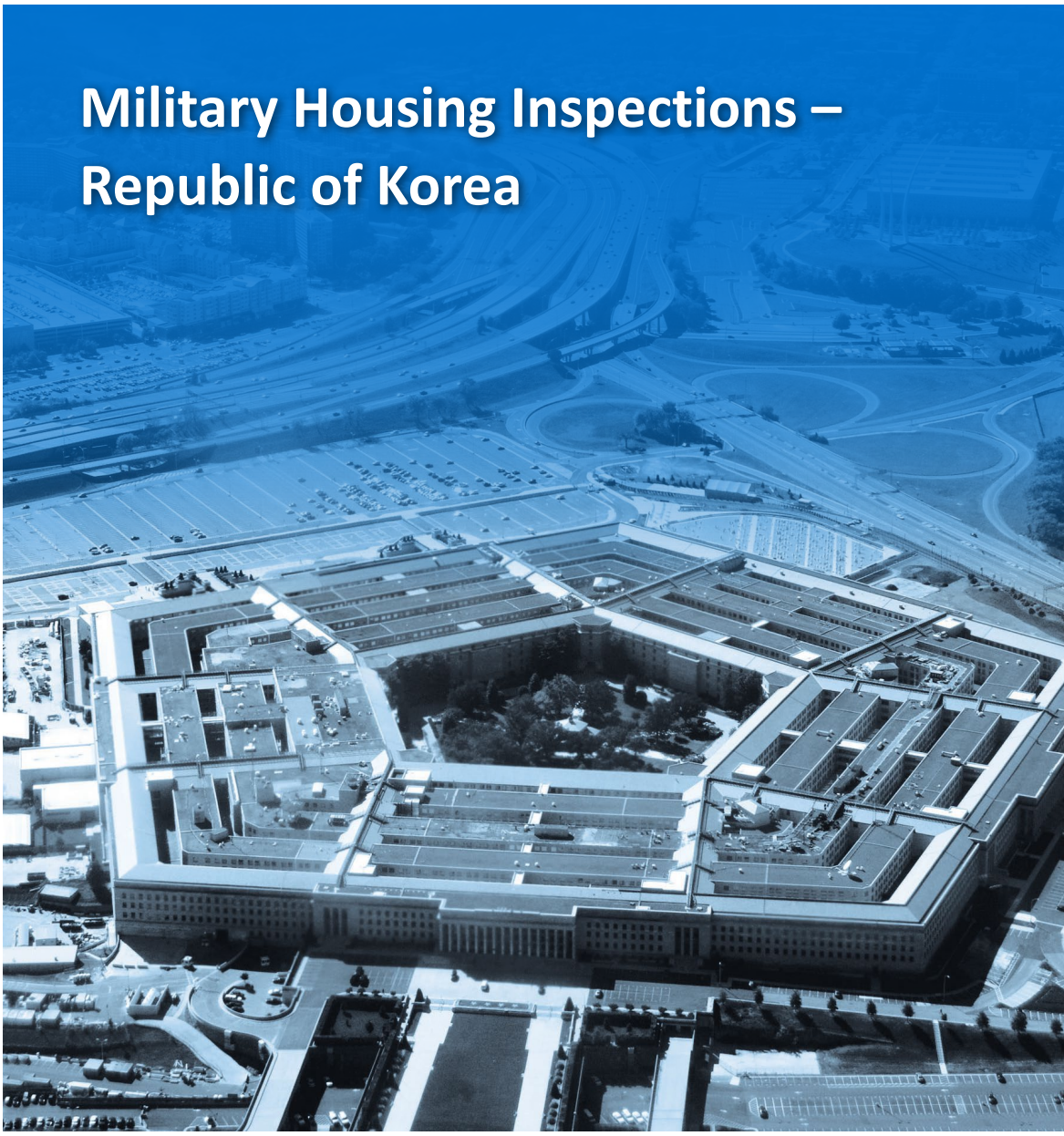
DODIG-2015-013

INSPECTOR GENERAL

U.S. Department of Defense

OCTOBER 28, 2014

Military Housing Inspections – Republic of Korea



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Report Documentation Page

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Results in Brief

Military Housing Inspections – Republic of Korea

October 28, 2014

Objective

Our objective was to inspect DoD military housing in the Republic of Korea for compliance with DoD and Federal environmental health and safety policies and standards. Those policies and standards include the Unified Facilities Criteria (UFC), National Fire Protection Association (NFPA) codes and standards, National Electrical Code (NEC), and U.S. Environmental Protection Agency (EPA) standards.

Findings

The majority of deficiencies (violations of code) identified during our inspection were attributed to insufficient inspection, maintenance, and repair of housing facilities. We identified a total of 646 deficiencies that could affect the health, safety, and well-being of warfighters and their families: 298 fire protection systems, 279 electrical systems, 53 environmental health and safety, and 16 housing management. Of the total deficiencies, we identified 11 critical deficiencies requiring immediate action in Notices of Concern (NOCs) to U.S. Pacific Command (PACOM) and U.S. Forces Korea (USFK).

We noted the following deficiencies for the Republic of Korea installations:

- Installations had inadequate resources and a lack of diligence to inspect, maintain, and repair housing facilities.
- Installation personnel did not ensure that fire protection systems were properly installed, periodically inspected, and maintained.

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Findings (cont'd)

- Installation personnel did not ensure that electrical systems were properly installed, periodically inspected, and maintained.
- Installation personnel did not follow environmental regulations or best practices to ensure the health and safety of occupants, specifically with regards to mold and radon.
- Housing management systems were not fully implemented and procedures were not always followed by installation personnel.

Recommendations

We recommend that the respective Military Departments, as applicable:

- Conduct an effective root cause analysis and corrective action for all 646 deficiencies in this report.
- Ensure that these deficiencies do not exist in other housing units.
- Ensure the inspection, maintenance, and repair program is in compliance with applicable codes and standards.
- Ensure that sufficient, qualified resources are available and assigned to inspect and verify that all housing buildings and units are in compliance with requirements.
- Ensure that housing management systems and processes are fully implemented and followed for all installations.

We recommend that the Under Secretary of Defense for Acquisition, Technology, and Logistics (OUSD(AT&L)) include guidance, per EPA standards, for both accompanied and unaccompanied housing within the Overseas Environmental Baseline Guidance Document for:

- Control and remediation of mold.
- Radon evaluation and mitigation.

Management Comments and Our Response

PACOM, USFK, Department of the Army, and the Department of the Air Force provided comments agreeing with all recommendations. The comments are fully responsive, and we do not require additional comments.

OUSD (AT&L (I&E)) disagreed with our recommendation that they provide policy and guidance for the control and remediation of mold and radon for accompanied and unaccompanied housing for the warfighter and their families. Therefore, we strongly request that OUSD (AT&L) reconsider their position and provide additional comments in response to this final report. See Recommendations Table on the following page.

Recommendations Table

Management	No Additional Comments Required	Recommendations Requiring Comment
Military Departments	A, B, C, D.1, and E	
OUSD (AT&L)*		D.2.a and D.2.b
PACOM and USFK	A, B, C, D.1, and E	

*Provide management comments by November 28, 2014.

INSPECTOR GENERAL
DEPARTMENT OF DEFENSE
4800 MARK CENTER DRIVE
ALEXANDRIA, VIRGINIA 22350-1500

October 28, 2014

MEMORANDUM FOR SECRETARY OF THE ARMY
SECRETARY OF THE AIR FORCE
UNDER SECRETARY OF DEFENSE FOR ACQUISITION, TECHNOLOGY AND LOGISTICS
COMMANDER, UNITED STATES PACIFIC COMMAND
COMMANDER, UNITED STATES FORCES KOREA

SUBJECT: Military Housing Inspections – Republic of Korea (Report No. DODIG-2015-013)

The DoD Office of Inspector General (OIG) conducted the subject inspections of military housing facilities in the Republic of Korea (ROK) for compliance with applicable DoD and Federal policies and standards. The categories of inspection were electrical, fire protection systems, and environmental health and safety. The environmental inspections focused on radiation, radon, mold, pest infestation, water quality, lead-based paint, and asbestos. We inspected approximately 12 percent of occupied housing buildings at 13 military installations in the ROK and identified 646 total deficiencies (violations of code).

We provided our findings/deficiencies in a draft of this report to U.S. Pacific Command (PACOM), U.S. Forces Korea (USFK), the Service components, and the Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics (OUSD (AT&L)). Although PACOM and USFK and the Services agreed with our recommendations, the Acting Deputy Under Secretary of Defense for Installations and Environment disagreed with our recommendation to issue policy for both control and remediation of mold and radon. Based on our inspection, the significant presence of mold and DoD's current ad hoc approach to radon mitigation places unnecessary risk on the warfighter and their dependents. The OIG DoD firmly believes that serious health hazards such as these need to be addressed at the DoD level. Therefore, we request further comments from the Under Secretary of Defense for Acquisition, Technology, and Logistics on our recommendations relating to radon and mold by November 28, 2014.

We considered management comments on a draft of this report when preparing the final report. DoD Directive 7650.3 requires that recommendations be resolved promptly. If possible, send a .pdf file containing your comments to [redacted]. Copies of your comments must have the actual signature of the authorizing official for your organization. We are unable to accept the /Signed/ symbol in place of the actual signature. If you arrange to send classified comments electronically, you must send them over the SECRET Internet Protocol Router Network (SIPRNET).

I wish to thank Deputy Commander, U.S. Pacific Command, LTG Tony Crutchfield, and the Commander, U.S Forces Korea, GEN Curtis Scaparrotti, and their staffs for the professionalism, support, and courtesies extended to our inspection team. The DoD OIG is proud and humbled to have met many warfighter families stationed throughout the ROK during the course of this inspection.

Please direct questions to [redacted].

Randolph R. Stone
Deputy Inspector General
Policy and Oversight

cc:

Assistant Secretary of the Air Force (Financial Management and Comptroller)
Army Inspector General
Naval Inspector General
Auditor General, Department of the Army

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Introduction

Objective

Our objective was to inspect DoD military housing in the Republic of Korea (ROK) for compliance with DoD and Federal environmental health and safety policies and standards. Those policies and standards include the Unified Facilities Criteria (UFC), National Fire Protection Association (NFPA) codes and standards, National Electrical Code (NEC), and U.S. Environmental Protection Agency (EPA) standards.

Background

Approximately 28,500 military personnel are stationed at installations throughout the Republic of Korea. In support of the DoD Office of Inspector General's (OIG) mission to ensure the health and safety of warfighters and their families, we announced the inspection of military housing in Asia on July 18, 2013.

Inspections were conducted in the Republic of Korea because of the strategic realignment of installations in the Pacific, and the transition of U.S. Forces Korea (USFK) elements from United States Army Garrison (USAG) Yongsan to Camp Humphreys. Camp Humphreys is the site of the largest construction and transformation project in the U.S. Department of Defense's history.

Inspection Process

We inspected DoD military housing facilities in the Republic of Korea for compliance with applicable DoD and Federal environmental health and safety policies and standards. The categories of inspection were electrical, fire protection systems, and environmental health and safety. The environmental inspections focused on radon, mold, water quality, pest infestation, lead-based paint, asbestos, and radiation standards. We inspected accompanied units (family housing) and unaccompanied units (barracks and dormitories), mechanical rooms, and common areas; interviewed personnel; evaluated housing service order requests and public work records; and examined program management plans and survey results. See Appendix A for additional scope and methodology.

We inspected electrical and fire protection systems in housing facilities for compliance with NEC, UFC, NFPA standards. We measured radon and radiation levels at both accompanied and unaccompanied housing including playgrounds, ball fields, and lodges. See Appendixes B and C for the inspection processes for the radon and radiation surveys, respectively. We evaluated water quality testing results (monthly, quarterly, and annually) at each installation and inspected

onsite water treatment plants, if applicable. During the onsite inspection, we interviewed residents for any concerns regarding drinking water quality. For lead-based paint, we evaluated the lead hazard management programs to see if the installations identified, controlled, or eliminated lead-based paint hazards through interim controls or abatement. For asbestos, we evaluated the asbestos management programs to determine whether each installation managed friable and non-friable Asbestos-Containing Materials (ACM) in accordance with environmental requirements. In addition, we visually inspected for lead-based paint and ACM in buildings followed by ensuring their inclusion in the lead-based paint and asbestos inventories.

ROK U.S. installations are subdivided into six areas of responsibility, as listed. The inspections were conducted at the following installations (also shown in Figure 1):

- Area I: USAG Camp Red Cloud
  - Camp Bonifas
  - Camp Casey
  - Camp Hovey
  - Camp Jackson
  - Camp Red Cloud
  - Camp Stanley
- Area II: USAG Yongsan
- Area III: USAG Humphreys
- Area IV: USAG Daegu
  - Camp Carroll
  - Camp Henry
  - Camp Walker
- Area V: Osan Air Base
- Area VI: Kunsan Air Base

Figure 1. Installations inspected in the Republic of Korea
Source: DoD OIG

Between March 10, 2014 and April 24, 2014, we inspected an average of 12 percent of occupied housing buildings. We selected buildings and units of a variety of size, type, and age; considered complaints received, work orders submitted, and onsite information gathered. We also inspected common areas such as utility rooms, boiler rooms, laundry rooms, lounges, and common kitchen areas.

The inspection was performed by fire protection engineers, environmental engineers, industrial hygienists, master electricians, radiation health physicists, and quality assurance engineers. Inspectors populated deficiency forms for each deficiency identified. Appendix D contains a full list of inspection criteria and Appendix E contains a sample deficiency form. At the end of each inspection, we briefed installation commands on the results and provided a draft copy of all deficiencies identified on their installation.

Notices of Concern

We issued two Notices of Concern (NOCs) to U.S. Pacific Command (PACOM) and USFK because of critical health and safety deficiencies requiring immediate corrective action; management comments are included in Appendix F.

Relevant Inspection Policy

We inspected facilities for compliance with applicable U.S law, DoD policies, Service requirements, and installation-specific standard operating procedures. DoD policies include DoD Instruction (DoDI) 4165.63, "DoD Housing," and DoD Manual (DoDM) 4165.63M, "DoD Housing Management," which specify adequacy of DoD housing. According to DoD policies, DoD housing must meet minimum standards for configuration, privacy, condition, health, and safety. DoDM 4165.63M states that DoD housing "shall be operated and maintained to a standard that protects the facilities from deterioration and provides safe and comfortable living places for Service members and their dependents." The Manual assigns responsibility to installation commanders to "ensure that the operation, maintenance, and repair of DoD housing and major building components are being performed to provide excellent facilities in the most cost-effective manner." For host nation-funded installations, we referred to DoD Directive (DoDD) 4270.34, "Host Nation-Funded Construction Programs in the U.S. Pacific Command Area of Responsibility." The Directive requires that host nation-funded projects be designed and constructed to meet U.S. military construction program criteria for personnel health and safety and environmental protection. Military construction outside of the United States is also governed by Status of Forces Agreements, Host Nation-Funded Construction Agreements, and in some instances, Bilateral Infrastructure Agreements.

DoDI 4715.05, "Environmental Compliance at Installations Outside the United States," establishes policy and assigns responsibilities for managing environmental compliance to protect human health and safety at DoD installations outside the United States. DoDI 4715.05 requires a comprehensive set of country-specific substantive provisions, called the Final Governing Standards (FGS) to protect human health and the environment in foreign countries identified by the Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)). DoDI 4715.05 also references DoD 4715.05-G, "Overseas Environmental Baseline Guidance Document (OEBGD)," to provide criteria and management practices for environmental compliance at U.S. installations overseas. The USFK 201-1, "Environmental Governing Standards" (EGS) are the FGS for the Republic of Korea. The environmental inspections focused on compliance with the requirements and policies established in the EGS and other applicable UFCs.

