NATIONAL TRAINING CENTER

Environment, Safety, and Health Department

General Procedure

Title:	NTC Safe Work Practices Guide
Number:	ESH-GP-503
Revision:	4

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REVISION HISTORY

Rev.	Effective Date	Description of Revision
4	01/25/12	Updated facility descriptions and Appendix B, Section 21.7
3	10/28/11	Removed NTC Federal staff responsibilities from document
2	04/06/10	Updated as part of 3-year review cycle
1	10/30/07	Re-designated, reformatted, and approved as general procedure

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1.0 PURPOSE AND OBJECTIVE

The purpose of this guide is to ensure the activities at the U.S. Department of Energy (DOE) National Training Center (NTC) are conducted in a way that preserves a safe and healthful environment for individuals.

The objective of this guide is to ensure the NTC has procedures that describe the environment, safety, and health (ES&H) regulations, rights, and responsibilities of its students and visitors, employees, and subcontractors.

2.0 SCOPE

This guide is applicable to all NTC employees, students, visitors, and subcontractors. These individuals are responsible for complying with the provisions of this guide and for following safety guidance provided by instructors or escorts.

3.0 CANCELLATION

This guide supersedes NTC 503, Safe Work Practices Guide, dated April 2010.

4.0 REFERENCES

4.1 Title 29 of the Code of Federal Regulations (CFR), Part 1926, Safety and Health Regulations for Construction

4.2 29 CFR Part 1910, OSHA Compliance Manual for the General Industry

4.3 10 CFR 851, Worker Safety and Health Program

4.4 DOE Order 422.1, Conduct of Operations

4.5 DOE Guide 450.4-1B, Integrated Safety Management System

4.6 DOE Manual 473-3, Protection Program Operations

4.7 Occupational Safety and Health Act of 1970, Public Law 91-596, 91st Congress, S.2193, December 29, 1970

4.8 NTC-PM-406, NTC Site Maintenance Plan

4.9 NTC-PM-501, Integrated Safety Management System Program

4.10 NTC-PM-505, NTC Worker Safety and Health Plan

4.11 PFT-SOP-644, Live Fire Range Operations

4.12 ESH-GP-520, Hazard Communication Program

4.13 ESH-GP-529, Ergonomics Program

4.14 ESH-GP-534, Forklift Safety

4.15 ESH-GP-536, Shop Operations and General Maintenance

4.16 ESH-GP-537, Lockout/Tag-Out Program

4.17 ESH-GP-539, Hazardous Waste Management

4.18 ESH-GP-540, Hazardous Materials Release Containment Plan.

4.19 ESH-GP-549, Storage, Transportation, and Use of Explosives

5.0 DEFINITIONS

None

6.0 POLICY

It is NTC policy that all activities be conducted in a way that preserves a safe and healthful environment for personnel and minimizes any risk of injury, damage, or environmental degradation. All activities will be conducted in compliance with DOE, federal, state, and Kirtland Air Force Base (KAFB) ES&H requirements. Accomplishing these goals requires a team effort on the part of all people working at or attending the NTC.

The NTC follows many codes, standards, and regulations—including those of the Occupational Safety and Health Act—to protect worker health and safety. The basic premise of this Act is to ensure, insofar as possible, that every employee in the United States has safe and healthful working conditions. The ES&H rules, rights, and responsibilities presented in this procedure are based on Occupational Safety and Health Administration (OSHA) standards, other federal and state regulations, and recognized safety practices.

7.0 RESPONSIBILITIES

7.1 NTC General Manager

7.1.1 Ensures all NTC guidance documents are available to all NTC contractor staff.

7.1.2 Requires contractor staff to read and adhere to NTC guidance documents, as appropriate to their area(s) of responsibility.

7.2 Students and Visitors, Employees, and Contractors

See Appendices A, B, and C for the responsibilities of students and visitors, employees, and contractors, respectively, at the NTC.

8.0 OPERATIONS

See Appendices A, B, and C for the operations to be performed by students and visitors, employees, and contractors, respectively, at the NTC.

9.0 APPENDICES

A – Safe Work Practices Guide for Students and Visitors
B – Safe Work Practices Guide for Employees
C – Safe Work Practices Guide for Contractors

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APPENDIX A – SAFE WORK PRACTICES GUIDE FOR STUDENTS AND VISITORS

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APPENDIX A – SAFE WORK PRACTICES GUIDE FOR STUDENTS AND VISITORS

WELCOME

This guide is designed to provide students and visitors with an overview of the U.S. Department of Energy (DOE) National Training Center (NTC) Environment, Safety, and Health (ES&H) Program, so they will understand their role in protecting themselves and the environment at the NTC. Students and visitors are responsible for complying with the policies and procedures in this appendix to help ensure that individuals visiting or working at the NTC have a safe and healthful work environment.

Students and visitors have the right to know the potential hazards associated with the areas they will visit and the measures being used to protect them from those hazards. An instructor or escort will provide this information to you in addition to this guide.

Individual departments or facilities may have specific safety practices that may expand upon or extend beyond the safe practices outlined in this appendix. If you enter or work in a department, follow the safety requirements of that department as well as those outlined in this appendix.

If you suspect the area you are visiting is unsafe, report your concerns to your instructor or escort.

1.0 GENERAL FACILITY DESCRIPTION

The NTC is composed of three facilities on Kirtland Air Force Base (KAFB)—the main campus, the live fire range (LFR), and the Integrated Safety and Security Training and Evaluation Complex (ISSTEC). KAFB is adjacent to the southern edge of the city of Albuquerque and is bounded on the east by the Cibola National Forest; on the south by the Isleta Pueblo Reservation; on the north by an Albuquerque residential, light industrial, and commercial enterprises area; and on the west by State of New Mexico land and an agricultural region.

The NTC main campus is sited on the eastern portion of KAFB, at the base of the Manzano Mountains, in the old Manzano Base Administrative Area. Presently, the NTC main campus has seven buildings in the Manzano area under permit from the Air Force. They are:

- Building 30120 (Tijeras Learning Center with instructor offices, kitchen area, and meeting room
- Building 30128 (Student Services Center and Rio Grande and Bosque Learning Centers)
- Building 30129 (Manzano Learning Center with instructor offices and meeting room
- Building 30130 (Cibola Learning Center, NTC Auditorium, vault-type room, and contractor offices)
- Building 30131 (Sandia Learning Center and contractor offices)
- Building 30132 (administration building with Federal and contractor offices and meeting rooms)

- Building 30133 (contractor offices and meeting room)
- Building 30178 (contractor maintenance offices)

In addition, two modular buildings that provide contractor office space are located on the main campus.

The LFR is a separate NTC complex located approximately 6 miles by road to the east of the main campus. It is situated in Coyote Canyon, approximately 0.75 mile west of Madera Canyon Road and immediately north of Coyote Canyon Road. The LFR is sited in the mouth of a large canyon located on U.S. Forest Service land. The LFR was later withdrawn from the U.S. Forest Service to the U.S. Army and subsequently to the U.S. Air Force when KAFB was incorporated under Air Force control. The LFR itself is permitted for DOE use by the Air Force. Some of the range safety fans extend into other areas of DOE permitted land.

The LFR currently consists of seven firearms ranges: Pistol Ranges 1 and 2, Rifle Ranges 1 and 2, the Research and Development Range, the Multi-Purpose Range, and the Shotgun Range. Range operations require a number of support facilities, including an Administration building with facilities for the use of paramedics; three range control towers; a tactical training tower; a live fire shoot house; several equipment/storage trailers; three range maintenance and target maintenance buildings; a building that houses the armory, machine shop, and a classroom; two modular classroom buildings; two weapons-cleaning facilities; six above-ground ammunition storage bunkers; and several small equipment storage units located at selected areas at the LFR. The nearby ISSTEC is the newest NTC training facility that affords students the opportunity to realistically train in a simulated DOE production facility with engagement simulation systems (ESS).

2.0 EMERGENCY PREPAREDNESS

2.1 Always be prepared to respond to an emergency. No one knows when an emergency will occur so being prepared is important.

2.2 Be familiar with emergency evacuation routes. Emergency evacuation signs are posted in NTC buildings.

2.3 Follow the instructions of your instructor, escort, or Building Emergency Team (BET) representative in the event of an emergency.

2.4 Attempt to protect government property and classified material without endangering yourself or others. If an emergency occurs, follow the directions below.

2.4.1 Report an emergency condition immediately to an instructor or escort. Anyone has the right and responsibility to call “STOP WORK” or “CEASE FIRE” if they observe an unsafe condition while at any NTC facility.

2.4.2 Respond immediately if ordered to evacuate.

2.4.3 Secure classified material if you can do so safely; if not, cover the materials and take them with you.

2.4.4 Collect personal items (keys, purses, cell phones) and take them with you.

2.4.5 Do not use an office telephone after the 911 call has been made.

2.4.6 Walk—do not run—from the building. Use the established emergency routes unless directed otherwise by the BET representative.

2.4.7 Assemble in designated evacuation areas. Stay at least 50 yards from any building, and do not block emergency vehicle access lanes.

2.4.8 Report to your instructor or escort so you can be accounted for.

- Supervisors will account for their NTC employees.
- Instructors will account for their students.
- Escorts will account for visitors.

Missing or unaccounted for employees, students, or visitors will be reported to NTC managers located at each assembly area.

2.4.9 Stay in the assembly areas until further instructions are provided.

3.0 ENVIRONMENTAL PROTECTION

Protection of the environment is a responsibility shared by every student and visitor at the NTC. Compliance with federal and state environmental regulations is mandatory. Noncompliance with these regulations can result in disciplinary action as well as civil and criminal penalties.

3.1 Follow prescribed ES&H rules designed to protect the environment.

3.2 Promptly report toxic spills and other harmful environmental releases.

4.0 ES&H ASSISTANCE

4.1 If you have safety questions or concerns while at the NTC, contact the NTC's ES&H staff (845-5170, extensions 153 or 155).

4.2 Always be safety conscious while training at the NTC.

5.0 INJURY / ILLNESS REPORTING

5.1 If you are injured or become ill as a result of NTC activities, notify your instructor or escort immediately. Report every training injury, however insignificant.

5.2 In the event of a medical emergency at any NTC facility, dial **911**. If using a cell phone, dial **853-9111.**

5.3 Follow the instructions of your instructor or escort.

5.4 If you are alone with an injured person, remain with that person until help arrives. If you provide first aid, do not administer aid that exceeds the level of your training.

6.0 INTEGRATED SAFETY MANAGEMENT

All work at the NTC will be conducted in accordance with the Integrated Safety Management System (ISMS). It is NTC policy to incorporate safety into the planning and execution of all work and to ensure safety from hazards for NTC workers and the environment. NTC will implement appropriate controls for those hazards that cannot be totally removed.

6.1 Seven Guiding Principles

DOE and the NTC have agreed to the seven guiding principles below to provide overall direction and guidance for instituting the ISMS.

1. *Line Management Responsibility for Safety.* Line management is responsible and accountable for the protection of employees, the public, and the environment. All employees are responsible and accountable for the safe conduct of their activities.

2. *Clear Roles and Responsibilities.* There shall be clear roles and lines of responsibility, authority, and accountability at all levels of the organization to ensure protection of employees, the public, and the environment.

3. *Competence Commensurate with Responsibilities.* All employees will have the experience, knowledge, skills, and abilities needed to perform their work safely and competently.

4. *Balanced Priorities.* Management will allocate resources to address safety, programmatic, and operational considerations. No work will be performed unless it can be performed safely.

5. *Identification of ES&H Standards and Requirements.* Hazards shall be evaluated and appropriate controls implemented before work is performed to provide adequate protection to employees the public, and the environment.

6. *Hazard Controls Tailored to Work Being Performed.* Engineered and administrative controls shall be in place to prevent and control work-associated hazards.

7. *Work Authorization.* No work will be performed unless it can be shown to be done safely.

6.2 The Five Core Functions

The five-step process for performing work is used throughout the DOE/NTC complex to support the establishment, implementation, and assurance of safe work practices.

1. *Define the Scope of Work*
   - Translate the scope of the project into work.
   - Set performance expectations.
   - Prioritize tasks and allocate resources.

2. *Analyze the Hazards*
   - Identify and analyze the hazards.

- Categorize the hazards.

3. *Develop and Implement Controls*
   - Identify appropriate standards and requirements.
   - Identify and implement needed controls to prevent and control hazards.
   - Establish a safety envelope.

4. *Perform Work within Controls*
   - Confirm operational readiness.
   - Perform the work safely.

5. *Provide Feedback and Continuous Improvement*
   - Analyze incidents, injuries, near misses, and assessments.
   - Collect feedback from employees.
   - Identify opportunities for improving performance.
   - Implement changes to improve performance.
   - Reinforce implemented work practices.
   - Hold employees accountable for their performance.

6.3 Benefits of ISMS

1. Integrates safety into work planning and execution.

2. Improves working conditions by tailoring hazard controls to the work being performed.

3. Identifies standards and requirements for conducting mission operations safely.

4. Establishes clear roles and lines of authority and responsibilities.

5. Contributes to safety at all levels.

6. Balances priorities and resources to address safety, programmatic, and operational considerations.

7. Drives continuous improvement in the area of ES&H.

7.0 LIVE FIRE RANGE SAFETY

The LFR is a designated Property Protection Area. As such, all visits to the LFR must be coordinated with the Range Master or designee. All visiting personnel must follow the directions posted at the main gate. All personnel will observe requirements associated with the range flags and flashing beacons.

A. <u>All Visitors</u>: Proceed to Building 100 and sign in with the Training Assistant. The Training Assistant will locate the PFTD sponsor via telephone or radio and coordinate a meeting place. Once business has been completed, sign out in Building 100 prior to departure from the LFR.

