midwest officials submitted Forms 1391 to construct a new fire station. However, the Forms 1391 did not sufficiently detail the impact to fire station mission and quality of life for fire station personnel if the Navy did not fund the project. As stated previously, Navy Instruction 11010.20G requires the project justification to describe clearly the impact to mission, health and safety, or quality of life, among other things, if the project is not funded. The Commander, Naval Installations Command, Navy Region Midwest, and NAVFAC Midwest officials stated that, when determining whether to recommend a project for funding, they focused on the "Impact If Not Provided" section of the Forms 1391. The Forms 1391 requesting MILCON funds stated that the fire station would continue to decline without repairs, renovation, and sustainment efforts, and that emergency response times "will not be improved" without relocating the fire station and construction of a new fire station.

The Planner, PWD, stated that, he did not put much emphasis when writing the "Impact If Not Provided" section because he believed if the project did not "float" or "fly," then they would probably not get MILCON funding. Additionally, officials from the office of the Commander, Naval Installations Command, stated that fire stations do not compete well with other mission requirements. Officials may have increased the likelihood of receiving funds to build a new fire station by including more detailed and clear information in the Form 1391 to adequately describe the impact to health, safety, and quality of life and the impact to the mission. The Commander, Navy Region Midwest, should issue guidance to ensure planners include sufficient detail to fully describe mission impact and the impact to quality of life, safety, and health for future projects.

Project Justification for the Renovation Project Included Inaccurate Information

The Form 1391 to renovate the existing fire station included inaccuracies that may have misled officials in their decision to fund the renovation project. Navy Instruction 11010.20G assigns to the Regional Commander responsibility for the validity and accuracy of the Forms 1391 for special projects. PWD and IPT personnel were also inherently responsible for accuracy because they were involved in preparing the Form 1391 and planning the fire station renovation project. The Form 1391 had two notable inaccuracies: one related to historic building designation and another that showed that renovation was more economical than new construction.

Historic Building Designation Was Not Accurate

The Form 1391, dated December 2008, incorrectly stated that the fire station was a listed historic facility. Navy Instruction 11010.20G requires commanding officers of all Navy shore installations, during a project's earliest planning stages, to determine whether the project will have any effect on historic properties. NAVFAC Midwest officials coordinated with the State Historic Preservation Office, and in April 2008, NAVFAC Midwest received notification that the fire station was not an historic property. Other sources, such as the Illinois Historic Preservation Agency, the National Register of Historic Places Inventory for Naval Station Great Lakes, and the Internet Navy Facilities Assets Data Store[12] confirmed that the fire station was not an historic facility, and according to the National Register of Historic Places, the fire station was not located within an historic district.

The Planner, PWD, stated that he assumed all buildings greater than 50 years old were historic. The Planner, PWD, prepared the Forms 1391 requesting MILCON funds in 2005 to 2006 but did not address the historical status of the fire station in the justification section, although the building was more than 50 years old at that time. The Planner, PWD, did not provide any reasons why he classified the fire station as historic, or why NAVFAC Midwest officials did not update the December 2008 Form 1391 after notification from the State Historic Preservation Office. The Planner, PWD, included the inaccurate historic designation as a justification to fund the renovation project on the approved Form 1391 that Congress received.

[12] The Internet Facilities Assets Data Store stores Department of the Navy property records.

New Construction Would Have Been More Economical Than Renovation

The economic analysis that supported the Form 1391 inaccurately stated that renovating the existing fire station would be more economical than constructing a new fire station. The Defense Hotline complaint alleged that replacing the fire station was more economical than renovating it because a new facility would cost the same as or less than a renovation. We substantiated this allegation. Navy Instruction 11010.20G requires all repair projects estimated to cost more than $2.00 million to have a net present value life-cycle economic analysis and refers to NAVFAC P-442, "Economic Analysis Handbook," October 1993,[13] for policy and procedures on preparing economic analyses.

The Planner, PWD, prepared a life-cycle economic analysis to support the Form 1391, estimating that the cost of new construction, over a 32-year project life, would be approximately $28.23 million. We identified that the Planner, PWD, overstated estimates for the initial construction costs and the annual costs for maintenance, repair, and utilities. After adjusting for these errors, we calculated that the cost of new construction would be approximately $18.57 million,[14] which was $9.66 million less than the amount on the Form 1391. The Planner, PWD, acknowledged that the economic analysis he prepared was not accurate, but provided no reasons for the inaccuracies. Table 1 compares the PWD and DoD OIG calculations of renovation and new construction costs.

Table 1. PWD and DoD OIG Calculations of Costs for Renovation and New Construction (Shown in Net Present Value)

Estimate	PWD Calculated Cost (in millions)	DoD OIG Calculated Cost (in millions)
Renovation Cost	$24.74	$24.74
New Construction Cost	28.23	18.57
Cost of New Construction Compared to Renovation	($3.49)	$ 6.16

Note: Because of rounding, columns may not calculate properly.

According to the estimates calculated by the Planner, PWD, a renovation project would cost approximately $3.49 million less over a 32-year period than constructing a new fire station. However, our analysis showed that the Navy could have saved approximately $6.16 million over the 32-year life of the project by building a new fire station rather than renovating the existing facility.

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[13] NAVFAC Midwest officials stated they used NAVFAC P-442, "Economic Analysis Handbook," November 9, 2009, during the planning of the renovation project. However, this version of the NAVFAC P-442 is unsigned. Additionally, this version was dated after the renovation project was planned, and the contract was awarded. Therefore, we did not consider this version for the purposes of this audit.

[14] While we acknowledge that NAVFAC Midwest used incorrect economic life, we also used a 30-year economic life, so we could compare our calculations with those from NAVFAC Midwest.

Because of these inaccuracies, the Form 1391 supported the option to renovate the fire station when new construction would have been the more economical option. Despite these errors, the Navy submitted the Form 1391 for approval, which may have misled officials in their decision to fund the renovation project.

Inconsistent Explanations for Excluding Applicable Design Criteria

~~(FOUO)~~ PWD and IPT officials provided inconsistent explanations to justify, without a waiver or exception, exclusion of applicable design criteria during the planning and design for the fire station renovation project. Specifically, the Planner, PWD, who prepared the original Form 1391 for the renovation project, and the IPT Design Manager provided several inconsistent explanations to justify exclusion of the UFC for Fire Stations, [redacted] and the requirements to achieve a LEED certification. The Planner, PWD, gave the following explanations for excluding the UFC for Fire Stations.

- He was not aware of the UFC for Fire Stations; however, he included it in the 2006 Form 1391 for a new fire station.

- Navy guidance "probably" only required the UFC for Fire Stations for new construction; however, the policy applies to renovations and new construction.

- He did not believe the Navy would approve a renovation project that included the UFC for Fire Stations because the Navy rejected a construction project to build a new fire station that would have complied with the UFC.

~~(FOUO)~~ The IPT Design Manager provided the following explanations for excluding the UFC for Fire Stations, [redacted] and the requirements to achieve a LEED certification.

- Budgetary constraints prevented the IPT from complying with the UFC for Fire Stations. While the UFC for Fire Stations provides leniency for budgetary constraints, neither PWD nor IPT officials could provide detailed budgetary constraints that would prevent them from fully implementing the UFC for Fire Stations.

- ~~(FOUO)~~ The UFCs for Fire Stations and [redacted] only applied to renovation projects if the estimated costs exceed 50 percent of the PRV. As we previously stated, the renovation cost exceeded 50 percent of the PRV for this project.

- The IPT design team decided the UFC for Fire Stations was not applicable because it was a renovation, not a new construction project. Contrary to this determination, the UFC for Fire Stations states that renovation projects should update existing facilities to meet the guidance and criteria outlined in the UFC.

- ~~(FOUO)~~ IPT did not have a cost engineer assigned to the renovation project; therefore, the IPT Design Manager stated that he did not know if the project cost was to exceed the 50 percent of the PRV, so he did not consider [redacted] the requirements for LEED certification.

The Deputy Public Works Officer, PWD, approved the Form 1391 for the renovation project in January 2009. However, in November 2011, he stated that he was not aware of the UFC for Fire Stations when he approved the Form 1391.

Review of Planning Documentation Was Ineffective

Officials who reviewed the Form 1391, the supporting documentation, and the RFP for the renovation project should have detected mistakes, such as inaccurate cost figures in the economic analysis. Navy Instruction 11010.20G requires the Regional Commander to ensure the adequacy of the economic analysis before submitting projects for higher-level review and approval. While Navy Instruction 11010.20G does not designate review or approval responsibilities below the Regional Commander level, PWD and IPT personnel have an inherent responsibility to complete accurate and valid project planning documentation. Officials reviewing the project planning documentation should identify and question any inconsistencies, and receive clarification on any questions before approving and forwarding the documentation. However, officials who reviewed planning documentation for the fire station renovation project did not identify these inaccuracies. As a result, the data provided to decisionmakers, including Congress, were inaccurate. We identified several costs from the life-cycle cost table that did not match the sources and derivations section of the life-cycle cost report in the economic analysis for the renovation project. For example, the life-cycle cost table showed $7.409 million to renovate the existing fire station, but the sources and derivations section of the life-cycle report listed the renovation cost as $7.474 million. Officials who reviewed the Form 1391 and its attachments should have easily detected and questioned these errors. Table 2 (on page 18) provides additional examples of costs listed in the economic analysis that conflicted.

Officials who reviewed planning documentation for the fire station renovation project did not identify these inaccuracies. As a result, the data provided to decisionmakers, including Congress, were inaccurate.

Table 2. Examples of Conflicting Costs in the Economic Analysis

Expense Item	Life-Cycle Cost Table	Sources and Derivations Section of the Life-Cycle Cost Report
Option to Renovate the Fire Station		
Renovation Cost*	$ 7,409,000	$ 7,474,000
Annual Sustainment, Repair, and Maintenance (2009-2010)	50,000	331,800
Annual Sustainment, Repair, and Maintenance (2028-2041)	First Two Years: 618,000 Remaining Years: 839,000	300,200
Option to Construct a New Fire Station		
Initial Construction Cost, Not Including Demolition	$ 12,454,000	$ 13,204,000
Annual Utilities Cost	First Two Years: 220,000 Remaining Years: 279,000	0
Demolition	400,000	540,000

* Neither of the renovation costs in the economic analysis matches the Form 1391 renovation costs, which was $7.78 million.