Inspection Criteria

Typically inspections were conducted in accordance with the latest standard and regulations to identify all hazard concerns. A facility's age could necessitate the use of an older edition code or regulation; however, we used the latest standards and regulations as the criteria for our inspections so that each facility could be compared to the same baseline. Any noncompliance with UFC, NFPA, NEC, EGS, environmental standards, DoD policies and instructions, Service policies, and internal base procedures and processes were documented as deficiencies. The following sections provide further details on the criteria for our inspection; Appendix D contains a full list of inspection criteria.

DoD Unified Facilities Criteria

The DoD Unified Facilities Criteria (UFC) streamlines all technical criteria and standards pertaining to the planning, designing, construction, and operation and maintenance (O&M) of real property facilities. It applies to the Military Departments, DoD agencies, and DoD field activities. UFC standards used for this inspection include UFC 4-711-01, "Family Housing," UFC 3-600-01 Change 1, "Fire Protection Engineering for Facilities," UFC 3-520-01 Change 1, "Interior Electrical Systems," and UFC 3-560-01, "Electrical Safety – O&M." In most cases, UFCs state that if requirements in NFPA or host nation agreements are more stringent than requirements in a UFC, the more stringent requirement takes precedence.

National Fire Protection Association Standards

The NFPA is an internationally recognized organization that publishes 300 codes and standards for minimizing the risks and effects of fire by establishing criteria for building, design, service, and installation in the United States and other countries. NFPA standards used in this inspection include NFPA 70, "National Electrical Code," which is the most widely used code for electrical installations. We also used NFPA 1, "Fire Code," which establishes requirements for fire safety and property protection in new and existing buildings and NFPA 101, "Life Safety Code," which establishes requirements to protect building occupants from fire, smoke, and toxic fumes.

Environmental Protection Agency Standards

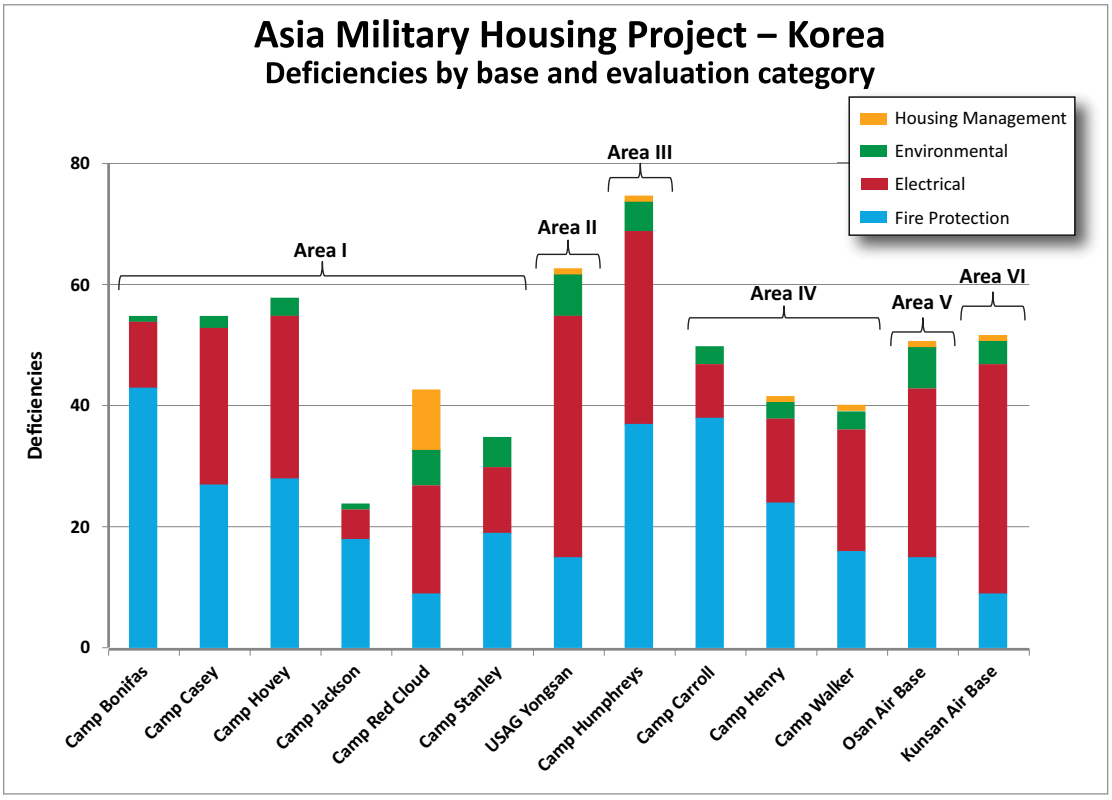
We used EPA standards for the radon and radiation surveys. We compared radon and radiation measurements taken during the inspection to the EPA exposure limits.

Categorization of Deficiencies

During the housing inspections at 13 military installations in the Republic of Korea, we documented 646 deficiencies (violations of code) affecting the life, health, and safety of warfighters and their families (see Appendix G). Deficiencies documented noncompliance with the UFC, NFPA, NEC, EGS, environmental standards, DoD policies and instructions, Armed Services policies, and internal procedures and processes at each facility. Deficiencies were classified into four primary categories: fire protection, electrical, environmental health and safety, and housing management. Environmental health and safety deficiencies were further delineated into the following subcategories: mold, asbestos/lead/polychlorinated biphenyls (PCBs), radon, water quality, pest infestation, and radiation. Based on the time of the year during which the inspections were conducted, an additional subcategory for Heating, Ventilation, and Air Conditioning (HVAC) systems was created to capture poorly maintained HVAC systems as they contribute to conditions conducive to mold growth. As we performed the ROK inspections in the March-April timeframe, we were not in Korea at the time of year when mold is in season, we therefore focused on HVAC systems as that leads to conditions conducive to mold growth. An additional subcategory was created to capture deficiencies related to spill containment practices for environmental contaminants that were found as being employed during the course of these inspections. Contamination deficiencies include the fuel tanks without a secondary containment system to control fuel leaks, oil spills and unmitigated volatile organic compounds. Our evaluation of housing management included an inspection of processes, databases, and components responsible for overall implementation of

housing policies. Figure 2 shows deficiencies in the four evaluation categories. Based on our radiation measurements, the estimated individual annual doses at each USFK installation were very low. At these levels, there are no demonstrable radiation-induced health effects.

Figure 2. Number Of Deficiencies By Base Installation And Evaluation Category



Installation Inspections

Area I: U. S. Army Garrison Red Cloud

USAG Red Cloud is located in and around Uijongbu, and between Seoul and the Korean Demilitarized Zone (DMZ). The weather is similar to Seoul's with four distinct seasons. Area I military installations' primary mission is to coordinate with ROK to deter aggression, and defend the ROK. Area I is comprised of various installations; we inspected Camp Bonifas, Camp Casey, Camp Hovey, Camp Jackson, Camp Red Cloud, and Camp Stanley. Area I has a community of about 14,000 service members, families, civilians, contractors, retirees, and Korean Augmentation to the United States Army (KATUSA) soldiers. Camp Bonifas is base camp for the United Nations Command Security Force-Joint Security Area. Camp Jackson is home to the KATUSA training academy for Korean soldiers temporarily assigned to U.S. military units. USAG Red Cloud, Department of Public Works (DPW) is responsible for Business Operations and Integration (BO&I), engineering, environmental, housing, master plans, and O&M functions and activities.

From March 17 through March 28, 2014, we inspected 110 units in 35 buildings. On April 9, 2014, we issued a NOC (see Appendix F) because of 5 deficiencies requiring immediate action (out of 242 deficiencies identified at installations throughout USAG Red Cloud). We found electrical grounding issues at Camp Jackson and Camp Stanley. In one example, a building at Camp Jackson was not electrically grounded in accordance with code because the building electrode was disconnected from the main water pipe. This created an electrocution hazard to anyone in contact with the equipment (see Figure 3). Also, buildings at Camp Jackson, Camp Bonifas, and Camp Stanley had fossil fuel burning equipment and lacked carbon monoxide alarms. Soot build-up on surfaces and around vent flue joints and dampers of the boilers in the mechanical rooms were signs of inadequate combustion ventilation, indicating higher risk of carbon monoxide poisoning.

Figure 3. Grounding electrode disconnected leaving the building ungrounded. (Deficiency No. JAC-EL-140326-006) Source: DoD OIG

In addition to those deficiencies identified in the NOC, we also noted installation-wide deficiencies. See Table 1 for deficiencies identified in USAG Red Cloud installations.

Table 1. USAG Red Cloud Deficiencies Categorization

Installation:	Fire Protection	Electrical	Environmental							Housing Management	Total
			Mold	HVAC	Lead/Asbestos	Contamination	Water Quality	Radon	Pest Infestation		
Camp Bonifas	9	11	1	0	0	0	0	0	0	0	21
Camp Casey	27	26	1	0	0	1	0	0	0	0	55
Camp Hovey	18	27	1	1	0	1	0	0	0	0	48
Camp Jackson	15	5	0	1	0	0	0	0	0	0	21
Camp Red Cloud	28	18	2	0	0	3	0	2	0	10	63
Camp Stanley	19	11	3	0	0	2	0	1	0	0	36

Figure 4. Ineffective use of fire doors allows fire to draft through the entire building. Left: Fire rated doors often propped open (Deficiency No. CAS-FP-140317-024) Right: Broken automatic closing mechanisms (Deficiency No. CRC-FP-140324-013)
Source: DoD OIG

Fire protection deficiencies included fire doors that were propped open, did not automatically and fully close, and were not fire rated (see Figure 4). We found dryer vents that were disconnected, pinched or shredded, and constructed of improper material (see Figure 5). Also, we found multiple sprinkler systems that were out of service and without temporary life safety measures.

Figure 5. Left: Clogged dryer duct (Deficiency No. BON-FP-140317-007). Right: Disconnected and damaged dryer duct (Deficiency No. HOV-FP-140317-006)
Source: DoD OIG

Electrical deficiencies included severe corrosion on electrical panels, missing light fixture covers in showers, and reverse polarized electrical outlets. We found broken and incomplete conduits, missing covers on junction boxes, and lack of ground fault circuit interrupter (GFCI) protection on vending machines and water coolers. These deficiencies create an electrocution hazard for installation personnel and occupants.

Environmental deficiencies included lack of maintenance on air handling units and fan-coil units. These components control moisture, provide positive pressure and temperature-conditioned airflow, and filter air from contaminants such as mold and bacteria.

In housing management, we found that the housing office did not always inspect units during move-in/move-out, and also buildings that were vacant for extended periods. We also found that inspection results were not always recorded. By not conducting housing inspections, damage and deterioration can go unnoticed.

Area II: USAG Yongsan

USAG Yongsan, is located in the heart of Seoul, Republic of Korea. Yongsan has four clearly distinct seasons. USAG Yongsan is home to more than 21,000 personnel, including service members, families, civilians, contractors, retirees, and KATUSA soldiers. It is also the headquarters for United Nations Command, Combined Forces Command, USFK, and the Eighth Army. DPW Housing Division is responsible for housing management activities at USAG Yongsan.

From March 10 through March 13, 2014, we inspected 29 units in 19 buildings, including multi-unit, barracks, towers, and single family homes. On April 9, 2014, we issued a NOC (see Appendix F) because of 2 deficiencies requiring immediate

action (out of the 91 deficiencies identified at USAG Yongsan). In one building, we found a fire alarm that was out of service leaving building occupants without means of fire detection or notification. Two other buildings had heating oil leaking onto electric blower motors creating a fire hazard for housing occupants.

In addition to those deficiencies identified in the NOC, we also noted installation-wide deficiencies. See Table 2 for deficiencies identified at USAG Yongsan.

Table 2. USAG Yongsan Deficiency Categorization

Installation:	Fire Protection	Electrical	Environmental							Housing Management	Total
			Mold	HVAC	Lead/Asbestos	Contamination	Water Quality	Radon	Pest Infestation		
USAG Yongsan	43	40	2	1	0	2	0	2	0	1	91

Fire protection deficiencies included inadequate exit signage and inoperable emergency lights. We found damaged sprinkler systems, missing manual pull stations at required locations, and non-functioning fire alarm control panels that were abandoned-in-place. Similar to other installations, we found fire doors propped open and not fire rated, and an insufficient number of carbon monoxide detectors. These deficiencies increase the risk of loss of life and property.

Electrical deficiencies included exposed energized wiring due to missing electrical service panel breaker blanks, missing knockout seals and covers in junction boxes, and missing exterior light fixture covers. We found that water circulating pumps in several buildings had missing or disconnected ground wires (see Figure 6). Similarly, we found that main electrical panels were not properly grounded through a bonding jumper in several buildings. Also, junction boxes were obstructed and inaccessible. These deficiencies create electrocution hazards for installation personnel.

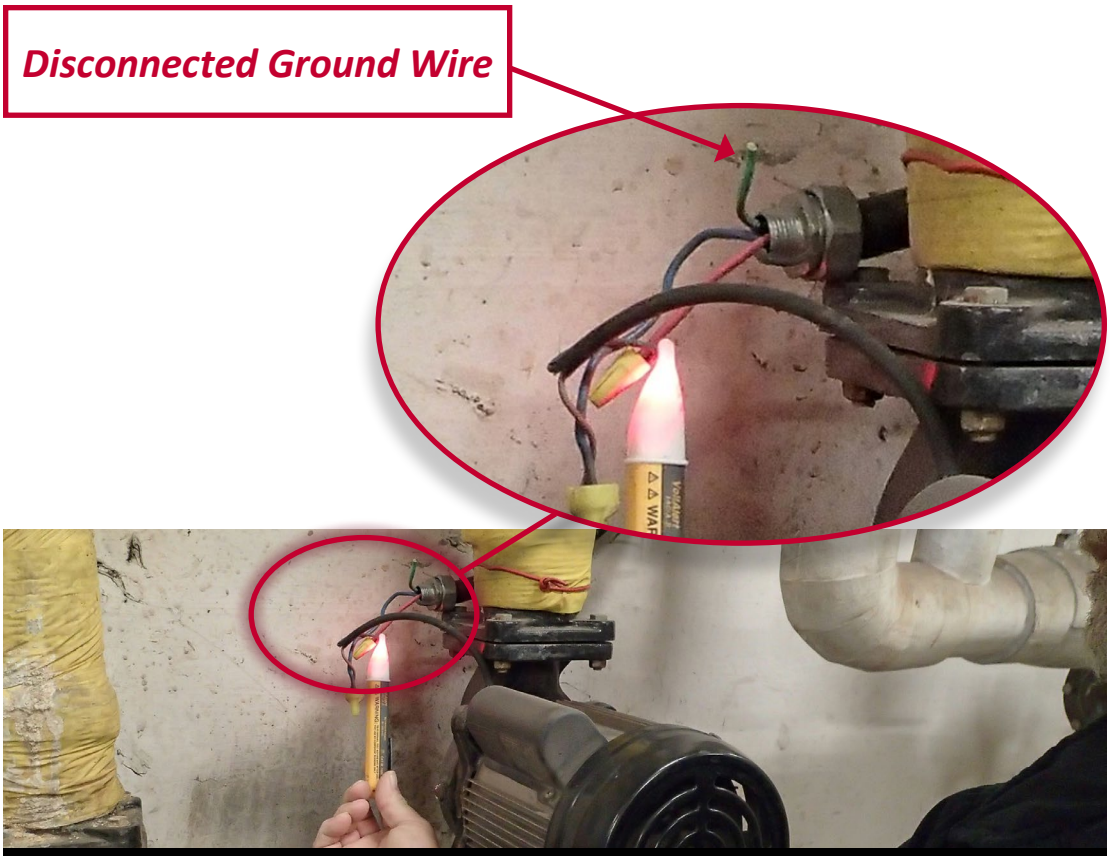


Figure 6. Hot water circulating pump is not grounded. Illuminated sensor probe indicates that conductor is energized (Deficiency No. YON-EL-140310-015)
Source: DoD OIG

