USAG HUMPHREYS PAM 385-1

SAFETY

USAG Humphreys Safety Program

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US ARMY GARRISON HUMPHREYS

SAFETY PROGRAM

Summary. This document provides policy, defines responsibility, prescribes criteria, and outlines guidance for the development, implementation and evaluation of the US Army Garrison Humphreys Accident Prevention program.

Applicability. This document applies to all USFK/IMCOM-Korea units within US Army Garrison Humphreys (USAG Humphreys), to Mission activities, and to U.S. Army Reserve and Marine Corp units supported by USAG Humphreys. Mission Commands should establish host Mission agreements to cover specific issues necessary to implement their accident prevention programs in accordance with requirements unique to their MACOMs.

Supplementation. Supplementation of this document is prohibited without prior approval from USAG Humphreys Safety Office.

Suggested improvements. The proponent of this document is USAG Humphreys Safety Office, Safety Manager. Users may send comments and suggested improvements on DA Form 2028 (Recommended Changes to Publications and Blank Forms) through channels to Commander, USAG Humphreys, ATTN: IMKO-ACH-SO, Unit #15228, APO AP 96271-5228.

This Pamphlet supersedes USAG Humphreys PAM 385-1, dated 1 November 2007

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Acronyms

AAF	Army Airfield
AGAR	Abbreviated Ground Accident Report
AMV	Army Motor Vehicle
ASO	Aviation Safety Officer
ASP	Ammunition Supply Point
CAPP	Commander's Accident Prevention Program
CFR	Code of Federal Regulation
CPAC	Civilian Personnel Advisor Center
CPR	Cardiopulmonary Resuscitation
DA	Department of the Army
DAC	Department of the Army Civilian
DES	Directorate of Emergency Services
DGC	Deputy to the Garrison Commander
DODAC	Department of Defense Ammunition Code
DODIC	Department of Defense Identification Code
DHR	Directorate of Human Resources
DPTMS	Directorate of Plans, Training, Mobilization, and Security
DPW	Directorate of Public Works
ECOD	Estimated Cost of Damages
EMT	Emergency Medical Technicians
EO	Executive Order
ESA	Emergency Stand by Assistant
EUSA	Eighth United States Army
FEWR	Facility Engineering Work Request
FOD	Foreign Object Damage
FRAGO	Fragmentary Orders
GSM	Garrison Safety Manager
GSO	Garrison Safety Office
HAZCOM	Hazardous Communication
HAZMAT	Hazardous Material
HC/DIV	Hazard Class/Division
HCP	Hazard Communication Program
HMIS	Hazardous Material Information System
HOC	Humphreys Operations Center (Staff Duty Officer)
IAW	In Accordance With
IDLH	Immediately Dangerous to Life or Health
IFC	Installation Fire Chief
IMCOM	Installation Management Command
LEL	Lower Explosive Limit
LOTO	Lockout/Tagout
MP	Military Police
MSDS	Material Safety Data Sheets
NIOSH	National Institute for Occupational Safety and Health

Acronyms (Cont'd)

NRC	Nuclear Regulatory Commission
NSN	National Stock Number
OHR	Operational Hazard Report
OPORD	Operational Orders
OSHA	Occupational Safety and Health Act
PCE	Protective Clothing and Equipment
PMO	Provost Marshal Office
POV	Privately Owned Vehicle
PPE	Personal Protective Equipment
PPR	Prior Permission Request/Required
PT	Physical Training
RAC	Risk Assessment Code
RF	Radio Frequency
RMO	Resource Management Office
RS	Respirator Specialist
RPE	Respiratory Protection Equipment
RPM	Respiratory Protection Management
RPO	Radiation Protection Officer
RPP	Respiratory Protection Program
RSO	Radiation Safety Officer
SASOHI	Standard Army Safety & Occupational Health Inspection
SIR	Serious Incident Report
SO	Safety Office
SN	Serial Number
SOP	Standing Operating Procedures
TMP	Transportation Motor Pool
USAG	US Army Garrison
WBGT	Wet Bulb Globe Temperature

References

DOD 4500.9-R	Part II, Defense Transportation Regulation (Cargo Movement)
DODI 6050.5	DoD Hazard Communication Program
DODI 6055.04	DoD Traffic Safety Program 20 April 2009, Incorporating Change 1, April 2, 2010
DOD 6055.9-STD	DoD Ammunition and Explosives Safety Standards
AK 385-10	Eighth United States Army Safety Program
AK 700-3	Logistics Conventional Ammunition
AR 11-34	The Army Respirator Protection Program
AR 40-5	Preventive Medicine
AR 50-7	Army Reactor Program
AR 95-1	Flight Regulations
AR 95-2	Airspace, Airfields/Heliports, Flight Activities, Air Traffic Control and Navigational Aids
AR 385-9	Safety Requirements for Military Lasers
AR 385-10	The Army Safety Program
AR 385-63	Range Safety
AR 420-90	Fire and Emergency Services
AR 600-8-104	Military Personnel Information Management/Records
AR 600-55	The Army Driver and Operator Standardization Program (Selection, Training, Testing, and Licensing)
AR 700-141	Hazardous Materials Information Resource System (HMIS)
* DA Pam 385-10	The Army Safety Program
* DA Pam 385-40	Army Accident Investigation and Reporting
* DA Pam 385-63	Range Safety

References (Cont'd)

* DA Pam 385-64 Ammunition and Explosives Safety Standards

* USFK Regulation 190-1 Motor Vehicle Traffic Supervision

* USFK Regulation 385-1 Safety Program

* USFK Pamphlet 385-2 Guide to Safe Driving in Korea

* USFK Pamphlet 385-3 Systems Approach to Seasonal Safety

* EUSA Pamphlet 420-1, EUSA Fire Prevention and Protection Program

29 CFR 1910, Occupational Safety and Health Standards for General Industry. (OSHA)

29 CFR 1910.146, Confined Spaces

29 CFR 1910.147, Control of Hazardous Energy (Lockout/Tagout)

29 CFR 1910.2000, Hazard Communication Program

29 CFR 1926.59, Hazard Communication

ANSI Z88.2, Practices for Respiratory Protection

ANSI Z88.6, For Respiratory Protection – Respirator Use-Physical Qualification for Personnel

FM 5-19, Composite Risk Management

TB 385-4, Safety Procedures for Maintenance of Electrical/Electrics Equipment

TB MED 502, Respiratory Protection Program

TB MED 509, Spirometry in Occupational Health Surveillance

TB MED 523, Control of hazards to Health from Microwave and Radio-Frequency Radiation and Ultrasound

IMCOM-K OPORD 06-25, KORO IMA Safety Awards Program

Appendixes

Chapter 1

Introduction

1-1. Purpose.

a. This regulation implements the USAG Humphreys Commander's Accident Prevention Plan (CAPP), and provides guidance and establishes responsibilities for its execution.

b. This regulation establishes policy and procedures to protect and preserve personnel and property against accidental injury or loss, this regulation also outlines the USAG Humphreys Safety Program.

1-2. References. Lists required and related publications.

1-3. Responsibilities.

a. The Commander, USAG Humphreys, is responsible for the Safety Program.

b. The USAG Humphreys Safety Manager will:

(1) Administer and direct all elements of the safety program for USAG Humphreys.

(2) Act as advisor to the USAG Humphreys Commander on all Safety and Occupational Health matters.

(3) Develop, coordinate, and disseminate safety program policy, direction and guidance to units or activities within USAG Humphreys and USAG Humphreys.

(4) Support commanders and leaders in developing specific Safety and Occupational Health plans, processes and procedures.

(5) Collect and distribute accident data and statistics relating to motor vehicle accidents, personal injuries and occupational illnesses.

(6) Develop countermeasures for reducing accidents.

(7) Review plans for new construction, renovation, and modification of facilities ensuring project completions are in compliance with Army Safety and Occupational Health Standards.

(8) Evaluate and assign appropriate Risk Assessment Codes (RAC) for safety related work requests (DA Form 4283).

(9) Publish and distribute a Standard Army Safety & Occupational Health Inspection (SASOHI) survey schedule not later than 30 September of each year.

(10) Conduct Hazard Communication (HAZCOM) training for Explosives/Radiation Safety, Aviation and OSHA surveys for all operations, facilities and personnel verifying conformance to safety standards and regulatory requirements detecting, preventing, eliminating or controlling all unsafe or unhealthy conditions.

(11) Provide safety advice and services to mission units or activities located within USAG Humphreys.

(12) Develop programs to reduce injuries and occupational illnesses by thoroughly investigating them. Investigations will identify cause and provide recommendations to prevent recurrence of similar injuries or illnesses.

c. All Commanders/Directors will:

(1) Implement and maintain an effective, aggressive and comprehensive Unit Safety Program.

(2) Appoint additional duty safety personnel on written orders to perform required safety and accident prevention functions. Forward a copy of appointment orders to the USAG Humphreys Safety Office (GSO) within seven days of appointment**.** Newly assigned Safety personnel will complete the online Additional Duty Safety Course and forward a copy of certificate of completion to the USAG Humphreys Safety Office, within 30 days of appointment.

(3) Ensure personnel observe established Safety and Occupational Health rules and regulations, including the use of protective clothing and equipment.

(4) Promptly evaluate and correct reported hazards identified through accident investigations, safety surveys or reported by personnel.

(5) Prepare an organizational SOP including a detailed hearing conservation plan.

(6) Ensure thorough risk assessments are accomplished prior to conducting operations.

(7) Route safety related work requests, DA Forms 4283, through the GSO prior to submission to Directorate of Public Works (DPW), for evaluation and Risk Assessment Codes (RAC) assignment.

(8) Incorporate relative aspects of the CAPP into the unit's accident prevention program.

d. Safety personnel. Guidelines for unit safety personnel are described in Appendix A.

(1) Maintain liaison with the USAG Humphreys Safety Office.

(2) Provide monthly organizational vehicle mileage to the GSO no later than (NLT) the 5th of each month. Telephonic reports are acceptable.

(3) Organizational Safety personnel are required to maintain individual vehicle mileage records and request safety awards at the end of the reporting year.

e. Directorate of Human Resources (DHR); USAG Humphreys will provide the necessary administrative support for the safety program. This support includes advising the GSO of changes in unit designations, unit assignments or unit deactivation's within USAG Humphreys.

f. Directorate of Plans, Training, Mobilization and Security (DPTMS) will:

(1) Integrate safety requirements into all training plans and operational procedures.

(2) Will develop risk management work sheet for all assigned missions IAW FM 5-19.

(3) Coordinate all exercise operations involving ammunition/explosives, radioactive material or radio frequency/microwave systems with the GSO.

(4) Support the Aviation Pre-Accident/Incident Prevention Plan.

g. Airfield Operations Officer will:

(1) Ensure compliance with chapters 4 and 5 pertaining to hazardous cargo on the airfield.

(2) Maintain the Aviation Pre-Accident/Incident Prevention Plan.

h. Directorate of Logistics (DOL) will:

(1) Ensure the Transportation Motor Pool (TMP) forwards an Estimated Cost of Damage (ECOD) report for each non-tactical vehicle involved in an accident to the GSO within two workdays.

(2) Forward a monthly report identifying the total Net Explosives Weight (NEW) of all Hazard Class Division ammunition and explosives on USAG Humphreys, to the GSO by the 7th day of each month. (4) Maintain a continuity book or folder for all USAG Humphreys explosives storage bunkers. Maintain the following information in the book/folder:

(a) A complete inventory by storage facility showing DODAC, nomenclature, quantity and total net explosive weight (NEW) for HD 1.3 and above material.

(b) The latest lightning protection/ground system inspection report, including the OMH reading for each bonding point.

(c) Copies of work orders submitted for corrections of safety deficiencies. Work orders will indicate repair cost estimates.

(d) Copies of internal or external surveys and inspections for the past and current fiscal year.

(3) Maintain a Consolidated Basic Load Ammunition Storage Facilities SOP, which this regulation incorporates.

i. The Resource Management Office (RMO) will:

(1) Provide sufficient funds within budget constraints and other resources to the GSO for support of safety programs.

(2) Submit a copy of the USAG Humphreys population report to the GSO as required.

j. Commanders of USAG Humphreys Medical Facilities will:

(1) Provide admittance and disposition sheets to GSO.

(2) Coordinate for assistance for commanders on health hazard evaluation and control.

(3) Participates in all primary crash responses.

(4) Conduct Wet Bulb Globe Temperature (WBGT) Index readings from June to September and report the readings to the USAG Humphreys Community Operations Desk (HCOD) 754-6111. The HCOD will, in turn, notify units when the WBGT Index reaches a level requiring modification of physical activity IAW TB MED 507.

k. Directorate of Public Works (DPW) will:

(1). Provide GSO construction/renovation plans for review to ensure compliance with Safety and OSHA standards prior to any plan of execution.

(2). Have the GSO evaluate and assign Risk Assessment Codes (RAC's) for safety related Facility Engineering Work Requests (FEWRs), DA Forms 4283.

(3). Ensure all contractors comply with DA PAM 385-10 Chapter 4; Contractor Safety Requirements.

(4) Submit an ECOD report for accidental facility damage to the GSO within two (2) workdays after notification of the accident.

(5) Provide monthly updates of all safety related work requests (those which have assigned Risk Assessment Codes (RAC) to the GSO NLT the 10th day of each month.

l. Director of Emergency Services will:

(1) Develop local procedures for safe control of traffic and coordinate traffic safety matters with the GSO.

(2) Provide the GSO with daily MP blotter and traffic accident reports.

(3) Promptly report accidents occurring within USAG Humphreys to the DPTMS. The DPTMS, in turn, will immediately notify the GSO and appropriate commander.

(4) Ensure the Fire Department participates in all primary crash responses.

(5) Have the Fire Chief submit an information copy of DOD Fire Incident Report, DD Form 2324 to the GSO.

m. The Civilian Personnel Advisor Center (CPAC) will:

(1) Forward a copy of each Report of Injury and Claim for Compensation it completes to the GSO.

1-4. Policy.

a. Commanders and supervisors are responsible for our most precious assets -- military and civilian employees. Commanders will integrate risk management procedures into the planning and execution of all organizational activities.

b. The USAG Humphreys Safety Office Council meets quarterly to review accident causes, develop countermeasures, and exchange safety and health information. Membership consists of the USAG Humphreys Commander (Chairman) or his representative, Safety Manager, Director of Human Resources (DHR), Director of Public Works (DPW), Airfield Operations Officer, Director of Morale, Welfare and Recreation (MWR), Director of Plans, Training, Mobility and Security (DPTMS), Director of Logistics (DOL), Director of Emergency Services (DES), Director of Civilian Personnel Advisory Center (CPAC), Chief Environmental, Occupational Health Nurse, Occupational Community Nurse, Fire Chief, Military Police (MP) and each Unit Commander within USAG Humphreys community.

1-5. Operational Procedures. In conducting all types of Safety and Occupational Health activities, the safety staff in this command will tailor programs to support the following elements:

a. Base support operations to include work site surveys, construction plan reviews, and review of contracts and contractor activities.

b. Range Operations.

c. Aviation Operations.

d. Explosives Operations.

e. Accident investigation, reporting, and administration.

f. Hazardous material operations.

g. Family, dependent and off-duty accident prevention.

h. Establish procedures to ensure personal protective clothing and equipment requirements, utilization and maintenance.

i. Ensure implementation of effective range safety procedures, and review all new range construction and waiver requests.

j. Publish safety procedures to implement effective family, sports, and recreation safety programs.

Chapter 2

Notification of Accidents and Unsafe or Unhealthy Conditions

2-1. Accident/Incident Reporting Procedures.

a. Each organization will establish accident-reporting procedures as part of its pre-accident/incident plan that includes the following:

(1) Immediately notify the GSO of all Army Class A and B accidents/fatalities, and report all Class C accidents.

(2) Report Class D or Class E aviation accident/incident and all Foreign Object Damage (FOD) immediately if Safety-of-Flight is an issue.

b. The notification will include the minimum information requirements of DA Form 7305-R (Worksheet for telephonic notification of aviation accident/incident) for all aviation accidents and DA Form 7306-R (Worksheet for telephonic notification of ground accident) for all ground accidents. Submit all other accident injury reports IAW AR 385-10, DA Pam 385-40 and local directives.

c. Mission units assigned to USAG Humphreys will submit courtesy copies of recordable accident reports to the GSO for the purpose of accident trend analysis.

d. Subordinate units will forward DA Forms 2397-AB-R for aviation Class D accidents, and Class E and FOD incidents and DA Forms 285-AB-R (AGAR) for Class C and D ground accidents. Submit the report to the GSO within 7 working days of the accident/incident.

e. During normal duty hours contact USAG Humphreys GSO, DSN 753-5580~7. After normal duty hours, units can contact USAG Humphreys Community Operations Desk (HCOD) 754-6111.

2-2. Civilian Personnel Advisory Center

a. The Civilian Personnel Advisory Center (CPAC) will record Korean employee injuries or illnesses and forward a copy to the GSO for review.

b. Department of the Army Civilians (DAC) and their supervisors will complete a CA-1 for DAC injuries or illnesses and submit the form to the CPAC. The CPAC will forward a copy of the report to the GSO for review.

c. The USAG Humphreys Medical/ Urgent Care Facilities will provide the SO with a copy of the daily Injury Report Log.

2-3. Report of Unsafe or Unhealthy Condition.

a. All personnel within USAG Humphreys are responsible for reporting unsafe or unhealthy working conditions. Complete the DA Form 4755 (Employee Report of Alleged Unsafe or Unhealthful Working Conditions), for known or suspect hazards. The initiator can sign the report or may submit anonymously; either way, the investigation procedures are identical. Individuals can submit reports through their supervisors or directly to the GSO. The GSO will process the report, investigate the hazard, and prepare responses IAW AR 385-10.

Chapter 3

Ground Accident Prevention Program

3-1. General. The objective of the ground accident prevention program is to complete all assigned missions and tasks in a professional and safe manner; safeguard all military and civilian employees and property from accidents; prevent accidental damage or destruction to all equipment, facilities and properties; and provide a continuing and aggressive accident prevention program compatible with the assigned mission.

3-2. Motor Vehicle Safety. The primary ingredient of a motor vehicle accident prevention program is involvement by commanders and leaders. They are responsible for supervising and promoting the safety program, as well as ensuring sufficient training of personnel under their jurisdiction. Incorporate the following actions to prevent motor vehicle accidents:

a. Commanders and Directorates will establish written dispatch procedures for each unit motor pool and TMP. They will include internal procedures for release of vehicles during amber and red road conditions.

b. The Military Police and gate guards will stop military vehicles entering and exiting the installations, inspect dispatches, and ensure that occupants are utilizing available safety restraints.

c. Commanders and Directorates will ensure that all Army Motor Vehicles (AMV) operators receive classroom instruction in accident avoidance that establishes and reinforces positive driver attitudes. All drivers of Army buses, MP vehicles, ambulances, fire trucks, fueling vehicles, vehicles carrying hazardous cargo, motorcycles, mopeds, crash-rescue vehicles, or other emergency vehicles must complete additional training. This additional training is to ensure competency in the safe operation of such vehicles and will include the following:

(1) Applicable laws and regulations.

(2) Safe operating practices under normal and emergency conditions.

(3) Driver inspection and primary preventive maintenance.

d. A certifying official will indicate to the person issuing the OF 346 (US Government Motor Vehicle Operator's Identification Card) that the driver has met the above requirements and fully understands operational peculiarities of the vehicle. Document the training on the operator's DA Form 348 (Equipment Operator's Qualification Record).

e. Use driver incentive awards to recognize the achievements of military and civilian drivers who contribute to safe operations IAW AR 385-10.

f. All personnel will use available restraint systems while driving or riding in an AMV/POV, on and off military installations, IAW USFK Reg 190-1 and AR 385-10.

g. Commanders and Directorates will establish countermeasures to prevent AMV/POV accidents based upon the Commanders Accident Prevention Plan (CAPP) and the annual accident analysis for USAG Humphreys. Each unit will address POV safety in conjunction with each holiday safety briefings and should inspect POVs periodically.

h. Individual operators of POVs must comply with the requirements of USFK 190-1 as it pertains to annual safety inspections and insurance requirements.

i. Drivers will not pass a vehicle yielding for runners, joggers or walkers in the roadway.

j. When traffic signals are not in place or in operation, vehicle drivers must yield the right-of-way and stop to yield for runners, joggers, or walkers crossing the roadway within a crosswalk.

3-3. Motorcycle, Moped Specialty Vehicles and ATV's. Operating a two-wheeled vehicle is dangerous due to the unusual variety of traffic hazards present in the Republic of Korea. Personnel will comply with traffic laws and regulations relative to the operation of motorcycles and mopeds contained in USFK Reg 190-1. When operating a motorcycle or moped, the operator will wear a Department of Transportation DOT approved protective helmet at all times. Reflective belts or sleevelets may not be used. Motorcycles/mopeds operators must wear a brightly colored upper garment and / or (orange, red or green) reflective vest during daylight, and reflective or florescent vest. at night. All motorcyclists will attend an approved Motorcycle Safety Foundation (MSF) course and carry the MSF card in their possession. Prior to any operation of ATV's, operators will be trained on the safe operations and controls that have been implemented to mitigate hazards. ATV operators will complete the Specialty Vehicle Institute of America based course prior to operating any ATV on or off installations.

3-4. Marching Units and Physical Training while in Formation Safety.

a. The total fitness of our fighting force is essential but needlessly exposing troops to preventable risks of injury is unacceptable.

b. Individual and formation runs are not authorized anywhere inside the fence surrounding the A511 airfield.

c. To support marching units and PT programs within USAG Humphreys, the following applies to all formations:

(1) Prior coordination with DPTMS (DSN 754-6735) is required for all Battalion size or larger unit/formation runs.

(2) Commanders will ensure that personnel wear a reflective vest, reflective belt, or other approved reflective material. Commanders will ensure uniformity of the type and wear of reflective material within their formations. Road guards will use flashlights during times of limited visibility such as night, fog and rain.

(3) Formations will utilize the right side of roadways in the direction of traffic and will not be more than three abreast and not take more than one lane of a roadway to include the formation commander.

(4) Unit or formation runs will not be conducted on public road ways outside USAG Humphreys installations.

(5) Vehicles approaching an oncoming formation will stop until directed to continue by the road guards or formation commander. Passing speed is a maximum of 10 MPH.

(6) Vehicles approaching battalion size formations from the rear will not pass the formations but may continue to follow. It is incumbent upon the commander of the last unit in battalion formations to ensure this action. Vehicles may pass company size or smaller formations only at the direction of the road guards or formation commander.

(7) Small unit formations that close on a battalion formation may continue to run behind the battalion but will not pass.

(8) Small unit formations may pass similar size units only after directed to do so by the road guards or formation commander of the formation to be passed.

(9) Designate individuals, other than the road guards, for straggler control to check on personnel that drop out for potential injuries and to ensure accountability.

3-5. Individual Physical Training. Serious accident potential exists when joggers/walkers compete with motor vehicles for space on the roads. To ensure that jogging/walking is conducted in a safe environment and to prevent accidents, joggers/walkers will observe the following safety rules:

a. Whenever possible use the sidewalk, however, do not interfere with pedestrian traffic.

b. Face traffic when using roadways. When with others stay in single file in the designated lanes.

c. During hours of darkness or reduced visibility, joggers will wear a reflective vest, reflective belt, or other approved reflective material while on a public roadway, street, bicycle path, or any other right-of-way under USFK jurisdiction.

d. The use of headphones/earphones while jogging/walking is prohibited.

e. Avoid all construction areas throughout the Garrison.

f. During Inclement weather conditions, (Red or Black) recreational running, walking and jogging will not be authorized.

g. Use crosswalks when crossing roads. However, yield the right-of-way to vehicular traffic when crossing a roadway other than within a marked crosswalk. Challenging or obstructing vehicular traffic is prohibited.

h. Obey applicable instructions of traffic control devices including stop signs unless directed otherwise by law enforcement personnel.

3-6. Prevention of Personal Injuries. Commanders will take the following actions to prevent personal injuries:

a. Pre-plan work activities and obtain the proper equipment before assigning the task.

b. Identify areas within workplaces, such as maintenance areas, where there is a potential for oil/grease leaks. Obtain rags and drying compound (Compound, Sweeping, Oil and Water Absorbing, 50#, NSN 7930-00-269-1272) and place them in areas where potential leaks exist.

c. Identify areas where ice is likely to form, order deicer, calcium chloride, NSN 6810-00-422-2169, and preposition it by 1 November of each year. Sand is a suitable substitute for calcium chloride, but is not authorized for use on installation roads.

d. Enforce dismount procedures to prevent injuries caused by troops jumping from the rear of Army Motorized Vehicles (AMVs).

e. Inspect workplaces for physical features, which may cause slips/falls. Correct, color code, or request repair as appropriate.

f. Conduct organized sports IAW DA PAM 385-5.

g. Establish countermeasures to prevent accidents based upon the CAPP and the annual injury analysis for USAG Humphreys.

3-7. Protective Clothing and Equipment (PCE) Program. Commanders/Directors at all levels will:

a. Have qualified safety and health personnel evaluate workplaces, operating procedures, and hazardous material to determine work hazards and health risks. Organizational SOPs will include any exposure restrictions or requirements for PCE noted in this evaluation.

b. Mark each work area or health risk hazard to warn personnel and indicate the PCE requirements.

c. Train personnel how to properly select, use, inspect, and care for PCE.

d. Establish a PCE maintenance program for all recoverable equipment IAW DA Pam 385-3. This will include cleaning, disinfecting, replacing unserviceable parts, periodic inspection by qualified persons, and proper storage to protect against environmental conditions that might contaminate the PCE or lessen its effectiveness.

e. Ensure that PCE is selected and inspected for proper fit and operation at the time of issue to the employee.

f. Comply with the prescribed use of the PCE. In the case of noncompliance, initiate the necessary corrective action to ensure compliance.

3-8. Operation of Bicycle and Recreational Play Vehicles:

a. Purpose: To reinforce regulatory requirements regarding the safe operation of bicycles and recreational play vehicles (inline skates, roller skates, scooters, skateboards) on USAG Humphreys.

b. Applicability: All US and KATUSA soldiers, DoD Civilians, Invited Contractors, Family members and Korean Employees who operate or intend to operate bicycles or recreational play vehicles within USAG Humphreys, area of responsibility.

c. Unless otherwise stated, the following rules will apply when a bicycle or recreational play vehicle is operated on USAG Humphreys.

(1) Both bicycle and owner must be enrolled in DBIDS through the local Pass and Identification office. Upon bicycle enrollment and successful safety inspection, the Pass and ID Office will affix a numbered decal to the bicycle as evidence of enrollment.

(2) Traffic laws apply to persons riding bicycles. Bicyclists riding on a roadway are granted rights and are subject to duties applicable to operators and drivers of any other type vehicle.

(3) All personnel operating or riding on a bicycle, recreational play vehicle, or any non-motorized vehicle, while on USAG Humphreys, will wear a protective helmet designed for bicycle safety and reflective vest or belt. Helmets will be certified to meet Department of Transportation (DOT) standards IAW DODI 6055.4 The helmet will be worn level on the head with the strap properly fastened under the chin. Reflective vest or reflective belt will be clearly visible (e.g. not covered/obstructed by anything such as a backpack), at all times. Elbow/knee pads, and gloves are highly recommended when riding on a recreational play vehicle.

(4) The wearing of headphones or earphones while participating in any of the above-mentioned activities or while jogging on USAG Humphreys is strictly prohibited.

(5) Bicyclists will not ride other than on or astride a permanent and regular seat. Bicycles will not be used to carry more persons at one time than the number for which they are designed and equipped.

(6) Bicycles, recreational play vehicle, and non-motorized vehicles will not be pulled or otherwise propelled by assistance from a motorized vehicle.

(7) Bicyclists will ride as near to the right side of the roadway as practical and will exercise due care when passing a standing vehicle or one proceeding in the same direction.

(8) Bicyclists will not ride abreast of highway and roads except on paths or parts of road as designated for the exclusive use of bicycles.

(9) Bicyclists will not carry any package, bundle, or article when transporting the article prevents the operator from keeping both hands free to control the bicycle and to give signals.

(10) Bicycles used during hours of darkness or limited visibility must be equipped with a front light and rear light. The front lamp must emit a white light visible at least 500 feet (150 meters) to the front. A rear lamp must emit a red light visible from 100 feet (30 meters).

(11) Recreational play vehicles are not authorized in parking areas (above/below ground), roadways, inside buildings, and school areas. Stunts, acrobatics or jumping while on a recreational play vehicle is not authorized except in the USAG Humphreys Skate Park.

d. Unit leadership, Military Police, Contract Security Guards and Humphreys Community will assist in the enforcement of this letter.

e. Bicyclists attempting to enter USAG Humphreys without personal safety equipment prescribed above or without the numbered decal as evidence of DBIDS enrollment will be advised to walk or park the bicycle, and register it at the first available opportunity.

Chapter 4

Aviation Accident Prevention

4-1. General. The commander of each aviation unit at USAG Humphreys will develop an Aviation Accident Prevention Program IAW AR 385-10 and integrate accident prevention awareness into functional areas involving the use, operation, and maintenance of aircraft. To fulfill this responsibility, commanders will publish aviation accident prevention directives to provide adequate instructions and safeguards for protecting personnel and equipment without reducing mission effectiveness.

4-2. Duties. The A511 Airfield Safety Officer, will contact the USAG Humphreys Safety Manager on all aviation safety matters. The A-511 Airfield Safety Officer's duties are:

a. Those outlined in AR 385-10 as they pertain to Aviation Safety.

b. To inspect the physical condition of A511 Airfield for hazards.

c. Maintains a close liaison with Mission Aviation Safety Officers.

d. Act as primary point of contact for all aviation mishaps in USAG Humphreys.

4-3. Transportation of Hazardous Cargo.

a. Units transporting hazardous cargo that requires aircraft services or parking at A511 Airfield will submit a written Prior Permission Request (PPR) a minimum of 24 hours prior to arrival.

(1) The PPR will include the following information:

(a) Number and type aircraft.

(b) Arrival and departure times.

(c) Exact nature of hazardous cargo.

(d) Net explosives weight of ammunition (If applicable).

(e) Estimated ground time.

(f) Special support requirements.

(g) Fuel requirements.

(2) The Pilot-in-Command will: Place the PPR number and the words "Hazardous Cargo" in the remarks section of the flight plan. Upon initial contact, the pilot will advise the A511 that hazardous cargo is onboard and give the PPR number.

b. Airfield Operations will:

(1) Contact the Commander, US Army Garrison Humphreys, or the Deputy to the Garrison Commander, USAG Humphreys for approval.

(2) Issue a PPR number upon approval and notify the:

(a) Airfield Manager / Operations Officer

(b) USAG Humphreys DPTMS

(c) USAG Humphreys Safety Manager

(d) Fire Chief

(e) PMO

(3) Coordinate all hazardous cargo operations through the USAG Humphreys Safety Manager.

c. Flight Operations. Upon initial contact with an aircraft carrying hazardous cargo, the A-511 flight dispatcher will:

(1) Provide priority handling.

(2) Notify the Airfield Operations NCOIC.

d. Aircraft Fueling Operations.

(1) Rotary-wing aircraft:

(a) Hot refueling is not authorized for aircraft carrying Class/Division 1.1 and/or 1.2 explosives.

(b) The only authorized service area is the Hazardous Cargo Pad for aircraft carrying Class/Division 1.1 and/or 1.2 explosives.

4-4. Accident Prevention Plan. Aviation unit commanders will establish an aviation accident prevention plan compatible with the mission and function of their organizations. The plan must integrate local regulations and publication requirements. Each plan must incorporate the following:

a. Commander’s Accident Prevention Program (CAPP). How to implement the plan through the unit SOP.

b. Aircraft accident prevention survey. The aircraft accident prevention survey is an effective means of evaluating the condition of the unit's aviation safety program. Perform the safety inspections IAW AR 385-10.

c. Aviation Safety Council. Appoint a unit Aviation Safety Council as part of the commander's aviation accident prevention effort. Members of the council will include the Commander, the ASO, and other personnel who are responsible for activities such as operations, supply, maintenance, aviation medicine, and engineering. Integrate all enlisted and civilian members of the unit into the aircraft accident prevention function.

d. Training. Provide monthly safety classes all aviation personnel for an effective safety program.

e. Investigation, reporting, and analysis. Accurate and timely aircraft accident investigations, reporting, and analysis are essential to aviation safety. Thoroughly investigate and report each aviation accident and hazard IAW AR 385-10 and DA Pam 385-90. All units assigned within USAG Humphreys must telephonically report all Class A, B, C and D aviation mishaps as soon as possible to the GSO, 753-5580~7.

f. Pre-accident Plan. The Airfield Operations Officer is responsible for the development, coordination and maintenance of the pre-accident plan. Each supporting activity must participate in practice drills, recommend improvements, and ensure the accuracy of the plan. The A-511 Airfield Safety Officer will coordinate, conduct and evaluate all crash drills. Each aviation unit must supplement the USAG Humphreys pre-accident plan by incorporating specific responsibilities of unit personnel. The pre-accident plan will meet or exceed the requirements of AR 385-10.

g. All units will comply with the provisions set forth in the A511 Airfield SOP.

Chapter 5

Ammunition and Explosives Safety Program

5-1. STANDARDS

a. Provide maximum protection to personnel and property from damaging effects of accidents involving ammunition or explosives.

b. Limit exposure of personnel to the minimum amount of ammunition or explosives consistent with safe and efficient operations.

c. Comply with ammunition and explosives safety standards wherever ammunition or explosives are stored or handled.

5-2 RESPONSIBILITIES

a. Garrison Safety Manager (GSM) is responsible for USAG Humphreys Explosives Safety Programs to include but not limited to the following:

(1) Establishing and administering an ammunition and explosive safety program.

(2) Exercises supervision over mission units, ensuring Arms Ammunition and Explosive (AA&E) safety procedures are maintained and implemented, to include specific plans for correcting violations of explosives safety standards.

(3) Review of explosive site plans for ammunition storage locations, new facility designs or modified explosive facilities within the safety arcs of explosives operations holding areas and operating locations, such as ports, railheads, ammunition maintenance, repair and renovation areas, Forward Arming and Refueling Points (FARPs), combat aircraft parking areas and Hot/Hazard Cargo parking areas, static missile batteries and locations used for the treatment or disposal (open burn or detonation) of munitions. Provide commanders with an explosive hazard risk assessment.

(4) Annual review and certification of (EA Form 296-R) storage licenses, IAW DA PAM 385-64 and DOD 6055.9-STD ensuring Quantity Distance (QD) requirements for separation distances of explosives from non-explosive facilities.

(5) Conduct semi-annual safety surveys of explosive facilities, ensuring munitions are stored IAW current license requirements. Survey's will include as a minimum, determination of Net Explosives Weight (NEW), compatibility of stored munitions, and service condition of the storage facility. NEW must not exceed allowance authorized in blocks ten and thirteen of EA Form 296-R.

b. Provost Marshal/Contract Guard Services will:

(1) Ensure all Explosive Laden Vehicles entering USAG Humphreys will properly display Hazard & Division (HD) placards for ammunition transported. All explosive laden vehicles must comply with restrictions of each installation as specified in Para 5-2 below. If restrictions cannot be met, the USAG Humphreys Garrison Commander (GC) or Deputy to the USAG Humphreys Garrison Commander (DGC) may authorize temporary safe haven of vehicles at the Hazard Cargo Pad. The GSO must be notified when munitions other than HD 1.4S require entry as listed Para 5-3 below.

(2) For emergency safe haven of explosive laden vehicles, contact the Explosive Safety Officer, DSN 753-5582, fire department, DSN 754-6173 and airfield operations, DSN 753-7636. Aircraft Emergencies (refer to Para 5-4 below).

(3) If the GC or DCG authorizes temporary Safe Haven of explosive laden vehicles, the MPs will provide escort to the hazard cargo pad via the following established primary hazardous cargo route.

Note: Primary Hazard Cargo Route- From CPX gate, make right turn onto Freedom Road, transit past the main gate area and go directly to the hazard cargo pad, entering via gate #8. Explosive laden vehicles above 1.4S will not enter USAG Humphreys without prior authorization from the USAG Humphreys Safety Office.

c**.** Airfield Operations Officer/NCOIC will:

(1) Ensure that the Hazard Cargo Pad Gate #8 is open.

(2) Inform the Airfield Fire Department, Tower, all flying organizations and Airfield Operations dispatch personnel that the Safe Haven Pad is occupied/closed.

(3) Provide radio for mission unit to maintain communications with the tower.

d. Mission Units/Mission Commands shall:

(1) Provide security of aircraft/vehicles while parked at the Hazard Cargo Pad.

(2) Properly maintain the basic load ammunition stored in Buildings 700, 714, 1238 & 1252 on USAG Humphreys. Ensure munitions are stored IAW the Explosives Storage License (EA Form 296-R), DA Pam 385-64, and AK Reg 700-3.