In addition to the conflicting costs in the economic analysis, officials did not identify the inaccurate historical designation of the building when reviewing the Form 1391. According to Navy Instruction 11010.20G, the Deputy Public Works Officer, Naval Station Great Lakes was responsible for determining whether the PWD and IPT should have followed historic requirements for the fire station renovation. The Deputy Public Works Officer stated that his normal review process included ensuring documentation supported the statements on the Form 1391 statements. However, he signed the Form 1391 without providing comments, assuming the fire station was an historic property.

Use of the Economic Analysis Checklist Will Improve Reviews of Planning Documentation

Several PWD personnel involved in preparing and reviewing the Form 1391 and its attachments, like the economic analysis, stated that they were unaware of any standard procedures or checklists for reviewing the Form 1391 and its attachments. NAVFAC P-442, which applies to all Navy Commands and field offices that prepare economic analysis, includes an economic analysis checklist developed for analysts and reviewers to aid in determining whether economic analyses are correct, complete, and well-documented. Had officials used this checklist when reviewing the fire station planning documentation, they would have identified several errors. For example, one checklist item is to review the economic life of the options presented and determine whether they are reasonable and supported by guidance. For the fire station renovation project, the Planner, PWD, used a 32-year economic life for the economic analysis. However, NAVFAC P-442 establishes economic lives for DoD buildings, such as a fire station, and states that the economic life for these structures should not exceed 25 years. In addition, the checklist identifies that no renovation project should exceed 70 percent of

new construction costs. The costs on the economic analysis for renovating the fire station were 87 percent of the costs of new construction. Therefore, PWD could have used the checklist to aid in reviewing the Form 1391 and supporting documentation and identifying inaccuracies.

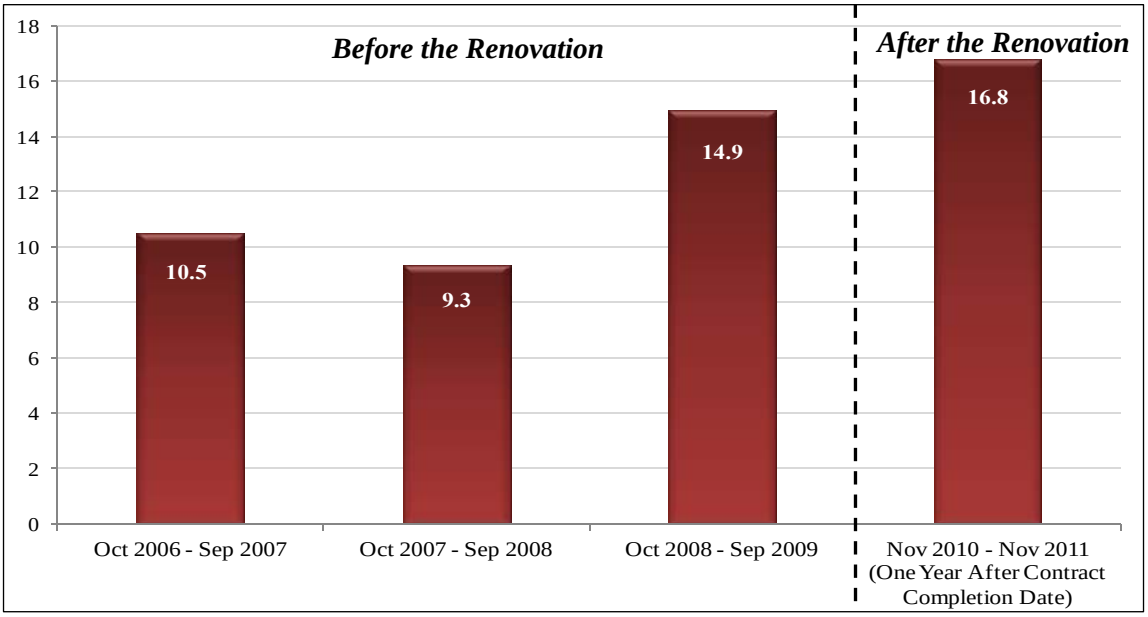
Because of ineffective documentation reviews, NAVFAC Midwest officials inaccurately presented the fire station renovation in the Form 1391 as the most cost-effective option to meet fire station needs with the added benefit of preserving a listed historic facility. The information provided to decisionmakers was misleading. As a result, the Navy will have to invest additional funds for additional renovations to the fire station. To improve reviews and ensure accuracy of the information in project planning documentation, the Commander, Navy Region Midwest, should issue guidance that requires officials reviewing project documentation to use the checklist included in NAVFAC P-442. Navy Region Midwest and NAVFAC Midwest leadership should also review the actions of personnel involved in preparing and reviewing the Forms 1391 and the RFP to determine whether errors and omissions during project planning warrant administrative actions.

Navy Must Invest Additional Funds to Mitigate Deficiencies That Remain After the Fire Station Renovation

The Navy will need to invest additional funds to correct deficiencies that remain after the fire station renovation. The Defense Hotline complaint alleged that the Navy will incur additional costs for basic infrastructure items that were not included in the contract. We substantiated this allegation. The Naval Station Great Lakes Fire Department submitted maintenance requests for repairing and installing basic infrastructure items, such as light switches, power outlets, doors, plumbing, and HVAC units after completion of the renovation.

We evaluated the average number of monthly maintenance requests before and after the renovation and determined that the average number of monthly maintenance requests increased after the contractor completed the renovation. Post-renovation maintenance logs identified repetitive problems occurring throughout the fire station, including problems with pest control, electricity, plumbing, and HVAC, as well as water leaking from the roof of the fire station. Figure 6 (on page 20) displays the average monthly number of the maintenance requests before and after the renovation.

Figure 6. Average Number of Monthly Maintenance Requests* for the Fire Station



* We did not calculate the average monthly maintenance requests for the period during contract execution (from September 2009 through November 2010). We also excluded from our analysis maintenance requests for recurring work, such as monthly or annual inspections.

As shown in Figure 6, the average number of monthly maintenance requests recorded after the renovation was higher than the average number of monthly maintenance requests for any of the 3 years before the renovation. Additionally, the average number of monthly maintenance requests for the 1 year after the renovation increased 13 percent, when compared to the year before the contract start date. Consequently, even after spending $5.48 million on the renovation project, the Navy had to invest additional funds to address increased maintenance requests.

Decreased Functionality After the Renovation Delayed Firefighter Response Times

The fire station renovation resulted in a less-functional fire station, which directly affected the firefighters' ability to respond to emergencies and provide timely support during emergencies. According to a voluntary DoD OIG survey, firefighters identified several functional challenges that the renovation project either caused or did not address. For example, firefighters identified decreased functionality because of relocating the fire station engine bays in relation to living quarters. Before the renovation, the fire engine bay was located in close proximity to the living quarters. However, after the contract award, Navy officials eliminated the requirement to lower the concrete slab in the engine bay to allow fire engine truck access; therefore, the fire engine truck was relocated to another bay that was further from the living quarters. As a result of decreased functionality, firefighters may take longer to reach their apparatus and equipment during an emergency, and longer distances to travel to their apparatus present more opportunities for tripping or other accidents.

DoD Instruction 6055.06, "DoD Fire and Emergency Services," December 21, 2006, requires a 7-minute aggregate response time[15] for firefighters to arrive on the scene of an emergency. The Fire Chief stated that the Naval Station Great Lakes Fire Department uses a 1-minute time frame to leave the fire station. This means that from the time the alert sounds in the fire station to the time the firefighters leave the fire station should not exceed 1 minute. We analyzed firefighter response times for the periods before and after the renovation project and identified that the response times worsened after the renovation project. For example, from January 2009 through August 2009, firefighters' average response time for all types of incidents was between 1 minute 54 seconds and 2 minutes 9 seconds. However, for the period January 2011 through August 2011, which was after the renovation, the average response time for all types of incidents increased to between 2 minutes 14 seconds and 2 minutes 31 seconds. Table 3 compares the average response times before and after the renovation.

Table 3. Comparison of Average Response Times Before and After the Fire Station Renovation

Incident Type	Average Response Time Range (Jan – Aug 2009)	Average Response Time Range (Jan – Aug 2011)	Difference After the Renovation	Approximate increase in response time (percentage)
Fire	2 minutes 14 seconds to 2 minutes 33 seconds	2 minutes 44 seconds to 3 minutes 9 seconds	30-36 seconds slower	22-24 percent
Emergency Medical Services	1 minute 41 seconds to 1 minute 56 seconds	2 minutes 4 seconds to 2 minutes 12 seconds	16-23 seconds slower	14-23 percent
All Incidents	1 minute 54 seconds to 2 minutes 9 seconds	2 minutes 14 seconds to 2 minutes 31 seconds	20-22 seconds slower	17-18 percent

As shown in Table 3, firefighters took longer to leave the main fire station than they did before the renovation. Response times for fire incidents after the renovation project increased by approximately 22 to 24 percent, and response times for emergency medical service incidents increased by approximately 14 to 23 percent. The increased response times may affect their ability to provide timely support during emergencies.

[15] The aggregate response time includes time for dispatch, turnout, and travel time. As previously stated, we used turnout time as response time for the purposes of this report.

NAVFAC Midwest Initiated Some Actions to Correct Outstanding Deficiencies in the Fire Station

In October 2011, we met with NAVFAC Midwest officials to brief them on outstanding deficiencies they should have addressed with the renovation project. For example, we identified that the HVAC system did not maintain consistent temperatures in the fire station. The RFP required an HVAC system that provides quality indoor air, occupant comfort, reliable operation, and ease of maintenance. The RFP also required controls to serve the heating and cooling requirements of the offices, classrooms, sleeping rooms, training rooms, day rooms, fitness rooms, and lounge areas of the facility. We also identified problems with standing water on the roof, cracks in the exterior walls, and damage around glass block units on the exterior walls. See Appendix B for the briefing we provided to NAVFAC Midwest.

