2. COUNTERPROLIFERATION AND FORCE PROTECTION

(Also see topics 1.4, 1.21, 1.25, 3.45, 4.39, 4.44, 5.46, 5.65, and 6.17)

2.1 Assess current definitions of WMD and discuss whether they are adequate to capture current and emerging threats. (See topic 1.21)

- What criteria should be considered when proposing a definition? (e.g. effects-based vs. threshold-based, political aspects, others?)
- Are some threats so distinctive they should be addressed separately? For example, should high yield explosives be combined with nuclear and with chemical (i.e., CBRNE) or is that not a useful definition?
- Should weapons of mass disruption be included in the definition? Why or why not?
- Are there technologies that might be captured by too broad of a definition that the US would not like to see denoted as WMD?
- What are the proliferation or legal implications of differing definitions?

Priority: 1
Key Terms: Weapons of Mass Destruction, WMD, CBRNE, definition, effects-based, threshold, high-yield explosives, weapons of mass effects, weapons of mass disruption

2.2 Examine the intersections between C-CBRNE, Force Protection, Homeland Security (HLS), and Homeland Defense (HLD); discuss the organizational stove-pipes and propose solutions to better leverage efforts.

- Determine/define the intersections between relevant DoD organizations. What tools, expertise, CONOPs, and technologies do they employ?
- Discuss potential synergies and redundant efforts.
- Conduct a gap analysis to determine how C-CBRNE could be better integrated into Force Protection, Homeland Security and Homeland Defense.
- Are there different implications for peacetime vs. wartime in terms of organizational lines of authority for C-CBRNE?

Priority: 1
Keywords: Force protection, CBRNE, Homeland Security, HLS, Homeland Defense, HLD, organization, tools, expertise, CONOPs, technologies, peacetime, wartime, stove-pipes

2.3 Assess how the DoD and the wider community is organized to support the S&T needs related to C-CBRNE.

- Identify C-CBRNE S&T organizations and activities.
- Identify S&T shortfalls and duplications of effort. Propose solutions to cover shortfalls and avoid duplication of effort in S&T. (e.g. the development of a forum for national labs & DoD, a single oversight body)
- Examine the role of private industry in C-CBRNE S&T activities. Is there potential for increased collaboration?
- Discuss approaches to identifying new areas/ideas for C-CBRNE S&T.

Priority: 1
Key Terms: Science, technology, S&T, national labs, DoD, shortfalls, duplication of effort, organization

2.4 What are potential new or emerging WMD technologies?

- What are the leading edge technologies (nanotech/MEMS, advanced energy systems and devices, high powered microwaves, new WMD technological advances in delivery systems: small, smart, autonomous, air, undersea, land) that could be utilized as weapons of mass destruction?
- How should new bio-engineered threats be identified, registered, and tracked?
- How or should other technologies be registered or tracked?
- What are the leading edge therapeutics that could be used as weapons?
- Propose methodologies for determining what could be used as a weapon. List criteria, if applicable.
- How should policy implications be determined?
- Inventory/survey NIH/medical community efforts and apply them to DoD policy.
- How should policy be developed to respond to advanced, unknown genomic threats?

Priority: 1
Key Terms: technologies, nanotech, MEMS, energy systems, microwaves, weapons of mass destruction, WMD, delivery systems, bio-engineering, therapeutics, National Institutes of Health, NIH, emerging weapons, lasers, non-lethal weapons

2.5 With technology making it easier for nations to acquire a nuclear capability (due to higher yields, dispersion of fissile materials), analyze ways to prevent the auto-catalytic proliferation of nuclear weapons.

- How should the intelligence and technical communities be integrated to detect latent nuclear capabilities? What changes should be made in current practices?
- What are the policy implications for the USAF in stemming proliferation? What are the legal implications?
- What are the optimal pressure points or incentives to prevent nations from wanting to acquire a latent nuclear capability?
- Under what circumstances are nonproliferation regimes effective? When have they failed?
- Discuss the role of multilateral frameworks and the United Nations.
- Discuss the impact of verification measures.

Priority: 1
Key Terms: Nuclear weapons, intelligence, technical, capabilities proliferation, nonproliferation, multilateral framework, United Nations, verification

2.6 Assess challenges regarding operations following a Radiological Weapon (RW) event.

- What are the risks? What actions should be taken?
- Discuss how to conduct operations through a radiological weapons event.
- How does C-RW differ from C-BW and C-CW in terms of tactics, techniques and procedures?
- What are the basic facts a commander should know about RW?
- What are new areas for radiological weapons research? How can the disruptive effect of RW be minimized?