B. Maintenance: All maintenance activities at the LFR will be coordinated through the Range Master. Prior to performing any maintenance work, an NTC work order must be submitted to the Range Master for his review and approval.

Upon arrival at the LFR, maintenance personnel will proceed directly to Building 100 and adhere to procedures (see paragraph A). Radios will remain on Channel 4 while at the LFR. When possible, all work at the LFR will be coordinated with the Range Master in advance.

C. DOE LFR Users/Memorandum of Understanding (MOU) or Range Use Agreement (RUA) Holders: During regular work hours, proceed to Building 100 and adhere to procedures (see paragraph A). If visitors will be attending training sessions, the sponsoring agency will escort their visitors to Building 100 to complete the sign-in procedure. Upon departure, the visitor will be escorted to Building 100 to sign out.

During non-duty hours, sign-in/out procedures will be completed on the Range Use Log. The sponsoring agency will accept responsibility for the visitor.

D. Delivery Personnel: Coordinate all deliveries with the Range Master or Training Assistant (see paragraph A).

7.1 Weapons

1. Privately owned weapons will not be used at the NTC LFR.

2. Written approval by their authorizing agency is required for non-DOE LFR users that must carry weapons for duty purposes.

3. The NTC is a tenant of KAFB. NTC employees and LFR users must adhere to all applicable regulations pertaining to the transport, and carrying, of weapons.

4. All weapons and ammunition must be stored in an approved location.

5. Concealed weapons are prohibited at NTC facilities.

7.2 Firearms Safety Rules

NTC firearms training is governed by DOE M 473.3 and SOP 644. Persons undergoing firearms training must observe the Four General Firearms Safety Rules and Fourteen Specific Firearms Safety Rules while at the LFR.

7.3 Four General Firearms Safety Rules

1. All firearms are always loaded.
2. Never point a firearm at anything you are not willing to destroy.
3. Keep your finger off the trigger until your sights are on the target.
4. Be sure of your target.

7.4 Fourteen Specific Firearms Safety Rules

1. It is mandatory to use approved eye and ear protection and other personal protective equipment as required by the range safety officer.

2. Unsafe conditions must be reported immediately to an instructor.

3. A firearm may only be exchanged with another shooter under the direct supervision of an instructor.

4. Firearms must not be left unattended or unsecured.

5. Firearm loading and firing may commence only on command.

6. Shooters are not permitted to talk during a firing activity except in reply to an instructor as a part of the activity or to shout “CEASE FIRE” in an unsafe situation.

7. Until the firing line has been declared safe by the firearms instructor, shooters must not move past or bend over the line.

8. All shooters must be trained on what constitutes an unsafe condition and to shout “CEASE FIRE” when such a condition is observed.

9. Smoking, eating, or drinking must be prohibited while shooting.

10. Alcoholic beverages and drugs are prohibited on firing ranges. Shooters taking medication must report this fact to the firearms instructor before reporting to the firing line. The firearms instructor is responsible for determining whether a shooter is fit based on the medication taken and whether it is safe for the shooter to use the range. A physician will be consulted if necessary.

11. Shooters must take precautions to prevent hot spent cartridge and gunshot residues from getting inside their clothing.

12. When a training session is completed, each firearm must be physically examined by the shooter and by a designated range safety officer or qualified firearms instructor to ensure that it is unloaded and in safe condition before leaving the range. If the shooter is using a duty firearm on the range, they may reload that weapon at the range if returning directly to duty.

13. Shooters must collect unexpended ammunition and return it to a firearms instructor.

14. While a firearm is being cleaned, live ammunition must not be allowed in the cleaning area.

7.5 Unsafe Conditions

If an unsafe condition develops, an Instructor or Range Safety Officer will call “CEASE FIRE”, and training will not resume until the situation is safely resolved. If you observe an unsafe act or condition, you are responsible for calling out "CEASE FIRE.” An

Instructor or Range Safety Officer will stop training immediately until the situation is safely resolved.

7.6 Risk Analyses/Strenuous Activity

A risk analysis has been completed for each hazardous NTC training activity and facility to identify hazards and remove or remediate them. An Exercise Physiologist has reviewed and approved training involving strenuous activities in both hot and cold environments. A safety briefing will be conducted prior to each training activity to inform participants of all course-specific hazards and the measures required to mitigate or eliminate them.

7.6.1 Ask questions prior to training to ensure you are aware of training requirements and safety hazards.

7.6.2 Strenuous activities such as those performed during physical training can cause muscle sprains and strains. Muscle-stretching/warm-up sessions lasting 20 minutes are recommended to avoid injury.

7.7 LFR Road Conditions

7.7.1 Road conditions leading to the LFR are marginal and require attention and careful driving. Driver and passengers should always have their seat belts secured.

7.7.2 Drivers should not exceed posted speed limits. The Base Security Police use radar and will give tickets.

7.7.3 Loose gravel creates a driving hazard, and dust reduces visibility. Watch out for other drivers and for wildlife that might be on the road.

7.7.4 During cold weather, ice and snow require careful driving and speed management.

7.8 Environmental Effects

7.8.1 Individuals may not realize they are becoming dehydrated because of the altitude and dry climate. Lost fluids must be replaced, and it is very important that individuals drink sufficient amounts of liquids to stay hydrated. During training, water will be provided at each of the ranges.

7.8.2 Sunscreen and brimmed hats are recommended for protection from the direct rays of the sun. Long-sleeved shirts will sleeves rolled down are also recommended.

7.8.3 Depending on the season, biting insects may be at the LFR. Insect repellent is recommended.

7.9 Personal Protection

7.9.1 Material Safety Data Sheets (MSDS) for cleaning agents and lubricants are located in the cleaning rooms, as are safety glasses, gloves, and barrier creams.

7.9.2 All individuals must wear approved eye and hearing protection before entering an active range where firearms activities are being conducted. Other training-specific PPE may be required by Instructors or Escorts (see Section 9.0).

8.0 MOTOR VEHICLE OPERATION

8.1 Seat Belts

Drivers and passengers must wear seat belts when driving or riding in motor vehicles on or off KAFB. Drivers of vehicles are responsible for ensuring all passengers wear seat belts.

8.2 Driver's License

8.2.1 Drivers must carry a valid state motor vehicle operator's license when driving government or rental vehicles.

8.2.2 Drivers are not permitted to use cell phones when operating vehicles on KAFB unless they have a "hands free" feature.

9.0 PERSONAL PROTECTIVE EQUIPMENT

All individuals must wear appropriate PPE as directed by Instructors or Escorts.

9.1 Eye Protection

Safety glasses with side shields or wraparounds (1) are required whenever you enter and/or work in areas requiring their use, and (2) are always required at the LFR when observing or participating in firearms training. Eye protection meeting the requirements of ANSI Z87.1-2003, Occupational and Educational Personal Eye and Face Protective Devices, must be worn if you are within 15 yards of a firing line. Side shields will be required if there is a danger of objects getting into the eyes from the side. Safety glasses will be provided at no cost to students and visitors.

9.2 Head Protection

Wear a Type 2, Class A hard hat if working in an area where there is a hazard of falling or flying objects. Instructors will advise students of headwear required for specific advanced training activities (e.g., for training in the Live Fire Shoot House or for defensive driving training).

9.3 Hearing Protection

All individuals must wear ANSI-approved hearing protection before entering a range where firearms activities are being conducted or when working in a high-noise area.

9.3.1 Wear approved hearing protection with a minimum noise reduction rating (NRR) of 26 when within 15 yards of a firing line or when directed by an instructor or escort.

9.3.2 Persons required to wear hearing protection must receive training in the proper use and care of the hearing protectors. Instructors or escorts will provide this instruction.

9.3.3 If you suspect high noise levels in a work or training area, contact your instructor or escort or call the NTC's ES&H staff (845-5170, extensions 153 or 155).

9.4 Foot Protection

9.4.1 Safety boots or shoes are required if the work involves handling of heavy materials that, if dropped, could injure the foot, or if work is performed on or near mechanical or motorized equipment.

9.4.2 Other foot protection (metatarsal guards) may be necessary when performing heavy material-handling operations or when using heavy equipment.

10.0 SMOKING POLICY

10.1 Smoking is only permitted in designated outdoor smoking locations. Your instructor or escort will identify them.

10.2 Do not smoke in government buildings, government vehicles, or rental vehicles used for official business. When in doubt, ask your instructor or escort.

10.3 Smoking is prohibited within 25 feet of the entrance to any building on KAFB.

11.0 STOP-WORK POLICY

Students and/or visitors are responsible for stopping an activity that poses a danger to health, safety, or the environment.

11.1 During weapons training, call "CEASE FIRE" if you observe an unsafe condition.

11.2 Notify an NTC instructor or escort if you observe a potentially hazardous situation. He/she will order "STOP WORK" or "CEASE FIRE" until the situation is safely resolved.

12.0 STUDENT COMPLAINT PROCESS

If you wish to file a complaint involving an unsafe working or training environment that has not been resolved, take the following steps:

12.1 Discuss the complaint with the supervisor of your instructor or staff member.

12.2 If the problem is not resolved, request a meeting with the Department Manager of the instructor or staff member, and submit a written statement of your complaint. You will normally receive a written response within 10 working days of the meeting with the Department Manager, including findings and decisions.

12.3 If you are not satisfied with the decision and wish to continue action, submit your written complaint to the General Manager and request a hearing. The General Manager will consider the complaint and, if required, will convene a hearing to address the issue. A decision can be expected within 15 working days.

APPENDIX B – SAFE WORK PRACTICES GUIDE FOR EMPLOYEES

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APPENDIX B – SAFE WORK PRACTICES GUIDE FOR EMPLOYEES

WELCOME

Every employee at the Department of Energy (DOE) National Training Center (NTC) must comply with the environment, safety, and health (ES&H) policies and procedures to ensure all individuals visiting or working at the NTC have a safe and healthful work environment. The purpose of this guide is to help NTC employees understand their roles in protecting themselves and others, as well as the environment, at the NTC.

The safe work practices outlined in this appendix are not all-inclusive. Additional safety policies and procedures are contained in 505, NTC Worker Safety and Health Program.

Each department has specific safety practices that may expand upon or extend beyond the safe practices outlined in this appendix. If you enter or work in a department, you must follow that department's safety practices as well as the practices outlined in this appendix.

In keeping with NTC policy and safety practices, employees have the right to:

A. Observe measurements (sampling and monitoring) of hazardous materials and harmful physical agents in the workplace, and see the records of those measurements;

B. Receive prompt notification of any indication that the employee may have been exposed to hazardous materials or harmful physical agents in excess of permissible limits;

C. File, without fear of reprisal, a complaint with the NTC, contractor, or DOE, including a request for inspection of the workplace;

D. See their individual records of possible exposure to workplace hazards; and

E. Read the Occupational Safety and Health Administration (OSHA) regulations prescribed by DOE, and download the DOE Contractor Employee Occupational Safety or Health Complaint form (on Nexus), if needed.

1.0 GENERAL SAFETY GUIDELINES

1.1 Report all accidents and injuries to your supervisor immediately.

1.2 Report workplace safety deficiencies or unsafe conditions to your supervisor immediately. You will not be penalized for doing so.

1.3 Know the location of all exits, firefighting equipment, and emergency equipment.

1.4 Obey all warning signs and tags indicating potential hazards.

1.5 Obtain approval from appropriate staff before entering restricted areas.

1.6 Walk—never run—in NTC administrative areas.

1.7 Do not engage in horseplay.

1.8 Do not engage in the use, distribution, sale, or possession of controlled substances on NTC premises or while conducting NTC business.

1.9 Do not enter construction areas at the NTC unless you are authorized to do so.

1.10 Do not wear rings, chains, watchbands, or other jewelry while working around machinery.

1.11 Wear safety shoes that will provide adequate protection from workplace hazards such as slippery floors, toxic or corrosive materials, or heavy falling objects.

1.12 Drink adequate amounts of water whenever you are working or training in a hot environment.

1.13 Do not work alone when performing potentially hazardous tasks. Work that may be hazardous includes work with flammable or reactive materials, toxic materials, high-pressure systems, and machine tools. Discuss potential hazards with your supervisor or the ES&H staff for guidance.

1.14 Do not dispose of hazardous materials—that is the responsibility of the ES&H staff. For questions regarding the disposition of suspected hazardous materials, contact the ES&H staff (845-5170, extensions 153 or 155). Further information on dealing with suspected hazardous materials may be found in ESH-GP-520, Hazard Communication Program; ESH-GP-539, Hazardous Waste Management; and ESH-GP-540, Hazardous Materials Release Containment Plan.

1.15 For information on hazardous materials education and training, contact the ES&H staff (845-5170, extensions 153 or 155).

2.0 AMMUNITION AND EXPLOSIVES

All operations involving ammunition and explosives will be conducted so as to minimize the number of persons exposed, the time of their exposure, and the quantity of materials to which they are exposed. NTC employees dealing with ammunition or explosives will complete the Nexus-based NTC Explosives Safety Training module and should be familiar with ESH-GP549, *Storage, Transportation, and Use of Explosives*, prior to starting any operations involving ammunition and explosives.

2.1 Only authorized NTC staff may sign for and receive ammunition and explosives.

2.2 All ammunition and explosives must be regularly inventoried and accounted for as per ESH-GP-549.

2.3 Place ammunition and explosives in approved storage locations as soon as possible after receipt.

2.4 Never leave explosives and ammunition unsecured.

2.5 If a situation arises that precludes the proper security or storage of ammunition or explosives, notify the applicable line manager and ES&H staff immediately.

2.6 Transport of ammunition and explosives by vehicle will be in accordance with procedures prescribed by the U.S. Department of Transportation, DOE, State of New Mexico, and Kirtland Air Force Base (KAFB) regulations. For questions concerning the transport of ammunition or explosives, contact the ES&H staff (845-5170, extensions 153 or 155).