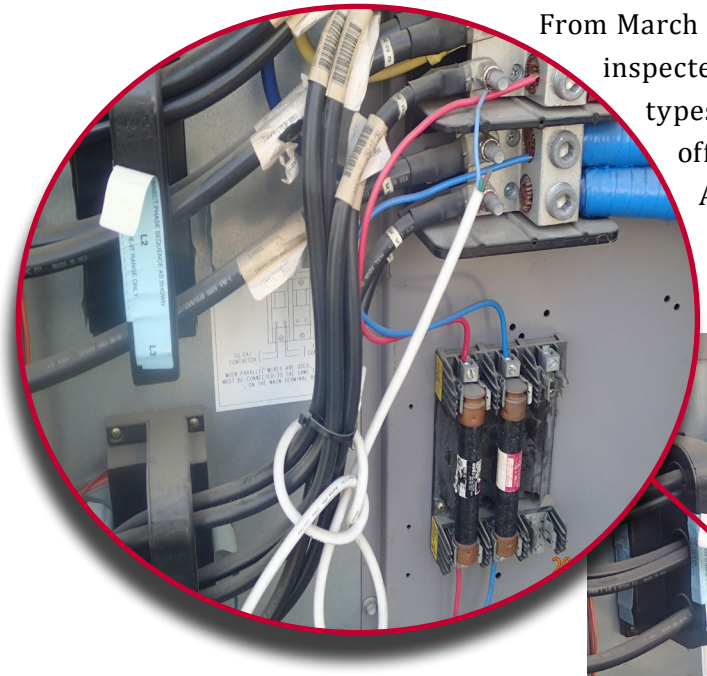
Environmental deficiencies included the lack of records of follow-up action on mitigation systems at three housing units that previously exceeded EPA recommended radon action levels.[1] It is of note that the Department of Public Works Environmental Division awarded a contract in 2013 to conduct additional radon tests to bring into compliance. We consider this a step in the right direction, although we did not perform an evaluation of the radon test contract. As at other installations, we found inadequate air filtration in buildings, which caused dust build-up.

An example of a housing management deficiency included facility management planning personnel not developing an Unaccompanied Housing Master Plan as required by its standard operating procedure for housing management. The lack of a documented Unaccompanied Housing Master Plan will lead to inadequate living accommodations and poor maintenance.

[1] UFC 4-711-01 "Family Housing," July 13, 2006 requires installation personnel to adhere to EPA recommendations for construction and mitigation.

Area III: USAG Humphreys

USAG Humphreys is located within the city of Pyeongtaek, approximately 35 miles south of Seoul, on the western coast of Republic of Korea. USAG Humphreys has four distinct seasons with its rainy season from June through August. USAG Humphreys is the site of the largest construction and transformation project in DoD history, with the population increasing from 10,000 to about 36,000 soldiers, civilians, and family members. USAG Humphreys is home to the Army's most active airfield in the Pacific, the 2nd Combat Aviation Brigade, elements of the 1st Signal Brigade, 501st Military Intelligence Brigade, 65th Medical Brigade, and many other tactical and direct support military units and commands. The DPW is responsible for all of the buildings' operations, inspections, and maintenance.



From March 31 through April 4, 2014, we inspected 28 units in 9 buildings of various types, including towers, bachelor officer quarters and barracks. On April 9, 2014, we issued a NOC (see Appendix F) because of 4 deficiencies requiring immediate action (out of the 75 deficiencies identified at Camp Humphreys). These deficiencies included an entire building not grounded, an exposed energized wire inside an elevator motor, and an extension cord incorrectly hard-wired to a high-powered electrical panel (see Figure 7). We also found that the drinking water supply had not been tested monthly for coliform bacteria since July 2013 as required by the USFK EGS.

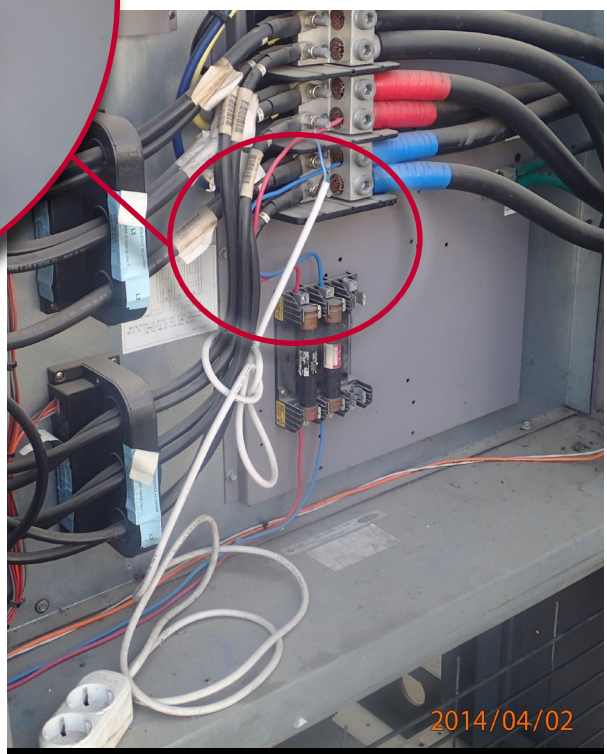


Figure 7: A drop cord hard-wired directly to conductors fused at 400 Amps inside the chiller electrical power panel (Deficiency No. HUM-EL-140331-021A) Source: DoD OIG

In addition to those deficiencies identified in the NOC, we also noted installation-wide deficiencies. See Table 3 for deficiencies identified at USAG Humphreys.

Table 3. USAG Humphreys Deficiency Categorization

Installation:	Fire Protection	Electrical	Environmental							Housing Management	Total
			Mold	HVAC	Lead/Asbestos	Contamination	Water Quality	Radon	Pest Infestation		
Camp Humphreys	37	32	2	0	0	1	1	1	0	1	75

Fire protection deficiencies included corroded and leaking sprinkler system components. We also found improperly installed and damaged dryer exhaust transition ducts. As at other installations, we found fire doors propped open and not latching, emergency lights missing or malfunctioning, and buildings without carbon monoxide detectors. These deficiencies increase the risk of fire resulting in the loss of life and property.

Electrical deficiencies included deteriorated and broken leak detection and alarm systems for exterior fuel tanks, broken or improperly maintained heating and ventilation equipment in mechanical and electrical rooms, and electrical receptacles with incorrect voltages. As at other installations, we found broken or missing light fixture covers in wet or damp locations. These deficiencies create an electrocution hazard for installation personnel.

Environmental deficiencies included inoperable building exhaust fans, clogged air filters, and presence of mold in housing units due to inconsistent maintenance and surveillance of air handling and ventilation systems. These issues can lead to costly repairs and reduced system effectiveness. It was not possible to verify that appropriate mitigation activities were being conducted, as USAG Humphreys had no radon data available. Therefore, USAG Humphreys cannot ensure that the warfighter remains protected from unsafe levels of radon exposure.

Housing management deficiencies identified a lack of garrison housing managers as required by the Army's housing management program, specifically the First Sergeants Barracks Program (FSBP). As stated in the FSBP, the garrison housing manager serves as the primary point of contact; trained and proficient in operations, the housing manager's expertise is critical for unaccompanied housing management. The absence of garrison housing managers can result in poor management of the unaccompanied housing units and subsequently degrade the health and welfare of the warfighter.

Area IV: USAG Daegu

USAG Daegu is located approximately 200 miles south of Seoul in the Gyeongbuk province. This area receives little precipitation except during the summer and has a continental climate with dry winters and hot summers. USAG Daegu is comprised of various installations; we inspected Camp Carroll, Camp Henry, and Camp Walker. Camp Carroll is home to the 19th Expeditionary Sustainment Command, 403rd Army Field Support Brigade, 36th Signal Battalion, 6th Ordinance Battalion, and 501st Sustainment Brigade. USAG Headquarters Daegu is located at Camp Henry, which consists of mainly administrative buildings and community support activities. USAG Daegu has a population of more than 8,000 personnel, which includes soldiers from different Services, DoD civilians, contractors, Korean national employees, KATUSA soldiers, and family members. The USAG Daegu DPW is responsible for BO&I, contracting, utilities, base and grounds, fire alarm and suppression, environmental, housing, and master planning.

From April 21 through April 25, 2014, we inspected 42 units in 12 buildings, including multi-unit, barracks, towers, and single family homes. There were no NOC deficiencies identified at USAG Daegu; however, we noted installation-wide deficiencies. See Table 4 for deficiencies identified at USAG Daegu.

Table 4. USAG Daegu Deficiency Categorization

Installation:	Fire Protection	Electrical	Environmental							Housing Management	Total
			Mold	HVAC	Lead/Asbestos	Contamination	Water Quality	Radon	Pest Infestation		
Camp Carroll	9	9	1	1	0	1	0	1	0	0	22
Camp Henry	16	14	1	0	0	0	0	2	0	1	34
Camp Walker	15	20	1	0	0	1	0	1	0	1	39

Fire protection deficiencies included inadequate exit diagrams, missing or broken exit signs, inoperable emergency lighting, and corridor fire doors propped open or damaged. We found buildings with heavily corroded sprinkler valves and missing sprinkler coverage in some required areas. As at other bases, we found a lack of carbon monoxide detectors in buildings with fossil fuel-burning equipment and inappropriate material used for dryer exhaust transition ducts. These deficiencies increase the risk of loss of life and property.

Electrical deficiencies included single buildings being supplied by multiple service drops (see Figure 8) and service drops/power lines that were too low. As at other bases, we found that water circulating pump motors were not grounded in mechanical rooms and several instances where GFCI protection was missing. We found exposed energized wiring due to missing electrical service panel breaker blanks or broken electrical covers, missing exterior light fixture covers, and missing knockout seals and covers in junction boxes. Additionally, we found several grounding issues where the first disconnecting means at the main electrical panel was not bonded. These deficiencies create electrocution hazards for installation personnel.

Figure 8: Multiple service drops supplying a single building -- no single means of disconnecting power to this building. (Deficiency No. WAL-EL-140421-015)
Source: DoD OIG

Environmental deficiencies were similar to other installations' issues with inconsistent maintenance and surveillance of air handling and ventilation systems. It is noteworthy that Camp Carroll maintained its records from previous radon assessments. However, Camp Walker and Camp Henry had not established a radon reduction program as required by Army facilities management. Breathing radon can increase risk of lung cancer.

Housing management deficiencies identified that the FSBP had not been fully implemented for unaccompanied personnel housing. For example, some unit barrack managers were not utilizing the Enterprise Military Housing (eMH) systems as required by the FSBP. The eMH is the Army's data processing application to centralize unaccompanied housing management, asset oversight, furnishings accountability and utilization reporting to improve the quality of housing and quality of life for the warfighter.

Area V: Osan Air Base

Osan Air Base is located in Pyongtaek City, 40 miles south of Seoul. Osan Air Base has a climate similar to Seoul with four distinct seasons and monsoon season in July and August. Osan Air Base is one of two major airfields operated by the U.S. in South Korea and home to the 51st Fighter Wing. The base has a community of about 10,000 personnel including air men, families, and other civilians. Osan Air Base currently has both family housing buildings and dormitories. The 51st Civil Engineer Squadron Installation Management Flight has ownership of all the buildings' operations, inspection, and maintenance.

From April 4 through April 11, 2014, we inspected 35 units in 9 buildings of various types, including towers, bachelor officer quarters and dormitories. There were no NOC deficiencies identified at Osan Air Base; however, we noted installation-wide deficiencies. See Table 5 for deficiencies identified at Osan Air Base.

Table 5. Osan Air Base Deficiency Categorization

Installation:	Fire Protection	Electrical	Environmental							Housing Management	Total
			Mold	HVAC	Lead/Asbestos	Contamination	Water Quality	Radon	Pest Infestation		
Osan Air Base	38	28	2	2	0	1	0	2	0	1	74

Fire protection deficiencies included fire alarm systems that were not completely functional, many with "trouble indicators," signaling a technical problem with the system. Fire doors were propped open, missing closer mechanisms, or were not properly closing. In addition, we found abandoned dryer exhaust ducts that were inappropriately closed off but still connected to the common vent. As at other bases, the majority of emergency lights were inadequate or broken. Also, the buildings surveyed lacked carbon monoxide detectors. These deficiencies increase the risk of fire, and loss of life and property.

Electrical deficiencies included inadequate vent space for cooling transformers (see Figure 9), and improperly maintained or functioning temperature control equipment in mechanical and electrical rooms. As at other bases, we found broken conduits, receptacles with reversed polarity, and missing covers in junction boxes. We also identified missing GFCI protection in laundry rooms, vending machines, and water coolers. These deficiencies create electrocution hazards for installation personnel.

Figure 9. Inadequate transformer clearance from wall. Overheating can cause early equipment failure, fire, and explosion (Deficiency No. OSA-EL-140407-018)
Source: DoD OIG

Environmental deficiencies included that Osan Air Base did not effectively detect and remediate mold conditions in accordance with Air Force policy as evidenced by mold found in several buildings (see Figure 10). In addition, Osan Air Base did not address the radon issue at buildings that exceeded acceptable radon levels and did not develop and implement a radon mitigation program for military housing, despite EPA studies stating that radon is a carcinogen that causes thousands of deaths each year.

Figure 10. Mold unchecked, unreported, and unmitigated (Deficiency No. OSA-EN-140407-007)
Source: DoD OIG

Housing management deficiencies included the ratio of 1 Airmen Dormitory Leader (ADL) per 340 rooms. The Air Force Instruction (AFI) 32-6005, "Unaccompanied Housing Management," requires 1 ADL per a maximum of 145 rooms. ADL's were overworked and unable to perform adequate follow-up of building maintenance. As a result, warfighter standard of living, health, and safety can be affected.

Area VI: Kunsan Air Base

Kunsan Air Base is located approximately 150 miles south of Seoul. The weather at Kunsan Air Base is cooler year-round due to its proximity to the ocean. The 8th Fighter Wing, known as the "Wolf Pack," is the base's host unit. The Kunsan Air Base community has about 2,900 personnel including airmen, DoD civilians, and contractors. The 8th Civil Engineer Squadron Installation Management Flight is responsible for all of the buildings' operations, inspection, and maintenance.

From April 14 through April 18, 2014, we inspected 33 units in 11 buildings of various building types, including multi-unit, barracks, towers, and bachelor officer quarters. There were no NOC deficiencies identified at Kunsan Air Base; however, we noted installation-wide deficiencies. See Table 6 for deficiencies identified at Kunsan Air Base.