Priority: 1
Key Terms: Commanders' guidelines, radiological weapons, RW CONOPs, dose thresholds, medical management of radiated casualties, ionizing radiation

2.7 Examine the Air Force role in the Proliferation Security Initiative (PSI) interdiction mission. (Also see topic 5.46)

- Discuss how the Proliferation Security Initiative applies to the USAF. What capabilities does the USAF require to conduct an aerial interdiction or support ground/maritime interdiction?
- What are the current USAF shortfalls in terms of organize, train, and equip to support these missions?
- Propose Rules of Engagement for aerial interdiction of CBRNE materials, technology, or expertise? What are key considerations in formulating TTPs for this mission?
- Discuss the legal implications of aerial interdiction.
- The researcher may choose to use case studies of lessons learned in the war on drugs, enforcing no-fly zones, maritime interdiction, or other aerial interdiction.

Priority: 1
Key Terms: Proliferation Security Initiative (PSI), capabilities, equipment, policy, ROE, aerial interdiction, drug war, no-fly zone, maritime interdiction, WMD interdiction, case study

2.8 Examine the CBRNE/force protection implications of a total force—that includes Reserve, Guard, civilians, and contractors. (Also see topic 5.1)

- Who should be considered essential personnel? By what criteria should designations be made?
- How can the USAF better integrate Reserve, Guard and contractor/civilians to ensure they are prepared to operate in a CBRNE or high threat environment?
- What functions should/should not be outsourced due to CBRNE or high threat environments? Discuss the political and legal implications of outsourcing.
- How should this issue apply to third country nationals?

- What are the primary considerations for commanders when making decisions about protecting civilians from CBRNE effects?
- What are the legal implications for protecting non-military personnel? (e.g. vaccination, protective gear, training.)

Priority: 1
Key Terms: Mission essential personnel, total force, contractor integration, military outsourcing, force protection, Reserve, Guard

2.9 Perform a case study on Request for Forces (RFF) approach used in Operation IRAQI FREEDOM (OIF) versus the historical time-phased force deployment data (TPFDD) process. Was the RFF approach successful in placing the appropriate counter-CBRNE (C-CBRNE) capabilities in theater? Include an examination of alternatives, such as pre-positioning. Also, examine the impact on aerospace expeditionary force (AEF) organization.

- How can the USAF provide the greatest C-CBRNE defense capability for the least TPFDD impact?
- Did the absence of a time-phased approach reduce visibility into arriving resources?
- How should planners best integrate all of the USAF's C-CBRNE capabilities in the AEF?
- How should C-CBRNE capabilities be prioritized? How should planners adjust for a specific location?
- What role can pre-positioned forces play?

Priority: 1
Key Terms: Deployment, time-phased force deployment data (TPFDD), C-CBRNE defense, aerospace expeditionary force, AEF, pre-positioning, C-CBRNE capabilities, Operation Iraqi Freedom, Iraq, Request for Forces (RFF), DEPORDS

2.10 Examine the impact of quarantine on military operations.

- Can a commander carry out effective operations while adhering to quarantine requirements?
- What information is needed to evaluate risks and benefits of continued operations?
- What are the legal and logistics ramifications of imposing quarantines? Identify the limits of the commander's authority to impose quarantines.
- Examine lessons learned from quarantines imposed during the spread of Severe Acute Respiratory Syndrome (SARS)? Discuss the implications of the successes and shortfalls on military operations.
- What are the key points in making the decision to impose quarantine (numbers, extent of contagion, mission impacts, legal impacts on communities and host nations)?

Priority: 1

Keywords: Biological warfare, biological defense, Severe Acute Respiratory Syndrome, SARS, quarantine, contagion, restriction of movement, host-nation agreements on restriction of movement, civil authorities, civil support, DoDD 6200.3 *Emergency Health Powers on Military Installations*

2.11 Was the USG effectively organized, equipped, and resourced to locate, identify, and eliminate weapons of mass destruction (WMD) in Iraq after the war?

- What changes does the DoD need to make in terms of intelligence, training, organization, and expertise?
- What are the legal implications of WMD elimination?
- What are the requirements for a standing WMD elimination capability? Assess the feasibility of such a capability.
- What are the political implications of WMD elimination in regard to dual-use materials, especially in a situation such as Iraq?
- Should these missions be conducted within a multilateral framework? What is the role of the United Nations?