(3) Monthly by the 8 day of the month, forward reports identifying the total (NEW) of ammunition and explosives for each storage facility to the USAG Humphreys Safety Office. Basic Load facilities storing HD 1.4S (small arms ammunition) only are exempt from monthly reporting requirements; however units shall provide an annual Basic Load Inventory due NLT 31 October of each year.

(4) Maintain a continuity book for the facility used in storage of Ammunition Basic Load. The continuity book will, at a minimum, contain the following:

(a) Storage License.

(b) Security Construction Statement.

(c) Waiver, Exemption, CCR (if applicable).

(d) Plan-O-Graph of each location.

(e) Access rosters for each facility.

(f) Ammunition Handling/Transportation SOP.

(g) Most current Lightning Protection System (LPS) test results.

(h) A complete inventory by storage facility indicating DODIC, NSN, nomenclature, hazard division (HD) and storage compatibility group (e.g. 1.3G), quantity and total net explosive weight (NEW).

(i) UBL/Operational Load Letter of Authorization. (as applicable).

(j) Training munitions (as applicable).

(k) Copies of internal and external surveys/inspections for the past and current fiscal year.

(l) List of current deficiencies.

(m) Copies of work orders submitted for the correction of safety deficiencies. Work orders will indicate the repair cost estimates.

(n) Site map with exposures (if applicable).

e. Unit Commanders shall:

(1) Ensure only licensed facilities are used for storage of AA&E. Ensure storage as prescribed in blocks 9, 10 and 13 of the EA Form 296-R.

(2) Ensure units comply with restrictions as specified in Para 5-3.

(3) Protect personnel and the public from explosives accidents by adhering to referenced safety principles for storage of ammunition and/or explosives.

(4) Ensure all personnel engaged in operations with munitions or hazardous materials are thoroughly trained and capable of recognizing the hazards of the explosive operation. Safety must become a firmly established habit when working with, or near items having explosives, flammable, or toxic hazards.

(5) Ensure munitions are handled under direct supervision of personnel who understand the hazards and risks involved.

(6) Ensure personnel are knowledgeable of safety/reporting procedures and are capable of reporting in the event of an accident or malfunction involving AA& E in accordance with AR 385-10, AR 75-1, the 6th Ordnance Battalion External SOP and this publication.

(7) Ensure operations involving explosives are conducted in a manner which expose the minimum number of people to the smallest quantity of explosives for the shortest period consistent with conducting the operation.

(8) Ensure a written SOP with a Risk Assessment is submitted to the GSO for review and approved by the GC prior to conducting operations involving ammunition or explosives. The SOP will include safety requirements, type(s) of explosives used, personnel/explosives limits, quality control/assurance, description of work to be performed, equipment to be used, the location and sequence of operations.

(9) Ensure all vehicles carrying any class of ammunition or explosives enter and exit USAG Humphreys via the CPX gate.

(10) Ensure that ammunition and explosives/hazardous material transported by vehicle comply with AR 385-55, Para 2-13 (a-i), Prevention Motor Vehicle Accidents.

(11) Ensure ammunition and explosives are adequately packaged for safe transportation and are compatible with all explosives loaded on the vehicle. Ref 49 CFR parts 174 & 177.

(12) Ensure that ammunition and explosives are properly block and braced in the transport vehicle to prevent movement.

(13) Ensure that vehicles transporting ammunition and/or explosives meet Department of Defense (DOT) requirements for movement over public roads i.e., explosives placards posted according to the highest hazard/class IAW 49 CFR, Hazardous Material Substances and Waste Compliance Guide, Para 172.522.

(14) Ensure that vehicle operators who are selected to transport hazardous material on public roads are HAZMAT qualified/certified IAW AR 600-55, Para 4-9, The Army Driver and Operator Standardization Program (Selection, Training, Testing and Licensing).

(15) Ensure that personnel are not transported in vehicle cargo bays with any class of ammunition or explosives.

(16) Ensure that an inventory of the units ABL is conducted monthly. Send copies of the inventory to the GSO, annually no later than the 31 October of each year.

NOTE 1: Storage of ammunition in unlicensed arms rooms is prohibited.

5-3. RESTRICTIONS

a. USAG HUMPHREYS: Explosive Laden Vehicle entry is limited to HD 1.4S (small arms ammunition) only. Items may be stored in licensed arms rooms and/or magazines 700, 714, 1238 or 1252. Mission units may not store ammunition in unlicensed arms rooms.

b. Mission Units requiring temporary storage (Safe Haven) of explosives laden vehicles above 1.4S should submit requests through the GSO to the USAG Humphreys GC. Contact the USAG Humphreys Explosive Safety Officer DSN 753-5582 for support of (Training) requirements.

c. Unit commanders desiring licensed arms rooms for storage of ammunition are to contact the Explosive Safety Officer.

NOTE 1: The USAG Humphreys GC is the final approving authority for explosives site licenses to include mission unit arms rooms and temporary storage at the Hazard Cargo Pad.

NOTE 2: Ensure all vehicles are fueled prior munitions pick up at ASPs/Depots. Vehicles laden with HD 1.1, 1.2 or 1.3 will not be allowed to enter USAG Humphreys for the purpose of refueling.

5-4. AMMUNITION BASIC LOAD (ABL)

a. Ammunition for miscellaneous activities and training ammunition may be stored in basic load storage facilities for a period not to exceed 30 days. Prior to drawing the ammunition, mission units will contact the GSO Explosive Safety Officer to initiate processing of temporary storage requests. Storage of these stocks must be separated and clearly identified as to their intended purpose. A DA Form 3020-R Magazine Data Card will be maintained on each lot in storage.

b. Magazine Data Cards (DA Form 3020-R) will be affixed to stacks. Containers will be properly marked/labeled. In addition to standard information on the DA Form 3020-R, the unit designation will be printed on the DA Form 3020-R.

c. Ammunition will be stacked and segregated by lot number. All stacks of ammunition will contain wooden spacers for free circulation of air beneath and throughout the stack. When more than one lot is stored in a stack, all items or containers of a lot will be stored together and the line of segregation between lots will be clearly indicated with a DA Form 3020-R affixed to the stack. Lots of ammunition will never be mixed randomly.

d. Partly filled (LIGHT) boxes will be securely fastened and marked. The light box will be completely painted orange, marked in black with DODIC, nomenclature, lot number and quantity. All light boxes will be kept on the top of the stack. There shall be no more than one light box for each lot.

e. Boxes must be stored in straight stacks and the nomenclature and lot numbers visible.

f. Ammunition and explosives will be kept dry. Stacks will be covered when evidence of water leakage is present.

g. Basic load ammunition will be retained in the same packaging as it was originally issued from the supporting ordnance company.

(1) Original pack (sealed containers) will not be broken except by a Quality Assurance Specialist Ammunition Surveillance (QASAS) during an annual basic load inspection, technical assistance visit, or when required for immediate use. In the event a seal is accidentally broken the unit may contact their supporting Ordnance Company to get the container resealed.

(2) Units with a mission requiring removal of ammunition from its packaging for potential immediate use must request approval for the unpacking of the basic load. The request for approval will be submitted with justification through command channels to the EUSA AC of S, G-3, ATTN: EACJ-TDD & AC of S, J4, ATTN DJ-AM-S.

5-5. EXCEPTIONS

a. As required by operational commitments aviation units may store Hazard Class Division up to HD 1.2.2 material in ALSE lockers located in or near Hangers. Appropriate fragmentation protection is the responsibility of the unit managing the locker.

b. (K-9 units) is authorized storage for 22 lbs of HD 1.1 training material in the Golan 10 container located near bldg 2067. Transportation of scent kit material shall be to/from training areas or nearest Depot for replacement stock only.

c. K-9 Explosive training shall be conducted IAW DA PAM 190-12, dated 4 June 2007, Chapter three and five.

d. For information/clarifications of exceptions, contact USAG Humphreys Safety Office at DSN 753-5580~7.

5-6. EMERGENCIES

Aircraft emergency landings w/ordnance shall be reported by the Desiderio Army Airfield Control Tower to Airfield Operations DSN 753-7555. Airfield Operations shall notify the (HOC DSN 754-6111/6094), Airfield Manager. The HOC shall in turn notify Department of Plans Mobilization and Training (DPTMS). DPTMS shall notify the Installation Safety Manager (ISM), the Deputy to the USAG Humphreys Commander (DGC), and USAG Humphreys n Commander (GC).

5-7. AMNESTY PROGRAM

a. Is administered by the 52nd Ordnance Co on USAG Humphreys.

b. Amnesty containers are for HD 1.4S (small arms ammunition) only and are located at the following locations:

c. USAG Humphreys: CPX Bunker (Bldg 700). The amnesty box is a small metal container attached to the fence. It is located 6 feet to the right of the gate.

(1) The amnesty program is not a substitute for normal turn in procedures and will not be used to circumvent standard supply procedures. Prior to moving abandoned ammunition or ammunition Found on Post (FOP) ensure that it is safe by contacting the servicing Ordnance Co QASAS or the USAG Humphreys Explosive Safety Officer.

(2) Once the ammunition has been cleared for transport, the unit will transport the amnesty ammunition to a location designated by the Ordnance Co. Units must contact the Supporting Ordnance Co., operations element, who will provide personnel for turn in at the designated ASP or AD.

NOTE: Amnesty containers shall be able to receive .50 Cal and below HD, 1.4S only, all other munitions require coordination and turn-in thru the servicing Ordnance Co. Under no circumstances, will munitions be left outside of an amnesty container. Supporting Ordnance Company POC's and phone numbers are provided at each location.

5-8. GENERAL INSTRUCTION

a. Safe handling of ammunition and explosives is everyone's responsibility; safety must become a firmly established habit when working with or in the vicinity of items having explosive, flammable or toxic hazards. Instructions governing the storage and care of ammunition and explosives will be posted in each AHA where ammunition and explosives are stored.

b. Always handle ammunition and explosives carefully.

c. Remove dirt and foreign materials from ammunition containers before placing in storage.

d. All containers must be kept closed.

e. Store each lot separately, ensuring stacks are stable. Where dunnage is required to keep containers of ammunition or explosives off the floor, wooden pallets shall be used. Ammunition stacks will maintain 18 inch clearance from walls and ceiling.

f. Do not open, repair, pack or repack containers in or within 100 feet of the AHA, except as specifically authorized by a QASAS.

g. Do not keep empty containers, tools or other material in the AHA

h. Good House Keeping/Cleanliness must be maintained.

i. Keep doors locked when the AHA is unattended.

j. Maintain a 50 foot cleared space around the AHA free from combustible materials

5-9. PREVENTION OF FIRES AND EXPLOSIONS

a. Written fire plans will be prepared to include a list of communications or alarm signals to be used. Responsibilities of personnel in the plan will include the following:

(1) Reporting the fire to the fire station DSN 753-7911.

(2) Directing orderly evacuation to pre-planned assembly areas, and accountability of personnel.

(3) Notifying personnel in nearby locations of impending dangers.

(4) Activating means of extinguishing the fire; minimum two each 10 BC fire extinguishers present during all handling, storage or transport.

(5) Advise the senior fire officer as to details of the fire, and personnel accountability.

b. Matches or other flame/spark producing devices are not permitted in magazine/explosives area.

c. Smoking within magazine areas or within 50 feet of explosive laden vehicles is prohibited.

d. IAW DA Pam 385-64 and when required, appropriate fire symbols will be displayed on buildings, storage facilities and all vehicles containing AA& E in a manner making them easily visible to approaching fire fighters from the maximum practical distance.

5-10. LIGHTNING PROTECTION SYSTEM (LPS)

a. A visual inspection of the LPS will be conducted every six months to check for evidence of corrosion, broken wires or connections. All necessary repairs will be made immediately.

b. In addition to the regular inspection/test interval, earth subsystems will be tested after initial installation, maintenance or renovation. A three point fall of potential test is not required on earth covered magazines. The lightning protection electrical test for an earth covered magazine will consist of a bonding check only. All records of test results will be kept on file for 5 years.

Chapter 6

Hazard Communication Program

SECTION I

6-1. PURPOSE.

To establish a uniform Hazard Communication Program IAW OSHA 29, CFR 1910.1200, 1915.99, 1917.28, 1918.90, 1926.59 and current Department of the Army, and USFK directives.

6-2. GOAL.

Transmit information concerning hazards to employers and employees.

6-3. APPLICABILITY.

This program is applicable to all units/activities assigned within USAG Humphreys Area of Responsibility and includes Army units at Osan and Suwon.

6-4. COMMUNICATION.

Personnel shall be provided information and training on hazardous chemicals to which they are exposed, by means of a hazard communication program, labels and other forms of warning, material safety data sheets and information and training. Personnel must be made fully aware of any operation in their work area where hazardous chemicals are present, the location and availability of the written hazard communication program, including the required list of hazardous chemicals, and Material Safety Data Sheets (MSDS). Personnel who use hazardous chemicals/materials shall be trained**.** Training rosters must be filed in official records.

a. Minimum Training Requirements:

(1) Methods and observations that may be used to detect the presence or release of a hazardous chemical in the work area (such as monitoring conducted by the employer, continuous monitoring devices, visual appearance or odor of hazardous chemicals when being released, etc.

(2) The measures employees can take to protect themselves from these hazards, including specific procedures the employer has implemented to protect employees from exposure to hazardous chemicals, such as appropriate work practices, emergency procedures and per USAG Humphreys personal protective equipment to be used.

(3) Details of the hazard communication program developed by the employer, including an explanation of the labeling system and MSDS, how employees can obtain and use the appropriate hazard information.

6-5. DUTIES AND RESPONSIBILITIES:

a. Commanders and directors will ensure that:

(1) Hazard Communication Program Representative is appointed on written orders to manage the HAZCOM program.

(2) A work place hazardous chemicals list is prepared and serves as an inventory of everything for which an MSDS must be maintained.

(3) Training programs for personnel on the safe use, transportation, handling, storage, and proper disposal are developed and implemented.

(4) All work center supervisors are thoroughly trained in Hazard Communications.

b. Supervisors will:

(1) Identify and evaluate each type of chemical used or stored in the workplace to determine specific hazards.

(2) Conduct and provide the Garrison Safety Office with a current inventory of hazardous materials in the work center by Bldg # and Rm #.

(3) Provide personnel effective information and training on hazardous materials in their work area at the time of their initial assignment and whenever new physical or health hazard the employees have not been previously trained about is introduced into their work area.

(4) Develop written HAZCOM procedures.

(5) Be responsible for the enforcement of safety standards and use of per USAG Humphreys personal protective equipment (PPE) and compliance with this program.

c. The Garrison Safety Office (USAG HUMPHREYS) will:

(1) Administer the USAG Humphreys Hazard Communication Program.

(2) Monitor hazardous chemicals and materials within USAG Humphreys for proper storage, training and safe use, handling, and waste disposal.

(3) Provide technical guidance and assistance to units and activities as required or requested.

(4) Maintain a master copy of hazardous chemicals Material Safety Data Sheets (MSDS).

(5) Consolidate requests for MSDS if not listed in the Hazardous Material Information System (HMIS) (DOD 6050.5L).

6-6. Training:

a. Personnel who work with, or are potentially exposed to hazardous chemicals, will receive initial training upon assignment or when a new hazard is introduced into work area. The immediate supervisor is responsible for ensuring that each person receives the required training.

b. The training plan will include but not limited to minimum requirements of Para 6-4a and the following:

(1) An overview of the requirements contained in the Hazard Communication Standard 1910.1200.

(2) The hazardous chemicals present in the work area;

(3) Symptoms of overexposure.

(4) How to determine the presence or release of hazardous chemicals in the work area.

(5) Steps the employer has taken to reduce or prevent exposure to hazardous chemicals.

(6) Procedures to follow if employees are over exposed to hazardous chemicals.

(7) How to read labels and MSDSs to obtain hazard information.

(8) Location of the MSDS file and written hazard communication program.

c. Initial training will include the following:

(1) The Department of Defense Federal Agency Hazard Communication Training Program and USAG Humphreys HAZCOM Program.

(2) An explanation of types of operations and hazardous chemicals used in the individual's workplace.

(3) A description of the USAG Humphreys Hazard Communication Program, the location and availability of the USAG Humphreys written hazard communication program, and how personnel can use and obtain chemical hazard information.

(4) Methods used by management to recognize and evaluate work area chemical exposures. Methods used include, but are not limited to, annual surveys, inventory listings, MSDS, and Chemical Data Publications.

(5) An explanation of the potential physical and health hazards with chemicals in the work area.

(6) Protective measures include administrative and engineering controls, safe work practice guidelines, emergency procedures, and personal protective clothing and equipment.

(7) The meaning of work area hazardous chemical warning labels.

(8) An explanation of MSDS and standing operating procedures to ensure that materials are handled, stored, and disposed of in accordance with specified standing operating procedures and regulations.

(9) Emergency evacuation and notification procedures.

(10) How to interpret hazard information and countermeasures on an MSDS.

d. Refresher training will be conducted during periods when the supervisors update inventory or workers have no recognized hazardous conditions.

SECTION II

6-7. IMPLEMENTING PROCEDURE RESPONSIBILITIES:

a. All personnel will:

(1) Follow safety instructions and use personal protective equipment as required.

(2) Report to their supervisor any unsafe or unhealthy condition in the work center.

6-8. LABELING SYSTEM:

a. Standard hazard identification labels will be used on products.

b. Other items will have standard written warning labels in English, such as flammable, compressed gas, etc.

c. MSDS for locally procured hazardous chemicals will be obtained from the Korea Contracting Office.

6-9. ACCESS TO MSDS:

a. Personnel in work centers will have the MSDS available to them.

b. MSDS or DOD Hazardous Materials Information System, hazardous item listing (DOD 6050.5L), is available to all personnel by calling the GSO at DSN 754-6001/6003/6124.

The hazardous material inventory will be updated whenever new hazardous chemicals enter the work area. The inventory shall be maintained at a central location with MSDS that is accessible to the workers of the work site.

6-10. ACCIDENTAL SPILLS:

a. In the event of accidental spills or leaks, personnel will evacuate the area.

b. All personnel must know emergency procedures, evacuation routes, and appropriate telephone numbers including the Korean Fire Department (119), Environmental Office DSN 753-7050/7052, Military Police Station DSN 754-6600, and Garrison Safety Office DSN 753-5580~7.

CAUTION: Dumping of fuel, oils, or other harmful, toxic, hazardous materials into drains is strictly prohibited and carries stiff penalties.

SECTION III

HAZARD IDENTIFICATION SYSTEM

6-11. Diamond-shaped diagrams give, at a glance, a general idea of the inherent hazard of the chemical and the order of severity of these hazards under emergency conditions, such as spills, leaks and fires. They provide emergency personnel with a means of identifying hazardous materials and areas in which they are stored.

6-12. The diagram identifies "Health," "Flammability" and "Reactivity" (instability and water reactivity) of a chemical and indicates the order of severity of each hazard by use of one of five number grading, from four (4), indicating the severe hazard, or extreme danger, to zero (0), indicating no special hazard. In diamond-shaped diagrams, the "Health" hazard is identified on the left, "Flammability" at the top, and "Reactivity" on the right.

6-13. The bottom space is primarily used to identify unusual reactivity with water. The letter "W" with a line through the center alerts fire-fighting personnel to the possible hazard in use of water. This bottom space may also be used to identify a radiation hazard by the symbol. Oxidizing chemicals are identified in the bottom space by "Oxy".

6-14. HEALTH HAZARDS:

(a). SYMBOL 4. A few whiffs of the gas or vapor may cause death. The gas, vapor or liquid could be fatal on penetrating the fire fighters' normal full protective clothing, which is designed for resistance to heat. For most chemicals having a health 4 rating, the normal full protective clothing available to the average fire department will not provide adequate protection against skin contact with these materials. Only special protective clothing designed for the protection against a specific hazard should be worn.

(b). SYMBOL 3. Materials extremely hazardous to health. Areas containing these chemicals may be entered with extreme care. Full protective clothing, including self-contained breathing apparatus (SCBA), rubber gloves, boots, and bands around legs, arms and waist shall be provided. No skin surface shall be exposed.

(c). SYMBOL 2. Materials hazardous to health. These areas may be entered freely with full-faced mask, (SCBA) that provides eye protection.

(d). SYMBOL 1. Materials only slightly hazardous to health. Self Contained Breathing Apparatus (SCBA) may be worn.

(e). SYMBOL 0. Materials, which upon exposure to fire will offer no health, hazard beyond ordinary combustible material.

6-15. FLAMMABILITY HAZARDS:

(a). SYMBOL 4. Very flammable gases, very volatile flammable liquids, and materials in the form of dusts or mists, readily form explosive mixtures when dispersed in air. Shut off the flow and keep cooling water streams on exposed containers. Use water spray carefully in the proximity of dusts so as not to create clouds.

(b). SYMBOL 3. Liquids, which may ignite under almost normal temperature conditions. Water may be ineffective on these liquids because of low flash points. USAG Humphreys lids which form coarse dusts, USAG Humphreys lids in shredded or fibrous form that create flash fires, USAG Humphreys lids that burn rapidly, usually because they contain their own oxygen, and any material that ignites spontaneously at normal temperatures in air.

(c). SYMBOL 2. Liquids that must be moderately heated before ignition can occur and USAG Humphreys lids that readily give off flammable vapors. Water spray may be used to extinguish the fire because the material can be cooled to below its flash point.

(d). SYMBOL 1. Materials that must be preheated before ignitions can occur. Water may cause frothing of liquids with this flammability rating number if it gets below the surface of the liquid and turns to stream. However, water spray gently applied to the surface will cause a frothing, which will extinguish the fire. Most combustible USAG Humphreys lids have a flammability rating of 1.

(e). SYMBOL 0. Materials that will not burn.

6-16. REACTIVITY HAZARDS:

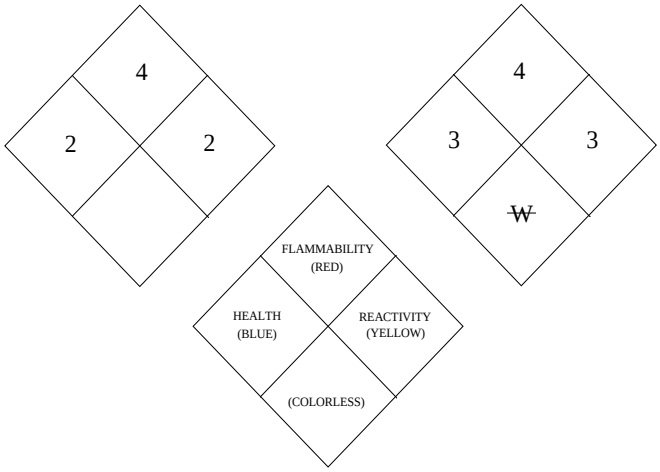
(a). SYMBOL 4. Materials which, (in themselves) are readily capable of detonation or of explosive decomposition or explosive reaction at normal temperatures and pressures. Includes materials, which are sensitive to mechanical or localized thermal shock. If a chemical with this hazard rating is in an advanced or massive fire, the area should be evacuated.

(b). SYMBOL 3. Materials which (in themselves) are capable of detonation or of explosive decomposition or of explosive reaction but which require a strong initiating source or which must be heated under confinement before initiation. Includes materials which are sensitive to thermal or mechanical shock at elevated temperatures and pressures or which react explosively with water without requiring heat or confinement.

(c). SYMBOL 2. Materials, which, (in themselves) are normally unstable and readily undergo violent chemical change but do not detonate. Includes materials which can undergo chemical change with rapid release of energy at normal temperatures and pressures or which can undergo violent chemical change at elevated temperatures and pressures. Also includes those materials which may react violently with water or which may form potentially explosive mixtures with water. In advanced or massive fires, fire fighting should be done from a protected location.

(d). SYMBOL 1. Materials that (in themselves) are normally stable but which may become unstable at elevated temperatures and pressures or which may react with water with USAG Humphreys me release of energy but not violently. Caution must be used when approaching a fire and applying water.

(e). SYMBOL 0. Materials, which are normally stable, even under fire exposure conditions and which are not reactive with water. Normal fire fighting procedures may be used.



Chapter 7

Radiation Safety Program

7-1. Summary - This PAM prescribes the US Army Garrison Radiation Safety Program. It includes Army policy for the use, licensing, disposal, transportation, dosimetry, accident reporting, safety design, and inventory control of and radiation exposure standards for ionizing and non-ionizing radiation sources. This PAM implements policy to be consistent with current federal radiation safety regulations, Army regulations, SOFA and applicable Host country radiation safety rules.

7-2. Applicability - This PAM applies to all US Army personnel, mission units, civilians, and contractors assigned within the USAG-Humphreys.

7-3. Purpose - This PAM describes policies and procedures for the use, licensing, disposal, transportation, safety design, and inventory control of ionizing and non-ionizing radiation sources. It also provides radiation exposure standards, dosimetry, and accident reporting instructions. Its objective is to assure safe use of radiation sources and compliance with all applicable Federal, DOD rules and regulations.

7-4. References - Required and related publications are listed in Enclosure 1.

7-5. Explanations of terms - Abbreviations and special terms used in this regulation are explained in the glossary.

7-6. Responsibilities:

a. The Commander maintains overall responsibility for assuring that the use, licensing, disposal, transportation, safety design, and inventory control of ionizing and non-ionizing radiation sources is in full compliance with NRC licenses, federal laws, Army Regulations and applicable technical publications. Specifically, the commander will:

(1) Designate, in writing, a qualified Radiation Safety Officer (RSO) and Alternate (ARSO). The training and experience of the Radiation Safety Officer will be commensurate with the type, size, complexity of the x-ray equipment, associated hazards, and will include a basic understanding of radiation protection principles and practices. Although a commander may assign radiation safety functions and the organizational location of the RSO to anywhere in the organization, the RSO will have direct access to the commander for radiation safety purposes as necessary. The individual(s) designated as RSO and ARSO will also serve as Dosimetry (Dose) Record Custodian (when applicable).

(2) Appoint a Radiation Safety Committee (RSC).

(3) Direct the implementation of a dosimetry program for industrial x-ray operations.

(4) Conduct an annual self-assessment quality assurance audit to verify that the Radiation Protection Program is in full compliance with requirements.

(5) Establish written policies and procedures to assure compliance with applicable Federal, DOD, and Army radiation safety regulations and directives. These documents will include emergency reaction plans as necessary and procedures for investigating and reporting radiation accidents, incidents, and overexposures.

b. The RSO shall establish and manage the radiation protection program. Specific duties are defined as:

(1) Providing advice and assistance to the Commander on all matters pertaining to the radiation protection program.

(2) Establishing and maintaining a personnel dosimetry program assuring that all radiation doses are As Low As Reasonably Achievable (ALARA). Coordinate with supporting medical personnel to help ensure that personnel receive appropriate occupational health surveillance. All personnel will complete DD Form 1952, Dosimeter Application and Record of Occupational Radiation Exposure, before receiving dosimetry monitoring. The RSO will review all subsequent changes in operational procedures to determine impact on the effectiveness of the ALARA program.

(3) Evaluating and documenting radiation hazards and proposing corrective actions. Radiation surveys will be performed as required but at least annually in conjunction with self-audits as an integral part of radiation evaluations. An internal quality assurance audit/self-assessment will be conducted by the RSO and fully documented during the first quarter of each fiscal year.

(4) Provided procedures and guidance for performing radioactive material inventories and the maintenance of the required records.

(5) Develop and conduct radiation safety training, ensuring that individuals have the appropriate level of training for the type and nature of radiation hazards associated with their job.

(6) Review shipping and receiving procedures to ensure they follow the appropriate radiation safety protocols. Insure all radiation areas are posted in accordance with applicable regulations.

(7) Assist in the management of radioactive waste, ensuring that the collection, storage, and disposal are in according with regulations.

(8) Investigating radiological accidents/incidents and recommending corrective action to preclude their recurrence. This includes coordination with civilian and military emergency response organizations as necessary.

c. The Radiation Safety Council is the commander's advisory body to gather and disseminate information about the status of the radiation safety program. Specific purpose and duties are defined as:

(1) The RSC will meet at least once in each six-month period and at the call of the chair.

(2) A representative of the commander (that is, the commander or someone at the executive level in the organization who is not a radiation user) should chair the RSC. The RSO should be recorder and will be a voting member. The Garrison RSO may be a non-voting member. The RSO will provide a copy of the minutes to each member.

7-7. Facilities and Equipment

a. Security and Control. Users are required to secure from unauthorized removal of, or access to military equipment containing radioactive materials or radiation producing devices when in storage. Users must control and safeguard weapons/devices containing licensed radioactive material or radiation producing devices when not in storage from loss, theft or damage.

b. Storage Areas. Storage areas will be located as to be free from danger of flooding and outside the danger radius of flammable materials and explosives. All storage areas will be posted as follows:

(1) Warning Signs. Areas where radioactive commodities are stored will be posted with conspicuous signs bearing the radiation symbol and the words "CAUTION, RADIOACTIVE MATERIAL (S)." Signs stating "No eating, drinking, smoking, chewing gum or tobacco, or applying cosmetics" will be posted in storage and maintenance areas.

(2) In addition, storage areas and maintenance will also post copies of the following:

NRC Form 3
Copies of 10 CFR Parts 19, 20.*
Copy of the ACALA NRC License.*
SBCCOM License
Energy Reorganization Act.
Emergency Notification Chart

*In lieu of posting these documents, a notice may be posted with the NRC Form 3 that describes the above documents and where the document may be examined.

7-8. General:

a. Keep personnel exposure to ionizing radiation at a level as low as is reasonably achievable (ALARA).

b. Army overseas controls of radiation sources will be at least as protective as are Army domestic controls.

c. Limit deviations to only those from Army radiation safety standards and procedures. Deviations from Federal and DOD regulations and standards and from NRC license, Army reactor permit, and ARA conditions, including those implemented in technical publications, are not authorized.

7-9. Ionizing Radiation Sources:

a. General:

(1) All Army personnel using RAM will comply with all applicable OHSA and NRC regulations and conditions of NRC licenses held by their own or by another command.

(2) The RSO and ARSOs will ensure that all personnel using RAM are aware of applicable regulations and conditions as appropriate.

(3) Currently, the US Army has NRC material licenses directly affecting operations within the USAG-H. They are M22, Chemical Agent Detector, Chemical Agent Monitor, VDR-2's, lensatic compasses, and magnesium-thorium alloy aircraft parts repair. In addition, OSHA regulations govern the operation of the industrial x-ray (LORAD LPX160) along with a current Army Radiation Authorization.

b. Nuclear Regulatory Commission/Occupation Safety and Health Association – All personnel may communicate directly with the NRC and OSHA without restriction. However, a person considering such communication should also consider whether information to be requested is obtainable from Army sources and whether information provided or obtained is of interest to the chain of command or other Army organizations.

c. Transfer and transport:

(1) Transfer radioactive material only to persons authorized to receive and possess it. Transfer of Army radioactive commodities will be IAW technical publications and applicable instructions established by the holder of the commodity license. The Battalion Radiation Safety Officer prior to actual material movement must review all transfers, issues, receipts, and shipments of RAM.

This includes the movement of radioactive material into, out of, and within the USAG-H.

(2) Domestic shipments of RAM will be IAW applicable NRC (10 CFR 71), Department of Transportation (DOT) (49 CFR), and U.S. Postal Service (39 CFR) regulations and IAW DOD 4500.9-R (Part II). International shipments of RAM will be IAW applicable U.S. and International Atomic Energy Agency (IAEA) transportation regulations.

d. Radioactive waste disposition – Coordinate with and obtain the approval of the Radiation Safety Officer within perspective organizations for proper disposal of radioactive wastes**. Sending radioactive material to the Defense Reutilization and Marketing Office (DRMO) for disposal is prohibited.**

e. Survey instruments - Calibrate radiation survey instruments used for health or safety purposes at least annually. Some instruments may require more frequent calibration. Consult applicable technical publications and with TMDE personnel for appropriate calibration intervals as necessary. Calibration of the VDR-2 is referenced in the material license.

f. Radioactive Material Inventory - Physical inventory of all on-hand radioactive material will be conducted semi-annually. The inventories will be completed by the 25 of October and March of each year. This inventory will include a list of all ionizing radiation producing devices. Record of these inventories will be maintained for three years. In addition, the local fire department will be notified of the location and type of radioactive material and the procedures for fighting fires next to or involving RAM. All RSO will maintain a list of all radioactive materials pending disposal. Organizational Radiation Safety Officers will submit a complete Inventory of their radioactive items to USAG-H RSO annually, NLT 31 October.

g. DOD Radiation Testing and Tracking System (RATTS) - IAW AR 710-4, a M22 and ICAM serialization officer will be assigned. Transaction reports will be submitted to DOD RATTS for:

(1) Inventory loss

(2) Suspected loss or theft

(3) Receipt

(4) Shipment Demilitarization

(5)Unfavorable wipe test report

(6) Removal of cell module from detector

(7) Insertion of a cell module

(8) Shipping records for the ICAM will be maintained for three years.

7-10. Radio Frequency (RF) Electromagnetic Radiation (EMR):

a. Units within the USAG-H will comply with RF radiation safety program elements in DODI 6055.11. Type-classified RF EMR-emitting system users will comply with radiation safety requirements in applicable technical publications.

b. Adopt no practice and conduct no operation involving planned exposure of personnel to RF levels in excess of the applicable maximum permissible exposures in DODI 6055.11.

c. Do not use radio frequency protective clothing for routine use to protect personnel. Protective equipment, such as electrically insulated gloves and shoes for protection against RF shock and burn or for insulation from the ground plane is permissible where necessary for compliance with induced current limits in DODI 6055.11.

d. Identify, attenuate, or control potentially hazardous radio frequency (RF) electromagnetic fields and other radiation hazards associated with Army electronic equipment by protective equipment or administrative actions, or a combination thereof.

e. Proponents of RF electromagnetic radiation-emitting systems will include radiation safety requirements in technical publications about siting, operation, and maintenance of these systems.

f. Measurement and Evaluation of RF Fields - Use measurement procedures and techniques recommended in IEEE C95.3 as basic guidance for evaluating RF hazards. Where multiple RF EMR emitters are located in fixed arrangements, RF evaluation data will include a determination of weighted contributions from expected simultaneously operated emitters.

g. Non-ionizing Radiation - See table 3-3 for a description of the electromagnetic radiation spectrum. Refer to the following indicated references for personnel radiation exposure standards for the following types of non-ionizing radiation.

h. Lasers: ANSI Z136.1 and ANSI Z136.3.

i. Ultraviolet, visible, infrared, and extremely low frequency electromagnetic radiation and static electric fields: (latest edition of) American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs™) for Chemical Substances and Physical Agents and Biological Exposure Indices (BEIs™).

j. Radio frequency electromagnetic radiation: DODI 6055.11.

k. Static magnetic fields: International Commission on Non-Ionizing Radiation Protection (ICNIRP), "Guidelines on Limits of Exposure to Static Magnetic Fields," Health Physics, vol. 66, January 1994, pp. 100-106.

Table 3—3. Electromagnetic Radiation.[†]

REGION	WAVELENGTH[‡]	FREQUENCY[‡]	AUTHORITY[¶]
Ionizing (gamma and x rays)	< 100 nm	> 3 PHz (E > 12.4 eV)	NRC and OSHA
Ultraviolet (UV)	100 to 380-400 nm	0.75-0.79 to 3 PHz	ACGIH
Visible (light)	380-400 to 760-780 nm	380-390 to 750-790 THz	ACGIH

[†] Unit abbreviations: nm = nanometer (10^{-9} m); μm = micrometer (10^{-6} m); mm = millimeter (10^{-3} m); km = kilometer (10^{3} m); PHz = petahertz (10^{15} Hz); THz = terahertz (10^{12} Hz); GHz = gigahertz (10^{9} Hz); kHz = kilohertz (10^{3} Hz); and eV = electron volt (1 eV = 1.6×10^{-19} J).
[‡] Wavelength × frequency = speed of light = 3×10^{8} m s^{-1}.
[¶] The regulating authority for personnel exposure for the purposes of this regulation (Para 5-4).

REGION	WAVELENGTH‡	FREQUENCY‡	AUTHORITY¶
Infrared (IR)	760-780 nm to 1 mm	300 GHz to 380-390 THz	ACGIH
Radiofrequency	1 mm to 100 km	3 kHz to 300 GHz	DOD
Extremely low frequency	> 100 km	< 3 kHz	ACGIH
Static electric fields	NA	NA	ACGIH
Static magnetic fields	NA	NA	ICNIRP

7-11. Radiation Safety Standards, Dosimetry, and Record keeping:

a. Personnel exposure limits in this chapter do not apply to doses or exposure due to background radiation, due to any medical administration the individual has received, or due to voluntary participation in medical research programs.

b. Ionizing Radiation

(1) Personnel exposure standards. Table 5-1 summarizes the federal personnel radiation exposure standards that the Army follows.

(a) Unrestricted areas. The dose in any unrestricted area from external sources will not exceed 2 millirems (mrem) [0.02 millisievert (mSv)] in any one hour.

