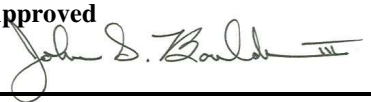
HSS Office of Health, Safety and Security	***Composite Adversary Team Training Health and Safety Standard Operating Procedure***	**Approved**  **John E. Hyndman** **Director,** **Office of Security Evaluations** **Date: June 30, 2009**
Office of Independent Oversight		**HS-61 SOP-02, Rev 0**

1.0 PURPOSE

Establish roles, responsibilities, and processes for the Office of Security Evaluations, within the Office of Independent Oversight, regarding health and safety requirements and documentation for semi-annual Composite Adversary Team (CAT) training, in support of Office of Security Evaluations inspections and other sanctioned activities.

2.0 APPLICABILITY

All associated Office of Health, Safety and Security (HSS) Federal and contractor employees associated with semi-annual CAT training.

3.0 REQUIREMENTS

Health and Safety Concept

3.1 This Standard Operating Procedure (SOP) is intended solely for CAT semi-annual training.

3.2 10 CFR 851, *Worker Safety and Health*, requires the employer to evaluate the working environment for potential hazards and eliminate or mitigate them to a reasonable level.

3.3 The CAT's mission is to challenge physical security systems and/or a protective force (PF) team and to gain access to a simulated asset. In order to properly prepare the CAT, the Office of Security Evaluations conducts semi-annual training. Core CAT personnel locate potential realistic testing/training sites. An initial visit to a potential site is made by Core CAT personnel and the CAT Safety Officer. The Core CAT and Safety Officer jointly evaluate the location for suitability to conduct safe realistic training. The Safety Officer, with knowledge of the training site and planned training activities, constructs site-specific risk assessments (RAs) to determine the level of initial risk, controls needed to mitigate the risk, and residual risk. The CAT Safety Officer also constructs and presents a site-specific safety brief to all personnel involved with the training.

3.4 The most current version of this procedure will be posted on the HSS Internet website, http://www.hss.energy.gov/index.cfm.

3.5 At a minimum, this procedure will be reviewed by the CAT Program Manager on an annual basis to ensure that it accurately reflects current U.S. Department of Energy (DOE) and HSS policies and processes. This procedure will be revised as needed to ensure continuous improvement; in response to changes in requirements; and changes in DOE/HSS management or organizational structure

3.6 The RAs are constructed utilizing the five core functions of integrated safety management and reflect the type of training that is to be conducted.

Defining the Scope

3.7 The scope of the training/work to be performed is determined by the CAT Coordinator and other Core CAT personnel. The planned activities are then developed and documented in a Training Plan.

3.8 A copy of this SOP (including RAs) is to be included in the Training Plan Book that is compiled by the Core CAT for each training period.

3.9 The CAT Coordinator has primary responsibility for the overall training. Segments of the training are conducted under the direction of Instructors accountable to the CAT Coordinator.

3.10 The Safety Officer travels with the Core CAT to the potential training site to:

- Understand the physical aspects of the site in relation to how the planned training/activities will be conducted (walk-down the areas).
- Talk to site personnel regarding specific site requirements.

3.11 The Safety Officer, utilizing the information stated above, then modifies, if necessary, one or more of the existing RAs listed in the appendices of this document or creates a new RA if the topic is unique. The RAs reflect as much as possible, any unique characteristics about the site and/or activity. If a new RA is created, it is appended to this SOP for future use.

3.12 The Safety Officer, utilizing the same information, constructs a site-specific safety brief to be given to all personnel attending the training.

3.13 Information that is not unique to the site or activity is included in a “general” safety brief that is provided to all personnel associated with the training via email prior to their arrival at the training site. Personnel receiving this information are responsible for reviewing it and being knowledgeable of the content.

3.14 The Safety Officer assembles and provides to the CAT Coordinator any safety-related information requested or required by the site.

Identifying and Analyzing Hazards

3.15 Hazards are identified and analyzed by reviewing the Training Plan and performing walk-downs of the training area(s).

3.16 During walk-downs, potential physical hazards, as well as chemical, biological, and radiological hazards, are assessed.

3.17 The Training Plan is written by Core CAT personnel. Core CAT personnel are DOE Certified Instructors and are aware of the health and safety requirements demanded by DOE. Consequently, Core CAT personnel plan activities and write training plans so that many activities or environments that are considered hazards or dangerous are immediately excluded. Known hazards that cannot be eliminated are often mitigated by the Core CAT during the initial planning phase through engineering, administrative controls, etc.

3.18 Multiple walk-downs of the training area(s) are performed by the Core CAT and Safety Officer during the initial visit. All other personnel associated with the training perform a walk-down of the area(s) upon arrival at the training site. The Core Cat and/or Instructors perform a walk-down of the training area(s) each morning to ensure that nothing has changed.

3.19 The physical aspects of the training are assessed by a Certified Exercise Physiologist. Based on the degree of perceived physical exertion, personnel may be monitored using a pulse oximeter. The pulse oximeter determines oxygen saturation, pulse rate and pulse quality. It is used to determine an individual's health status before being released from the exercise area after a strenuous event. The pulse oximeter is maintained at the Engagement Simulations Systems (ESS) Facility. It is the responsibility of the CAT Coordinator to ensure that the pulse oximeter is brought to each CAT training session in working order.

3.20 The Core CAT, Instructors, and Safety Officer rely on their experience and training in identifying and analyzing hazards as well as using the following documents for reference:

- 10 CFR 851, *Worker Safety and Health*.
- 29 CFR 1910, *General Industry Standards*.
- 29 CFR 1926, *Construction Industry Standards*.
- DOE Manual 450.4-1, *Integrated Safety Management System Manual*
- DOE Manual 470.4-3, Chg 1, *Protective Force*.

Determining Risk

3.21 RAs are developed to identify and specify controls for hazards relevant to the training being conducted. RAs recognize "skill of the worker" as a risk modifier. CAT personnel are highly trained and qualified DOE security police officers (SPOs). Instructors are DOE National Training Center (NTC) certified. Weapons used in the training are engagement simulation system (ESS) dedicated weapons and are inspected and maintained by NTC certified armorers in accordance with DOE M 470.4-3, change 1.

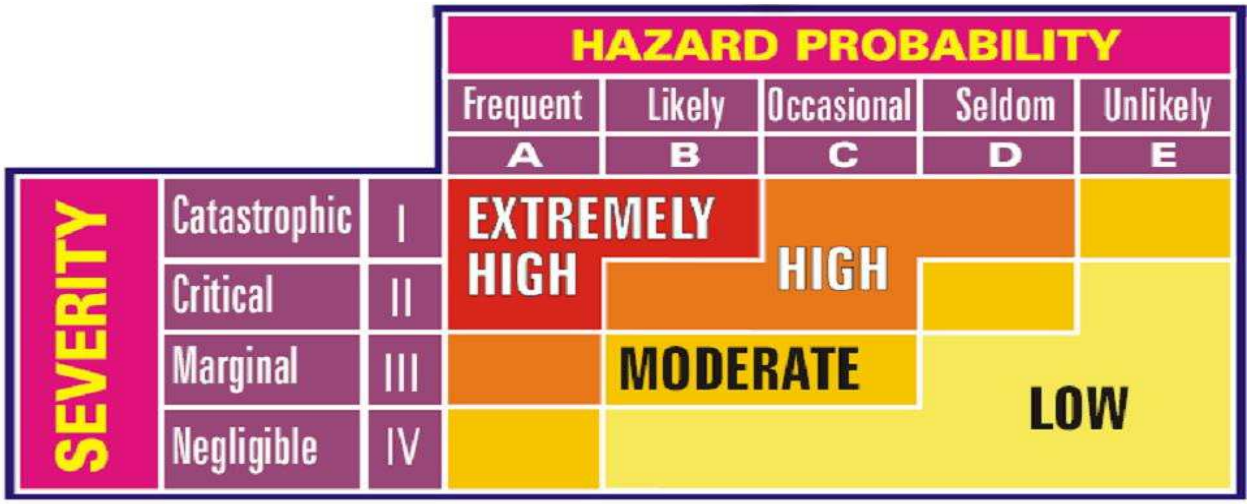
3.22 Training is to be performed in accordance with applicable DOE standards. Individuals are responsible for compliance with procedures and specific safety precautions associated with training activities. This responsibility is communicated to each participating individual during the safety briefing prior to the start of the training.

3.23 A qualitative approach methodology is used as the basis for determining risk. Past accidents, occupational injury experience, procedure review, etc., are used to determine the consequence and probability associated with the planned training activities. Lessons learned from previous training activities are very influential in this process.

3.24 Once the consequence and probability have been determined, the Risk Assessment Table (Section 3.26) is used to determine a final qualitative designation of risk.

3.25 Unmitigated risk is determined by evaluating the event and surrounding environment in terms of severity and probability, assuming that no controls are or will be in place. Mitigated Risk is the amount of risk remaining after controls have been utilized. Mitigated Risk is often referred to as residual risk.

3.26



3.27 Severity: The expected consequences of an event in terms of degree of injury, property damage, or other mission-impairing factors are defined as:

- Catastrophic: Death or permanent total disability, system loss, major damage, significant property damage, or mission failure.
- Critical: Permanent partial disability, temporary total disability in excess of three months, major system damage, significant property damage, or significant mission degradation.
- Marginal: Minor injury, lost workday incident, minor system damage, minor property damage, or some mission degradation.
- Negligible: First aid or minor medical treatment, minor system impairment, or little/no impact on mission accomplishment.

3.28 Hazard Probability: The likelihood that an event will occur is defined as:

- Frequent: Occurs often or continuously.
- Likely: Occurs several times**.**
- Occasional: Occurs sporadically.
- Seldom: Unlikely, but could occur at some time.
- Unlikely: Can assume it will not occur.

Developing Controls

3.29 Hazards are eliminated or mitigated by developing controls, using the typical hierarchal approach of substitution, engineering, and administration. Substitution with less hazardous products or activities is always the first consideration (example: using a "safer" distraction device). If substitution is not possible, engineering controls, such as barriers, are then considered (example: deploying distraction devices or smoke grenades into a secondary containment device). If neither substitution nor engineering controls are practical, the last resort is an administrative approach, such as limiting time of exposure (examples: limiting time at an unprotected elevated edge, following procedures, and using safety controllers to monitor activities and conditions). In some instances, if residual risk cannot be reduced to an acceptable level, the control may be to simply not perform the task.