Table 6. Kunsan AB Deficiency Categorization

Installation:	Fire Protection	Electrical	Environmental							Housing Management	Total
			Mold	HVAC	Lead/Asbestos	Contamination	Water Quality	Radon	Pest Infestation		
Kunsan Air Base	24	38	3	0	0	1	0	0	0	1	67

Fire protection deficiencies included multiple buildings with overdue repairs on fire alarm and sprinkler systems. We found excessive corrosion on fire pumps, valves, and fittings. As at other bases, we found broken exit signs, emergency lighting that was inadequate or broken, and fire doors that did not close properly, latching, or propped open. In laundry rooms, we found abandoned and disconnected exhaust ducts, and excessive lint build-up on walls and exhaust ducts. These deficiencies increase the risk of fire, resulting in the loss of life and property.

Electrical deficiencies included a lack of monitoring and maintenance of fuel tank leak detector systems. We found building service drops improperly attached and abrading against a mechanical room door. We also found water heaters not grounded in single family units. As at other bases, we found exposed energized wiring due to missing electrical service panel breaker blanks or broken electrical covers, missing exterior light fixture covers, homemade dead fronts for electrical panels that were not certified per code, and missing knockout seals and covers in junction boxes. Also, we identified conductor wires that were fused at a higher rating than their amp rating. These deficiencies create electrocution hazards for installation personnel.

Environmental deficiencies included water damage to ceiling tiles and drywall due to poorly maintained HVAC systems and plumbing pipes. We also found that in some instances, the air handling units were not operating. We noted a lack of communication between unaccompanied housing and the civil engineering component on established roles and responsibilities. For example, there were no agreed-upon procedures for preventive maintenance of the fan coil unit filters and air registers (see Figure 11).

Housing management deficiencies included the ratio of ADLs to dormitories. The AFI32-6005, "Unaccompanied Housing Management," states that one ADL should handle "up to 145 rooms." Currently ADLs handle, on average, over 200 rooms. ADLs were overworked and unable to perform adequate follow-up of building maintenance. As a result, warfighter standard of living, health, and safety can be affected.

Figure 11. Clogged air return registers (Deficiency No. KUS-EN-140414-001)
Source: DoD OIG

Overall Findings and Recommendations

The installations we inspected had departments that were responsible for operations, inspection, testing, and maintenance of their buildings. Installation leadership and personnel were responsive to our information requests, on-site access, and inspection timelines. Installation personnel responsible for fire protection, electrical, and environmental health and safety recognized the need for improvements. However, we noted challenges such as the lack of training, and short deployments, which increased turnover and reduced continuity in housing services. Contributing factors included a lack of translation (English to Korean) of standards, codes, procedures, and instructions, and their implementation. The following sections discuss our overall findings and recommendations.

Finding A

Inspection, Maintenance, and Repair

We documented a total of 646 deficiencies that violated health and safety codes and requirements. The majority of the deficiencies were attributed to inadequate resources and a lack of diligence to inspect, maintain, and repair housing facilities. Inadequate inspections and maintenance can lead to costly repairs, damage to Government buildings and facilities, and hazardous health and safety conditions for the warfighters and their families.

Facilities management did not always perform preventive, recurring, and cyclic maintenance. These maintenance activities ensure that infrastructure and supporting equipment such as HVAC, electrical systems, fire protection systems, and water treatment and supply function as intended. Adequate maintenance also reduces costly repairs and damage to buildings and facilities. In addition, housing visits and inspections were not being conducted in accordance with established instructions and procedures. Without adequate inspection programs and up-to-date records, installation personnel cannot ensure that housing conditions are maintained at required levels, which could affect the quality of life for the occupants.

Recommendations, Management Comments, and Our Response

Recommendation A

We recommend that the respective Military Departments, as applicable:

a. **Conduct an effective root cause analysis and corrective action for all 646 deficiencies in this report.**

b. **Ensure that these deficiencies do not exist in other housing units.**

c. **Ensure the inspection, maintenance, and repair program is in compliance with applicable codes and standards for fire protection systems, electrical systems, and environmental health and safety.**

Department of the Army Comments

The Deputy Assistant Secretary of the Army (Installations, Housing, and Partnerships), responding for the Army, agreed.

Department of the Air Force Comments

The Director of Civil Engineers, DCS/Logistics, Installations and Mission Support, responding for the Air Force, agreed.

United States Pacific Command Comments

The Acting Deputy Under Secretary of Defense, responding for the United States Pacific Command, and United States Forces Korea, agreed.

Our Response

Comments from management addressed all of the specifics of the recommendation, and no further comments are required.

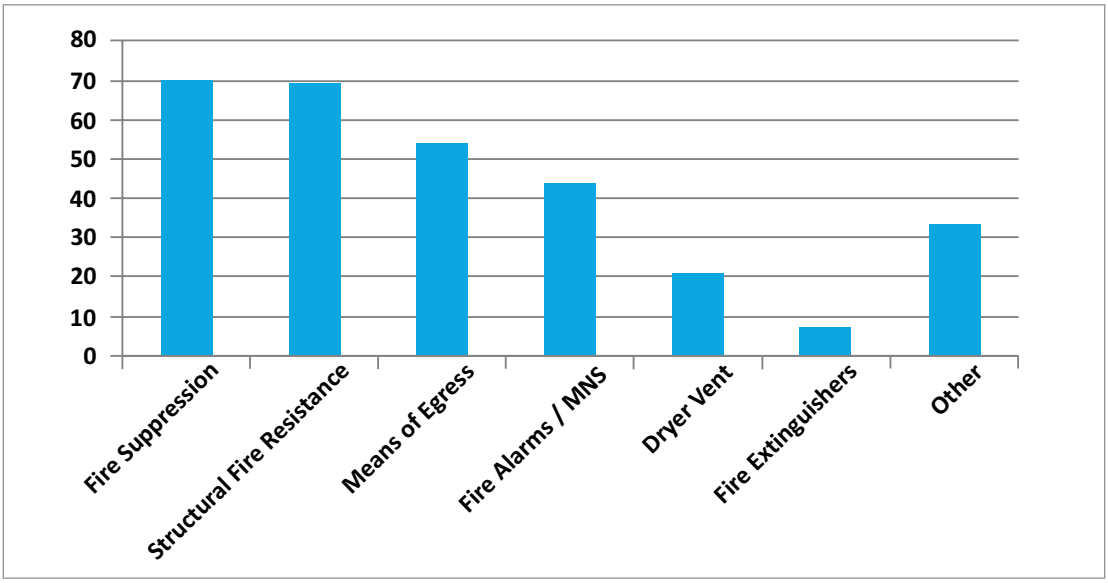
Finding B

Fire Protection Systems

Installation personnel did not ensure that fire protection systems were properly installed, periodically inspected, and maintained. For example, fire doors were not properly maintained or secured. Also, dryer vent hoses were pinched, clogged, crushed, or disconnected and were not constructed of fire rated material. There was also a lack of carbon monoxide detectors. In addition, sprinkler and fire alarm systems were not maintained as required by NFPA code. As a result, risk of personnel injury or death is not effectively mitigated.

We found 298 fire protection deficiencies. Figure 12 shows the breakdown of all the fire protection deficiencies in the relevant subcategories.

Figure 12. Fire Protection Deficiencies



We found deficiencies in the fire suppression systems throughout installations in Korea. For example, many buildings had sprinkler systems that were broken, not maintained, improperly installed, or missing altogether. In the area of structural fire resistance, we found fire doors that were propped open, damaged, not rated, or were missing closers. We also found deficiencies in the means of egress. For example, many buildings did not have adequate emergency lighting in the fire escape stairways and hallways. Fire alarm deficiencies included missing carbon monoxide detectors and missing or broken fire alarms. Dryer vent transition ducts were bent, crushed, disconnected, pinched, or clogged and were not constructed

of fire rated material. We found a lack of periodic inspection of fire extinguishers, many with low levels of extinguishing agent. Other deficiencies were items stored in prohibited locations, heating oil leakage in areas where ignition is probable, and excessive lint build-up in laundry rooms. These deficiencies increase the risk of fire, loss of life, and property.

Recommendation, Management Comments, and Our Response

Recommendation B

We recommend that the respective Military Departments, as applicable, ensure that sufficient, qualified resources are available and assigned to inspect and verify that all housing buildings and units are in compliance with requirements for fire protection systems.

Department of the Army Comments

The Deputy Assistant Secretary of the Army (Installations, Housing, and Partnerships), responding for the Army, agreed.

Department of the Air Force Comments

The Director of Civil Engineers, DCS/Logistics, Installations and Mission Support, responding for the Air Force, agreed.

United States Pacific Command Comments

The Acting Deputy Under Secretary of Defense, responding for the United States Pacific Command, and United States Forces Korea, agreed.

Our Response

Comments from management addressed all of the specifics of the recommendation, and no further comments are required.

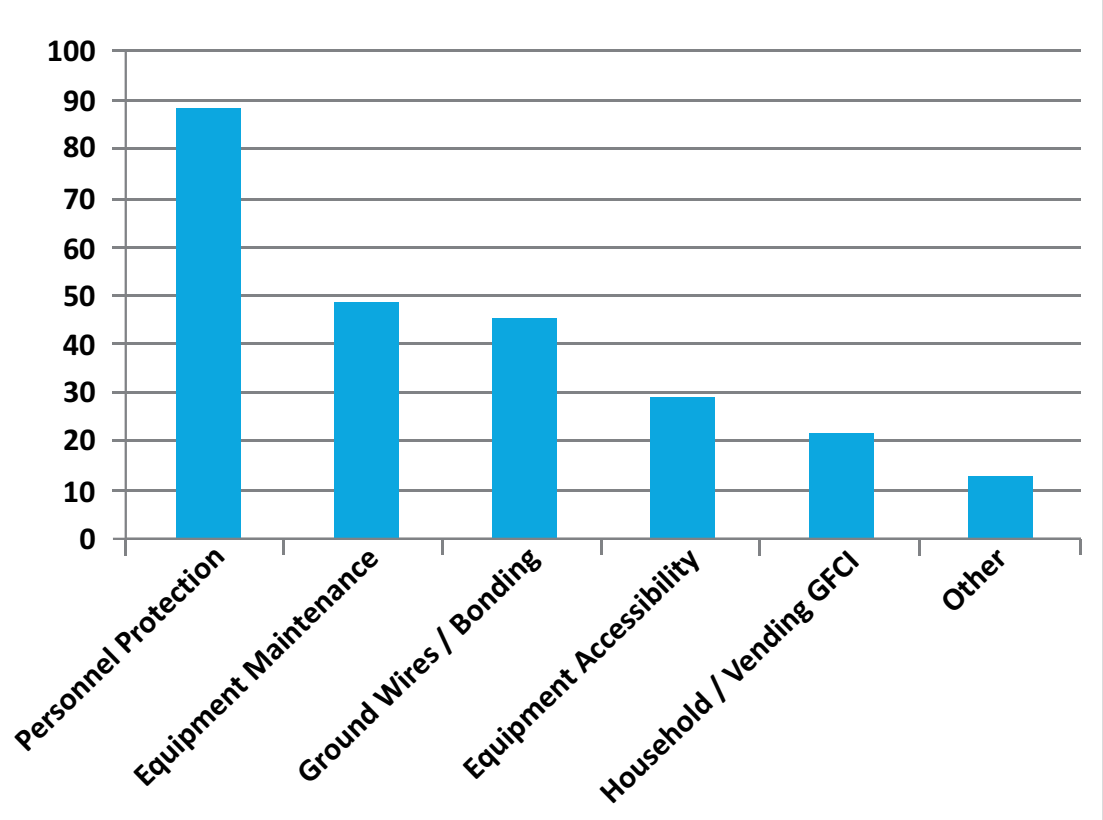
Finding C

Electrical Systems

Installation personnel did not ensure that electrical systems were properly installed, periodically inspected and maintained. We found a lack of personnel trained and educated in the NEC. We also found ungrounded water circulator pump motors, improperly fused conductors, inappropriate service drops, and incomplete or broken conduits. Inadequate installation, repair, and maintenance increase the risk of fire and personnel exposure to hazardous electrical conditions.

We identified 279 electrical deficiencies. Figure 13 shows the breakdown of the electrical deficiencies in the relevant subcategories.

Figure 13. Electrical Deficiencies



Personnel protection deficiencies included exposed wires not contained or protected by junction boxes in mechanical rooms, missing electrical service panel breaker blanks or broken electrical covers, incomplete or broken electrical conduits, missing light fixture covers in damp and wet locations and within reach

of personnel in the shower, and missing knockout seals and covers in a junction box. In the area of equipment maintenance, we found electrical service-drop conductors providing electricity to the main electrical panel of the house that were too low, corrosion on junction boxes, and many buildings being served by multiple service drops. Also, we found inadequate or nonfunctioning climate control for electrical rooms and equipment. Ground wires/bonding issues included unbonded main electrical panels, and water circulating pumps with disconnected ground wires. Equipment accessibility deficiencies included junction boxes and electrical panels that were obstructed and inaccessible. We found lack of GFCI protection in laundry rooms, outside areas, vending machines, and water coolers. Other deficiencies included electrical panels with missing or incorrectly labeled directories, incorrect fittings being used to connect a conduit, and receptacles wired for incorrect voltage. These deficiencies create a risk of fire, electric shock, or electrocution for installation personnel and occupants.

Recommendation, Management Comments, and Our Response

Recommendation C

We recommend that the respective Military Departments, as applicable, ensure that sufficient, qualified resources are available and assigned to inspect and verify that all housing buildings and units are in compliance with requirements for electrical systems.

Department of the Army Comments

The Deputy Assistant Secretary of the Army (Installations, Housing, and Partnerships), responding for the Army, agreed.

Department of the Air Force Comments

The Director of Civil Engineers, DCS/Logistics, Installations and Mission Support, responding for the Air Force, agreed.

United States Pacific Command Comments

The Acting Deputy Under Secretary of Defense, responding for the United States Pacific Command, and United States Forces Korea, agreed.

Our Response

Comments from management addressed all of the specifics of the recommendation, and no further comments are required.