2.7 Ammunition storage areas will be cleaned regularly so explosive residue or combustible materials do not accumulate. All explosive and combustible materials collected during cleaning will be properly disposed of.

2.8 All motor vehicles used to transport ammunition and explosives will be inspected and documented prior to use.

2.9 Only trained and designated NTC staff that have a current vehicle operator's license may transport ammunition and explosives. Consult with your supervisor or the ES&H staff (845-5170, extensions 153 or 155) on questions concerning the transportation of ammunition or explosives.

3.0 BARRICADES AND PHYSICAL HAZARD PROTECTION

3.1 Ensure all floor and wall openings and open-sided floors from which there is a drop of 4 feet or more are guarded. The opening must be guarded with a handrail consisting of a top rail, mid-rail, and posts. The handrail must be placed at a vertical height of 42 inches and be constructed to withstand 200 pounds of force in any direction. A 4-inch toe board should be included around the perimeter.

3.2 Place guardrails around floor holes larger than 1 foot in diameter. Cover permanent floor openings of 2 feet and smaller with 3/4-inch plywood, secured against displacement.

3.3 When performing work on overhead walkways, aisles, or stairs, provide barricades and/or warning devices that will prevent injuries to people in work areas below.

3.4 When performing overhead work on unprotected platforms or ladders higher than 6 feet off the ground, wear an approved personal arrest fall protection system.

3.5 When welding, cutting, or grinding, provide barricades, shields, and warning signs to prevent others from being exposed to hazards.

3.6 Obey all warning signs posted in work areas.

4.0 CHEMICALS AND COMPRESSED GASES

4.1 Chemicals

For the purpose of this section, the term "chemical" refers to any substance other than water that is used for a chemical effect. Operations involving chemicals should be

reviewed and approved by qualified individuals prior to their use. PPE requirements and handling restrictions must be clearly specified.

4.1.1 Maintain work areas in a clean and organized manner.

4.1.2 Handle all chemicals in accordance with Material Safety Data Sheet (MSDS) requirements.

4.1.2.1 Always read the label on the container before using. Request further instructions from your supervisor, if needed.

4.1.2.2 You are responsible for knowing the properties of chemicals before working with them as well as the special safety precautions and PPE that may be required. For detailed information on hazards, first-aid, physical characteristics, and handling, consult the MSDS for the chemical. Call the ES&H staff at 845-5170, extensions 153 or 155. The ES&H staff maintains a current collection of MSDS for all hazardous chemicals at the NTC.

4.1.3 If a chemical comes into contact with your skin or eyes, immediately flush the area extensively with cold water for 15 to 30 minutes and seek medical care.

4.1.4 Store toxic or hazardous materials in areas designated by your supervisor and in containers properly labeled with the name and/or makeup of contents, date, and appropriate hazard warnings.

4.1.5 Wear appropriate PPE when working with or around chemicals. Required PPE is provided by your employer at no cost to you, but it is your responsibility to use it.

4.1.6 Do not eat, drink, or smoke in areas where chemicals are handled.

4.1.7 Do not mix chemicals or cleaning agents unless you are authorized to do so and are aware of, and prepared for, potential adverse reactions.

4.1.8 When mixing acid with water, always pour the acid into cold water slowly. Pouring water into acid can cause acid splatter.

4.1.9 Rules have been established regarding the mixing of waste chemicals. For specific instructions on preparing waste for disposal in accordance with federal and NTC programs and policies, call the ES&H staff (845-5170, extensions 153 or 155).

4.1.10 Place chemical waste in approved containers having secure methods for sealing filler points.

4.1.11 Affix a chemical waste tag to the container as soon as the waste is placed in the container. Ensure the tag includes a list of the contents and the date.

4.1.12 When working with flammable liquids with a flash point below 100 degrees Fahrenheit (found on the MSDS), observe the following four basic safeguards.

4.1.12.1 Isolate the operation from other unrelated operations, or move to a remote area.

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4.1.12.2 Confine liquids in approved closed containers with appropriate labels.

4.1.12.3 Ensure the area is well-ventilated to prevent the accumulation of explosive gases.

4.1.12.4 Eliminate potential ignition sources (for example, open flames, spark-producing sources, static charge accumulators, or other potential heat sources).

4.2 Compressed Gases

4.2.1 Compressed air sources must be reduced to 30 psi, or lower, prior to use.

4.2.2 Use compressed air for cleaning only for limited purposes that do not involve toxic materials and do not include cleaning clothing, hair, or body.

4.2.3 Do not direct compressed air at yourself or anyone else as it could result in injury.

4.2.4 Separate oxygen cylinders in storage from fuel-gas cylinders by a minimum distance of 20 feet or by a barrier that is at least 5 feet high and capable of withstanding a fire for as long as 30 minutes.

4.2.5 Avoid dropping or striking compressed gas cylinders.

4.2.6 Secure compressed gas cylinders in an upright position when in use, in storage, or being moved. Cylinders moved by forklift must be secured upright in an approved rack or cage. Certain “short” cylinders may be temporarily stored in a horizontal position—see the MSDS for storage requirements.

4.2.7 Do not lift compressed gas cylinders with an electromagnet.

4.2.8 Ensure valve caps are screwed in place on all gas cylinders when regulators are not attached—this will help prevent damage to valve assemblies. Install valve caps before moving cylinders.

4.2.9 To prevent leaking of gas, close cylinder valves and release regulator pressure on all units when not in use.

4.2.10 Close cylinder valves:

- When work is finished,
- On empty cylinders (leaving approximately 25 psi residual pressure), or
- Before a cylinder is moved.

4.2.11 Store all combustible materials such as gasoline, oil, or grease separately from oxygen cylinders and equipment at all times. Use oxygen regulators on oxygen cylinders. Never use another combustible gas regulator on an oxygen cylinder.

4.2.12 Do not allow an arc to be struck on a gas cylinder.

4.2.13 The fusible plugs on acetylene cylinders melt at about the boiling point of water. If a valve becomes clogged or frozen, thaw it with warm, not boiling, water applied only to the valve. Never use a flame or heat gun.

4.2.14 Ensure that acetylene cylinders are stored, transported, and used in an upright position. Ensure all compressed gas cylinders bear proper Department of Transportation markings.

4.2.15 Use two-wheel trucks designed for moving cylinders to prevent back injuries and dropped cylinders.

4.2.16 Set acetylene cylinder regulators to limit discharge pressures to no more than 15 psi.

4.2.17 Call the ES&H staff (845-5170, extensions 153 or 155) for information on proper disposal procedures for any empty gas cylinders.

4.3 Emergency Procedures

4.3.1 Alert employees in the immediate vicinity to evacuate the area.

4.3.2 Dial **911** for emergency assistance. (Dial **853-9111** if calling from a cell phone). Notify the work area supervisor and the ES&H staff (845-5170, extensions 153 or 155).

4.3.3 Know the locations and use of emergency equipment such as fire extinguishers, emergency eyewash stations, showers, and chemical spill kits.

4.3.4 Supervisors responsible for chemical use areas should ensure that emergency equipment is regularly checked for readiness.

4.3.4.1 Test emergency eye wash facilities for at least 1 minute each month.

4.3.4.2 Wall-mounted fire extinguishers must be inspected monthly, and the inspection tag must be dated and initialed.

5.0 CONFINED SPACES ENTRY

The term “confined space” can refer to a tank, vessel, silo, vault, pit, sump, excavation, open-topped space (more than 4 feet deep), pipeline, duct, sewer, or tunnel. A confined space has limited means of entry and egress, unfavorable ventilation, and/or is subject to accumulation of hazardous or toxic gases. As such, is not designed for continuous occupancy, and can be lethal.

Some confined spaces have been identified at the NTC. However, untrained or unauthorized NTC employees are prohibited from entering such spaces.

If there is a question regarding a confined space, call the ES&H staff (845-5170, extensions 153 or 155).

6.0 ELECTRICAL SAFETY

6.1 Only trained, qualified, and authorized NTC employees will be permitted access to electrical panels and electrical enclosures.

6.2 Extension cords will not be (1) used as a substitute for fixed wiring; (2) run through holes in walls, ceilings, or floors; (3) run through doors, windows, or similar openings; (4) attached to building surfaces; or (5) or concealed behind walls, ceilings, or floors.

6.3 Keep water out of all electrical equipment.

6.4 Protect the insulation on all electrical cords. Do not tie coiled electrical cords with wire.

6.5 Electrical equipment used in working areas, wet areas, chemical-use areas, or hazardous areas must be properly protected/grounded.

6.6 Use pneumatic cleaning devices with extreme caution in and around electrical equipment and persons in the workplace. Keep pressure below 30 psi.

6.7 Report all electrical malfunctions such as blown fuses, sparking or smoking motors, or frayed wiring to your supervisor.

6.8 Double-insulated tools and appliances may be used in lieu of grounded equipment in non-hazardous locations.

6.9 Provide sufficient access and working space for all permanently mounted electrical equipment, as specified in NEC 110-16 and 110-34. A minimum of 4 feet clear working space on all sides is recommended.

6.10 Consult NTC Maintenance staff (845-5170, extension 347 or 460) before starting up electrical equipment that is new or that you are unfamiliar with.

6.11 Use ground fault circuit interrupters (GFCIs) on electrical equipment in damp, wet, or hot/humid locations, or by sink installations. GFCIs can be installed at the receptacle or at the breaker panel. For short-term use, portable cord and plug units are permitted. For assistance, contact Maintenance staff (845-5170, 347 or 460) or ES&H staff (845-5170, extensions 153 or 155).

6.12 Follow the NTC Lockout/Tag-Out procedures below.

6.12.1 Isolate all sources of energy before beginning repair or maintenance work on machinery and equipment.

6.12.2 All machinery and equipment will be locked out and tagged out of service to prevent accidental start-up.

6.12.3 Do not attempt to operate any switch, valve, or other energy-isolating device when it is locked or tagged out of service.

6.12.4 Lock and tag out all energy sources, including electrical, hydraulic, pneumatic, thermal, gravity, stored, and chemical systems.

NOTE: For additional Lockout/Tag-Out information, see:

- NTC-PM-406, *NTC Site Maintenance Plan*
- ESH-GP-536, *Shop Operations and General Maintenance*

- ESH-GP-537, Lockout/Tag-Out Program.

6.13 Ensure all NTC facility electrical systems comply with NEC requirements.

6.14 Maintain electrical fixtures and appliances in good condition.

7.0 EMERGENCY RESPONSE

7.1 In your work area, be familiar with the emergency evacuation diagrams and emergency exits, and discuss emergency procedures with your supervisor. Ask questions if you do not fully understand something. Be sure you familiarize yourself with:

A. Locations of fire alarm pull stations,
B. Primary and secondary escape routes from the building,
C. Plans for assisting personnel with medical problems or disabilities,
D. Emergency evacuation assembly locations,
E. Your Building Emergency Team (BET) members.

7.2 During emergencies, protect government property to the maximum extent practicable without endangering personnel.

7.3 Follow the procedures listed below in the event of any emergency.

7.3.1 Report the emergency immediately to your supervisor or by dialing **911**. (If using a cell phone, dial **853-9111**).

7.3.2 If the emergency requires evacuation of your building, follow instructions of your BET and walk from the building in an orderly manner – do not run.

7.3.3 If you have time and there is no immediate danger, turn off all office machines and close windows and doors.

7.3.4 Secure classified material if you can do so quickly; if not, cover the materials and take them with you.

7.3.5 Rapidly collect important personal items (purses, car keys, cell phones) and take them with you.

7.3.6 After the emergency is declared and 911 has been called, do not use an office telephone.

7.3.7 When evacuating the building, use the established emergency routes unless directed otherwise by the BET representative.

7.3.8 Assemble in designated areas. Stay at least 50 yards from any building, and do not block emergency response vehicle access routes.

7.3.9 Report to your supervisor so you can be accounted for.

- Supervisors will account for their employees.

- Instructors will account for their students.
- Escorts will account for visitors.

Missing or unaccounted for employees, students, or visitors will be reported to the NTC Human Resources Representative.

7.3.10 Stay in the assembly areas until further instructions are provided.

8.0 ENVIRONMENT

8.1 Everyone at the NTC is responsible for protecting the environment. Make it your business to know which permits, laws, and regulations apply to your work area and job responsibilities. Not complying with the permits or laws and regulations can result in fines and closure of operations as well as damage to the environment. You can be held personally responsible for deliberately violating environmental protection laws. Federal agencies that regulate activities conducted at the NTC include the Environmental Protection Agency, DOE, the Department of Labor, and the Department of Transportation. The main state agency that regulates the activities of the NTC is the New Mexico Environment Department.

8.2 Some of the federal laws and regulations that govern operations conducted at the NTC facilities include the following:

- Clean Air Act
- Resource Conservation and Recovery Act
- Clean Water Act
- National Environmental Policy Act
- Toxic Substances Control Act
- National Historic Preservation Act

8.3 Some of the state laws and regulations that govern operations conducted at the NTC facilities include the following:

- New Mexico Air Quality Control Regulations
- New Mexico Environmental Compliance Act
- New Mexico Water Quality Act
- New Mexico Hazardous Waste Act

8.4 Waste minimization means reducing the amount of waste or eliminating it altogether. The basic goal of waste minimization is to preserve natural resources. Every NTC employee is responsible for knowing the approved methods of dealing with waste. Specifically, each employee must learn the methods he/she will use on the job. Some ways to minimize waste and help prevent pollution include ordering less hazardous products and using good planning and good housekeeping.

8.5 Waste segregation means keeping different kinds of waste separate to preclude potentially hazardous accumulations, and reactions, between incompatible materials.