3.30 Stop Work – Similar to an exercise freeze as described in DOE M 470.4-3, change 1, all personnel, regardless of the nature of their involvement with the training, have both the authority and responsibility to stop any activity if in their opinion:

- Unsafe conditions develop.
- They observe any unsafe condition or practice that would directly impact their safety or the safety of others.
- They observe any unsafe condition or practice that would directly result in a significant adverse impact on the environment.
- NOTE: Stop Work Authority is not to be confused with Exercise Freeze. Stop Work Authority usually results in legal action/involvement. Exercise Freeze is a command used to stop the action during force-on-force type activities to resolve an unexpected event such as an injury or real life emergency i.e. fire department response.

3.31 Personnel have the responsibility to report unsafe acts, conditions, or practices. Reporting should follow normal chain-of-command lines if at all possible.

3.32 Per 10 CFR 851, personnel have the right to report workplace hazards without reprisal and remain anonymous. This can be done by contacting the DOE Office of Inspector General Hotline at 1-800-541-1625.

Medical Examination and Self Assessment Health Questionnaire

3.33 CAT personnel are active SPOs selected from DOE sites. These individuals are currently enrolled in their site's fitness programs and participate in their site's annual fitness assessments, run tests and medical examinations and therefore, no additional Medical Examinations are required by HSS.

3.34 All personnel participating as PF role players during CAT training are required to have a medical examination and submit a completed medical release form to the Contractor Human Resource Department and/or appropriate Contractor Administrative Staff prior to training. Specific instructions can be found in section 4.6.

3.35 The CAT Program Manager will direct all non-DOE personnel participating, for training purposes, as members of the CAT to have a medical examination and submit a completed medical release form prior to training. The completed release form is valid for one 12-month period. Specific instructions can be found in section 4.7.

3.36 Core CAT personnel are required to have annual medical examinations and submit medical release forms and self assessment health questionnaires to the CAT Safety Officer per their internal standard operating procedure.

3.37 No other personnel can participate, other than observers or personnel in administrative or passive roles, without having annual medical examinations or submit medical release forms or self assessment health questionnaires.

3.38 The CAT Coordinator will receive a list of personnel that are approved to participate as PF role players from the Contractor Human Resource Department and/or appropriate Contractor Administrative Staff one month prior to the CAT training session.

Health and Fitness

3.39 Prior to training, Observers or other personnel in administrative or passive roles will be provided a comprehensive safety briefing by the safety officer that provides information on potential safety impacts of training activities that could affect them.

3.40 Prior to training, the CAT Coordinator will ask all participants whether they are taking any medication or have a medical condition that could impact their safety and the safety of others during the training. If such a situation exists, that individual will not be allowed to participate in that activity unless cleared by the CAT Medical Officer.

3.41 All participants need to be aware of the potential adverse impacts of the training. Training can exert a great deal of physiological stress on the body, due in part to exercising specific muscle groups to a higher degree than normal. Training can combine many activities within a very short period of time. Training may be conducted at higher than normal altitudes and during times when temperature extremes may pose health and safety concerns.

3.42 An automated external defibrillator (AED) and multiple first aid kits are listed on the CAT Equipment Request List. Before each semi-annual training session, the first aid kits are checked against an established list of necessary items. Any missing items are replaced before training begins. When multiple training sites are utilized, a first aid kit will be available at each site.

3.43 Personnel shall use appropriate precautions when rendering first aid in accordance with their level of training. During training the potential exists for minor injuries that could result in exposure to human blood or other bodily fluids. Personnel are reminded to use appropriate care to avoid contact with blood or other bodily fluids. Any potential contact is to be reported to the nearest instructor immediately.

3.44 Core CAT personnel are certified in both cardio-pulmonary resuscitation (CPR)/AED and first aid. One Core CAT member is designated the Medical Officer for each semi-annual training session. Participants requiring first aid treatment are to contact a Core CAT member or the Exercise Physiologist (if present) for assistance. This information is communicated to participants during the safety brief.

3.45 Players, Instructors, and technicians (who work with munitions or munitions simulators) shall not consume alcoholic beverages within eight hours prior to the start of training activities. Participants should be aware of the physical and mental stress associated with training of this nature and of the potential for injury and property damage. The consumption of alcohol impedes both mental and motor skills and interferes with the body's ability to retain fluids, which increases the risk of dehydration.

3.46 The possession of alcohol or illegal drugs at the training site is strictly prohibited. If an Instructor detects the presence of alcohol on a participant or if a participant is believed to be under the influence, the Instructor shall remove the participant from training activities immediately and appropriate follow-up action shall be taken in accordance with pre-established regulations and/or directives.

3.47 Training participants will be "on duty" for no more that 14 consecutive work hours, immediately followed by a break from the training area (physically away from the area) for a minimum of eight hours to allow sufficient time for bed rest, meals, and other necessities. Sleep deprivation/fatigue can result in poor judgment, bad decisions, and accidents.

Emergency and Fire Fighting Services

3.48 All injuries, incidents, and accidents must be reported immediately to the nearest Instructor. Personnel observing a player who is seriously ill or injured will immediately advise the nearest Instructor and render aid to the level of their ability. The CAT Coordinator, Core CAT, and Safety Officer will investigate all accidents and injuries.

3.49 During the initial visit to a site, the Core CAT determines the emergency resources available (including medical and fire fighting services) and the means to obtain them. Each participant is instructed in how to alert emergency response personnel.

3.50 First-aid trained personnel, a first-aid kit, and AED are available during training. Personnel are briefed prior to the start of training on how to get medical assistance.

Personnel Safety

3.51 Personnel must assume responsibility for protecting themselves from hazards present during training activities. Potential exposures to hazardous materials and chemicals shall be maintained as low as reasonably achievable. Postings and safety signs must be followed. Any questions should be addressed to an instructor immediately.

3.52 It is important to recognize potential hazards and to know how to limit or avoid exposure. Personnel should not enter an area if they do not know and understand all the hazards that are there and how to protect themselves.

3.53 Physical hazards include such things as:

- Suspended loads
- Uneven and/or rough terrain
- Elevated surfaces
- Confined spaces
- Motor vehicles
- Ladders, scaffolding, barricades, barbed wire fence, trenches, open holes and excavation, cliffs and gullies, ponds, lakes, and streams
- Stored-energy hazards, such as electrical hazards, compressed gases, and machines of all types.

3.54 Chemical hazards include laboratory chemicals, glues, adhesives, paint, lead, asbestos, and blood (do not touch them).

3.55 Carbon monoxide may be of concern while firing blank ammunition in enclosed areas, such as closed vehicles, hallways, and small rooms. Potential areas for overexposure will be evaluated to determine whether the area can be deemed safe, whether compensatory measures must be introduced (e.g., ventilation), or whether the area must be removed from play.

3.56 During hot weather, personnel must protect themselves from such concerns as glare, sunburn, dehydration, heat cramps, heat exhaustion, and heat stroke. Hot weather also increases animal activity, resulting in potential exposures to venomous snakes and spiders, disease-carrying insects, and other wildlife. Potentially severe allergic or toxic reactions to a wide spectrum of plant life are also possible. Hot, dry winds result in large amounts of dust and dirt that can impair vision and cause respiratory reactions.

3.57 Personnel must protect themselves during cold weather conditions. Cold weather exposure can result in physical conditions such as hypothermia, an acute problem resulting from prolonged cold exposure and heat loss; frostbite, damage done to skin and cells of the body; and shivering, something the body does to stay warm when it gets cold.

3.58 Specific and pertinent weather and safety concerns will be addressed at safety briefings prior to the start of training.

3.59 Personnel should stay alert for changing weather conditions. The CAT Coordinator, Instructors, and Safety Officer will work jointly to address changing weather conditions during a training exercise. Most often, site protocol will dictate actions to be taken during severe weather.

3.60 Safety equipment shall be used only for its intended purpose, in accordance with the manufacturer's instructions, and in compliance with applicable laws and standards. Safety equipment shall not be altered in any way that could impede it from performing its intended safety function.

3.61 Equipment used during training shall be inspected for usability and operability prior to the initiation of training. Individual participants are ultimately responsible for their safety and shall inspect all gear they may use during the training. Questionable equipment shall be immediately removed from service and shall not be used under any circumstances. Questions on the usability of any gear should be directed to an Instructor.

3.62 Examples of the types of safety equipment that may be used include, but are not limited to, the following:

- Site and HS-61 radios
- Basic tactical battle clothing and equipment
- Helmets
- Helmets used on all terrain vehicles must be DOT approved
- Special vision equipment
- Knee and elbow pads
- Gloves
- High-top boots with ankle support
- Eye and face protection shall comply with 29CFR1910.133
- Hearing protection shall comply with 29CFR1910.95
- Respirators - Participants using respirators shall have a current respirator fit test card.

Engagement Simulation System Safety

3.63 Specific periods of time, or "windows," will be established for conducting various portions of the training. Conduct of training activities outside of the designated windows is expressly prohibited. This is especially true for the loading and securing of the ESS equipment. All site personnel who normally occupy the training area(s) will be informed of the test window(s) and the general nature of the training prior to the start of the training.

3.64 Training area boundaries are determined by the Core CAT and Safety Officer during safety walk-downs prior to the training. Boundaries are dictated by the hazards present at the time and the planned training activities.

3.65 Off-limits areas are also determined during the safety walk-down prior to the training.

3.66 Training boundaries and off-limits areas will be appropriately marked and identified to all test participants during the pre-training safety brief.

3.67 An “exercise freeze" is a safety/emergency hold that is used to correct significant safety-related problems or to respond to an actual emergency. Any person observing a life-threatening situation has the responsibility to initiate an exercise freeze by alerting the Instructor(s), who will then notify the CAT Coordinator. If a freeze occurs, players are to stop what they are doing and follow the directions provided by Instructor(s).

3.68 All participants shall conduct their activities and weapons manipulations in conformance with established ESS weapons safety rules and in such a manner as to inflict the minimum insult to the training area environment.