(b) Nuclear Regulatory Commission jurisdiction. Standards for exposure to ionizing radiation emitted from NRC-licensed RAM are in 10 CFR 20. The Army also applies these standards to a combination of exposures to NRC-licensed RAM and other ionizing radiation sources.

(c) Occupational Safety and Health Administration (OSHA) jurisdiction. Federal standards for occupational exposure to all other ionizing radiation sources are in OSHA regulations (29 CFR 1910.1096 and 1926.53). However, adhere to NRC standards for all ionizing radiation sources when NRC standards are more protective than OSHA standards.

c. Dosimetry. All occupationally exposed personnel using AIRDC dosimetry services will wear a whole-body dosimeter (worn closest to the source of radiation exposure on the trunk between the shoulders and waist).

(1) Monitor, using AIRDC-supplied dosimeters [except see Para (2)], occupational exposure of all personnel working in Army facilities or on Army projects.

(2) Personnel at Army government-owned contractor-operated (GOCO) facilities and contractor personnel who are working in Army facilities and require dosimetry will use AIRDC-supplied dosimeters unless a written contract specifically exempts them.

(3) AIRDC dosimeters may be used to monitor the exposure of other personnel and for area monitoring. Evaluate requirements for continued use of AIRDC dosimetry for such purposes periodically (at least annually).

(4) DA PAM 40-18 contains instructions for wearing supplemental dosimeters.

d. Bioassay.

(1) Monitor occupational intake of RAM and, as necessary, assess the committed effective dose equivalent (CEDE) for:

(a) Adults likely to receive, in 1 year, an intake in excess of 10 percent of applicable annual limits of intake (ALI). The ALIs for NRC-licensed RAM are in table 1, columns 1 and 2, 10 CFR 20, appendix B.

(b) Minors and declared pregnant women likely to receive, in 1 year, a CEDE in excess of 0.05 rem (0.5 mSv).

(2) Intake of RAM may be monitored and the CEDE assessed for other individuals. Evaluate the requirement for continued intake monitoring periodically (at least annually).

e. Dosimetry and bioassay records.

(1) All personnel will complete DD Form 1952, Dosimeter Application and Record of Occupational Radiation Exposure, before receiving AIRDC dosimetry or participating in a routine bioassay program.

(2) The RSO will provide a copy of determinations of administrative doses to the AIRDC for archiving.

(3) The RSO will provide a copy of each DD Form 1952 and calendar year ADR for routinely monitored personnel to the supporting medical treatment facility or occupational health clinic (AR 40-66). (Examples: A visitor monitored only during a short-term visit of a few days is not routinely monitored. A student or intern monitored over a period of a few months is routinely monitored.)

f. Other requirements. Federal requirements for security of RAM; control of access to radiation areas, high radiation areas, and very high radiation areas; caution signs; posting and labeling requirements; radioactive material shipping and receiving; and so on are in 10 CFR, 29 CFR 1910.1096 and 1926.53, 49 CFR, and other applicable documents listed in the References section (appendix A).

Table 5-1. Army Personnel Ionizing Radiation Exposure Standards.[1]

Category	Maximum[2,3]
Member of the general public	100 mrem (1 mSv) (TEDE) in calendar year[4]
Fetus/embryo of occupationally exposed declared pregnant woman	500 mrem (5 mSv) (DDE of mother + ED due to radionuclide's in fetus/embryo) for entire pregnancy
Occupational exposure of adults	5 rem (0.05 Sv) (TEDE) in calendar year
Lens of the eye	15 rem (0.15 Sv) (EDE) in calendar year[3]
Individual organ	50 rem (0.5 Sv) (DDE + CDE) in calendar year
Skin or extremity	50 rem (0.5 Sv) (SDE) in calendar year
Occupational exposure of minors	10% of limits for adults

7-12. Radioactive Contamination - In the absence of other regulatory or advisory guidance, a surface is contaminated if either the removable or total radioactivity is above the levels in Table 5-2.

a. If a surface cannot be decontaminated promptly to levels below those in Table 5-2, control, mark, designate, or post it IAW applicable regulations.

b. Always reduce radioactive contamination to levels ALARA.

Table 5-2.[a] Surface Radioactivity Values in dpm/100 cm^2

Nuclide	Removable[b, d]	Total (Fixed + Removable)[b, d]
^{nat}U, ^{235}U, ^{238}U, and associated decay products	1,000	5,000

[1] From 10 CFR 20. Refer to 10 CFR 20 for detailed standards.

[2] Abbreviations: TEDE = total effective dose equivalent; DDE = deep dose equivalent; ED = effective dose; EDE = effective dose equivalent; CDE = committed dose equivalent; SDE = shallow dose equivalent.

[3] OSHA standard for occupational exposure of adults and for the lens of the eye is 1¼ rem in calendar quarter. OSHA standard for skin of whole body is 7½ rem in calendar quarter. OSHA standard for hands and forearms; feet and ankles is 18¾ rem in calendar quarter.

[4] The dose in any unrestricted area from external sources, exclusive of the dose contributions from patients administered radioactive material and released in accordance with applicable regulations, will not exceed 2 mrem (0.02 mSv) in any one hour.

Nuclide	Removable[b, d]	Total (Fixed + Removable)[b, d]
Transuranics, ^{226}Ra, ^{228}Ra, ^{230}Th, ^{228}Th, ^{231}Pa, ^{227}Ac, ^{125}I, ^{129}I	20	500
^{nat}Th, ^{232}Th, ^{90}Sr, ^{223}Ra, ^{224}Ra, ^{232}U, ^{126}I, ^{131}I, ^{133}I	200	1,000
Beta-gamma emitters (nuclides with decay modes other than alpha emission or spontaneous fission) except ^{90}Sr and others noted above[e]	1,000	5,000
Tritium and tritiated compounds[f]	10,000	NA

[a] See Para 5-2 for applicability of this table. This table is extracted from 10 CFR 835, appendix D. The values in this table apply to radioactive contamination deposited on, but not incorporated into the interior of, the contaminated item. Where surface contamination by both alpha- and beta-gamma-emitting nuclides exists, apply the limits established for alpha- and beta-gamma-emitting nuclides independently.

[b] As used in this table, dpm (disintegration per minute) means the rate of emission by radioactive material as determined by correcting the counts per minute observed by an appropriate detector for background, efficiency, and geometric factors associated with the instrumentation.

[c] The amount of removable radioactive material per 100 cm^2 of surface area should be determined by swiping the area with dry filter or soft absorbent paper, applying moderate pressure, and then assessing the amount of radioactive material on the swipe with an appropriate instrument of known efficiency. (Note: The use of dry material may not be appropriate for tritium.) When removable contamination on objects of surface area less than 100 cm^2 is determined, the activity per unit area should be based on the actual area and the entire surface should be wiped. Except for transuranics and ^{228}Ra, ^{227}Ac, ^{228}Th, ^{230}Th, ^{231}Pa and alpha emitters, it is not necessary to use swiping techniques to measure removable contamination levels if direct scan surveys indicate that the total residual surface contamination levels are within the limits for removable contamination.

[d] The levels may be averaged over one square meter provided the maximum surface activity in any area of 100 cm^2 is less than three times the value specified. For purposes of averaging, any square meter of surface shall be considered to be above the activity guide G if: (1) From measurements of a representative number n of sections it is determined that $\frac{1}{n}\sum_{i=1}^{n} S_i \geq G$, where S_i is the dpm/100 cm^2 determined from measurement of section i; or (2) it is determined that the sum of the activity of all isolated spots or particles in any 100 cm^2 area exceeds 3G.

[e] This category of radionuclides includes mixed fission products, including the ^{90}Sr which is present in them. It does not apply to ^{90}Sr which has been separated from the other fission products or mixtures where the ^{90}Sr has been enriched.

[f] Tritium contamination may diffuse into the volume or matrix of materials. Evaluation of surface contamination shall consider the extent to which such contamination may migrate to the surface in order to ensure the surface radioactivity value provided in this table is not exceeded. Once this contamination migrates to the surface, it may be removable, not fixed; therefore a "Total" value does not apply.

7-13. Special Reporting Requirements:

a. Reporting requirements of AR 40-5, AR 385-40, and DA PAM 40-18 apply for radiation accidents, incidents, and over-exposures. Additional requirements are in Para b and 6-2.

b. IMMEDIATELY EVACUATE PERSONNEL SUSPECTED OF EXPERIENCING POTENTIALLY DAMAGING EYE EXPOSURE FROM LASER RADIATION TO THE NEAREST MEDICAL FACILITY FOR AN EYE EXAMINATION (SEE FM 8-50). LASER EYE INJURIES REQUIRE IMMEDIATE SPECIALIZED OPHTHALMOLOGIC CARE TO MINIMIZE LONG-TERM VISUAL ACUITY LOSS. MEDICAL PERSONNEL SHOULD OBTAIN MEDICAL GUIDANCE FOR SUCH EMERGENCIES FROM THE WALTER REED ARMY INSTITUTE OF RESEARCH DETACHMENT AT BROOKS AFB [COMMERCIAL (800) 473-3549].

c. Notify the installation or activity public affairs officer and Radiation Safety Officer at the onset of the accident or incident in order to activate public affairs contingency measures (AR 360-5). Radiation accidents or incidents attract the attention of local and national media quickly. Early disclosure of accurate information is vital to maintaining the confidence of both the internal and external public.

d. Ionizing Radiation - Federal reporting requirements for accidents, incidents, and over-exposures are in 10 CFR 20, subpart M and in 29 CFR 1910.1096(m) and 1926.53(o).

(1) Send information copies of all reports required by 10 CFR 20.2201 through 20.2205, 29 CFR 1910.1096(m), or 29 CFR 1926.53(o) and of any other accident or incident report to the NRC or OSHA through command channels to HQDA (DACS-SF), WASH DC 20310-0200.

(2) Reports through command channels will meet the same time requirements as do required reports to the NRC and OSHA. For example, if the NRC requires immediate telephonic notification, follow it with immediate telephonic notification through the chain of command to HQDA (DACS-SF), WASH DC 20310-0200 [DSN 225-7291 or commercial (703) 695-7291].

7-14. Specific Instructions - M22, Chemical Agent Alarm Detector (CAD) and Chemical Agent Monitor (ICAM)

a. Training

(1) Individual User is defined as individuals who place in operation or operate devices containing radioactive sources. The individual user is authorized possession, use and performance of operational checks and services only. Individual users will receive initial radiation safety training that includes safe handling procedures, biological effects, and emergency procedures. Annual refresher training will be required thereafter. This training will be conducted as part of the soldier's in-processing.

(2) Maintenance Personnel are defined as personnel responsible for the repair beyond the level of performing checks and service in connection with operating the device. Maintenance personnel will receive initial radiation safety training as part of Advance Individuals training (AIT). Job evaluation will be required annually after assuming duties IAW material license.

(3) IAW AR 350-14, the Unit NBC defense officer and NCO must successfully complete the 2-week NBC Defense Course of instruction developed by the U.S. Army Chemical School. Chemical Officers (branch code 74) or Chemical NCOs (MOS 54B) are not required to be graduates of this course. In addition, an enlisted alternate (with special qualification identifier C) will be appointed from unit assets.

b. Maintenance (Applicable to ALL Mission Units), (ICAM ONLY). IAW the NRC license, source leak tests will be performed on the ICAM annually. These leak tests will be forwarded to a lab recognized by SBCCOM unless directed by higher headquarters. A leak test will be performed prior to any maintenance being conducted. The following steps will be taken when performing leak test:

(1) Proper prepare the work area

(2) Cover bench with Kraft paper

(3) Secure paper to work surface with tape

(4) Seal all seams with tape

(5) Wear disposable gloves while performing maintenance

(6) Use outlet filter when in an enclosed area

(7) Perform wipe survey of work area at the end of each day maintenance is performed.

(8) Wash hands at the end of maintenance

c. All storage and maintenance areas will be posted as specified in Para 1-5 above.

d. A current inventory of radioactive items and the source will be maintained at work/storage areas per company and by the RSO. A copy will be sent to the USAG-H Radiation Safety Officer. Inventories will be updated annually and when items are transferred or received to include the replacement of the source cells.

e. A list of radioactive items will be furnished to the local fire department with the following information:

(1) Number of items by noun, model, isotope, and activity (i.e. 31 each Chemical Detector. M22, Americium-241, 2.54 uCi each).

(2) Building number, room number, and brief description of location (i.e.: cage in west end of basement)

(3) A copy annotated by the fire department acknowledging receipt will be maintained by the LRPO.

f. M22 Automatic Chemical Agent Alarm System.

(1) The M22 Automatic Chemical Agent Alarm System provides a method of automatically detecting chemical nerve agents in the air and then gives an alarm. Two detector cells containing radioactive material is located inside the M88 detector, therefore it is a licensed item requiring safety training for all users and maintenance personnel. M22 Automatic Chemical Agent Alarm System - TM 3-6665-321-12&P, describes in detail, safety procedures for the M22 operator and maintenance personnel.

(2) Detector Cell:

(a) Detector Cell is located inside of the M88.

(b) Operators are not authorized to remove, repair, or service the pump and detector cell modules. Operators only inspect IAW the M22 Technical manual prior to, during, and after operation.

(3) Procedures for use of M22.

(a) M22 must have outlet port filters installed.

(b) Installation of outlet port filter includes uncovering outlet nut, removing outlet nut and cap, screwing on outlet filters (handle filters with bag only), and installing outlet cap and nut on outlet filter.

(c) Remove outlet filter by reversing installation sequence.

(4) Removal of unserviceable filter. This must be supervised by one of the following: Unit NBC NCO, officer, or RSO.

(a) Must wear gloves when handling filter.

(b) Filter removal procedures:

- Remove outlet cap and nut.

- Using plastic bag, remove outlet filter and seal bag. (Remember to use the same storage bag the filter came in for holding the filter).

- Place sealed filter into larger plastic bag along with gloves.

- Seal the larger plastic bag with tape and mark by writing:

Radioactive Waste.
Radioactive Ni-63
20-30 millicuries

- Wash hands with non-abrasive soap.

(c) Dispose of plastic bag in accordance with above procedures and guidance provided by the local procedures.

g. M22 Maintenance.

(1) Unit: The user is not authorized to perform maintenance on the M22. Therefore, it is important that you know where and when to go for maintenance.

(2) Intermediate Direct Support (IDS), Intermediate General Support (IGS) DS/GS level and Test, Measurement, Diagnostic Equipment (TMDE) personnel are authorized to perform leak tests annually in accordance with TM 3-6665-321-12&P. Ensure the alarm user spends a transaction card when major events occur, for example leak tests or when the alarm is permanently transferred to another unit.

h. Storage.

(1) Storage areas must be free from flooding, not in danger zones of explosives or flammable, and must be approved by the RSO.

(2) Storage containers should be securable.

i. Shipment of M22.

(1) Consult Unit RSO and or the transportation officer for assistance.

(2) Pack in the original package, if available, and seal. If original package is not available, use cushioning material and cardboard box.

(3) Must be accompanied by Government Bill of Lading.

j. Accidents: If an accident occurs, immediately cordon off area and control access to prevent spread of contamination. Notify unit NBC NCO/Officer or RSO immediately.

(1) On scene activities of NBC NCO/Officer include:

(a) Must wear gloves inside hazardous area and when handling potentially contaminated material.

(b) Use AN/PDR-27 or AN/VDR-2 to locate detector cell (if location is unknown)

(c) Supervise personnel collecting and bagging potentially contaminated environmental material.

(d) Collect pieces of damaged detector unit and place them in separate plastic bag (NBC NCO/Officer only). Place detector unit bag in the environmental material bag along with all gloves. Seal bag.

(e) Ensure hands of all personnel involved are washed with soap and water.

(2) Take bag to Direct Support Maintenance for contamination check.

(3) Additional efforts must be taken when an accident involves a fire to prevent inhalation of airborne contamination.

(a) Firefighter must wear self-contained breathing apparatus (respirators).

(b) Fight fires from the upwind side whenever possible.

k. Chemical Agent monitor System (ICAM).

(1) The Chemical Agent Monitor (ICAM) is a portable, hand-held instrument designed to determine and indicate the presence of nerve or blister agent vapors at very low levels.

(2) Radioactive Source.

(a) The radioactive source is totally enclosed and protected by the ICAM case and poses no hazard when intact.

(b) The ICAM contains a plated cylinder containing 10 milliCurie of Nickle-63.

(c) The ICAM is potentially dangerous if the ICAM case is broken. Do not attempt to open the ICAM case.

(3) Safety, Care, and Handling.

(a) The ICAM radioactive material is controlled by the U.S. Nuclear Regulatory Commission (NRC) under Title 10 CFR.

(b) ICAM's should be used and stored in accordance with the conditions of the NRC License issued to SBCCOM. Current copies of the NRC Regulations (Title 10 CFR) and the license are available from the Battalion RSO upon request.

(c) Part 21...Title 10 CFR requires a responsible officer of the licensed organization to promptly evaluate and report defects and noncompliance which relate to substantial safety hazards. Failure to comply may result in personal fines.

(4) Accidents.

(a) Accident response in general should be to remove the injured or spectators, establish an exclusion area to limit possible spread of contamination, and notify the NBC NCO/Officer or LRPO.

(b) In any emergency event, contamination must be considered to be present until determined otherwise to preclude contamination of personnel and spreading of contamination.

(c) The Radiac Set AN/PDR27 or VDR2 (with beta shield open) is suitable for detecting the location of the Nickel-63 source. Wipes must be taken in the immediate area of the accident and evaluated to determine contamination.

(d) In the case of a fire, the basic concern is possible airborne radioactive contamination carried out of the fire by the heated air and smoke. Firefighters should fight the fire from upwind and wear portable air systems.

(5) Storage.

(a) Remove battery from ICAM. Store battery separately from CAM.

(b) Store ICAMs in rooms/areas/section designated for storage of radioactive material which are free from the danger of flooding, outside the danger radius of flammable or explosives and secured against unauthorized removal.

(c) Post the area with "CAUTION-RADIOACTIVE MATERIAL" signs as required.

(6) Maintenance.

(a) Operator. Upon receipt of Call Card from supporting TMDE, fill out the card and return card and ICAM to Intermediate Direct Support for wipe test (annually).

(b) IDS. Perform wipe test procedures in accordance with TM using an AN/PDR27 or VDR2. Any sustained reading of 0.1 mR/hr indicates contamination of the CAM. Discontinue use of the CAM and bag the unit until Army Ionizing Radiation Dosimetry Center (AIRDC) results are returned.

(c) A reading of less than 0.1 mR/hr on the radiac set does not necessarily indicate that the CAM is free of radioactive contamination.

(d) Mail wipes to a recognized SBCCOM approved facility unless directed otherwise by higher headquarters.

(7) Packing/Shipment.

(a) Place the ICAM in the original shipping container and over pack with a cardboard box or wooden box.

(b) Do not pack ICAM with other material. Do not use material saturated with oil or other dirty materials as cushioning or over packing.

(c) Do not pack batteries with ICAM. Ship batteries separately.

(d) The government Bill of Lading or other shipping documents should be completed in accordance with Title 49 CFR, Army, and local regulations.

(8) Leak Testing.

(a) ICAM - Annually using wooden tip Q-tips.

7-15. USE OF RADIOGRAPHY EQUIPMENT ON NON-ARMY PROPERTY TO INCLUDE AREAS OF NON-OPERATIONAL CONTROL OF THE OPERATING ORGANIZATION:

a. Procedures on this SOP and other applicable regulations are in place.

b. Consult JAG, Civil Affairs, and Country RPO as applicable to verify state/country requirements.

c. Notify MACOM RCO of the transportation of the RT unit.

7-16. Magnesium-Thorium Alloy Aircraft Engine Parts

a. Licensed maintenance will be limited to Aviation Intermediate Maintenance (AVIM) only. Maintenance will be limited to those procedures specifically called out in the license. Authorized maintenance is described as the following:

(1) Hand filing

(2) Hand sanding

(3) Hand re-tapping or threads

(4) Chemical removal of and treatment of corrosion

(5) Reapplication of protective coatings

(6) Drilling

(7) Prohibited procedures include all operations involving machine tools except drilling.

b. Aviation maintenance personnel will be provided training by the work place supervisor prior to their authorization to perform licensed maintenance.

Documentation of the training provided will be maintained to include the signature of the trainee acknowledging that training was received.

c. Annual retraining of all personnel performing authorized maintenance will be conducted in when STB 1579 received from RSO AMCOM each year with documentation listing the names and dates trained being forwarded to the RSO.

d. All chips, filings and clean-up wipes or rags will be doubled bagged and sent to the RSO for disposal as radioactive waste. All unserviceable, non-repairable parts will be disposed of as radioactive waste without use of demilitarization procedures.

e. All maintenance areas will be posted as specified in Para 1-5 above.

7-17. Lensatic Compasses (Tritium devices)

a. NSN 6605-00-151-5337 and 6605-00-846-7618 - Both of these compasses are either operationally unserviceable or condemned. Units within the USAG-H are not authorized these items. Contact the RSO for turn-in or disposal instructions.

b. NSN 6605-01-196-6971

(1) This item is license exempt however it contains 120 Mcu of tritium gas and is tracked as part of the radioactive material. These compasses will have a unique serial number assigned by the RSO, which will be engraved inside of the top cover. Disposal or receipt of these compasses will be coordinated with the RSO for serial number retirement/assignment.

(2) If at any time a compass is damaged or discovered to be damaged, following the instructions below, immediately after the damage is detected, will reduce the exposure to personnel and limit the area of contamination.

(a) The first action in the minimization of exposure is to step back from the source. Alert any other personnel in the immediate area, direct them to leave.

(b) Put on latex disposable gloves and immediately place the device in a plastic bag. Take or bring the bag to the device. DO NOT move the device to another location in order to bag it. Place the bag and device into another plastic bag (double-bag). Label the bag 'CAUTION-

DAMAGED TRITIUM SOURCE - DO NOT OPEN' and Date. Take off latex gloves and place inside of the outer plastic bag.

(c) Verify that all personnel have vacated the area, then secure the area. Post the area in a clearly visible manner with signs that states "CAUTION – RADIOACTIVE CONTAMINATED AREA". Shut off lights, electrical equipment, gas, etc.

(d) Wash hands for two minutes with a non-abrasive soap.

(e) Notify the RSO. Be prepared to report the details of the incident to include how the source was damaged, the specific commodity, total activity of the source it contained, any personnel/clothing contamination and anything else you may feel is important.

(3) Tritium sources used in the compasses are not a biological hazard as long as they remain sealed. Radiation emitted when tritium decays is so weak that it will not penetrate the compass cover glass. A tritium source must be damaged before the radioactivity can escape. Released tritium may cause contamination of personnel, personnel clothing, work areas, and the air. The ionizing radiation from tritium has such a low energy that no field radiation survey meters are available that will detect the presence of tritium on surfaces. Therefore, the damaged source will be treated as contaminated until it can be proven free of contamination.

(4) When the tritium is released into the air or has contaminated a working surface, it creates a biological hazard. The body intakes tritium via inhalation or absorption through skin contact. Treating tritium compasses with special care, and ensuring they are not damaged is the best protection against contamination or exposure. Intact compasses are not hazardous.

(5) Areas where compasses are stored must be properly identified by posting a sign that states "CAUTION – RADIOACTIVE MATERIAL." The sign will be posted on the appropriate secured cabinet that contains the radioactive item, rather than outside the storage room.

7-18. SEMI ANNUAL WIPES OF DEPLETED URANIUM BUNKERS

a. The 6th Ordnance Battalion Radiation Safety Officer is responsible for overseeing this action.

(1) Wipe test will be completed semi annually IAW SB 742-1

(2) The USA-H Safety Manager will be notified Immediately upon receipt of wipes that are sent into Cp Carroll Nucleonic Facility that come back with readings exceeding the limitations prescribed by SB 742-1 within the USAHG-H area of responsibility.

(3) Wipes that are returned from the Nucleonic Facility that exceed the limitations prescribed in SB 742-1 Will be handled IAW SB 742-1 immediately.

7-19. LORAD LPX160 INDUSTRIAL X-RAY UNIT

(NO RADIOGRAPICS WILL TAKE PLACE IN THE ABSENCES OF THE RADIATION SAFETY OFFICER)

a. The Commander will designate, in writing, a qualified a Radiography Supervisor.

(1) The Radiography Supervisor shall

(a) Control and assure proper maintenance of all industrial radiographic equipment to include ensuring that all safety devices are functional and are properly utilized and that only qualified, competent radiographers perform radiography operations.

(b) Develop and maintain current X-radiography operating procedures and emergency procedures and otherwise assist the Radiation Safety Officer on technical and safety issues pertaining to radiography.

(c) Assure the availability, calibration and proper maintenance of radiation measurement instruments.

(2) Radiographers' workers (RW) shall comply fully with procedures for conducting nondestructive examinations to include all associated safety requirements as outlined in applicable technical manuals and in this SOP. Special emphasis will be placed on assuring that all personnel exposures to radiation are maintained below allowed limits and in line with the concept of (ALARA).

(3) The RSO will conduct a comprehensive investigation in accordance with DA Pam 40-18 if results of radiation dosimetry indicate exposures exceeding the criteria specified in Table 2-1, DA PAM 40-18.

(4) RWs will additionally wear an electronic pocket dosimeter (EPD) specifically designed for x-ray monitoring. This dosimeter alarms to provide an immediate indication of radiation exposure exceeding the preset level and provides interim radiation dose information pending the quarterly (or monthly) readout of TLDs. Radiation dose results from the EPD will be maintained in a log book maintained by the radiography supervisor as documentation of personnel exposure for the current TLD wear period until TLDs are submitted for readout. The RSO and radiography supervisor to manage radiation exposures will use these results. (In addition to the re-settable readouts, EPDs have a second, long-term readout, which provides a record of all radiation exposure received since their last calibration. To maximize use of the long-term readout, each radiographer and RSO will use the same EPDs when possible.

b. General procedures

(1) The Radiographic Test (RT) Unit will generally be used in the unshielded (open) class installation. This means that because of the lack of shielding, all operating procedures must be absolutely followed to ensure the safety of workers and of the general public.

(2) The RT unit can be used in another area/country (e.g. deployment) provided that: all procedures in this SOP and other applicable regulations are followed, JAG, Civil Affairs, and the installation RSO are consulted, as applicable, to verify state/country legality, and the RCO is notified of the transportation of the RT unit.

(3) The RT unit will never be used as a weapon or to intimidate or interrogate enemy soldiers. Its use will be strictly limited to legitimate radiographic nondestructive inspection requirements or for surveys to verify safe operating conditions.

(4) The RT unit will be used after normal duty hours whenever practicable to minimize exposures to other personnel and impact on other unit operations. This does not, however, preclude its use during normal duty hours.

(5) Radiographic operations will not be conducted without at least two individuals in attendance at all time. One of these persons must be a properly qualified radiographer who has been authorized by the unit commander to perform nondestructive testing.

(6) Radiographic operations will not be initiated until all safety requirements are fully implemented, required radiation warning devices employed, and radiation monitors properly placed to assure that personnel cannot enter the radiation restricted area.

c. Required Equipment

(1) Two serviceable and calibrated radiation survey meters authorized for use with industrial radiographic operations. Although these survey meters can accurately measure other gamma and X-ray fields, their use will be limited to radiographic operations unless otherwise approved by the RSO.

(2) Personnel dosimetry equipment for each RW as outline in paragraphs 6b and 6d above.

(3) Interlock and radiation warning sign/strobe as described in TM 55-1500-335-23, Chapter 5.

(4) 600 feet of rope or 600 feet of yellow barrier tape which states “Caution Radiation Area” with a sufficient number of stands.

(5) Ten each “Caution (or Danger) Radiation Area”, “Caution (or Danger) High Radiation Area” and “Caution (or Danger) Very High Radiation Area”, as applicable.

(6) Sufficient lights for night operations (if applicable).

(7) All other safety-related equipment provided by the manufacturer.

d. Radiation Protection Surveys and Reports

(1) The RSO will conduct a thorough radiation protection survey and prepare a radiation protection survey report IAW TM55-1500-335-23 for the following situations:

(a) Prior to beginning radiographic operations in order to establish safe operating conditions.

(b) Anytime the useful beam direction is to be changed.

(c) When radiographic operations are to be conducted in areas not previously surveyed.

(d) When a different RT unit is to be used.

(e) At least annually as part of the annual internal quality assurance self-assessment.

(2) The radiation protection survey report will be valid for three (3) years. The RSO will maintain the survey on file and updated it at least annually. This report will be valid only for the location(s) and operating conditions specified in the report.

(3) The RSO or his designated representative (e.g. Alternate RSO or Radiography Supervisor) will conduct a comprehensive informal radiation protection survey prior to each radiographic operation. The survey will include the following:

(a) Verification of proper operation of all interlocks, ON-OFF beam control mechanisms, safety and warning devices, remote monitoring systems, and survey instruments.

(b) Verification that Radiation Area boundaries are secure and posted with a sufficient number of warning signs so as to be conspicuous from all directions. The locations of the High Radiation Area and Radiation Area boundaries will be verified with the written radiation protection survey report, but only the Radiation Area is verified by survey instrument

(c) Verification with Production Control that no maintenance or other personnel are on the roof of the hanger, if applicable.

(d) Notification of all personnel over the hanger loudspeaker system (if available) by the RSO or his representative that RT testing is being conducted.

(e) Documentation of radiation levels (radiation survey) by the RSO or his designated representative as follows:

- The RT will be positioned as it will be for the radiographic exposure (including the object to be x-rayed) with voltage and current set to the same levels to be used.

- Survey meters will be positioned at the operating controls and at area expected to receive the highest amounts of radiation. This will generally be the area closest downrange from the RT unit and has little or no inherent radiation shielding such as walls, doors, etc.

- The radiation-restricted area will be cleared of all personnel. Safety monitors will be posted within eyesight of each other along the restricted area boundary. The RSO will have two-way radios for communication with safety monitors with whom he is not in visual contact.

- With the rotating flashing strobe warning light on, the RT unit will be activated for a period of time as specified by the RSO (generally about 10 percent of the time required for that particular radiographic procedure). Dose rate readings will then be recorded using X-ray survey meters. This step will be repeated as required until all required dose rate information is obtained.

- After the RT unit is turned off and the Control Unit safety key is removed, the RSO or his designated representative will proceed toward the X-ray tube head with a survey meter to verify that it is in fact off and that a safe configuration exists.

(f) The comprehensive informal radiation survey will be valid until operating conditions change or until the radiation restricted area boundary is not secured by safety monitors.

e. Radiographic operations

(1) If the comprehensive informal radiation protection survey indicates that safe operating conditions exist, the radiographer will put the x-ray film in place and prepare the target for the actual radiographic procedure.

(2) The same procedure specified in paragraph 6c(4) will be used for the actual radiograph except that the time will be 100% of the required time instead of 10%.

(3) If the operating conditions (voltage, current, beam orientation etc) are changed, a new informal radiation survey must be completed as outlined above.

(4) The RSO or his designated representative for each radiographic operation will complete a daily utilization log (see enclosure 1 of the SOP.) This form will be maintained for three (3) years.

(5) Upon conclusion of radiographic operations all X-ray equipment will be secured to prevent unauthorized access and the key required to initiate the x-ray will be returned to the unit key control custodian for proper control.

f. Emergency procedures

(1) These emergency procedures have been established to ensure maximum protection to radiographic workers and to the general public.

(2) At any time during safety surveys or actual radiographic operations, if unsafe conditions exist (e.g. excessive radiation levels, failed interlocks, warning lights etc) the RSO or anyone will immediately cease all radiographic operations.

(3) If the RSO suspects possible overexposure or if the failure occurred during RT unit operation such that overexposure may have occurred the RSO will immediately cease operation, remove RT unit key, verify with a survey meter that the X-ray has ceased operation, and read each individuals electronic personnel dosimeter (EPD). In the event that any individual was not in possession of an EPD and TLD, action will be taken immediately to assess the dose received by the individual. If any individual EPD indicates overexposure the RSO will immediately:

(a) Notify the Commander, Battalion RSO and Unit RSO as follows:

Battalion Commander

Executive Commander

Battalion RSO

Garrison RSO

(b) Record all events surrounding the potential overexposure to include operating parameters (voltage, current, time) and the name, rank, organization of all individuals involved in the radiographic operation. Documentation will include:

(1) Completion of the daily utilization log including a sketch of the RT unit configuration and positions of all personnel

(2) A signed statement from the potentially exposed individual detailing actions resulting in or contributing to the exposure.

(3) Turn in the TLD and control badge for their immediate transmittal to the Army Ionizing Radiation Dosimetry Center for analysis using the most expeditious mean available. (TLDs suspected of having received a potential overexposure must be annotated as such, in writing, when they are sent to AIRDC for processing. In addition, AIRDC should be contacted telephonically to assure their immediate processing).

(c) All radiation accidents and incidents will be fully investigated and reported in accordance with AR 385-40 and EUSA Supplement thereto and corrective action taken immediately to preclude recurrence prior to resumption of radiography operations. In addition, lessons learned from radiation incidents will be widely disseminated through command channels to preclude occurrence of such incidents elsewhere.

(d) Technical assistance is available from the ATCOM Health Physicist (DSN 693-2196/Commercial 314-263-2196).

g. Training requirements:

(1) Radiographer: Must have successfully completed USAFITRO Nondestructive Inspection Course, U.S. Navy Radiographic Operator Course or equivalent training (equivalency will be determined by TRADOC or by the Army NDI Program Manager). Additionally, each radiographer will require at least eight hours of annual refresher training conducted by the RSO or his representative. This training will be documented and include topics derived from Title 10, Code of Federal Regulations, Part 34 (10 CFR 34), as listed in TM 55-1500-335-23, Section 9-9.

(2) All personnel working in or frequenting any portion of the X-radiography restricted area to include radiographer, radiation safety monitors and ancillary personnel will receive initial and annual radiation safety training consistent with 10 CFR 19.12. This training will include instruction in health problems associated with exposure to such radiation; in the purposes and functions of protective devices; in the appropriate response to warnings made in the event of any unusual occurrence or malfunction and shall be advised as to the radiation exposure reports which workers may request. The extent of these instructions shall be commensurate with potential radiological health protection problems in the restricted area. (Training of females must also include instruction in radiation risks to the embryo/fetus and options of pregnant females to declare their pregnancy.) Annual retraining will be scheduled so that the interval from the last such retraining does not exceed 18 months.

h. X-RAY CONTROLS:

(1) Primary controls governing the production of radiation shall be capable of being secured (locked) to prevent unauthorized use of the x-ray. The primary radiographer at the control panel will maintain control of key for x-ray unit at all times.

(2) Instrumentation and controls on the x-ray console will be clearly identified and easily discernible.

(3) Provisions will be made in control circuits for the connection of facility interlocks and warning systems.

(4) When an interlock system interrupts x-ray operation, resumption of operation will be possible only by manually resetting the controls where disconnect occurred followed by energizing a switch at the main control console.

i. General operational health physics considerations

(1) All personnel including visitors shall be informed of:

(a) Presence of X-radiation.

(b) Health hazards of X-radiation.

(c) Procedures and precautions to maintain X-radiation exposure As Low As Reasonably Achievable (ALARA).

(d) Emergency Procedures.

(e) Right to receive a report of X-radiation exposure.

(2) All main entrances into building where x-ray operations exist shall be clearly posted that a radiation presence and/or operation may be on going within this structure. This is mandatory by federal law to ensure compliance with OSHA and to notify the public of potential hazards that may exist.

(3) Adequate survey meters and monitoring devices of proper type, and commensurate with the hazards expected will be provided and operated during all x-ray operations.

j. Radiation Protection Organization and Responsibilities:

(1) Organizationally, the RSO must be in a position to effectively advise the commander and x-ray personnel on matters of radiation protection. He/she should not be an operator, supervisor of operations, or under the supervision of such individuals.

(2) Size, complexity, type of x-ray equipment, operating schedules, and other warranting circumstances determine the number of radiation protection personnel needed.

(3) The Organizational Radiation Safety Officer will develop a radiation/hazard awareness program consistent with reference regulations, related documents and with the nature of radiological operations. The program shall establish local policies, lines of authority, standards for the control of exposure to radiation, and shall implement applicable radiation protection procedures, personnel monitoring, radiological surveys, RADIAC calibration, accident/incident investigation and records maintenance. It should be coordinated with supporting organizations including medical, fire, security and safety.

k. Radiation Protection Procedures:

(1) The Organizational Radiation Safety Officer will prepare and publish detailed procedures to implement all aspects of the radiation protection program. Procedures will include:

(a) Instructions regarding duties of radiation protection personnel.

(b) Radiation protection measures to be taken by operating personnel, personnel dealing with experimentation or investigation, and support maintenance, fire, security, and medical personnel. These procedures must also address emergency procedures to be taken for credible accidents.