We noted to NAVFAC Midwest officials that the contractor's warranty would expire on November 18, 2011. In response to the outstanding deficiencies we identified, NAVFAC Midwest officials inspected Building 106 to ensure that the contractor completed all items identified in the contract to the standards stated in the contract. NAVFAC Midwest officials engaged the contractor to address these deficiencies before the expiration of the warranty period at no additional cost to the Government, and as of April 2012, were working through those deficiencies. In addition, NAVFAC Midwest officials stated that Naval Station Great Lakes experienced significant problems with the main drains on the installation, which caused the fire station to flood. Officials stated that they scheduled a project in summer 2012 to fix drainage problems at the installation. NAVFAC Midwest officials have already taken actions to address outstanding deficiencies covered under the warranty for the repair project, and with the assistance of the Regional Fire Chief, Navy Region Midwest, they should identify actions to correct the remaining problems.

Conclusion

Navy officials did not properly plan the fire station renovation project and provided misleading information to decision makers. Furthermore, the Navy did not make the most economical decision, which resulted in a less-functional fire station at Naval Station Great Lakes. These project planning deficiencies failed to correct fire station problems and may have misled Congress in funding decisions. We substantiated the Defense Hotline allegations related to the fire station renovation project. While the project to renovate the fire station partially met the needs of the fire station, NAVFAC Midwest will need to determine how to meet the required design criteria for the fire station and address the firefighters' needs.

Management Comments on the Finding and Our Response

Summaries of management comments on the finding, finding discussion, and our responses are in Appendix D.

Recommendations, Management Comments and Our Response

1. We recommend that the Regional Fire Chief, Navy Region Midwest, and the Public Works Officer, Public Works Department Great Lakes, Naval Facilities Engineering Command, Midwest, identify existing deficiencies, such as those we identified in this report related to the required unified facilities criteria and quality of life, and implement appropriate actions to correct the deficiencies.

Department of the Navy Comments

The Commanding Officer, NAVFAC Midwest, in coordination Commander, Navy Region Midwest, agreed with this recommendation. The Commanding Officer stated that the Naval Station Great Lakes Public Works officials met with the Regional Fire Chief to identify and discuss the outstanding building deficiencies. The Commanding Officer stated that over half of the deficiencies identified have been closed, and the remaining deficiencies are being addressed through ongoing or planned initiatives at the installation.

Although not required to comment, the Inspector General, Commander, Navy Installations Command, agreed with the NAVFAC Midwest comments.

Our Response

The Navy comments were responsive, and the actions met the intent of the recommendations. Therefore, no further comments are required.

2. We recommend that for future projects, the Commander, Navy Region Midwest:

a. Issue guidance requiring planners to provide sufficient detail in the "Impact If Not Provided" section on the Forms 1391 to ensure that officials reviewing and approving Forms 1391 fully understand the impact to the mission, quality of life, safety and health that would occur if the project were not funded.

Department of the Navy Comments

The Commanding Officer, NAVFAC Midwest, in coordination with the Commander, Navy Region Midwest, agreed with the recommendation. The Commanding Officer stated that Navy Region Midwest issued guidance to PWD officials requires planners to follow the UFC when preparing and reviewing Forms 1391. The Commanding Officer stated that this guidance would be reinforced during quarterly meetings and NAVFAC

Midwest would reinforce the utilization of the business management system processes[16] during project planning.

Although not required to comment, the Inspector General, Commander, Navy Installations Command, agreed with the NAVFAC Midwest comments.

Our Response

The Navy comments were responsive, and the actions met the intent of the recommendations. Therefore, no further comments are required.

b. Issue guidance requiring Naval Facilities Engineering Command and Naval Station Great Lakes Public Works Department officials to use the checklist provided in Naval Facilities Engineering Command P-442, "Economic Analysis Handbook," October 1993, to ensure a thorough and accurate review of Forms 1391 and supporting documentation.

Department of the Navy Comments

The Commanding Officer, NAVFAC Midwest, in coordination with the Commander, Navy Region Midwest, agreed with the recommendation. The Commanding Officer stated that NAVFAC Midwest will reinforce the process outlined in the P-442 during the next quarterly meeting, and will request economic analysis training as new software is implemented. The Commanding Officer stated that Naval Facilities Engineering Command, Midwest, has also implemented additional business management system processes that were not in place during planning for the renovation project.

Although not required to comment, the Inspector General, Commander, Navy Installations Command, agreed with the NAVFAC Midwest comments.

Our Response

The Navy comments were responsive, and the actions met the intent of the recommendations. Therefore, no further comments are required.

3. We recommend that Commander, Navy Region Midwest, and Commanding Officer, Naval Facilities Engineering Command, Midwest, review the actions of personnel involved in preparing and reviewing planning documentation, such as the Forms 1391, supporting documentation, and the request for proposal, and based on that review:

a. Determine which personnel failed to exercise due diligence when planning a project to correct existing fire station deficiencies.

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[16] The NAVFAC business management system provides a systematic method for the management of business processes, common practices, and process quality improvements. The business management system is a Web-based framework for NAVFAC employees to participate in the development and improvement of common best business practices. The Commanding Officer stated that the business management system processes were not in place during planning for the renovation project.

Department of the Navy Comments

The Commanding Officer, NAVFAC Midwest, in coordination with the Commander, Navy Region Midwest, agreed with the recommendation. The Commanding Officer stated that NAVFAC Midwest reviewed the actions of the personnel involved in the preparation of the Forms 1391, and have counseled the planner and Integrated Product Team design manager.

Although not required to comment, the Inspector General, Commander, Navy Installations Command, agreed with the NAVFAC Midwest comments.

Our Response

The Navy comments were responsive, and the actions met the intent of the recommendations. Therefore, no further comments are required.

b. Take the appropriate administrative actions.

Department of the Navy Comments

The Commanding Officer, NAVFAC Midwest, in coordination with the Commander, Navy Region Midwest, agreed with the recommendation. The Commanding Officer stated that NAVFAC Midwest incorporated numerous procedural safeguards, to include relevant training for all current and future planners, and that no further administrative actions were required.

Although not required to comment, the Inspector General, Commander, Navy Installations Command, agreed with the NAVFAC Midwest comments.

Our Response

The Navy comments were responsive, and the actions met the intent of the recommendations. Therefore, no further comments are required.

Appendix A. Scope and Methodology

We conducted this performance audit from July 2010 through June 2012 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Our audit scope included a review of the Navy Region Midwest Great Lakes Project RM-005-07, "Repair Fire Station Building 106," to renovate the main fire station (Building 106) at Naval Station Great Lakes. We reviewed documentation including the official contract file, Form 1391s, cost estimates, life-cycle economic analyses, and the winning contractor's technical proposal and cost data. We reviewed Federal, DoD, and Navy policy and guidance related to construction and renovation projects, and we compared this policy and guidance with our audit results. We reviewed Office of Management and Budget guidance concerning collection of information in accordance with the Paperwork Reduction Act of 1995. We interviewed personnel from the following organizations.

- Commander, Naval Installations Command, Washington, D.C.
- Headquarters, Naval Facilities Engineering Command, Washington, D.C.
- Commander, Navy Region Midwest, Great Lakes, Illinois
- NAVFAC Midwest, Great Lakes, Illinois
- Naval Station Great Lakes PWD, including the Facilities Management Division and the Facilities, Engineering and Acquisition Division, Great Lakes, Illinois
- NAVFAC Midwest IPT, Great Lakes, Illinois
- Naval Station Great Lakes Fire Department, Great Lakes, Illinois
- Fort Belvoir Fire Station, Fort Belvoir, Virginia

We also conducted an anonymous, voluntary survey of the 56 firefighters at Naval Station Great Lakes, all of whom were employees of the Navy.

Methodologies Used in DoD OIG Calculations

This section details the methodologies we used in our calculations for this report, specifically those related to the economic analysis, life-cycle cost report and tables within the economic analysis, evaluation of monthly maintenance requests, and average emergency response times.

Validation of Assumptions Used in the Economic Analysis

As stated on page 15 of the report, we reviewed the economic analysis and identified some errors in the calculations. To calculate an accurate life-cycle cost report, we validated assumptions made by the Planner, PWD; adjusted erroneous data; and used ECONPACK Version 4.0.6 to complete the calculation.

First, we reviewed the Navy Instruction 11010.20G and validated that the Planner, PWD, used the correct cost factors and cost per square foot when preparing the life-cycle cost report within the economic analysis for the fire station renovation project.
Navy Instruction 11010.20G requires the following percentages for each cost factor:

- Contingency Factor: 5 percent;
- Design-Build Factor: 4 percent; and
- Supervision, Inspection, and Overhead Factor: 8 percent.

We also reviewed the replacement cost per square foot, and determined that the Planner, PWD, used the correct figure when preparing the life-cycle cost report within the economic analysis. UFC 3-701-07, "DoD Facilities Pricing Guide," July 2, 2007,[1] provides unit cost data and related adjustment factors for DoD facilities. Planners should use the UFC when preparing MILCON project documentation and other project-level estimates. According to UFC 3-701-07, the replacement cost per square foot for a fire station is $183.64, which is consistent with the economic analysis prepared by the Planner, PWD. We used these cost factors and cost per square foot to prepare the adjusted economic analysis.

Adjustments to Initial Construction Costs Calculations

We determined that the Planner, PWD, overstated the initial construction costs for new construction in the economic analysis for the fire station renovation project. Therefore, we adjusted the initial construction costs to accurately reflect the costs of a new fire station. We used the same assumptions as the Planner, PWD, with the exception of the total square feet of the building and the area cost factor.

Square Feet Used for New Construction

The basic facilities requirement is the optimal space required to perform missions. The UFC 2-000-05N, "Facility Planning for Navy and Marine Corps Shore Installations," undated,[2] (formerly known as NAVFAC Publication 80), includes criteria and methodology for determining basic facilities requirements. UFC 2-000-05N, Section 730, "Community Facilities-Personnel and Support Services," January 31, 2005, states that the total basic facilities requirement for a headquarters fire station with two engine companies is 12,393 square feet. The Fire Chief, Naval Station Great Lakes verified that the Great Lakes headquarters fire station (Building 106) has two companies.

The basic facilities requirement document for the Naval Station Great Lakes Fire Department reflects this as well. The basic facilities requirement document for Naval Station Great Lakes Fire Department also identified 9,240 square feet required for

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[1] UFC 3-701-07 was updated September 15, 2009; however, the Planner, PWD, prepared the final Form 1391 on December 21, 2008, and NAVFAC Midwest awarded the contract on September 30, 2009. Therefore, the UFC 3-701-07 dated July 2007 was the current UFC during the project planning. We used this version of the UFC for our analysis.
[2] This document was reformatted in accordance with the standards for a UFC on January 31, 2005, but has been regularly updated since then to address emergent facility planning issues.

additional headquarters equipment, such as rescue boats and trailers, ambulance storage, and hazardous materials storage. Therefore, the total requirement for the Naval Station Great Lakes headquarters fire station is 21,813 square feet. However, the Planner, PWD, used 35,738 square feet to calculate the construction costs for a new facility, which is the size of the current fire station. Therefore, we adjusted the square feet for new construction to 21,813 square feet, which is approximately 61 percent of the square feet that the Planner, PWD, used to develop the life-cycle cost report within the economic analysis.