3.69 Each individual participant is personally responsible for the safe use of their ESS weapon(s) and shall ensure that the following conditions are met:

- No live-fire weapons of any type shall be allowed in the training area.
- No live ammunition of any type shall be allowed in the training area.
- All ESS weapons used, with the exception of light anti-tank weapons, shall be equipped with blank fire adapters (BFA)/live round inhibitors (LRI).
- All ESS weapons/magazines shall be modified to use only blank ammunition and be clearly marked.
- Just prior to the beginning of the training, all participants shall inspect their weapons, ammunition, and person to ensure that only blank ammunition and properly equipped ESS weapons are being used.
- All participants are reminded that hot propellant gases are vented from ESS weapons when fired.
- Participants shall not load weapons until the training window has been opened and they are released to load by the CAT Coordinator.
- At the conclusion of the training, excess blank ammunition will not be fired. It is to be turned in at the designated location for use in future training.

3.70 Each participant is responsible for their own safety and the safety of those around them. The following general rules of conduct apply to all tactical training involving the use of ESS equipment:

- Players shall never fire an ESS weapon at an individual who is within ten feet (three meters) of themselves. In the event of players suddenly becoming aware of a member of the opposing force already within ten feet of their location, the individual making the discovery shall immediately shout "DANGER–CLOSE," and an Instructor shall decide who survived the encounter.
- ESS equipment operates by the firing and detection of specially encoded laser signals. Transmitters of all laser engagement systems used in training must carry caution stickers that are visible to persons in the vicinity of the transmitter and that contain the following words: "INVISIBLE LASER RADIATION." Do not stare into the beam within ten feet (three meters) of the laser and do not view with optical instruments, such as binoculars, within 45 feet (15 meters).
- The lasers used in the ESS equipment do not present an undue hazard to the eyes during normal operations, and no special eye protection is required. The lasers meet the U.S. Food and Drug Administration eye safety requirements of 21 CFR 1040.10 and 11 and ANSI Z136.1-6.
- All ascents and descents from elevated positions should be by ladder or stairway maintaining three points of contact.
- Participants are to avoid roof hazard areas, such as lightning rods and guy wires. Within six feet of a roof edge, players must assume a prone position and a controller must be present to act as a "safety monitor." Personnel shall not extend any part of their body outside of the roof's edge.
- Only knives and other cutting implements necessary to perform activities essential to the training will be permitted within the training boundary. They shall not be used as weapons or to simulate weapons.
- All non-participants and other unauthorized personnel will be excluded from the training (play) area(s). Authorized observers and other non-players in the training area shall be under escort by an instructor cadre member and use care to ensure they do not intrude into the play.
- If necessary, check points will be established to eliminate the possibility of armed personnel entering the training areas.

3.71 The ESS technicians are responsible for issuing ESS equipment in accordance with the following procedures:

- Verify with the CAT Coordinator that all participants are familiar with the basic operation, care, and use of the ESS equipment before issuance.
- Issue ESS equipment only in areas where live weapons and/or ammunition are not stored or located.

- Issue ESS equipment only after ensuring that participants do not have live weapons and/or ammunition on their person.
- Ensure that the ESS harnesses are functioning, activated, and worn properly.
- Ensure that ESS weapons have been modified to inhibit the introduction of live ammunition into a firing position in the weapon.
- Ensure that only properly marked ESS magazines are issued.
- Ensure that ESS magazines are loaded only with approved blank ammunition.
- Ensure that issue and test-firing of ESS weapons is conducted only after approval has been received from the CAT Coordinator and proper notifications have been made, and only in approved locations.
- Maintain and adjust laser transmitters to ensure the accuracy and operability of the ESS weapons to meet their intended use.
- Ensure that all ESS weapons are kept segregated from weapons that fire live rounds and are closely controlled.
- At the end of each day's training activities, all ESS weapons and ammunition shall be collected and accounted for.

3.72 Only players who have received ESS training from a qualified training instructor (at a minimum, Instructors must be certified in DOE basic instructor training), will be permitted to participate in the training. Players who will be using or handling explosive devices must have appropriate training from an instructor. The player's organization must certify to the CAT Coordinator that such training has been completed. Only trained technicians will handle, install, arm, disarm, and remove top decks, boom boxes, etc., from training play vehicles. (NOTE: The CAT Coordinator must approve use of top deck/boom box systems prior to their use.) Personnel operating hazardous equipment must be trained in its proper use. Documentation of such training shall be available at the training location.

3.73 Equipment from the ESS technician's workspace or vehicles will not be removed without the knowledge and authorization of the responsible ESS technician. All ESS equipment will be accounted for prior to release of the CAT members.

Pyrotechnic Safety

3.74 Personnel who work with explosives must be trained and qualified in the tasks to be performed. They must understand all safety standards, requirements, and precautions that apply to their work. The Instructors will ensure that operations are conducted in a manner that exposes the minimum number of people to the smallest quantity of explosives for the shortest period of time, consistent with the activities being conducted.

Instructors will ensure that all residues from pyrotechnic items are removed from the training area and turned over to appropriate personnel for proper disposal.

3.75 Only the ESS technician is responsible for transportation of approved munitions to the training site. Transportation will be in accordance with U.S. Department of Transportation regulations. Explosive devices are not to be carried on commercial airline flights or in privately owned vehicles.

3.76 Munitions shall be protected from abnormal stimuli or environments, such as impact, shock, high temperatures, and open flames.

3.77 Smoking shall be prohibited within 50 feet when handling, transporting, or storing munitions.

3.78 Live-fire weapons and live ammunition are not part of this training and will not be allowed in the training area during the conduct of the training exercise activities.

3.79 All outdoor operations, whether at the staging area or at training areas, shall be discontinued during storms that are within three miles of the staging or training areas. If threatening weather conditions are present, a lightning detector will be utilized. Completion of an exercise involving explosives after receipt of a lightning alert may be allowed only if preparation has progressed to the extent that discontinuance of the exercise would represent a greater personnel exposure than its completion would.

3.80 Smoke grenades will be used in accordance with the memorandum written by the Chief, Defense Nuclear Safety, dated March 14, 2005 or any more current directives.

3.81 Pyrotechnic devices shall be used only in areas identified as safe by the Site's Fire Protection or Safety organizations and CAT Coordinator with input from the Safety Officer.

3.82 The anti-tank weapon effect signature simulation (ATWESS) cartridge ignites at the rear of the ESS shoulder-fired rocket. (Common names for shoulder-fired rockets include LAW, VIPER, and RPG.) Anyone firing a shoulder-fired rocket simulator is responsible for verifying that the danger zone is clear – 30 feet to the rear and five feet to all sides of the shoulder-fired rocket simulator. The operator shall not arm the shoulder-fired rocket simulator until the target is sighted. If the shoulder-fired rocket is not fired, it must be returned immediately to the safe position. Prior to turn-in, if the shoulder-fired rocket simulator has not been fired, it shall be returned to an unloaded/tube-empty position. Training participants shall receive comprehensive instruction on the operation and safety considerations of the shoulder-fired rocket simulator before use. Shoulder-fired rocket simulators shall only be used in designated areas that have been specifically approved by the CAT Coordinator with input from the Safety Officer.

3.83 The Vehicle Hit Indicator System is designed to simulate and react to weapons fire. These devices are normally mounted on the roofs of vehicles. Blasts are vented upward and usually do not present a hazard. However, participants must not position themselves above or within ten feet of the devices while outside the vehicle. Only technicians professionally trained on the use and safety of pyrotechnics will handle these systems.

3.84 Participants deploying diversionary devices (flash-bangs) must be properly trained in their use. Diversionary devices shall not be thrown within 50 feet of unprotected individuals.

3.85 Participants deploying training grenades ("nerfs" and "blue bodies") must be properly trained in their use.

3.86 Dud explosives and pyrotechnics will be handled only by trained personnel. Do not approach a dud simulator. Mark its location and immediately notify an Instructor. The Instructor will notify the CAT Coordinator, who will then notify trained personnel.

Vehicle Safety During Training

3.87 Vehicles must not be mounted or dismounted until after they come to a complete stop.

3.88 All personnel in moving vehicles must wear seat belts unless given specific direction otherwise by the CAT Coordinator with input from the Safety Officer.

3.89 Vehicle maneuvers (e.g., accelerations and decelerations, cruising, turns) must be accomplished in accordance with local vehicle operating procedures.

3.90 When a training scenario requires a roadblock, it will be simulated by placing a blocking vehicle on the shoulder of the road and by notifying a controller that a roadblock has been established. If the blocking vehicle's presence could effectively obstruct the roadway, the controller should not allow the vehicle being blocked to pass.

3.91 Headlights shall be used from dusk to dawn and during periods of low visibility unless given specific direction otherwise by the CAT Coordinator with input from the Safety Officer.

3.92 Players shall not take up positions under vehicles.

3.93 Only players who are passengers are allowed to shoot from moving vehicles. Care must be exercised that spent casings do not distract the driver.

Reporting Injuries That Occur on the Job

3.94 Report all accidents, injuries, and illnesses that occur at any CAT training location, while on official Government travel, and/or while performing work-related activities. These accidents/incidents include: slips, trips, or falls; back, shoulder, neck, or other muscle strains; exposure to chemical fumes or radiation; cuts, broken bones, or bruises; motor vehicle accidents; food poisoning; occupational illnesses, including infectious diseases, if exposed while at work or on official travel; and hospitalizations for work-related accident, injury, or illness. Report accidents even if they don't result in an injury.

3.95 The injured employee should complete the necessary paperwork (DOE Form 5484.3, *Individual Accident/Incident Report*). If the employee is unable to do so, he/she may designate an individual to complete and file the forms. Forms are available in the CAT Training Book.

3.96 The CAT Coordinator and Safety Officer must review accident/incident reports. On each of these forms, there is a special section that must be completed by the CAT Coordinator after they have assessed the incident that resulted in the injury or illness. Based on this information, the CAT Coordinator determines whether the injury resulted from a work-related activity, and whether other factors contributed to the cause. It is incumbent upon the CAT Coordinator to take actions to prevent a recurrence of the injury or illness. The CAT Coordinator may request assistance from the Safety Officer to help identify corrective actions.

3.97 Additional information can be found in the DOE *Quick Guide when Injured On the Job.* A copy of this document is included in the Training Plan Book, along with a copy of DOE Form 5484.3, *Individual Accident/Incident Report*.

