

Powder River



Powder River Training Complex Ellsworth Air Force Base, South Dakota Environmental Impact Statement

Executive Summary



August 2010

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This volume contains the printed Executive Summary of the Powder River Training Complex (PRTC), Ellsworth Air Force Base (AFB) South Dakota, Draft Environmental Impact Statement (EIS) and the entire Draft EIS on the CD in the pocket below.

To view the Draft EIS on CD, you will need Adobe Acrobat® Reader. If you do not already have Adobe Acrobat® Reader, you can download it at www.adobe.com.

To review the PRTC Draft EIS:

- Insert the CD in your computer's CD drive and double-click on the file in the CD directory.
- Either scroll through the document or click on a heading in the Table of Contents and it will take you to that section of the Draft EIS.

The CD files are read-only, which means you may view and/or print them from the CD.

If you would like to view a printed copy of the PRTC Draft EIS, it is available for review at Montana State Library, Miles City, Ekalaka, Henry A. Malley Memorial, Fallon County, Rosebud County, Bicentennial, Parmly Billings, Montana; Bowman Regional, Dickinson Area, North Dakota State, North Dakota; Deadwood, Belle Fourche, Grace Balloch Memorial, South Dakota State, Rapid City, South Dakota; Wyoming State, Crook County, Sheridan County Fulmer, Sheridan College Griffith Memorial, Gillette College, Campbell County, Wyoming public libraries. The Draft EIS is also available online at the Air Combat Command www.acplanning.org and Ellsworth AFB www.ellsworth.af.mil websites.

To request further information contact:

Captain Matthew Reese
28 BW/PA, Ellsworth AFB, SD
Phone: (605) 385-5056

To submit comments on the Draft EIS, contact:

Linda DeVine, Program Manager
ACC/A7PS
129 Andrews St., Suite 337
Langley AFB, VA 23665-2701
Fax: (757) 764-1975

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Draft

**Powder River Training Complex
Ellsworth Air Force Base South Dakota
Environmental Impact Statement**

Executive Summary

Public comments on this Draft EIS are requested pursuant to the National Environmental Policy Act, 42 United States Code 4321, *et seq.* All written comments received during the comment period will be made available to the public and considered during Final EIS preparation. The provision of private address information with your comment is voluntary. However, this information is used to compile the mailing list for Final EIS distribution and failure to provide such information will result in your name not being included on the list. Private address information will not be released for any other purpose unless required by law.

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This Executive Summary is designed to direct the reader to the Powder River Training Complex (PRTC) Draft Environmental Impact Statement (EIS). A CD containing the Draft EIS is provided on the inside front cover of this Draft EIS Executive Summary.

The Draft EIS is organized in seven chapters. Chapter 1.0, *Purpose and Need for the Proposed Action and Alternatives*, describes the purpose and need of the proposal to provide military training airspace that is adequately sized, properly configured, and capable of supporting the training mission for B-1 aircrews operating from Ellsworth Air Force Base (AFB) and B-52 aircrews operating from Minot AFB. Chapter 2.0, *Description of Proposed Action and Alternatives*, provides a detailed description of the Proposed Action (Alternative A), Alternative B, Alternative C, and the No-Action Alternative, which is continued training in the existing Powder River airspace. Chapter 2.0 discusses the alternative selection process and alternatives considered but not carried forward for further analysis. Chapter 2.0 also provides a comparative summary of the environmental effects of the alternatives.

Chapter 3.0, *Affected Environment*, describes the existing conditions of environmental resources that could be affected by the PRTC. Chapter 4.0, *Environmental Consequences*, addresses the potential environmental consequences by overlaying the Chapter 2.0, *Description of Proposed Action and Alternatives*, on the existing or baseline conditions from Chapter 3.0.

Chapter 5.0, *Cumulative Effects and Other Environmental Considerations*, addresses the cumulative effects of recent past, present, and reasonably foreseeable actions that may be implemented in the region of influence (ROI). Chapter 6.0, *References*, contains references cited in the EIS and lists the individuals and organizations contacted during the preparation of the EIS. Chapter 7.0, *List of Preparers*, presents a list of the document preparers. Appendices A-I complete the CD.

Proponent and Cooperating Agency

The United States Air Force (Air Force) is the proponent for the Powder River Training Complex (PRTC) proposal and is the lead agency for the preparation of the Environmental Impact Statement (EIS). The Federal Aviation Administration (FAA) is a cooperating agency as defined in 40 Code of Federal Regulations (CFR) §1508.5.

Congress has charged the FAA with administering all navigable airspace in the public interest as necessary to ensure the safety of aircraft and the efficient use of such airspace. The FAA is the agency with jurisdiction by law and special expertise to those portions of the PRTC proposal regarding changes in the configuration of the airspace and establishment of new airspace. The FAA is participating as a cooperating agency in this EIS. As a cooperating agency, FAA has participated in public scoping and preparation of the Draft EIS. FAA input has been critical in developing the Proposed Action and alternatives.