Area Cost Factor for New Construction

UFC 3-701-07 states that the area cost factor for new construction in Great Lakes, Illinois, should be 1.25. However, the Planner, PWD, used 1.27. Therefore, we adjusted this factor in our calculations.

Additional Adjustments to DoD OIG Calculations

Aside from adjustments to the square footage and area cost factors, we used the estimates completed by the Planner, PWD, for all other costs. However, because the Planner, PWD, overstated initial construction costs, the estimates for Contingency; Design-Build; and Supervision, Inspection, and Overhead, which are calculated as a percentage of the total construction costs, decreased. Table A-1 shows the cost category, the estimate in the 2008 economic analysis, and our adjusted costs.

Table A-1. Auditor-Adjusted Estimated Costs for the MILCON Calculations

Category	2008 Economic Analysis	Auditor-Adjusted Cost
Construct Facility	$ 8,334,000	$ 5,007,174
Technical Operating Manual	40,000	40,000
Anti-Terrorism/Force Protection	150,000	150,000
Paving	550,000	550,000
LEED	390,000	390,000
Electrical Utilities	350,000	350,000
Mechanical Utilities	350,000	350,000
Water/Sewer	250,000	250,000
Site Improvement	470,000	470,000
Special Concrete Footer	230,000	230,000
Demolish Building 106	540,000	540,000
Subtotal	11,654,000	8,327,174
Contingency	583,000	416,358
Supervision, Inspection, and Overhead	979,000	699,482
Design-Build	529,000	377,720
Total*	**$ 13,744,000**	**$ 9,820,736**

*Columns may not total properly due to rounding.

As shown in Table A-1 on page 28, the Planner, PWD, overstated new construction costs by approximately $3.92 million, which is approximately 28.5 percent of the estimated costs from the 2008 economic analysis.

Adjustments to Life Cycle Cost Tables

We determined that the Planner, PWD, used the cumulative net present value from the life-cycle cost tables to compare costs for renovation and new construction in the Form 1391 for the renovation project. Therefore, we adjusted the initial construction costs, maintenance and repair costs, and utility costs in the life-cycle cost tables to account for the adjustments we made for the initial construction costs.

Economic Life

NAVFAC P-442 outlines the maximum economic lives for assets, such as buildings. According to this guidance, the economic life should be the least of the following three factors:

- the mission life or period over which a need for the asset is anticipated (DoD mission objectives are about 25 years);
- the physical life, or period over which the asset may be expected to last physically; or
- the technological life or period before obsolescence would dictate replacing the asset.

For permanent buildings, the NAVFAC P-442 states that the economic life should not exceed 25 years. NAVFAC P-442 states that there may be lead time, or a significant period of time between the initial investment expenditure and the beginning of the economic life; however, economic life starts only when the asset begins to yield tangible benefits to the Navy, for example, the date of beneficial occupancy.

Based on this guidance, we determined that the economic life for the fire station renovation project should have been 25 years plus lead time; however, we used the same project life as the Planner, PWD, which was a 30-year economic life and 2-year lead time, to ensure a fair comparison of economic analyses.

Initial Construction Costs

We adjusted the initial construction cost instead of the total construction cost because the total amount includes costs that may be used elsewhere in the life-cycle cost report. For example, “Demolition” is in the Sources and Derivations section of the economic analysis as part of the total cost of the fire station, but is broken out separately in the life-cycle cost table. Therefore, we determined adjustment of the initial construction costs would more accurately reflect costs for new construction. To adjust the life-cycle cost tables, we reduced the initial construction cost of $12,454,000 by 28.5 percent to $8,905,000.

Maintenance and Repair Costs

In the life-cycle cost tables for a new construction project, the Planner, PWD, listed maintenance and repair costs of $500,000 per year for years 2 through 10. However, for the renovation project, the Planner, PWD, listed maintenance and repair costs of $50,000 in year 2 and $412,000 per year in years 3 through 10. We determined that this was illogical because a new facility would likely need less maintenance and repair than a renovated facility. Therefore, for years 2 through 10, we used $412,000 per year as the basis to adjust the cost for new construction. For year 2, we used the Planner's assumption that a newly constructed fire station would incur full maintenance and repair costs. Therefore, for year 2, we adjusted the base cost to $412,000 and included the full maintenance and repair costs.

After we adjusted the base costs for new construction, we multiplied the maintenance and repair costs by 61 percent to account for the reduced size of a new facility, which would be approximately 61 percent of the size of the current facility. Table A-2 summarizes the changes we made to the maintenance and repair costs in years 2 through 10 for a new construction project.

Table A-2. DoD OIG Adjustments to Maintenance and Repair Costs From Years 2 Through 10
(thousands)

Year	2008 Economic Analysis		Auditor Adjustment	
	Renovation Cost	New Construction Cost	Adjusted New Construction Base Cost	Adjusted New Construction Cost (61 percent of adjusted new construction base cost)
1	50	$ 0	0	0
2	50	500	412	251
3	412	500	412	251
4	412	500	412	251
5	412	500	412	251
6	412	500	412	251
7	412	500	412	251
8	412	500	412	251
9	412	500	412	251
10	412	500	412	251

For years 11 through 32, we used the same base cost as the Planner, PWD, decreasing it by 61 percent because the Planner, PWD, used the same maintenance and repair costs for new construction and renovation in these years.

Utility Costs

As stated on page 26, we determined that a new fire station would be approximately 61 percent the size of the existing fire station. Therefore, we reduced utility costs proportionately by multiplying them by 61 percent.

ECONPACK

We used ECONPACK Version 4.0.6 to generate our adjusted economic analysis. We determined that the Planner, PWD, used version 3.2.1 of ECONPACK, which was different from version 4.0.6 available to us at the time of our analysis. We tested version 4.0.6 to determine whether there were changes that would affect the outcome of our economic analysis. See the computer-processed data section of this appendix (on page 32) for our methodology and conclusions.

Calculation of Average Monthly Maintenance Requests

We identified four periods for which we would evaluate the average number of monthly maintenance requests. We excluded maintenance requests submitted during the renovation period, which was from September 30, 2009, through November 19, 2010. Our review periods were from:

- October 1, 2006, through September 30, 2007 (pre-renovation);
- October 1, 2007, through September 30, 2008 (pre-renovation);
- October 1, 2008, through September 30, 2009 (pre-renovation); and
- November 20, 2010 through November 19, 2011 (post-renovation).

We sorted the data provided by NAVFAC Midwest by the completion date. Then, we identified all records related to routine or expected services requests, such as monthly inspections, and excluded those from our review. We counted the total number of remaining maintenance request logs for each period and divided that number by 12 to determine the average number of monthly maintenance logs.

Calculation of Average Emergency Response Times

We obtained response time data from the Enterprise Safety Applications Management System database, which is a safety management system composed of a suite web-enabled module to manage data requirements to include response times to emergencies. From the data in this database, the Navy generates a report to populate the National Fire Incident Response System, which is a Department of Homeland Security system that all U.S. Navy fire departments are required to use to report their emergency response incidents. We obtained data in Excel format for the Naval Station Great Lakes Fire Department for periods before and after the renovation. Specifically, we obtained data from January 1, 2009, through August 31, 2009 (before the renovation) and January 1, 2011, through August 31, 2011 (after the renovation). The data identified the

dispatch, departure, and arrival date[3] for each incident. Unless otherwise noted, we used Excel formulas for all calculations.

Identifying Data Sets

The Naval Station Great Lakes Fire Department includes a headquarters fire station (Building 106) and a satellite fire station. We excluded response times for those incidents at stations other than Building 106. We then identified and compared response time data for the same months before and after the renovation. We further separated the data by fire incidents and emergency medical service incidents by identifying those incidents for which only the emergency medical service apparatus was dispatched. We considered all other incidents to be fire incidents. Therefore, for each period (before and after the renovation), we had three sets of data: fire incidents, emergency medical service incidents, and all incidents (fire and emergency medical service). For all sets of data, we calculated the response time for each incident by subtracting the dispatch time from the departure time.

Calculation of Average Response Times

We then calculated the average response times using two methods: median and mean. The median is the middle value in a list of numbers. The mean is the summed value of a series of numbers divided by the amount of numbers in the series. For example, if a series of numbers is 2, 3, 5, 10, and 20, the mean of these numbers is the sum of the numbers, which is 40, divided by the amount of numbers in the series, which is 5; the result is 8. Both are valid methods for calculating the average of a group of numbers. For this set of response time data, using both median and mean averages also shows users that, regardless of how average is calculated, the response times are worse than they were before the renovation project started.

Use of Computer-Processed Data

We obtained and relied on computer-processed data from NAVFAC Midwest and Naval Station Great Lakes to complete the audit. We obtained information from Navy databases and systems, as well as a software application. The details of the data, systems, and testing are discussed below.

We used ECONPACK software to generate an adjusted economic analysis for the fire station renovation project. Because we used ECONPACK Version 4.0.6 and the Planner, PWD used Version 3.2.1, we tested the software to determine whether we could compare our economic analysis to the one generated by the Planner, PWD. To test the software, we input the same information as that on the economic analysis provided by NAVFAC

[3] The headings for the data indicated dispatch, departure, and arrival date. The data in these columns included the date and time. We will refer to the data using “time” instead of “date.”

Midwest, and verified that the output from ECONPACK Version 4.0.6 was identical to that provided by NAVFAC Midwest using Version 3.2.1. We determined that the data generated from ECONPACK Version 4.0.6 were sufficiently reliable for purposes of this audit.

We also obtained data from the Internet Navy Facility Assets Data Store to determine whether the fire station was historic. Although we could not independently verify the reliability of this information, we compared it to information from historic preservation Web sites, including the Illinois Historic Preservation Agency and the National Register of Historic Places Inventory for Naval Station Great Lakes. From these efforts, we determined that the information we obtained is sufficiently reliable for this audit.