3.98 Information regarding reportable accidents and injuries will be disseminated through appropriate reporting channels, such as Occurrence Reporting Processing System (ORPS), Computerized Accident/Incident Reporting System (CAIRS), Lesson Learned, etc.

Site-Specific Safety Considerations

3.99 The following items are topics that should be considered when visiting a potential training site:

- Range Safety Officer and Officer in Charge training requirements.
- General Employee Training requirements.
- Communication requirements for emergencies, weather conditions, etc.
- Site access requirements.

- Training area suitability (realism in conjunction with safety).
- Physical conditioning (heat/cold stress), along with type of training with regard to time of year and expected weather conditions.
- Reporting requirements for injuries, discovered safety hazards, wildlife, etc.
- Medical and emergency response availability, response times, and procedures.
- Fire fighting equipment and procedures.
- General industry hazards present.
- Radiation hazards present.
- Environmental hazards present (Solid Waste Management Units).
- Biological hazards present (flora and fauna).

Performing Work

3.100 Before training commences the CAT Coordinator confirms with the Core CAT, CAT Safety Officer, and Instructors that all aspects of the training – planning (lesson plans, risk assessments, assignments etc.), equipment (ESS, props, etc.) and training areas (walk-downs, out-of-play areas, etc.) – have been addressed and are in place.

3.101 The Core CAT and Safety Officer will provide a realistic (yet safe) training environment for the CAT.

3.102 The Safety Officer will provide to the CAT Coordinator a general safety brief to be distributed via email to all personnel involved with the training prior to arrival.

3.103 The Safety Officer, Core CAT, and/or designated personnel will search all equipment bags and tactical vests for live ammunition prior to training/inspections.

3.104 The Safety Officer will give a site-specific safety brief to all personnel involved with the training prior to the start of activities.

3.105 The CAT Coordinator, Core CAT, Instructors, Safety Officer, and CAT members will perform a safety walk-through of area(s).

3.106 The CAT Coordinator, Core CAT, Instructors, and Safety Officer will provide oversight of the activities and enforce all safety controls.

3.107 At the conclusion of training/inspection, team members will be reminded to conduct a self-search of equipment bags/tactical vests for blank ammunition, smoke grenades, ATWESS cartridges, "blue body" grenades, and fuses to ensure that no unauthorized munitions are inadvertently carried to the airport.

3.108 After-action reports will be written by Core CAT, Instructors, and the Safety Officer, specifying whether the controls, as implemented, were adequate and/or suggesting methods of improvement.

Feedback for Improvement

3.109 The CAT Coordinator will compile pertinent health and safety information gathered during hot-washes and after-action reports for use in developing future training plans.

3.110 Information from pertinent accidents/incidents (lessons learned) will be used in developing future training plans.

4.0 RESPONSIBILITIES

4.1 Director, Office of Security Evaluations or Designee:

- Review and approve this procedure.

4.2 CAT Program Manager:

- Ensure that this procedure is reviewed for comment and resolution prior to presentation to the applicable HSS approving manager for final review/approval
- Approve curriculum for CAT training
- Approve instructional support for DOE NTC PF training program.

4.3 CAT Coordinator:

- Manage and oversee day-to-day CAT training and operations
- Ensure that this procedure is reviewed for comment and resolution prior to presentation to the applicable HSS approving manager for final review/approval
- Ensure that an Emergency Data Sheet (see appendix F) for each CAT member is available at the training location
- Provide guidance and direction to the Core CAT
- Participate in safety walk-downs
- Distribute the general safety brief to all participants
- Ensure that all visitors/observers are under escort by an instructor cadre member.

- Review and maintain medical release forms from all non-DOE participants
- Maintain documentation certifying the qualifications of personnel authorized to handle duds
- Complete sections 38, 39, and 41 of DOE Form 5484.3, *Individual Accident/Incident Report*, in accordance with DOE O 440.1B, *Worker Protection Program for DOE Federal Employees*
- Investigate any accidents/injuries
- Read, understand, and adhere to this procedure.

4.4 Core CAT:

- Develop, implement, and manage the CAT training program
- Conduct daily safety walk-downs of the training area
- Research, develop, and provide oversight for CAT props and equipment
- Investigate any accidents/injuries
- Ensure that necessary emergency equipment is available
- Read, understand, and adhere to this procedure

4.5 Instructor Cadre:

- Provide safety oversight during training
- Follow the instructions of the CAT Coordinator
- Provide the CAT Coordinator with an after-action report based on the activity
- Walk-down the training area(s) prior to activities
- Provide direction and answer all safety-related questions from CAT members
- Assist in investigating any accidents/injuries that occur in their area of operation
- Read, understand, and adhere to this procedure

4.6 Protective Force Role Players

- Physical:
- Obtain annual physical from licensed personal physician

- Assist personal physician in understanding the type and extent of anticipated physical activity. Activities may include, but, are not limited to, running short distances, crawling, and climbing ladders/stairs. Activities may be performed in adverse environmental conditions (i.e., high/low ambient air temperatures, high/low levels of humidity and in locations with altitudes up to 7000 feet)
- Have physician complete Medical Release Form (Appendix A)
- Submit completed Medical Release Form to CAT Safety Officer by April 1 of each year.
- Self Assessment Health Questionnaire:
- Complete (after September 1 of each year) Self Assessment Health Questionnaire (appendix C)
- Submit either health questionnaire or, if necessary second completed Medical Release Form to CAT Safety Officer by October 1 of each year.
- Read, understand, and adhere to this procedure.

4.7 Non-DOE personnel participating, for training purposes, as members of the CAT

a. Physical:

- Obtain annual physical from licensed personal physician
- Assist personal physician in understanding the type and extent of anticipated physical activity. Activities may include, but, are not limited to, running short distances, crawling, and climbing ladders/stairs. Activities may be performed in adverse environmental conditions (i.e., high/low ambient air temperatures, high/low levels of humidity and in locations with altitudes up to 7000 feet
- Have physician complete Medical Release Form (Appendix B)
- Submit completed Medical Release Form to CAT Coordinator.

b. Read, understand, and adhere to this procedure.

4.8 CAT Safety Officer:

- Update and maintain this CAT Health and Safety SOP along with appended RAs
- Walk-down training area(s) prior to activities
- Provide safety briefs prior to training
- Ensure that CAT equipment is searched for live weapons/ammunition
- Provide safety oversight during training
- Assist CAT Coordinator and Core CAT during planning for training activities

- Assist in investigating accidents/injuries
- Provide the CAT Coordinator with an after-action report based on the activity.

4.9 CAT Member:

- Participate in walk-downs of training area(s) and provide input into:

  Identifying potential hazards

  Developing controls

  Providing after-action feedback
- Read, understand, and adhere to this procedure

4.10 Visitors/ Observers

- Participate in initial safety brief if at all possible
- Upon arrival check in with CAT Coordinator
- Remain with and follow direction of cadre instructor (CAT Coordinator will assign visitor/observer to a cadre instructor for escort)

5.0 DEFINITIONS

CAT Coordinator: The individual responsible for the overall organization and direction of all CAT members.

CAT Program Manager: The Office of Security Evaluations Federal staff member responsible for managing the CAT program.

Composite Adversary Team (CAT): Players who act or portray the part of an adversary during limited-scope performance tests (LSPT) or force-on-force (FOF) exercises.

Core CAT: A group of full time employees responsible for performing CAT leadership duties during Office of Security Evaluations' performance testing activities and for assisting in the management and operation of the CAT program.

Engagement Simulation System (ESS): Equipment consisting of weapons-mounted laser transmitters and laser sensors that are mounted on potential targets (e.g., personnel, vehicles, and buildings). ESS permits accurate assessment of the effects of weapons fire during simulated hostile engagement. Also referred to as multiple integrated laser engagement system (MILES).

ESS Technicians: Office of Security Evaluations ESS contractor personnel responsible for the procurement, storage, maintenance, setup, and issuance of all related CAT ESS equipment and weapons.

Safety Officer: This individual is responsible for reviewing CAT Training Plan, developing RAs (if necessary) for CAT training and/or new CAT equipment and providing safety brief to participants prior to training.

National Training Center (NTC): The Department of Energy's model training provider and national training resource for Federal agencies, as well as state, local, and international organizations involved in protecting national security interests.

6.0 REFERENCES

6.1 10 CFR 851, *Worker Safety and Health*

6.2 29 CFR 1910, *General Industry Standards*

6.3 29 CFR 1926, *Construction Industry Standards*

6.4 DOE Order 470.4A, *Safeguards and Security Program*

6.5 DOE Manual 470.4-1, Chg 1, *Safeguards and Security Program Planning and Management*

6.6 DOE Manual 470.4-2, Chg 1, *Physical Protection*

6.7 DOE Manual 470.4-3, Chg1, *Protective Force*

6.8 Protective Force Protocols for ESS Supported Performance Tests and Exercises document

6.9 Rules of Engagement for Exercise Players

6.10 CAT Handbook 2004

6.11 DOE M 450.4-1, *Integrated Safety Management System Manual*

6.12 DOE O 440.1B, *Worker Protection Program for DOE Federal Employees*

6.13 HS-61-01, *Composite Adversary Team Standard Operating Procedure*

APPENDICES

A. Protective Force Role Player Medical Release Form
B. Non-DOE Personnel Medical Release Form
C. Annual Self Assessment Health Questionnaire
D. General Risk Analysis for Elevated Work Surfaces
E. General Risk Analysis for Ladders, Movement Between Elevations
F. General Risk Analysis for Night Vision Devices
G. General Risk Analysis for Walking/Working Surfaces
H. General Risk Analysis for Environmental Conditions
I. General Risk Analysis for Miscellaneous Hazards
J. General Risk Analysis for Pyrotechnics – Training Grenades
K. General Risk Analysis for Pyrotechnics – Smoke Grenades
L. General Risk Analysis for Pyrotechnics – Diversionary Devices
M. General Risk Analysis for Pyrotechnics – Vehicle Borne Improvised Explosive Devices (VBIED)
N. General Risk Analysis for Vehicles
O. General Risk Analysis for Vehicles – Night Driving
P. General Risk Analysis for Vehicles – All Terrain Vehicles (ATVs)
Q. General Risk Analysis for ESS Equipment

Protective Force Role Player
Medical Release

Instructions

- Obtain annual medical examination from licensed personal physician.
- Assist personal physician in understanding the type and extent of anticipated physical activity. Activities may include, but are not limited to, running short distances, crawling, and climbing ladders/stairs. Activities may be performed in adverse environmental conditions (e.g., high/low ambient air temperatures, high/low levels of humidity, and in locations with altitudes up to 7,000 feet).
- Have physician complete medical release form (Appendix A).
- Submit completed medical release form to Contractor Human Resource Department and/or appropriate Contractor Administrative Staff by April 1 each year.