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EXECUTIVE SUMMARY

PURPOSE AND NEED FOR THE PROPOSED ACTION AND ALTERNATIVES

The overarching purpose of any military force is to be able to successfully conduct combat operations. To accomplish this purpose, the military force must train often and realistically. A trained military force is essential to support national political and security objectives. Capabilities in the air and capabilities in space can rapidly provide the national command structure a full range of military options to meet national objectives and protect national interests. B-1 and B-52 aircraft have the range to reach and remain near a target area, the combat capability to carry a variety of munitions and sensors for specific targets, the responsiveness to be at the scene when needed, and the flexibility to relocate and respond to time sensitive targets. These capabilities make United States Air Force (Air Force) bombers flown by trained aircrews a key asset in national defense.

Aircrews need to train to become that key asset, and training requires airspace. Multiple changes to B-1 and B-52 missions are explained in EIS Section 1.2.3. These capability and mission changes make the current Powder River airspace inadequate to meet training requirements.

The Air Force needs to improve airspace assets for required training by B-1 aircrews stationed at Ellsworth Air Force Base (AFB), South Dakota and B-52 aircrews stationed at Minot AFB, North Dakota. The Air Force proposes the Powder River Training Complex (PRTC) to improve training through establishing new airspace and modifying existing airspace. PRTC would improve training through:

- establishing new airspace and modifying existing airspace in the region of Ellsworth AFB and Minot AFB;
- providing for complex multi-mission training in the new and modified airspace;
- permitting defensive training with chaff and flare countermeasures in the new and modified airspace;
- providing for realistic Large Force Exercises (LFEs) with approximately 20 aircraft of various types during 1 to 3 days per quarter, an expected total of 10 days per year;
- authorizing supersonic flight for the B-1s above 20,000 feet mean sea level (MSL) in the new and modified airspace to be scheduled only during the expected 10 days per year of LFEs; and
- authorizing other military units with fighters, primarily from the surrounding area, to conduct supersonic flight above 10,000 feet AGL in the new and modified airspaces to be scheduled only during the expected 10 days per year of LFEs.

The purpose of the proposed PRTC is to provide local airspace that would support primarily Ellsworth and Minot AFBs with the capability to adequately train aircrews and ensure their readiness to succeed and survive in combat. No bombing range is proposed for this action. Bomber technology, capabilities, and combat missions have changed and expanded in recent years. Aircraft and threat systems now have longer range and higher altitude capabilities. Fuel conservation necessitates shorter training flights while low-altitude training and new targeting pods require more diverse airspace. Combat experience requires complex multiple mission training, and the number of users has increased. This has all resulted in a requirement for bombers to take on multi-role taskings and very high utilization rates.

Identifying a location for improved training involved assessing airspace options throughout the Western United States (U.S.). Figure ES-1 summarizes the alternatives identification process described in the

Draft Environmental Impact Statement (EIS) Chapter 2.0. Airspaces such as the Tiger, Devils Lake, Hays, and Lake Andes Military Operations Areas (MOAs) were created and configured for Cold War era missions. They do not have the dimensions, altitude structure, or electronic capabilities to meet today or tomorrow's Overseas Contingency Operation training missions for bombers. Western airspaces such as the Mountain Home Range Complex (MHRC), Utah Test and Training Range (UTTR), and Nevada Test and Training Range (NTTR) are excellent ranges with updated electronic and target capabilities; however, these ranges are distant from B-1 and B-52 bases. In addition, the excellent training offered by these ranges leads to intensive use for both test and training missions by locally-based aircraft, severely limiting access for bomber training. This limited access, combined with the distance from B-1 and B-52 home bases, makes it difficult to conduct realistic training and maintain aircrew proficiency.



Since 9/11, the Air Force has evolved multiple new roles and responsibilities for the B-1, including support for Non-Traditional Intelligence, Surveillance, and Reconnaissance.

In combat, B-1s are often launched fully loaded and set up an orbit with a variety of munitions near the expected action. B-1s are the weapon of choice in combat where they can be called on to target everything from an enemy mobile SCUD missile minutes from launching to an enemy pinning down a Sea, Air, Land (SEAL) team on a hilltop to a weapons cache found by a Special Operations team. B-1 aircrews must be trained to be experts in every possible mission. Training the B-1 four-man aircrew to accomplish these multiple new and existing assignments, often on the same mission, requires dynamic, realistic training airspace. The expanded B-1 capabilities and the aircraft's performance mean that one or two B-1s require all the current Powder River airspace for a realistic training mission. The B-1 operational wing at Ellsworth AFB does not

have adequate airspace to train aircrews for present and future training requirements. The B-52 operational aircraft at Minot AFB face comparable training limitations.

Airspace and ground assets must be integrated into a local training complex accessible to Ellsworth AFB and Minot AFB with the opportunity for multiple mission training. The capability to launch more local training flights would permit aircrews to fulfill requirements for combat readiness because a higher proportion of training time per flying hour would be spent in multi-mission training for today's and tomorrow's conflicts. B-1 aircrews cannot accomplish the array of expanded training requirements while commuting to remote training complexes, and these remote training complexes have limited availability. Commuting and availability further reduce flexibility and efficiency.