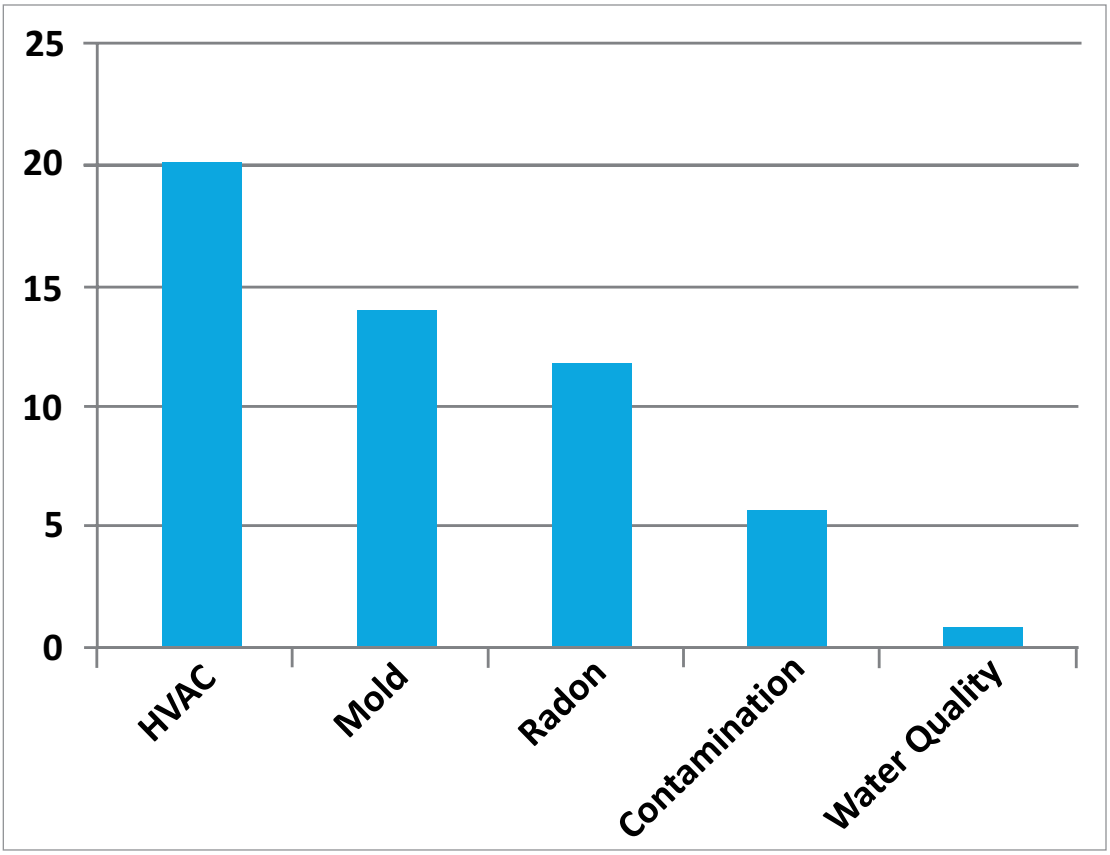
Finding D

Environmental Health and Safety

Installation personnel did not always follow environmental regulations or best practices to ensure the health and safety of occupants. For example, installation personnel did not effectively implement routine maintenance and surveillance of air handling equipment, including HVAC systems, building exhaust fans, fan coil units, air filters, and other components. A lack of adequate maintenance and repair may contribute to the moisture and mold problem. In addition, radon surveillance and mitigation was inadequate and did not meet Service-level requirements. As a result, personnel may be exposed to higher than recommended levels of environmental hazards.

We identified 53 deficiencies relating to environmental health and safety. Figure 14 shows the breakdown of all of the environmental deficiencies in the relevant subcategories.

Figure 14. Environmental Health and Safety Deficiencies



We found a lack of properly maintained HVAC units, fan coil units, filters, and plumbing system pipes. Air handling units (AHU) were broken and out of service for extended periods, which could allow moist air to enter the building through negative pressure and cause mold growth. In unaccompanied units, responsibilities were not clearly defined between building occupants and managers for operating and maintaining air handling system components in living quarters or for addressing water leaks and mold problems. In addition, there is no DoD-wide policy or guidelines on mold mitigation and control. Mold may increase the potential for respiratory illness and other mold and indoor air quality-related health issues.

We found that radon surveys and databases were not maintained at several installations. Installation personnel were not performing post-mitigation monitoring to ensure existing radon mitigation systems were functioning. We also found a lack of guidance on radon surveillance, mitigation, and control despite EPA studies stating that radon is a carcinogen that causes thousands of deaths each year. For example, OEBGD does not provide guidance on radon. UFC 4-711-01 provides guidance on radon for accompanied housing but not for unaccompanied housing. Furthermore, a Department of the Army Radon Reduction Program was superseded by Army Regulation (AR) 420-1, "Army Facilities Management," which refers to AR 200-1, "Environmental Protection and Enhancement," for radon action level guidelines; however, AR 200-1 has no reference to radon. Further details of our inspection relating to radon can be found in Appendix B.

Contamination deficiencies include the fuel tanks without a secondary containment system to control fuel leaks, oil spills and unmitigated volatile organic compounds. Without proper clean up, oil spills will contaminate soil, surface water, groundwater, and other biological resources. Asbestos and lead-based paint programs were in compliance with the EGS and UFC 4-711-01 requirements. Installations had active pest management plans in place and no complaints were brought up during the inspection interviews. Water quality is good and in compliance with the EGS. However, we found a lapse in monthly water quality bacteriological testing for total coliform at USAG Humphreys.

Based on our radiation measurements (measured for both indoor and outdoor), the estimated individual annual doses at each USFK installation were very low. At these levels, there were no demonstrable radiation-induced health effects. Further details of our inspection relating to radiation can be found in Appendix C.

Recommendations, Management Comments, and Our Response

Recommendation D.1

We recommend that the respective Military Departments, as applicable, ensure that sufficient, qualified resources are available and assigned to inspect and verify that all housing buildings and units are in compliance with environmental health and safety requirements.

Department of the Army Comments

The Deputy Assistant Secretary of the Army (Installations, Housing, and Partnerships), responding for the Army, agreed.

Department of the Air Force Comments

The Director of Civil Engineers, DCS/Logistics, Installations and Mission Support, responding for the Air Force, agreed.

United States Pacific Command Comments

The Acting Deputy Under Secretary of Defense, responding for the United States Pacific Command, and United States Forces Korea, agreed.

Our Response

Comments from management addressed all of the specifics of the recommendation, and no further comments are required.

Recommendation D.2

We recommend that OUSD (AT&L) include guidance for both accompanied and unaccompanied housing within the OEBGD for:

a. **Control and remediation of mold.**
b. **Radon evaluation and mitigation.**

OUSD (AT&L) Comments

The Acting Deputy Under Secretary of Defense (Installations and Environment) responding for OUSD (AT&L) non-concurred and stated that because there is no U.S. federal standard for radon or mold in the U.S., there is no standard that would be applicable to U.S. facilities outside the U.S.. AT&L further stated that modifying the OEBGD by creating standards for application outside the U.S. that do not have application inside the U.S. would undermine the purpose of the OEBGD to ensure practices outside the U.S. are carried out in a manner that is consistent with what would be done inside the U.S. To ensure each of the Military Services' practices are fully informed, AT&L will facilitate information sharing of lessons learned across the Military Services.

Our Response

We disagree with management comments from AT&L on mold and radon. They did not address the specifics of the recommendations. With regard to Mold, the Navy and Marine Corps Public Health Center stated that, "any extensive indoor mold growth should be treated as a potential health concern and removed as soon as practical — regardless of the kind of mold present." The UFC 4-711-01, "Family Housing," dated July 2006, states that humidity and moisture must be controlled to prevent mold growth in buildings (UFC 4-711-01, Section 7-1.9). The UFC provisions are indeterminate and leave each service and base to develop its own mold prevention plans, which we found were not effectively implemented. Moreover, they conflict with other energy-saving policies that reward bases for saving energy but resulted in ambient conditions that promote mold growth.

With regard to radon, the Indoor Radon Abatement Act of 1988 established a long-term goal that indoor air be as free from radon as the ambient air outside buildings. This is facilitated by 15 U.S.C. 2669 which states, "The head of each Federal department or agency that owns a Federal building shall conduct a study for the purpose of determining the extent of radon contamination in such buildings." Because the law requires the study within the U.S., it would be reasonable to apply a similar standard for overseas buildings housing U.S. service members and their families.

Radon is also addressed in UFC 4-711-01. UFC 4-711-01 provides guidance on radon for accompanied housing but not for unaccompanied housing. Section 7-1.6, "Radon," states that, "Follow EPA recommendations for construction and mitigation. Family housing should be designed, constructed, and improved in accordance with EPA document - "Model Standards and Techniques for Control of Radon in New Residential Buildings," 59 CFR 13402 (March 1994). Guidelines for evaluation and need and required testing can be found in UFC 3-490-04A, "EPA Radon Mitigation Standards," and UFGS 13287 "Radon Mitigation" (August 2004)." Furthermore, the Unified Facilities Guide Specifications (UFGS) 31 21 13, "Radon Mitigation," dated August 2011, covers the requirements for diagnostic testing for radon and designing and constructing radon mitigation systems in existing buildings and facilities, including constructing radon mitigation system enclosures, when required. UFGS 31 21 13, section 1.4.1 Performance Requirements, states that, "Radon mitigation systems shall reduce and maintain radon concentration levels below [148 Becquerel per cubic meter] [4.0 pCi/L] in various buildings specified herein. Test, design and construct radon mitigation systems in accordance with EPA 402-R-93-078, EPA 402-R-93-003, EPA 402-R-92-004 and as specified herein. Additional guidance for testing, designing and constructing radon mitigation systems is contained in EPA 625-R-92-016 and EPA 625-R-93-011." Therefore we request that management reconsider its position and provide additional comments.

Finding E

Housing Management

Installation personnel were not fully implementing housing management policies and were not always following procedures. Specifically, the FSBP was not fully implemented. The ADLs were not implementing unaccompanied housing management responsibilities in accordance with policy documents. Housing management deficiencies were systemic throughout the installations as evidenced by inadequate housing management record keeping, slow response times to emergency service calls, lack of work order prioritization and follow up. As a result, issues were not addressed in a timely manner and occurrences of similar issues may not be prevented.

We found a total of 16 deficiencies in the area of housing management. These deficiencies identified the need for improving processes for tracking service calls and work orders through completion, ensuring that inspections and maintenance are conducted as required, and analyzing historical work order information for trends and lessons learned to improve housing management programs. We also found a lack of housing management training and high turnover rates. Barrack managers average a 1-year tour and were unable to provide continuity of unaccompanied housing management. As a result, maintenance of unaccompanied housing units is adversely affected.

The FSBP has not been fully implemented. We found unit's barrack managers are not utilizing the Enterprise Military Housing (eMH) systems adequately to track maintenance and lost or damaged furnishings, work maintenance orders, cash collection vouchers, and barracks utilization reports. The eMH system is required to be used by FSBP. The lack of eMH utilization will inhibit the barracks manager's ability to properly process all transactions relating to unaccompanied housing property management, oversight, and reporting by Garrisons and tenants units. Subsequently, quarterly utilization data will not be reported and visibilities of unaccompanied housing issues are reduced.

The ADLs and family housing managers did not always perform unaccompanied housing management and family housing procedures. In addition, airmen dormitories had inadequate ADL coverage. This shortage of trained and qualified housing managers affected work order completion.

Recommendation, Management Comments, and Our Response

Recommendation E

We recommend that the respective Military Departments, as applicable, ensure housing management policies are implemented and procedures are followed.

Department of the Army Comments

The Deputy Assistant Secretary of the Army (Installations, Housing, and Partnerships), responding for the Army, agreed.

Department of the Air Force Comments

The Director of Civil Engineers, DCS/Logistics, Installations and Mission Support, responding for the Air Force, agreed.

United States Pacific Command Comments

The Acting Deputy Under Secretary of Defense, responding for the United States Pacific Command, and United States Forces Korea, agreed.

Our Response

Comments from management addressed all of the specifics of the recommendation, and no further comments are required.

Appendix A

Scope and Methodology

We conducted this inspection from July 2013 through June 2014 to meet the intent of the Council of the Inspectors General on Integrity and Efficiency Quality Standards for Inspection and Evaluation. Those standards require that we plan and perform the inspection to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our inspection objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our inspection objectives.

We conducted an inspection of military housing in Korea for applicable requirements and specifications for:

- Electrical systems
- Fire protection systems
- Environmental health and safety
    - Mold,
    - Radon,
    - Water quality,
    - Pest infestation,
    - Asbestos,
    - Lead-based paint, and
    - Radiation
- Housing management

Government contract administration policies and practices were not the focus of this inspection. Additionally, we did not identify and evaluate the performance of specific service contractors supporting USFK.

Use of Technical Assistance

Fire protection engineers, environmental engineers, master electricians, industrial hygienists, radiation health physicists, and quality assurance engineers assisted with this inspection. Subject matter experts were certified in their associated field.

Use of Computer-Processed Data

We did not use computer-processed data to perform this audit.

Documentation Methodology

All meetings, analysis, and other work was documented in the form of work papers. These work papers and references were cataloged in SharePoint. SharePoint was used as the primary organization and referencing tool for the project.

When deficiencies required immediate action, NOCs were issued. The remaining deficiencies are documented in this report in accordance with the Technical Assessment Directorate's operating procedures, including all relevant quality control steps/certifications. Instructions to obtain completed forms for each deficiency identified are located in Appendix G.

Appendix B

Radon Survey Results

Objective

The objective was to verify that installations implemented a testing program to identify the level of indoor radon, determine whether indoor radon levels were above the EPA-recommended levels, and verify that radon mitigation systems were installed in buildings with indoor radon levels above 4 picocuries per liter (pCi/L). Also, we evaluated each Service's radon policies and guidelines.

Scope and Methodology

As part of this inspection, an independent radon survey was completed on buildings selected at random. We measured ambient radon levels in housing facilities on U.S. military installations. Radon detectors were placed in 87 housing facilities in the Republic of Korea (both accompanied family housing and unaccompanied quarters). We made an independent selection of the units to have detectors installed based on housing type (e.g. high-rise, duplex, etc.). We placed a minimum of five detectors plus additional redundant detectors per base.

Measurements were taken using passive Landauer Radtrak® alpha-track radon detectors for 90 days to measure indoor radon levels. Detectors were placed in housing units or available common areas of the lowest occupied floor. Radtrak® measures the average radon concentration at the detector's location during the monitoring period. The alpha-track detector has a radiosensitive element that records alpha particle emissions (alpha tracks) from radon's natural radioactive decay. Specific radon detector placement within housing units followed EPA 402-R-92-003, Protocols for Radon and Radon Decay products Measurements in Homes, May 1993, recommendations. For quality control, duplicate detectors were placed at a minimum of 10 percent of the monitoring locations. Also, field blanks (to measure background exposure that may accumulate during shipment and storage) were submitted to the laboratory for each installation tested. Landauer meets National Radon Proficiency Program (NRPP) requirements and is a NRPP certified laboratory. Additional details on the tests can be provided upon request.

Laboratory results are provided in picocuries per liter (pCi/l) for comparison with the EPA's guideline value of 4.0 pCi/l. Retesting of radon is recommended for housing units with radon levels that are equal to or greater than 4.0 pCi/l and/or there is a statistically significant difference between the results of duplicate

detects. Where subsequent monitoring confirms an indoor radon level of 4.0 pCi/l or greater, radon mitigation strategies should be considered in accordance with the latest standards or guidance applicable to military housing in overseas locations.

Criteria

Radon is a naturally occurring, chemically inert, ubiquitous radioactive gas that is found in the air, water, and soil. Radon migrates from the surrounding soil into buildings; it enters through air spaces around pipes, cracks in concrete slabs and basement foundation blocks, and pores in concrete masonry units. In the United States, the radon concentration for outdoor air ranges from 0.02 to 1.0 pCi/L and for indoor air, the average is 1.25 pCi/L. According to the EPA, radon is a carcinogen that causes thousands of deaths each year. The EPA recommends that homeowners mitigate their homes if the radon level is 4.0 pCi/L or greater and consider mitigation if the levels are between 2.0 pCi/L and 4.0 pCi/L.

Survey Results

The following are deficiencies identified based on our independent radon testing. Details on each item listed below can be found on the deficiency forms. See Appendix G:

1) Camp Red Cloud: One building (#248, Unit 105A) with radon level at 4.00 pCi/l. We recommend retesting that location. (Deficiency No. CRC-EN-140324-007)
2) Camp Henry: One building (#1110, Unit 120) with radon level at 6.4 pCi/l. We recommend retesting that location. (Deficiency No. HEN-EN-140418-003)
3) Camp Stanley: One building (#2371, Unit 105) with radon level at 4.6 pCi/l. We recommend retesting that location. (Deficiency No. STA-EN-140325-006)
4) Camp Carroll: One building (#143, Unit 102) with radon level at 16.00 pCi/l. We recommend retesting that location. (Deficiency No. CAR-EN-140422-004)

Radon Policy Evaluation

Based on our evaluation of policies and guidelines governing radon mitigation, we noted that there is no overall DoD policy in regards to acceptable levels of radon. However, radon is addressed in the UFC 4-711-01, "Family Housing," dated July 2006. In addition, the Unified Facilities Guide Specifications (UFGS) 31 21 13, "Radon Mitigation," dated August 2011 establishes performance requirements.