Name of Protective Force Role Player: _____

Identification (Badge Number): _____

I hereby attest that (_____) is physically capable of participating in U.S. Department of Energy (DOE) Composite Adversary Team (CAT) training in the following function:

□ Fixed Response Protective Force Role Player

□ Mobile Response Protective Force Role Player

Additionally, the individual identified above is not currently taking any prescription medications and/or over-the-counter medications that may pose any risk to his/her health or well being while participating in the training activity in conditions such as those described below.

Date of Medical Examination: _____

Licensed Physician: _____

Background:

The U.S. Department of Energy's (DOE) Office of Independent Oversight's Office of Security Evaluations is principally responsible for conducting independent evaluations on behalf of the Secretary of Energy. The purpose of these evaluations of is to verify that the Department can

effectively respond to emergencies and to provide assurance that tactical response forces at various field sites are adequately protecting the critical nuclear assets within their custody.

As a key element of these evaluations, the Office of Security Evaluations conducts force-on-force performance tests using a "red cell" aggressor force known as the DOE Composite Adversary Team (CAT). During these performance tests, DOE tactical response forces must defend against simulated terrorist attacks planned and executed by the CAT. In order to enhance the realism of these complex tactical exercises and to maintain the proficiency of the CAT, the Office of Security Evaluations conducts semi-annual CAT training utilizing selected inspection team staff members to role play as PF officers. Such training generally manifests itself in a series of exercises where the CAT and PF role-players participate in force-on-force war games utilizing blank-fire assault rifles that have been specially modified with laser engagement transmitters. Participants are also equipped with special individually worn sensor harnesses that record the accuracy of opposing team members' weapons fire. As such, the Office of Security Evaluations and its principal support services contractor, the Unwin Company, requires inspection team staff members that have been selected to perform duties as PF role-players during CAT training to undergo an annual medical examination. The scope and focus of the examination should be such that it examines the individual's physical readiness to participate in one of two role-player functions: Fixed Response Protective Force Role Player and Mobile Response Protective Force Role Player as described below.

Fixed Response Protective Force Role Player:

A Fixed Response Protective Force Role Player operates from a static defensive position or from a mobile security patrol vehicle under both day and lowlight conditions as well as varying environmental conditions (i.e., high/low ambient air temperatures, high/low levels of humidity and in locations with altitudes up to 7000 feet). Anticipated significant physical activities include but are not limited to: operating semi-automatic and fully automatic blank-fire weapons from a stationary position; rapid motor functions such as reloading firearms in a simulated combat environment; wearing and/or carrying approximately 15 lbs. of tactical weapons and equipment; and quickly maneuvering distances less than 25 yards with assigned equipment. Sustained activity at these levels will typically range from approximately 15 to 20 minutes total in duration. Of significant note, no hand-to-hand contact is permitted among participants and all participants are required to wear appropriate personal protective equipment (e.g., eye and hearing protection, pro-tech helmets, and knee and elbow pads) during the training. Additionally, force-on-force training activities are observed by a certified safety professional, certified exercise physiologist, and rapid access to emergency medical services is available at all times.

Mobile Response Protective Force Role Player

A Mobile Response Protective Force Role Player operates as a foot patrol or from mobile security patrol vehicle under both day and lowlight conditions as well as varying environmental conditions (i.e., high/low ambient air temperatures, high/low levels of humidity and in locations with altitudes up to 7000 feet). Anticipated significant physical activities include, but are not limited to, performing all functions of a Fixed Response Protective Force Role Player as enumerated above. Additionally, Mobile Response Protective Force Role Players typically participate in more intense simulated gun battles, carry heavier equipment (approximately 35 lbs. or less) and are required to quickly maneuver greater distances (approximately ½ mile or less).

Sustained activity at these levels will typically range from approximately 15 to 20 minutes total in duration.

Non-DOE CAT
Medical Release

Instructions

- Obtain annual medical examination from licensed personal physician.
- Assist personal physician in understanding the type and extent of anticipated physical activity. Activities may include, but are not limited to, running short distances, crawling, and climbing ladders/stairs. Activities may be performed in adverse environmental conditions (e.g., high/low ambient air temperatures, high/low levels of humidity, and in locations with altitudes up to 7,000 feet).
- Have physician complete medical release form (Appendix B).
- Submit completed medical release form to Contractor Human Resource Department and/or appropriate Contractor Administrative Staff by April 1 each year.

Name: _____

Identification (Badge Number/Etc.) _____

I hereby attest that (_____) is physically capable of participating in U.S. Department of Energy (DOE) Composite Adversary (CAT) training.

Additionally, the individual identified above is not currently taking any prescription medications and/or over-the-counter medications that may pose any risk to his/her health or well being while participating in the training activity in conditions such as those described below.

Date of Medical Examination: _____

Licensed Physician: _____

Background:

The U.S. Department of Energy's (DOE) Office of Independent Oversight's Office of Security Evaluations is principally responsible for conducting independent evaluations on behalf of the Secretary of Energy. The purpose of these evaluations of is to verify that the Department can effectively respond to emergencies and to provide assurance that tactical response forces at various field sites are adequately protecting the critical nuclear assets within their custody.

As a key element of these evaluations, the Office of Security Evaluations conducts force-on-force performance tests using a "red cell" aggressor force known as the DOE Composite Adversary Team (CAT). During these performance tests, DOE tactical response forces must

defend against simulated terrorist attacks planned and executed by the CAT. In order to enhance the realism of these complex tactical exercises and to maintain the proficiency of the CAT, the Office of Security Evaluations conducts semi-annual CAT training utilizing selected inspection team staff members to role play as PF officers. Such training generally manifests itself in a series of exercises where the CAT and PF role-players participate in force-on-force war games utilizing blank-fire assault rifles that have been specially modified with laser engagement transmitters. Participants are also equipped with special individually worn sensor harnesses that record the accuracy of opposing team members' weapons fire. As such, the Office of Security Evaluations and its principal support services contractor, the Unwin Company, requires personnel (Core CAT and non-DOE CAT) that have been selected to perform duties as CAT team members either during CAT training or actual performance testing to undergo an annual medical examination. The scope and focus of the examination should be such that it examines the individual's physical readiness to participate as a CAT team member.

Non-DOE CAT (CAT team member):

A CAT team member operates either on foot or from a vehicle (the vehicle may be an All Terrain Vehicle (ATV)) under both day and lowlight conditions as well as varying environmental conditions (i.e., high/low ambient air temperatures, high/low levels of humidity and in locations with altitudes up to 7000 feet). CAT team members typically participate in intense simulated gun battles, carry heavy equipment (approximately 80 lbs. or less) and are required to quickly maneuver distances of up to one half (½) mile. High intensity activity levels will typically range from 15 to 20 minutes, however, training or performance testing can lasts for several hours in total duration. Of significant note, no hand-to-hand contact is permitted among participants and all participants are required to wear appropriate personal protective equipment (e.g., eye and hearing protection, pro-tech helmets, and knee and elbow pads) during training and performance testing. Additionally, force-on-force activities are observed by a health and safety professionals, exercise physiologists and rapid access to emergency medical services is available at all times.

SELF ASSESSMENT HEALTH QUESTIONNAIRE

This questionnaire is a simple screening tool used to self identify and document either that there have been no changes in your health since your last annual physical screening exam or that there has been a change in your health and you need to seek medical attention before further participation as a PF role player, evaluator, or Core CAT.

These questions are from a modified pre-participation screening questionnaire developed by the American Heart Association and American College of Sports Medicine.

Please read carefully and answer each one honestly.

Since your last annual physical screening exam:

Have you had?

- **Yes / No A heart attack**
- **Yes / No Heart surgery**
- **Yes / No Cardiac catheterization**
- **Yes / No Coronary angioplasty (PTCA)**
- **Yes / No Pacemaker/implantable cardiac defibrillator/rhythm disturbance**
- **Yes / No Heart valve disease**
- **Yes / No Heart failure**
- **Yes / No Heart transplantation**
- **Yes / No Developed congenital heart disease**

Have you experienced?

- **Yes / No Chest discomfort with exertion**
- **Yes / No Unreasonable breathlessness**
- **Yes / No Dizziness, fainting, or blackouts**
- **Yes / No Have you started taking heart medication(s)**

Other Health Issues

- **Yes / No Developed diabetes**
- **Yes / No Developed asthma or other lung disease**
- **Yes / No Have burning or cramping sensation in your lower legs when walking short distances**
- **Yes / No Have musculoskeletal problems that limit your physical activity**
- **Yes / No Feel that you cannot safely participate as an evaluator or PF role player**
- **Yes / No Have you started taking prescription medications(s)**

If you answered “yes” to one or more of the above statements, consult your personal physician before further participation as a PF role player. If you choose to be re-examined use medical release found in appendix A.

If you answered “no” to all questions then sign, print your name, and date this form. Give completed form to the contractor safety officer by October 1 of each calendar year.