(c) Applicable portions of approved procedures will be furnished to each organization supporting radiological operations and should be conspicuously posted at each location at which radiological operations are conducted.

e. Area Monitoring Requirements:

(1) A detailed radiation protection survey must be performed by the RSO prior to operation of x-ray equipment (Formal).A Radiation Protection Sketch will be performed by the radiographer for each and every shot after (Informal).

(2) Radiation protection surveys of x-ray operation will be performed at least annually by the LRSO or alternate to detect unknown changes and malfunctioning equipment.

(3) Continuous radiation monitors with remote readout capability, visual, audible alarms at the control panel, in the radiation area, will be employed in all radiation areas which are occupied by personnel.

f. Interlock and Warning Systems:

(1) X-Ray equipment will be secured when not in operation to prevent unauthorized use.

(2) If, for any reason, a safety interlock must be bypassed, such action must:

(a) Be authorized by the supporting RSO or his/her designated representative. Such authorization is temporary and is contingent on implementation of compensating safety controls, procedures, and should be terminated as soon as practical.

(b) Be recorded in a maintenance log or equivalent record and posted at the x-ray console.

(3) A minimum of two persons will witness the re-establishment of safety interlocks and will record the date, time, and initials of the persons in the operating log.

7-20. RADIATION MEASUREMENT:

a. Instrumentation. Radiation instrumentation that is not specifically designed for the measurement of x-rays generally can not accurately measure x-radiation. As such, x-ray survey instruments and dosimeters fielded with the x-ray system will be used in lieu of other similar equipment unless technical review by qualified personnel documents the acceptability of the other instruments. (An instruments energy response, angular response, response time, response to changes in temperature, and atmospheric pressure should be verified prior to its use. Each radiography area will have at the minimum, two RADIAC survey instruments.

b. Storage. The selected location for storage of personnel monitoring instruments such as (TLD) thermo luminescent dosimeters and direct reading pocking dosimeters is very important. The control badge/TLD will be stored in the same location as the personnel TLD badges. They should be stored in a location with the least amount of background radiation, in an environment free from excessive temperature and humidity. The TLD badges and pocket dosimeters shall be returned to designated storage location at the end of each work period. Designated storage location will be approved by the RSO in writing.

c. Test, Calibration, Maintenance, and Storage.

(1) Each RADIAC instrument will be calibrated at the interval prescribed by TMDE for safety and health instruments (currently annually). In addition, calibration is required prior to putting an instrument back into use after it has been repaired.

(2) Radiac instruments shall be labeled as ACTIVE and submitted for health-safety calibration to Redstone Arsenal AL.

7-21. X-RAY SYSTEM ON-SITE OPERATIONS (UNSHIELDED/UNPROTECTED)

a. X-ray Operating Procedures (Unshielded/Unprotected)

(1) The Organizational RSO shall be notified prior to the time, location, and expected duration of planned x-ray operations. The RSO will be present for every unshielded exposure procedure. The Garrison Radiation Safety Officer will provide approval of outside x-rays prior to execution on the Garrison.

(2) For exposures that are to be conducted on or near an active flight line or hanger, coordination/notification shall be made through Production Control, Flight Operations or Traffic Control Tower prior to beginning any x-ray operations.

(3) Only a qualified 68D with ASI N2 or Level II radiographer qualified under NAS 410 or contractor certification program will operate x-ray equipment. RSO/Radiography supervisor will strictly enforce this. Radiographer (N2) will maintain in his/her personal custody, control of x-ray console ON-OFF key at all times to prevent unauthorized use.

(4) All personnel participating in x-ray operations shall wear one, self-indicating dosimeter (EPD-2), and a TLD. There shall be present, at a minimum, two RADIAC instruments during x-ray operation.

(5) The EPD shall be issued to personnel conducting x-ray operations and read at the start of the shift when radiography is to be conducted. Initial reading of the dosimeter will be recorded on a local dosimeter log.

(6) The TLDs are serialized and assigned to individual personnel by name. They shall be issued to appropriate personnel assigned by serial number when conducting x-ray operations only. The TLD designated as Control will be placed in the approved TLD storage location and identified as such. The Control TLD shall never be worn by any individual.

(7) The EPD's shall be randomly read during the course of x-ray operations to ascertain any x-radiation being received.

(8) Radiographer will ensure that two RADIAC survey instruments are present during all x-ray operations. The radiographer(s) will check DA Label 80 (calibration), and battery level of instruments prior to x-ray operation. Radiographer(s) will also check response of instruments with check sources in instrument case.

(9) Radiographers conducting x-ray operation shall maintain the radiography utilization log. Upon completion of x-ray operations utilization log shall be returned to radiography supervisor.

(10) The Laser Pointer is a sighting device that is mounted on the tube head. This device locates the centerline of the emitted x-ray beam and aids in the proper alignment of tube head and component(s) to be exposed. The laser assembly contains a Class IIIa laser module that emits laser radiation. Use of this device shall be controlled by the radiographer(s) conducting x-ray exposures. This aiming device shall be secured with the other x-ray controls at the end of each shift.

! WARNING !

* LASER LIGHT IS DANGEROUS. AVOID EXPOSURE AND DIRECT EYE CONTACT.

* DO NOT AIM AT ANY PERSONNEL OR FLAT MIRROR.

FIRST AID FOR EYE INJURY FROM LASER ENERGY:

First aid should not be attempted for damage produced by laser energy to the eye; therefore, prompt reporting to a medical treatment facility is imperative for known or suspected laser injuries. Report injuries to Occupational Health.

7-22. LASER POINTER INFORMATION:

Manufacture: LORAD Corp., Danbury, CT
Model: 3-000A-0792
Laser Type: Class IIIa - laser product
Peak Power: 5mw
Wavelength: 670 nm
*Conforms to all applicable standards of subchapter J.21 CFR CH1

b. Vertical Exposure: The following procedural steps shall be followed in the order written when unshielded/unprotected x-ray operations are conducted.

(1) The radiographer shall check personnel assisting in the designated operating area for proper personnel dosimetry. All other personnel will be instructed to depart area or stay outside the safe zone/controlled area as indicated in enclosed illustrations, only authorized radiation workers will be allowed to remain in area.

(2) The radiographer/assistant will setup equipment, rope off an area 220 feet/67 meters in diameter from tube head, post appropriate warning signs for warm-up procedures, and exposures. The radiographer will ensure that the tube head is setup for the 90 degree down (towards ground) exposure of component to be inspected. The 220-foot/67 meter boundary shall be the safe zone for warm-up procedures, reference Safety Assessment Report, paragraph 4.2.6. (The warm-up procedures will be strictly followed as prescribed in T.O. 33B3-3-31-1, page 4-3, section 4.1.2 and table 4-1.).

Prior to warm-up procedures to further reduce the amount of X-radiation output from tube head, radiographer may rotate the lead shield on the anode until the window is completely covered; IAW T.O. 33B3-3-31-1, page 4-3, paragraph 4.1.2, step #1. During the warm-up procedures the radiographer's assistant will establish a 2 mR/hr RADIAC reading for each instrument setting adjustment. The instrument settings/adjustments in increments as prescribed for warm-up procedures shall be annotated, to include the restricted area distance/boundary from tube head. To aid in these recordings which will vary from one area to the next, i.e. (grass field, hardtop-asphalt road, flight line, hanger floor, component(s)/object being irradiated, state-weather, atmosphere conditions, etc.) operators shall lay down a 50/100 foot tape measure on ground so that obtaining these distances are acquired in a timely manner. (See enclosed illustration-vertical/horizontal exposures).

(3) Radiographer or assistant will make a sketched drawing of the unshielded/unprotected area system setup. This sketch shall include as much detailed information as possible. (See enclosed illustration-vertical/horizontal exposures) This sketch shall be filed for later reference and destroyed when no longer needed for operations.

(4) The radiographer will check to ensure that all x-ray equipment and connections are properly positioned. The interlock system for this type of unshielded/unprotected operation has been incorporated into the rotating beacon, which is placed onto tube head/tripod.

(5) The radiographer will instruct the assistant (barrier monitor) to secure and monitor restricted area boundary. Upon completion of each warm-up sequence/setting, the monitor shall report the highest reading received to the radiographer.

(6) The radiographer shall ensure that there is at a minimum one calibrated RADIAC instrument located at the control console.

(7) The radiographer shall insert the key into the control console, turn the safety switch to the ON position, reset the timer control, press the X-RAY ON button, and announce X-RAY ON.

(8) The radiographer shall complete the required warm-up. Upon completion of the required warm-up the radiographer shall announce X-RAY OFF, turn the safety key to the OFF position, and remove the key maintaining personal custody.

(9) The monitor shall report his/her reading to the radiographer.

(10) The radiographer shall record the RADIAC reading on the radiography utilization log.

(11) The radiographer/assistant will adjust restricted area boundaries to distances needed as calculated for the component and instrument settings for exposure to be performed.

(12) Repeat steps 4 through 7.

(13) The radiographer shall complete the exposure, he/she shall announce X-RAY OFF, turn the safety key switch to the OFF position, remove the key, maintaining personal custody of it.

(14) Repeat steps 9 through 10.

(15) The radiographer shall remove the exposed film. If no angle exposure is required, go to step 21.

(16) The radiographer and his/her qualified assistant(s) shall setup for the angle exposure.

(17) Repeat steps 4 through 7.

(18) Repeat steps 9 through 11.

(19) The radiographer shall setup the control console for the angle exposure and repeat steps 6 through 13.

(20) The radiographer shall remove the exposed film.

(21) The radiographer/barrier monitor shall ensure that no one is permitted to cross the 2 mR/hr boundary at any time during irradiation exposure procedures. Procedural steps 4 through 20 shall be repeated as necessary until all radiographic exposures have been completed.

c. Horizontal Exposure: Procedural steps for horizontal type exposure shall be followed as outlined in paragraph 2.1 above through 2.21 as applicable, with adjustments made to safe zone/controlled area boundaries. For further clarification on this matter, radiographer shall refer to enclosed illustration entitled X-ray System Unshielded Illustration of Exposure Area "Horizontal Exposure Only".

d. At the completion of the shift or final radiography operation of the day, final readings of EPD's shall be recorded in the dosimetry log. All equipment, to include TLDs shall be secured/stored in their designated area.

(22). Required Publications

ANSI N13.30 - American National Standards Institute, Performance Criteria for Radio bioassay, [cited in Para 1-4e(6)] (This publication may be obtained from American National Standards Institute, 1430 Broadway, New York, NY 10018.)

ANSI Z136.1 - American National Standards Institute, American National Standard for Safe Use of Lasers [cited in Para 1-4k(e), 1-4n(5), 3-1a, and 5-4a] (This publication may be obtained from the Laser Institute of America, Suite 125, 2424 Research Parkway, Orlando, FL 32826.)

ANSI Z136.3 - American National Standards Institute, American National Standard for the Safe Use of Lasers in Health Care Facilities (cited in Para 3-1a, and 5-4a) (This publication may be obtained from the Laser Institute of America, Suite 125, 2424 Research Parkway, Orlando, FL 32826.)

AR 9-11 – US Army Radiation Safety Program

AR 40-5 - Preventive Medicine [cited in Para 1-4g(3), (4), and (6); 1-4n(4); 2-7d; and 6-1a]

AR 40-10 - Health Hazard Assessment Program (HHA) in Support of the Army Materiel Acquisition Decision Process [cited in Para 1-4g(5)]

AR 40-13 - Medical Support-Nuclear/Chemical Accidents and Incidents [cited in Para 1-4g(2)]

AR 40-66 - Medical Record Administration [cited in Para 5-2d(3)]

AR 50-7 - Army Reactor Program [cited in Para 1-5b and 2-3a(6)]

AR 70-1 - Systems Acquisition Policy and Procedure (cited in Para 1-8c and 2-1a)

AR 200-1 - Environmental Protection and Enhancement (cited in Para 2-1d)

AR 200-2 - Environmental Effects of Army Actions (cited in Para 2-1d)

AR 360-5 – Public Information (cited in Para 6-1c)

AR 385-10 - Army Safety Program [cited in Para 1-4c(2)]

AR 385-40 - Accident Reporting and Records (cited in Para 6-1a)

AR 385-63 - Policies and Procedures for Firing Ammunition for Training, Target Practice and Combat (cited in Para 3-1b)

AR 750-43 - Army Test, Measurement and Diagnostic Equipment Program [cited in Para 1-4d(4) and 2-8]

DA PAM 40-18 - Personnel Dosimetry Guidance and Dose Recording Procedures for Personnel Occupationally Exposed to Ionizing Radiation [cited in Para 1-4g(7), 1-4i(5)(b), 5-2b(4), and 6-1a]

DOD 4160.21-M-1 - Defense Demilitarization Manual (cited in Para 3-2c)

DOD 4500.9-R (Part II) - Defense Transportation Regulation - Cargo Movement (cited in Para 2-6b)

DODI 6055.1 - DOD Occupational Safety and Health Program [cited in Para 1-4i(5)(a)]

DODI 6055.11 - Protection of DOD Personnel from Exposure to Radiofrequency Radiation and Military Exempt Lasers (cited in Para 4-1a through c, 1-4g(7), 1-4j(4), and 5-4c)

FM 8-50 - Prevention and Medical Management of Laser Injuries (cited in Para 6-1b)

FM 25-101 - Battle Focused Training (cited in Para 1-8f)

FM 101-5 - Staff Organization and Operations (cited in Para 1-8f and 1-9c)

IEEE C95.3 - Institute of Electrical and Electronics Engineers, IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields—RF and Microwave (cited in Para 4-2) (This publication may be obtained from the Institute of Electrical and Electronics Engineers, Inc., 345 East 47th St., New York, NY 10017)

MIL-HDBK-828 - Laser Range Safety [cited in Para 3-1b and 3-1c(1)] (This publication may be obtained from the Standardization Documents Order Desk, Building 4D, 700 Robbins Ave., Philadelphia, PA 19111)

SB 742-1 – Radiation Explosive Safety Program

SB 11-206 - Personnel Dosimetry Supply and Service for Technical Ionizing Radiation Exposure Control [cited in Para 1-4d(2)(a)]

TB 750-43 - Army Test, Measurement, and Diagnostic Equipment (TMDE) Calibration and Repair Support Program [cited in Para 1-4d(4) and 2-8]

Title 10, CFR, Chapter I - Nuclear Regulatory Commission [cited in Para 1-4d(2), 1-4d(2)(b) through (e); 2-1d; 2-3a(1) and (4); 2-3c(2); 2-4b(2); 2-5a; 5-2a(1), c(1)(a), and f; 6-2; and 6-2a]

Title 21, CFR, Subchapter J - Radiological Health (cited in Para 3-2a)

Title 29, CFR, Part 1910 - Occupational Safety and Health Standards [cited in Para 1-4d(2)(d), 5-2a(2) and f, 6-2, and 6-2a]

Title 32, CFR, Part 655 - Radiation Sources on Army Land (cited in Para 2-4)

Title 39, CFR - U.S. Postal Service (cited in Para 2-6b)

Title 40, CFR - Environmental Protection Agency (cited in Para 2-1d)

Title 49, CFR - Department of Transportation (cited in Para 2-6b and 5-2f)

TM 3-261 - Handling and Disposal of Unwanted Radioactive Material [cited in Para 1-4d(3)]

Unnumbered Publication - ACGIH Threshold Limit Values (TLVs™) for Chemical Substances and Physical Agents and Biological Exposure Indices (BEIs™) (cited in Para 5-4b) (This publication may be obtained from the American Conference of Governmental Industrial Hygienists, Technical Affairs Office, 1330 Kemper Meadow Dr., Cincinnati, OH 45240)

Unnumbered publication - International Commission on Non-Ionizing Radiation Protection (ICNIRP), "Guidelines on Limits of Exposure to Static Magnetic Fields," Health Physics, vol. 66, pp. 100-106 (cited in Para 5-4d)

(23). Related Publications

A related publication is merely a source of additional information. The user does not have to read it to understand this regulation.

AR 11-2 - Management Control

AR 11-34 - The Army Respiratory Protection Program

AR 25-400-2 - The Modern Army Recordkeeping System (MARKS)

AR 50-5 - Nuclear Surety

AR 55-38 - Reporting of Transportation Discrepancies in Shipments

AR 70-6 - Type Classification of Army Materiel

AR 190-54 - Nuclear Reactor Security Program

AR 210-10 - Installations--Administration

AR 385–16 - System Safety Engineering and Management

AR 700-64/DLAM 4145.8/NAVSUPINST 4000.34/AFR 67-8/MCO P4400.105 - Radioactive Commodities in the DOD Supply Systems

AR 700-93 - Processing and Shipping DOD Sponsored Retrograde Materiel Destined for Shipment to the United States, Its Territories, Trusts, and Possessions

AR 725-50 - Requisitioning, Receipt, and Issue System

AST-1500Z-100-93 - Identification Guide for Radioactive Sources in Foreign Materiel (This publication is available from Commander, U.S. Army Foreign Science and Technology Center, ATTN: IAFSTC-PO, 220 Seventh St. NE, Charlottesville, VA 22901-5396)

DODI 6055.8 - Occupational Radiation Protection Program

IEEE C95.1 - Institute of Electrical and Electronics Engineers, IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz (This publication may be obtained from the Institute of Electrical and Electronics Engineers, Inc., 345 East 47th St., New York, NY 10017)

NBS Handbook 107 - Radiological Safety in the Design and Operation of Particle Accelerators (The National Bureau of Standards is now known as the National Institute of Science and Technology) (This publication may be obtained from the U.S. Government Printing Office, P.O. Box 37082, Washington, DC 20013-7082, or from the National Technical Information Service, 5258 Port Royal Rd., Springfield, VA 22161)

NBS Handbook 111 - Radiation Safety for X-Ray Diffraction and Fluorescence Analysis Equipment (This publication may be obtained from the U.S. Government Printing Office, P.O. Box 37082, Washington, DC 20013-7082, or from the National Technical Information Service, 5258 Port Royal Rd., Springfield, VA 22161)

NBS Handbook 114 - General Safety Standards for Installations Using Non-Medical X-Ray and Sealed Gamma-Ray Sources, Energies up to 10 MeV (This publication may be obtained from the U.S. Government Printing Office, P.O. Box 37082, Washington, DC 20013-7082, or from the National Technical Information Service, 5258 Port Royal Rd., Springfield, VA 22161) Approximately 100 numbered reports on a variety of radiation safety topics (These publications may be obtained from the National Council on Radiation Protection and Measurements, 7910 Woodmont Ave., Suite 1016, Bethesda, MD 20814)

NRC Regulatory Guide 8.13 - Instruction Concerning Prenatal Radiation Exposure (This publication may be obtained from the U.S. Government Printing Office, P.O. Box 37082, Washington, DC 20013-7082, or from the National Technical Information Service, 5258 Port Royal Rd., Springfield, VA 22161)

NRC Regulatory Guide 8.29 - Instruction Concerning Risks from Occupational Radiation Exposure (This publication may be obtained from the U.S. Government Printing Office, P.O. Box 37082, Washington, DC 20013-7082, or from the National Technical Information Service, 5258 Port Royal Rd., Springfield, VA 22161)

TB 43-0116 - Identification of Radioactive Items in the Army

TB 43-0121 - Inspection and Certification of RADIAC Meters (Dosimeters)

TB 43-0122 - Instructions for the Safe Handling and Identification of U.S. Army Communications-Electronics Command-Managed Radioactive Items in the Army Inventory

TB 43-0216 - Safety and Hazard Warnings for Operation and Maintenance of TACOM Equipment

TB 43-0133 - Hazard Criteria for CECOM Radiofrequency and Optical Radiation Producing Equipment

TB 43-0137 - Transportation Information for CECOM Radioactive Commodities (Use this bulletin for general guidance only; refer to 10 CFR 71 and 49 CFR for current NRC and DOT regulations.)

TB 43-0141 - Safe Handling, Maintenance, Storage, and Disposal of Radioactive Commodities Managed by the U.S. Army Troop Support and Aviation Material Readiness Command

TB 43-180 - Calibration and Repair Requirements for the Maintenance of Army Materiel

TB 385-4 - Safety Requirements for Maintenance of Electrical and Electronic Equipment

TB MED 502 - Respiratory Protection Program

TB MED 521 - Management and Control of Diagnostic X-Ray, Therapeutic X-Ray, and Gamma-Beam Equipment

TB MED 522 - Control of Health Hazards from Protective Material Used in Self-Luminous Devices

TB MED 523 - Control of Hazards to Health from Microwave and Radio Frequency Radiation and Ultrasound

TB MED 524 - Control of Hazards to Health from Laser Radiation

TB MED 525 - Control of Hazards to Health from Ionizing Radiation Used by the Army Medical Department

Title 10, CFR, Part 835 - Occupational Radiation Protection

TM 5-315 - Transportability Guidance for Safe Transport of Radioactive Materials (Use this manual for general guidance only; refer to 10 CFR 71 and 49 CFR for current NRC and DOT regulations.)

TM 55-315 - Transportability Guidance for Safe Transport of Radioactive Materials (Use this manual for general guidance only; refer to 10 CFR 71 and 49 CFR for current NRC and DOT regulations.)

(24). Prescribed Forms

DA Form 11–2–R - Management Control Evaluation Certification Statement (cited in Para D-3)

Referenced Forms

DD Form 1952 - Dosimeter Application and Record of Occupational Radiation Exposure [cited in Para 5-2d(1) and (3)]

NRC Form 241 - Report of Proposed Activities in Non-Agreement States [cited in Para 2-4b (2)]

(25). Recordkeeping Requirements

This regulation requires the creation, maintenance, and use of the following specific records. [See AR 25-400-2 for file numbers (FNs), descriptions, and dispositions.]

FN 11-Xxa	Radiation safety surveys
FN 11-XXb	Radiation safety training
FN 11-XXc	Radiation SOPs, regulations, and guidance
FN 11-XXd	Radiation analyses
FN 11-Xxe	Radiation sources accounting files
FN 11-XXf	Personnel dosimetry and bioassay
FN 11-XXg	Dosimetry controls
FN 11-XXh	Radiation safety committee files
FN 11-Xxi	Radiation safety inspections
FN 11-XXj	Radiation safety reports
FN 11-XXk	Radiation safety incident cases
FN 11-XXm	Radiation licenses and authorizations
FN 11-XXn	Radiation instrument and calibration
FN 11-XXp	Radiation facilities
FN 11-XXq	Decommissioning records

(26). Management Control Evaluation Checklist

(a). Function - The function covered by this checklist is radiation safety.

(b). Purpose - The purpose of this checklist is to assist commanders and radiation safety officers in evaluating the key management controls listed below. It is not intended to cover all controls.

(c). Instructions - Answers must be based on the actual testing of key management controls (for example, document analysis, direct observation, sampling, simulation, other). Answers that indicate deficiencies must be explained and corrective action indicated in supporting documentation. These management controls must be evaluated at least once every five years. Certification that this evaluation has been conducted must be accomplished on DA Form 11–2–R (Management Control Evaluation Certification Statement).

(27). Test questions –

a. If required [Para 1-4k(1)], has a person been designated to be radiation safety officer?

b. If required [Para 1-4k(2)], has a written radiation safety SOP been established?

c. Are all personnel occupationally exposed to radiation receiving appropriate radiation safety training?

d. Are all radiation sources secured against unauthorized use and removal?

e. If the unit possesses radioactive commodities, has a written SOP been established to assure compliance with radiation safety requirements of applicable technical publications?

f. Are all controllable quantities of radioactive material and radiation-producing sources held by the unit under appropriate authority (for example, a Nuclear Regulatory Commission license, an Army radiation authorization, or as part of a radioactive commodity)?

g. Is all radioactive waste disposed of properly?

h. Are all radiation survey instruments used for health and safety appropriately calibrated?

i. For Army laser ranges, have all type-classified or commercial class IIIb or class IV lasers received appropriate evaluation before their use?

j. Are all unwanted military-exempt lasers disposed of properly?

k. Are all accidents and incidents involving excessive personnel radiation exposure or excessive radioactive contamination of facilities, equipment, or the environment promptly reported through appropriate channels?

l. Do all personnel occupationally exposed to ionizing radiation or radioactive material above applicable levels [Para 5-2b(1) and c(1)] participate in an appropriate dosimetry or bioassay program?

m. Is the dose in all unrestricted areas less than 2 millirems (0.02 millisieverts) in any one hour?

(28). Glossary

ACGIH	American Conference of Governmental Industrial Hygienists
ACSIM	Assistant Chief of Staff for Installation Management
ADR	Automated Dosimetry Report
AFB	United States Air Force Base
AIRDC	Army Ionizing Radiation Dosimetry Center
ALARA	As Low As is Reasonably Achievable
ALI	Annual Limit of Intake
ANSI	American National Standards Institute
AR	Army Regulation
ARA	Army Radiation Authorization
ARP	Army Radiation Permit
ARSC	Army Radiation Safety Council

ASA (IL&E)	Assistant Secretary of the Army (Installations, Logistics, and Environment)
BEI™	Biological effectiveness index (ACGIH trademark)
Bkd	Background
CDRR	Central Dosimetry Records Repository
CECOM	U.S. Army Communications-Electronics Command
CEDE	Committed Effective Dose Equivalent
CFR	Code of Federal Regulations
CG	Commanding General
CHPPM	U.S. Army Center for Health Promotion and Preventive Medicine
Cm	Centimeter
DA	Department of the Army
DAC	Derived Air Concentration
DASAF	Director of Army Safety
DOD	Department of Defense
DODI	Department of Defense Instruction
DOE	Department of Energy
Dpm	Disintegration's per minute
DOT	Department of Transportation
DSN	Defense Switching Network
EMR	Electromagnetic Radiation
EPA	U.S. Environmental Protection Agency
EV	Electron Volt
FN	File Number
FY	Fiscal Year
GHz	Gigahertz
GOCO	Government-Owned Contractor-Operated
Gy	Gray
H	Hour
HHA	Health Hazard Assessment
HQDA	Headquarters, Department of the Army
Hz	Hertz
IAEA	International Atomic Energy Agency
IAW	In Accordance With
ICNIRP	International Commission on Non-ionizing Radiation Protection
IEEE	Institute of Electrical and Electronics Engineers
IR	Infrared
KBq	Kilo Becquerel
KHz	Kilohertz
Km	Kilometer
M	Meter
MACOM	Major Army command
MARKS	Modern Army Recordkeeping System
METL	Mission-essential task list
?Ci	Micro Curie
Mg	Milligram
MIL-HDBK	Military Handbook
?m	Micrometer

Mm	Millimeter
MOS	Military Occupational Specialty
Mrad	Millirad
MSv	Millisievert
MTF	Medical Treatment Facility
NARM	Naturally occurring or Accelerated produced Radioactive Material
NBS	National Bureau of Standards (now named the National Institute of Standards and Technology)
NCRP	National Council on Radiation Protection and Measurements
NGB	National Guard Bureau
NIST	National Institute of Standards and Technology
Nm	Nanometer
NORM	Naturally Occurring Radioactive Material
NRC	U.S. Nuclear Regulatory Commission
NSN	National stock number
NVLAP	National Voluntary Laboratory Accreditation Program
OSHA	Occupational Safety and Health Administration
PHz	Petahertz
RAM	Radioactive Material
RDTE	Research, Development, Testing, and Evaluation
RF	Radiofrequency
RSC	Radiation Safety Committee
RSO	Radiation Safety Officer
RSSO	Radiation Safety Staff Officer
SB	Supply Bulletin
SI	Systemé Internationale (International System)
SOFA	Status of forces agreement
SOP	Standing Operating Procedure
SSI	Specialty Skill Identifier
Sv	Sievert
TACOM	U.S. Army Tank-Automotive and Armaments Command
TB	Technical Bulletin
TB MED	Technical Bulletin (Medical)
TEDE	Total Effective Dose Equivalent
THz	Terahertz
TLV™	Threshold limit value (ACGIH trademark)
TM	Technical Manual
TMDE	Test, Measurement, and Diagnostic Equipment
TOE	Table of Organization and Equipment
TSG	The Surgeon General
U.S.C.	United States Code
CHPPM	U.S. Army Center for Health Promotion and Preventive Medicine
USAMC	U.S. Army Materiel Command
UV	Ultraviolet

(29). Terms

Absorbed dose - The energy imparted by ionizing radiation per unit mass of irradiated material. The units of absorbed dose are the rad and the gray (Gy).

Administrative dose - The total effective dose equivalent that a radiation safety officer assigns when dosimetry is inaccurate or has been misused or lost.

Agreement State - Any State with which the Atomic Energy Commission or the NRC has entered into an effective agreement in which the State assumes many of the NRC's functions.

ALARA - Acronym for "as low as is reasonably achievable" means making every reasonable effort to maintain exposures to radiation as far below applicable dose limits as is practical consistent with the purpose for which the activity is undertaken, taking into account the state of technology, the economics of improvements in relation to benefits to the public health and safety, and other societal and socioeconomic considerations and in relation to utilization of nuclear energy, radioactive materials, and ionizing radiation in the public interest.

Annual limit of intake (ALI) - The derived limit for the amount of radioactive material taken into the body of an adult worker by inhalation or ingestion in a year. ALI is the smaller value of intake of a given radionuclide in a year that would result in a committed effective dose equivalent of 5 rems (0.05 Sv) or a committed dose equivalent of 50 rems (0.5 Sv) to any organ or tissue.

Army regulation - A directive that sets forth missions, responsibilities, and policies, and establishes procedures to ensure uniform compliance with those policies.

Army Reserve facilities - Pertains to those facilities normally employed for the administration and training of Army Reserve units, in any entire structure or part thereof, including any interest in land, Army Reserve Center, and storage and other use areas.

Background radiation - Radiation from cosmic sources; naturally occurring radioactive material, including radon (except as a decay product of source or special nuclear material); and global fallout as it exists in the environment from the testing of nuclear explosive devices or from past nuclear accidents such as Chernobyl that contribute to background radiation. "Background radiation" does not include radiation from source, byproduct, or special nuclear materials that the NRC regulates or from NARM that the Army regulates.

Becquerel (Bq) - The SI unit of radioactivity equivalent to one nuclear transformation per second.

Bioassay (Radio bioassay) - The determination of kinds, quantities or concentrations, and, in some cases, the locations of radioactive material in the human body, whether by direct measurement (in vivo counting) or by analysis and evaluation of materials excreted or removed from the human body (in vitro counting).

Byproduct material - Any radioactive material (except special nuclear material) yielded in or made radioactive by exposure to the radiation incident to the process of producing or utilizing special nuclear material.

Committed dose equivalent - The dose equivalent to organs or tissue of reference that will be received from an intake of radioactive material by an individual during the 50-year period following the intake.

Committed effective dose equivalent - The sum of the products of the weighting factors applicable to each of the body organs or tissues that are irradiated and the committed dose equivalent to these organs or tissues.

Commodity, radioactive - See Radioactive commodity

Condition - The status of personnel and equipment (readiness) as they interact with the operational environment during mission planning and execution.

Control - Action taken to eliminate hazards or reduce their risk.

Curie (Ci) - A unit of radioactivity equal to 37 billion Becquerel's.

Declared pregnant woman - A woman who has voluntarily informed her employer, in writing, of her pregnancy and the estimated date of conception.

Decommission - To remove (as a facility) safely from service and reduce residual radioactivity to a level that permits release of the property for unrestricted use and termination of the NRC license, Army reactor permit, or Army radiation authorization.

Deep-dose equivalent - Applies to external whole-body exposure and is the dose equivalent at a tissue depth of 1 centimeter (1000 mg cm^{-2}).

Derived air concentration (DAC) - The concentration of a given radionuclide in air that, if breathed for a working year of 2,000 hours under conditions of light work (inhalation rate 1.2 cubic meters of air per hour), results in an inhalation of one ALI.

Develop the Force - One of the Army's four core capabilities. This capability includes the processes of developing doctrine; developing requirements; acquiring, training and sustaining

people; and identifying and developing leaders. This core capability encompasses the various functions that must be accomplished to create tactical units that comprise the Operational Force.

Deviation - A departure from the requirements of this regulation.

Direct and Resource the Force - One of the Army's four core capabilities comprised of four core processes: planning and policy Development; direction and assessment; financial management; and information management. These processes have six functions: Leadership; Human Resource Management; Force Management; Military Strategy; Acquisition and Logistics Management; and Installations & Facilities Management.

Dose equivalent - The product of absorbed dose in tissue, quality factor and all other necessary modifying factors at the location of interest in tissue. The units of dose equivalent are the rem and sievert (Sv).

Effective dose equivalent - The sum of the products of the dose equivalent to the organ or tissue and the weighting factors applicable to each of the body organs or tissues that are irradiated. The units of dose equivalent are the rem and sievert (Sv).

Electromagnetic radiation - Electric and magnetic fields that oscillate at right angles to each other and to their direction of propagation and that travel at the speed of light in a vacuum (300,000 kilometers per second). Electromagnetic radiation includes gamma rays, x rays, ultraviolet radiation, visible light, infrared radiation, radiofrequency radiation, and extremely low frequency electromagnetic radiation (see table 5-3).

Electron volt (eV) - A unit of energy equal to 1.6 ? 10^{-19} joule.

Exposure - In risk management, the frequency and length of time subjected to a hazard.

Extremely low frequency (ELF) electromagnetic radiation - Electromagnetic radiation with a frequency less than 3 kHz.

Eye dose equivalent - Applies to the external exposure of the lens of the eye and is taken as the dose equivalent at a tissue depth of 0.3 centimeter (300 mg cm^{-2}).

Giga- (G) - An SI unit prefix indicating a factor of one billion (10^9).

Gray (Gy) - The SI unit of absorbed dose. One gray is equal to an absorbed dose of 1 joule/kilogram (100 rads).

Hazard - Any real or potential condition that can cause injury, illness, death of personnel, damage to or loss of equipment or property, or mission degradation.
Hertz (Hz) - The SI unit of frequency equivalent to one vibration (cycle) per second.

High radiation area - An area, accessible to individuals, in which radiation levels could result in an individual receiving a dose equivalent in excess of 0.1 rem (1 mSv) in 1 hour at 30 centimeters from the radiation source or from any surface that the radiation penetrates.

Infrared (IR) electromagnetic radiation - Electromagnetic radiation with a wavelength between 760-780 nm and 1 mm.

Installation - A grouping of facilities located in the same vicinity, which support particular functions. Installations may be elements of a base. Land and improvements permanently affixed thereto which are under the control of the Department of the Army and used by Army organizations. Where installations are located contiguously, the combined property is designated as one installation and the separate functions are designated as activities of that installation. In addition to those used primarily by troops, the term "installation" applies to real properties such as depots, arsenals, ammunition plants (both contractor and Government operated), hospitals, terminals, and other special mission installations. For the purposes of this regulation, United States Army Regional Support Commands are installations.

Ionizing radiation - Charged subatomic particles and ionized atoms with kinetic energies greater than 12.4 eV, electromagnetic radiation with photon energies greater than 12.4 eV, and all free neutrons and other uncharged subatomic particles (except neutrinos and antineutrinos).

Kilo- (k) - An SI unit prefix indicating a factor of 1000.

Low-level radioactive waste - See Radioactive waste, low-level.

Materiel readiness command - A major subordinate command of the U.S. Army Materiel Command responsible for National Inventory Control Point (NICP) and National Maintenance Point (NMP) functions for assigned items (AR 725-50).

Member of the public - Any individual except when that individual is receiving an occupational dose.

Micro- (?) - An SI unit prefix indicating a factor of one one-millionth(10^{-6}).

Milli- (m) - An SI unit prefix indicating a factor of one one-thousandth (0.001).
Naturally occurring or accelerator produced radioactive material (NARM)
Radioactive material not classified as byproduct, special, or source material; NARM includes NORM (naturally occurring RAM).

Non-ionizing radiation - Electromagnetic radiation with photon energies less than 12.4 eV.

Occupational dose - The dose received by an individual in the course of employment in which the individual's assigned duties involve exposure to radiation or to radioactive material from regulated and unregulated sources of radiation, whether in the possession of the employer or other person. Occupational dose does not include dose received from background radiation; from any medical administration the individual has received; from exposure to patients administered radioactive material and released in accordance with applicable regulations; from voluntary participation in medical research programs; or as a member of the public.

Optical radiation - See Visible light.

Peta- (P) - An SI unit prefix indicating a factor of one million billion (10^{15}).

Probability - The likelihood that an event will occur.

Project the force - One of the Army's four core capabilities. This capability includes the processes of tailoring, mobilizing and projection of land power, and supporting organizational training. Recognized as the overriding capability by which the Army will be measured is the ability to rapidly deploy ready forces into a distant area of operations and keep them coming as dictated by the tempo of battle.

Qualified expert - A person who, by virtue of training and experience, can provide competent authoritative guidance about certain aspects of radiation safety. Being a qualified expert in one aspect of radiation safety does not necessarily mean that a person is a qualified expert in a different aspect.

Quality factor - The modifying factor [listed in 10 CFR 20.1004, tables 1004(b).1 and 1004(b).2] that is used to derive dose equivalent from absorbed dose.

Rad - A unit of absorbed dose. One rad is equal to an absorbed dose of 0.01 joule/kilogram (0.01 gray).