8.6 Source reduction includes using and buying fewer materials, and choosing materials that have the least impact on the environment. Source reduction is superior to waste treatment, storage, and disposal. Source reduction includes:

- Recycling materials within a process
- Substituting less hazardous materials
- Changing the process
- Changing the technology
- Changing administrative procedures
- Practicing good housekeeping.

8.7 *Recycling* is using, reusing, or reclaiming usable material from waste. Reducing waste at the source is superior to recycling, but recycling is preferable to discarding materials that can be reused. Recycling techniques include:

- Use or reuse: Returning a potential waste material either to the originating process as a substitute for an input material, or to another process as an input material;

- Reclamation: Recovering a useful or valuable material from waste.

9.0 FIRE PREVENTION

9.1 In case of fire or explosion, dial **911** and evacuate the area. (If calling on a cell phone, you must dial **853-9111**). Notify the area supervisor and ES&H staff (845-5170, extensions 153 or 155) of the incident immediately.

9.2 Know the following information:

A. Locations of fire alarm pull stations;
B. Emergency evacuation routes and emergency exits from your work place; and
C. Your Building Emergency Team (BET) members.

9.3 Dispose of oily rags, wipe cloths, and other flammable items in designated, labeled receptacles with self-closing lids.

9.4 Store flammable liquids in properly labeled metal safety containers equipped with self-closing lids and flame arresters in the spouts. Store these containers in designated flammable liquids storage areas. Do not store flammable liquids in glass containers having a capacity larger than 1 gallon.

9.5 Store quantities of liquid flammable materials in excess of 25 gallons in appropriately labeled metal flammable liquid storage cabinets.

9.6 Keep access to fire extinguishers, fire escapes, emergency exits, outside doors, and hallways clear of obstacles.

9.7 Do not introduce flame- or spark-producing items into areas where there is a potential for concentrations of flammable gases or vapors. If an area is in doubt, contact the ES&H staff (845-5170, extensions 153 or 155) for tests for flammable vapors such as those in tanks, sumps, and sewers.

9.8 Flammable hydrogen gas is produced by charging batteries. Do not introduce open flames, sparks, or electrical arcs within 30 feet of a battery-charging area.

9.9 Do not charge batteries without first checking the electrolyte level. Add distilled water if necessary.

9.10 Do not store flammable or combustible materials in boiler, furnace, or water heater rooms.

9.11 Do not remove safety pins or break the seals on a fire extinguisher unless it is to be used to fight a fire.

9.12 If you see a fire extinguisher that has lost pressure or has a seal or pin missing, immediately notify your supervisor or contact the ES&H staff (845-5170, extensions 153 or 155).

9.13 Adhere to the following smoking rules:

9.13.1 Smoking is not permitted in any government building or vehicle.

9.13.2 Smoking is only permitted in designated outdoor smoking areas.

9.13.3 Cigarette residue will be disposed of in the cigarette butt cans located at designated smoking areas.

10.0 FIRE PROTECTION

10.1 Overview

Fire is the third leading cause of accidental deaths in the United States, yet most people fail to prepare themselves for the possibility of a fire. More than 70 worksite fires occur every day. In case of fire, your first responsibility is to protect yourself. Always follow the instructions of the BET member in an emergency.

Be familiar with the emergency evacuation maps and general assembly areas posted within the buildings or shown in the emergency plan. Leave the building or area quickly, but do not run. Do not attempt to fight the fire unless you have been trained to use the wall-mounted fire extinguishers and can do so with no danger to yourself. Give priority to notifying all other occupants and helping those occupants who have physical disabilities to evacuate quickly.

10.2 In the Event of Fire

10.2.1 In the event of any fire (no matter how small), dial **911**. (If using a cell phone on KAFB, dial **853-9111**).

10.2.2 Do not attempt to fight a fire – your first responsibility is to get out of the building safely. Only BET members are trained to use the wall-mounted fire extinguishers at the NTC.

10.2.3 When evacuating a burning building, follow BET member instructions.

10.2.4 If you are the last one out of a room, close the door but don't lock it. Locking the door will slow down the fire department's search and rescue efforts.

10.2.5 Walk, do not run, to the nearest exit.

10.2.6 Stay low to avoid smoke and toxic gases. The best air is close to the floor, so crawl if necessary.

10.2.7 Cover your mouth and nose with a damp cloth to help you breathe.

10.2.8 Once outside the building, report to your designated assembly area for accountability purposes.

10.2.9 If trying to escape from a fire, remember the following:

10.2.9.1 Never open a closed door without feeling it first. Use the back of your hand so you will not burn your palm. If the door is hot, try another exit.

10.2.9.2 If there is no other door or window leading out, seal the cracks around the doors and vents with anything you can find to keep smoke out until you are rescued.

10.2.9.3 If you are trapped, look for a telephone, call 911 and tell them exactly where you are.

10.2.9.4 If you are having trouble breathing, stay close to the floor and cover your mouth and nose with a cloth.

10.3 Fire Classification

Fires are classified by the type of material burning. Know the classes of fires so you can choose the right fire extinguisher in an emergency. Each class of fire contains different igniting materials. Different methods must be used to prevent different kinds of fires.

This section describes the classes of fire, igniting materials, and methods used to prevent each class of fire.

10.3.1 Class A: Ordinary combustibles such as wood, cloth, paper, rubber, plastic, and other common materials.

- Keep storage and working areas free of trash.

10.3.2 Class B: Flammable or combustible liquids or gases such as gasoline, kerosene, paint, paint thinner, and propane.

- Don't refuel gasoline-powered equipment in a confined space, or in any area near an open flame or other heat source.
- Don't refuel gasoline-powered equipment when the equipment is hot.
- Store flammable liquids in tightly closed, spill-proof containers.

- Use flammable liquids only in well-ventilated areas.
- Place oily rags in covered, approved containers.

10.3.3 Class C: Energized electrical equipment such as appliances, switches, panel boxes, and power tools.

- Replace old wiring, worn insulation, and broken electrical fittings.
- Prevent motors from overheating by keeping them clean and in good working order.
- Ensure all electrical tools and equipment are properly grounded.

10.3.4 Class D: Certain combustible exotic metals such as magnesium, titanium, potassium, and sodium.

- Be aware of storage requirements for specific metals to prevent inadvertent chemical reactions and ignition.

10.4 Fire Extinguisher Ratings

Fire extinguishers are rated for the four classes of fires discussed above. The ratings are shown on the faceplate of the extinguisher. If a fire extinguisher is used properly, it can save lives and property by putting out or containing the fire until the fire department arrives. Only BET members are trained to use wall-mounted fire extinguishers at the NTC, using the **P-A-S-S** code:

- **P**ull the pin: Some extinguishers require releasing a lock latch, pressing a puncture lever, or carrying out some other action.
- **A**im low: Point the extinguisher nozzle at the base of the fire.
- **S**queeze the handle: This releases the extinguishing agent.
- **S**weep from side to side: Keep the extinguisher aimed at the base of the fire and sweep back and forth until the fire is out.

NOTE: Your safety is the main concern of the NTC. Do not fight a fire unless you have been properly trained to do so.

11.0 FIRST AID AND MEDICAL

11.1 Immediately report all work-related injuries and illnesses to your supervisor, the ES&H staff, or Human Resources representative, no matter how minor. If necessary, seek treatment from the NTC contract physician as soon as possible.

11.2 Dial **911** to request emergency medical assistance at any element of the NTC (if calling on a cell phone on KAFB, you must dial **853-9111**). Be prepared to state:

A. Nature of illness or injury,
B. Location where emergency responders are needed, and
C. Your name and the phone number from where you are calling.

11.3 All head, eye, and back injuries should be reviewed by the NTC contract physician as soon as possible.

11.4 Do not move a seriously injured person, except to prevent further injury. The victim's head and neck should be stabilized until emergency responders arrive. While waiting, regularly check the victim's pulse, respiration, and level of consciousness. Place direct pressure on points of heavy bleeding, preferably with a bandage. Do not provide any first aid treatment beyond your level of training.

11.5 For the most effective initial treatment:

A. Apply ice packs to bruises and muscle strains (never apply ice directly to skin).
B. Run cool (not cold) water over burned skin.

11.6 If a chemical comes into contact with your eyes or skin, flush the area extensively with cold water. Allow 15 minutes for eyes and 5 minutes for skin. Seek immediate medical attention.

12.0 HOUSEKEEPING

12.1 Remove trash, debris, or obstacles from walkways inside and outside of your work area.

12.2 Clean up spilled liquids immediately to prevent slips and falls.

12.3 Discard trash, scrap, and waste materials in properly labeled receptacles.

12.4 Keep emergency exits, hallways, fire extinguishers, eye wash stations, and fire alarm pull stations clear and unobstructed at all times.

12.5 Keep access to power switches, fuse boxes, junction boxes, and other electrical equipment free from obstruction to allow access in case of emergency.

12.6 Keep hoses, cords, and other tripping hazards off floors and stairs at all times. Cords that must lie across a floor must be protected, or signs or barricades must be emplaced.

12.7 Do not leave nails, splinters, or sharp objects protruding from material or lying on floors.

12.8 Return chemicals to appropriate storage cabinets after use.

13.0 INDUSTRIAL HYGIENE

Industrial hygiene is the anticipation, recognition, evaluation, and control of potential health hazards in the workplace that may cause illness, discomfort, or a lack of well-being among workers or among members of the community.

- ANTICIPATION is the identification and control of hazards before an operation begins or a facility is constructed.

- RECOGNITION is the identification of hazards and their effects.
- EVALUATION is the analysis of hazards and their effects by using the senses and monitoring instruments.
- CONTROL is the implementation of specific requirements that are used to eliminate or minimize hazards and their effects.

13.1 Types of Industrial Hazards

A. Chemical hazards: This category includes liquids, solids, fibers, mist, dust, fumes, smoke, gases, and vapors.

NOTE: A copy of the NTC Hazardous Materials Inventory is available on the Nexus.

B. Physical hazards: This category includes lead, noise, vibration, temperature extremes, and non-ionizing radiation (such as the radiation from infrared and ultraviolet radiation from lasers, microwaves, or radio frequency generated during the operation of accelerators).

C. Biological hazards: This category includes insects, molds, bacteria, viruses, and yeast.

D. Ergonomic factors: This category includes video display terminals and repetitive motion.

13.2 Agencies Governing Industrial Hygiene

Several agencies establish the regulations, standards, and guidelines that industrial hygienists use to evaluate hazards. These agencies include:

A. OSHA (Occupational Safety and Health Administration): Issues mandatory regulations that have the power of law.

B. ANSI (American National Standards Institute): Serves as the administrator and coordinator for the U.S. private sector voluntary standardization system.

C. NIOSH (National Institute for Occupational Safety and Health): The federal agency responsible for making recommendations for the prevention of work-related disease and injury. NIOSH is part of the Center for Disease Control.

D. ACGIH (American Conference of Governmental Industrial Hygienists): A member-based organization dedicated to industrial hygiene and occupational health and safety.

E. DOE (U.S. Department of Energy): Combines regulations and guidelines from the above agencies into one industrial hygiene program.

13.3 Exposure

The degree or extent of any health hazard depends on the conditions of exposure to the hazard. Examples of conditions of exposure include routes of entry into the body, concentration or level, exposure time, and individual susceptibility.

Hazards can be evaluated by using senses such as smelling, seeing, and hearing; by noticing body signs and symptoms (qualitative evaluation); and by measuring (quantitative evaluation).

A qualitative evaluation of a hazard is limited because your senses cannot tell you the degree of the hazard. Also, the hazard may not give signs that you can readily sense; for example, your senses cannot detect an odorless, clear vapor. Therefore, a qualitative evaluation is the least accurate method of studying hazards.

A quantitative evaluation is the more accurate method of evaluating hazards. However, quantitative methods are not available for all hazards.

13.4 Hazard Control

Hazards in the workplace can be controlled by a variety of methods. These methods are listed below in order from the most preferred to the least preferred.

A. Elimination: The removal of a potential hazard before it can occur by design of an operation (how work is done) or by design of a facility (how a building or site is constructed).

B. Substitution: The replacement of a high hazardous material or process with a less hazardous material or process.

C. Engineering controls: The mechanical or structural systems used to reduce or minimize potential hazards. Examples include ventilation systems, remote handling, fume hoods, and acoustic absorption.

D. Administrative controls: The required safety procedures that minimize potential hazards. Examples include proper work practices, limits in exposure time, training, SOPs, and special work permits.

E. PPE: The least preferred method of control, PPE should only be used to supplement other control methods. Examples include protective clothing (lab coats, safety shoes, helmets, and gloves), protective eyewear (safety glasses, goggles, and face shields), hearing protection, and respiratory equipment.

14.0 INTEGRATED SAFETY MANAGEMENT

All work at the NTC will be conducted in accordance with the Integrated Safety Management System. It is NTC policy to incorporate safety into the planning and execution of all work and to ensure safety from hazards for NTC workers and the environment. NTC will implement appropriate controls for those hazards that cannot be totally removed.

14.1 Seven Guiding Principles

DOE and the NTC have agreed to the seven guiding principles below to provide overall direction and guidance for instituting Integrated Safety Management.

1. ***Line Management Responsibility for Safety.*** Line management is responsible and accountable for the protection of employees, the public, and the environment. All employees are responsible and accountable for the safe conduct of their activities.

2. ***Clear Roles and Responsibilities.*** There shall be clear roles and lines of responsibility, authority, and accountability at all levels of the organization to ensure protection of employees, the public, and the environment.

3. ***Competence Commensurate with Responsibilities.*** All employees will have the experience, knowledge, skills, and abilities needed to perform their work safely and competently.