Signature: _____ Date: _____

Printed Name: _____

Appendix D

Step 1 **Identify the Hazard**	**Step 2** **Assess the Hazard**	**Un-Mitigated Risk** **Severity & Probability**		**Step 3** **Develop Controls and Make Decision**	**Step 4** **Implement Controls**	**Mitigated Risk** **Severity & Probability**	**Step 5** **Supervise and Evaluate**
Elevated surfaces	Death, injury	Risk: Moderate Severity: Catastrophic & Probability: Unlikely	1	General Safety Brief	Provide prior to arrival	Risk: Moderate Severity: Catastrophic & Probability: Unlikely	Monitor controls AARs Re-evaluate controls as necessary
			2	Site-specific Safety Brief	Give Safety Brief prior to activity		
			3	Six-foot rule	Enforce six-foot rule		
			4	Train personnel to requirements	Ensure personnel are trained		
			5	Painted yellow/orange lines identifying hazard areas	Identifying markings to participants **(examples: provide photos)**		
			6	Personal protective equipment (PPE (knee/elbow pads and helmets)	Enforce PPE requirements		
			7	Instructor/controller experience	Utilize experience		
			8	Safety walk-through of site	Perform safety walk-through of site		
			9	Instructor/controller supervision	Enforce supervision		
			10	Prior Training/experience of participants	Utilize prior training/experience of participants		
			11	Determine out-of-play areas (sloped roofs)	Put exceptional hazards out-of-play **(Mark areas with yellow tape – provide photos)**		
			12	Participants walk-through of training/play areas	Ensure participants walk-through training/play areas		

Appendix E

General Risk Analysis for Ladders, Movement Between Elevations

Step 1 Identify the Hazard	Step 2 Assess the Hazard	Un-Mitigated Risk Severity & Probability		Step 3 Develop Controls and Make Decision	Step 4 Implement Controls	Mitigated Risk Severity & Probability	Step 5 Supervise and Evaluate
Changing elevations and moving equipment between levels	Death, injury	Risk: Moderate Severity: Catastrophic & Probability: Unlikely	1	General Safety Brief	Provide prior to arrival	Risk: Moderate Severity: Catastrophic & Probability: Unlikely	Monitor controls AARs Re-evaluate controls as necessary
			2	Site-specific Safety Brief	Give Safety Brief prior to activity		
			3	Only proper methods of ascent and descent are allowed (ladders, stairs, etc). Maintain three-points of contact	Reinforce proper methods of ascent and descent		
			4	Ladder Training (if required by site)	Ensure personnel are trained		
			5	Determine methods of equipment movement between different levels of elevation on a case-by-case basis (multiple trips or hoist - depending on availability and site requirements)	Enforce site-approved method of equipment movement between different levels of elevation		
			6	PPE (knee/elbow pads and helmets)	Enforce PPE requirements		
			7	Instructor/controller experience	Utilize experience		
			8	Safety walk-through of site	Perform safety walk-through of site		
			9	Instructor/controller supervision	Enforce supervision		
			10	Prior Training/experience of participants	Utilize prior training/experience of participants		
			11	Participants walk-through of training/play areas	Ensure participants walk-through training/play areas		

Appendix F

General Risk Analysis for Night Vision Devices

Step 1 **Identify the Hazard**	Step 2 **Assess the Hazard**	Un-Mitigated Risk **Severity & Probability**		Step 3 **Develop Controls and Make Decision**	Step 4 **Implement Controls**	Mitigated Risk **Severity & Probability**	Step 5 **Supervise and Evaluate**
Night vision devices (NVGs)	Death, injury, property damage	Risk: High Severity: Catastrophic & Probability: Seldom	1	General Safety Brief	Provide prior to arrival	Risk: Moderate Severity: Catastrophic & Probability: Unlikely	Monitor controls
			2	Site-specific Safety Brief	Give Safety Brief prior to activity		
			3	NVG training	Ensure personnel are trained		
			4	Limit vehicle speed - limit vehicle numbers - no casual traffic	Enforce traffic controls		AARs
Eye fatigue, loss of depth perception & peripheral vision Bright light - Temporary blindness in bright light			5	PPE (knee/elbow pads and helmets)	Enforce PPE requirements		
			6	Instructor/controller experience	Utilize experience		Re-evaluate controls as necessary
			7	Safety walk-through of site	Perform safety walk-through of site		
			8	Instructor/controller supervision	Enforce supervision		
			9	Prior training/experience of participants	Utilize prior training/experience of participants		
			10	Determine out-of-play areas	Put exceptional hazards out-of-play		
			11	Participants walk-through of training/play areas	Ensure participants walk-through training/play areas		

Appendix G

General Risk Analysis for Walking/Working Surfaces

Step 1 **Identify the Hazard**	**Step 2** **Assess the Hazard**	**Un-Mitigated Risk** **Severity & Probability**		**Step 3** **Develop Controls and Make Decision**	**Step 4** **Implement Controls**	**Mitigated Risk** **Severity & Probability**	**Step 5** **Supervise and Evaluate**
Walking/ working surfaces	Injury	Risk: Low Severity: Marginal & Probability: Seldom	1	General Safety Brief	Provide prior to arrival	Risk: Low Severity: Marginal & Probability: Unlikely	Monitor controls AARs Re-evaluate controls as necessary
			2	Site-specific Safety Brief	Give Safety Brief prior to activity		
			3	Eyes on path	Re-enforce concept		
			4	PPE (knee/elbow pads and helmets)	Enforce PPE requirements		
			5	Instructor/controller experience	Utilize experience		
			6	Instructor/controller supervision	Enforce supervision		
			7	Prior training/experience of participants	Utilize prior training/experience of participants		
			8	Safety walk-through of site	Perform safety walk-through of site		
			9	Determine unique hazards	Identify to participants types and locations of hazards **(examples: provide photos)**		
			10	Determine out-of-play areas	Put exceptional hazards out-of-play **(Areas will be marked with yellow tape - photos)**		
			11	Participants walk-through of training/play areas	Ensure participants walk-through training/play areas		

Appendix H

General Risk Analysis for Environmental Conditions

Step 1 **Identify the Hazard**	Step 2 **Assess the Hazard**	Un-Mitigated Risk **Severity & Probability**		Step 3 **Develop Controls and Make Decision**	Step 4 **Implement Controls**	Mitigated Risk **Severity & Probability**	Step 5 **Supervise and Evaluate**
Environ-mental conditions (general)	Death, injury, property damage	Risk: Moderate Severity: Catastrophic & Probability: Unlikely	1	General Safety Brief	Provide prior to arrival	Risk: Moderate Severity: Catastrophic & Probability: Unlikely	Monitor controls AARs
			2	Site-specific Safety Brief	Give Safety Brief prior to activity		
			3	PPE (knee/elbow pads, helmets, boots, gloves, eye and hearing protection, appropriate clothing)			
			4	Continuation of training/exercise is based on CAT Coordinator's assessment of conditions and/or site requirements	Enforce PPE requirements		Re-evaluate controls as necessary
			5	Instructor/controller experience	Utilize experience		
			6	Safety walk-through of site	Perform safety walk-through of site		
			7	Instructor/controller supervision	Perform supervision		
			8	Prior training/experience of personnel deploying	Utilize prior training/experience of personnel deploying		

Appendix H (cont'd)

			9	Determine unique hazards	Identify to participants types and locations of hazards **(examples: provide photos)**		
			10	Determine out-of-play areas	Put exceptional hazards out-of-play **(Mark areas with yellow tape – provide photos)**		
			11	Participants walk-through of training/play areas	Participants walk-through of training/play areas		
Hot weather	Heat-related injury: • Heat stroke • Heat exhaustion • Heat cramps • Exertional heat illness		12	Instructors are trained to recognize symptoms of heat related illness/injury - participants are briefed on recognition of heat related injury symptoms and precautions to take Paramedics are on site during training/exercise and are trained and equipped to handle all types of heat-related illness or injury Rest breaks are taken between events to allow participants to cool down and drink water - drinking water is available at all event sites, and participants are encouraged to hydrate Rest breaks are taken in shaded areas when possible - participants are encouraged to remove/loosen load bearing equipment, or any other restrictive clothing or equipment	Ensure Instructors are trained to recognize heat-related illness/injury Ensure participants are briefed Ensure paramedics are advised of training Ensure breaks are taken Ensure water is available Attempt to take breaks in shaded areas		

Appendix H (cont'd)

Cold Weather	Cold-related injury: • Numbness • Frostbite • Hypo-thermia		13	Instructors are trained to recognize symptoms of cold related illness/injury - participants are briefed on recognition of cold-related injury symptoms and precautions to take Paramedics are on site during training/exercise and are trained and equipped to handle all types of cold-related illness or injury Rest breaks are taken in warm areas between events to allow participants to warm themselves and drink water - drinking water is available at all event sites, and participants are encouraged to hydrate	Ensure Instructors are trained to recognize cold-related illness/injury Ensure participants are briefed Ensure paramedics are advised of training Ensure breaks are taken in warm areas Ensure water is available		
Rain	Wet competition surfaces cause slips and falls, resulting in injury		14	Instructors inspect training areas prior to beginning of events - if hazards exist due to wet surfaces, events are delayed or re-scheduled Participants wear sturdy, slip-resistant footwear	Put exceptional hazards out-of-play **(Mark areas with yellow tape – provide photos)** Ensure participants wear proper footwear		

Appendix H (cont'd)

Lightning	Electrocution due to lightning strike		15	CAT Coordinator will terminate training if lightning strikes area determined to be within three miles or site requirement dictates termination All personnel will be moved under shelter or indoors until the threat of lightning has passed	Ensure CAT Coordinator follows protocol. Utilize lightning detector when threatening weather conditions exist. Ensure personnel are protected		
High wind	Blowing debris, sand, or dirt distracts participants or causes eye injuries Inability of competitors to hear event commands due to wind noise results in injury		16	Protective eye wear meeting requirements of ANSI Standard Z87.1-2003 is required of all participants Participants must be able to hear Instructors	Ensure proper protective eyewear is used Ensure that participants can hear and understand directions given by Instructors		
Ultra violet rays	Sunburn		17	All personnel are encouraged to use sun block lotion with a minimum SPF of 15, wear headgear that affords head and neck protection, and wear long sleeve shirts with sleeves rolled down	Encourage personnel to use protective clothing and sun block lotion		

Appendix H (cont'd)

Biological	Insect bites/stings, spider bites, snake bites, etc.		18	Awareness and avoidance	Ensure personnel are made aware of possible fauna in area		
Vegetation	Poison ivy, oak, sumac; contact dermatitis		19	Awareness and avoidance Wear appropriate clothing, wash hands and clothes	Ensure personnel are made aware of possible flora in area		