Radiation - For the purposes of this regulation, unless otherwise specified, radiation includes both ionizing and non-ionizing radiation.

Radiation area - An area, accessible to individuals, in which radiation levels could result in an individual receiving a dose equivalent in excess of 0.005 rem (0.05 mSv) in 1 hour at 30 centimeters from the radiation source or from any surface that the radiation penetrates.

Radiation safety - For the purposes of this regulation, a scientific discipline whose objective is the protection of people and the environment from unnecessary exposure to radiation. Radiation safety is concerned with understanding, evaluating, and controlling the risks from radiation exposure relative to the benefits derived. Same as "health physics" and "radiation protection."

Radiation safety committee - An advisory committee for the commander to assess the adequacy of the command's radiation safety program. Same as "radiation control committee" and "radiation protection committee."

Radiation Safety Officer - The person that the commander designates, in writing, as the executive agent for the command's radiation safety program. Same as "radiation protection officer" or "health physics officer."

Radiation safety program - A program to implement the objective of radiation safety.

a. The Army's radiation safety program includes all aspects of—

(1) Measurement and evaluation of radiation and radioactive material pertaining to protection of personnel and the environment.

(2) Army's compliance with Federal and DOD radiation safety regulations.

(3) The Army's radiation dosimetry, radiation bioassay, radioactive waste disposal, radiation safety training, and radiation instrument TMDE and calibration programs.

b. A command's radiation safety program includes all aspects of—

(1) Measurement and evaluation of radiation and radioactive material within the command as they pertain to protection of personnel and the environment.

(2) Compliance with Federal, DOD, and Army radiation safety regulations.

Radioactive commodity - An item of Government property made up in whole or in part of radioactive material. A national stock number (NSN) or part number is assigned to commodities containing radioactive material greater than 0.01 ?Ci.

Radioactive waste - Solid, liquid, or gaseous material that contains radionuclide's regulated under the Atomic Energy Act, as amended, or is of sufficient quantity to require an Army radiation authorization, and is of negligible economic value considering the cost of recovery. Radioactive waste, low-level - Material the NRC classifies as low-level radioactive waste (see 10 CFR 62.2); waste not classified as high-level radioactive waste (spent nuclear fuel), as transuranic waste, or as uranium or thorium tailings and waste; material acceptable for burial in a land disposal facility (10 CFR 61).

Radio bioassay - See bioassay

Radiofrequency (RF) electromagnetic radiation - Electromagnetic radiation with frequencies between 3 kHz and 300 GHz.

Radiofrequency (RF) controlled environment - Locations where RF exposure may be incurred by persons who are aware of the potential for occupational exposure, by other cognizant persons, or as the incidental result of transient passage through areas where analysis shows the exposure levels may be above those shown in DODI 6055.1, table 6-2-1, but do not exceed those shown in DODI 6055.1, table 6-1-1. Existing physical arrangements or areas, such as fences, perimeters, or weather deck(s) of a ship may be used in establishing a controlled environment.

Radiofrequency (RF) uncontrolled environments - Locations where RF exposures do not exceed permissible exposure levels in DODI 6055.1, table 6-2-1. Such locations generally represent living quarters, workplaces, or public access areas where personnel would not expect to encounter higher levels of RF energy.

Recorder, RSC - The person directly responsible for the accuracy and completeness of the RSC minutes. The recorder may designate someone else to take notes at RSC meetings (for example, an assistant or secretary). The recorder should be the RSO to help assure that the minutes meet regulatory requirements.

Rem - A unit of any of the quantities expressed as dose equivalent. The dose equivalent in rems is equal to the absorbed dose in rads multiplied by the quality factor (1 rem = 0.01 sievert).

Residual Risk - The level of risk remaining after controls have been identified and selected for hazards that may result in loss of combat power. Controls are identified and selected until residual risk is at an acceptable level or until it cannot be practically reduced any further.

Risk - Chance of hazard or bad consequences; exposure of chance of injury or loss. Risk level is expressed in terms of hazard probability and severity.

Risk assessment - The identification and assessment of hazards (first two steps of the risk management process).

Risk decision - The decision to accept or not accept the risk(s) associated with an action; made by the commander, leader, or individual responsible for performing that action.

Risk management - A logical five step thought process, applicable to any situation or environment, for identifying and controlling hazards to protect the force.

Risk management integration - The process by which individuals or organizations develop plans to embed risk management into all that they do.

Severity - The expected consequence of an event in terms of degree of injury, property damage, or other mission impairing factors (loss of combat power, adverse publicity, and so on), that should occur.

Shallow dose equivalent - Applies to the external exposure of the skin or an extremity and is taken as the dose equivalent at a tissue depth of 0.007 centimeter (7 mg cm^{-2}) averaged over an area 1 square centimeter.

Sievert (Sv) - The SI unit of any of the quantities expressed as dose equivalent. The dose equivalent in sieverts is equal to the absorbed dose in grays multiplied by the quality factor (1 Sv = 100 rem). Source material - Uranium or thorium, or any combination thereof, in any physical or chemical form or ores that contain by weight one-twentieth of one percent (0.05%) or more of uranium, thorium, or any combination thereof. Source material does not include special nuclear material.

Special nuclear material - Plutonium, uranium-233, uranium enriched in the isotope 233 or in the isotope 235, or any material artificially enriched by any of the foregoing.

Sustain the Force - One of the Army's four core capabilities. This capability includes the Processes of acquiring, maintaining and sustaining equipment; maintaining and sustaining land operations; acquiring and sustaining infrastructure and operating installations.

Tera- (T) - An SI unit prefix indicating a factor of one trillion (10^{12}).

Total effective dose equivalent - The sum of the deep-dose equivalent (for external exposures) and the committed effective dose equivalent (for internal exposures).

Type classification - A designation the Army uses to indicate acceptability for service use (AR 70-61).

Ultraviolet (UV) electromagnetic radiation - Electromagnetic radiation with wavelengths between 100 nm and 380-400 nm.

United States Army Reserve Center - A home station facility, activity, or installation utilized for administration and training of United States Army Reserve units and personnel.

Unrestricted area - An area, access to which in neither limited nor controlled (for the purposes of ionizing radiation safety).

Very high radiation area - An area, accessible to individuals, in which radiation levels could result in an individual receiving an absorbed dose in excess of 500 rads (5 grays) in 1 hour at 1 meter from a radiation source or from any surface that the radiation penetrates.

Visible light - Electromagnetic radiation with wavelengths between 380-400 nm and 760-780 nm.

Weighting factor - For an organ or tissue, the proportion of the risk of stochastic effects resulting from irradiation of that organ or tissue to the total risk of stochastic effects when the whole body is irradiated uniformly.

Chapter 8

Confined Space Entry Program

8-1. Purpose. Establish a uniform Confined Space Entry Program IAW OSHA 29 CFR 1910.146. Provide information to all military, civilian, and contract employees who are required to enter and perform work in confined spaces in USAG Humphreys.

8-2. Goal. Establish a safe working environment for all personnel entering or performing work in confined spaces.

8-3. Applicability. This program is applicable to all military, civilians, and contractors, which may be entering or performing work in confined spaces in USAG Humphreys.

8-4. Definitions.

a. Confined Space - An area which (1) has adequate size and configuration for employee entry, (2) has limited means of access or egress, and (3) is not designed for continuous employee occupancy. 29 CFR 1910.146

b. Permit-Required confined Space – is defined as a confined space that has one or more of the following characteristics: (1) contains or has the potential to contain a hazardous atmosphere, (2) contains a material that has the potential for engulfing a employee, (3) has an internal configuration that could trap an employee or asphyxiate the employee by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section, or (4) contains any other recognized serious safety or health hazard.

c. Attendant – An individual stationed outside the permit space who monitors employees performing work inside the permit space.

8-5. Responsibilities.

a. Supervisors will evaluate the workplace to determine if any confined spaces are permit-required and will be evaluated annually.

b. If the workplace contains permit spaces, the supervisor will inform exposed employees, by posting danger signs of the existence and location of the danger posed by the permit spaces.

c. The supervisor will train employees prior to a duty assignment, a change in duties, a change in permit space operations that could present a hazard in which an employee has not been previously trained, and when he/she has reason to believe that there are deviations from the permit space entry procedures.

d. The entry supervisor shall notify the USAG Humphreys Garrison Safety Office (GSO), DSN 753-5580~7 and the Installation Fire Chief, at DSN 753-6176 prior to beginning confined space work.

e. The entry supervisor shall provide pedestrian, vehicle, or other barriers, as necessary, to protect employees from external hazards.

f. The entry supervisor shall ensure that attendants are thoroughly trained and are familiar in the performance of the following duties:

(1) Know the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure.

(2) Be aware of the possible behavioral effects of hazard exposure to employees.

(3) Continuously maintain an accurate list of all employees, by name that enters the permit space.

(4) Remain outside the permit space during entry operations until relieved by another attendant.

(5) Communicate with employees as necessary to monitor their status and alert them of the need to evacuate the space if the attendant detects a prohibited condition, behavioral effects of hazard exposure, or a situation outside the space that could endanger them.

(6) Summon rescue and other emergency services as soon as the attendant determines that employees may need assistance to escape from permit space hazards.

(7) Take the following actions when unauthorized persons approach or enter a permit space while the operation is underway; warn them to stay away from the permit space; have them exit immediately if they have entered the permit space; and inform the employees and the entry supervisor if they enter the permit space.

(8) Perform non-entry rescues as specified by the employer's rescue procedures.

(9) Perform no other duties that might interfere with the attendant's primary duty to monitor and protect the employees.

(10) Maintain radio and/or telephone contact with Fire Dept. DSN 753-7911, to expedite notification for rescue of workers trapped or overcome by atmospheric conditions within the space.

g. Leaders shall ensure that entry supervisors are thoroughly trained and familiar with the following duties:

(1) Know the hazards that may be faced during entry, including information on the mode, signs, or symptoms, and consequences of the exposure.

(2) Verify that the appropriate entries have been made on the permit, that all tests specified by the permit have been conducted and that all procedures and equipment specified by the permit are in place before endorsing the permit and allowing entry to begin.

(3) Terminate the entry and cancel the permit when the entry operations covered by the permit have been completed or if a condition that is not allowed under the permit arises in or near the permit space.

(4) Verify that rescue services are available and that the means for summoning them is operable.

(5) Remove unauthorized individuals who enter or who attempt to enter the permit space during operations.

h. Before entry begins, the entry supervisor identified on the permit shall sign the entry permit to authorize entry. Maintain the completed permit at the work site for the duration of the work being performed. The duration of the permit may not exceed the time required to complete the assigned task or the job identified on the permit.

i. The Installation Fire Chief, (IFC) will:

(1) Provide rescue and emergency services for confined space entry.

(2) Ensure that each member of the rescue service is provided with and is properly trained to use the personal protective equipment and rescue equipment necessary for making rescues from confined spaces IAW 29 CFR 1910.146.

(3) Ensure that at least one member of the rescue team maintains current certification in first aid and CPR.

j. When a contractor performs work that involves permit space entry, the Contracting Officer shall:

(1) Advise the contractor that the workplace contains permit spaces and that permit space entry is allowed only through compliance with USAG Humphreys Confined Space Entry Program.

(2) Advise the contractor of all previous hazards and experiences associated with the permit space.

(3) Coordinate entry operations with the contractor, when both installation employees and contractor employees will be working in or near the same permit spaces.

(4) Debrief the contractor at the conclusion of the entry operations regarding any hazards confronted or created in permit spaces during entry operations.

8-6. Special Requirements, 29 CFR 1910.146 App B.

a. Before an employee enters the space, test the internal atmosphere with a calibrated direct-reading instrument for the following conditions in the order given:

(1) Oxygen content.

(2) Flammable gases and vapors.

(3) Potential toxic air contaminants.

Note: Request assistance from the GSO at DSN 753-5580~7.

b. Test the atmosphere in all underground work areas as often as necessary to assure that the atmosphere at normal atmospheric pressure contains at least 19.5% but no more than 22% oxygen.

c. Whenever 5% or more of the lower explosive limit for methane or other flammable gases are detected in any underground work area or airshafts, steps will be taken to increase ventilation air volume or control the gas concentration.

d. When conducting operations in a potentially hazardous atmosphere, i.e., explosive gases present, install ventilation system constructed of fire-resistant materials and an acceptable electrical system and fan motors.

e. Locate the controls for reversing the airflow of ventilation systems above ground when conducting operations in potentially hazardous atmospheres.

f. Additional ventilation controls may be discontinued when gas concentrations are reduced below 5% of the lower explosive limit.

g. Work will be suspended whenever 10% or more of the lower explosive limit for methane or other flammable gas is detected near welding, cutting, or hot work.

h. Work will not continue until the concentration of such flammable gas is reduced to less than 10% of the lower explosive limit.

i. Whenever 20% or more of the lower explosive limit for methane or other flammable gases is detected in any underground work area or in the return:

(1) All employees, except those necessary to eliminate the hazard, shall be immediately withdrawn to a safe location above ground.

(2) Electrical power, except for acceptable pumping and ventilation equipment, shall be cut off to the area endangered by the flammable gas until the concentration of such gas is reduced to less than 20% of the lower explosive limit.

j. When ventilation has been reduced to the extent that hazardous levels of methane or other flammable gas may have accumulated, no power other than for acceptable equipment may be restored and no work will resume until the following procedures have been accomplished:

(1) Ventilation restored.

(2) Affected areas retested to ensure that the atmosphere is within flammable limits.

k. Use continuous forced air ventilation as follows:

(1) An employee may not enter the space until the forced air ventilation eliminates any hazardous atmosphere.

(2) Direct the forced air ventilation to ventilate the immediate areas where the employees are or will be present within the space and continue until all employees leave the space.

(3) Ensure that the air supply for the forced air ventilation is from a clean source and does not increase the hazards in the space.

l. Periodically test the atmosphere within the space to ensure that the continuous forced air ventilation is preventing the accumulation of a hazardous atmosphere.

m. If a hazardous atmosphere is detected during entry, evacuate each employee from the space immediately; evaluate the space to determine how the hazardous atmosphere developed, and implement measures to protect employees from the hazardous atmosphere before any subsequent entry takes place.

n. There may be no hazardous atmosphere within the space whenever any employee is inside the space.

o. Coordinate all confined space work permits through the USAG Humphreys Fire Chief, 753-6176 prior to submitting for approval to the USAG Humphreys GSO. The GSO will be the only approving authority for confined space entry permits. No entry or work shall commence in a permit required confined space until an entry permit has been approved.

8-7. Entry Permit. The entry permit will contain the following (APPENDIX C):

a. The specific confined space.

b. Purpose of entry.

c. Date and duration of the entry permit.

d. The authorized employees by name or by such other means that will enable the attendant to determine quickly and accurately, for the duration of the permit, which authorized employees, are inside the permit space.

e. List attendants, by name.

f. The name of the entry supervisor and a space for the signature or initials of the entry supervisor who originally authorized entry.

g. The specific hazards that exist in the permit space.

h. Measures used to isolate the permit space and to eliminate or control permit space hazards before entry.

NOTE**:** These measures shall include the lockout or tagging of equipment and procedures for purging, inserting, ventilating, and flushing permit spaces.

i. Acceptable entry conditions.

j. Results of initial and periodic tests, accompanied by the names or initials of the testers and by the times the tests were performed.

k. Rescue and emergency services that are available and how to contact them.

l. Communication procedures used by authorized employees and attendants to maintain contact during the entry.

m. Equipment, such as personal protective equipment, testing equipment, communications equipment, alarm systems, and rescue equipment to be provided.

n. Any other information whose inclusion is necessary, given the circumstance of the particular confined space, in order to ensure employee safety.

o. Any additional permits, such as a hot work permit, issued to authorize work in the permit space.

Chapter 9

Respiratory Protection Program

9-1. Purpose. To prescribe the responsibilities, policies and the essential elements to establish, execute and maintain the US Army Garrison Humphreys Respiratory Protection Program (RPP).

9-2. References.

a. AR 11-34, The Army Respirator Protection Program

b. AR 40-5, Preventive Medicine

c. AR 385-10, Army Safety Program

d. TB MED 502, Respiratory Protection Program

e. TB MED 509, Spirometry in Occupational Health Surveillance

f. CFR 1910, Occupational Safety and Health Standards

g. ANSI Z88.2, Practices for Respiratory Protection

h. ANSI Z88.6, For Respiratory Protection-Respirator Use-Physical qualifications for personnel

9-3. Applicability. This program document applies to all personnel who use or may need to use industrial-type Respiratory Protection Equipment (RPE). This program does not cover military protective masks (e.g. M9, M17 and M40-series). AR 11-34, 1-5f.

9-4. Policies.

a. The ability to use RPE will be a condition of employment when required by the job.

b. Personnel will not be assigned to tasks requiring the use of respirators without proper medical evaluation. Personnel who have been determined to be medically competent to don a respirator, formally trained in respiratory protection and properly fit tested are considered "qualified respirator users." TB MED 502, 2-10.

c. Restrictions.

(1) Wearing of contact lenses in contaminated atmospheres with a respirator shall not be allowed. AR 11-34, 1-5(c) (1)

(2) Respirators equipped with a face piece will not be worn if facial hair comes between the sealing periphery of the face piece and the face, or if facial hair interferes with valve functions. AR 11-34, 1-5(c) (2).

d. Each area and operation requiring Respiratory Protection Equipment (RPE) will be identified and posted to inform personnel of the work hazard or health risks involved and type of respirator required. AR 11-34, 1-5(d).

e. Only National Institute for Occupational Safety and Health (NIOSH) approved respirators will be used by personnel.

f. Only NIOSH approved spectacle kits will be provided to personnel who require corrective lenses while using a tight fitting, full face piece respirator. Loose fitting supplied-air helmets generally allow the use of normal corrective glasses underneath the respirator.

g. RPE will only be used when hazards cannot be controlled through engineering, product substitution or other types of controls or work practices.

h. No entry will be made into an Immediately Dangerous to Life or Health (IDLH) environment or confined space without clearance from the USAG Humphreys Safety Manager and respective Division Chief. Specialized work practices, atmospheric testing, training and other requirements are required for any entry into confined spaces.

i. Training shall be available in English. Request for training in Korean shall be directed to the GSO.

9-5. Responsibilities.

a. Commander, USAG Humphreys:

(1) Ensure that the primary objective is to prevent airborne contamination in the workplace, as far as feasible by accepted engineering controls (e.g. enclosure or confinement of the operation, local or general ventilation and substitution of less toxic materials).

(2) Ensure that respiratory protection is used only when effective engineering controls are not feasible or while controls are being instituted.

(3) Ensure sufficient funds, facilities and qualified personnel are available perform all duties required by the RPP.

(4) Ensure that there is sufficient funding for formal training of the Respiratory Program Manager (RPM) and Respirator Specialist (RS).

b. Division Chiefs. Division Chiefs shall enforce the proper use of respiratory protection and support the USAG Humphreys Respiratory Program Manager (RPM) in implementation of the USAG Humphreys Respiratory Protection Program Document.

c. USAG Humphreys Safety Manager, AR 11-34, 2-5.

(1) Provide direction to the RPM in planning, programming and annually evaluating the USAG Humphreys Respiratory Protection Program (RPP).

(2) Provide guidance to Division Chiefs in the preparation of any Standing Operating Procedure (SOP) involving the use of respiratory protection.

(3) Perform work site inspections to determine the type of respirator protection best suited for the task involved.

(4) Conduct and document random inspections to determine if Respirator Equipment (RE) is properly selected, used, cleaned, maintained, stored, and discarded.

(5) Coordinate with the RPM to designate the type of respirator to be used.

(6) Coordinate with the RPM to review and approve all purchases of respiratory protective equipment and related supplies (e.g. spare parts, filters, chemical cartridges).

(7) Coordinate with Installation Fire Chief to provide self-contained breathing apparatus (SCBA) training as needed.

(8) Review and assist in the preparation of all lesson plans for respiratory protection training.

d. USAG Humphreys Respiratory Program Manager (RPM). The USAG Humphreys RPM will: AR 11-34, 2-7.

(1) Have experience and formal training in the basic principles of respiratory protection and program management; which includes wearer training, fit testing, proper respirator selection, cleaning, storage, maintenance, inspection, monitoring of hazards, storage, safe work practices and proper respirator use.

(2) Plan, program and annually evaluate the USAG Humphreys RPP.

(3) Prepare the USAG Humphreys RPP document in coordination with the USAG Humphreys Safety Manager and technical assistance from the Industrial Hygienist Division, and Occupational Health Nurse, and Department of Preventive Medicine Force Health Protection, U.S. Army Medical Department Activity, 65th Medical Brigade.

(4) The US Army Garrison Humphreys RPP document shall be in both English and Korean.

(5) Approve any SOP that requires the use of RPE prior to publication.

(6) Conduct random worksite visits to ensure that monthly inspections are conducted and records maintained on emergency-use respirators and self-contained breathing apparatus.

(7) Coordinate with the USAG Humphreys Safety Manager and Industrial Hygienists to designate the type of respirator to be used.

(8) Initiate prompt corrective action on deficiencies found in the Respiratory Protection Program.

(9) Prepare and develop training material (e.g., lesson plans, visual aids, videos, slide presentations, overlays) for all respiratory protection courses in conformance with DA and federal regulations.

(10) Train or ensure that the training of supervisors and workers meet the requirements as outlined.

(11) Maintain and update annually a list of qualified respirator users and specific respirators each individual is qualified to use.

e. Respirator Specialist (RS). The USAG Humphreys RS will: AR 11-34, 2-8.

(1) Have experience in or has completed at least one training course in the basic principles of respiratory protection that includes the proper selection, fit testing, cleaning, inspection, maintenance, storage and safe use of respiratory protection devices.

(2) Perform required fit testing and annually thereafter IAW OSHA requirements.

(3) Perform inspection, cleaning and sanitation of respiratory equipment.

(4) Perform routine maintenance and repair of respiratory equipment.

(5) Perform work site inspections to determine the type of respirator protection best suited for the task involved.

(6) Conduct and document random inspection to determine if RPE is properly selected, used, cleaned, maintained, stored, and discarded.

(7) Coordinate and assist in the preparation of all lesson plans for respiratory protection training with IRPD.

(8) Maintain records as per Para 9-17, below.

f. Industrial Hygienist, Industrial Hygiene Section, 65th Medical Brigade USAG Humphreys.

(1) Consult with the USAG Humphreys Safety Manager to:

(a) Assist in providing direction to the RPM in planning, programming and annually evaluating the USAG Humphreys RPP.

(b) Assist in providing technical guidance to Division Chiefs in the preparation of any Standing Operating Procedure (SOP) involving respirator use in their department.

(c) Assist in performing work site inspections to determine the type of respirator protection best suited for the task involved.

(d) Assist in conducting random inspections to determine if RE is properly selected, used, cleaned, maintained, stored, and discarded.

(e) Assist the RPM to designate the type of respirator to be used.

(f) Assist the RPM in reviewing all respiratory protective equipment and related supply (e.g. spare parts, filters, chemical cartridges) procurement action and provide recommendations for approval or disapproval.

g. Occupational Health and Optical Services will provide medical evaluations of respirator users to:

(1) Determine if workers assigned to tasks requiring the use of respirators are physically, psychologically and physiologically able to perform work while wearing a prescribed respirator.

(2) Inform supervisors whether each employee is able to wear respiratory protection and perform the required work and coordinate with the civilian personnel office and activity when necessary.

(3) Review workers' medical status annually.

(4) Perform optical examinations of qualified respirator users and order corrective lenses for use inside full-face piece respirators. Assure proper vision and fit after receipt of the lenses.

h. Director of Human Resources (DHR) and Division Chiefs. The DHR and Division Chiefs will:

(1) Ensure that job descriptions address requirements for respirator use, and identity the ability to use RPE as a condition of employment when required by the nature of the job.

(2) Document respirator protection training.

i. Director of Logistics (DOL). The Procurement Officer will:

(1) Ensure that only NIOSH approved RPE and replacement parts are procured.

(2) Ensure that the RPM has reviewed and approved all request for procurement of RPE prior to actual procurement.

(3) Provide local procurement of RPE and replacement parts when necessary.

j. Qualified Respirator Users. Qualified respirator users will: AR11-34, 2-14.

(1) Be familiar with the contents of this document (US Army Garrison Humphreys Respiratory Protection Program Document), job site SOPs and available respirators.

(2) Use RPE according to instructions and training.

(3) Inspect each respirator prior to and after each use.

(4) Perform positive and negative pressure checks of RPE prior to use.

(5) Notify their immediate supervisor of defective respirator.

(6) Immediately stop the operations, exit the area and notify their supervisor if they (respirator users) have trouble in breathing, strange odors, taste or any other unusual situation.

k. Supervisors will: AR 11-34, 2-7.

(1) Periodically check the respirator work area to ensure proper use of RPE.

(2) Ensure that all SOPs concerning the use of respirator protection have been approved by the USAG Humphreys RPM.

(3) Instruct or ensure that workers are trained on any SOP involving the use of respirators and the USAG Humphreys Respiratory Protection Program Document.

(4) Maintain records for training on the use of respirators and the USAG Humphreys Respiratory Protection Program Document.

(5) Ensure that workers who use respirators are periodically medically certified to wear respiratory protection.

(6) Ensure that workers who use respirators are trained.

(7) Ensure that respirator users are storing respirators in a clean and sanitary condition.

(8) Ensure respirator users are conducting negative and positive fit testing of respirators prior to use.

(9) Implement the requirements for rescue and standby personnel regarding Immediately Dangerous to Life or Health (IDLH) situations.

(10) Notify the Fire Department Supervisor prior to entry into any IDLH situation or confined space.

l. Directorate of Public Works (DPW) will:

(1) Install and maintain breathing air systems capable of providing Grade D (as defined in American National Standards Institute ANSI Standard Z86.1, and Compressed Gas Association CGA Specification G-7.1) breathing air where required, to include the use of only "oil-free" compressors designed for breathing air systems.

(2) Maintain and calibrate air breathing system alarms in an operable manner.

(3) Install airline couplers that are incompatible with outlets for other gas systems.

(4) Implement a schedule of routine maintenance for servicing and inspecting airline purification panels and changing filters and cartridges as necessary.

n. Directorate of Emergency Service:

(1) Ensure the Fire Department supervisor provides training for firefighters using RPE in coordination with designated safety and health managers and installation medical authorities.

(2) Coordinates with the RS to inspect monthly the emergency use respirators and SCBAs.

(3) Is available for emergencies where SCBA's would be required to enter a contaminated atmosphere.

9-6. Selection of Respiratory Protective Devices.

a. Only NIOSH approved respirators and replacement parts will be utilized. An approved supplied air respiratory protection system includes the respirator and all airline hose.

b. The respirator inventory must include at least two different manufacturers and three different sizes (small, medium and large) to ensure proper fitting of all respirator users.

9-7. Fit Testing, AR 11-34, 3-5b.

a. Only the USAG Humphreys RPM or RS will conduct either quantitative or qualitative fit testing of all respirator users.

b. Fit testing will be conducted during annual training and at the first issue of a respirator. (See Appendix L)

c. Ensure that respirator users bring and are fit tested with any other protective device or work site requirement that might affect the respirator face seal (e.g. safety glasses, helmets, barrier cream).

9-8. Maintenance and Care AR 11-34, 3-6.

a. All respirators will be inspected for defects after each use and after cleaning, sanitizing, repair or maintenance.

b. Ensure that respirators are cleaned and sanitized after each use.

c. Emergency use and SCBA must be inspected at least monthly.

d. Reduction or admission valves and regulators will be returned to the manufacturer or a trained and certified technician for adjustment or repair.

e. No attempt will be made to replace or repair components beyond the manufacturer's recommendations.

f. Compressed air cylinders shall be hydrostatically tested to ensure their integrity, steel cylinders every 5 years and composite cylinders every 3 years.

g. Respirators will be cleaned and sanitized according to the manufacture's instructions.

9-9. Storage.

a. Respirators shall be stored in a clean plastic bag or manufacturer's case in a clean location away from sunlight, heat, cold, moisture or chemicals.

b. Respirators shall be stored in a manner as to prevent distortion of the face piece and exhalation valve.

c. Emergency use or rescue respirators shall be readily accessible at all times and stored to facilitate quick donning. Storage cases shall be clearly marked.

9-10. Sign Posting.

a. All work areas that require the use of respiratory protective equipment, shall have posted at the entrance to the work area, a sign that bears the following information: CAUTION: RESPIRATOR WORK AREA, AUTHORIZED PERSONNEL ONLY, and (STATE THE TYPE OF RESPIRATOR) RESPIRATOR REQUIRED IN THIS AREA.

b. The word "CAUTION" appearing in yellow lettering on a black rectangular panel, placed at the upper half of the sign. The lower half panel contains the instructions and shall have black lettering on a yellow background.

c. All signs shall be both in English and Local National's Language.

9-11. Spectacle Kits. Upon request NIOSH approved spectacle kit (corrective lenses) inserts will be procured for all respirator users who require corrective lenses.

9-12. Immediately Dangerous to Life or Health Situations.

a. IDHL Environments. An IDHL situation includes oxygen-deficient atmospheres (less than 19.5 percent or less oxygen by volume) and/or toxic contaminants at concentrations capable of posing an immediate threat to safety, life or health, or adverse delayed effects on health (e.g. OSHA PEL's, ACGIH TLV's and Lower Explosive Limits (LEL)).

b. Explosive Atmospheres.

c. Emergency Standby Assistance. Planning will be such that one individual (emergency standby assistant (ESA)) will be unaffected by any likely incident and have the proper rescue equipment and training to be able to assist the others in case of an emergency. The ESA never enters the IDLH environment, but is situated outside the entrance to the IDLH environment. The ESA must be working at the IDLH site. Emergency response personnel from the Fire Department do not fulfill this requirement, unless they stay at the site throughout the entire operation.

d. Unknown Concentrations. All confined spaces shall be considered IDLH unless test indicates otherwise. Other untested atmospheres with unknown contaminant concentrations or less than 19.5 percent oxygen shall be considered IDLH.

e. Communication. Communication (visual, voice or signal line) will be maintained between all individuals present.

g. Respiratory Selection. Only pressure-demand SCBA or positive pressure supplied air respirators with auxiliary SCBA shall be use for entry or rescue.

9-13. Breathing Air Compressors, TB MED 502.

a. Compressors shall be constructed and located to prevent the intake of contaminated air and meet the requirements for Grade D breathing air.

b. Non-oil lubricated compressors should be used for providing breathing air. When existing oil lubricated compressors are replaced, they shall be replaced with non-oil lubricated compressors.

c. Oil-lubricated compressors shall have a high-temperature or carbon monoxide alarm or both. If only a high-temperature alarm is used, the air from the compressor must be frequently checked for carbon monoxide.

d. If portable diesel- or gas-powered compressors are used for breathing air, a real-time carbon monoxide monitor must be installed in the compressor.

e. In-line filters and absorbent systems shall be used to provide Grade D breathing air from compressors. Filters shall be changed in accordance with manufacture's recommendations.

9-14. Air Line Couplings. Airline couplings shall be incompatible with outlets for other gas systems to prevent inadvertent servicing of airline respirators with irrespirable gases and oxygen.

9-15. Low Temperature/High Temperature Environment.

a. Nose cups, approved by NIOSH, should be used in full-face respirators during cold weather to prevent lenses fogging and visual impairment.

b. Vortex heater and/or cooler units, approved by NIOSH, may be used to prevent heat and cold stress to respirator users.

9-16. Record Keeping, TB MED 509, Chapter 5.

a. The RS will maintain fit and leak testing records for at least the duration of employment of each covered soldier and civilian work force.

b. The RS will maintain respiratory training records for at least the duration of employment of each covered soldier and civilian work force.

Chapter 10

Bloodborne Pathogens Program

10-1. Purpose. To standardize procedures as required by the Occupational Safety & Health Administration (OSHA) for the management of USAG Humphreys Blood borne Pathogen Program. Additionally this chapter provides guidance and procedures to minimize and prevent, when possible, occupational exposure to Bloodborne Pathogens, as well as action to be taken if potential or actual exposures occur.

10-2. References.

a. Title 29 CFR Part 1910, Occupational Exposure to Bloodborne Pathogens

b. AR 385-10, The Army Safety Program

10-3. Scope. The following procedures are applicable to all units and individuals assigned or attached to the USAG Humphreys. This chapter applies to all operations that have or involve occupational exposure to Bloodborne Pathogens. In particular; personnel whose required duties include routine or reasonably anticipated tasks, procedures, or processes where there is anticipated or actual occupational exposure to blood or potentially infectious materials.

10-4. Occupational Safety and Health Administration (OSHA).

a. OSHA established the standard for protecting employees from occupational exposure to Bloodborne Pathogens. Army policy is to extend this same protection to their personnel.

b. Blood borne Pathogens are defined as Human Immunodeficiency Virus (HIV), Hepatitis B Virus (HBV) and Hepatitis C Virus (HCV). They may be transmitted to persons whose skin, eyes, and mucous membranes and non-intact skin are exposed to human blood and/or body fluids.

c. Occupational infection with Bloodborne Pathogens cannot be detected by visual inspection. Consequently, all human blood and human body fluids must always be treated as containing Bloodborne Pathogens.

10-5. Responsibilities.

a. The USAG Humphreys Safety Manager will:

(1) Provide oversight for the overall implementation of this program.

(2) Advise the Commander immediately when corrective action is needed to ensure an effective program.

(3) Ensure this chapter is reviewed and updated when necessary, but at least annually to account for new or modified tasks, procedures, and job classifications that involve occupational exposure to Bloodborne Pathogens.

b. Commanders/Directors will:

(1) Identify, by name, all personnel that are Military Police (MP), Cardiopulmonary Resuscitation (CPR) Certified, Combat Lifesaver, Emergency Medical Technicians (EMT), Life Guards shall be trained and qualified for enrollment into Bloodborne Pathogen Program.

(2) Ensure all exposure incidents are evaluated and appropriate follow-up action is provided.

(3) Ensure that all first responders receive Hepatitis B Virus (HBV) inoculations.

c. All personnel will report suspected exposures, both occupational and non-occupational (e.g., incidental and "Good Samaritan"), to Bloodborne Pathogens or other potentially infectious material (i.e., exposure incidents) to their supervisor.

(1) Comply with all the requirements of this chapter.

10-6. Exposure Determination. In making the decisions concerning what tasks involve occupational exposure to Bloodborne Pathogens, the following materials encountered in the work place are not considered to release blood or other potentially infectious material in a liquid or semi-liquid state if compressed or infectious waste. 29 CFR 1910.1030 pg 262.

a. Used personal hygiene products, i.e., tampons, sanitary napkins, diapers, and facial tissues; and

b. Absorbent materials (e.g., Band-Aids, bandages) containing small amounts of blood or body fluids and no free-flowing or unabsorbed liquid.

10-7. Methods of Compliance, 29 CFR 1910.1030 pg 263.

a. Universal Precautions:

(1) Will always be observed where there is a potential for contact with human blood or other potentially infectious materials and are the primary means to prevent exposure.

(2) Procedural control of exposure to Bloodborne Pathogens by treating all human blood and body fluids as if infectious?

(3) Include the use of proper PPE to prevent exposure to BBP's.

b. Work Practice Controls, 29 CFR 1910.1030 pg 264.

(1) These methods will be the secondary means to eliminate or minimize personnel exposure to Bloodborne Pathogens.

(2) Work practice controls alter the manner in which a task is performed. They include proper handling of used bandages and other emergency items that have contacted human blood or other potentially infectious materials as well as performing procedures in a manner that will prevent or minimize the spattering, splashing, spraying, or generation of droplets of blood or other body fluids.

(3) The following work practices will be employed and enforced, when appropriate:

(a) Eating, drinking, smoking, applying lip balm or cosmetics, handling contact lenses, and similar practices will be prohibited in all areas where occupational exposure to Bloodborne Pathogens can be anticipated.

(b) Hand washing facilities shall be provided when feasible. When not feasible, because of the location or event, antiseptic hand cleanser and clean paper or cloth towels or antiseptic towelettes, as a minimum, will be provided. Employees will wash their hands and any other exposed skin using soap and running water as soon as feasible. Mucous membranes that have been exposed will also be flushed with copious amounts of water.

(c) Any equipment or surfaces that may have been contaminated with human blood or other potentially infectious materials will be decontaminated following practices and using materials approved for the purpose.

(d) No waste container, especially plastic bags, will be compressed by hand. This reduces the potential for inadvertent exposure due to sharp objects concealed in such containers.

c. Personal Protective Equipment (PPE).

(1) PPE is a Universal Precaution used to eliminate or minimize personnel exposure to Bloodborne Pathogens.

(2) PPE prevents human blood or other potentially infectious material from reaching or passing through work or street clothes, undergarments, skin, eyes, mouth, and mucous membranes under normal conditions. PPE consists of disposable pocket mouth-to-mouth resuscitation devices, gloves, eye protection, and face shields, masks and similar items.