Priority: 1
Keywords: WMD, WMD elimination, threat reduction, dismantlement, inspection regime, Iraq, Operation Iraqi Freedom, United Nations, International Atomic Energy Agency

2.12 Passive defense and force protection at Joint and Combined Operations bases pose significant operational challenges for commanders. Resolving many of these challenges will require a new approach to passive defense/force protection operations.

- How should the USAF handle Allies/Coalition/US Joint Forces that are not at the same level of readiness? Should the USAF provide them with equipment, medical supplies, or collective protection?
- How should we train/exercise Joint/Coalition Forces to operate in a CBRNE environment?
- The researcher may want to conduct a case study analysis (e.g. examine Joint operational experience in the Gulf War or OIF)

Priority: 1
Key Terms: Force protection, passive defense, Joint, Allies, doctrine, civilian, military, CBRN, force protection, operations, fixed-site, doctrine, policy, coalition, biological warfare.

2.13 Examine aero medical evacuation policies in a contaminated environment.

- What are the national policies on medevac of contaminated patients or remains?
- What is the capacity for the evacuation of contaminated patients?

- What are the requirements for noncombatant evacuation operations (NEO)? What are the political/legal ramifications for the evacuation of contaminated civilians?
- Is there a medical evacuation requirement? Is there a mobile medical unit requirement?
- Investigate the potential for medical CRAF (Civil Reserve Air Fleet) in the event of a contaminated casualty surge—would CRAF provide back-flow from theater?
- What modalities are necessary?
- How should levels of decontamination be determined prior to transport?
- Are there case studies for comparison?
- What are the work-arounds in lieu of transporting?

Priority: 2
Key Terms: aero medical evacuation, BW, contamination, mobile medical unit, med evac, Civil Reserve Air Fleet, decontamination, case study, transport, work around

2.14 What are the proliferation implications for transnational Chemical/Biotech corporations?

- Should, and if so, how should materials and expertise transfers within/between multi-national companies be monitored?
- Identify potential areas of proliferation concern in regard to transnational corporations.
- Examine dual-use export control legislation and multilateral agreements. Assess their implications for transnational corporations. Identify areas for improvement in these regimes.
- What are the strategies to identify and track dual-use technology in this context?

Priority: 2
Key Terms: Proliferation, transnational corporation, technology transfer, dual-use technology, export controls, biotech, chemical industry

2.15 Examine cruise missiles as WMD delivery vehicles. (Also see topic 1.25)

- How likely are cruise missiles to be used as delivery vehicles for chemical or biological weapons?
- What is the threat? How would they be used? Who has the capability to use cruise missiles as WMD delivery systems?
- Consider the political and military implications of their use or threat of use.
- What are their advantages (assess cost, accuracy, etc.)? What are their limitations? Would payload survive delivery (examine environmental stresses)?
- Are there means to address the proliferation/development of cruise missiles to deter their use as WMD delivery vehicles?
- What are effective countermeasures against them? Identify cutting edge technologies that could be employed to counter the threat.

Priority: 2
Key Terms: Cruise missile, WMD, delivery vehicle, payload survival, countermeasures

2.16 Examine the commercial UAV threat and potential countermeasures.

- What is the threat? How might an adversary use commercial UAVs as a warfighting weapon or weapon of terror? Combined with CBRNE?
- What role might the USAF be assigned or how can it contribute to defending against UAVs? What are effective countermeasures against them?
- Identify the key issues regarding UAV delivery of chemical or biological weapons (CBW). Which countries or groups might have the capability to use them as CBW delivery systems?
- How is it possible to regulate UAVs? Assess the extent to which current domestic and international flight regulations apply to UAVs.
- Would proliferation prevention measures be effective against this threat? Why or why not?

Priority: 2
Key Terms: Unmanned Aerial Vehicle, UAV, CBW delivery, International Civil Aviation Organization, ICAO, Federal Aviation Administration, FAA

2.17 Examine the role of security forces in C-CBRNE operations.

- Do security forces have distinctive responsibilities?
- Do their capabilities match their requirements?
- What kind of threats should security forces be responsible for in expeditionary situations?
- What equipment, technology and training do they need?
- What measures can be taken to improve the role of security forces in C-CBRNE operations?

Priority: 2
Key Terms: Security forces, CBRNE, expeditionary, equipment, technology, force protection, full spectrum threat response, integrated base defense, integrated base defense security systems, explosives detection, high-yield explosives, improvised explosive device

2.18 Examine the lessons learned from Department of Defense (DoD) vaccination programs. How can these lessons apply in the future?