Appendix I

General Risk Analysis for Miscellaneous Hazards

Step 1 **Identify the Hazard**	**Step 2** **Assess the Hazard**	**Un-Mitigated Risk** **Severity & Probability**		**Step 3** **Develop Controls & Make Decision**	**Step 4** **Implement Controls**	**Mitigated Risk** **Severity & Probability**	**Step 5** **Supervise and Evaluate**
Mis-cellaneous hazards (general)	Death, injury, property damage	Risk: Moderate Severity: Catastrophic & Probability: Unlikely	1	General Safety Brief	Provide prior to arrival	Risk: Low Severity: Marginal & Probability Seldom	Monitor controls AARs Re-evaluate controls as necessary
			2	Site-specific Safety Brief	Give Safety Brief prior to activity		
			3	PPE (knee/elbow pads, helmets, boots, gloves, eye and hearing protection, appropriate clothing)	Enforce PPE requirements		
			4	Instructor/controller experience	Utilize experience		
			5	Safety walk-through of site	Perform safety walk-through of site		
			6	Instructor/controller supervision	Perform supervision		
			7	Prior training/experience of personnel deploying	Utilize prior training/experience of personnel deploying		
			8	Determine unique hazards	Identify to participants types and locations of hazards		

Appendix I (cont'd)

			9	Determine out-of-play areas	Put exceptional hazards out-of-play **(Mark areas with yellow tape – provide photos)**		
			10	Participants walk-through of training/play areas	Participants walk-through of training/play areas		
Illumination	Normal vision is impaired		11	Artificial lights, glow sticks to identify hazards; NVGs may be used	Use artificial illumination as necessary		
Razor wire	Cuts		12	Leather gloves, over-the-ankle boots, double clothing or padding, elbow and knee pads	Enforce PPE requirements		
Barbed wire fences	Sprains/ strains/ cuts		13	Leather gloves, over-the-ankle boots, double clothing or padding, elbow and knee pads	Enforce PPE requirements		
Manually lifting or moving objects	Sprains/ strains		14	Pre-training physical conditioning, Fitness for Duty (all personnel), CAT leads (responsible for individual's pre and post daily training activities), CAT Instructors are responsible for daily observations, daily pre-training exercising, stretching and other appropriate activities, etc. Proper lifting techniques, proper body position, etc. Maximum allowable weight limit one individual can lift: male 100 lbs, female 75 lbs - Wt. may be adjusted on a case-by-case basis	Ensure personnel are fit for duty Ensure proper lifting techniques are utilized Ensure maximum weight limits are not exceeded		

Appendix I (cont'd)

Jumping/ landing	Falls/ sprains/ strains/ cuts		15	Individuals are trained on proper landing techniques Appropriate spotter personnel will be placed to assist individuals	Ensure personnel are trained Ensure spotters are used		
Crawling/ running/ walking	Acceleration forces		16	Appropriate protective equipment will be utilized (i.e., boots with ankle Protection, helmets, elbow and knee pads, spotters, etc.) as needed for the specific task Training of individuals to task	Enforce PPE requirements Ensure personnel are trained to task		
General industry	Not an industrial complex: general industry hazard considerations will be used.		17	Compliance with 29 CFR 1910 and 1926 Standards as well as applicable DOE Orders, ANSI standards, NIOSH, and other professional organizational guidelines	Follow are applicable regulations and guidelines		
Industrial hygiene	Inhalation/ absorption/ ingestion hazards		18	Compliance with 29 CFR 1910 and 1926 Standards as well as applicable DOE Orders, ANSI standards, NIOSH, and other professional organizational guidelines	Follow all applicable regulations and guidelines		

Appendix I (cont'd)

Carbon monoxide	Levels may exceed regulatory limits		19	Evaluate fighting positions for adequate air flow	Enclosed and partially enclosed fighting positions and locations will be reviewed and engineering/admin controls implemented to control exposures or will be placed off-limits		
Nuclear radiation	Over-exposure		20	Compliance with 29 CFR 1910 and 1926 standards as well as applicable DOE Orders, ANSI standards, NIOSH, and other professional organizational guidelines	Follow applicable regulations and guidelines		

Appendix J

General Risk Analysis for Pyrotechnics – Training Grenades

Step 1 **Identify the Hazard**	**Step 2** **Assess the Hazard**	**Un-Mitigated Risk** **Severity & Probability**		**Step 3** **Develop Controls and Make Decision**	**Step 4** **Implement Controls**	**Mitigated Risk** **Severity & Probability**	**Step 5** **Supervise and Evaluate**
Pyrotechnics (Nerf grenades and blue bodies)	Injury, property damage, fire, duds	Risk: Moderate Severity: Marginal & Probability: Occasional	1	General Safety Brief	Provide prior to arrival	Risk: Low Severity: Marginal & Probability: Unlikely	Monitor controls AARs Re-evaluate controls as necessary
			2	Site-specific Safety Brief	Give Safety Brief prior to activity		
			3	Only trained personnel allowed to deploy	Ensure only trained personnel deploy		
			4	Only trained personnel allowed to handle duds	Ensure only trained personnel handle duds		
			5	Determine acceptable areas	Utilize only acceptable areas		
			6	Players PPE (knee/elbow pads, helmets, eye and hearing protection, gloves, appropriate clothing	Enforce use of PPE		
			7	Instructor/controller experience	Utilize instructor/controller experience		
			8	Safety walk-through of site	Perform safety walk-through of site		
			9	Instructor/controller supervision	Perform supervision		
			10	Prior training/experience of personnel deploying	Utilize prior training/experience of personnel deploying		
			11	Participants walk-through of training/play areas	Ensure that participants perform walk-through of training/play areas		
			12	Proper disposal procedures	Ensure proper disposal		
			15	Fire fighting equipment on site	Ensure fire fighting equipment on site		

Appendix K

General Risk Analysis for Pyrotechnics – Smoke Grenades

Step 1 **Identify the Hazard**	Step 2 **Assess the Hazard**	Un-Mitigated Risk **Severity & Probability**		Step 3 **Develop Controls and Make Decision**	Step 4 **Implement Controls**	Mitigated Risk **Severity & Probability**	Step 5 **Supervise and Evaluate**
Pyrotechnics (smoke grenades)	Injury, property damage, fire, duds	Risk: Moderate Severity: Marginal & Probability: Occasional	1	General Safety Brief	Provide prior to arrival	Risk: Low Severity: Marginal & Probability: Unlikely	Monitor controls AARs Re-evaluate controls as necessary
			2	Site-specific Safety Brief	Give Safety Brief prior to activity		
			3	Within 12 feet of canister use air-supplied respirator	Enforce 12 foot rule		
			4	Between 12 feet and 50 feet of canister use are-purifying respirator	Enforce the between 12 and 50 foot rule		
			5	Distances greater than 50 feet do not require the use of a respirator			
			6	Position controllers to ensure 12 and 50 foot compliance and to assist personnel that may become immobilized in the proximity of discharging canisters	Utilize controllers to ensure 12 and 50 foot compliance and to assist personnel that may become immobilized in the proximity of discharging canisters		
			7	Smoke Grenade Work Instruction	Ensure personnel are trained		
			8	Only trained personnel allowed to deploy	Ensure only trained personnel deploy		
			9	Only trained personnel allowed to handle duds	Ensure only trained personnel handle duds		
			10	Determine acceptable areas (unconfined outdoor use only)	Use only in previously determined acceptable areas		

Appendix K (cont'd)

			11	Players PPE (knee/elbow pads, helmets, eye and hearing protection, gloves, respirators, appropriate clothing)	Enforce use of PPE		
			12	Other personnel within 50 feet of discharging canisters PPE (appropriate respirators)	Enforce use of PPE		
			13	Instructor/controller experience	Utilize instructor/controller experience		
			14	Safety walk-through of site	Perform safety walk-through of site		
			15	Instructor/controller supervision	Perform supervision		
			16	Prior training/experience of personnel deploying	Utilize prior training/experience of personnel deploying		
			17	Participants walk-through of training/play areas	Ensure that participants perform walk-through of training/play areas		
			18	Proper disposal procedures	Ensure proper disposal		
			19	Fire fighting equipment on site	Ensure fire fighting equipment on site		

Appendix L

General Risk Analysis for Pyrotechnics – Diversionary Devices

Step 1 **Identify The Hazard**	**Step 2** **Assess the Hazard**	**Un-Mitigated Risk** **Severity & Probability**		**Step 3** **Develop Controls & Make Decision**	**Step 4** **Implement Controls**	**Mitigated Risk** **Severity & Probability**	**Step 5** **Supervise & Evaluate**
Pyrotechnics (flash bangs)	Injury, property damage, fire, duds	Risk: Moderate Severity: Critical & Probability: Seldom	1	General Safety Brief	Provide prior to arrival	Risk: Low Severity: Marginal & Probability: Unlikely	Monitor controls AARs Re-evaluate controls as necessary
			2	Site-specific Safety Brief	Give Safety Brief prior to activity		
			3	Fifty foot rule - Diversionary devices shall not be thrown within 50 feet of unprotected individuals	Enforce fifty foot rule		
			4	Flash bang Lesson Plan	Ensure personnel are trained		
			5	Only trained personnel allowed to deploy	Ensure only trained personnel deploy		
			6	Only trained personnel allowed to handle duds	Ensure only trained personnel handle duds		
			7	Determine acceptable areas	Use only in previously determined acceptable areas		
			8	Determine if containment devices are necessary/required	Use containment devices as necessary/required		
			9	Players PPE (knee/elbow pads, helmets, eye and hearing protection, gloves, appropriate clothing)	Enforce use of PPE		

Appendix L (cont'd)

			10	Controls PPE (when deploying - eye and hearing protection, gloves, appropriate clothing)	Enforce use of PPE		
			11	Instructor/controller experience	Utilize instructor/controller experience		
			12	Safety walk-through of site	Perform safety walk-through of site		
			13	Instructor/controller supervision	Perform supervision		
			14	Prior training/experience of personnel deploying	Utilize prior training/experience of personnel deploying		
			15	Participants walk-through of training/play areas	Ensure that participants perform walk-through of training/play areas		
			16	Proper disposal procedures	Ensure proper disposal		
			17	Fire fighting equipment on site	Ensure fire fighting equipment on site		

Appendix M

General Risk Analysis for Pyrotechnics – Vehicle Borne Improvised Explosive Devices (VBIEDs)