4. ***Balanced Priorities.*** Management will allocate resources to address safety, programmatic, and operational considerations. No work will be performed unless it can be performed safely.

5. ***Identification of ES&H Standards and Requirements.*** Hazards shall be evaluated and appropriate controls implemented before work is performed to provide adequate protection to employees the public, and the environment.

6. ***Hazard Controls Tailored to Work Being Performed.*** Engineered and administrative controls shall be in place to prevent and control work-associated hazards.

7. ***Work Authorization.*** No work will be performed unless it can be shown to be done safely.

14.2 The Five Core Functions

The five-step process for performing work is used by the DOE/NTC to support the establishment, implementation, and assurance of safe work practices.

1. ***Define the Scope of Work***
   - Translate the scope of the project into work.
   - Set performance expectations.
   - Prioritize tasks and allocate resources.

2. ***Analyze the Hazards***
   - Identify and analyze the hazards.
   - Categorize the hazards.

3. ***Develop and Implement Controls***
   - Identify appropriate standards and requirements.
   - Identify and implement needed controls to prevent and control hazards.
   - Establish a safety envelope.

4. ***Perform Work within Controls***
   - Confirm operational readiness.
   - Perform the work safely.

5. ***Provide Feedback and Continuous Improvement***
   - Analyze incidents, injuries, near misses, and assessments.
   - Collect feedback from employees.
   - Identify opportunities for improving performance.
   - Implement changes to improve performance.
   - Reinforce implemented work practices.
   - Hold employees accountable for their performance.

14.3 Benefits of Integrated Safety Management

1. Integrates safety into work planning and execution.

2. Improves working conditions by tailoring hazard controls to the work being performed.

3. Identifies standards and requirements for conducting mission operations safely.

4. Establishes clear roles and lines of authority and responsibilities.

5. Contributes to safety at all levels.

6. Balances priorities and resources to address safety, programmatic, and operational considerations.

7. Drives continuous improvement in the area of ES&H.

15.0 LADDERS

15.1 Before using a ladder, inspect it for defects such as broken safety feet, split side rails and rungs, broken brackets, or loose supports and bolts.

15.2 Remove an unsafe ladder from service and tag it "DANGEROUS, DO NOT USE" until it can be repaired.

15.3 Ladders should be tied off or securely held in place to prevent slipping. Safety feet for ladders are recommended.

15.4 Place straight ladders at an angle no greater than 75 degrees with the base at least1 foot from the vertical line for each 4 feet of vertical rise.

15.5 When climbing or descending, face the ladder and use both hands. Only one person at a time will be on a ladder.

15.6 Keep your body mass between the ladder side rails. If you must reach while on a ladder, move the ladder to a position that allows you to maintain your balance while reaching.

15.7 Ensure both spreaders engage before mounting a step ladder. Avoid standing or stepping on the top two steps or rungs of a step ladder. Step ladders should always be emplaced on a flat, level surface.

15.8 Ensure the ladder extends 3 feet above the level of the elevated area to which you are going.

15.9 Do not use metal ladders while working near electrical lines or equipment.

15.10 Do not use horizontal ladders as runways or scaffolds unless the ladder is designed for that purpose.

15.11 Never place a ladder in front of a door that opens towards the ladder unless the door is locked, blocked, or guarded. Do not place ladders in front of emergency exits.

15.12 Never lean a ladder against a moveable backing such as stacked boxes or barrels.

15.13 Never slide down a ladder.

15.14 Ensure you are wearing appropriate shoes before climbing the ladder.

15.15 If performing overhead work on a ladder that places you more than 6 feet from the ground, you must wear an approved personal arrest fall protection system.

16.0 FORKLIFTS

16.1 Selected employees are required to operate the single NTC forklift. The safe operation of a forklift is the responsibility of the operator. The operator should be thoroughly familiar with the vehicle's capabilities and limitations and perform a detailed pre-operational inspection prior to each shift. Deficiencies will be reported to the operator's supervisor. No forklift will be operated with known deficiencies.

16.2 Only trained and authorized operators are permitted to operate forklifts. Operators must complete basic and refresher training, as prescribed by 29 CFR 1910-178 and ESH-GP-534, Forklift Safety.

16.3 Always keep hands, feet, and head inside the operator's compartment. Guards that are provided for the protection of the operator are only effective when the operator is completely inside the cab.

16.4 Avoid abrupt stops or changes in direction that might cause the forklift to tip or the load to shift.

16.5 Watch out for pedestrians, sound the horn when approaching an intersection, and slow down for turns. Maintain a three-vehicle distance from other vehicles.

16.6 Always raise and lower loads slowly, and travel slowly with and without loads. With forklifts, slower is always better.

16.7 Loads should be centered and balanced before moving.

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16.8 Loads should always be carried as close to the travel surface as possible, usually 4-6 inches . Do not travel with elevated loads, as it adversely affects the vehicle center of gravity. If the load obstructs forward visibility, travel in reverse.

16.9 Riders are not permitted anywhere on a forklift.

16.10 If a forklift is used to elevate a workman, an approved lift platform must be placed on the forks. No one is allowed to ride in the lift platform on the way to the work site. The person to be lifted should get in the platform only when the forklift is at the work site.

16.11 Practice standard driving rules. Keep to the right when driving and give pedestrians the right-of-way.

16.12 Use the horn at intersections and when approaching corners you cannot see around.

16.13 Beware of overhead and side obstacles when moving, as they are the single greatest cause of forklift accidents.

16.14 Spills present a hazard to operators of forklifts. Ensure liquid spills are cleaned up prior to operating forklifts over the spill area.

16.15 Do not drive a forklift toward a person in front of a wall or other fixed object.

16.16 Never go under, or allow anyone else to go under, a raised load.

16.17 Before leaving a forklift:

A. Lower the forks on, and parallel to, the travel surface,
B. Turn off the engine,
C. Disengage the gearshift,
D. Set the emergency brake, and
E. Take the key.
F. Chock the wheels if parked on an incline.

16.18 Maintain clear vision in all directions when moving a load with a forklift.

16.19 When moving with a load up an incline, travel forward. When going down an incline with a load, travel in reverse. Ascend and descend grades slowly, with forks tilted back slightly.

16.20 Maintain a safe distance from the edges of inclines, ramps, and platforms. Never attempt to turn while on an inclined travel surface.

16.21 Ensure trailers and rail cars have brakes set, wheels chocked, and dock plates secured prior to entering with a forklift.

16.22 Report all accidents to your supervisor immediately.

17.0 LIVE FIRE RANGE SAFETY

The LFR is a designated Property Protection Area. As such, all visits to the LFR must be coordinated with the Range Master or designee. All visiting personnel must follow the directions posted at the main gate. All personnel will observe requirements associated with the range flags and flashing beacons.

A. All Visitors: Proceed to Building 100 and sign in with the Training Assistant. The Training Assistant will locate the PFTD sponsor via telephone or radio and coordinate a meeting place. Once business has been completed, sign out in Building 100 prior to departure from the LFR.

B. Maintenance: All maintenance activities at the LFR will be coordinated through the Range Master. Prior to performing any maintenance work, an NTC work order must be submitted to the Range Master for his review and approval.

   Upon arrival at the LFR, maintenance personnel will proceed directly to Building 100 and adhere to procedures (see paragraph A). Radios will remain on Channel 4 while at the LFR. When possible, all work at the LFR will be coordinated with the Range Master in advance.

C. Delivery Personnel: Coordinate all deliveries with the Range Master or Training Assistant (see paragraph A).

17.1 Weapons

17.1.1 Privately owned weapons will not be used at the NTC LFR.

17.1.2 Written approval by their authorizing agency is required for non-DOE LFR users that must carry weapons for duty purposes.

17.1.3 The NTC is a tenant of KAFB. NTC employees and LFR users must adhere to all applicable regulations pertaining to transport and carry of weapons.

17.1.4 All weapons and ammunition must be stored in an approved location.

17.1.5 Concealed weapons are prohibited at NTC facilities.

17.2 Firearms Safety Rules

Firearms training at the LFR is performed in accordance with safety rules found in DOE M 473.3 and PFT-SOP-644.

17.3 Four General Firearms Safety Rules

1. All firearms are always loaded.
2. Never point a firearm at anything you are not willing to destroy.
3. Keep your finger off the trigger until your sights are on the target.
4. Be sure of your target.

17.4 Fourteen Specific Firearms Safety Rules

1. It is mandatory to use approved eye and ear protection and other personal protective equipment as required by the range safety officer.

2. Unsafe conditions must be reported immediately to an instructor.

3. A firearm may only be exchanged with another shooter under the direct supervision of an instructor.

4. Firearms must not be left unattended or unsecured.

5. Firearm loading and firing may commence only on command.

6. Shooters are not permitted to talk during a firing activity except in reply to an instructor as a part of the activity or to shout “CEASE FIRE” in an unsafe situation.

7. Until the firing line has been declared safe by the firearms instructor, shooters must not move past or bend over the line.

8. All shooters must be trained on what constitutes an unsafe condition and to shout “CEASE FIRE” when such a condition is observed.

9. Smoking, eating, or drinking must be prohibited while shooting.

10. Alcoholic beverages and drugs are prohibited on firing ranges. Shooters taking medication must report this fact to the firearms instructor before reporting to the firing line. The firearms instructor is responsible for determining whether a shooter is fit based on the medication taken and whether it is safe for the shooter to use the range. A physician may be consulted if necessary.

11. Shooters must take precautions to prevent hot spent cartridge and gunshot residues from getting inside their clothing.

12. When a training session is completed, each firearm must be physically examined by the shooter and by a designated range safety officer or qualified firearms instructor to ensure that it is unloaded and in safe condition before leaving the range. If the shooter is using a duty firearm on the range, he or she may reload that weapon at the range if returning directly to duty.

13. Shooters must collect unexpended ammunition and return it to a firearms instructor.

14. While a firearm is being cleaned, live ammunition must not be allowed in the cleaning area.

17.5 Unsafe Conditions

If an unsafe condition is observed, the Instructor or Range Safety Officer will call “CEASE FIRE”, and training will cease until the problem is safely resolved. Any participant who observes an unsafe act or condition is responsible for calling "CEASE

FIRE," and an Instructor or Range Safety Officer will cease training until the problem is safely resolved.

17.6 Risk Analyses/Strenuous Activity

A risk analysis has been completed for each course of fire and training activity and facility to identify training hazards and measures to mitigate or eliminate them. An Exercise Physiologist has reviewed and approved all strenuous training performed in hot or cold environments. A safety briefing is conducted prior to each course of fire or training activity to identify hazards to participants.

17.6.1 Participants are encouraged to ask questions prior to training to ensure they are aware of training requirements and safety hazards.

17.6.2 Strenuous activities such as those performed during physical training can cause muscle sprains and strains. Muscle-stretching/warm-up sessions lasting 20 minutes are recommended to avoid injury.

17.7 LFR Road Conditions

17.7.1 Road conditions leading to the LFR are marginal and require attention and careful driving. Drivers of vehicles on KAFB may not talk on a cell phone unless it has the “hands free” option.

17.7.2 Drivers must obey posted speed limits. The Base Security Police use radar to enforce KAFB speed limits.

17.7.3 Loose gravel creates a driving hazard, and dust reduces visibility. Watch out for other drivers and for wildlife that might be on the road.

17.7.4 The driver and passengers must always wear seat belts.

17.7.5 During cold weather, ice and snow require careful driving and speed management.

17.8 Environmental Effects

17.8.1 Because of the altitude and dry climate, individuals may not realize they are becoming dehydrated. Lost fluids must be replaced, and it is very important that individuals drink sufficient amounts of liquids to stay hydrated. During training, water will be provided at each of the ranges.

17.8.2 Sunscreen and brimmed hats are recommended for protection from the direct rays of the sun. Long-sleeved shirts will sleeves rolled down are also recommended.

17.8.3 Depending on the season, biting insects may be at the LFR. Insect repellant is recommended.

17.9 Personal Protection

17.9.1 Material Safety Data Sheets for cleaning agents and lubricants are located in the cleaning rooms, as are safety glasses, gloves, and barrier creams.

17.9.2 All individuals must wear approved eye and hearing protection before entering an active range where firearms activities are being conducted. Other training-specific PPE may be required by Instructors or Escorts (see Section 9.0).

18.0 MACHINERY AND EQUIPMENT

18.1 Only use machines and equipment that you are trained and authorized to use.

18.2 Machine guards must be in place prior to use. Guards that have been removed for repairs or maintenance must be replaced before the machine is started.

18.3 Do not wear loose, baggy clothing around operating equipment. Keep shirts and blouses tucked in to prevent them from getting caught in operating equipment. Do not wear rings, bracelets, watches, or other jewelry while operating machinery.

18.4 Hair extending to the top of the shoulders is a potential hazard when operating machinery. Secure hair up to prevent it from being caught in the machinery.

18.5 Turn the machine off and wait for it to stop before placing your hands or other body parts at the point of operation.

18.6 Do not operate valves, switches, or other controls that you are not specifically authorized to operate.

18.7 Use equipment for its designed purpose and only within its rated capacity.

18.8 Foot switches on equipment such as welding machines or drill presses must be guarded with a top shield to prevent accidental starting.

18.9 Follow the lockout/tagout procedures described below.

18.9.1 When working on machinery or equipment that, if started without warning, could cause injury, you must follow the lockout/tagout procedures in:

- NTC-PM-406, *NTC Site Maintenance Plan*
- ESH-GP-536, *Shop Operations and General Maintenance*
- ESH-GP-537, *Lockout/Tag-Out Program.*

18.9.2 Tag and lock out all electrical, pneumatic, hydraulic, mechanical, chemical, thermal, or stored energy sources. Test machine and system controls to ensure zero energy potential.