- Review the recent vaccination programs. Analyze differences in policy in the continental United States (CONUS) and outside the continental United States (OCONUS).
- How can policy be enforced? Who should receive compulsory vaccinations? Who should be provided vaccinations on a voluntary basis?

- Examine similar Allied/Coalition programs. Explore how host nation programs might affect US forces.
- What can be done in the long term (acquire more vaccines; redirect resources dedicated to vaccine acquisition to other BW preparation methods)?

Priority: 2
Key Terms: Vaccines, vaccination program, compulsory vaccination, voluntary vaccination, biological warfare, biological defense, Allies, medical records, acquisition, commanders, anthrax, smallpox

2.19 How should the DoD develop and implement standards for thorough decontamination (unrestricted, unprotected use of a previously chemically and/or biologically contaminated asset)? These standards should take account of implications for long-term personnel exposure, military or civilian re-use of the equipment, and reconstitution of the force structure. (Also see topic 3.45)

- What are the important considerations in developing criteria?
- When can a contaminated asset be used without mission-oriented protective posture (MOPP) gear?
- What is the policy for returning a previously contaminated asset to CONUS?
- How will Allied concerns affect standards or policymaking?

Priority: 2
Key Terms: Decontamination, chemical, biological, policy, guidance, implement, contaminated, personnel, exposure, civilian, equipment, force structure, Allies, mass casualties

2.20 Identify "best practices" used by other nations in addressing C-CBRNE.

- Are best practices applicable to US operations? Which can be adopted for use by the US?
- The researcher should examine how Allied forces interact with their local civilian populations when responding to a CBRNE incident.
- The researcher should focus on countries that have extensive experience with readiness for C-CBRNE operations (e.g. Israel, United Kingdom).

Priority: 2
Key Terms: Best practices, passive defense, consequence management, Allies, fixed-site operations, CONUS, doctrine, counterterrorism, civilian, civil-military operations, civil affairs, civil support, force protection, operations, fixed-site, doctrine, policy, Allies, coalition, biological warfare, homeland defense, homeland security, CBRNE, CONOPS

2.21 Examine force protection engineering standards.

- Evaluate current DoD new facility construction standards from a CBRNE threat perspective.
- Are there comprehensive DoD standards to guide design engineers for all types of facilities and levels of risk and acceptable vulnerability?
- How current and relevant are the existing new construction or renovation standards to today's CBRNE and terrorist threats?
- Are the current "best practices" in antiterrorism and force protection incorporated in the DoD building standards/codes? If not, posit recommended standards based on researched best practices.
- What formal risk/vulnerability assessment process is undertaken to determine if a new facility requires special CBRNE measures and is that assessment updated throughout the design/construction life cycle? Assess review requirements.

Priority: 2
Key Terms: Installation force protection, building design, construction, engineering, building codes, CBRNE, standards

2.22 The DoD has undertaken a major effort to transform its structure, operational capabilities and business practices to align better with the security environment it perceives will exist in the first few decades of the 21st Century. Capabilities-based planning forms a key element of that transformation. Examine how capabilities-based planning and transformation affect C-CBRNE planning.

- How do the principles guiding DoD transformation apply to C-CBRNE efforts?
- What transformation practices and principles have been applied to the C-CBRNE challenge?
- What is the connection between our CBRNE vulnerabilities, capabilities-based planning, and DoD transformation efforts for C-CBRNE planning?

Priority: 3
Key Terms: Capabilities, planning, transformation, C-CBRNE, vulnerabilities

2.23 Identify ways to assess CBRNE, Force Protection, or nuclear security effectiveness using a performance-based methodology instead of the traditional compliance based standards. (Also see topic 2.26)

- Are the current compliance-oriented security and force protection standards adequate given the dynamic threat environment? What are their strengths and shortcomings? Do they portray an accurate picture of the effectiveness of security forces and systems?
- Survey existing inspection reports and analyses for their assessments of the suitability of current evaluation methods.
- Could a quantitative, performance-based methodology be developed that better represents the true effectiveness of CBRNE or security capabilities?

- How might DoD or the Air Force transition from the current compliance-based system to a more performance oriented evaluation system?
- What are the essential performance elements that must be considered in a performance-based methodology?
- Can factors like leadership, communications effectiveness, human factors (e.g. fatigue, experience), and the environment be adequately captured and portrayed as part of a performance methodology that is reliable and repeatable?