We obtained response time data from the Deputy Fire Chief, Naval Station Great Lakes, to determine whether the response times improved or got worse after the renovation. We assessed the reliability of this data by comparing it to data directly queried by the audit team from the Enterprise Safety Applications Management System and interviewing fire station officials familiar with the data input processes. We concluded that the data were sufficiently reliable for the purposes of this audit.

We obtained data from the Single Platform Maximo Enterprise (Maximo) to identify the frequency of maintenance requests before and after the fire station renovation. The data were not material to our audit findings and conclusions. Therefore, we did not assess the reliability of this data; however, we concluded the data were sufficiently reliable for the purposes of this audit given the Navy's use of the Maximo system.

Prior Coverage

No prior coverage has been conducted on the subject in the last 5 years.

Use of Technical Assistance

The DoD OIG Technical Analysis and Coordination Cell assisted with the audit. These personnel attended site visits to Naval Station Great Lakes and informally provided subject matter expertise to the team on engineering issues.

The DoD OIG Quantitative Methods Division also assisted with the audit. These personnel analyzed data from the audit client related to the analysis of maintenance requests before and after the renovation. The DoD OIG Quantitative Methods Division analyzed maintenance request data provided by the client using a Chi-Square test, which is a statistical test commonly used to compare observed data with data we would expect to obtain according to a specific hypothesis. This test also takes into consideration the amount of deviation between the observed data and the expected data.

Appendix B. Briefing to NAVFAC Midwest on Outstanding Building Deficiencies

The following charts are those developed by the DoD OIG audit team and briefed to NAVFAC Midwest officials.

[redacted]

Audit of Justification and Planning for Project Repair Fire Station Building 106, Naval Station Great Lakes, Illinois

Status Briefing on Areas of Concern Regarding Building 106

October 4, 2011

Project Number D2010-D000LC-0236.000

1

[redacted]

[redacted]

Objectives and Background

Audit Objective

To determine whether Project RM 005-07, Repair Fire Station Building 106 was adequately justified and properly planned. We will also address the allegations made to the Defense Hotline about this project.

Briefing Objective

This briefing addresses issues related to the functionality and quality of life of Building 106 that should have been fixed under the scope of the repair contract.*

Background

The contract for Project RM 005-07 states that NAVFAC Midwest Public Works Department must contact the contractor, Spaan Tech, by the end of the warranty period (November 18, 2011) if problems covered by warranty provisions of the contract arise.

The audit team conducted a site visit to Naval Station Great Lakes from August 22-26, 2011. During this visit the audit team and technical experts reviewed the official contract file, toured Building 106, and provided a survey to be completed by the fire fighters. This briefing highlights some of the issues identified by the audit team that may be covered under the contractor's warranty.

*The contract for Project RM 005-07 states the scope of work is in the Request for Proposal (RFP), Amendments, and the Contractor's Technical Proposal. The issues identified in this briefing are covered within the contract.

2

[redacted]

[redacted]

Preliminary Results: East Roof Ponding

As of 26 August 2011, the audit team observed that scuppers (which provide secondary drainage) are much higher than primary drain covers on the East area of the roof (left). During heavy rain, this design may not ensure adequate drainage. The audit team also observed bare spots and broken and failed gravel stops (right). These problems may cause water ponding on the East roof.

- The Phase II Technical Proposal, Factor 2, Exterior Architectural Elements requires the contractor to inspect and repair the existing roof to ensure it is weather tight and serviceable. Cracks, alligatoring, bare spots, blistering, rupturing, curling low spots and water ponding will be repaired. Any broken, failed or missing gravel stops will be repaired as well.

3

[redacted]

Preliminary Results: West Exterior Wall Cracks

As of August 26, 2011, the audit team observed vertical cracks on the west exterior brick wall.

- The Phase II Technical Proposal, Factor 2, Exterior Architectural Elements, states that for Exterior Masonry Walls, "the exterior brick and masonry façade, parapet wall and coping requires some maintenance consisting of tuck pointing and the repair of vertical cracks and water infiltration."

4

[redacted]

[redacted]

Preliminary Results: Glass Block Units

As of August 26, 2011, the audit team observed damage around the glass block units on the west exterior wall.

- The Phase II Technical Proposal, Factor 2, Exterior Architectural Elements, states that for the Existing Exterior Windows, Teng will inspect and repair all existing exterior windows. In addition to window maintenance, each existing steel lintel will be inspected for deficiencies and repaired / replaced accordingly. Some exterior windows consist of glass block units; these windows will be inspected for deterioration, damage and water infiltration and be repaired accordingly.

5

[redacted]

[redacted]

Preliminary Results: HVAC Inconsistencies

As of August 26, 2011 the temperature in Building 106 is inconsistent throughout the whole Fire Station.

- The RFP requires an HVAC system that attains the following objectives: occupant comfort, indoor air quality, acceptable noise levels, energy efficiency, reliable operation, and ease of maintenance. Also, it requires controls to serve the heating and cooling requirements of the offices, conference rooms, classrooms, sleeping rooms, training rooms, day rooms, fitness rooms, washrooms, kitchen, dining, and lounge areas of the facility.
- The Technical Proposal states that the mechanical and electrical systems have been designed to provide for energy efficient controls where possible and where it would not interfere with the function of individual spaces.

6

[redacted]

[redacted]

Preliminary Results: Fitness Room Lighting

As of August 26, 2011, occupancy sensors do not function properly and as a result, the lights in the fitness room do not turn off.

- The RFP requires a building-wide lighting control system to control general area lighting based on a time clock and user input. In addition, the RFP states that room occupancy sensors will be provided as an energy-saving measure and will automatically turn off the lights when the rooms or offices have been vacant for a pre-programmed period of time. Finally, it states that lighting equipment shall be verified to ensure it operates in accordance with user's requirements and with manufacturer's recommendations.

7

[redacted]

[redacted]

Suggested Actions

In order to provide timely awareness of known warranty provisions discussed in this briefing, we were unable to analyze all potential Building 106 deficiencies that might be covered under the warranty provisions of the contract.

We suggest that NAVFAC Midwest, in coordination with the Great Lakes Fire Department, conduct an inspection of Building 106 to ensure that all items required to be completed by the contractor were indeed completed and executed to the standards required in the contract.

We also suggest that NAVFAC Midwest contact the contractor to address any deficiencies prior to the expiration of the warranty period on November 18, 2011. This will ensure the contractor fully complies with the contract for Project RM 005-07, and that the Navy receives all the repairs for which the contractor was paid.

8

[redacted]

Appendix C. Consolidated Responses to the DoD OIG Survey of Naval Station Great Lakes Firefighters

We distributed a survey to 56 firefighters at Naval Station Great Lakes to identify their concerns with the fire station after the renovation. The following figure is a copy of the DoD OIG survey. We also consolidated the responses to these survey questions and presented them in this appendix.

Figure D-1. DoD OIG Survey of the Naval Station Great Lakes Firefighters

[redacted]

Department of Defense Office of Inspector General
Audit of Justification and Planning for the Project Repair Fire Station Building 106
Project Number D2010-D000LC-0236.000

Survey for Fire Station Building 106

We would appreciate you taking the time to complete the following voluntary survey. This seven question survey should take approximately fifteen minutes of your time. Responses will not be identified by individual and will be compiled together and analyzed as a group. Please mail this survey to DoD IG in the pre-paid envelope provided. If you have any questions or concerns, please contact [redacted].

1. How has the renovation impacted your safety?
   ☐ 1 (worse) ☐ 2 ☐ 3 (no impact) ☐ 4 ☐ 5 (better)
   Please give specific examples.

2. How has the renovation impacted your ability to respond to emergencies?
   ☐ 1 (worse) ☐ 2 ☐ 3 (no impact) ☐ 4 ☐ 5 (better)
   Please give specific examples.

3. How has the renovation impacted the functionality of the fire station based on your mission responsibilities?
   ☐ 1 (worse) ☐ 2 ☐ 3 (no impact) ☐ 4 ☐ 5 (better)
   Please give specific examples.

4. How has the renovation impacted your quality of life?
   ☐ 1 (worse) ☐ 2 ☐ 3 (no impact) ☐ 4 ☐ 5 (better)
   Please give specific examples.

5. After the renovation was completed describe any changes that needed to be made to Building 106 to improve its functionality and/or your quality of life.

6. Given the current state (after renovation) of Building 106, will a new constructed fire station enable you to perform your work:
   (a) Same
   (b) Less efficiently
   (c) More efficiently

   Please give specific details based on your selection:

7. List any other concerns that you may have about Building 106.

Impact of Renovation on Firefighters' Safety

Question one of the DoD OIG survey was related to the impact of the renovation on firefighter safety. We asked firefighters to rate their responses on a scale of one to five, one indicating "worse," three indicating "no impact," and five indicating "better." The firefighters' average response to this question was 1.67.

We also asked firefighters to provide specific examples of their concerns related to their safety after the renovation. Table D-1 shows the concerns firefighters identified in response to this question.

Table D-1. Concerns Identified in Response to Question 1 and the Frequency

Firefighter Concern	Frequency (out of 21 surveys)
Flooding	10
Alert System	9
HVAC	8
Air Compressor/Dryer/Self Contained Breathing Apparatus Compressor	6
Fire Pole	5
Layout of the Fire Station	5
Lighting	5
Vehicle Ramps	4
Building Structure	3
Dorm Rooms	3
Firefighter Opinion	3
No Answer	3
Pest Control	3
Floor Coating	2
Operational Building Issues	2
Other	2
PPE	2
Wash Room	2
Floor Drains	1
Garage Doors	1
Hoses	1
Location of the Fire Station	1
Plumbing	1
Water Mains	1

Impact of Renovation on Firefighters' Ability to Respond to Emergencies

Question two of the DoD OIG survey was related to the impact of the renovation on the firefighters' ability to respond to emergencies. We asked firefighters to rate their responses on a scale of one to five, one indicating "worse," three indicating "no impact," and five indicating "better." The firefighters' average response to this question was 1.62.

We also asked firefighters to provide specific examples of their concerns related to their ability to respond to emergencies after the renovation. Table D-2 shows the concerns firefighters identified in response to this question.