(3) PPE, appropriate to the hazard, will be used to reduce exposure to Bloodborne Pathogens.

(4) PPE will be issued, used, and maintained as follows:

(a) Don disposable gloves prior to performing any emergency aid.

(b) PPE that has been penetrated by blood or other potentially infectious material, or that has been punctured or damaged in any manner, will be removed from use immediately or as soon as feasible and will be disposed of properly. (Ensure proper exposure follow-up evaluation.)

(c) Contaminated PPE will be placed in containers/sturdy plastic bags, before being removed from any work area, and immediately turned over to the Medical Clinic for disposal. Reusable and disposable PPE will be containerized separately.

(d) Reusable PPE will be cleaned after each use and will be stored under sanitary conditions.

10-8. Housekeeping, 29 CFR 1910.1030 pg 265. Consult the local area medical facility for any Blood or Body Fluid spill.

10-9. Biohazard Waste Disposal. All biohazard wastes will be turned over to the local area medical facility.

10-10. Exposure Incidents, 29 CFR 1910.1030 pg 263.

a. If an employee is involved in or is a witness to an exposure incident (i.e., specific eye, mouth, mucous membrane, non-intact skin or parental contact with blood or other potentially infectious materials) he/she will take immediate action to clean the area of exposure then report the incident to his/her supervisor. All exposure incidents will be reported regardless of whether they are occupational or non-occupational (i.e., incidental or "Good Samaritan"). Due to their confidential nature, these incidents will be recorded in the Medical Records of the employee, which is protected by the Privacy Act.

b. Supervisors will immediately notify the unit Safety Office.

c. The Unit Safety Office will take the following actions:

(1) Provide written notification of the exposure incident to the local medical facility.

(2) Investigate the incident.

(3) When the investigation is complete, report the specific circumstances of the incident, including route(s) of exposure, to the local area medical facility. The written report will contain a description of the employee's job duties as they relate to the exposure incident.

(4) The local area medical facility should provide appropriate medical evaluation and follow-up.

10-11. Training, 29 CFR 1910.1030 pg 271. All employees with potential for occupational exposure to Bloodborne Pathogens, and their supervisors, will receive training sufficient to ensure they are knowledgeable of the requirements contained in this chapter. The hazards Bloodborne Pathogens pose to workers, of the control measures used to reduce or eliminate the hazards, and of command policy will be covered. The requirement will include but not be limited to the initial (1 Hour) and annual training (minimum 30 minutes). (See Appendix O)

10-12. Cardiopulmonary Resuscitation (CPR): The proper use of protective barriers to perform CPR (i.e., mouth-to-mask ventilation) will be included as an element of all CPR training conducted. Mouth-to-mask training does not replace, but is an addition to, the required mouth-to-mouth training. (See Appendix L)

Chapter 11

Composite Risk Management Program

11-1. Purpose. To standardize procedures as required by the appropriate regulatory guidance for Development and Implementation of the Army Safety Composite Risk Management Program within the USAG Humphreys.

11-2. References.

a. AR 385-10, Army Safety Program.

b. FM 5-19, Composite Risk Management.

11-3. Scope. The following procedures are applicable to all units and individuals assigned, attached to the USAG Humphreys. Composite risk management offers a practical means of optimizing safety and mission accomplishment. The process of applying composite risk management allows hazards to be identified and controlled. Composite risk management allows decision-makers to make informed decisions.

11-4. Responsibilities, FM 5-19 Chapter 2.

a. Commander/Directors will:

(1) Ensure composite risk management procedures are published in OPORDS, FRAGOs, SOPs and all other directives before an operation begins.

(2) Ensure newly assigned leaders are trained upon arrival and at least annually on the composite risk management process.

b. The USAG Humphreys Safety Manager will:

(1) Provide oversight for the overall implementation of this program.

(2) Advise the Commander immediately when corrective action is needed to ensure an effective program.

(3) Review and update this chapter as necessary, but at least annually to account for new training requirements.

(4) Monitor/review the risk assessments published in the USAG Humphreys Unit OPLANS/OPORDS for each major operation/exercise.

(5) Develop a five-step composite risk management process to be utilized/followed by all USAG Humphreys Units/Directorates.

(6) Coordinate or conduct leader training for USAG Humphreys personnel.

c. Unit/Directorate Additional Duty Safety Personnel will:

(1) Review the Composite Risk Management Worksheets (DA Form 7566) developed within their organization to ensure that all identified hazards have control measures established to reduce or eliminate the hazards.

(2) Submit Risk Assessments to the GSO for review and/or submission to higher headquarters as required by this chapter

d. Employees/Soldiers will:

(1) Familiarize themselves and comply with all requirements of this regulation.

(2) Recognize hazards and accident risks associated with their duties and work environment, and know the procedures to control these risks.

e. USAG Humphreys Organizations will submit Risk Assessments for all Organizational Activities / Missions through USAG-H Anti Terrorism Officer, to Garrison Safety Office.

11-5. Risk Identification.

a. Identifying risk is a systematic look at each phase of the operation or mission and determining possible adverse events that could occur during the operation. This process should be completed in two steps: preparing operations analysis and preliminary hazard analysis.

b. An operations analysis is a list, in time sequence, of descriptions of events that are expected to occur during the operation.

c. A preliminary hazard analysis is a list of various hazards that could occur and result in accidents. Hazards should be listed for each event listed in the operations analysis. Hazards are identified using accident experience databases, scenario thinking, and similar techniques.

11-6. Risk Assessment. The hazard probability and hazard severity must be determined for each hazard identified in the preliminary hazard analysis. See FM 5-19, 1-20.

11-7. Risk Control Options and Decisions.

a. For each hazard identified, risk control options must be proposed. This process must begin with the most serious risk. Potential risk controls must be analyzed to determine suitability based on the impact of the mission.

b. Risk must be controlled without sacrificing essential mission requirements when risk elimination is not possible. Risk control alternatives may include:

(1) New task standards.

(2) Revised operational procedures / parameters.

(3) Additional training.

(4) Special maintenance requirements.

(5) Establishing new or modified controls.

(6) Trading off mission elements for risk controls.

c. A new risk assessment must be performed for each hazard with proposed hazard control.

d. Unnecessary risk will never be accepted. Leaders who have the authority to accept the risk also have the responsibility to protect soldiers from unnecessary risk.

e. Risk is acceptable when risk benefits outweigh the risk/cost.

11-8. Implement Controls.

a. The controls selected by the Commander or leader must be implemented.

b. The controls must be integrated as standards in Unit/Directorate SOPs, OPORDs, FRAGOs, etc to ensure procedures are used during operations.

The chain of command must be involved. Examples of Controls:

(1) Engineering or designing to eliminate or control hazards.

(2) Selecting a Course of Action (COA) that avoids identified hazards.

(3) Limiting the number of people and the amount of time they are exposed to hazards, consistent with mission requirements.

(4) Selecting personnel with appropriate mental, emotional, and physical capabilities.

(5) Providing protective clothing, equipment, and safety and security devices.

(6) Providing such services as adequate sanitation facilities and water purification capabilities.

(7) Providing warning signs and signals.

(8) Scheduling vehicle and aircraft silhouette drills.

(9) Planning training, including rehearsals, rock drills, battle drills, and so forth.

(10) Programming communications links for key civilian organizations.

(11) Establishing battlefield controls such as areas of operations and boundaries, direct fire control measures, fire support coordination measures, rules of engagement, airspace control measures, bridge classification, traffic control, and so forth.

(12) Developing terrorist attack warning systems and response plans. The key is to specify who, what, where, when, and how each control is to be used.

(13) Planning and scheduling intensive threat and friendly vehicle identification refresher training for all anti-armor and air defense weapons crews before the mission reduces the probability of engaging a friendly vehicle or aircraft (fratricide).

(14) Programming installation of crashworthy passenger seats in the UH-60 Blackhawk, when mission circumstances do not indicate their removal, can reduce the severity of injuries in crashes.

(15) Requiring soldiers to wear flak vests and helmets during movement to contact, or when riding in vehicles in areas where enemy fire is likely, can reduce the probability and severity of a wound from small arms fire or fragments.

11-9. Supervision. Leaders must maintain the effectiveness of the risk controls and ensure that risk control standards are performed as expected and that they are being maintained in a high level.

a. Composite risk management can be summarized in the following five principles:

(1) Accept no unnecessary risk.

(2) Make risk decisions at the appropriate level.

(3) Accept risk when benefits outweigh costs.

(4) Manage risks in the planning phase, before execution.

(5) Reconsider your composite risk management approach when changes occur.

b. Application of composite risk management techniques allows the decision-maker to make an informed decision. Although the appropriate decision may involve some amount of risk, the risk can be reduced to a level consistent with the benefits.

c. Basic Composite Risk Management Process

(1) Identify: List the hazards.

(2) Assess: Determine the risk of each hazard.

(3) Decide: Reduce risk to the appropriate level for the mission.

(4) Control: Develop and implement control measures.

(5) Supervise: Ensure controls are followed, get feedback.

d. Hazard Severity Definitions, FM 5-19, 1-24.

(1) I Catastrophic - Loss of ability to accomplish the mission or mission failure. Death or permanent total disability (accident risk). Loss of major or mission-critical system or equipment. Major property (facility) damage. Severe environmental damage. Mission-critical security failure. Unacceptable collateral damage.

(2) II Critical - Significantly (severely) degraded mission capability or unit readiness. Permanent partial disability, temporary total disability exceeding 3 months time (accident risk). Extensive (major) damage to equipment or systems. Significant damage to property or the environment. Security failure. Significant collateral damage.

(3) III Marginal - Degraded mission capability or unit readiness. Minor damage to equipment or systems, property, or the environment. Lost day due to injury or illness not exceeding 3 months (accident risk). Minor damage to property or the environment.

(4) IV Negligible - Little or no adverse impact on mission capability. First aid or minor medical treatment (accident risk). Slight equipment or system damage, but fully functional and serviceable. Little or no property or environmental damage.

e. Hazard Probability, FM 5-19, 1-23.

(1) FREQUENT (A) Occurs very often, continuously experienced

Single item Occurs very often in service life. Expected to occur several times over duration of a specific mission or operation. Always occurs. Fleet or inventory of Occurs continuously during a specific mission items or operation, or over a service life. Individual soldier Occurs very often in career. Expected to occur several times during mission or operation. Always occurs. All soldiers exposed Occurs continuously during a specific mission or operation.

(2) LIKELY (B) Occurs several times

Single item Occurs several times in service life. Expected to occur during a specific mission or operation. Fleet or inventory of Occurs at a high rate, but experienced items intermittently (regular intervals, generally often,). Individual soldier Occurs several times in career. Expected to occur during a specific mission or operation. All soldiers exposed Occurs at a high rate, but experienced intermittently.

(3) OCCASIONAL (C) Occurs sporadically

Single item Occurs some time in service life. May occur about as often as not during a specific mission or operation. Fleet or inventory of Occurs several times in service life. Items Individual soldier Occurs some time in career. May occur during a specific mission or operation, but not often. All soldiers exposed Occurs sporadically (irregularly, sparsely, or sometimes).

(4) SELDOM (D) Remotely possible; could occur at USAG Humphreys me time

Single item Occurs in service life, but only remotely possible. Not expected to occur during a specific mission or operation. Fleet or inventory of Occurs as isolated incidents. Possible to item occur some time in service life, but rarely. Usually does not occur. Individual soldier Occurs as isolated incident during a career. Remotely possible, but not expected to occur during a specific mission or operation. All soldiers exposed Occurs rarely within exposed population as isolated incidents.

(5) UNLIKELY (E) Can assume will not occur, but not impossible

Single item Occurrence not impossible, but can assume will almost never occur in service life. Can assume will not occur during a specific mission or operation. Fleet or inventory of Occurs very rarely (almost never or items improbable). Incidents may occur over service life. Individual soldier Occurrence not impossible, but may assume will not occur in career or during a specific mission or operation. All soldiers exposed Occurs very rarely, but not impossible.

f. Risk Levels, FM 5-19, 1-25.

(1) E - Extremely High: Loss of ability to accomplish the mission if hazards occur during mission. A frequent or likely probability of catastrophic loss (IA or IB) or frequent probability of critical loss (IIA) exists.

Example: A commander finds that one of his implied tasks to attack an objective involves crossing a normally shallow riverbed. After looking at the factors of METT-TC, he discovers that three days of intense rain have raised the water level to rise above flood stage, with currents far in excess of his ability to safely ford with armored vehicles. After discussing COA with his staff, he determines the accident risk is extremely high because of the likely probability and catastrophic severity of losing vehicles and killing soldiers. His conclusions are based on his experience with and knowledge of fording armored vehicles under the existing conditions of water depth and current speed.

(2) H - High: Significant degradation of mission capabilities in terms of the required mission standard, inability to accomplish all parts of the mission, or inability to complete the mission to standard if hazards occur during the mission. Occasional to seldom probability of catastrophic loss (IC or ID) exists. A likely to occasional probability exists of a critical loss (IIB or IIC) occurring. Frequent probability of marginal losses (IIIA) exists.

Example: During a preplanned ambush, the leader discovers that the force he intends to ambush has significantly more combat power than his own force can accommodate. He realizes that he could only delay rather than destroy the enemy. He knows his casualty estimates would be very high if the enemy reorganized and counterattacked. He also knows that the size of the enemy force could seriously affect adjacent units conducting a movement to contact. He determines the situation is high risk because he estimates (based on his training and experience) there is a likely probability of the enemy reorganizing and counterattacking and the severity of loss to his unit would be critical.

(3) M - Moderate: Expected degraded mission capabilities in terms of the required mission standard will have a reduced mission capability if hazards occur during mission. An unlikely probability of catastrophic loss (IE) exists. The probability of a critical loss is seldom (IID). Marginal losses occur with a likely or occasional probability (IIIB or IIIC). A frequent probability of negligible (IVA) losses exists.

Example: A commander in a defensive position receives a warning order to be prepared to counterattack if the enemy attacks again. He chooses to use pre-positioned ammunition caches to support his defense, as opposed to moving his ammunition re-supply forward by truck. He determines that the severity of not having an immediate re-supply of ammunition available during the counterattack will have a critical impact on his combat power. He realizes that if the enemy forces him to abandon his forward positions, the severity of the loss of his ammunition caches will critically affect his combat power. He considers that his unit is deployed in excellent defensive positions. He has repelled two attacks that resulted in the destruction of an estimated 50 percent of the enemy's combat power. He receives information that the probability of the enemy attacking is likely, but that the probability of the enemy being reinforced and attacking in overwhelming force is remote (seldom). The commander concludes that the risk of conducting a counterattack with limited ammunition is greater than the moderate risk of the enemy pushing him back.

(4) L - Low: Expected losses have little or no impact on accomplishing the mission. The probability of critical loss is unlikely (IIE), while that of marginal loss is seldom (IIID) or unlikely (IIIE). The probability of a negligible loss is likely or less (IVB through (IVE)).

Example: A mechanized task force (TF) conducting a movement to contact in a desert environment is overtaken by nightfall before reaching its limit of advance (LOA). The terrain along the axis of advance is flat and open. Visibility is about 800 meters under a clear sky illuminated by a full moon. Estimates put the enemy, which has been hastily withdrawing for the past three days, at approximately 30 percent strength. Contact has been light with no defensible terrain along the TFs axis. The TF commander considers all the factors. In addition, the TF is 100 percent operational in using night vision devices. The TF commander estimates that it is unlikely that his unit will incur losses of critical severity by being surprised by the enemy or lose critical combat power due to an accident. He estimates the risk to his force in continuing a nighttime movement is low.

11-10. Decision Level. The following commanders will decide if operations will continue.

a. **Extremely High (E)… IMCOM Korea Commander**
b. **High (H)…… USAG Humphreys Commander**
c. **Moderate (M)…….. Director of Organization**
d. **Low (L)……. Company Commander/Section Supervisor**

Risk Assessment Matrix						
		Probability				
Severity		**Frequent A**	**Likely B**	**Occasional C**	**Seldom D**	**Unlikely E**
Catastrophic	I	E	E	H	H	M
Critical	II	E	H	H	M	L
Marginal	III	H	M	M	L	L
Negligible	IV	M	L	L	L	L

E – Extremely High Risk
H – High Risk
M – Moderate Risk
L – Low Risk

Sample Composite Risk Management (DA Form 7566) at Appendix K.

Chapter 12

Safety Awards Program

12-1. Purpose. To standardize procedures as required by the appropriate regulatory guidance for establishing and promotion of safety awards program for the USAG Humphreys. Additionally this program will recognize the achievements of soldiers and civilians in the area of accident prevention.

12-2. References.

a. AR 385-10, Army Safety Program

b. IMCOM-Korea OPORD 06-25 (IMCOM-K Safety Awards Program).

12-3. Scope. The following procedures are applicable to all units and individuals assigned or attached to the USAG Humphreys.

12-4. Background. Accidents in the workplace can cause severe personal injuries and equipment damage that can cause mission failure. Soldiers, DA civilians, DA Contract personnel, and Korean Nationals are working hard to prevent such accidents from occurring in the workplace and need to be recognized for their safety efforts. IMCOM-Korea recognizes Soldiers, DA Civilians, DA contract personnel, and Korean Nationals for safety excellence in the prevention of accidents in the workplace. The goal of the safety award program is to foster mission accomplishment by recognizing excellence of both military and civilians of the organization and motivating them to high levels of performance and safety. All levels of command will endorse and participate in the Army Accident Prevention Awards.

12-5. Responsibilities.

a. The USAG Humphreys Commander will:

(1) Ensure assigned personnel are recognized and acknowledge for their safety excellence in the prevention of accidents in the workplace.

(2) Submit names of personnel to be recognized for safety excellence in the workplace to HQ, IMCOM- Korea NLT the last Thursday of each quarter.

(3) Nominate unit/directorate for the Commanding General's Award for Safety Excellence who has made the most significant contribution in achieving and promoting accident prevention and awareness within the command.

(4) Nominate unit/directorate for the Safety Award who has best Safety Awareness and Accident Prevention Program.

(5) Nominate unit/directorate for the Award of Excellence in Safety who have completed 36 consecutive months without experiencing a Class A, B, or C accident. Subsequent awards for each additional year of accident free experience will receive special recognition.

(6) Recognize unit/directorate that have completed 12 consecutive months without experiencing a class A, B, or C accident and nominate them for the Award of Accomplishment in Safety.

b. Directors will recognize the following individuals of their units/activities with a certificate of Achievement in Safety:

(1) Leaders or supervisors of activity who have gone 12 consecutive months without an on-duty lost-time injury.

(2) Employees who have driven 12 consecutive months without an accident, injury, or traffic violation.

(3) Electrical/electronic maintenance personnel who have performed their assigned duties for 12 consecutive months without an accident.

(4) Civilians employees who have maintained an accident/injury free work record for a 5-year period.

(5) Any employee who has made significant contribution to the USAG Humphreys Safety Program.

Processing Safety Awards:

a. All Safety Awards justifications will be processed through the USAG Humphreys Safety Office for review and validation.

b. The USAG Humphreys Safety Manager will review each package for completeness and certify that the activity or individual has, in fact, contributed as suggested in the nomination documentation.

c. The USAG Humphreys Safety Manager will forward each nomination package through the Command Group for approval by the Commander or for coordination prior to submitting the package to HQ IMCOM-Korea Safety.

d. Presentation of Safety Awards will generally be at the Quarterly USAG Humphreys Safety Council. However, the IMCOM-K Commander, USAG Humphreys Commander, or Directors may elect to present the awards at the work place, during Safety Stand Down Days, or New Horizons Day.

Chapter 13

Hazardous Energies Control and Lockout/Tagout Program

13-1. Program Description. It is our goal at USAG Humphreys to control hazardous energies in the workplace to the greatest extent feasible. This Hazardous Energies Control and Lockout/Tagout Program are established to ensure that our employees' health is protected from hazardous energies in the work environment. The US Army is required by OSHA regulations to provide and maintain a Hazardous Energies Control and Lockout/Tagout Program for all operations where employees may be potentially exposed.

13-2. Reference. Federal OSHA 29 CFR 1910.147 - The Control of Hazardous Energy (Lockout/Tagout)

13-3. Scope.

a. This program applies to the installation, service, maintenance, or removal of any type of machinery, equipment, or components, in which the unexpected start-up or release of stored energy could cause injury.

b. This program is applicable to all employees within USAG Humphreys. The purpose of this program is to prevent injuries and accidents from occurring while:

(1) Servicing or maintaining machinery or equipment that is capable of sudden energy releases.

(2) Working with machinery or equipment that is capable of storing hazardous energy.

Note: Stored energy may be in the form of electricity (capacitors), air pressure (pneumatic), liquid pressure (hydraulic), springs, or potential energy of position, but is not limited to the above.

c. This program requires a systematic approach to servicing and maintaining equipment and machinery and strives to ensure the safety of all USAG Humphreys personnel and contractors, and compliance with the applicable regulations. This approach involves: following approved and written equipment-specific procedures to shut down and lock out equipment and machinery, dissipating all hazardous energy, blocking parts where necessary, and verifying that the energy has been controlled before all work is initiated.

d. Persons who fail to follow established written procedures for lockout of equipment and machinery, or who fail to take appropriate steps to protect the safety of all persons who are performing work under locked out conditions are subject to disciplinary action. This includes persons performing lockout that are not previously trained and authorized, and who do not follow established policies and procedures.

e. No employee shall install, service, remove, or perform electrical or mechanical maintenance on any electrical equipment or machinery until that equipment is turned off or de-energized, all stored hazardous energy has been bled down, dissipated, or blocked off, and the machinery has been locked out and blocked as provided in the section below.

f. Such work may be performed on circuits and systems operating at a sustained voltage of less than 30 volts or where there is no risk of exposure to electric arcs or burns without locking out the electrical energy source.

g. Lock out is required for mechanical service and maintenance operations if the procedures to be performed could involve employee exposure to energized electrical parts, to machinery that could unexpectedly start up, or to a stored energy source on the equipment or machinery.

h. Servicing or maintenance on equipment that is powered through an electrical cord and plug shall be worked on with the cord unplugged. The person performing the work must have exclusive control of the plug at all times. If necessary, this can be accomplished by applying some form of a plug lock or cord cap lock-over device that is secured with the worker's personal lock and tag.

13-4. Definitions.

a. Affected and Other Employee – Any employee in an office or industrial setting who works around outlets, electrical panels, or electrical switches, and whose job requires them to be near or around the hazard zone (but not within the hazard zone) when equipment is being serviced or maintained under a locked-out or tagged-out condition. For example, a machine operator that must stay near the machine during a lockout is classified as an Affected Employee.
Office staff working on computers and electrical equipment when nearby equipment is being serviced or maintained during a lockout is also classified as Affected Employees. The Affected Employee must be instructed never to attempt to re-start or re-activate equipment that is locked out or tagged out. See also the definition for “Authorized Lockout/Tagout Employee”.

b. Assigned Individual Lock – A padlock or combination lock issued to an employee for whom no other person has the key, combination, or means of opening without using destructive force. The lock shall be uniquely identified and shall not be used for any other purpose.

c. Authorized Lockout/Tagout Employee – A person who has completed the required hazardous energy control training and is authorized to lockout or tagout a specific machine or equipment to perform service or maintenance. A person must be an Authorized Lockout/Tagout Employee in order to apply a lock or tag to control hazardous energy. All Authorized Lockout/Tagout Employees must be trained in:

(1) Electrical Safety Training;

(2) Lockout/Tagout Training;

(3) Equipment specific procedures in their individual work units.

d. “Capable of Being Locked Out" – An energy-isolating device will be considered capable of being locked out if it is designed with a hasp or other means of attachment to which, a lock can be affixed, or if it has a locking mechanism built into it. Other energy isolating devices are capable of being locked out, if lockout can be achieved without the need to dismantle, rebuild, or replace the energy-isolating device or permanently alter its energy control capability. An appropriate lockout attachment, designed for such an application, is available through a supplier.

e. Energy Forms:

(1) Electrical – Low voltage is when the potential is greater than 30 volts RMS or direct current, but less than 600 volts; high voltage is when the potential is greater than 600 volts; high current is when 25 amperes or greater exists at any voltage

(2) Chemical – Explosion, pressure, extreme heat, fire, corrosive, reactive, oxidizer, toxic

(3) Pressure – greater than one atmosphere, can be in the form of pneumatic pressure, hydraulic pressure, or liquid pressure

(4) Vacuum – less than one atmosphere

(5) Ionizing Radiation – greater than 2 milliRem per hour

(6) Non-Ionizing Radiation – Ultraviolet greater than the ACGIH TLV, Infrared, RF/Microwave, Laser, Magnetic Fields

(7) Potential – Flywheels, springs, differences in elevation, elevated parts that could drop, capacitors, batteries.

f. Energy Isolating Device – A mechanical device located at an energy control point that positively blocks the flow of energy and can be locked in the “safe” position. Push buttons, selector switches, software controls, interlocks, and other control circuit devices are not considered energy isolating devices.

g. Hazardous Energy – Energy, if not controlled, of such a magnitude that it is capable of causing harm to a person, death, or loss of resources.

h. Hazardous Energy Control – The process of systematically implementing mechanical means to prevent hazardous energy from flowing to a person. This includes using mechanical means to achieve the following conditions:

(1) *Isolated* – A condition where all sources of hazardous energy have been controlled by breaking the energy path so that the energy cannot flow to workers. The term “isolated” is commonly used with electrical circuits and fluid lines.

(2) *Dissipated* – A condition where all stored energy has been reduced to a non-hazardous level. Most commonly used with energy storing devices such as capacitors, pressure receivers, or springs.

(3) *Blocked* – A condition where a mechanical device is inserted into the energy path to physically prevent movement. Most commonly used with mechanical machinery or fluid filled lines.

i. Hazard Zone – The space around a source of hazardous energy where a person could be harmed if the hazardous energy was suddenly or unexpectedly released; such as the unexpected release of stored pressure, the unexpected movement of a machine, or the spray from a hazardous chemical that was unexpectedly released.

j. High Voltage System – Associated electrical conductors and equipment operating at or intended to operate at a sustained voltage of more than 600 volts.

k. Lock out – The method of applying a mechanical lockout device and a tag on an energy-isolating device by an authorized employee in accordance with established written procedures, in order to control hazardous energies.

l. Lock out Device – Padlocks, combination locks, or other methods (such as disconnecting conductors or removing fuses), which will effectively prevent unexpected or inadvertent energizing of a designated circuit or release of equipment or machinery. These devices shall not be used for other purposes, and shall include a means to indicate the identity of the employee applying the device.

m. Low Voltage System – Associated electrical conductors and equipment operating at or intended to operate at a sustained voltage of 600 volts or less.

n. Normal Production, Normal Production Operation - Using a machine or piece of equipment for its intended or designed production function. If a machine or piece of equipment is not actively producing its product, it is not considered to be in production.

o. Qualified High Voltage Electrical Worker - A person who has a minimum of two years of training and experience with high voltage circuits (> 600 volts) and equipment and who has demonstrated he/she is familiar with the work to be performed and the hazards involved. A Qualified High Voltage Electrical Worker will actually be performing the electrical work. All Qualified High Voltage Electrical Workers must be trained in:

(1) Electrical Safety Training.

(2) Lockout/Tagout Training.

(3) Hazardous Electrical Voltage Training.

(4) Equipment specific procedures for individual work areas.

p. Tag out – The placement of a tagout device on an energy-isolating device in accordance with established written procedures to control hazardous energy. Using tagout as a form of hazardous energy control is not a positive means of controlling hazardous energy and shall not be used whenever lockout is possible.

q. Tag out Device – A prominent warning tag capable of being securely attached that provides a warning not to use the equipment. The tag should include: reason for tag, name of person placing the tag and how that person may be contacted, and date the tag was placed. Tags must be durable and able to withstand the environment to which they are exposed for the maximum time exposure is expected. These tags shall not be used for other purposes.

r. Stored Energy source – Any device that is capable of holding energy after equipment shutdown. This includes, but is not limited to, capacitors, tanks, pipes, springs, and flywheels.

13-5. Responsibilities.

a. Supervisor Responsibilities in Facilities Maintenance and in other activities that perform Lockout/Tagout procedures:

(1) Supervisors are responsible for ensuring that all Affected Employees (including new and transferred employees) are trained in the safety significance, purpose, and use of these lockout/tagout procedures.

(2) Supervisors are responsible for ensuring all Authorized Lockout/Tagout (LOTO) Employees receive the appropriate level of training and that these employees are provided with the proper equipment and personal protective equipment to perform the job safely.

(3) Supervisors are responsible for ensuring that only Qualified High Voltage Electrical Workers work on high voltage systems (>600 volts), and only Authorized LOTO employees work on systems that contain hazardous voltages equal to or below 600 volts.

b. Directors Representatives Responsibilities. The DPW, DOL, MWR and in other activities who are performing lockout/tagout work, in partnership with the USAG Humphreys Safety Office, are responsible for assigning a LOTO Coordinator in their activity. In some cases, the Safety Representative may be the same person as the Lockout/Tagout Coordinator.

c. Lockout/Tagout Coordinator is Responsibilities. The assigned Lockout/Tagout Coordinator is responsible for:

(1) Writing equipment specific lockout/tagout procedures;

(2) Ensuring that only Authorized LOTO Employees perform lockout/tagout operations on necessary equipment;

(3) Maintaining an inventory of all equipment in their department that requires equipment specific lockout/tagout procedures;

(4) Receiving the appropriate training to become an Authorized LOTO Employee and perform lockout/tagout procedures on equipment; and

(5) Purchasing or installing equipment and machinery to ensure that this equipment or machinery has the capability to accept a lockout device on all energy isolating devices. This will include, but is not limited to, electric power disconnect devices that can be locked only in the open (OFF) position, fluid control components (e.g., valves) that can be locked in the safe position, or fluid lines that have the capability to place a mechanical barrier between a hazardous fluid and the point where work must be performed. Whenever major replacement, repair, renovation, or modification of machines or equipment is to be performed, energy isolating devices for such machinery or equipment shall be installed and be designed to accept a locking device so they are capable of being locked out.

d. USAG Humphreys Safety Office (GSO) Responsibilities. GSO is responsible for:

(1) Assisting Directors and other activities that perform electrical work, to interpret the standards and regulations as they apply to the work being performed;

(2) Assisting Directors and other activities in writing equipment specific lockout/tagout procedures;

(3) Assisting in the coordination of appropriate training for Authorized LOTO Employees and providing training for the assigned LOTO Coordinator;

(4) Overseeing and managing the implementation of the intent of this program and resolving any situations not directly addressed by this program; and

(5) Performing annual review of all electrical work, including lockout/tagout procedures for specific equipment and high voltage switching procedures.

13-6. Program Components

a. Sequence of Hazardous Energies Control Procedure.

(1) The Authorized LOTO Employees performing the work, as well as their supervisor, must create the work plan, written lockout procedures, and physically locate and identify all isolating devices to be sure which switches, valves, or other energy isolating devices apply to the equipment to be locked out.

(2) Employees authorized to lockout/tagout equipment must be certain which switch or other energy isolating devices apply to the equipment to be locked out.

(a) All energy isolating devices must have labels identifying the equipment supplied and the type and magnitude of energy isolated.

(b) CAUTION: Any questionable identification of electrical energy sources must be cleared by the employees with their supervisor before proceeding.

(3) Notify all Affected and Other Employees as necessary that a lockout is to be performed. These persons must be informed that they are not to disturb the lockout device or attempt to re-start the equipment until they are informed that the lockout has been cleared and it is safe to resume normal operations.

(4) If the equipment is in operation, shut it down using the normal shutdown procedure. Turn the equipment off if there is an off/on switch.

(5) Open the circuit breaker, disconnect switch or other energy-isolating device (i.e., turn it to the "OFF" position). Toggle switches, push buttons, and other types of control switches are not energy isolating devices.

(6) All energy-isolating devices must be locked out. Lock out the circuit breaker, disconnect switch, or other isolating device in the open ("OFF") position with an assigned individual lock, and attach an identifying tag to the lock. If it is impossible to use a lock, refer to the "Procedure When Physical Locking Is Impossible" section.

(7) For electrical equipment which has capacitors that must be manually discharged to assure safe work, open access panels and discharge these capacitors with an appropriate discharge tool and follow directions in the equipment manual or maintenance procedures. This must only be accomplished by an Authorized LOTO Employee or Qualified High Voltage Electrical Worker who is authorized to perform such work.

(8) All forms of stored energy must then be dissipated (except for batteries, which can be disconnected). This may include relaxing any springs, relieving any pressure or vacuum, allowing flywheels to come to rest, or neutralizing or adequately removing any chemicals.

(9) Any parts that could inadvertently move during the procedure must be blocked in place to prevent this movement. Blocking must be secured in place so that it cannot be inadvertently removed or fall out.

(10) Verify that all forms of hazardous energy have been reduced to zero potential. If the work to be performed involves de-energized electrical equipment, this equipment must be tested with some form of test equipment to verify that there is no electrical energy present. Other forms of energy also require verification of zero potential. Examples of such means of verification include: observing a pressure gauge for zero pressure (gauge) or vacuum, observing a multi-meter showing zero volts, observing a spring in a relaxed state, observing that a flywheel is not spinning, or using litmus paper or a measuring device to verify that a chemical is no longer present or hazardous.

(a) The final step is to attempt to re-start or re-energize the equipment or machinery to verify an isolated condition. If the equipment does not re-start, then work can proceed. If the equipment re-starts or it appears that energy has been allowed to flow into the system, there could be a serious flaw in the procedure, and no work should proceed until the problem is identified and appropriate steps are included in the procedure to control this energy.

(b) The equipment is now locked out. Work may now begin.

b. Situations Involving More Than One Person Locking Out.

(1) Employees and/or contractors must engage in a group lockout situation. If more than one employee works on the equipment, a lockout adaptor suitable for the installation of several locks must be used, enabling all workers to lock out the machine with their individual locks.

c. Procedure Involving Personnel Changes During The Job.

(1) Persons being replaced or exchanged on a job during a shift or at the end of a shift must ensure that the lock(s) and tag(s) of his/her replacement are substituted for his/her own before leaving the job.

(2) If a lockout procedure is to continue through the following work shift, the oncoming work crews must place their locks and tags on the energy isolating devices before the departing crew removes their locks and tags. Before work begins on the subsequent work shift, the oncoming crew must re-verify that all safety devices, such as blocking, are in place, that there is still zero energy in the system, and they should attempt to restart or re-energize the system before anyone enters the hazard zone.

d. Procedure When Work Is Left Unfinished.

(1) Locks, tags, and all other safety-warning devices must be left in place during all short absences such as breaks or trips to pick up parts.

(2) When work is incomplete and temporarily suspended overnight or over a weekend, all locks, tags, and other safety warning devices must be left in place.

(3) When work is suspended for more than a weekend, the equipment or machinery must be tagged as out of service, permanently disconnected from all energy sources, and must have its cover and access panels reinstalled. All locks and other tags must be removed.

e. Procedure When One Employee Leaves The Area Without Removing His/Her Lock.

(1) When an employee leaves the facility site and does not remove his/her lock(s) from the energy isolating device(s) (for example, if the employee became sick and left the site) then the responsible supervisor must attempt to contact that employee to determine if he/she will be able to return to remove the lock. If it is verified that the equipment is ready to be returned to service, and the employee is unavailable or cannot return, the supervisor, then cuts the lock(s) off the energy isolating device(s).

(2) Once the employee returns to the work site, that person must be informed that their lock was removed and the status of the equipment that was locked out (e.g., returned to service, still under lockout, etc.).

f. Procedure When Physical Locking Is Impossible.

(1) When it is impossible to use a lock, a tagout device must be used in lieu of a lock out along with another positive means of disconnecting the circuit, equipment, or machinery. This can include unplugging the equipment (or locking out the plug), disconnecting the conductors, or removing fuses.

(2) All other steps of the process are the same as those listed above for lockout. A tag out device must be placed on the plug, conductors, disconnect switch, fuse brackets, or other positive means employed.

g. Procedure When Machine Testing Is Required During A Lockout. On USAG Humphreys me machines, it may be necessary to energize or start up machinery or equipment during a lockout procedure to tune, adjust, or make measurements before the machine is fully restored to service. In those instances, all persons must clear the hazard zone of all tools and equipment, leave the hazard zone, verify that all persons are clear of any hazards, remove the necessary locks, and then the equipment can be energized. A qualified person must then make the necessary measurements or adjustments and the equipment shut down. The locked-out condition must then be re-established by repeating the exact same work steps specified on the written procedure for fully locking out the equipment.

h. Lockout Requirements For Specific Situations

(1) Work on pressure or vacuum systems:

(a) For pneumatic systems, (e.g., generally where compressed air is used to perform some mechanical function).

(b) Pneumatic systems are generally used to provide some force for mechanical movement. For isolating such a system, it may be more logical and convenient to isolate (block) and lockout the mechanical portion of the energy path. If servicing or maintenance is to be performed on the pneumatic system itself, the compressor pump must be turned off and locked out and the air receiver or system depressurized before work can begin.