18.9.3 When restarting after zero energy is verified, remove locks and tags and warn others to stand clear for start-up.

18.9.4 No one will remove a tag from tagged-out equipment or switches without the permission of the person who originally tagged the equipment.

18.10 Do not wear radio or CD headphones that reduce hearing capabilities—they may impair your ability to hear machines, warning devices, or other employee's voices.

19.0 MATERIAL HANDLING

19.1 Material Storage

19.1.1 Stack or store all boxes, crates, barrels, or pallets in a secure and stable manner, using the cross-tier or pyramid method.

19.1.2 Stack pallets or materials such as sheet metal, steel plate, or plywood on their edges. Use of stacking racks designed for that purpose is recommended.

19.1.3 Maintain clear aisles to provide access to stored materials.

19.1.4 Separate all materials that could produce an adverse chemical reaction if a leak or spill should occur.

19.1.5 Do not store materials closer than 18 inches to overhead sprinkler heads.

19.1.6 Do not store material on top of cabinets.

19.1.7 Do not store materials in aisles leading to emergency exits.

19.1.8 Do not store pallets in stacks higher than 6 feet.

19.2 Physical Handling

19.2.1 Never exceed your physical limits. Obtain help or use hoists or other mechanical equipment to lift objects too heavy for one person.

19.2.2 Lift properly. Keep your back straight, bend the knees, grip the item firmly with both hands, and lift with the leg muscles by straightening the legs. Keep the load close to your body. Never lift with your back. Use your legs.

19.2.3 Twisting your back when lifting or handling heavy objects can cause back injury. If you must turn, move your feet so your entire body turns as a unit.

19.3 Mechanical Handling

19.3.1 Select and use the proper material-handling equipment when handling materials. You must be trained and authorized to use the material-handling equipment selected.

19.3.2 Operate hoists, cranes, or other mechanical material-handling equipment within their rated capacities, and only if you are trained and authorized to do so.

19.3.3 Check all chains, slings, and cables for damage (for example, worn or frayed areas, elongation, cuts, or kinks) prior to use.

20.0 OCCUPATIONAL MEDICINE

New NTC employees will be scheduled for a physical examination. The new-hire examination provides baseline medical information that can be used for future references. For some jobs, employees must have medical surveillance exams every

year (e.g., employees working in high noise areas such as the LFR are monitored for early signs of hearing degradation and employees exposed to surface or airborne lead are monitored for blood-lead levels). These exams are mandatory. Employees who are not participating in mandatory surveillance exams may be offered routine medical examinations periodically depending on their age. Questions regarding medical examinations should be directed to the Human Resources representative.

If you incur a work-related illness or injury, no matter how minor, you must immediately report it to your Supervisor, an ES&H representative, and a Human Resources representative. The Human Resources representative will complete and submit the necessary workers' compensation paperwork. They will ensure that workers' compensation benefits are administered properly. There are stringent reporting requirements that must be met in order to get workers' compensation benefits.

NOTE: Employees need to be aware that delays in reporting injuries/illnesses could result in their workers' compensation claims being denied.

The ES&H staff will review the injury or illness to identify potential hazards and to ensure that corrective actions are taken that meet OSHA and DOE reporting requirements.

21.0 OFFICE SAFETY

NTC employees are responsible for adhering to the office safety guidelines defined here and provided by their supervisors. Supervisors will ensure hazards are identified and removed from their area(s) of responsibility. They are also responsible for ensuring employees are advised of any workplace hazards they may encounter during the workday.

21.1 General Office Safety

The leading types of disabling accidents that occur within the office are the result of falls, strains and overexertion, falling objects, striking against objects, and being caught in or between objects. All workplace illnesses and injuries, no matter how slight, must be reported at once to your Supervisor, the Human Resources representative, or the ES&H staff.

21.1.1 Do not engage in horseplay, scuffling, and other unprofessional conduct that can be dangerous to you and other employees.

21.1.2 Learn the locations of all alarm boxes, fire extinguishers, emergency evacuation routes, fire exits, and assembly areas specific to your work area.

21.1.3 Ensure emergency exits, aisles, power panels, fire extinguishers, alarm boxes, and overhead sprinkler heads are never blocked or obstructed.

NOTE: Emergency exits must be kept clear at all times.

21.1.4 Keep floors clean and free of trash—slippery floors can be a fall hazard.

21.1.5 If you observe an unsafe condition developing or in process, report the condition to your supervisor or the ES&H staff. If required, call for a “STOP WORK” to advise of the unsafe condition.

21.1.6 Do not smoke inside NTC facilities or in any government-owned or -leased vehicle. Use designated smoking areas and cigarette butt receptacles located at selected locations outside of NTC buildings where smoking is permitted.

21.1.7 Smoking is not permitted within 25 feet of any building entrances on KAFB.

21.1.8 Obey all warning signs in the workplace.

21.2 Preventing Falls and Slips

Falls and slips are the most common office accident, accounting for the greatest number of disabling injuries. Fortunately, most slipping and tripping hazards are preventable. Follow the guidelines below to help prevent a fall before it happens.

21.2.1 Be sure the pathway is clear before you walk.

21.2.1.1 Close desk and file drawers completely after every use.

21.2.1.2 Keep wastebaskets out of high-traffic areas.

21.2.1.3 Clean up spills and pick up pencils, paper clips, waste papers, and other items that present a slipping or tripping hazard.

21.2.1.4 Keep all electrical cords and phone cords out of traffic paths to prevent tripping. If necessary, tape the full length of the cord to the walking surface or use a rubber cord ramp specifically designed to minimize the risk of tripping.

21.2.2 Open one drawer of a file cabinet at a time to prevent the cabinet from falling over. It may be necessary to secure the cabinet to a wall, floor, or other object to prevent it from tipping.

21.2.3 Avoid excessive bending, twisting, and leaning backward while seated.

21.2.4 Secure electrical cords and wires away from walkways.

21.2.5 Always use a stepladder or step stool to get objects that are beyond your reach. Never use a chair as a ladder.

21.2.6 Report loose carpeting or damaged flooring.

21.2.7 Never carry anything that obscures your vision.

21.2.8 Wear stable shoes with non-slip soles.

21.2.9 If you find yourself falling, let your body crumple and roll. You are more likely to absorb the impact and momentum of a fall without injury. Reaching an arm or leg out to break your fall may result in a broken limb.

21.3 Cuts and Punctures

21.3.1 Exercise caution when working with sharp and pointed objects in the office. Staplers, hole punches, scissors, letter openers, razor blades, spike spindles, and other pointed objects can cause injury and should be handled with care.

21.3.2 Ensure paper cutters have a guard bar to prevent accidents while holding the paper. The cutting arm should be secured in the “down” position when not in use.

21.3.3 Use care to avoid getting fingers, ties, or long hair caught in office machines. Paper shredders and some other machines can catch and pull fingers, clothing, and long hair into the mechanism.

21.4 Safe Lifting Practices

Although a typical office job may not involve lifting large or especially heavy objects, it is important to follow the principles of safe lifting before doing so.

21.4.1 Before you pick up a carton or load, ask yourself these questions:

A. Is this too heavy for me to lift and carry alone?
B. How high do I have to lift it?
C. How far do I have to carry it?
D. Am I trying to impress anyone by lifting this?

21.4.2 If you feel a lift is beyond your ability, contact your supervisor or ask another employee to assist you.

NOTE: Request assistance from the Logistics staff (845-5170, ext. 421) when attempting to move office furniture or other very heavy objects.

21.4.3 To safely lift a large or heavy object:

21.4.3.1 Take a balanced stance, feet placed shoulder-width apart. When lifting something from the floor, squat close to the load.

21.4.3.2 Keep your back in its neutral or straight position. Tuck in your chin so your head and neck continue the straight back line.

21.4.3.3 Grip the object with your whole hand, rather than only with your fingers. Draw the object close to you, holding your elbows close to your body to keep the load and your body weight centered.

21.4.3.4 Lift by straightening your legs. Let your leg muscles, not your back muscles, do the work.

21.4.3.5 Never twist when lifting. When you must turn with a load, turn your whole body, feet first.

21.4.3.6 When carrying boxes or large objects up or down stairs, be sure there is adequate lighting. Look at each step, and move slowly. If you cannot see where you are walking, ask for assistance.

21.4.4 To set something down, use the same body mechanics designed for lifting.

21.5 Material Storage

Office materials that are improperly stored can lead to objects falling on and tripping employees, poor visibility, and fire hazards. A good housekeeping program will reduce or eliminate hazards associated with improper storage of materials. Examples of improper storage include disorderly piling of materials, piling materials too high, and obstructing doors, aisles, fire exits and firefighting equipment. This section describes good storage practices.

21.5.1 Do not store boxes, papers, and other materials on top of lockers or file cabinets because they can fall and cause injuries. All boxes and cartons in a pile or stack should be the same size. Always stack materials in such a way that they will not fall over.

21.5.2 Store heavy objects on lower shelves.

21.5.3 Ensure aisles, corners, and passageways remain unobstructed. Do not stack materials in these areas.

21.5.4 Storage areas should be designated and used only for that purpose.

21.5.5 Fire equipment, extinguishers, fire door exits, and sprinkler heads should remain unobstructed. Materials should be located at least 18 inches (46 centimeters) from sprinkler heads.

21.6 Workstation Ergonomics

Ergonomics means fitting the workplace to the workers by modifying or redesigning the job, workstation, tool, or environment. Workstation design can have a big impact on office workers health and well-being. (See ESH-GP-529, *Ergonomics Program*.)

21.6.1 Adjust the height of the chair's seat so your feet are flat on the floor and your knees bend at a 90 degree angle.

21.6.2 Adjust the seat pan depth so that your back is supported by the chair backrest while the back of the knee is comfortable relative to the front of the seat.

21.6.3 Adjust the backrest vertically so that it supports/fits the curvature of your lower back.

21.6.4 With your arms at your sides and the elbow joint approximately 90 degrees, adjust the height and position of the chair armrests to support your forearms.

21.6.5 Adjust the height of the keyboard so your fingers rest on the keyboard home row when the arm is to the side, elbow at 90 degrees, and the wrist straight.

21.6.6 Place the mouse, trackball, or special keypads next to the keyboard tray. Keep the wrist in a neutral position, with the arm and hand close to the body.

21.6.7 Adjust the height of the monitor so the top of the screen is at eye level and 18-24 inches away. If bifocals or trifocals are used, place the monitor at a height that allows easy viewing without tipping the head back.

21.6.8 Place reference documents on a document holder close to the screen, at the same level, and at the same distance from the eyes.

21.6.9 Use a footrest if you cannot rest your feet comfortably on the floor.

21.7 Office Electrical Safety

Electricity is an essential source of power for office operations. Electrical equipment used in an office is potentially hazardous and can cause serious shock and burn injuries if improperly used or maintained. Electrical accidents usually occur as a result of faulty or defective equipment, unsafe installation, or misuse of equipment on the part of office workers. Types of electrical hazards found in an office environment include:

A. Ungrounded equipment
B. Overloaded outlets
C. Unsafe or non-approved equipment
D. Blocked electrical panel doors
E. Improperly placed cords
F. Electrical cords placed across walkways and work areas
G. “Live” unguarded parts
H. Electrical plugs frayed or broken
I. Working on "live equipment"
J. Defective, frayed, or improperly installed cords for electrically operated office equipment.

Contact Maintenance staff (845-5170, ext. 347 or 460) to have electrical problems in your office corrected.

21.7.1 Do not run electrical cords through walls, doors, or floors, or wrap them around pipes.

21.7.2 Ensure each electrical wall outlet supplies power only to the number of electrical cords for which it was designed.

21.7.3 To provide service for additional equipment from a single outlet, use an approved power strip. Do not exceed the amperage rating of the power strip, and do not plug one power strip into another.

21.7.4 Do not use electrical cords if the cord insulation is broken or separated from the plug or the machine.

21.7.5 If an electrical plug has a grounding prong, do not remove the grounding prong.

21.7.6 Space heaters can present a fire hazard. Only space heaters with anti-tilt switches may be used at NTC facilities. Keep clothing, drapes, and other combustibles away from the heater. Turn off heaters when not in use and at the end of the work day.

21.7.7 Employees working on, or around, around electrical equipment must receive training on the hazards of that equipment.

21.7.8 Ensure energized transformers and other energized equipment are protected by integrated housings, or by an enclosure that excludes access to unauthorized personnel.

21.7.9 Ensure that employees do not handle electrical equipment while standing on a wet surface or when the hands, feet, or body are wet.

21.7.10 Ensure temporary wiring is grounded in accordance with National Electrical Code (NEC) requirements.

21.7.11 Lockout/tagout will be performed before any work on energized circuits.

22.0 PERSONAL PROTECTIVE EQUIPMENT

22.1 Eye and Face Protection

22.1.1 Eyeglasses

Wear approved industrial safety eyeglasses that meet ANSI Standard Z87.1-2003 whenever you enter and/or work in areas requiring the use of safety glasses. Side shields or wraparounds may be required if there is a danger of objects getting into the eyes from the side.

Safety glasses with side shields are <u>always</u> required at the LFR. Safety glasses will be provided at no cost to the employee.

22.1.2 Goggles and Face Shields

22.1.2.1 Wear chemical goggles or a full-face shield when handling or moving chemicals, or where chemical splashing may occur.

22.1.2.2 Wear goggles or a full-face shield when engaged in chipping, grinding, drilling, or breaking concrete or tile, or while assisting in these activities.

22.1.3 Welding Goggles and Hoods

22.1.3.1 Wear welding goggles with a minimum number 5 shade filter lens when engaged in oxy/acetylene welding or cutting.