Table D-2. Concerns Identified in Response to Question 2 and the Frequency

Firefighter Concern	Frequency (out of 21 surveys)
Layout of the Fire Station	9
Alert System	8
Lighting	6
Garage Doors	4
Dorm Rooms	3
No Answer	3
Captain's Berthing	2
Fire Pole	2
Flooding	2
HVAC	2
Air Compressor/Dryer/Self Contained Breathing Apparatus Compressor	1
Building Structure	1
Location of the Fire Station	1
Vehicle Ramps	1
Wash Room	1

Impact of Renovation on the Functionality of the Fire Station

Question three of the DoD OIG survey was related to the impact of the renovation on functionality of the fire station. We asked firefighters to rate their responses on a scale of one to five, one indicating "worse," three indicating "no impact," and five indicating "better." The firefighters' average response to this question was 1.57.

We also asked firefighters to provide specific examples of their concerns related to the functionality of the fire station after the renovation. Table D-3 shows the concerns firefighters identified in response to this question.

Table D-3. Concerns Identified in Response to Question 3 and the Frequency

Firefighter Concern	Frequency (out of 21 surveys)
Layout of the Fire Station	9
Alert System	6
Floor Drains	5
Hoses	5
Kitchens	4
HVAC	4
Water Mains	4
Captain's Berthing	3
Dorm Rooms	3
Firefighter Opinion	3
Flooding	3
Information Technology	3
Lighting	3
No Answer	3
Operational Building Issues	3
Air Compressor/Dryer/Self Contained Breathing Apparatus Compressor	2
Plumbing	2
Fire Pole	1
Floor Coating	1
Garage Doors	1
Location of the Fire Station	1
PPE	1
Vehicle Ramps	1
Wash Room	1

Impact of the Renovation on Firefighters' Quality of Life

Question four of the DoD OIG survey was related to the impact of the renovation on firefighters' quality of life. We asked firefighters to rate their responses on a scale of one to five, one indicating "worse," three indicating "no impact," and five indicating "better." The firefighters' average response to this question was 1.57.

We also asked firefighters to provide specific examples of their concerns related to their quality of life after the renovation. Table D-4 shows the concerns firefighters identified in response to this question.

Table D-4. Concerns Identified in Response to Question 4 and the Frequency

Firefighter Concern	Frequency (out of 21 surveys)
HVAC	15
Dorm Rooms	12
Firefighter Opinion	6
Flooding	6
Layout of the Fire Station	6
Kitchens	5
Lighting	5
Air Compressor/Dryer/Self Contained Breathing Apparatus Compressor	3
Alert System	3
Operational Building Issues	3
Plumbing	3
Captain's Berthing	2
Floor Drains	2
Building Structure	1
Information Technology	1
No Answer	1
Pest Control	1

Changes to the Fire Station Needed to Improve Functionality and Firefighters' Quality of Life

Question five of the DoD OIG survey was related to outstanding changes to the fire station that were needed to improve the functionality of the fire station and the firefighters' quality of life after the renovation. Table D-5 shows the concerns firefighters identified in response to this question.

Table D-5. Changes Need to Improve Fire Station Functionality and Firefighters' Quality of Life

Firefighter Concern	Frequency (out of 21 surveys)
HVAC	15
Flooding	8
Alert System	6
Building Structure	6
Firefighter Opinion	6
Floor Drains	6
Lighting	5
Operational Building Issues	5
Plumbing	5
Air Compressor/Dryer/Self Contained Breathing Apparatus Compressor	4
Layout of the Fire Station	4
Captain's Berthing	3
Dorm Rooms	3
PPE	3
Floor Coating	2
Information Technology	2
Kitchens	2
Garage Doors	2
Wash Room	2
Water Mains	2
Fire Pole	1
No Answer	1
Other	1
Vehicle Ramps	1

Impact of a New Fire Station on Firefighters' Ability to Perform the Mission

Question six of the DoD OIG survey asked firefighters, given the state of the current fire station, what impact a new fire station would have on their ability to perform their mission. We determined that this question was misleading to firefighters because it was not objective. Therefore, we excluded the results of this question from our analysis.

Additional Concerns Related to the Fire Station

Question seven of the DoD OIG survey asked firefighters to list any additional concerns they had related to the fire station. Table D-6 shows the concerns firefighters identified in response to this question.

Table D-6. Additional Concerns Firefighters Identified in OIG DoD Survey

Firefighter Concern	Frequency (out of 21 surveys)
Firefighter Opinion	10
HVAC	4
No Answer	4
Building Structure	3
Dorm Rooms	3
Flooding	3
Kitchens	3
Layout of the Fire Station	3
Lighting	3
Vehicle Ramps	3
Air Compressor/Dryer/Self Contained Breathing Apparatus Compressor	2
Alert System	2
Captain's Berthing	2
Fire Pole	2
Floor Coating	2
Floor Drains	2
Hoses	2
Information Technology	2
Operational Building Issues	2
Plumbing	2
PPE	2
Wash Room	2
Water Mains	2
Pest Control	1

Appendix D. Management Comments on the Finding and Our Responses

The Commanding Officer, NAVFAC Midwest, in coordination with Commander, Navy Region Midwest, provided additional comments on the finding and report discussion. Although not required to comment, the Inspector General, Commander, Navy Installation Command also provided comments on the report. The complete text of these comments can be found in the Management Comments section of this report.

Department of the Navy Comments on the Renovation Project Not Meeting the Fire Station Needs

The Commanding Officer, NAVFAC Midwest, in coordination with Commander, Navy Region Midwest, disagreed that the fire station did not meet the needs of the fire department. The Commanding Officer stated the renovation project made many improvements to the fire station and that after the renovation, the fire station operated successfully and with greater capacity. The Commanding Officer also stated that officials used the UFC for Fire Stations to define customer requirements, but that budget constraints required officials to use judgment to address the most critical deficiencies for the fire station.

Our Response

We agree that the renovation project resulted in some improvements to the fire station; however, as we identified in the report, the renovation project did not mitigate all potential health and safety risks to fire station personnel. Additionally, response times increased after the renovation, which indicated that the functionality of the fire station and the ability of the firefighters to meet their mission, was impacted. In addition, we acknowledge that the UFC for Fire Stations provides leniency for budgetary constraints; however, despite our requests, officials could not produce documentation to identify budgetary constraints or demonstrate how the officials prioritized the fire station deficiencies. We also disagree that planners used the UFC for Fire Stations to plan the renovation project. During interviews, the Planner, PWD, and the IPT Design Manager stated that they did not use the UFC for Fire Stations during project planning for various reasons.

Department of the Navy Comments on Proper Planning to Address Deficiencies with Basic Infrastructure Items

The Commanding Officer, NAVFAC Midwest, in coordination with Commander, Navy Region Midwest, stated that basic infrastructure items, such as the HVAC, roof, and plumbing were addressed in the planning and renovation, but outstanding deficiencies in the contractor's workmanship remained and were being corrected.

Our Response

After further review, we agree that NAVFAC Midwest officials planned the renovation project to address the HVAC, roof, and plumbing. We did not review the contract administration or quality assurance procedures for this contract; however, we acknowledge that NAVFAC Midwest officials are working with the contractor to resolve outstanding deficiencies with the HVAC and roof, and that officials have taken steps to address the plumbing and drainage problems at the installation. Therefore, we deleted the statement that proper planning would have addressed these deficiencies from the finding on page 5 of the report.

Department of the Navy Comments on Potential Health and Safety Risks and Improvements to Fire Station Functionality

The Commanding Officer, NAVFAC Midwest, in coordination with Commander, Navy Region Midwest, stated that the renovation project mitigated many of the risks and improved some fire station functionality. The Commanding Officer stated building improvements included electrical, mechanical, and telephone system repairs; new interior finishes; repair and improvements to space configuration; and a whole building roof repair. The Commanding Officer stated the project also included new toilets and shower room, exercise room, and kitchen repairs. The Commanding Officer also stated that, although sunlight is filtered through a skylight, the PPE storage lockers could be moved to their original location. Finally, the Commanding Officer stated that they plan to relocate the washers and dryers away from normal foot traffic.

Our Response

We agree that the renovation project resulted in some improvements to the functionality of the fire station, such as new shower and exercise rooms. Therefore, we revised pages 6 and 7 of the report to address only the outstanding health and safety risks. However, the PPE storage lockers continue to be exposed to sunlight and the washer and dryers will continue to pose noise hazards to firefighters until the equipment is relocated. Additionally, the fire station still lacks an adequate wash and disinfection room, which increases the firefighters' exposure to potentially harmful chemicals.

Department of the Navy Comments on the Fire Alert System

The Commanding Officer, NAVFAC Midwest, in coordination with Commander, Navy Region Midwest, stated that replacement of the firefighter alert system was not part of the renovation contract because the alert system was considered personal or collateral equipment. The Commanding Officer stated only real property equipment could be replaced under the renovation contract. The Commanding Officer stated NAVFAC Midwest informed fire station officials that the fire alert system was excluded from the contract. The Commanding Officer also stated fire station officials would have to submit a request for a new alert system separately.

Our Response

During the audit, we identified problems with the outdated fire alert system. We acknowledge that the alert system was not included in the renovation project, and modified the paragraphs on page 9 of the report to clarify that point.

However, the UFC for Fire Stations requires an alert system with simultaneous light and audible controls, and we identified potential safety issues with the existing alert system lighting. In response to the DoD OIG survey, the firefighters identified concerns with the alert system. Therefore, although it was not part of the renovation project, we highlighted the alert system as a building deficiency that posed a potential health and safety risk to firefighters.

Department of the Navy Comments on the Firefighter Dorm Rooms

The Commanding Officer, NAVFAC Midwest, in coordination with Commander, Navy Region Midwest, stated the results of temperature audits between March and June 2011 were generally within the UFC requirements. Additionally, the Commanding Officer stated that the DoD OIG report stated that the walls do not provide the sound transmission class rating between 50 and 55. The Commander also stated insulation was installed in each dorm room wall for sound barrier and heat loss. Finally, the Commanding Officer stated they were unable to identify the source of the photo on page 10 of the report showing 112-degree temperatures in the fire station.

Our Response

Our report did not provide data related to the sound transmission class rating in the dorm rooms. Our report stated firefighters responding to the DoD OIG voluntary survey identified they could not rest properly due to noise from adjacent rooms. During the audit, we met with the NAVFAC Midwest Industrial Hygienist and requested that he provide the results of his annual building survey of the fire station, to include the noise level readings; however, the Industrial Hygienist did not provide his final report, and provided only an estimate of the noise levels in the dorm rooms. We concluded that estimates were not sufficiently reliable evidence to use in our report.