(2) Work on Electrical Power Systems or Equipment: Work on de-energized electrical equipment or systems must be accomplished by person(s) who are Authorized LOTO Employees. Electrical energy must be locked out at a disconnect switch that positively interrupts the circuit supplying the electricity or the equipment is physically disconnected from the source of electricity. Interlocks, software controls, relays, or other control circuit devices are prohibited for use to control hazardous electrical energy for servicing or maintenance. The equipment or circuits must be verified to be de-energized with a test meter or other type of testing device before work is to begin.

(3) Restoring Equipment To Service: The restoration procedure is specified in the written lockout procedure below, and must be performed in the exact sequence as stated.

(a) Remove all blocking and replace any critical parts removed during the lockout procedure.

(b) Ensure that all tools or equipments have been removed from the hazard zone.

(c) Close and secure all cover panels and doors. If all panels or doors cannot be closed, which may occur when testing, place barricades or rope-off a safety zone with non-conductive material and post prominent warning signs around the area.

(d) Advise all Affected and Other Employees that the system is to be re-energized.

(e) Ensure all persons are clear of the equipment/hazard zone.

(f) Remove locks and tags. NOTE: Ordinarily, only the person who placed the locks and tags may remove them. If the person who placed the locks and tags is not available, only his/her supervisor may cut off the locks and tags, after personally ascertaining it is safe to do so.

(g) Energize the equipment and restore the equipment to the normal condition.

(h) Notify all Affected and Other Employees that the lockout condition has been cleared.

i. This program does not cover the following conditions:

(1) Certain tasks, such as minor tool changes and adjustments that are part of normal production operations and can be accomplished without removing protective guards or with the use of tools where the employee is not potentially exposed to hazardous energy or inadvertent start up of the equipment.

(2) Work on electrical equipment or systems where the work must be done on exposed, energized electrical parts or where there may be a potential for electric shock or electric burns. This type of work is to be done only after responsible supervision has determined that the work must be performed with the equipment energized. Only Authorized LOTO Employees will be allowed to perform energized electrical work while wearing appropriate protective equipment using approved work techniques.

j. Enforcement.

(1) Supervisors of Authorized LOTO Employees shall periodically audit their employees on the job to ensure compliance with lockout procedures (See Appendix M).

(2) Employees who fail to adhere to Lockout and Tagout procedures are subject to disciplinary action.

(3) Each hazardous energy control procedure must be inspected at least annually to verify its effectiveness. The LOTO Coordinators, together with the GSO, who is not actively participating in the lockout procedure being evaluated, must perform this review.

(4) Any observed deviations from the written lockout procedure or inadequacies in the employee's required knowledge or understanding of their responsibility under the procedure will be noted on the audit form. Refresher training must be conducted to correct these deficiencies.

(5) No employee shall install, service, remove, or perform electrical or mechanical maintenance on any electrical equipment or machinery unless he/she is trained, and "Authorized" for the specific tasks to be performed, which shall include the specific lockout procedures necessary for that task.

13-7. Training Requirements and Competency Assessment.

a. To be considered Authorized LOTO Employees, employees must attend Safety/ Lockout/Tagout Training class. After taking the Safety Training class, the Authorized LOTO Employees will be certified to work on equipment that requires Lockout/Tagout procedures.

b. Employees must participate in refresher training every three years. All procedures must be inspected on an annual basis and as the need arises due to new job assignments, changes in procedures, or changes in equipment that present new hazards. Refresher training will also is conducted when deficiencies are found during the annual program review, when there have been deviations from established procedures, or if the employee's knowledge of the energy controls procedures appear to be inadequate.

c. Training records shall be maintained by the Supervisor or Safety Representative within the activity.

Chapter 14

Ergonomics Program

14-1. PURPOSE: Prevent injuries and illness by eliminating or reducing worker exposure to Work-related musculoskeletal disorder (WMSD). Training of personnel on workplace hazards related to ergonomics and their prevention.

14-2. SCOPE: Ergonomics covers all personnel and their interaction in the workplace. Consideration is given to the design of the workplaces, environment, jobs, tasks, equipment, and processes in relationship to human capabilities and interactions in the workplace.

14-3. REFERENCES: AR 40-5 (next revision), AR 385-10, DODI 6055.1, DOD Safety and Occupational Health (SOH) Program, Creating the Ideal Computer Workstation: A Step-by-Step Guide, and HQDA Letter 40-00-1, dated 14 July 2000.

14-4. RESPONSIBILITIES:

a. Troop Commanders will appoint an Ergonomics Program representative who may be the Occupational Safety and Health (or Safety Officer) Representative for the Troop. The representative will:

1) Provide information about problematic work areas to the Ergonomics Team within the Squadron. Issues not resolved will be forwarded to the Installation Medical Authority for resolution.

2) Coordinate and participate in unit activity work area assessments, solution identification, personnel training and education efforts, and health care management issues.

3) Brief the Troop Commander on Ergonomics Program issues, activities and recommendations.

14-5. GOALS:

a. Prevent injuries and illness by eliminating or reducing worker exposure to WMSD risk factors.
b. Reduce the potential for fatigue, error, and unsafe acts by adapting the job and workplace to the worker's capabilities and limitations.
c. Increase the overall productivity of the work force.
d. Improve overall unit readiness.

14-6. SUPPORT:

a. Installation Medical Authority (IMA) provides early recognition, evaluation, treatment, and follow-up of WMSDs among military and civilian personnel.
b. Installation Ergonomics Officer (IEO) is a qualified health or safety professional who has received at least 40 hours of formal ergonomics training; Chairs Ergonomics Subcommittee.

c. Director of Contracting Support provides consultation for the purchase of new equipment.
d. Director of Public Works provides consultation for facility modification and construction.
e. Director of Logistics ensures the integration of ergonomic considerations.

14-7. REPORTS:

a. Semi-annual: Troop Safety Officers will assess their work areas with the assistance of the Squadron Safety Officer whom is a qualified, school trained Ergonomics Officer, providing a summary of active/passive surveillance, implemented controls, and effects of controls to the Squadron Safety Officer whom will file a report with the IEO. This report will be included in Squadron Semi-annual Army Aviation Accident Prevention Surveys.

14-8. GENERAL:

a. Computer work stations design:

1. Avoid overcrowding
2. Do not direct the warm airflow from the central processing unit and disk drives toward you.
3. Use anti-static floor mats or other static grounding in low humidity workplaces.
4. Place equipment on and around your desk so that when you perform routine tasks:

    a. Your shoulders are relaxed.
    b. Your upper arms are close to your body.
    c. The angle between your upper arm and forearm is in the range of 75 to 135 degrees.
    d. Your wrists are bent no more that 5 degrees right or left and no more than 10 degrees up and down.
    e. Ideally, your desk should have an adjustable surface large enough to accommodate a monitor and a separate, adjustable keyboard tray. Adjustable desktops and keyboard trays allow for different operators and a variety of tasks to be performed.
    f. If a fixed height desk is used, add a keyboard tray that adjusts vertically to provide added adjustability. The minimum adjustment range for this tray should be 22” to 28” from the floor.

g. Adjust your chair to a comfortable position, adjust the keyboard tray to allow you to type with the angle between your upper and forearm in the range of 75 to 135 degrees, and your wrists bent no more than 5 degrees
h. right or left and no more than 10 degrees up or down. Then adjust the monitor support surface to allow you to gaze slightly down to view the center of the screen.
i. Desk clearance underneath should be 15" for knees, and 23.5" for feet. Minimum under-desk clearance width should be 20".
j. Allow at least 16" between monitor and eyes.
k. Taller workers or workers with a history of back pain may be more comfortable with a height-adjustable desk, a sit/stand desk, or a standing workstation. The minimum adjustment range for a keyboard tray on a standing workstation should be 34.5" to 47.25" from the floor.
l. Specifics on desks, chairs, and computer ergonomic equipment can be found in *Creating the Ideal Computer Workstation: A Step-by-Step Guide*. A DOD Information Guide dated June 2000.
m. Avoid prolonged repetitive motions of any kind.
n. Avoid stressful physical motions for any lengthy period of time.
o. Lift with legs and observe two-man lift requirements. Generally, anything over 25 lbs should be handled as potentially injurious to lower back when lifted from any position.
p. Remove common lifts as much as possible and/or decrease their load for workers (engineer out/remove hazard).
q. Teach workers to not make sudden or abrupt moves when lifting.
r. Pushing objects is preferred over pulling.
s. Use mechanical assets with lift as much a possible.
t. Lift only stable balanced loads manually.
u. Keep in mind that relatively light loads when unbalanced or improperly lifted can and do cause injury to workers every day. Additionally, repetitive motions that may not seem harmful can be harmful. For example, using a computer mouse for more than 4 hours per day over a period of time, depending on the individual, can cause repetitive stress injuries.
v. In 1996, more than 647,000 AMERICAN workers experienced serious injuries due to overexertion or repetitive motion on the job. These work related musculoskeletal disorders (WMDS) account for 34% of lost workday injuries. WMSDs cost employers an estimated $15 to $20 billion in workers compensation costs in 1995 and $45 to $60 billion more in indirect costs.
w. DOD's Ergonomics Working Group has a great deal of information that is continually updated. Their site is found at http://chppm-www.apgea.mil/ergowg2/index.htm.

APPENDIX A

Additional Duty Safety Program Guide

A-1. PURPOSE: This appendix provides basic information to assist collateral duty safety personnel in implementing Safety and Occupational Health Programs.

A-2. SAFETY GOALS: The Army safety goals are:

a. Reduce and keep to a minimum accidental work force and monetary losses, thus providing more efficient use of resources and advancing the combat effectiveness of the Army.

b. Provide a safe and healthful working environment at all times for Army personnel and others exposed to Army operations.

A-3. SAFETY OBJECTIVES: The above safety goals are achieved through the following safety program objectives:

a. Prevention of injury and occupational illness: Minimize frequency and severity of injuries and occupational illness resulting from Army operations, thus improving employee morale and efficiency and minimizing costs associated with lost production, compensation payments, sick leave usage, and related expenses.

b. Damage control: Aimed at detecting and eliminating causes of inadvertent damage to Army and non-Army property because of Army operations.

c. Compliance with statutory and regulatory requirements: Uses the specialized experience of the safety staff to insure consistent, economical compliance with applicable safety requirements of Federal Laws, DOD directives, Army Regulations, host nation and Status of Forces Agreements.

d. Accident Prevention: Involves the use of special techniques to detect unsafe behavior and conditions.

e. Occupational health involves implementing AR 40-5 to ensure the physical and mental health of all personnel.

f. Liability Limitation: Involves prompt and prudent action to reduce the likelihood of liability against the Army.

A-4. ACCIDENT REPORTING:

a. The three main reasons for reporting Army accidents are: First, to notify higher headquarters that a mishap of stated proportion and impact has occurred; second, to record essential information that will identify causes and necessary corrective actions; and third, to permit an evaluation of the progress being made in accident prevention. Remedial efforts cannot be developed and implemented without accurate and comprehensive reports of all accidents.

b. Proper reporting is extremely important: The effectiveness of an investigation is seriously reduced if reports are not accurately and properly completed. Facts that are discovered but not reported have little effect in accident prevention. Incomplete reporting results in inadequate action and, consequently, inadequate prevention of future accidents.

c. Accident Investigation Report (DA Form 285 or 285-AB-R): Formal accident investigation reports will be prepared and submitted through command channels to this USAG Humphreys, ATTN: IMKO-ACH-USAG HUMPHREYS , Unit #15228 APO AP 96271-5228 within seven (7) working days after an accident. If necessary call or go to the Traffic Section, PMO to obtain pertinent information on Army motor vehicle accidents. Remember, part of your job is to investigate the accident, not to wait for information to filter down to you.

A-5. UNIT ADDITIONAL DUTY SAFETY PERSONNEL:

a. The functions of the unit safety individuals are many and varied. He/she must detect trouble spots before trouble occurs and recommend changes in the operations, procedures, methods, and facilities to eliminate accident potential. He/she is responsible for developing educational and promotional programs and for assisting the commander in achieving the desired balance between accident prevention and operation. His/her mission is to assist the organization in maintaining an operational relationship between an accident free operation and the accomplishment of the assigned mission.

b. Methods for accomplishing these goals vary with the personalities involved and mission of the unit. The following are four basic requirements to form the foundation of a successful accident prevention program:

(1) Determine the weaknesses and inadequacies that exist in operations, training, maintenance, servicing, facilities, traffic control, etc.

(2) Analyze the problem areas and determine the action necessary to correct each unsatisfactory condition.

(3) Recommend to the commander the appropriate action through a coordinated plan or program.

(4) Constantly monitor the effects and adequacy of actions that have been implemented.

c. In executing these basic requirements, the safety officer must perform a wide variety of duties, such as:

(1) Be familiar with Safety, OSHA and DOD requirements for the unit, principles of accident prevention, and Army safety regulations.

(2) Develop safety directives, policies, plans, and procedures.

(3) Interpret safety policies and procedures for the commander and other personnel.

(4) Supervise and conduct safety spot surveys and inspections on a monthly basis of all work areas and activities.

(5) Provide technical assistance to eliminate or control unsafe behavior and environment.

(6) Provide prompt assistance in accident investigation and reporting. Check completeness and accuracy of reports and evaluate adequacy of corrective action.

(7) Analyze the accident experience to determine the principal accident sources so that preventive efforts may be better directed.

(8) Maintain and review the safety reference handbook to ensure that all required safety reference publications are properly maintained and that all safety directives are effectively implemented.

(9) Organize and act as recorder of the unit safety council when required.

(10) Arrange for the incorporation of safe practices in operating procedures, training publications, demonstrations, and exercises to insure safety of both Army personnel and the general public.

(11) Determine the need and procure material for safety training and safety promotion.

(12) Complete hazardous material inventories. Conduct HCP training and publish job specific work center implementing instructions.

(13) Maintain close liaison with the USAG Humphreys Safety Staff. They have expertise and resources that are usually not available at the unit level.

A-6. OCCUPATIONAL SAFETY AND HEALTH PROGRAM:

a. The Occupational Safety and Health Act (OSHA): Public Law 91-596, concerns all uniform personnel and civilian employees of the Federal Government. Its purpose is to assure a safe and healthful working environment.

b. Section 19 of the Act requires the head of each Federal agency to establish and maintain an effective and comprehensive Occupational Safety and Health Program consistent with all Occupational Safety and Health Standards. It further requires the agency to:

(1) Provide safe and healthful work place and conditions of employment consistent with the standards.

(2) Acquire, maintain, and require the use of safety equipment, PPE, and devices reasonably necessary to protect employees.

(3) Keep adequate records of all occupational accidents and illnesses for proper evaluation and corrective action.

c. Public Law 91-596 was further implemented by Executive Order 12196. Requirements of EO 12196 extend to all echelons of the Army and are implemented by AR 385-10, The Safety Program.

A-7. UNIT SAFETY REFERENCE HANDBOOK: Unit Additional Safety Personals within USAG Humphreys will establish and maintain a unit safety reference book. The reference book will contain the following sections:

a. Section I. Orders: Appointment for unit additional duty safety personnel will be made on a memorandum and maintained in this section. The On-Line Additional Duty Safety Course Certificates will also be maintained in this section.

b. Section II. Inspection Reports: Monthly unit safety inspection reports (current year) and the latest annual safety assistance visit report (SO) will be maintained in this section.

c. Section III. Safety Materials: All safety items such as letters, messages, bulletins, composite risk management worksheets, etc., received from higher headquarters for implementation will be maintained in this section.

d. Section IV. References: Each unit will, as a minimum, maintain the safety reference publications indicated by an asterisk in appendix A or have ready access to them.

e. Unit Additional duty Safety personnel will periodically review the handbook to ensure that all required reference publications are maintained and that all safety directives are implemented.

APPENDIX B

BOMB THREAT

QUESTIONS TO ASK:

1. When is the bomb going to explode?
2. Where is it right now?
3. What does it look like?
4. What kind of bomb is it?
5. What will cause it to explode?
6. Did you place the bomb?
7. Why?
8. What is your address?
9. What is your name?

EXACT WORDING OF THE THREAT:

_____

_____

_____

_____

_____

_____

Sex of caller:_____ Race:_____

Age: _____ Length of call: _____

Number at which call is received: _____

Time: _____ Date: _____/_____/_____

S A M P L E

CALLER'S VOICE:

___ Calm	___ Nasal
___ Angry	___ Stutter
___ Excited	___ Lisp
___ Slow	___ Raspy
___ Rapid	___ Deep
___ Soft	___ Ragged
___ Loud	___ Clearing throat
___ Laughter	___ Deep breathing
___ Crying	___ Cracking voice
___ Normal	___ Disguised
___ Distinct	___ Accent
___ Slurred	___ Familiar
___ Whispered	

If voice is familiar, who did it sound like? _____

BACKGROUND SOUNDS:

___ Street	___ Factory
___ Voices	___ Animal noises
___ PA system	___ Clear
___ Music	___ Static
___ House noises	___ Local
___ Motor	___ Long distance
___ Office	___ Booth

Other_____

THREAT LANGUAGE:

___ Well Spoken (educated) ___ Incoherent ___ Foul
___ Irrational ___ Taped
___ Message read by threat maker
Remarks: _____

REPORT THREAT IMMEDIATELY TO:

_____and _____ (MP's)

NUMBER: _____

DATE: _____/_____/_____

NAME_____

POSITION_____

PHONE NUMBER: _____

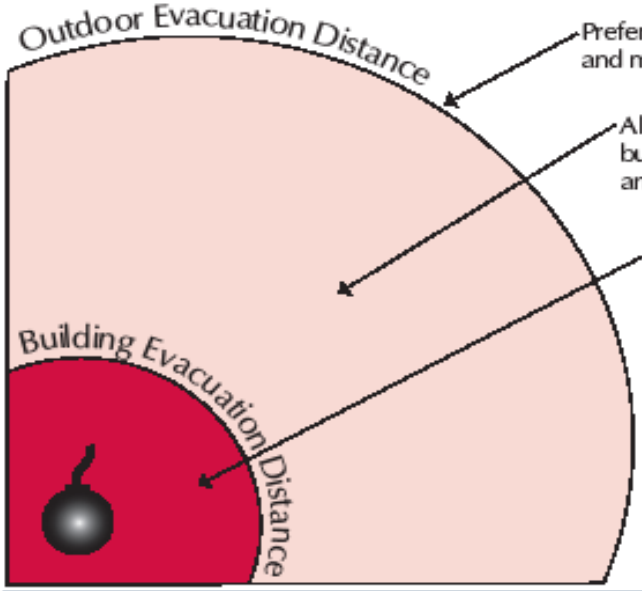
S A M P L E

UNCLASSIFIED

Bomb Threat Stand-Off Distances

Threat Description		Explosives Capacity [1] (TNT Equivalent)	Building Evacuation Distance [2]	Outdoor Evacuation Distance [3]
	Pipe Bomb	5 LBS/ 2.3 KG	70 FT/ 21 M	850 FT/ 259 M
	Briefcase/ Suitcase Bomb	50 LBS/ 23 KG	150 FT/ 46 M	1,850 FT/ 564 M
	Compact Sedan	500 LBS/ 227 KG	320 FT/ 98 M	1,500 FT/ 457 M
	Sedan	1,000 LBS/ 454 KG	400 FT/ 122 M	1,750 FT/ 533 M
	Passenger/ Cargo Van	4,000 LBS/ 1,814 KG	600 FT/ 183 M	2,750 FT/ 838 M
	Small Moving Van/ Delivery Truck	10,000 LBS/ 4,536 KG	860 FT/ 262 M	3,750 FT/ 1,143 M
	Moving Van/ Water Truck	30,000 LBS/ 13,608 KG	1,240 FT/ 378 M	6,500 FT/ 1,981 M
	Semi-Trailer	60,000 LBS/ 27,216 KG	1,500 FT/ 457 M	7,000 FT/ 2,134 M

This table is for general emergency planning only. A given building's vulnerability to explosions depends on its construction and composition. The data in these tables may not accurately reflect these variables. Some risk will remain for any persons closer than the Outdoor Evacuation Distance.



Preferred area (beyond this line) for evacuation of people in buildings and mandatory for people outdoors.

All personnel in this area should seek shelter immediately inside a building **away from windows and exterior walls.** Avoid having anyone outside—including those evacuating—in this area. [4]

All personnel must evacuate (both inside of buildings and out).

1: Based on maximum volume or weight of explosive (TNT equivalent) that could reasonably fit in a suitcase or vehicle.

2: Governed by the ability of typical US commercial construction to resist severe damage or collapse following a blast. Performances can vary significantly, however, and buildings should be analyzed by qualified parties when possible.

3: Governed by the greater of fragment throw distance or glass breakage/ falling glass hazard distance. Note that pipe and briefcase bombs assume cased charges that throw fragments farther than vehicle bombs.

4: A known terrorist tactic is to attract bystanders to windows, doorways, and the outside with gunfire, small bombs, or other methods and then detonate a larger, more destructive device, significantly increasing human casualties.

NCTC

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UNCLASSIFIED

APPENDIX C

Confined Space Entry Permit

Date and Time Issued: _____ Date and Time Expires: _____

Job Site/Space I.D.: _____ Job Supervisor: _____

Equipment to be worked on: _____Work to be performed: _____

Stand-by personnel: _____ _____ _____

1. Atmospheric Checks: Time _____
   Oxygen _____%
   Explosive _____% L.E.L.
   Toxic _____PPM

2. Tester's signature: _____

3. Source isolation (No Entry):

	N/A	Yes	No
Pumps or lines blinded,	( )	( )	( )
disconnected, or blocked	( )	( )	( )

4. Ventilation Modification:

	N/A	Yes	No
Mechanical	( )	( )	( )
Natural Ventilation only	( )	( )	( )

5. Atmospheric check after isolation and Ventilation:
   Oxygen _____% > 19.5 %
   Explosive _____% L.E.L < 10 %
   Toxic _____PPM < 10 PPM H (2) S
   Time _____
   Tester's signature: _____

6. Communication procedures:
_____
_____

7. Rescue procedures:
_____
_____
_____
_____
_____

S A M P L E

8. Entry, standby, and back up persons:		Yes	No
Successfully completed required training?			
Is it current?		( )	( )

9. Equipment:	N/A	Yes	No
Direct reading gas monitor - tested	( )	( )	( )
Safety harnesses and lifelines for entry and standby persons	( )	( )	( )
Hoisting equipment	( )	( )	( )
Powered communications	( )	( )	( )
SCBA's for entry and standby persons	( )	( )	( )
Protective Clothing	( )	( )	( )
All electric equipment listed Class I, Division I, Group D and Non-sparking tools	( )	( )	( )

10. Periodic atmospheric tests:

Oxygen	____%	Time ____	Oxygen	____%	Time ____
Oxygen	____%	Time ____	Oxygen	____%	Time ____
Explosive	____%	Time ____	Explosive	____%	Time ____
Explosive	____%	Time ____	Explosive	____%	Time ____
Toxic	____%	Time ____	Toxic	____%	Time ____
Toxic	____%	Time ____	Toxic	____%	Time ____

We have reviewed the work authorized by this permit and the information contained here-in. Written instructions and safety procedures have been received and are understood. Entry cannot be approved if any squares are marked in the "No" column. This permit is not valid unless all appropriate items are completed.

Permit Prepared By: (Supervisor) _____ Reviewed By: (Commander/Leader)

_____ _____

(printed name) (signature)

Approved By: (SO) _____

This permit to be kept at job site. Return job site copy to Safety Management Office following job completion.

Copies: (Safety Management Office, Unit Supervisor)

S A M P L E

APPENDIX D

HAZCOM Training Record

Areas in which training is required for each employee –

- Hazardous chemicals to which they may be exposed while in the workplace.
- Measures to lessen the possibility of exposure, i.e. PPE, Handling, Storage, etc.
- Location of MSDS for all hazardous chemicals.
- Procedures to follow if they are exposed.

_____ _____
(Signature of Employee) Date

_____
(Title)

Certificate of Training

I, _____, attended training on the Hazard

Communications for (Unit) _____.

Signed: _____ Date: _____

Printed Name: _____

Signature of Instructor: _____

Printed Name of Instructor: _____

S A M P L E

APPENDIX E

HAZCOM Lesson Plan

1. Prepare Objectives.

   a. Develop safety attitude.

   b. Make personnel aware of the hazardous chemicals.

   c. Motivate soldiers to protect themselves by preventing exposure to hazardous chemicals.

   d. Learn how to read and understand labels and MSDSs.

2. Design training program.

   a. Identify what and where hazardous chemicals are found in the work area.

   b. The nature (odor or visual appearance) and hazard of the chemicals, including local and systemic toxicity.

   c. The specific nature of the operation involving hazardous chemicals that might result in personnel exposure.

   d. Specific information to aid the soldiers in the recognition and evaluation of conditions and situations, which may result in the release of hazardous chemicals.

   e. Purpose for and description of detection or monitoring devices.

   f. The purpose for and application of specific first aid procedures and practices.

   g. The type, use, and limitations of personal protective equipment. This includes location and availability.

   h. Review of the Hazard Communication Standard, 29 CFR 1910.1200.

3. Techniques used in the training program.

   a. Handout material – example of labels, MSDS, etc.

   b. Audiovisual – example of labels and MSDS.

   c. Demonstration of protective equipment. What it is! How to wear it!
Where it is located!

d. Tests or quiz.

e. Attendance records.

4. Assessing effectiveness.

a. Were training objectives met?

b. What part of the training program needs to be revised?

c. What part of the program was already known and consequently unnecessary?

d. What material was confusing?

e. What material was missing?

f. How often should training be repeated?

g. What did the soldier learn and/or fail to learn?

APPENDIX F

HAZCOM Program Elements and Checklist for Supervisors

The key elements that each supervisor must implement are a written program, training, and record availability and storage.

1. The written Hazard Communication Program.

a. Have you prepared a written list of all the hazardous chemicals present in the workplace?

b. Are you prepared to update your hazardous chemical list?

c. Do you have up-to-date Material Safety Data Sheets (MSDS) for those materials on your hazardous chemical lists?

d. Is the list of hazardous chemicals cross-reference or indexed so that identifiers on the list refer to the MSDS and warning labels?

e. Have you developed a system to ensure that all incoming hazardous chemicals are received with proper labels and MSDS?

f. Do you have procedures in your workplace to ensure proper labeling or warning signs for bulk storage or secondary usage containers that hold hazardous chemicals?

g. Do you have a complete list of the chemical hazards and precautions that you can give to outside contractors?

h. Do you have written procedures on how you will inform your soldiers of the chemical hazards associated with unlabeled pipes?

i. Have personnel been informed of the hazards associated with performing non-routine tasks (i.e., confined space, repair, and maintenance operations)?

j. Is your hazard communication program in writing and available to your soldiers?

2. Information and training: Have you developed a personnel information and training program that includes the following –

a. Does the training cover all types of harmful chemicals with which the soldiers may come into contact under normal usage and unforeseeable emergency?

b. Are your soldiers familiar with the different types of chemicals and the major hazards associated with them (i.e., solvents, corrosives, etc.)?

c. Are your soldiers aware of the specific requirements in the Hazard Communication Program (HCP)?

d. Does your program train soldiers in?

(1) Operations where hazardous chemicals are present.

(2) Location and availability of your written HCP including lists of chemicals and MSDSs?

e. Does your training program include the explanation of labels and warnings that have been established in their work area?

f. Do your soldiers understand methods to detect presence or release of chemicals in the workplace?

g. Does your training program provide information on the appropriate first aid procedures in the event of an emergency?

h. Are personnel trained in the proper work practices and personal protective equipment in relation to the hazardous chemicals in the work area?

i. Does the training include explanation of the labeling system and MSDSs the soldiers can obtain and use?

j. Have you worked out a system to ensure that new personnel are trained?

l. Have you developed a system with purchasing or other staff to make sure that additional training is provided if a new hazardous substance is introduced into the work area?

m. Do you have a system to ensure that the current (up-to-date) MSDSs are in work areas where the chemicals are used?

n. If you become aware of new hazards relating to the chemicals in use, do you have a system for informing the soldiers?

o. Do you use the references in the appendices to the Hazard Communication Standard, 29 CFR 1910.1200 to evaluate new chemicals in question?

APPENDIX G

Hazardous Energy Control Checklist

An effective program for hazardous energy control requires regular monitoring by supervisor's supervision. The following checklist should guide you in evaluating machine guarding and LOTO.

1. Requirements for All Safeguards

a. Do the safeguards provided meet the minimum OSHA requirements?
b. Do the safeguards prevent workers' hands, arms, and other body parts from making contact with dangerous moving parts?
c. Are the safeguards firmly secured and not easily removable?
d. Do the safeguards ensure that no objects will fall into the moving parts?
e. Do the safeguards permit safe, comfortable, and relatively easy operation of the machine?
f. Can the machine be oiled without removing the safeguard?
g. Is there a system for shutting down the machinery before safeguards are removed?
h. Can the existing safeguards be improved?

2. Mechanical Hazards

a. The point of operation:
- Is there appoint-of-operation safeguard provided for the machine?
- Does it keep the operator's hands, fingers, body out of the danger area?
- Is there evidence that the safeguards have been tampered with or removed?
- Could you suggest a more practical, effective safeguard?
- Could changes be made on the machine to eliminate the point-of-operation hazard entirely?
- is adequate safety distance being used as a primary control for the operator?

b. Power transmission apparatus:
- Are there any unguarded gears, sprockets, pulleys, or flywheels on the equipment?
- Are there any exposed belts or chain drives?
- Are there any exposed set screws, key ways, collars, etc.?
- Are starting and stopping controls within easy reach of the operator?
- If there is more than one operator, are separate controls provided?

c. Other moving parts:
- Are safeguards provided for all hazardous moving parts of the machine including auxiliary parts?

3. Nonchemical Hazards

a. Have appropriate measures been taken to safeguard workers against noise hazards?
b. Have special guards, enclosure, or personal protective equipment been provided, where necessary, to protect workers from exposure to harmful substances used in machine operation?

4. Electric Hazards

a. Is the machine installed in accordance with national fire Protection association (NFPA) and national Electrical Code (NEC) requirement?

b. Are there loose conduit fitting?

c. Is the machine properly grounded?

d. Is the power supply correctly fused and protected?

e. do workers occasionally receive minor shocks while operating any of the machine?

5. Training

a. Do operators and maintenance workers have the necessary training in how and why to use the safeguards?

b. Have operators and maintenance workers been trained in where the safeguards are located, how they provide protection, and what hazards they protect against?

c. Have operators and maintenance workers been trained in how and under what circumstances guards can be removed?

d. Have workers been trained in the procedures to follow if they notice guards that are damaged, missing, or inadequate?

6. Protective Equipment and Proper Clothing

a. Is personal protective equipment required?

b. If protective equipment is required, is it appropriate for the job, in good condition, kept clean and sanitary, and stored carefully when not in use?

c. In the operator dressed safely for the job (i.e. no loose-fitting clothing or jewelry)?

7. Machinery Maintenance and Repair

a. Have maintenance workers received up-to-date instruction on the machines they service?

b. Do maintenance workers lock out the machine from its power sources before beginning repairs?

c. Where several maintenance persons work on the same machine, are multiple lockout devices used?

d. Do maintenance persons use appropriate and safe equipment in their repair work?

e. Is the maintenance equipment itself properly guarded?

f. Are maintenance and servicing workers trained in the requirements of 29 CFR 1910.147, lockout/tagout hazard, and do the procedures for lockout/tagout exits before they attempt their tasks?

APPENDIX H

Inventory List of Hazardous Chemicals

The following is a list of the hazardous chemicals used in this workplace. Further information can be obtained from the MSDS attached with this program from, (Name and title) _____.
The originals will be kept on file by (Name and title) _____, at (location) _____.

MSDS INDEX # HAZARDOUS MATERIAL

1. (name of material, etc.)
2.
3.
4.

Non-routine Tasks

Before any non-routine task is performed, personnel will be advised and/or they must contact (Name or title) _____for special precautions to follow and (Name or title) _____will inform any other personnel who could be exposed.

In the event such tasks are required, (Name or title) _____ will provide the following information about such activity as it relates to the specific chemicals expected to be encountered:

- Specific chemical name(s) and hazard(s).
- Protective personal equipment required and safety measures to be taken.
- Measures that have been taken to lessen the hazards including ventilation, respirators, presence of other personnel, and emergency procedures.

S A M P L E

APPENDIX I

Radiation Accident/Incident Report, RCS DD-R&E (AR) 1168

CLASSIFICATION: UNCLASS/OTHER

DATE OF EVENT: _____

RADIATION PRODUCING DEVICE/SOURCE INVOLVED:
_____

NSN: _____ LOCATION: BLDG_____ ROOM_____

NOMENCLATURE: _____

TYPE OF EMISSION: (Circle) ALPHA BETA GAMMA X-RAY OTHER

DESCRIPTION OF ACCIDENT/INCIDENT:
_____
_____
_____
_____
_____
_____

PERSONNEL EXPOSED, INJURED, CONTAMINATED:

NAME: _____ SSN: _____

ESTIMATED EXPOSURE: _____ REM

CONTAMINATED LEVELS: _____

FACILITIES AFFECTED: _____

POTENTIAL DAMAGES: _____

IMPACT OF DAMAGES: _____

ACTIONS TAKEN: _____

LOCAL RADIATION SAFETY OFFICER:

NAME: _____ PHONE: _____

S A M P L E

APPENDIX J

Land Usage Request

Fax or Deliver Request Personally To (A-511) Operations
FAX TO 753-7831
Base Operations: 753-7555/7742/7636

Date Request Submitted**:** _____

Subject**:**_____

Date Time Group (India) (DTG)**:** _____

Location (LOC)**:** _____

Altitude (If applicable)**:** N/A

Description**:**

_____
_____
_____

BN S-3 (or designated rep) APPROVE DISAPPROVE Signature: _____

AFLD MGR (or designated rep) APPROVE DISAPPROVE Signature: _____

DPTMS DIR (or designated rep) APPROVE DISAPPROVE Signature: _____

Please mark location of requested (training / land usage) area on attached map, if applicable.

Point of Contact (Print Name & Rank)**:**_____
Unit/DSN**:**

_____
Signature**:** _____

It is the unit's responsibility to conduct a site survey and risk assessment sheet prior to conducting operations. Any questions, contact the airfield operations 753-7428/7736/7555.

This form may be locally reproduced.

SAMPLE

APPENDIX K

HOT-WORK PERMIT

For use of this form, see AR 420-90;the proponent agency is ACSIM

1. LOCATION	2. DATE	3. PERMIT NO.
4. TYPE OF WORK	5. START TIME	6. FINISH TIME
7.a. NAME OF PERSON RESPONSIBLE FOR HOT-WORK AT JOB SITE *(Contractor/Government Employee)*	7.b. SIGNATURE	

PRECAUTIONS BEFORE OPERATIONS

CHECKLIST	CHECK ONE	
	YES	NO
8. Did Fire Department Inspector inspect site?		
9. Are there procedures for Fire Department emergency notification? *(Emergency No.)*		
10. Are combustibles in area noted?		
11. Should combustibles be covered? *(If yes, note in remarks)*		
12. Are proper extinguishers on hand?		
13. Is wet-down necessary? *(If yes, note in remarks)*		
14. Is smoking permissible at work sites?		
15. Is continuous fire watch required?		
16. Is Fire Department standby required?		
17. Are other precautions required? *(If yes, note in remarks)*		

18.a. FIRE DEPARTMENT INSPECTOR'S SIGNATURE	18.b. DATE

PRECAUTIONS AFTER OPERATIONS

CHECKLIST	CHECK ONE	
	YES	NO
19.a. Was Fire Department notified after hot-work operation was completed?		
19.b. Time:		
20.a. Did Fire Department inspector inspect work site?		
20.b. Time:		
21. Are after work conditions safe? *(If no, note in remarks)*		
22. Are heat producing devices safe if left at work site?		

23.a. FIRE DEPARTMENT INSPECTOR'S SIGNATURE	23.b. DATE

24. REMARKS

NOTE: PERMIT VALID ON DAY OF OPERATION AT ONE LOCATION ONLY

DA FORM 5383-R,SEP 92 EDITION OF JAN 85IS OBSOLETE USAPPC V1.00

APPENDIX L

Temporary Storage of Ammunition

IMKO-AC-SO 1 June 2010

MEMORANDUM FOR RECORD

SUBJECT: Request Temporary Storage of (*Unit Name)* training ammunition.

1. IAW US Army Garrison Humphreys PAM 385-1 dated 1 April 2010, Chapter 5, Explosive Safety Officer recommends approval for this period (*dates*) of subject request. Storage location is the Hazardous Cargo Pad on A-511 USAG Humphreys.

2. Initials required from each Department listed below.

   A. Garrison Safety Office Bldg 484 RM 104 _____.
   B. DES Bldg 481 _____.
   C. DPTMS Bldg 1280 RM 228 _____.
   E. Fire Department Bldg T-421 _____.
   F. PMO Bldg 481 _____.
   G. Airfield OPS Bldg S-819_____.