Priority: 3
Key Terms: CBRNE, force protection, readiness, standards, performance-based, leadership

2.24 Survey and capture recent exercise and wargaming threat scenarios for access denial and terrorism where WMD are employed. Identify significant scenarios that are lightly played and develop alternative and innovative scenarios for future consideration.

- Conduct a survey of past scenarios.
- Describe how a library of threat scenarios might be developed, maintained, and accessed by exercise or game developers.
- Identify significant trends/areas of omission in WMD scenario development.
- What are the sources and differentiators of WMD scenarios and how have they played out?
- Are all important elements of a WMD threat scenario adequately addressed in the current scenarios?
- Brainstorm and develop some innovative WMD threat scenarios that have not been well addressed but merit analysis and game play.

Priority: 3
Key Terms: Scenarios, access denial, weapons of mass destruction, WMD, force protection, UAV, case study, wargaming, terrorism, CBT simulators

2.25 Assess the role of global arms sales patterns in contributing to proliferation.

- Examine emerging trends in arms sales (including US arms sales).
- Assess post-sale controls on US arms sales and weapons technology transfers. Is it possible to prevent/limit re-transfer?
- Examine international and domestic legislation governing the sale/transfer of arms. Are there disconnects or shortfalls?
- Is there evidence of international cooperation among major arms supplier states (US, Russia, China, and Israel)? Are there currently incentives to cooperate to regulate sales/transfers?
- Do other arms producing countries indicate strategies specifically targeted against US interests in their sales/transfers?
- Examine the impact of unregulated arms sales/transfers by rogue states and non-state actors.

Priority: 3
Key Terms: Arms sales, proliferation, technology transfer, arms suppliers, US, Russia, China, Israel, regulating arms sales, post-sale controls, unregulated arms transfers, rogue states, non-state actors, United Nations Programme of Action to Prevent, Combat and Eradicate the Illicit Trade in Small Arms

2.26 Survey CBRNE vulnerability and mitigation strategy assessment tools. (Also see topic 2.23)

- Identify the various vulnerability assessment tools across DoD agencies and organizations.
- What current and emerging threats do they address?
- Do shortfalls in assessment tools exist? Are there redundancies?
- Can vulnerability and mitigation tools be combined into more powerful tools?

Priority: 3
Key Terms: Vulnerability, mitigation, strategy, assessment tools, emerging threats

2.27 Examine S & T advances that may have relevance for improved force protection.

- What advanced technologies (e.g. materials, IT, sensors, communications, etc.) have the potential to make substantial contributions to force protection against existing and potential CBRNE threats?
- Conduct a literature survey and expert interviews to identify relevant S&T research and development at universities, national laboratories, and industry.
- Identify existing USG programs to promote innovative technology development for force protection.
- Look for programs of cross fertilization between DoD and DHS.

Priority: 3
Key Terms: S&T, science and technology, advanced technologies, innovation, force protection, CBRNE

2.28 Standard Operating Procedures (SOPs) for CBRNE responses.

- Assess base-wide SOPs to identify best practices in countering CBRNE threats (e.g. food handling, medical practices, physical security, etc.). Note any shortfalls and inconsistencies.
- Identify and examine one or two case studies for lessons learned (e.g. Aum Shinrikyo sarin attack in Tokyo, SARS in the US and Hong Kong, Anthrax and the Hanta virus in the US). Indicate best practices that could be applied to bases. Identify impediments to adoption, if any.
- Which responses are applicable to CW, but not to BW (e.g. doffing masks, shelter in place, etc.)?

Priority: 3
Key Terms: Standard Operating Procedures, SOP, CBRNE, Aum Shinrikyo, Sarin, Tokyo subway, lessons learned, SARS, Severe Acute Respiratory Syndrome, de-mask, doffing, shelter in place

2.29 Examine implications of new US national strategies (e.g. National Bio-Defense Strategy, National Strategy to Combat WMD, National Military Strategy, etc.) for their implications for USAF plans and operations.

- Identify pillars and principles guiding current strategies. What areas of strategy require clarification?
- Identify strategy-CONOPS gaps, if any.
- Identify strategy-resource gaps, if any.
- Determine the potential impact of these strategies on the USAF programs and operations.
- Identify areas in which USAF doctrine may require change.

Priority: 3
Key Terms: National strategies, bio-defense strategy, National Security Strategy, National Strategy to Combat Weapons of Mass Destruction, gap analysis, operations, impact