We were unable to validate the temperature audits conducted between March 2011 and June 2011. However, the Deputy Fire Chief stated during our audit that, in October 2011, the Activity Public Works Officer determined that the heating system for the fire station was too small, and, therefore, could not properly heat the building. Also, as previously stated, we acknowledge that NAVFAC Midwest officials are working with the contractor to resolve any outstanding deficiencies with the HVAC system.

Finally, the photo presented on page 10 of our report states that the source of the photo was the Naval Station Great Lakes Fire Department. We obtained this photo from fire station personnel on September 28, 2011.

Department of the Navy Comments on the DoD OIG Voluntary Survey

The Commanding Officer, NAVFAC Midwest, in coordination with the Commander, Navy Region Midwest, stated he disagreed with the interpretation of the DoD OIG survey and opinion, stating that the results were unsupported. The Commanding Officer pointed out improvements to the electrical, mechanical, and telephone systems, as well as to the roof, interior finishes, and space configuration for EMTs. The Commanding Officer also stated NAVFAC Midwest consulted fire station officials during the project design to validate project requirements and mission requirements, and that fire station officials requested changes to building layout, such as relocation of vehicles. The Commanding Officer also emphasized that NAVFAC is responsible for ensure the project scope includes appropriate design criteria, including UFCs, and complies with life and safety codes. NAVFAC is also responsible for ensuring accurate cost estimates and economic analyses, and that the project provided is within available funding.

Our Response

We administered a voluntary survey to all firefighters in the Naval Station Great Lakes Fire Department. We consolidated their responses, summarized the data, and presented it in the report. However, most of the concerns firefighters identified in the survey coincide with our observations during our site visits. The Commanding Officer stated that NAVFAC Midwest consulted fire station officials during project planning and that fire station officials requested changes to building layout, such as relocation of vehicles. However, because there is little or no documentation from these events, we could not validate these statements.

We understand NAVFAC responsibilities throughout the project planning process. As this report outlines, we identified risks with the development of project requirements and economic analysis. However, management comments to the recommendations provide corrective actions to mitigate the risks we identified in the report.

Department of the Navy Comments on the Most Economical Option for Project Completion

The Commanding Officer, NAVFAC Midwest, in coordination with the Commander, Navy Region Midwest, agreed that MILCON was the most economical option to achieve the project objectives, but stated the most cost-effective option does not dictate the final solution, and that a less-economical solution may be implemented. The Commanding Officer also stated the economic analysis for a MILCON project showed that MILCON was more economical by only a marginal amount. The Commanding Officer also noted NAVFAC Midwest made several attempts to obtain MILCON funding, but they were unsuccessful because of MILCON program constraints and a large backlog in MILCON projects throughout the Midwest region. Therefore, the Commanding Officer stated they decided to renovate the fire station because waiting for MILCON funding would have resulted in a substandard fire station with deteriorated building systems for an unknown period of time.

Our Response

We understand that the most economical option does not dictate the final solution for project completion. However, as stated in our report, the economic analysis for the Form 1391 for the renovation project incorrectly showed that renovation was the most economical option to achieve the project objectives. Additionally, our report highlights that additional details clearly stating the impact to the mission, health and safety, and quality of life may have increased the likelihood of funding for a new fire station.

Department of the Navy Comments on Explanations for Excluding Design Criteria

The Commanding Officer, NAVFAC Midwest, in coordination with Commander, Navy Region Midwest, disagreed that the explanations for excluding design criteria are reflective of the facts discussed during the audit site visits. The Commanding Officer stated many details of the interviews were omitted or incorrectly stated. The Commanding Officer also stated the UFC provides leniency for budgetary constraints, and that NAVFAC Midwest used the UFC to define customer requirements and plan and design the project.

Our Response

The facts presented on pages 16 and 17 of this report reflect the statements provided to us during interviews with NAVFAC Midwest officials. We agree the UFC for Fire Stations provides leniency for budgetary constraints during project execution; however, planners must still use the UFC for Fire Stations when planning projects to identify all requirements. As previously stated, the Planner, PWD, and the IPT Design Manager stated during interviews that they did not use the UFC for Fire Stations when planning the project.

Department of the Navy Comments on the Average Monthly Maintenance Calls Before and After the Renovation

The Commanding Officer, NAVFAC Midwest, in coordination with Commander, Navy Region Midwest, disagreed with the conclusions regarding the average monthly number of maintenance calls after the renovation, stating the data was skewed because of the number of final adjustments to building systems during the contractor's warranty period. The Commanding Officer stated that between December 2011 and May 2012, after the warranty period, the average number of monthly service calls was between 13 and 15 per month.

Our Response

As stated in our report, we reviewed service calls from October 2006 through November 2011, excluding the renovation period. Therefore, we could not validate the information on the number of average monthly service calls from December 2011 through May 2012. Additionally, we could not determine whether the service calls from November 2010 through November 2011 (after the renovation) were related to contract warranty issues or not.

The DoD OIG Quantitative Methods Division analyzed the data within our audit scope, and measured the likelihood that the periods before and after the renovation have a similar non-routine maintenance request rate. Their results indicated that the probability of monthly maintenance requests after the renovation being similar to the requests before the renovation was approximately 1.2 percent, which means that it is very unlikely. For additional explanation on this calculation, please see Appendix A.

Commander, Navy Installations Command Comments

Although not required to comment, the Inspector General, Commander, Navy Installations Command, agreed with the NAVFAC Midwest comments. The Inspector General stated the report highlights deficiencies in the project planning, design, and contract award processes, and these deficiencies were partially a result of Navy funding limitations and resource allocations.

The Inspector General also stated that the MILCON project prioritization process made it highly unlikely that a MILCON replacement project, such as replacement of the fire station, would have been funded. The renovation project provided relief to the firefighters from very poor facility conditions. The Inspector General stated that the Commander, Navy Installations Command, and NAVFAC Midwest made the best possible attempt to execute a critical project for Naval Station Great Lakes, and although there were errors in the project development and design, NAVFAC Midwest has improved processes to prevent these problems from reoccurring.

Our Response

We agree that there were deficiencies with the project planning; however, we cannot conclude on problems related to contract award, as this was outside the scope of our audit. We also cannot conclude as to the reason for the deficiencies, but we acknowledge that, in response to this report, NAVFAC Midwest provided corrective actions that will mitigate the risk of these problems.

Finally, we cannot comment on the likelihood of obtaining MILCON funding for replacing the fire station. However, our report highlights the Forms 1391 for construction of a new fire station needed additional details to emphasize the impact to fire station mission and quality of life for fire station personnel if the Navy did not fund the project. The report also highlights that the Planner, PWD, stated he did not put much emphasis on these details, and that clear, detailed information that describes the impact to health, safety, quality of life, and mission may have increased the likelihood of receiving funds for a new fire station.

Department of the Navy Comments

DEPARTMENT OF THE NAVY
COMMANDER, NAVY INSTALLATIONS COMMAND
716 SICARD STREET, SE, SUITE 1000
WASHINGTON NAVY YARD, DC 20374-5140

5041
Ser N00G/12U72262
6 Jul 12

SECOND ENDORSEMENT on NAVFAC MW ltr 5041 Ser RE/0898 of 5 Jul 12

From: Commander, Navy Installations Command
To: Inspector General, Department of Defense

Subj: PROJECT PLANNING RESULTED IN OUTSTANDING BUILDING DEFICIENCIES AND DECREASED FUNCTIONALITY OF THE MAIN FIRE STATION AT NAVAL STATION GREAT LAKES (PROJECT NO. D2010-D000LC-0236.000)

1. Forwarded. Concur with Commanding Officer, Naval Facilities Engineering Command Midwest (NAVFAC MW) response.

2. The findings of the subject audit highlight several deficiencies in the project planning, design and contract award process. These deficiencies were, in part, a result of Navy funding limitations and resource allocation priorities that impacted both planning and facility projects.

3. The immediate renovation project was executed to prevent firefighters from operating in a severely degraded facility. Due to the Military Construction (MILCON) project prioritization process, it is highly unlikely a MILCON replacement project would be supported. Accordingly, a Special Project was programmed and funded within the boundaries of available resources to provide relief from the very poor facility conditions our firefighters were operating in. CNIC and NAVFAC MW made the best possible attempt to execute a project that was a critical need for Naval Station Great Lakes. While there were errors made in the project development and design, processes have been improved to prevent a reoccurrence.

GERALD R. MANLEY
Inspector General

Copy to:
NAVFAC
NAVFAC MW
CNRMW

5

DEPARTMENT OF THE NAVY
COMMANDER, NAVY REGION MIDWEST
2601B PAUL JONES STREET
GREAT LAKES, ILLINOIS 60088-2845

5041
Ser N4/0175
5 Jul 12

FIRST ENDORSEMENT on NAVFAC MW ltr 5041 Ser RE/0898 of 5 Jul 12

From: Commander, Navy Region Midwest
To: Inspector General, Department of Defense
Via: Commander, Navy Installations Command

Subj: PROJECT PLANNING RESULTED IN OUTSTANDING BUILDING DEFICIENCIES AND DECREASED FUNCTIONALITY OF THE MAIN FIRE STATION AT NAVAL STATION GREAT LAKES (PROJECT NO. D20 10-DOOOLC-0236.000)

1. Forwarded. Fully concur with NAVFAC Midwest response.

R. L. WILLIAMSON

Copy to:
NAVFAC MW

4

Final Report Reference

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
MIDWEST
201 DECATUR AVENUE, BUILDING 1-A
GREAT LAKES, ILLINOIS 60088-2801

5041
Ser RE/ 0898
5 Jul 12

From: Commanding Officer, Naval Facilities Engineering Command, Midwest
To: Inspector General, Department of Defense
Via: (1) Commander, Navy Region Midwest
(2) Commander, Navy Installations Command

Subj: PROJECT PLANNING RESULTED IN OUTSTANDING BUILDING DEFICIENCIES AND DECREASED FUNCTIONALITY OF THE MAIN FIRE STATION AT NAVAL STATION GREAT LAKES (PROJECT NO. D20 1 0-DOOOLC-0236.000)

Ref: (a) Department of Defense Office of Inspector General Report of 12 Jun 12

Encl: (1) Comments on Report Findings

1. This letter is in response to Naval Facilities Engineering Command Midwest (NAVFAC MW) review of reference (a). As a result of our analysis, we agree with the three recommendations provided in the report and have taken or will take the actions listed below.