22.1.3.2 Wear a full welding hood with a minimum number 10 shade filter lens when engaged in or observing arc welding.

22.2 Head Protection

22.2.1 Wear a Type 2, Class A hard hat when working in an area where there is a hazard of falling or flying objects.

22.2.2 Wear a Type 2, Class B electrical shock resistant hard hat when working on energized electrical circuits.

22.3 Hearing Protection

All individuals must wear approved hearing protection before entering a range where firearms activities are being conducted, or when working in a high-noise area.

22.3.1 If you suspect high noise levels in your work area, contact the ES&H staff (845-5170, extensions 153 or 155) for an evaluation of the noise levels.

22.3.2 Wear approved hearing protection with a minimum noise reduction rating (NRR) of 26 within 15 yards of a firing line, or when you are in an area where noise levels are above 85 dBA.

22.3.3 Staff members required to wear hearing protection must receive training in the use and care of the various types of hearing protection devices. Supervisors or the ES&H staff will provide this instruction.

22.4 Foot Protection

22.4.1 Safety boots or shoes are required if the work involves handling of heavy materials that, if dropped, could injure the foot, or if work is performed on or near mechanical or motorized equipment.

22.4.2 Instep protection (metatarsal guards) may be necessary when performing heavy material handling operations or when using heavy equipment.

22.4.3 When working in areas where a chemical spill hazard exists, wear safety shoes with impermeable uppers.

22.5 Hand and Arm Protection

22.5.1 Wear appropriate gloves when handling toxic, corrosive, or hot materials, or where a risk of glass, metal, or wood splinters exists.

22.5.2 Wear approved arm or body covering while engaged in welding and cutting operations.

22.6 Protective Clothing

Wear rubber gloves and eye and face protection when engaged in, assisting with, or working in the immediate vicinity of hazardous chemicals. A rubber apron or chemical suit may also be necessary.

23.0 SCAFFOLDS AND WORK PLATFORMS

23.1 Scaffolds and platforms 10 feet or more above the floor level must have a standard guardrail consisting of top rail, mid-rail, and posts. The handrail must be placed at a vertical height of 42 inches and be constructed to withstand 200 pounds of force in any direction. A 4-inch toe board should be included around the perimeter.

23.2 Scaffold and platform planks must have end cleats.

23.3 Where special scaffolding is constructed and end cleats on planks are either impractical or impossible, secure the planks and extend them at least 6 inches, and not more than 12 inches, beyond their end supports.

23.4 Secure scaffolds three or more sections high to the adjacent structure at every third section.

23.5 No one should be on a rolling scaffold while it is being moved.

23.6 Securely wire, bolt, or pin all scaffold connecting points.

23.7 Immobilize all wheels on roll-away scaffolds except while being moved.

23.8 Set and secure outriggers on all scaffolds prior to use.

23.9 Use caution when working near power lines. Do not work closer than 10 feet (3 meters) to energized electrical transmission lines.

23.10 Scaffolds and their components will be capable of supporting at least four times the maximum intended load.

23.11 Do not extend scaffold adjusting screws more than 12 inches.

23.12 Do not let the working platform height exceed four times the smallest base dimension, unless guyed or otherwise stabilized.

24.0 STOP-WORK POLICY

Any NTC employee may call “STOP WORK” on an activity or operation that poses a danger to health, safety, or the environment.

24.1 NTC employees will stop work immediately on any activity that poses a danger to health, safety, or the environment.

24.2 NTC employees will notify a supervisor in the event of a hazardous situation. The supervisor will order “STOP WORK” and remove the hazard.

25.0 TOOLS

25.1 Keep tools in a safe storage area. Falling tools can cause injuries, tripping over tools on the floor can cause falls, and sharp tools left unprotected in drawers or carried in the pocket can cause cuts.

25.2 Use tools only for the purpose(s) for which they are designed.

25.3 Examine all tools before attempting to use them.

A. Have broken or defective tools replaced or repaired.

B. Return non-double-insulated electrical equipment that is missing the grounding prong to the Maintenance office for replacement and/or repair.

C. Return electrical tools that need repair to the Maintenance office.

26.0 VEHICLES

26.1 You must have a valid state motor vehicle operator's license to operate mobile equipment. Special training and certification is required by 29 CFR 1910.176-184 for special purpose equipment, such as forklifts.

26.2 Do not allow passengers on equipment that is not designed to carry passengers. Do not allow passengers to ride on open flatbed trucks or in the open bed of a pickup truck.

26.3 Comply with all posted and written traffic regulations while operating mobile equipment on and off the NTC site.

26.4 Set hand brakes when parking vehicles, and chock wheels of vehicles parked on an incline. The transmission will be placed in PARK.

26.5 Use seat belts when riding in any vehicles on and off of KAFB.

26.6 Do not smoke in government vehicles or in rental vehicles used for official business.

26.7 Vehicle operators on KAFB cannot talk on a cell phone while driving unless there is a "hands free" feature.

27.0 CHEMICAL WASTE DISPOSAL

The ES&H staff ensures proper disposal of chemical wastes generated at the NTC.

27.1 Containers of chemical waste must be accurately identified and labeled. Call the ES&H staff (845-5170, extensions 153 or 155) for labeling assistance.

27.2 Pack small containers and glass bottles in sturdy boxes with cushioning between items.

27.3 Avoid mixing incompatible materials.

27.4 Only use containers approved by the Department of Transportation. Call the ES&H staff (845-5170, extensions 153 or 155) for assistance in selecting shipping containers.

27.5 Do not place vials, bottles, or un-dissolved solids in liquid waste containers.

27.6 Do not put mineral acids, bases, oxidizers, or other corrosive or highly reactive materials in metal cans.

27.7 Hazardous materials should be secured by the generator at the NTC-approved holding areas. Notify the ES&H staff (845-5170, extensions 153 or 155) when hazardous waste materials require disposal.

28.0 WELDING AND CUTTING

28.1 Wear a welder's hood and safety glasses during arc welding operations to prevent welding by-products from entering the eye.

28.2 Do not watch the arc from a welding operation unless you are wearing at least a number 10 shade eye protection.

28.3 Use welding screens in areas where other personnel might be exposed to sparks or the welding arc.

28.4 Provide adequate protection to contain sparks or slag when welding or cutting near, or above, other persons or activities.

28.5 Maintain adequate ventilation when welding to avoid accumulation of toxic fumes.

28.6 Wear appropriate clothing to protect skin areas during welding operations.

28.7 An ABC fire extinguisher must be present during welding and cutting operations. Welding carts must be fitted with a fire extinguisher.

28.8 To prevent damage to compressed gas cylinder walls, do not allow an arc to be struck on a cylinder.

28.9 Keep welding electrodes and rod stubs in the proper containers, and dispose of them properly.

28.10 Properly secure overhead welding lead cords, ground cords, and power supply cords when they cross traffic aisles.

28.11 Never use oxygen as a substitute for compressed air.

28.12 Open acetylene cylinder valves no more than one full turn, and leave the wrench on valve stem.

28.13 Open oxygen valves as far as the valve will go, and tighten against the seat to prevent leakage around the stem.

28.14 Fumes from cutting galvanized metal with oxyacetylene torches can be toxic. Wear an appropriate respirator designed to prevent the inhalation of metallic fumes.

28.15 Secure acetylene cylinders in an upright position to prevent loss of contents and corrosion of cylinder walls.

28.16 In oxyacetylene operations, the fuel gas line must have a check valve installed at the regulator to prevent flashback explosions.

28.17 The NTC's Hot Work Permit Program has been implemented to reduce the risk of fire associated with welding or cutting operations, and other open flame work. Contact the ES&H staff (845-5170, extensions 153 or 155) for assistance in securing a hot work permit.

28.17.1 NTC staff that perform hot work must be trained in permit requirements and safe work practices.

28.17.2 A manager or supervisor must inspect the work area and specify precautions to be taken before hot work begins.

28.17.3 Flammables or combustibles must be removed or protected from exposure to ignition sources.

28.17.4 A fire watch will be required during welding or cutting operations.

28.17.5 Contractors working at NTC facilities must comply with the NTC Hot Work Permit Program.

29.0 LABELING AND COLOR CODING

Valves, tanks, compressors, circuit breakers, fuse locations, instruments, gauges, motor control stations, relay or terminal cabinets, room doors, emergency and fire protection equipment must be properly labeled and color coded.

29.1 Labels

29.1.1 Information on labels must be accurate and legible;

29.1.2 Labels must be securely attached and oriented for easy reading;

29.1.3 Labels must properly identify equipment function and/or hazard;

29.1.4 Piping labels must indicate fluid name and flow direction;

29.1.5 Pipes containing hazardous or toxic fluids or explosives gases must bear unique markings;

29.1.6 Labels and adhesives must be made of materials that are compatible with their application.

29.2 Label Placement

29.2.1 Labels must be placed on, or as near as practicable, to the equipment requiring the label;

29.2.2 Labels must be oriented in an easy to read manner so the correct component is easily identified;

29.2.3 Label placement should not interfere with equipment operation.

29.3 Label Replacement

29.3.1 Missing, damaged or illegible labels must be identified and replaced. Temporary labels may be used until permanent labels are installed;

29.3.2 Regular inspection and maintenance procedures will include verification of labels;

29.3.3 A supervisor will verify that missing, damaged or illegible labels have been replaced by appropriate temporary or permanent labels.

29.4 Color Coding

29.4.1 Fire protection equipment, danger, and emergency stops on machines must be color-coded **RED**;

29.4.2 Physical hazards, flammable storage cabinets and material handling equipment must be color coded **YELLOW**;

29.4.3 First aid and safety equipment must be color coded **GREEN**;

29.4.4 Dangerous machine parts, exposed cutting devices and inside of moveable guards, enclosed doors and transmission guards must be color coded **ORANGE**;

29.4.5 Color coding for piping must be:

- **Red** for Fire Protection
- **Yellow** for Dangerous
- **Green** for Safe
- **Blue** for Protective Materials

29.4.6 Gas cylinders must bear the appropriate color coded DOT label;

29.4.7 Hoses for specific gases must be:

- **Red** for Fuel Gas
- **Green** for Oxygen
- **Black** for Inert Gas

29.5 Accident Prevention Tags

Accident prevention tags must be:

- **Red** for **DANGER**, with lettering/symbols in a contrasting color;
- **Yellow** for **CAUTION,** with lettering/symbols in a contrasting color;
- **Orange** for **WARNING,** with lettering/symbols in a contrasting color;
- **Orange-Red** for **BIOLOGICAL HAZARD,** with lettering/symbols in a contrasting color.

30.0 SUMMARY

The NTC has policies, procedures, protocols, checklists, and safe work practices for use in our daily work. Management and health and safety professionals are also available to advise and consult on ES&H issues for all activities. Using these resources is important, but we can achieve even safer performance by remembering the 10 rules below.

1. **LEARN** the safe and proper way to do your job before you start.

2. **THINK** safety and **ACT** safely at all times.

3. **FOLLOW** safety rules, regulations, and procedures—they are for your protection and the protection of your associates.

4. **WEAR** proper clothing and PPE—match your protection to the hazard.

5. **CONDUCT** yourself properly at all times—horseplay is prohibited and carelessness causes accidents.

6. **OPERATE** only the equipment you are trained and authorized to use.

7. **INSPECT** tools and equipment to be sure they are in safe condition before you start work.

8. **ADVISE** your Supervisor promptly of any unsafe conditions or unsafe work practices.

9. **REPORT** any occupational injury or illness immediately to your Supervisor, the ES&H staff, or the Human Resources representative.

10. **SUPPORT** your safety program—take an active part in safety meetings and be a participating member of the safety team.

APPENDIX C – SAFE WORK PRACTICES GUIDE FOR CONTRACTORS

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APPENDIX C – SAFE WORK PRACTICES GUIDE FOR CONTRACTORS

WELCOME

These guidelines identify the mandatory safety requirements to be observed while contractors perform work at the Department of Energy (DOE) National Training Center (NTC). To minimize risk, contractors will ensure all of their employees are aware of the hazards associated with their jobs and use proper tools, procedures, and personal protective equipment (PPE).

No work will start without a written notice to proceed. NTC reserves the right to conduct a pre-work meeting at a time and place convenient to NTC. During the start of the work meeting, the contractor will provide NTC with the following information: (1) any necessary insurance certificates; (2) a written list of subcontractor personnel and second-tier subcontractors assigned to the task order; and (3) a project management schedule.

For all construction and non-routine maintenance, the contractor will submit a preliminary hazard assessment prior to commencement of the work. No work will begin until all contractor personnel have received the NTC Pre-Work Safety Orientation.

The requirements in this document are examples of minimum requirements and, as such, are not all-inclusive. The contractor has full responsibility for ensuring safe working conditions at the job site, including providing periodic safety inspections of the worksite.

The procedures in this document apply to contractors, except where otherwise noted.

1.0 MINIMUM SAFETY REQUIREMENTS

1.1 Observe all federal, state, and Kirtland Air Force Base (KAFB) construction standards applicable to your industry. Occupational Safety and Health Administration (OSHA) Code of Federal Regulations (CFR) Parts 1910 and 1926 are the minimum standards that apply while working on NTC property.

1.2 Monitor construction operations to ensure compliance with these requirements. Contractors who fail to comply with safety requirements are subject to job stoppage until minimum requirements are met. Any such job stoppage will be at no cost to DOE or the NTC.

2.0 COMPRESSED GAS CYLINDERS

2.1 Compressed gas cylinders pose high pressure and flammability hazards and must be stored, transported, handled, and used properly.

2.2 Ensure compressed gas cylinders are clearly marked to identify the contents and are stored in a secure, upright position away from heat sources or open flames.

2.1 Gas Cylinders in Storage

2.1.1 While in storage, the regulator will be removed and the protective cap will be screwed over the valve.

2.1.2 The cylinder will be secured in an upright position to protect against falling. Soft lines such as natural rope or synthetic rope will not be used to secure the cylinder.