UFC 4-711-01 provides guidance on radon for accompanied housing but not for unaccompanied housing. Section 7-1.6 Radon states that, "Follow EPA recommendations for construction and mitigation. Family housing should be designed, constructed, and improved in accordance with EPA document—*Model Standards and Techniques for Control of Radon in New Residential Buildings*, 59 CFR 13402 (March 1994). Guidelines for evaluation and need and required testing can be found in UFC 3-490-04A, *EPA Radon Mitigation Standards*, and UFGS 13287 *Radon Mitigation* (August 2004)."

UFGS 31 21 13, Section 1.4.1, "Performance Requirements," states that, "Radon mitigation systems shall reduce and maintain radon concentration levels below [148 Becquerel per cubic meter] [4.0 pCi/L] in various buildings specified herein. Test, design and construct radon mitigation systems in accordance with EPA 402-R-93-078, EPA 402-R-93-003, EPA 402-R-92-004 and as specified herein. Additional guidance for testing, designing and constructing radon mitigation systems is contained in EPA 625-R-92-016 and EPA 625-R-93-011."

In the absence of a DoD policy, each Service has its own defined limits on monitoring and remediation terms. Information on radon requirements by each Service is shown in Table B.

Table B1. Radon Requirements by Military Service

	Army	Navy/Marine Corps	Air Force
Service Requirement	Army Regulation (AR 420-1), "Army Facilities Management," dated 2012	OPNAV Instruction 5090.1C Change Transmittal 1 "Environmental Readiness Program Manual," 18 July 2011 Navy Radon Assessment and Mitigation Program (NAVRAMP) Guidance Document for Navy Family Housing, dated 10 September 2002	Air Force Instruction (AFI) 48-148, "Ionizing Radiation Protection" dated 21 September 2011
Mitigation phase/Action levels	Chapter 3, Paragraph 3-47c, states, "The EPA has published monitoring guidance, radon relative risk information, and action level guidelines (see AR 200-1). Installations will establish a radon assessment and mitigation program per guidance from the Environmental Management Office."	5090.1C, Sec 21-5.26 Radon. Navy activities shall manage their radon program in accordance with the NAVRAMP 30-5 Navy Policy 30-5.1 General. Navy installations shall undertake mitigation measures in buildings determined to have indoor radon levels above 4 pCi/L. Marine Corps Order (MCO) P5090.2A Change 3, "Environmental Compliance and Protection Manual," August 26, 2013, states that, "In buildings with indoor radon levels above 4 pCi/L, the Marine Corps must reduce radon to acceptable levels."	Section 5.3 The remediation schedule should adhere to the following schedule: > 20 pCi/L within one year, 4-20 pCi/L, within 1-3 years. Any installation found to have a single structure with concentrations greater than 4 pCi/L shall undergo a detailed assessment.
Post Mitigation Phase	No guideline because AR 200-1, dated December 13, 2007 no longer contains any reference to radon	NAVRAMP Sec 3.3 Page 20: After mitigation in the housing area has been completed, at a minimum of every two calendar years, all radon reduction systems will be inspected by a qualified mitigator and retested.	Post remediation: Remediated structures shall be reassessed by the IRSO for ambient radon concentrations no less than two weeks and no greater than six months post remediation to validate the efficacy of the remedial action.

Additionally, we noted deficiencies, during the course of the inspection, which related to installations not maintaining radon surveys and databases as required by the respective Service policy.

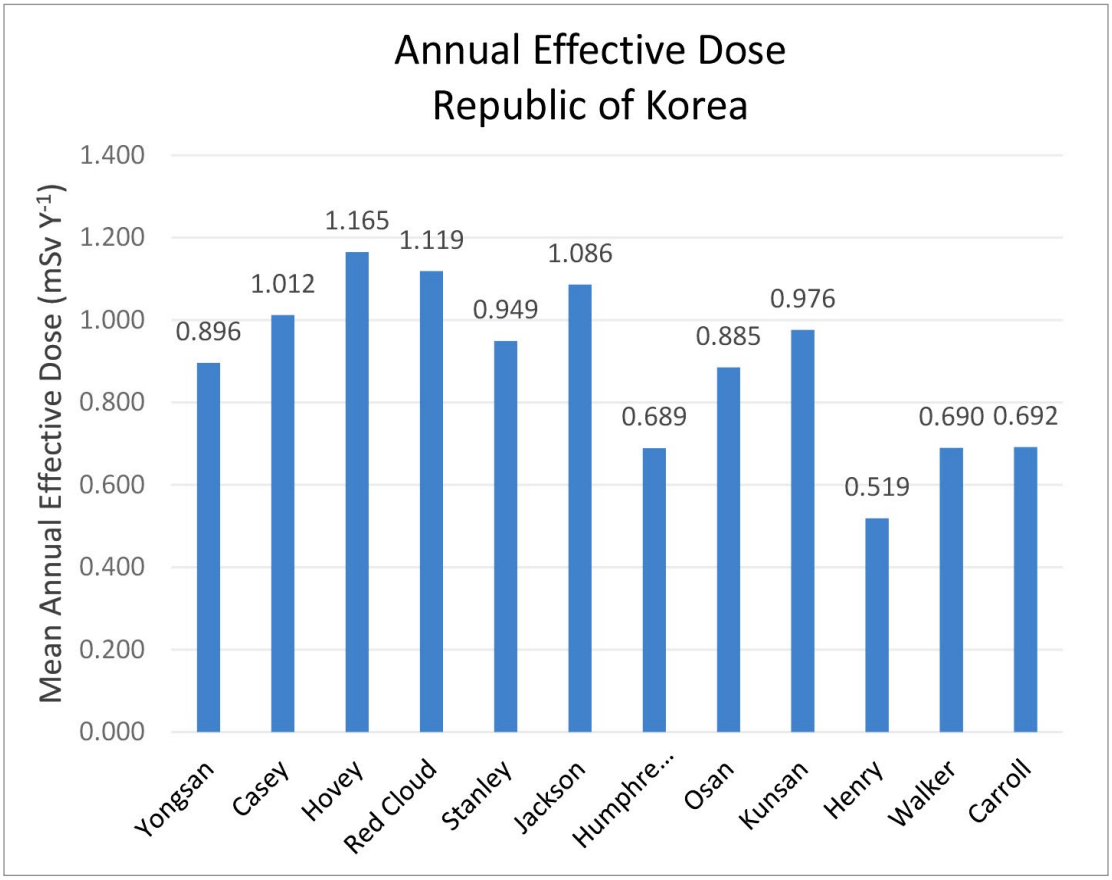
Appendix C

Radiation Survey Results

Objective

The objective of this assessment was to determine whether current ambient (background) radiation levels pose unacceptable health risk concerns to DoD members living and working in USFK military housing installations. This is an independent assessment of the current radiological conditions in ROK, and not in response to any radiation-related event or reported concerns.

Figure C1. Estimated Mean Individual Effective Dose, Military Housing Facilities ROK



Scope and Methodology

We measured ambient radiation levels of building materials in housing facilities on U.S. military installations in the ROK. The radiological assessment was made in military housing facilities, ranging from single-family units, family tower buildings, town homes, to unaccompanied bachelor quarters. The type and number of housing units that were inspected were independently selected by the DoD OIG

Team and varied from base to base. Integrated static method was used as the primary method for measuring ambient gamma radiation exposure levels. More than 300 separate static and systematic survey measurements were performed in 67 housing units and adjacent outdoor locations which included playgrounds, and exterior perimeters of housing units and buildings, direct surface measurements of counter tops, floors, bathroom floors and walls. This included 48 unaccompanied (Bachelor), 14 accompanied (Family) housing units, and 5 administrative buildings. The radiological assessment was limited to external radiation measurements. Soil, air, food, or water sampling was not within the scope of this inspection. Consequently, the radiological assessment does not include any contribution from internal uptake of radioactive materials, such as through ingestion and inhalation.

All radiation measurements were accomplished using calibrated hand-held portable radiation detection instruments (Figure C2), and based on the following survey methods and approaches:

Figure C2. Side-by-side fluke 451 ion chambers mounted on tripods
Source: DoD OIG

- Static integrated external radiation exposure measurements of ambient gamma radiation levels of selected indoor housing facilities and adjacent outdoor areas.
- Systematic scanning survey of ambient radiation levels throughout living areas of each housing facility for gross surface and/or ambient beta and gamma radiation.
- Contact measurements to assess alpha radiation of building materials; ceramic tiled floors and walls, granite table tops, counter tops, and other flooring materials.
- The survey was accomplished using DoD radiation survey equipment supplied by Navy and Air Force activities in USFJ and USFK. Information on the survey instruments used in the field and sponsoring activities is listed in Table C1.

Table C1. DoD Instruments Provided by USFJ & USFK Activities

Activity	Manufacturer	Model	Serial No.	Calibration Date
ASAF PACAF -51 AMDS	Fluke Biomedical	451P	458	Aug 2013
		451P	450	Jul 2013
	Canberra	ADM-300	690682	Nov 2013
		AP-100A	690396	Nov 2013
USNH Yokosuka	SAIC	IM-265/PDQ	A00515	Nov 2012
	SAIC	DT-680	A04633	Apr 2013

Health physicists generally agree on limiting a person's exposure beyond background radiation to about 1 mSv per year from all sources. Exceptions are occupational, medical, or accidental exposures. The Environmental Protection Agency (EPA) generally limits exposures from a specific source to the public to levels under 1 mSv. The Health Physics Society further recommends against quantitative estimation of health risks below an individual dose of 50 mSv per year, or lifetime dose of 100 mSv above natural sources.

Survey Results

The mean individual dose value was estimated from indoor and outdoor ambient radiation exposure measurements for each military installation. All calculations were done on an exposure rate basis and summed over a 365 day period to estimate the individual yearly dose. Static measurements were taken in .001 mSv per minute then hourly rates were calculated and multiplied by 8760 hours per year (24 h d-1 x 365 d yr -1). To simplify the calculations, and as a general approximation, conversions and weighting factors were assumed to be unity for all calculations to conservatively estimate individual effective

dose values. For this assessment, equivalent dose is equivalent to effective dose. Indoor and outdoor occupancy weight factors were used to estimate the individual effective dose.

The estimated annual mean effective dose values for each USFK military installation are shown graphically in Figure C1. Estimated mean values were all less than 1.2 mSv annual effective dose. The results of this assessment show that the mean effective dose an individual receives in one year while assigned to ROK is less than 1.2 mSv from external background radiation. The individual health risks associated with these estimated (low) individual doses in USFK military installations are considered negligible. At these levels, there are no demonstrable radiation induced health effects. Currently, there are no regulatory dose limits from external natural occurring background radiation exposure. However, the U.S. NRC regulates effective dose to individual members of the public from licensed operation to less than 1 mSv in a year above background. From a health risk perspective 1.2 mSv is far below the dose levels that cause cancer.

Appendix D

Inspection Criteria List

DoD and Services Policies and Standards

- DoDI 6055.05, "Occupational and Environmental Health," November 11, 2008
- DoDI 6055.06, "DoD Fire and Emergency Services (F&ES) Program," December 21, 2006
- DoDI 4165.63, "DoD Housing," July 21, 2008
- DoDD 4715.1E, "Environmental Safety and Occupational Health," March 19, 2005
- DoD 4165.63-M, "DoD Housing Management," October 28, 2010
- DoDI 4715.05, "Environmental Compliance at Installations Outside the United States," November 1, 2013
- DoD 4715.05-G, "Overseas Environmental Baseline Guidance Document," May 1, 2007
- DoDD 4270.34, "Host Nation-Funded Construction Programs in the U.S. Pacific Command Area of Responsibility," April 24, 2007
- DoDI 4150.07, "DoD Pest Management Program," May 29, 2008

Unified Facilities Criteria

- UFC 3-520-01, "Interior Electrical Systems," Change 2, July 1, 2012
- UFC 3-560-01, "Electrical Safety, O&M," Change 4, May 1, 2012
- UFC 3-600-01, "Fire Protection Engineering for Facilities," Change 3, March 1, 2013
- UFC 3-601-02, "Operation and Maintenance: Inspection, Testing, and Maintenance of Fire Protection Systems," September 8, 2010
- UFC 4-711-01, "Family Housing," July 13, 2006
- Unified Facilities Guide Specifications (UFGS) 31 21 13, "Radon Mitigation," August 2011

Electrical Standards Criteria

- National Fire Protection Association (NFPA) 70, "National Electrical Code (NEC)," 2011 Edition
- NFPA 70E, "Standard for Electrical Safety in the Workplace," 2012 Edition
- Base Order (BO) 5100 31B, "Ground Occupational Safety and Health Program, SOP 12, MCBO Lockout and Tagout Standard Operating Procedure," February 26, 2013

- USAG-Yongsan PAM 385-1, "Chapter 13 - Hazardous Energies Control and Lockout-Tagout Program"

Fire Protection Standards Criteria

- NFPA 1, "Fire Code," 2012 Edition
- NFPA 10, "Standard for portable fire extinguishers," 2010 Edition
- NFPA 13, "Standard for the Installation of Sprinkler Systems," 2010 Edition
- NFPA 13D, "Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes," 2010 Edition
- NFPA 13R, "Standard for the Installation of Sprinkler Systems in Low-Rise Residential Occupancies," 2010 Edition
- NFPA 58, "Liquefied Petroleum Gas Code Handbook," 2011 Edition
- NFPA 72, "National Fire Alarm and Signaling Code," 2010 Edition
- NFPA 101, "Life Safety Code," 2012 Edition
- 8FWI32-2001, "Fire Prevention Program," September 25, 2013
- AFI 32-2001, "Fire Emergency Service Program," September 9, 2008

General Environmental Health and Safety Criteria

- U.S. Forces Korea Regulation (USFK) 201-1, "Environmental Governing Standards," June 18, 2012
- Department of the Navy Memorandum, "Interim Technical Guidance (ITG) FY 03-4, NAVFAC Mold Response Manual," June 06, 2003
- OPNAVINST 5100.23G CH-1, "Navy Safety and Occupational Health Program Manual," July 21, 2011
- OPNAVINST 5100.23G, "Navy Safety and Occupational Health Program Manual," December 30, 2005
- Facilities Criteria (FC) 4-721-10N, "NAVY and Marine Corps Unaccompanied Housing," November 01, 2012, Change 2, May 1, 2013
- Marine Corps Order (MCO) P5090.2A CH 3, "Environmental Compliance and Protection Manual," August 26, 2013
- USMC BO 5100-31B, "Ground Occupational Safety and Health," February 26, 2013
- NAVMC DIR 5100.8, "Marine Corps Occupational Safety and Health Program Manual," May 15, 2006
- NAVFAC, "Navy Radon Assessment and Mitigation Program (NAVRAMP)," September 10, 2002