Recommendation #1: "We recommend that the Regional Fire Chief, Navy Region Midwest, and the Public Works Officer, Public Works Department Great Lakes, Naval Facilities Engineering Command, Midwest, identify existing deficiencies, such as those we identified in this report related to the required unified facilities criteria and quality of life, and implement appropriate actions to correct the deficiencies."

Response #1: Concur. The Naval Station Great Lakes Public Works Officer (PWO), Assistant PWO (APWO), and the Regional Fire Chief met on 25 April 2012 to discuss the project and current discrepancies as noted on the draft DoDIG report. All discrepancies were noted with either Service Requests submitted for correction or with projects inputted into the Work Induction Board to be designed. The Naval Station Great Lakes APWO is tracking the status of 26 items (14 have been closed, six (6) in progress, and six (6) on the list for future funding) and have been given priorities for correction. All of the projects identified are local funding authority that can be approved at the installation level.

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Per management, the comments to this report are not "For Official Use Only."

Recommendation #2: "We recommend that for future projects, the Commander, Navy Region Midwest:

a. Issue guidance requiring planners to provide sufficient detail in the "Impact If Not Provided" section on the Forms 1391 to ensure that officials reviewing and approving Forms 1391 fully understand the impact to the mission, quality of life, safety and health that would occur if the project were not funded."

Response #2a: Concur. Navy Region Midwest (N4) has issued guidance via NAVFAC Midwest Chain of Command to Public Works Department planners at all Region installations. This guidance requires planners to follow the UFC when preparing the 1391s, in the identification of deficiencies process, and documenting this in the 1391. This guidance will be reinforced as part of our Quarterly AM Community meetings. Additionally, this guidance was issued to the Integrated Product Team, Facilities Engineering and Acquisition Division, and Capital Improvements personnel. NAVFAC MW will reinforce utilization of the Business Management System (BMS) processes during the MILCON and Special Project planning cycles. The BMS processes were not in place when project was originally proposed.

a. "Issue guidance requiring Naval Facilities Engineering Command and Naval Station Great Lakes Public Works Department officials to use the checklist provided in Naval Facilities Engineering Command P-442, "Economic Analysis Handbook," October 1993, to ensure a thorough and accurate review of Forms 1391 and supporting documentation."

Response #2b: Concur. NAVFAC MW will re-enforce following the P-442 process when developing economic analysis. This will also be done as part of next Quarterly Project Planners Community Meeting to re-enforce our project development process. Additionally, Economic Analysis training will be requested specifically for NAVFAC MW as part of the rollout of a new version of Economic Analysis software. In addition, NAVFAC MW has already implemented project review processes that were not in-place when this project was under development. The POM process now requires many levels of documented project review which will be analyzed to determine if additional improvements can be made. NAVFAC also has a process for project review for MILCON projects (MTP3) and Anti-Deficiency Act reviews for SRM projects, which continue to re-enforce planning guidance and are part of the NAVFAC BMS's (B-2.1.5 Special Project Development

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and B-11.3.2 Regular Cycle Navy "Blue" MCON Region/FEC Team 1391). Each BMS does contain a checklist, which is recommended for use by Installation Planners. These BMS's were updated and put in place after this project was developed.

Recommendation #3: "We recommend that Commander, Navy Region Midwest, and Commanding Officer, Naval Facilities Engineering Command Midwest review the actions of personnel involved in preparing and reviewing planning documentation, such as the Forms 1391, supporting documentation, and the request for proposal, and based on that review:

a. Determine which personnel failed to exercise due diligence when planning a project to correct existing fire station deficiencies."

Response #3a: Concur. We reviewed the actions of the personnel involved in the preparation of the 1391s and have counseled both the Project Planner and the IPT Design Manager.

a. "Take the appropriate administrative actions."

Response #3b: No further administrative actions are required at this time. NAVFAC MW has incorporated the numerous procedural safeguards as previously mentioned and inserted relevant training into the training plan for all current and future project planners.

2. For items and findings that we disagree with, we are providing comments to address each item and finding in enclosure (1).

3. My point of contact is [redacted] NAVFAC MW Command IG, who may be reached at [redacted].

R. O. WORDEN

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Final Report Reference

COMMENTS ON REPORT FINDINGS

NAVFAC MIDWEST agrees with the findings with the exception of following items:

1. Page 1, line 12: "Renovation project will result in a fire station that does not meet the fire department's needs…" line 20: "our audit substantiated the complainant's allegations."

Disagree that the fire station does not meet the Fire Department's needs. Many improvements were made and the FD operates successfully now with greater capacity. The UFC was used to define customer requirements, to plan and to design the project. The UFC does provide leniency for budgetary constraints, and since there was not enough funding available for a new facility; judgment was used to address the most critical deficiencies for the fire department.

2. Page 5, line 23: "Furthermore proper planning would have addressed deficiencies with basic infrastructure items such as the heating, ventilation, and air conditioning; the roof; and plumbing; however, these deficiencies were outstanding after the renovation."

The heating, ventilation, and air conditioning, the roof; and plumbing were addressed in the planning and renovation, however, outstanding contractor deficiencies in workmanship remained and they were/are being corrected as noted on page 22 of the report.

3. Page 6, Second Paragraph: "Renovation Did Not Mitigate Potential Health and Safety Risks or Improve Functionality of the Fire Station."

Deleted, Pages 5 and 6

We believe this statement is incorrect. Many of the risks were mitigated and several functionality improvements were incorporated, but not all. Improvements to the building included repair of deteriorated interior electrical, mechanical, and telephone systems in the designated area of work. The architectural work included new interior finishes, repair and improvements to space configuration within the EMT designated areas of the building, and a whole building roof repair. Project included new men & women's toilet/shower rooms, weight/exercise PT room, and kitchen repairs.

- PPE Storage: The sunlight is filtered through skylight, and the wheeled lockers can be relocated to its original location.

Enclosure (1)

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- Washers and Dryers: The noise level for the dryer does require single hearing protection if within six feet, and our plan is to relocate it away from normal foot traffic.

4. Page 9, Second Paragraph: "Firefighter Alert System Was Outdated."

Firefighter Alert System is classified as "Personal Equipment or sometimes referred to as "Collateral Equipment" and not Real Property Equipment. Only Real Property Equipment would be authorized for replacement in this project. Therefore, alert system replacement was not part of the contract. The Fire Department was informed of its exclusion from the renovation project, and a new alert system will need to be submitted separately as an unfunded equipment item.

5. Page 10, First Paragraph: "Firefighter Dorm Rooms Did Not Meet UFC Requirements."

The UFC HVAC requirements are to be minimum of 68 degrees and maximum of 78 degrees with individual thermostats. While we did not provide individual thermostats due to budget constraints, our current temperature audits show the centralized system we installed to be within standards. Report also states that the walls do not provide STC rating of 50-55. Insulation was installed in each dorm room wall for sound barrier and heat loss. Heating season temperature audit was conducted in BLDG 106 from 24 March 2011 to 14 April 2011 with results showing all temperature readings at least six degrees over the heating requirement of 68 +/- two degrees. Cooling season temperature audit was conducted from a 21 May 2011 to 10 Jun 2011 and documented most rooms were at or below the cooling requirement of 78 +/- two degrees. Highest recorded peak temp was 85 degrees for less than three hours. As for the photo in the report showing a 112 degrees Fahrenheit reading, we were not able to identify when and where the photo was taken.

6. Page 11, Third Paragraph: "Firefighters Claimed the Renovation Made Fire Station Conditions Worse."

We disagree with this interpretation of the unscientific survey and of opinion. The facts would not support the survey results. Improvements to building included repair of deteriorated interior electrical, mechanical, and telephone systems in the designated area of work. The architectural work

included new interior finishes, repair and improvements to space configuration within the EMT designated areas of the building, and a whole building roof repair. Project included new men & women's toilet/shower rooms, weight/exercise PT room, and kitchen repairs. During design stage, the Fire Department as the end user was consulted to validate mission requirement, the project scope relative to that mission requirement, selection of the most efficient layout to meet the mission requirement. Changes to building layout such as addition of the EMT function, relocation of vehicles, and PPE storage location were designed per Fire Department request. NAVFAC is responsible to ensure that the scope includes appropriate design criteria/UFCs, complies with life safety codes, cost estimates are accurate and are accurately applied to the economic analysis; work classification is accurate and provides a project within available funding.

7. Page 15, First Paragraph: "New Construction Would Have Been More Economical Than Renovation."

True, the MILCON is the most economical option. However, it should be noted that the most cost effective option does not dictate the final solution and less economical solutions can also be implemented. The most economical solution is not a requirement to approve and implement projects while an Economic Analysis is a requirement. We performed an Economic Analysis for P536 (MILCON Project to replace fire station at B106) and it showed that the MILCON was only marginally more economical. The decision was made after several unsuccessful attempts due to MILCON Program constraints on MILCON funding that resulted in the requirement to renovate the existing building as the solution. With a $487M backlog in NRMW MILCON projects, the selection of P536 as a MILCON project was not likely in the foreseeable future. Waiting for MILCON programming would have resulted in the Fire Department operating out of a substandard facility with deteriorated building systems for unknown period of time.

8. Page 16, Second Paragraph: "Inconsistent Explanations for Excluding Applicable Design Criteria."

We believe this paragraph to be subjective and not inclusive of the facts discussed during the audit site visits in 2010 and 2011. Many details are left out or incorrectly stated. The UFC does provide leniency for budgetary constraints. This

guidance was used during the defining of customer requirements, planning and design of the project. There was not enough funding available for a new facility; therefore judgment was used to address the most critical deficiencies for the fire department.

9. Page 19, Third Paragraph: "Navy must invest additional funds to mitigate deficiencies that remain after the Fire Station Renovation."

The IG report states an average of 14.9 service calls per month from October 2008 to September 2009 prior to the renovation; rising to an average of 16.8 service calls per month from November 2010 to November 2011. PWD contends that this data is skewed by final adjustments to building systems during the warranty period. Following the warranty expiration, from December 2011 to May 2012; service calls have dropped to an average of 13 to 15 per month.

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Inspector General
Department of Defense

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