2.1.3 Cylinders will not be stored in the same area as petroleum-based products.

2.2 Gas Cylinders in Use

Secure cylinders in an upright position to protect against falling while in use. Gas cylinders will bear the proper Department of Transportation (DOT) labels.

3.0 CONFINED SPACES ENTRY

The term “confined space” refers to a tank, vessel, silo, vault, pit, sump, excavation, open-topped space (more than 4 feet deep), pipeline, duct, sewer, or tunnel not designed for continuous occupancy. A confined space has limited means of egress and unfavorable natural ventilation. Confined spaces may also be subject to a lack of breathable air or a buildup of toxic gases. Entry into a confined space can be lethal.

Some confined spaces have been identified at the NTC. Contractors will be authorized to enter confined spaces after they have ensured their entry will comply with NTC and 29 CFR 1910 confined space entry requirements.

If there is a question regarding a confined space, call the NTC ES&H staff (845-5170, extensions 153 or 155).

4.0 ELECTRICAL SAFETY

4.1 Employees working on, or around, around electrical equipment must receive training on the hazards of that equipment.

4.2 Ensure energized transformers and other energized equipment are protected by integrated housings, or by an enclosure that excludes access to unauthorized personnel.

4.3 Ensure that employees do not handle electrical equipment while standing on a wet surface or when the hands, feet, or body are wet.

4.4 Ensure temporary wiring is grounded in accordance with National Electrical Code (NEC) requirements.

4.5 Lockout/tagout will be performed before any work on energized circuits.

5.0 EXCAVATION OR TRENCHING

Employees working in excavations or trenches that are deeper than 5 feet will be protected from cave-ins by a protective system described in 29 CFR 1926, 650-653.

Excavations deeper than 4 feet must have an egress route (usually a ladder) every 25 feet along the length of the trench.

NOTE: A KAFB Digging Permit is required for all ground disturbances 6 inches in depth or greater (the only exception would be sprinkler head and valve box replacement/repair). This includes work to any unimproved surface on the NTC site.

To prevent damage to underground infrastructure where a digging permit has not been obtained (for example, repair/replacement of a sprinkler head and valve box), the only acceptable procedure is to hand dig.

6.0 EXTENSION CORDS

Extension cords used with portable electrical tools will be the three-wire type, with a three-prong plug. Extension cords will have an AWG Rating of 12 or 14. Inspect the cords daily for damage. Extension cords must be protected from damage from footsteps, sharp corners, projections, or pinch points. Extension cords of the correct length must be used. Multiple extension cords must not be “daisy chained.”

7.0 FORKLIFT/HEAVY EQUIPMENT OPERATION

7.1 Ensure equipment operators are in compliance with training and qualification requirements of 29 CFR 1910.178 for forklifts, and have proof of required training for other specialized equipment to be operated.

7.2 Ensure equipment is operated and maintained in accordance with federal and state OSHA requirements.

8.0 GENERAL FIRE PROTECTION

8.1 Provide appropriate fire extinguishers and hoses at work sites in accordance with the requirements of 29 CFR 1926. Any flame- or spark-generating activity (welding, cutting, grinding) will require a Hot Work Permit (see Paragraph 25.0, Welding and Cutting).

8.2 Do not conduct open burning at work sites.

8.3 Smoking is only permitted in designated outdoor smoking areas.

9.0 GUARDING HOLES AND WALL OPENINGS

9.1 Ensure open holes, pits, and manholes are guarded by a covering of adequate strength and construction. Openings must be protected by a removable standard railing when the cover is not in place; if this is not possible, use safety nets or other fall protection.

9.2 Guard wall openings from which there is a drop of more than 4 feet with a rail, roller, picket fence, half door, or equivalent barrier. If this is not possible, use safety nets or other fall protection.

10.0 HOISTING/LIFT EQUIPMENT CERTIFICATION

Provide documentation that an authorized individual or agency has inspected equipment within the last year and that the operator is trained and certified to operate the hoisting/lifting equipment.

11.0 HOUSEKEEPING/SANITATION

11.1 Keep all work locations clean, orderly, and in a sanitary condition. Remove combustible refuse daily.

11.2 Do not allow tools, materials, and debris to accumulate at the work site.

11.3 Maintain floors in a clean and dry condition. Remove or cover projections, nails, splinters, holes, or loose boards.

12.0 INTEGRATED SAFETY MANAGEMENT

All work at the NTC will be conducted in accordance with the Integrated Safety Management System (ISMS). It is NTC policy to incorporate safety into the planning and execution of all work and to ensure safety from hazards for NTC workers and the environment. NTC will implement appropriate controls for those hazards that cannot be totally removed. The program at the NTC is described in NTC-PM-501, *Integrated Safety Management System Program.*

12.1 Seven Guiding Principles

DOE and the NTC have agreed to the seven guiding principles below to provide overall direction and guidance for instituting the ISMS.

1. ***Line Management Responsibility for Safety.*** Line management is responsible and accountable for the protection of employees, the public, and the environment. All employees are responsible and accountable for the safe conduct of their activities.

2. ***Clear Roles and Responsibilities.*** There shall be clear roles and lines of responsibility, authority, and accountability at all levels of the organization to ensure protection of employees, the public, and the environment.

3. ***Competence Commensurate with Responsibilities.*** All employees will have the experience, knowledge, skills, and abilities needed to perform their work safely and competently.

4. ***Balanced Priorities.*** Management will allocate resources to address safety, programmatic, and operational considerations. No work will be performed unless it can be performed safely.

5. ***Identification of ES&H Standards and Requirements.*** Hazards shall be evaluated and appropriate controls implemented before work is performed to provide adequate protection to employees the public, and the environment.

6. ***Hazard Controls Tailored to Work Being Performed.*** Engineered and administrative controls shall be in place to prevent and control work-associated hazards.

7. ***Work Authorization.*** No work will be performed unless it can be shown to be done safely.

12.2 The Five Core Functions

The five-step process for performing work is used at the DOE/NTC to support the establishment, implementation, and assurance of safe work practices.

1. ***Define the Scope of Work***
   - Translate the scope of the project into work.
   - Set performance expectations.
   - Prioritize tasks and allocate resources.

2. ***Analyze the Hazards***
   - Identify and analyze the hazards.
   - Categorize the hazards.

3. ***Develop and Implement Controls***
   - Identify appropriate standards and requirements.
   - Identify and implement needed controls to prevent and control hazards.
   - Establish a safety envelope.

4. ***Perform Work within Controls***
   - Confirm operational readiness.
   - Perform the work safely.

5. ***Provide Feedback and Continuous Improvement***
   - Analyze incidents, injuries, near misses, and assessments.
   - Collect feedback from employees.
   - Identify opportunities for improving performance.
   - Implement changes to improve performance.
   - Reinforce implemented work practices.
   - Hold employees accountable for their performance.

12.3 Benefits of ISMS

1. Integrates safety into daily activities.

2. Improves working conditions by tailoring hazard controls to the work being performed.

3. Identifies standards and requirements for conducting mission operations safely.

4. Establishes clear roles and lines of authority and responsibilities.

5. Contributes to safety at all levels.

6. Balances priorities and resources to address safety, programmatic, and operational considerations.

13.0 LIVE FIRE RANGE SAFETY

The LFR is a designated Property Protection Area. As such, all visits to the LFR must be coordinated with the Range Master or designee. All visiting personnel must follow the directions posted at the main gate. All personnel will observe requirements associated with the range flags and flashing beacons.

A. All Visitors: Proceed to Building 100 and sign in with the Training Assistant. The Training Assistant will locate the PFTD sponsor via telephone or radio and coordinate a meeting place. Once business has been completed, sign out in Building 100 prior to departure from the LFR.

B. Delivery Personnel: Coordinate all deliveries with the Range Master or Training Assistant (see paragraph A).

C. The NTC General Manager's policy on contractors carrying firearms to NTC worksites:

   1. Privately owned weapons will not be taken to NTC facilities by contractor personnel, as this would violate Air Force policies regarding transport and carrying of private firearms on KAFB.

   2. Concealed weapons of any kind are prohibited at all NTC facilities.

14.0 LOCK OUT/TAG OUT

Contractor policy on lockout/tag-out must comply with the requirements in ESH-GP-537, *NTC Lockout/Tag-Out Program*. Contractors must use appropriate locks and warning signs/tags when work is performed on electrical or mechanical equipment, where the unexpected start-up could cause injury to individuals.

15.0 MACHINE GUARDING

Ensure power-operated tools and machinery are equipped with in-place and functioning machine guards prior to use.

16.0 MEDICAL

16.1 Ensure first-aid kits are available on the job site. The NTC does not provide medical services at the job site.

16.2 Report all accidents resulting in personal injuries to the Facilities Operations Department (845-5170, extensions 154) and the ES&H staff (extensions 153 or 155).

17.0 PERSONAL PROTECTIVE EQUIPMENT

17.1 Contractors will provide their employees with PPE that is appropriate to the job being performed.

A. Hard Hats – Must be worn where there is a danger of head injury from falling or flying objects.

B. Safety Shoes – Must be worn when handling heavy objects that, if dropped, could injure feet.

C. Eye/Face Protection – Must be worn when machines or operations present potential eye or face injury from physical, chemical, or radiation agents. Eye protection will be worn at all times in buildings that have been designated as a mandatory eye protection required area. Eye protection should meet the requirements defined in ANSI Standard Z87.1-2003.

D. Protective Gloves – Must be worn when there is the possibility of hand injury.

E. Hearing Protection – Wear approved hearing protection with a minimum noise reduction rating (NRR) of 26 within 15 yards of a firing line or while performing high noise operations such as drilling, cutting, chipping, or grinding.

F. Fall Protection – Must be provided while working at elevations of 6 feet or higher above ground level where standard guardrails or other approved fall protection are not provided.

G. Respiratory Protection – Must be worn when performing activities that could expose the individual to harmful fumes, mists, particulates, or gases.

H. Hand Protection – Must be worn when performing activities that could cause injury to individual's hands.

18.0 PORTABLE LADDERS

18.1 When using portable ladders, ensure Type I industrial ladders are used.

18.2 Inspect ladders before use. Steps, side rails, safety feet, and hardware must be in good condition to ensure proper performance. Do not use defective ladders; tag them "unsafe" and remove them from the work site.

18.3 Do not use metal ladders for electrical work.

18.4 Extend ladder side rails at least 3 feet above the landing. Ensure side rails are tied, blocked, or otherwise secured to prevent their being displaced.

18.5 Ladders must be secured at the top or bottom when someone is on the ladder.

18.6 Only one person at a time will be on a ladder.

18.7 Ensure both spreaders are engaged before mounting a step ladder. Step ladders must be on firm, level surfaces. Never stand on the top or second step of a step ladder.

19.0 POWER TOOLS

19.1 Ensure all power tools are properly grounded while they are in use, and machine guards are functioning and in place.

19.2 Inspect electrical tools before use. Ensure cords and plugs are sound. Remove defective tools from service.

20.0 PROPERTY DAMAGE

Report accidents involving damage to government or personal property to the ES&H staff (845-5170, extensions 153 or 155).

21.0 COMPLIANCE SURVEYS

Job sites will be subject to safety compliance surveys on a “no notice” basis. Cooperate with inspectors, and comply with recommendations for hazard abatement. CFR 29 1926 worksite requirements will be enforced.

22.0 SCAFFOLDING

22.1 Scaffolding will:

A. Be provided where needed,
B. Comply with all 29 CFR requirements,
C. Be of sound rigid construction, and
D. Be capable of carrying four times the maximum intended load.

22.2 Guardrails and toe boards will be installed on open sides and ends of platforms more than 10 feet above the ground. Appropriate ladder access will be provided. Cleats will be installed where required by 29 CFR.

22.3 Scaffolds will be secured to permanent structures if not designed for freestanding use.

23.0 STEEL ERECTION

23.1 A safety railing using 0.5-inch wire rope (or equivalent) will be installed at a height of approximately 42 inches around the perimeter of all temporary floors where scaffolding is not used. The installation will be in accordance with the requirements in 29 CFR 1926.

23.2 Safety belts, lanyards, or safety nets will be worn or installed when workers are exposed to elevations where the potential fall distance exceeds two stories or 25 feet, and a safety rail is not in place.

24.0 TEMPORARY LIGHTING

Temporary lighting will be equipped with guards to prevent accidental contact with the bulb. Temporary lighting will be equipped with heavy-duty electrical cords and well-maintained connections and insulation.

25.0 WELDING AND CUTTING

25.1 Before any welding or cutting work is started, ensure the area is clean, cleared of all flammable and combustible materials, and that potentially combustible floors are protected. Ensure a Hot Work Permit is secured prior to performing welding or cutting operations.

25.2 If welding or cutting in the vicinity of potentially combustible materials, take special precautions to ensure sparks and hot slag do not reach the materials. Ensure a fire extinguisher, water hose, or pail of water is available at the welding/cutting site. Observe the Hot Work Permit fire watch requirements.

26.0 WIRE ROPE SLINGS AND CHAINS

26.1 Inspect ropes, slings, and chains prior to use.

26.2 Remove defective equipment from service.

27.0 DRIVING ON KAFB

27.1 Comply with all posted speed limits.

27.2 Carry a valid state motor vehicle operator's license.

27.3 Ensure drivers and passengers wear seatbelts at all times while vehicle is moving. No one is permitted to ride on the outside of a vehicle.

27.4 When contractor vehicles are parked, set the parking brake and the transmission in PARK. If on an incline, chock the wheels.

27.5 Do not park vehicles in areas that impede the normal flow of traffic.

27.6 Vehicle operators cannot talk on a cell phone unless it has a "hands free" feature.