3. It is the unit's responsibility to coordinate with Airfield OPS for use of the Hazardous Cargo Pad and to provide 24 hour security.

4. POC for this action is the undersigned, joseph.e.colson@us.army.mil 753-5582.

Joseph E. Colson
Explosive Safety, USAG Humphreys

Acknowledged:

JOSEPH P. MOORE
COL, EN
Commanding

SAMPLE

COMPOSITE RISK MANAGEMENT WORKSHEET

For use of this form, see FM 5-19; the proponent agency is TRADOC.

1. MSN/TASK	2a. DTG BEGIN	2b. DTG END	3. DATE PREPARED (YYYYMMDD)
RSO I Risk Overview	XXXXXXXXXX	XXXXXXXXXXX	XXXXXXXXX

4. PREPARED BY

a. LAST NAME	b. RANK	c. POSITION
XXXXXXXXX	XXXXXXX	XXXXXXXXXXX

5. SUBTASK	6. HAZARDS	7. INITIAL RISK LEVEL	8. CONTROLS	9. RESIDUAL RISK LEVEL	10. HOW TO IMPLEMENT	11. HOW TO SUPERVISE (WHO)	12. EFFECTIVENESS OF CONTROL?
Life Support Areas (LSAs)	- Soldier/participant vehicular strike/run-over	M	- Designated AMV and POV parking areas. Loading/unloading zones established with adequate clearance/segregation from pedestrian traffic.	M	CDR Guidance, OPLAN, Leader's Safety Guide	Company CDR, Collateral Safety Officers/NCOs, Leaders, Participants	
			- Require use of ground guides at all times with LSA. - Limit vehicle operations at night to mission essential only.				
			- Ensure appropriate lighting and marking (signs, postings, barriers, engineer tape) of designated pedestrian traffic areas.				
			- Vehicles not parked where they can roll toward tents/sleeping personnel. - Require use of vehicle chock blocks and parking brakes.				
			- Awareness briefings of these controls to exercise participants.				
	Materiel handing - Loading/unloading - Lifting/carrying - Slips, trips, and falls	M	- Enforce the use of correct lifting techniques. - Remind personnel to bend from the hips and knees, not just the waist, carrying objects close to the body and avoiding sudden moves.	M	OIC/NCOIC/ Guidance, OPLAN, Leader's Safety Guide, FM 21-10, FM 21-11	Company CDR, Collateral Safety Officers/ NCOs, Leaders, Participants	

Additional space for entries in Items 5 through 11 is provided on Page 2

13. OVERALL RISK LEVEL AFTER CONTROLS ARE IMPLEMENTED *(Check one)*

☐ LOW ☒ MODERATE ☐ HIGH ☐ EXTREMELY HIGH

14. RISK DECISION AUTHORITY

a. LAST NAME	b. RANK	c. DUTY POSITION	d. SIGNATURE
XXXXXXXXX	XXXX	Commanding, XXXXXXXX	

1. PURPOSE: Prevent injuries and illness by eliminating or reducing worker exposure to Work-related musculoskeletal disorder (WMSD). Training of personnel on workplace hazards related to ergonomics and their prevention.

2. SCOPE: Ergonomics covers all personnel and their interaction in the workplace. Consideration is given to the design of the workplaces, environment, jobs, tasks, equipment, and processes in relationship to human capabilities and interactions in the workplace.

3. REFERENCES: AR 40-5 (next revision), AR 385-10, DODI 6055.1, DOD Safety and Occupational Health (SOH) Program, Creating the Ideal Computer Workstation: A Step-by-Step Guide, and HQDA Letter 40-00-1, dated 14 July 2000.

4. RESPONSIBILITIES:

a. Troop Commanders will appoint an Ergonomics Program representative who may be the Occupational Safety and Health (or Safety Officer) Representative for the Troop. The representative will:

1) Provide information about problematic work areas to the Ergonomics Team within the Squadron. Issues not resolved will be forwarded to the Installation Medical Authority for resolution.
2) Coordinate and participate in unit activity work area assessments, solution identification, personnel training and education efforts, and health care management issues.
3) Brief the Troop Commander on Ergonomics Program issues, activities and recommendations.

5. GOALS:

a. Prevent injuries and illness by eliminating or reducing worker exposure to WMSD risk factors.
b. Reduce the potential for fatigue, error, and unsafe acts by adapting the job and workplace to the worker's capabilities and limitations.
c. Increase the overall productivity of the work force.
d. Improve overall unit readiness.

6. SUPPORT:

a. Installation Medical Authority (IMA) provides early recognition, evaluation, treatment, and follow-up of WMSDs among military and civilian personnel.
b. Installation Ergonomics Officer (IEO) is a qualified health or safety professional who has received at least 40 hours of formal ergonomics training; Chairs Ergonomics Subcommittee.

ITEM 5 THROUGH 12 CONTINUED:							
5. SUBTASK	6. HAZARDS	7. INITIAL RISK LEVEL	8. CONTROLS	9. RESIDUAL RISK LEVEL	10. HOW TO IMPLEMENT	11. HOW TO SUPERVISE (WHO)	12. FFECTIVENESS OF CONTROL?
Life Support Areas (LSAs)	Materiel handing - Loading/unloading - Lifting/carrying - Slips, trips, and falls	M	- Require personnel to get help with loads that cannot be managed with ease.	M	OIC/NCOIC/ Guidance, OPLAN, Leader's Safety Guide, FM 21-10, FM 21-11	Company CDR, Collateral Safety Officers/ NCOs, Leaders, Participants	
			- Ensure that loading/unloading zones and work areas are clear of obstructions, dunnage/debris; illumination at night.				
			- Prohibit personnel from jumping or stepping from cargo vehicles while carrying loads; require the use of a ramp or buddy system.				
			- Remind personnel to use extreme care when carrying loads over rough surfaces or in loose soil, mud, or sand.				
	LSA Fuel handling/POL operations (chemical exposure and fire)	H	Use bonding and grounding equipment, extinguishers in place/operational, establish Smoking material/heat producing item checks (50 foot parameter), properly trained and	M	OIC/NCOIC guidance, SOP, OPLAN, EUSA Pam 420-1, fuel Material Safety Data Sheets (MSDS)	Leaders, supervisors, Collateral Safety Officers/NCOs, POL handlers/operators, Fire	
			licensed fuel handlers used. Require frequent inspection of working area. Fire prevention inspections.			Prevention Inspectors.	
	Mess Operations - Fires and explosions	M	- Ensure that kitchen fuel area is at least 15 meters from working area and is marked as a hazard area.	L	OIC/NCOIC inspections, SOP, OPLAN, Leader's Safety Guide	Leaders, supervisors, Collateral Safety Officers/NCOs, MKT operators	
			- Ensure that operable fire extinguishers are accessible (with designated operators) in mess-tent area and at stove-lighting and fuel-storage areas.				
			- Remind operators that increased heat will add pressure to fuel tanks and fuel cans and that particular attention must be given to M2 burners.				
			- Keep mess-tent exits marked and clear of obstructions.				

1. PURPOSE: Prevent injuries and illness by eliminating or reducing worker exposure to Work-related musculoskeletal disorder (WMSD). Training of personnel on workplace hazards related to ergonomics and their prevention.

2. SCOPE: Ergonomics covers all personnel and their interaction in the workplace. Consideration is given to the design of the workplaces, environment, jobs, tasks, equipment, and processes in relationship to human capabilities and interactions in the workplace.

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b. Reduce the potential for fatigue, error, and unsafe acts by adapting the job and workplace to the worker's capabilities and limitations.
c. Increase the overall productivity of the work force.
d. Improve overall unit readiness.

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ITEM 5 THROUGH 12 CONTINUED:

5. SUBTASK	6. HAZARDS	7. INITIAL RISK LEVEL	8. CONTROLS	9. RESIDUAL RISK LEVEL	10. HOW TO IMPLEMENT	11. HOW TO SUPERVISE (WHO)	12. FFECTIVENESS OF CONTROL?
Life Support Areas (LSAs)	Mess Operations - Cuts and burns	M	- Ensure that knives are kept sharp and properly stored. - Require personnel to use the proper tool for the job.	L	OIC/NCOIC inspections, SOP, OPLAN, Leader's Safety Guide	Leaders, supervisors, Collateral Safety Officers/NCOs, MKT operators	
			- Caution personnel not to use knives or other sharp instruments to pry open tray packs (use modified can opener and P38).				
			- Remind personnel to tilt heated tray packs and cans to right or left when opening to prevent burns from squirting hot juices.				
	- (Health) Poor sanitation	M	- Ensure that all food waste is properly disposed of. - Ensure that food preparation area is at least 100 meters from latrines.	L	OIC/NCOIC inspections, SOP, OPLAN, Leader's Safety Guide	Leaders, supervisors, Collateral Safety Officers/NCOs, MKT operators	
			- Ensure that food is protected from contamination.				
			- Monitor food handlers and other soldiers to ensure that sanitation standards/hygiene are maintained.				
	Constructing wire obstacles	M	Ensure that personnel use proper equipment (post drives and eye protection) and wear proper clothing (barbed-wire gloves, sleeves rolled down) when constructing wire obstacles.	L	OIC/NCOIC Guidance, OPLAN, Leader's Safety Guide	CDRs/NCOs, Collateral Safety Officers/NCOs, Leaders, Participants	
	Fire, egress, winds and flash floods (Life Safety) - Fixed facilities - Tents	M	Exits unobstructed; Fire watch where fuel burning equipment used and turned off when vacated; Require fire extinguishers at tent and facility exits; Assign fire prevention	L	CDR guidance, OPLAN, EUSA PAM 420-1, Fire prevention Plan/SOP, leader's Safety Guide	CDRs/NCOs/Collateral Safety Officers/NCOs, Fire Prevention Inspection, UFL Participants	
	- Wire obstacles		checks/duties; No refueling of hot equipment; Gear/clothing and other combustibles clear of heat producing equipment (3 ft. clearance).				
			Ensure sufficient anchorage, proper for soil conditions, is provided to prevent wind damage. Beware of flash flooding potential; use higher ground.				

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3. REFERENCES: AR 40-5 (next revision), AR 385-10, DODI 6055.1, DOD Safety and Occupational Health (SOH) Program, Creating the Ideal Computer Workstation: A Step-by-Step Guide, and HQDA Letter 40-00-1, dated 14 July 2000.

4. RESPONSIBILITIES:

a. Troop Commanders will appoint an Ergonomics Program representative who may be the Occupational Safety and Health (or Safety Officer) Representative for the Troop. The representative will:

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2) Coordinate and participate in unit activity work area assessments, solution identification, personnel training and education efforts, and health care management issues.
3) Brief the Troop Commander on Ergonomics Program issues, activities and recommendations.

5. GOALS:

a. Prevent injuries and illness by eliminating or reducing worker exposure to WMSD risk factors.
b. Reduce the potential for fatigue, error, and unsafe acts by adapting the job and workplace to the worker's capabilities and limitations.
c. Increase the overall productivity of the work force.
d. Improve overall unit readiness.

6. SUPPORT:

a. Installation Medical Authority (IMA) provides early recognition, evaluation, treatment, and follow-up of WMSDs among military and civilian personnel.
b. Installation Ergonomics Officer (IEO) is a qualified health or safety professional who has received at least 40 hours of formal ergonomics training; Chairs Ergonomics Subcommittee.

ITEM 5 THROUGH 12 CONTINUED:							
5. SUBTASK	6. HAZARDS	7. INITIAL RISK LEVEL	8. CONTROLS	9. RESIDUAL RISK LEVEL	10. HOW TO IMPLEMENT	11. HOW TO SUPERVISE (WHO)	12. FECTIVENESS OF CONTROL?
Life Support Areas (LSAs)	**Electrical** - Fixed antennas - Movable antennas - Generators	M	Require grounding of equipment; Ensure twice the distance from power lines as the length of antenna when erecting antennas; Tie-down of antennas in areas of power lines and tip	L	CDR guidance, OPLAN, SOP, Leader's Safety Guide, Equipment Technical Manual	CDRs/NCOs/Collateral Safety Officers/NCOs, Operators, Signal Ops Personnel, UFL Participant	
	- Power tools/equipment		protectors in place; Require that personnel wear eye protection, helmets and gloves when erecting antennas and driving ground rods; Prohibit use of substitutes fro antenna mast				
			sections (camouflage poles have been a fatal alternative); Provide Ground Fault Circuit Interrupters (GFCI) for portable electric tools/equipment.				
Other General LSA, LSA Support Mission,	Cold weather injury and proper hydration	M	Leader checks of proper uniform wear, enforce regular hydration and water use with appropriate layers of clothing for cold. Enforce the use of warming stations/rotation of personnel for warming.	L	CDR guidance, OPLAN, Safety Briefings, FM 21-10, FM 21-11, TB MED 507	CDRs/NCOs/Leaders, Participants, Buddy System	
FTX, EXEVAL	Carbon monoxide Overexposure	M	No un-vented fuel burning equipment in sleeping tents, flap/window left partially open. ASO briefed on CO poisoning symptoms.	L	CDR guidance, OPLAN	CDRs/NCOs/Collateral Safety Officers/NCOs, all participants	
	Vehicle driving/convoy march accident during LSA support missions: Unfamiliar and unusual	H	Licensed and experienced drivers, instruction in local driving customs and practices, assistant drivers used, night movement/dispatches minimized, risk assessment completed,	M	Unit SOP/CDR guidance; OPLAN; AR 385-55; FM 55-30; USFK Reg 55-355; USFK Pam 385-2	Company CDR, 1SGT, First Line Leaders/supervisors, Drivers	
	driving practices; heavy POV and pedestrian traffic		seat belts used.				
	Ground guiding	M	Train drivers in correct use of ground guides and ground guiding procedures. Require in LSAs and when visibility limited. 10-foot ground to vehicle stand off/side distance adhered, hi-visibility vests	L	SOP and OPLAN, safety brief, and ground guide checklist 21-11	Vehicle Cdr/NCOIC, all vehicle drivers & ground guides	
			applied, cone lights used, no walking backwards.				
	Vehicle break down: Driver/mechanic struck by POV	M	Daily PMCS. Recovery vehicle trailing, reflective vests worn, cone-lights used at night, warning triangles/flares used.	L	Pre-exercise safety briefing to drivers and Assist drivers	Company CDR, 1SGT, First Line Leaders/supervisors	

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ITEM 5 THROUGH 12 CONTINUED:

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Other General LSA, LSA Support Mission,	Fatigue/sleep deprivation	M	Require and enforce sleep plans that provide for adequate mental and physical task performance. Note: 7 to 8 hours sleep will maintain optimum mental task performance	L	OIC/NCOIC Guidance, OPLAN, Leader's Safety Guide	CDRs/NCOs, Collateral Safety Officers/NCOs, Leaders, Participants	
FTX, EXEVAL			indefinitely; Providing for a minimum of 4 to 5 hours uninterrupted sleep will equate to performance of 48 hours without sleep after 6 to 7 days.				
	Forklift/crane accident during LSA support missions	H	Trained and licensed operators, license verification, forklift fall spotter/stopper used, seat belts worn. Lift plan risk assessment for all elevated operations completed. Pallets and	L	Unit Commander guidance, Unit SOP, OPLAN	NCOIC, forklift driver and ground guide/fall spotter/rigger	
			straps/tie-downs properly used.				
	Visitors/media on site injury		Enforce safety standards, escort at all times, designated meeting areas used.		OPLAN, visitor orientation, PAO guidance	OIC/NCOIC, all personnel	

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COMPOSITE RISK MANAGEMENT WORKSHEET

For use of this form, see FM 5-19; the proponent agency is TRADOC.

1. MSN/TASK	2a. DTG BEGIN	2b. DTG END	3. DATE PREPARED (YYYYMMDD)
Life Support Facilities (Building and Tents) Life Safety	XXXXXXXXXX	XXXXXXXXXXX	XXXXXXXXX

4. PREPARED BY

a. LAST NAME	b. RANK	c. POSITION
XXXXXXXXX	XXXX	XXXXXXXXXXX

5. SUBTASK	6. HAZARDS	7. INITIAL RISK LEVEL	8. CONTROLS	9. RESIDUAL RISK LEVEL	10. HOW TO IMPLEMENT	11. HOW TO SUPERVISE (WHO)	12. FFECTIVENESS OF CONTROL?
Building and Tents Life Safety	- Faulty electric wiring	H	Conduct safety inspection and notify DPW for correction.	L	Life Support Facility Standard	Direct Enforce LSA Standards/supervision	
	- Pot holes on the walkways	M	Construct wooded walkways to again access to all tents.	L		Frequent spot checks by LSA managers, Safety and Fire Prevention Officer.	
	- Insufficient space established for walkway paths	M	Provide safe walkway path.	L			
	- Insufficient anchorage provided for high wind conditions.	H	Secure all tents to prevent blowing over during high winds.	L			
	- Blocked exits/egress	H	Clear the area to provide smooth egress in case of fire emergency.	L			
	- No fire extinguisher provided	H	Provide smoke detectors to all sleeping facilities and tents.	L			

Additional space for entries in Items 5 through 11 is provided on Page 2

13. OVERALL RISK LEVEL AFTER CONTROLS ARE IMPLEMENTED *(Check one)*

☐ LOW ☒ MODERATE ☐ HIGH ☐ EXTREMELY HIGH

14. RISK DECISION AUTHORITY

a. LAST NAME	b. RANK	c. DUTY POSITION	d. SIGNATURE
XXXXXXXXX	XXXX	Commanding, XXXXXXXX	

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ITEM 5 THROUGH 12 CONTINUED:

5. SUBTASK	6. HAZARDS	7. INITIAL RISK LEVEL	8. CONTROLS	9. RESIDUAL RISK LEVEL	10. HOW TO IMPLEMENT	11. HOW TO SUPERVISE (WHO)	12. FFECTIVENESS OF CONTROL?
Building and Tents Life Safety	- Tripping hazard	M	Identify/mark tent ropes with white engineering tape.	L	Life Support Facility Standard	Frequent spot checks by LSA managers, Safety and Fire Prevention Officer.	
	- No smoke detector provided	H	Provide smoke detectors to all sleeping facilities and tents.	L			
	- Inadequate area lighting (exterior) for security and safety	M	Install security lighting in coordination with DPW.	L			
	- No emergency light system installed	H	Install emergency light system in coordination with DPW.	L			
	- No exit signs	H	Install exit signs in coordination with DPW.	L			
	- Insufficient space for cots or bunkers laterally and end to end	H	Ensure minimum 36 inches between cots and bunks.	M			
	- Flooring	M	Ensure even wooded flooring is installed in the tents.	L			
	- Dehydration/heat Injury Prevention	M	Potable drinking water supply/bottled water, ensure appropriate liquid intake.	L	Leaders Guidance and direction. Buddy system.	Direct Supervision Spot check	
			* Safety Office will conduct joint safety inspections on all life support facilities and tents with fire department prior to occupancy.				
			* Safety Office will ensure all corrective actions are taken prior to occupancy.				
	- Carbon Monoxide Poisoning	M	No un-vented fuel heaters in sleeping Tents/areas. Flap/window left partially open and Soldiers must be briefed on CO poisoning symptoms.	L	SOP and OPLAN, safety brief all personnel awareness and watch CDR guidance, OPLAN	CDRs/NCOs/Area Safety Inspectors	
	- Tent fire	M	Stoves turned off when lights out or no one in the tent. Fire watch when stoves operating and fire extinguishers at both exits of tent. Tent stove operators training	L	Cdr's guidance, SOP, Risk Management plan CDR guidance, OPLAN	Frequent Checks by CDRs/NCOs.	

Cape Fox Professional Services

MOTORCYCLE TRAINING REQUEST FORM

Motorcycle Safety Foundation *RiderCourses* (MSF)

IMCOM - Korea Safety Office

Please complete the following information: *(Type or print clearly, print or email)*

I. PERSONAL DATA:

Last Name: _____ First Name: _____ Gender: _____

Unit Address: _____ Installation: _____

Office Phone: _____ Cell Phone: _____ Home Phone: _____

E-mail Address: _____ Age: _____

Supervisors Name: _____ **Position:** _____ **Telephone #:** _____

II. STATE/USFK LICENSE INFORMATION:

Driver's License #: _____ State of Issue: _____ Motorcycle End: _____ Exp. Date: _____

USFK License #: _____ Lic. Office: _____ Motorcycle End: _____ Exp. Date: _____

III. MOTORCYCLE EXPERIENCE:

Last Motorcycle Safety Foundation Course Attended: _____ Date Completed: _____

How many years have you operated a motorcycle? _____ Longest break?: _____ Reason: _____

How many years have you had motorcycle license? _____

Do you currently ☐ possess ☐ plan to purchase ☐ or ship a bike in/to Korea? What type? _____

How many miles did you ride last year? _____ What type of riding? _____

IV. NEW RIDERS EXPERIENCE: *(New Riders Only)*

Do you know how to ride a bicycle?	☐ Yes	☐ No
Do you know how to drive a manual/standard transmission?	☐ Yes	☐ No
Have you rode a motorcycle as a rider or passenger in the past?	☐ Yes	☐ No
Are you familiar with the following courses:		
MSF Basic Riders Course (BRC)	☐ Yes	☐ No
MSF Experienced Riders Course (ERC)	☐ Yes	☐ No
Motorcycle Riders Course (MRC:RSS)	☐ Yes	☐ No

MSF MOTORCYCLE SAFETY FOUNDATION®

V. TRAINING REQUIREMENTS: *(All Applicants)*

Request a training slot for the following course: ☐ BRC ☐ ERC

Request the following dates for training: Primary: _____ Alternate: _____

Request a school ☐ **motorcycle** ☐ **scooter** **for training.**

Click to email

Print Form

FOR MORE INFORMATION CONTACT:

All Garrisons - Scott Steuerwald, Lead Instructor, Army Traffic Safety Training Program at safedriving@korea.army.mil or call 724-3040 or 010-8913-5148, Fax: 724-5446

Email

VI. *RIDERCOACH USE ONLY:*

Date Scheduled for training: _____ *Range Location:* _____ ☐ *BRC* ☐ *ERC*

RiderCoach #1: _____ *RiderCoach #2:* _____

Knowledge Test Score: _____ *Skills Test Score:* _____ ☐ *Pass* ☐ *Fail*

MSF Card #: _____

Ver. 06/07

Reference: 1910.95 (k) (1) thru (3)

Hazardous Waste Operations and Emergency Response Training
Reference: 1910.120 (e)

Respiratory Protection Training
Reference: 1910.134 (k)

Portable Fire Extinguishers Training
Reference: 1910.157 (g) (1), and (2)

Bloodborne Pathogens Training
Reference: 1910.1030 (g) (2)

Asbestos Training
Reference: 1910.1001 (k) (9)

O-2. Initial OSHA and DA Training Requirements:

Hazardous Waste Operations and Emergency Response
Reference: 1910.120 (e) (1) (i)

Mechanical Power Presses
Reference: 1910.217 (h) (13) (i) (a)

Asbestos
Reference: 1910.1001 (k) (9) (i)

Bloodborne Pathogens
Reference: 1910.1030 (g) (2) (i)

HAZCOM
Reference: 1910.1200 (h) (1)

CPR
Reference: TB 385-4, 1-6
Winter Operation for AMV Drivers
Reference: EUSA Supplement 1 to AR 600-55, Para 4-3, h

Spring and Summer Safety
Reference: USFK Pamphlets 385-3, Section III

Fall and Winter Safety
Reference: USFK Pamphlets 385-3, Section IV

O-3. Seasonal Training Requirement

Spring and Summer Safety

– Destructive Weather/Rainy Season, Heat Injury prevention, Swimming, Insect Bites, Sports Injuries, Vehicle Operations

Fall and Winter Safety

– Physical Conditioning, Winter Hazard-General Concerns, Cold Weather Injuries and Treatments, Prevention of Cold Weather Injuries, Vehicle Preparation for Winter and Winter Driving Safety

Fluid Replacement Guidelines for Warm Weather Training
(Applies to average acclimated soldier wearing BDU, Hot Weather)

Heat Category	WBGT Index, °F	Easy Work		Moderate Work		Hard Work	
		Work /Rest	Water Intake, Qt/hr	Work /Rest	Water Intake, Qt/hr	Work /Rest	Water Intake, Qt/hr
1	78-81.9	NL	½	NL	¾	40/20 min	¾
2 (Green)	82-84.9	NL	½	50/10 min	¾	30/30 min	1
3 (Yellow)	85-87.9	NL	¾	40/20 min	¾	30/30 min	1
4 (Red)	88-89.9	NL	¾	30/30 min	¾	20/40 min	1
5 (Black)	> 90	50/10 min	1	20/40 min	1	10/50 min	1

- The work:rest times and fluid replacement volumes will sustain performance and hydration for at least 4 hours of work in the specified heat category. Individual water needs will vary ± ¼ qt/hour.
- NL= no limit to work time per hour.
- Rest means minimal physical activity (sitting or standing), accomplished in shade if possible.
- **CAUTION: Hourly fluid intake should not exceed 1½ quarts.**
- **Daily fluid intake should not exceed 12 quarts.**
- Wearing body armor add **5°F** to WBGT Index
- Wearing MOPP overgarment add **10°F** to WBGT Index.

Easy Work	Moderate Work	Hard Work
• Walking Hard Surface at 2.5 mph, ≤ 30 lb Load • Weapon Maintenance • Manual of Arms • Marksmanship Training • Drill and Ceremony	• Walking Hard Surface at 3.5 mph, < 40 lb Load • Walking Loose Sand at 2.5 mph, no Load • Calisthenics • Patrolling • Individual Movement Techniques. i.e. low crawl, high crawl • Defensive Position Construction	• Walking Hard Surface at 3.5 mph, ≥ 40 lb Load • Walking Loose Sand at 2.5 mph with Load

	• Field Assaults	

USAG HUMPHREYS GUIDE
TO PREVENTION OF COLD INJURIES DUE TO EXPOSURE TO TEMPERATURES BELOW 50^0 F

INFORMATION ON THIS CARD IS PROVIDED TO ASSIST LEADERS IN RISK DECISION MAKING AND CONTROL DEVELOPMENT AS PART OF THE RISK MANAGEMENT PROCESS. RISK DECISIONS AND CONTROLS SHOULD BE DEVELOPED FOR ALL TRAINING. LEADERS MUST ENSURE THAT THESE RISK DECISIONS/CONTROLS ARE IMPLEMENTED INTO UNIT TRAINING PLANS AND THAT TRAINING IS SUPERVISED.

	MINIMUM UNIFORM			OTHER FACTORS
WIND CHILL CATEGORY (SEE REVERSE)	**FIELD UNIFORM**	**PT UNIFORM**	**OFF DUTY ACTIVITIES**	
LITTLE DANGER	POLY PRO (T& B) ECWCS** (T&B) BALACLAVA TRIGGER FINGER MITTENS GORE-TEX BOOTS*	PFU SWEATS BLACK KNIT CAP BLACK GLOVES W/INSERTS	COAT HAT EAR PROTECTION GLOVES BOOTS	-- INCREASE LEADER SURVEILLANCE -- NO FACIAL CAMOUFLAGE -- INCREASE HYDRATION. -- PROVIDE WARM-UP AREAS WITH HOT DRINKS, ETC. -- SKIN COVERED AND DRY
INCREASING DANGER	POLY PRO (T& B) COAT &TROUSER LINERS ECWCS** (T&B) BALACLAVA/PILECAP ECW MITTENS BOOTS ECW (TYPE I)	PFU SWEATS POLY PRO (T&B) BALACLAVA TRIGGER FINGER MITTENS	COAT HAT EAR PROTECTION GLOVES BOOTS	-- RESTRICT NON-ESSENTIAL OUTDOOR TRAINING. -- LOW ACTIVITY: 30-40 MIN WORK CYCLE. -- SEDENTARY ACTIVITY: 15-20 MIN WORK CYCLE. -- USE BUDDY SYSTEM. -- NO EXPOSED SKIN
GREAT DANGER	POLY PRO (T& B) SHIRT, COLD WX TROUSER LINER ECWCS** (T&B) BALACLAVA/PILECAP ECW MITTENS BOOTS ECW (TYPEII)	PFU SWEATS POLY PRO (T&B) BALACLAVA TRIGGER FINGER MITTENS	HEAVY COAT LONG UNDERWEAR HAT & SCARF MITTENS CW BOOTS	-- CONSIDER INDOOR TNG. -- HIGH INTENSITY ACTIVITY: <15 MIN WORK CYCLE. -- CONSIDER CANCELING LOW OR SEDENTARY ACTIVITY OUTDOOR TNG -- COVER ALL EXPOSED SKIN

* GORE-TEX BOOTS = Matterhorn/Rocky Mountain/or similar GORE-TEX insulated leather boots
** ECWCS = Extended Cold Weather Clothing System (GORE-TEX)

WIND CHILL CHART FOR FAHRENHEIT TEMPERATURES (^{0} F)

ACTUAL THERMOMETER READING (^{0} F)

ESTIMATED WIND SPEED (IN MPH)	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
	EQUIVALENT TEMPERATURE (^{0} F)											
CALM	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
5	48	37	27	16	6	-5	-15	-26	-36	-47	-57	-60
10	40	28	16	4	-9	-21	-33	-46	-58	-70	-83	-95
15	36	22	9	-5	-18	-32	-45	-58	-72	-85	-99	-112
20	32	18	4	-10	-25	-39	-53	-67	-82	-96	-110	-124
25	30	16	0	-15	-29	-44	-59	-74	-88	-104	-118	-133
30	28	13	-2	-18	-33	-48	-63	-79	-94	-109	-125	-140
35	27	11	-4	-20	-35	-51	-67	-82	-98	-113	-129	-145
40	26	10	-6	-22	-37	-53	-69	-85	-100	-116	-132	-148

WINDS GREATER THAN 40 MPH HAVE LITTLE ADDITIONAL EFFECT

LITTLE DANGER

INCREASING DANGER

Exposed flesh may freeze within 1 minute

GREAT DANGER

Exposed flesh may freeze within 30 se

Trenchfoot and Immersion foot may occur at any point on this chart

APPENDIX P

USAG HUMPHREYS CONSOLIDATED BASIC LOAD STORAGE PLAN

P-1. REFERENCES:

a. AR 190-11, 15 NOV 2006, Physical Security of Arms, Ammunition, and Explosives.

b. 6th Ordnance Battalion External SOP (Latest edition).

c. DA Pam 385-64, 15 DEC 1999, Ammunition and Explosives Safety Standards.

d. AK Reg 700-3, 21 JUN 2005, Logistics Conventional Ammunition.

e. Memorandum EUSA Safety, dated 20 Dec 94, Subject: Continuity Books for Ammunition Holding Areas (AHA)

P-2. PURPOSE: To provide policies and procedures for operation and security of consolidated basic load ammunition storage facilities within USAG Humphreys.

P-3. SCOPE: This appendix is applicable to all authorized units storing Unit Basic Load (UBL) ammunition in ammunition storage facilities.

P-4. RESPONSIBILITIES:

a. Director of Plans, Training, Mobilization and Security (DPTMS).

(1) Overall operation of all consolidated ammunition storage facilities within USAG Humphreys.

(2) Assigning unit spaces within buildings 400 thru 405 (Cp Ames), 700, 714, 1238 & 1252 (USAG Humphreys) for storage of unit basic load and contingency requirements.

(3) Submitting work orders for maintenance, repair and upkeep of all ammunition storage facilities.

(4) Monitoring operations of the ammunition storage facilities ensuring units comply with all provisions of this plan, safety regulations and appropriate references.

(5) Monitoring and maintaining updated status reports for the Net Explosive Weight (NEW) in storage for Hazard Class Division (HC/D) 1.1, 1.2, 1.3, and 1.4 ammunition, ensuring the NEW is not exceeded.

(6) Forwarding reports identifying the total NEW of HC/D 1.1, 1.2, 1.3, and 1.4 ammunition and explosives in each storage facility in Area III (IAW Appendix A) to the Garrison Safety Office (GSO) by the 7th day of each month.

(7) Posting of Fire Symbols, Chemical Hazard Symbols, No Smoking within 50 feet and Restricted Area signs as applicable.

(8) Ensuring using units are informed of what types of ammunition are authorized to be stored in the each storage facility.

(9) Maintaining monthly unit basic load reports from all Area III mission units, to include monitoring changes in unit basic load.

(10) Coordinating with facility engineers for testing of Lightning Protection Systems (LPS) bonding checks of the ammunition storage facilities as required by DA Pam 385-64, Appendix D, and maintaining the resulting documentation.

(11) Reviewing mission unit SOP's for uploading and transporting munitions from UBL storage facilities.

(12) Maintain a Continuity Book for all USAH Humphreys storage facilities IAW reference f.

b. COMMANDERS

(1) Responsible for assigning space based on unit basic load quantities and contingency requirements.

(a) Commander, 719th MI will assign space within bunkers 1238 and 1252.

(2) Notifying DOL of any security, maintenance or upkeep issues within their respective storage facilities.

(3) Ensuring using units comply with all provisions of this plan, and paragraph 1 (References) above.

(4) Posting of Fire Symbols, Chemical Hazard Symbols, No Smoking Within 50 Feet, and Restricted Area signs as applicable.

(5) Notifying the USAG Humphreys Safety Office of any accidents occurring during handling of ammunition.

(6) Ensuring that munitions are handled under the direct supervision of competent personnel who thoroughly understand the hazards and risks involved.

(7) Ensuring that only authorized ammunition is stored in the storage facilities.

(8) Identifying and making arrangements for the turn-in of suspended lots of ammunitions and replenishment of Unit Basic Load (UBL).

(9) Ensuring those vehicles used for transportation of ammunition pass all parts of the 626 inspection checklist and have applicable placards properly displayed.

(10) Providing own material handling equipment and/or personnel to support the upload of ammunition.

(11) Provide SOP for the issue and upload of munitions from their respective UBL storage facilities.

P-5. STORAGE AND HANDLING OF BASIC LOAD AMMUNITION:

a. Ammunition for miscellaneous activities and training ammunition may be stored in the consolidated basic load storage facilities. These items must also be reported on monthly UBL report. Storage of these stocks must be separated and clearly identified as to their intended purpose. A DA Form 3020-P Magazine Data Card will be maintained on each lot in storage.

b. When more than one unit is using the same storage cages stocks will be segregated and identified by unit. Magazine Data Cards (DA Form 3020-R) will be affixed to the containers. Containers will be properly marked/labeled. In addition to standard information on DA Form 3020-R, the unit designation will be printed on the DA Form 3020-R.

c. Ammunition will be stacked and segregated by lot number. Ammunition will be stacked so that free circulation of air beneath and throughout the stack is possible. When more than one lot is stored in a stack, all items or container of a lot will be stored together and the line of segregation between lots will be clearly indicated with a DA Form 3020-R affixed to the stack. Lots of ammunition will never be mixed randomly.

d. Partly filled (light) boxes will be securely fastened and marked. The light box will be kept on the top of the stack. The light box will be completely painted orange and marked in black paint with the DODIC, nomenclature, ammunition lot number, and quantity of ammunition in the box. There will be no more than one light box for each lot.

e. Storage in direct sunlight must be avoided.

f. Boxes must be stored in straight stacks and the nomenclature and lot numbers visible.

g. Ammunition and explosives will be kept dry. Stacks will be covered when leakage is present.

h. Basic load ammunition shall be retained in the same packaging as it was originally issued.

(1) Original pack (sealed container) will not be broken except by a Quality Assurance Specialist (Ammunition Surveillance) during an annual basic load inspection or technical assistance visit or when required for potential immediate use.

(2) Units with a mission requiring removal of ammunition from its packaging for potential immediate use must request approval for the unpacking of the basic load. The request for approval will be submitted with justification through command channels to the EUSA AC of S, G-3, ATTN: EACJ-TDD and AC of S, J4, ATTN: DJ-AM-S.

(3) Ammunition lost, damaged, or unserviceable (due to neglect) must be accounted for IAW AR 735-5.

i. Adequate provisions will be taken by commanders to prevent pilferage of all types of ammunition. Highly pilferable items will be given maximum security protection. Containers of ammunition in storage will be securely banded with steel strapping or sealed with lead wire seals. Every precaution will be taken to prevent unauthorized access to ammunition storage areas. The provisions of AR 190-11 apply to loss, theft or recovery of ammunition.

j. All ammunition items will be handled with care. Containers will not be dropped rolled or stepped on at any time.

k. Units will display a unit designation placard on their assigned storage area within the storage facility with Unit, POC, and phone number.

P-6. Request for changes or exceptions to this plan should be forwarded to the Commander, USAG Humphreys, ATTN: IMKO-ACH-SO

P-7. POC is Garrison Explosive Safety, 753-5582.

The proponent agency of this pamphlet is the Safety Office. Users are invited to send comments and suggested improvements of DA Form 2028 (Recommended Changes to publications and Blank Forms) to USAG Humphreys (IMKO-ACH-SO), Unit #15228, APO AP 96271-5228

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Commanding

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