- Department of the Air Force Memorandum, "Interim Policy and Guidance for the Prevention, Surveillance, and Remediation of Water Damage and Associated Mold Contamination in Air Force (AF) Facilities," May 10, 2005
- Air Forces Instruction (AFI) 91-203, "Air Force Consolidated Occupational Safety Instruction," July 25, 2013
- AFI 48-148, "Ionizing Radiation Protection," September 21, 2011
- AFI 32-6001, "Family Housing Management," June 4, 2013
- AFI 32-6005, "Unaccompanied Housing Management," January 19, 2012
- AFI 32-1001, "Civil Engineering Operations Management," September 1 2005
- Air Force Memorandum, "Policy to Implement Work Prioritization Model," June 14, 2013
- AFI 23-204, "Materiel Management - Organizational Fuel Tanks," July 24, 2012
- AFGM 91-203-1, "Air Force Guidance Memo to AFI 91-203 AF Consolidated Occupational Safety Instruction," July 25, 2013
- 8FWI36-2901, "Kunsan AB Community Standard," November 25, 2013
- 8FWI32-6005, "Unaccompanied Housing Management," May 12, 2011
- 8FWI32-6001, "Quarterly Dormitory Competition," April 18, 2012
- Army Regulation (AR) 420-1, "Army Facilities Management," August 24, 2012
- AR 200-1, "Environmental Protection and Enhancement," December 13, 2007
- DA PAM 420-1-1, "Housing Management," April 02, 2009
- DA PAM 200-1, "Army Radon Reduction Program," January 17, 2002
- US Army Center for Health Promotion and Preventive Medicine (USACHPPM) Technical Guide 277, "Army Facilities Management Information Document on Mold Remediation Issues" February 2002
- US Army Center for Health Promotion and Preventive Medicine (USACHPPM) Technical Guide 278,. "Industrial Hygiene/Preventive Medicine Mold Assessment Guide," February 2002
- 8th Army Command Policy - Letter No 9, "Living Standard Soldiers in Barracks," September 26, 2011
- US Army - IMCOM-K, "Standard Operating Procedure for Housing Management," January 6, 2014
- USFK, "Implementing Agreement for ROK Fund Construction In Kind Project," January 27, 2012

Appendix E

Sample Deficiency Form

DOD Office of the Inspector General
TAD EVALUATION RECORD

DIRECTED TO (ACTIVITY/LOCATION)	PROJECT	CONTROL NUMBER
DODIG EVALUATOR	SUBMITTAL DATE	
PERSON(S) CONTACTED / TITLE/ORG	CLAUSE #	
	MANAGEMENT REVIEW Signature/Date: _____	
ABSTRACT		
DETAILED DESCRIPTION OF CONDITION		
EFFECT		
RECOMMENDATION		
CRITERIA		
OBJECTIVE EVIDENCE		

1 of 1

IG-TAD FORM 10. August 12, 2014

Appendix F

Notices of Concern

DoD OIG NOC 1, April 9, 2014 - USAG Yongsan, Jackson, Bonifas, and Stanley

INSPECTOR GENERAL
DEPARTMENT OF DEFENSE
4800 MARK CENTER DRIVE
ALEXANDRIA, VIRGINIA 22350-1500

APR 9 2014

MEMORANDUM FOR COMMANDER, UNITED STATES FORCES KOREA

SUBJECT: Notice of Concern – Military Housing Inspections – Asia
USAG Yongsan and Area 1 (Project No. D2013-DTOTAD-0003)

This Notice of Concern (NOC) is to inform you that the Department of Defense, Office of the Inspector General (OIG), has identified issues requiring your immediate attention. The inspection of military housing at U.S. facilities in USAG Yongsan, and Area 1 was conducted from March 10 to 28, 2014. We identified findings in fire protection systems, electrical systems, structures, and environmental health. Copies of all findings were provided to the base commander at the conclusion of the inspection. Upon completing all inspections in the Republic of Korea, a report will also be issued that contains all findings for bases inspected.

Although the DoD OIG view all findings as significant to the health and safety of the warfighter and their families, the following 7 findings pose an immediate safety hazard and require immediate corrective action. The findings shall be made available to recipients of this memo via the Aviation and Missile Development and Engineering Center (AMRDEC) Safe Access File Exchange website. You will receive an automated AMRDEC delivery notice e-mail with instructions detailing the process for downloading the complete findings for review and comment.

USAG Yongsan – 2 Findings

Fire Protection

Buildings 7020A, and 7025B – The furnaces in both buildings were leaking heating oil from inside the furnace enclosure onto the electric blower motor. Heating oil was covering the blower motor case and draining onto the enclosure. The open source of fuel next to a flame producing device, such as the furnace, could create a fire hazard for housing occupants (Finding YON-FP-140310-0430).

Building 1352 - The fire alarm system was out of service and indicating faults on both initiating and notification circuits. The malfunctioning fire alarm system leaves occupants of the building without any means of fire detection or notification (Finding YON-FP-140301-020).

USAG Camp Jackson – 2 Findings

Electrical

Building 2167 - The building was not electrically grounded per code. The grounding electrode conductor was disconnected from the main water pipe, creating the potential for excessive current on non-current carrying parts. This could lead to electric shock or electrocution to anyone in contact with the panel or equipment (Finding JAC-EL-140326-006).

DoD OIG NOC 1, April 9, 2014 - USAG Yongsan, Jackson, Bonifas, and Stanley (cont'd)

Fire Protection
Building 2167 – The building contained fossil fuel burning equipment; however, the mechanical rooms lacked carbon monoxide alarms. Inadequate combustion ventilation signs were posted in the mechanical rooms indicating that personnel were at increased risk of carbon monoxide poisoning (Finding JAC-FP-140326-001).

USAG Camp Bonifas – 1 Finding

Fire Protection
Buildings S127, S137, S138, and S139 – All 4 buildings contained fossil fuel burning equipment; however, the mechanical rooms lacked carbon monoxide alarms. Inadequate combustion ventilation signs were posted in the mechanical rooms indicating that personnel were at increased of carbon monoxide poisoning (Finding BON-FP-140321-003).

USAG Camp Stanley – 2 Findings

Electrical
Building 2401 – The neutral conductor was bonded to a load side enclosure on the secondary side of an electrical subpanel. This could cause arcing anywhere on the enclosure, or with any conductive material attached. It also increases the potential for fire, shock, or electrocution. (Finding STA-EL-140325-009).

Fire Protection
Buildings S2370, S2401, S2416, S2441, and S2442 – All 4 buildings contained fossil fuel burning equipment; however, the mechanical rooms lacked carbon monoxide alarms. Inadequate combustion ventilation signs were posted in the mechanical rooms indicating that personnel were at increased risk of carbon monoxide poisoning (Finding STA-FP-140325-006).

In accordance with requirements of DoD Directive 7650.3, please provide your comments and proposed corrective actions by May 9, 2014. We will include copies of the comments in the report. If possible, send a portable document format (.pdf) file containing your comments to Mr. James Howell at james.howell@dodig.mil.

We appreciate the courtesies and support extended to the DoD OIG staff. Please direct questions to [redacted].

Randolph R. Stone
Deputy Inspector General
Policy and Oversight

2

DoD OIG NOC 1, April 9, 2014 - USAG Yongsan, Jackson, Bonifas, and Stanley (cont'd)

cc:
Under Secretary of Defense for Acquisition, Technology and Logistics
Assistant Secretary of the Air Force (Financial Management and Comptroller)
Commander, United States Pacific Command
Naval Inspector General
Auditor General, Department of the Army
Commander, USAG Yongsan
Commander, Camp Red Cloud

3

DoD OIG NOC 1, April 9, 2014 - USAG Yongsan, Jackson, Bonifas, and Stanley Addendum

INSPECTOR GENERAL
DEPARTMENT OF DEFENSE
4800 MARK CENTER DRIVE
ALEXANDRIA, VIRGINIA 22350-1500

April 29, 2014

MEMORANDUM FOR COMMANDER, UNITED STATES FORCES KOREA

SUBJECT: Revision of Notice of Concern – Military Housing Inspections – Asia
USAG Yongsan and Area 1, April 9, 2014 (Project No. D2013-DT0TAD-0003)

Subsequent to issuing the subject original Notice of Concern (NOC), we became aware that two building numbers were incorrectly referenced. Thus, this memorandum corrects those building numbers as follows:

- Finding YON-FP-140310-043A, building number 7025B is corrected to 7125B
- Finding YON-FP-140301-020A, building number 1352 is corrected to 1532

Thus, the affected revised paragraphs found on page one of the original NOC now reads:

USAG Yongsan – 2 Findings

Fire Protection
Buildings 7020A and 7125B – The furnaces in both buildings were leaking heating oil from inside the furnace enclosure onto the electric blower motor. Heating oil was covering the blower motor case and draining onto the enclosure. The open source of fuel next to a flame-producing device, such as the furnace, could create a fire hazard for housing occupants (Finding YON-FP-140310-043A.

Building 1532 – The fire alarm system was out of service and indicated faults on both initiating and notification circuits. The malfunctioning fire alarm system leaves occupants of the building without any means of fire detection or notification (Finding YON-FP-140301-020A).

As stated in the original NOC, please provide your comments and proposed corrective actions by May 9, 2014, to [redacted]

We apologize for this error and as always, appreciate the courtesies and support extended to the DoD OIG staff. Please direct questions to [redacted]

Randolph R. Stone
Deputy Inspector General
Policy and Oversight

DoD OIG NOC 2, April 9, 2014 - USAG Humphreys

INSPECTOR GENERAL
DEPARTMENT OF DEFENSE
4800 MARK CENTER DRIVE
ALEXANDRIA, VIRGINIA 22350-1500

APR 9 2014

MEMORANDUM FOR COMMANDER, UNITED STATES FORCES KOREA

SUBJECT: Notice of Concern – Military Housing Inspections – Asia – USAG Humphreys (Project No. D2013- DTOTAD-0003)

This Notice of Concern (NOC) is to inform you that the Department of Defense, Office of the Inspector General (OIG), has identified issues requiring your immediate attention. The inspection of military housing at U.S. facilities in USAG Humphreys was conducted from March 31 to April 4, 2014. We identified findings in fire protection systems, electrical systems, structures, and environmental health. Copies of all findings were provided to the base commander at the conclusion of the inspection. Upon completing all inspections in the Republic of Korea, a report will be issued that contains all findings for the bases inspected.

Although the DoD OIG views all findings as significant to the health and safety of the warfighter and their families, the following 4 findings pose an immediate safety hazard and require immediate corrective action. The findings shall be made available to recipients of this memo via the Aviation and Missile Development and Engineering Center (AMRDEC) Safe Access File Exchange website. You will receive an automated AMRDEC delivery notice e-mail with instructions detailing the process for downloading the complete findings for review and comment.

USAG Humphreys – 4 Findings

Electrical
Building 571 – The building was not grounded per code. The grounding electrode conductor was disconnected from the main water pipe in the mechanical room and provides the potential for excessive current on non-current carrying parts. This could lead to electric shock or electrocution to anyone in contact with the panel or equipment (Finding HUM-EL-140331-019).

Building 1294 – In the elevator equipment room, the junction box on the motor for elevator 1 has tape on the splice for the three phase motor, leaving energized copper wire exposed. Temperature expansion, motor vibration, or contact during removal of cover could lead to electric shock or fire due to the exposed part of the conductor in contact with the metal junction box. (Finding HUM-EL-140331-020).

Building 1294 – An extension drop cord was hard wired inside the chiller power panel to a circuit which is fused at 400 amps. This could lead to electric shock or fire due to melting the extention cord conductors before any fuse would protect the circuit, (HUM-EL-140331-021).

DoD OIG NOC 2, April 9, 2014 - USAG Humphreys (cont'd)

USAG Humphreys – There has not been a total coliform bacteria test performed of the Garrison drinking water since July 2013, as required by the USFK Environmental Governing Standards. Without conducting total coliform bacteriological monitoring from the distribution system, it is not possible for Camp Humphreys to determine the adequacy of treatment or quality of the Garrison drinking water. Risks to public health cannot be determined (Finding HUM-EN-140331-001).

In accordance with requirements of DoD Directive 7650.3, please provide your comments and proposed corrective actions by May 9, 2014. We will include copies of the comments in the report. If possible, send a portable document format (.pdf) file containing your comments to [redacted]

We appreciate the courtesies and support extended to the DoD OIG staff. Please direct questions to [redacted]

Randolph R. Stone
Deputy Inspector General
Policy and Oversight

cc:
Under Secretary of Defense for Acquisition, Technology and Logistics
Assistant Secretary of the Air Force (Financial Management and Comptroller)
Commander, United States Pacific Command
Naval Inspector General
Auditor General, Department of the Army
Commander, USAG Humphreys

2

Management Comments to NOC 1 & NOC 2, May 9, 2014

DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
PACIFIC REGION
132 YAMANAGA STREET, BLDG 104
FORT SHAFTER, HI 96858-5520

REPLY TO
ATTENTION OF
IMPC-ZA

9 MAY 2014

MEMORANDUM FOR Department of Defense, Office of the Inspector General, ATTN: Randolph R. Stone, 400 Mark Drive, Alexandria, VA 22350

SUBJECT: Notice of Concern – Military Housing Inspections, Asia, USAG Red Cloud, USAG Yongsan, and USAG Humphreys

1. References:

a. Notice of Concern - Military Housing Inspections – Asia – USAG Yongsan and Area 1 (Project No. D20123-DTOTAD-0003).

b. Notice of Concern - Military Housing Inspections – Asia – USAG Humphreys (Project No. D20123-DTOTAD-0003).

2. The Garrisons' responses to the Notices of Concern are at Enclosures 1-3. All Korea Garrisons are standing by to take action on any additional corrections identified in the final report.

3. POC is [redacted] Chief, Public Works Division, [redacted]

3 Encls
as

DEBRA D. ZEDALIS
Director

Management Comments to NOC 1 & NOC 2, May 9, 2014 (cont'd)

DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, UNITED STATES ARMY GARRISON, RED CLOUD AND AREA I
UNIT # 15707
APO AP 96258-5707

REPLY TO ATTENTION OF:

IMRD-PW

21 April 2014

MEMORANDUM FOR Inspector General, Department of Defense Office of the Inspector General, ATTN: Randolph R. Stone, Deputy Inspector General, 400 Mark Drive, Alexandria, VA 22350

SUBJECT: Notice of Concern – Military Housing Inspections – Asia, USAG Red Cloud and Area I (Project No. D2013-DTOTAD-0003)

Referencing the subject dated 9 April 2014, the Notice of Concern at USAG RC and Area I at Camp Jackson, Camp Bonifas and Camp Stanley are being addressed. The electrical findings at Camp Jackson and Camp Stanley have already been fixed. For the fire protection findings, the source of required carbon dioxide detectors has been identified and currently in the process of procuring them. We are anticipating installing these detectors by NLT end of Jun 14.

USAG RC Camp Jackson – 2 Findings

Electrical
Building 2167 was grounded properly to code on the same day of finding.

Fire Protection
We have identified local source for the required carbon monoxide detectors and are in the process of purchasing. Estimated date of completion is NLT 30 Jun 14.

USAG RC Camp Bonifas – 1 Finding

Fire Protection
We have identified local source for the required carbon monoxide detectors and are in the process of purchasing. Estimated date of completion is NLT 30 Jun 14.

USAG RC Camp Stanley – 2 Findings

Electrical
Building 2401 was grounded properly to code on the same day of finding.

Fire Protection
We have identified local source for the required carbon monoxide detectors and are in the process of purchasing. Estimated date of completion is NLT 30 Jun 14.