Step 1 **Identify the Hazard**	**Step 2** **Assess the Hazard**	**Un-Mitigated Risk** **Severity & Probability**		**Step 3** **Develop Controls and Make Decision**	**Step 4** **Implement Controls**	**Mitigated Risk** **Severity & Probability**	**Step 5** **Supervise and Evaluate**
Pyrotechnics (VBIEDs) VBIEDs Utilized: either site-approved flash bangs or ATWESS cartridges	Injury, property damage, fire, duds	Risk: Moderate Severity: Critical & Probability: Seldom	1	General Safety Brief	Provide prior to arrival	Risk: Low Severity: Marginal & Probability: Unlikely	Monitor controls AARs Re-evaluate controls as necessary
			2	Site-specific Safety Brief	Give Safety Brief prior to activity		
			3	Determine acceptable areas (maintain safety zone)	Use only in previously determined acceptable areas		
			4	Follow VBIED Work Instruction	Ensure personnel are trained		
			5	Determine if Event Controller is necessary to keep area clear	Use Event Controller as necessary to keep area clear		
			6	Determine usability of delivery device	Inspect containment/delivery device prior to use/deployment		
			7	Do not arm until ready to use	Ensure device is not prematurely armed		
			8	Authorized personnel (ESS technicians) place pyro (set up device - arm)	Ensure only authorized personnel set up devices		
			9	Radios off while placing pyro	Ensure radios are off while placing pyro		
			10	Follow misfire procedure	Ensure procedures are followed		

Appendix M (cont'd)

			11	Proper disposal procedures			
			12	Players PPE (knee/elbow pads, helmets, eye and hearing protection, gloves, appropriate clothing)	Enforce use of PPE		
			13	Controllers PPE (when deploying - eye and hearing protection, gloves, appropriate clothing)	Enforce use of PPE		
			14	Instructor/controller certification and experience	Utilize instructor/controller experience		
			15	Safety walk-through of site	Perform safety walk-through of site		
			16	Instructor/controller supervision	Perform supervision		
			17	Prior training/experience of personnel deploying	Utilize prior training/experience of personnel deploying		
			18	Participants walk-through of training/play areas	Ensure that participants perform walk-through of training/play areas		
			19	Proper disposal procedures	Ensure proper disposal		
			20	Fire fighting equipment on site	Ensure fire fighting equipment on site		

Appendix N

General Risk Analysis for Vehicles

Step 1 **Identify the Hazard**	**Step 2** **Assess the Hazard**	**Un-Mitigated Risk** **Severity & Probability**		**Step 3** **Develop Controls and Make Decision**	**Step 4** **Implement Controls**	**Mitigated Risk** **Severity & Probability**	**Step 5** **Supervise and Evaluate**
Vehicles	Death, injury, property damage	Risk: High Severity: Catastrophic & Probability: Seldom	1	General Safety Brief	Provide prior to arrival	Risk: Low Severity: Marginal & Probability: Seldom	Monitor
			2	Site-specific Safety Brief	Give Safety Brief prior to activity		
			3	Personnel must have current driver's license	Ensure personnel have current driver's license		
			4	Site specified speed limits (on and off road)	Enforce site speed limits		Re-evaluate controls as necessary
			5	Observe all traffic laws - all traffic control devises (signs, pavement markings, cones, etc.) will be observed	Enforce traffic laws		
			6	Driving off designated roadways is prohibited unless specifically directed otherwise	Enforce off road driving policy		
			7	Passengers shall not be transported on the outer surface of any vehicle unless specifically directed otherwise	Enforce policy		
			8	Vehicles shall not be operated to crash, block or outmaneuver other vehicles or persons	Instructor/controller perform supervision		

Appendix N (cont'd)

			9	Do not crawl under a running vehicle	Instructor/controller perform supervision		
			10	Vehicles may only be mounted or dismounted after they have come to a complete stop	Instructor/controller perform supervision		
			11	Headlights shall be used from dusk to dawn and during periods of low visibility unless specifically directed otherwise	Instructor/controller perform supervision		
			12	Seat belts will be worn at all times unless specifically directed otherwise	Enforce seat belt policy		
			13	PPE (knee/elbow pads, helmets)	Enforce PPE requirements		
			14	Instructor/controller experience	Utilize experience		
			15	Safety walk-through of site	Perform safety walk-through of site		
			16	Instructor/controller supervision	Perform supervision		
			17	Prior training/experience of personnel	Utilize prior training/experience of personnel deploying		
			18	Determine unique hazards	Identify to participants types and locations of hazards		
			19	Determine out-of-play areas	Put exceptional hazards out-of-play		
			20	Participants walk-through of training/play areas	Participants walk-through of training/play areas		

Appendix O

General Risk Analysis for Vehicles – Night Driving

Step 1 **Identify the Hazard**	**Step 2** **Assess the Hazard**	**Un-Mitigated Risk** **Severity & Probability**		**Step 3** **Develop Controls and Make Decision**	**Step 4** **Implement Controls**	**Mitigated Risk** **Severity & Probability**	**Step 5** **Supervise and Evaluate**
Night driving	Death, injury, property damage	Risk: High Severity: Catastrophic & Probability: Seldom	1	General Safety Brief	Provide prior to arrival	Risk: Low Severity: Marginal & Probability: Seldom	Monitor controls AARs Re-evaluate controls as necessary
			2	Site-specific Safety Brief	Give Safety Brief prior to activity		
			3	PPE (knee/elbow pads, helmets)	Enforce PPE requirements		
			4	Seatbelts	Re-enforce seatbelt policy		
			5	Site/exercise-required speed limits	Enforce speed limits		
			6	Observe all traffic laws	Enforce traffic laws		
			7	Instructor/controller experience	Utilize experience		
			8	Controllers supervise ProForce and OPFOR positioning/ROE	Controllers enforce positioning/ROE		
			9	Safety walk-through of site	Perform safety walk-through of site		
			10	Instructor/controller supervision	Perform supervision		
			11	Prior training/experience of personnel deploying	Utilize prior training/experience of personnel deploying		
			12	Determine unique hazards	Identify to participants types and locations of hazards **(examples: provide photos)**		
			13	Determine out-of-play areas	Put exceptional hazards out-of-play **(Mark areas with yellow tape – provide photos)**		
			14	Participants walk-through of training/play areas	Participants walk-through of training/play areas		

Appendix P

General Risk Analysis for Vehicles – All Terrain Vehicles (ATVs)

Step 1 **Identify the Hazard**	**Step 2** **Assess the Hazard**	**Un-Mitigated Risk** **Severity & Probability**		**Step 3** **Develop Controls and Make Decision**	**Step 4** **Implement Controls**	**Mitigated Risk** **Severity & Probability**	**Step 5** **Supervise and Evaluate**
All terrain vehicles (ATVs)	Death, injury, property damage	Risk: Moderate Severity: Catastrophic & Probability: Unlikely	1	General Safety Brief	Provide prior to arrival	Risk: Moderate Severity: Catastrophic & Probability: Unlikely	Monitor controls AARs Re-evaluate controls as necessary
			2	Site-specific Safety Brief	Give Safety Brief prior to activity		
			3	Personnel must be trained and certified by a nationally recognized training and certifying agency	Ensure personnel are trained and certified by a nationally recognized training and certifying agency		
			4	Site specified speed limits will be adhered to	Enforce site speed limits		
			5	PPE (knee/elbow pads, helmets, boots, gloves, eye and hearing protection, appropriate clothing)	Enforce PPE requirements		
			6	Instructor/controller experience	Utilize experience		
			7	Safety walk-through of site	Perform safety walk-through of site		
			8	Instructor/controller supervision	Perform supervision		
			9	Prior training/experience of personnel deploying	Utilize prior training/experience of personnel deploying		
			10	Determine unique hazards	Identify to participants types and locations of hazards **(examples: provide photos)**		
			11	Determine out-of-play areas	Put exceptional hazards out-of-play **(Mark areas with yellow tape – provide photos)**		
			12	Participants walk-through of training/play areas	Participants walk-through of training/play areas		

Appendix Q

General Risk Analysis for ESS Equipment

Step 1 **Identify the Hazard**	**Step 2** **Assess the Hazard**	**Un-Mitigated Risk** **Severity & Probability**		**Step 3** **Develop Controls and Make Decision**	**Step 4** **Implement Controls**	**Mitigated Risk** **Severity & Probability**	**Step 5** **Supervise and Evaluate**
ESS equipment	Death, injury, property damage	Risk: Moderate Severity: Catastrophic & Probability: Unlikely	1	General Safety Brief	Provide prior to arrival	Risk: Low Severity: Marginal & Probability: Seldom	Monitor controls AARs Re-evaluate controls as necessary
			2	Site-specific Safety Brief	Give Safety Brief prior to activity		
			3	Personnel must be trained to use ESS weapons/equipment	Ensure personnel are trained in the proper use of ESS weapons/equipment		
			4	ESS weapon/equipment inspection	Ensure ESS weapon/equipment inspection occurs prior to the beginning of the activity		
			5	Permanent modification	Ensure that ESS weapons have been permanently modified		
			6	Live round inhibitors	Ensure live round inhibitors have been incorporated		
			7	Weapon color	Clearly marked as exercise weapons		

Appendix Q (cont'd)

			8	Closely controlled and kept separate from any weapons not associated with the exercise			
			9	Only blank ammunition	Ensure only blank ammunition is used		
			10	Modified magazines	Ensure modified magazines are used		
			11	Magazine color	Ensure magazines are marked as ESS magazines		
			12	Ten-foot rule	Instructor/controller perform supervision		
			13	Laser maintenance and adjustment	Instructor/controller perform supervision		
			14	Laser caution sticker	Ensure lasers have precautionary sticker with proper verbiage		
			15	Light anti-tank weapon simulator rules	Ensure personnel are trained and enforce back-blast distance requirements		
			16	Inspect participant's personal equipment to ensure no live weapons or ammunition are introduced	Perform inspection of participants personal equipment		
			17	PPE (knee/elbow pads, helmets, boots, gloves, eye and hearing protection, appropriate clothing)	Enforce PPE requirements		
			18	Instructor/controller experience	Utilize experience		
			19	Safety walk-through of site	Perform safety walk-through of site		
			20	Instructor/controller supervision	Perform supervision		
			21	Prior training/experience of personnel deploying	Utilize prior training/experience of personnel deploying		
			22	Determine unique hazards	Identify to participants types and locations of hazards		

Appendix Q (cont'd)

			23	Determine out-of-play areas	Put exceptional hazards out-of-play **(Mark areas with yellow tape – provide photos)**		
			24	Participants walk-through of training/play areas	Participants walk-through of training/play areas		