The POC for this memorandum is the undersigned, [redacted]

COL, AV
JOHN M. SCOTT
COL, AV
Commanding

Management Comments to NOC 1 & NOC 2, May 9, 2014 (cont'd)

DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, US ARMY GARRISON-YONGSAN
UNIT #15333
APO AP 96205-5333

REPLY TO ATTENTION OF

IMYN-PW

7 May 2014

MEMORANDUM THRU Deputy Inspector General (Randolph R. Stone), 400 Mark Drive, Alexandria, VA 22350

FOR Inspector General, Department of Defense Office of the Inspector General

SUBJECT: Notice of Concern – Military Housing Inspections – Asia, USAG Yongsan and Area I (Project No. D2013-DTOTAD-0003)

1. Referencing the subject memorandum dated 9 April 2014, the Notice of Concern at USAG Yongsan, 2 findings are addressed.

USAG YONGSAN – 2 Findings

Fire Protection

a. Fuel leak issues in B# 7020A and B# 7125B [*sic*] B# 7025B were repaired on 20 March 2014. (Ref. Finding YON-FP-140310-0430).

b. The fire protection finding for B# 1532 [*sic*] B# 1352, fire alarm panel was repaired and is operational. Fire alarm bells, room smoke detectors, fire alarm pull stations, and automatic fire alarm transmitter were tested and are operational. Existing fire alarm panel is worn and scheduled for replacement. Estimated completion date is NLT 30 Jun 14 (Ref. Finding YON-FP-140301-020).

2. The POC for this memorandum is [redacted]

MICHAEL E. MASLEY
COL, AG
Commanding

Management Comments to NOC 1 & NOC 2, May 9, 2014 (cont'd)

DEPARTMENT OF THE ARMY
INSTALLATION MANAGEMENT COMMAND PACIFIC REGION
HEADQUARTERS, UNITED STATES ARMY GARRISON HUMPHREYS
UNIT # 15228
APO AP 96271-5228

REPLY TO ATTENTION OF:

IMHM-ZA

7 May 2014

MEMORANDUM FOR Deputy Inspector General (Randolph R. Stone), DoD Office of the Inspector General, 400 Mark Drive, Alexandria, VA 22350

SUBJECT: Notice of Concern - Military Housing Inspections - Asia - USAG Humphreys (Project No. D2013-DTOTAD-0003)

1. Reference Notice of Concern dated 9 April 2014, the noted findings at USAG Humphreys are being addressed. Electrical findings have all been corrected; in terms of environmental findings, coliform bacteria testing has begun.

a. Electrical

(1) Building 571 was properly grounded on the same day as the finding.

(2) Building 1294 (Correct building is 731) had the bare wires taped and the system was restored to an operational condition on the same day as the findings.

(3) Building 1294 had the hardwired drop cord removed and was corrected on 16 April 2014.

b. Environmental – Coliform bacteria testing resumed on 14 April 2014 for Garrison's drinking water.

2. POC is the undersigned, [redacted]

Darin S. Conkright

DARIN S. CONKRIGHT
COL, SF
Commanding

Appendix G

Deficiencies

Recipients of this report will receive an automated Aviation and Missile Research, Development, and Engineering Center (AMRDEC) file exchange delivery notice e-mail with instructions detailing the process for downloading all of the deficiencies identified during this inspection.

Management Comments

Department of the Army

DEPARTMENT OF THE ARMY
OFFICE OF THE ASSISTANT SECRETARY OF THE ARMY
INSTALLATIONS, ENERGY AND ENVIRONMENT
110 ARMY PENTAGON
WASHINGTON, DC 20310-0110

SAIE-IHP

05 SEP 2014

MEMORANDUM FOR INSPECTOR GENERAL, DEPARTMENT OF DEFENSE, 4800 MARK CENTER DRIVE, ALEXANDRIA, VIRGINIA 22350-1500

SUBJECT: Military Housing Inspections – Korea (D22013-DTOTAD-0003)

1. The Army concurs with recommendations A.1-3, B, C, D.1, and E. My staff reviewed and concurs with U.S. Army Installation Command, Pacific Region proposed corrective actions to the noted deficiencies requiring immediate action.

2. Specific actions were taken to ensure noted life, safety and health deficiencies do not exist in other housing units as noted in recommendations A – E.

3. POC for this action is [redacted]

PAUL D. CRAMER
Deputy Assistant Secretary of the Army
(Installations, Housing and Partnerships)

Print Recycled Paper

Department of the Air Force

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS UNITED STATES AIR FORCE
WASHINGTON, DC

MEMORANDUM FOR INSPECTOR GENERAL, DEPARTMENT OF DEFENSE (DoDIG)

FROM: HQ USAF/A7C
1260 Air Force Pentagon
Washington, DC 20330-1260

SUBJECT: Military Housing Inspection – Republic of Korea (Project No. D2013-DT0TAD-0003)

The Air Force takes seriously the health, safety, and quality of life of all service members residing in housing we manage. The Air Force has reviewed and concurs with the findings and recommendations outlined in the Military Housing Inspection – Republic of Korea Report, dated 14 August 2014. Osan and Kunsan Air Bases are actively engaged in corrective actions for the findings cited in the report, many of which are already completed. The installations have continued inspecting our housing inventory for similar deficiencies and are monitoring the progress until we are assured all the necessary corrective actions are complete.

As requested, the Air Force's official responses are attached. If there are any questions, please have your staff contact [redacted].

GREEN.TIMOTHY.S.1135082844 Digitally signed by GREEN.TIMOTHY.S.1135082844 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USAF, cn=GREEN.TIMOTHY.S.1135082844 Date: 201 .08.29 07:18:12 -0 '00'

TIMOTHY S. GREEN, Brig Gen, USAF
Director of Civil Engineers
DCS/Logistics, Installations & Mission Support

Attachment:
AF Response to DoDIG Recommendations in Military Housing Inspection – Republic of Korea

Department of the Air Force (cont'd)

AIR FORCE RESPONSE TO
DoD INSPECTOR GENERAL DRAFT REPORT
PROJECT NUMBER: D2013-DT0TAD-0003

MILITARY HOUSING INSPECTIONS – REPUBLIC OF KOREA

Recommendation A
We recommend that the respective Military Departments, as applicable:

a. *Conduct an effective root cause analysis and corrective action for all 141 deficiencies in this report.*

Air Force Response to Recommendation A.a
The Air Force concurs with this recommendation and completed the effective root cause analysis on the 141 identified deficiencies for Air Force-managed housing. Corrective actions are complete for 98 (70%) of the deficiencies. An additional 23 (16%) deficiencies are pending supplies and in progress to complete. Due to the complex nature of the remaining 20 (14%) deficiencies, corrective actions require contract support and are in various stages of planning and execution. The estimated time to complete the remaining deficiencies is Apr 15 based on projected contracting and project execution timelines.

b. Ensure that these deficiencies do not exist in other housing units.

Air Force Response to Recommendation A.b
The Air Force concurs with this recommendation and is currently reviewing all housing units to ensure that these deficiencies do not exist in other housing or dorm units. This effort will continue until 100% of our housing inventory meets current DoD and Federal environmental health and safety policies and standards.

c. Ensure the inspection, maintenance, and repair program is in compliance with applicable codes and standards for fire protection systems, electrical systems, and environmental health and safety.

Air Force Response to Recommendation A.c
The Air Force concurs with this recommendation. A review of the inspection, maintenance, and repair programs is underway to ensure compliance with applicable codes and standards for fire protection systems, electrical systems, and environmental health and safety. Installations have been instructed to ensure life, health, and safety codes and standards are the primary focus of the inspection, maintenance and repair program.

Department of the Air Force (cont'd)

Recommendation B
We recommend that the respective Military Departments, as applicable, ensure that sufficient, qualified resources are available and assigned to inspect and verify that all housing buildings and units are in compliance with requirements for fire protection systems.

Air Force Response to Recommendation B
The Air Force concurs with this recommendation and will ensure that sufficient, qualified resources are available and assigned to inspect and verify that all housing buildings and units are in compliance with requirements for fire protection systems. Of the 62 fire protection deficiencies, 41 (66%) have been corrected. The estimated time to complete the remaining deficiencies is Apr 15 based on projected contracting and project execution timelines.

Recommendation C
We recommend that the respective Military Departments, as applicable, ensure that sufficient, qualified resources are available and assigned to inspect and verify that all housing buildings and units are in compliance with requirements for electrical systems.

Air Force Response to Recommendation C
The Air Force concurs with this recommendation and will ensure that sufficient, qualified resources are available and assigned to inspect and verify that all housing buildings and units are in compliance with requirements for electrical systems. Of the 66 electrical system deficiencies, 52 (79%) have been corrected. The estimated time to complete the remaining deficiencies is Apr 15 based on projected contracting and project execution timelines.

Recommendation D.1
We recommend that the respective Military Departments, as applicable, ensure that sufficient, qualified resources are available and assigned to inspect and verify that all housing buildings and units are in compliance with environmental health and safety requirements.

Air Force Response to Recommendation D.1
The Air Force concurs with this recommendation and will ensure that sufficient, qualified resources are available and assigned to inspect and verify that all occupied housing buildings and units are in compliance with environmental health and safety requirements. Of the 11 environmental health and safety deficiencies, 5 (45%) have been corrected. The estimated time to complete the remaining deficiencies is Apr 15 based on projected contracting and project execution timelines.

Department of the Air Force (cont'd)

Recommendation E
We recommend that the respective Military Departments, as applicable, ensure housing management policies are implemented and procedures are followed.

Air Force Response to Recommendation E
The Air Force concurs with this recommendation. We currently use the Interim Work Information Management System and the Automated Civil Engineer System to manage, control, plan, schedule, and program work requirements at our installations. The Air Force has implemented the enterprise Military Housing (eMH) to manage the housing in Korea. In addition, over the next several years we will transfer the tracking of service calls and work orders to an updated information technology system which will interface with eMH and provide a more robust tracking system for work orders.

Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics

OFFICE OF THE UNDER SECRETARY OF DEFENSE
3000 DEFENSE PENTAGON
WASHINGTON, DC 20301-3000

ACQUISITION, TECHNOLOGY AND LOGISTICS

AUG 28 2014

MEMORANDUM FOR DEPUTY INSPECTOR GENERAL POLICY AND OVERSIGHT

THROUGH: DIRECTOR, ACQUISITION RESOURCES AND ANALYSIS 8/28/14

SUBJECT: Response to DoDIG Draft Report on Military Housing Inspections – Republic of Korea (Project No. D2013-DT0TAD-0003)

As requested, I am providing a response to Recommendation D.2 contained in the subject report.

Recommendation D.2: We recommend that OUSD(AT&L) include guidance for both accompanied and unaccompanied housing within the OEBGD for:

a. Control and remediation of mold.
b. Radon assessment and mitigation.

Response:
Non-Concur. We understand the Military Services take multiple approaches to assessing and controlling mold and radon. This variability reflects the continuing evolution in the knowledge of health risk assessment and control procedures. This evolution is also reflected in guidelines – but not U.S. legal standards – issued by regulatory authorities. Because there is no U.S. federal standard for radon or mold in the United States, there is no standard that would be applicable to U.S. facilities outside the U.S. through the OEBGD. Modifying the OEBGD by creating standards for application outside the U.S. that do not have application inside the U.S. would undermine the purpose of the OEBGD and effectively apply differing standards outside the U.S. from those applied inside the U.S. The underlying goal of the OEBGD is to ensure practices outside the U.S. are carried out in a manner that is consistent with what would be done inside the U.S. To create a special standard only for application outside the U.S. would undermine that purpose. To ensure each of the Military Services' practices are fully informed, we will facilitate information sharing of lessons learned across the Military Services.

My point of contact is [redacted] if additional information is required.

John Conger
Acting Deputy Under Secretary of Defense
(Installations and Environment)

United States Pacific Command

COMMANDER, U.S. PACIFIC COMMAND
(USPACOM)
CAMP H.M. SMITH, HAWAII 96861-4028

9 September 2014

MEMORANDUM FOR DEPUTY INSPECTOR GENERAL POLICY AND OVERSIGHT

SUBJECT: Official Draft Report – Military Housing Inspections – Korea
(Project No. D2013- DT0TAD-0003)

References: USFK 20140814 Draft Report DoD OIG Military Housing Inspections – Korea
D2013-DT0TAD-0003

USPACOM appreciates the opportunity to review the Draft Report on Military Housing Inspections – Korea (referenced). USPACOM staff has reviewed and does not have any further comments.

The health, safety and quality of life of all service members stationed in USPACOM's AOR is important to our mission. The USPACOM staff will continue to coordinate with USFK and the Service Components as they work to resolve issues identified in this report.

My point of contact for this action is [redacted] Please contact him with any further questions at [redacted]

JOHN L. DOLAN
Major General, U.S. Air Force
Chief of Staff

cc:
J004
J4
Chief of Staff, United States Forces Korea

Acronyms and Abbreviations

ACM	Asbestos-Containing Materials
ADM	Add-Drop Muliplexer
AFMC DET	Air Force Materiel Command Detachment
AR	Army Regulation
ASCE	American Society of Civil Engineers
BEE	Bioenvironmental Engineering Office
BNC	Berkeley Nucleonics Corp.
BO	Base Order
BO&I	Business Operations and Integration
CEG	Civil Engineering Group
CFA	Commander Fleet Activities
DA PAM	Department of the Army Pamphlet
DMZ	Demilitarized Zone
DOD	Department of Defense
DODD	Department of Defense Directive
DODG	Department of Defense Guidance
DODI	Department of Defense Instruction
DODM	Department of Defense Manual
DPW	Department of Public Work
EPA	Environmental Protection Agency
FSBP	First Sergeants Barracks Program
FGS	Final Governing Standards
GFCI	Ground Fault Circuit Interrupter
HVAC	Heating, Ventilation, and Air Conditioning
EGS	USFK Environmental Governing Standards
IWIMS	Interim Work Information Management System
ITG	Interim Technical Guidance
KATUSA	Korean Augmentation to the United States Army
LBP	Lead-Based Paint
MCAS	Marine Corps Air Station
MCB	Marine Corps Base
MCO	Marine Corps Order
mSv	Millisievert

Acronyms and Abbreviations (cont'd)

MREM	Millirem (see REM)
NAF	Naval Air Facility
NFPA	National Fire Protection Association
NAVFAC	Naval Facilities Engineering Command
NAVRAMP	Navy Radon Assessment and Mitigation Program
NEC	National Electrical Code
NOC	Notice of Concern
NORM	Natural Occurring Radioactive Material
O&M	Operations and Maintenance
OEBGD	Overseas Environmental Baseline Guidance Document
OIG	Office of Inspector General
OPNAVINST	Chief of Naval Operations Instructions
OUSD (AT&L)	Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics
PACOM	U.S Pacific Command
pCi/L	Picocuries Per Liter
POC	Point of Contact
RADIAC	Radio Activity Detection and Identification and Computation
REM	Roentgen Equivalent in Man
SAIC	Science Applications International Corporation
SASC	Senate Armed Services Committee
SME	Subject Matter Expert
TAD	Technical Assessment Directorate
USACHPPM	United States Army Center for Health Promotion & Preventive Medicine
USAG	United States Army Garrison
USFK	United States Forces Korea
USMC	United States Marine Corps
USNH	United States Naval Hospital
µSv	Microsievert

Whistleblower Protection
U.S. Department of Defense

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For more information about DoD IG reports or activities, please contact us:

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