B-52s from Minot AFB face the same training challenge. B-52 aircrews must fulfill a broad range of missions, with new missions for electronic suppression and smart weapons arising from the Overseas Contingency Operation. This varied array of missions include strategic attacks, counter land-and-air, and preparation for deployment with the Aerospace Expeditionary Forces (AEFs). Meeting these requirements demands efficient and effective use of limited available training hours. As with the B-1s, the B-52s must train in an airspace complex located and configured to provide a high proportion of training and minimal low-value commuting time. Such a complex would permit Minot AFB to generate quality local sorties and fulfill training requirements for



B-52 (pictured here) and B-1 bombers have historically used Ellsworth AFB scheduled Military Training Routes (MTRs) in Montana, North Dakota, South Dakota, and Wyoming for low-altitude penetration mission training.

combat readiness. Figure ES-2 presents an overview of the modular nature of the proposed PRTC and describes the airspace segments of the PRTC. The PRTC is designed to address nearly all the limitations of the existing Powder River airspace explained in Section 1.0 of the Draft EIS. These limitations and training deficiencies, summarized in Table ES-1, drive the need to implement the proposed PRTC. Table ES-2 summarizes the improved training capabilities that would fulfill the needs summarized in Table ES-1 should PRTC be implemented. The sections referenced in Table ES-2 are the Draft EIS sections where additional details are presented. Both distance and accessibility of remote airspace complexes described in Figure ES-1 result in inefficient and ineffective use of aircrew and aircraft flying hours. Commuting flight hours do not permit aircrews to generate sufficient sorties to meet expanded training requirements with new weapon systems. Limitations of aircraft maintenance personnel and time further reduce the ability of flight crews to achieve training requirements. Such limitations and deficiencies can preclude aircrews from achieving timely combat-ready status.

The existing Powder River airspace includes the Powder River Military Operations Areas (MOAs), associated Air Traffic Control Assigned Airspace (ATCAA), and an array of no-drop targets and electronic threats.

The proposed Powder River Training Complex (PRTC) builds upon the Powder River airspace and adds and reconfigures MOA and ATCAA assets to meet today's and tomorrow's training needs.

The Air Force proposes to establish PRTC to overcome the limitations and deficiencies listed in Table ES-1. The proposed PRTC modular nature would permit joining the airspace for once quarterly LFEs. An LFE is a highly sophisticated training exercise that simulates full-scale battlefield scenarios, and requires enough airspace to provide assembly, ingress, egress, and maneuver areas. Such training exercises employ a full range of combat tactics, equipment, and personnel.

The Air Force proposes to conduct LFEs a maximum of once per calendar quarter, lasting 1 to 3 days. LFEs would occur in a 2 to 4 hour block and may include approximately 20 aircraft, of various aircraft types training in simulated combat. Supersonic flight would only be authorized during the 10 days per year of LFEs to permit aircrews to use the full capabilities of their aircraft. At supersonic speeds, the timeframe during which aircrews are exposed to enemy threats tests crew reaction times, which may have been seconds, and become tenths of seconds. During LFEs, the B-1 would conduct supersonic flights above 20,000 feet MSL, and transient fighters would conduct supersonic flights above 10,000 feet AGL. LFEs would occupy all or substantial portions of the proposed PRTC.

Combat tactics are both offensive and defensive in nature and include use of defensive chaff and flares. Defensive training using chaff and flares permits aircrews to train to meet increasingly complex surface-to-air threats which require near instantaneous aircrew response to the threat. Chaff and flare deployment represent necessary

Aviation and Airspace Use Terminology

Above Ground Level (AGL): Altitude expressed in feet measured above the ground surface.

Mean Sea Level (MSL): Altitude expressed in feet measured above average (mean) sea level.

Flight Level (FL): Manner in which altitudes at 18,000 feet MSL and above are expressed, as measured by a standard altimeter setting of 29.92.

Visual Flight Rules (VFR): A standard set of rules that all pilots, both civilian and military, must follow when not operating under instrument flight rules and in visual meteorological conditions. These rules require that pilots remain clear of clouds and avoid other aircraft.

Instrument Flight Rules (IFR): A standard set of rules that all pilots, civilian and military, must follow when operating under flight conditions that are more stringent than visual flight rules. These conditions include operating an aircraft in clouds, operating above certain altitudes prescribed by Federal Aviation Administration (FAA) regulations, and operating in some locations such as major civilian airports. Air Traffic Control (ATC) agencies ensure separation of all aircraft operating under IFR.

Source: FAA Pilot/Controller Glossary 2010

combat operations which bomber aircrews cannot perform in the existing local airspace. Chaff creates a brief reflective cloud of fibers thinner than a human hair to confuse enemy radar. Flares create a heat source to decoy heat-seeking missiles away from the aircraft. These countermeasures defend aircraft against enemy threats and are extensively used in combat. Training to employ these countermeasures in an effective and timely manner is essential for aircrews conducting almost any mission. Chaff would not be deployed where it could interfere with airport radars and flares would be deployed above 2,000 feet AGL (flares burn out in 500 feet) or not be deployed in a MOA during extreme fire conditions.

Table ES-2 summarizes the improved training capabilities of the proposed PRTC depicted on Figure ES-2. A comparison of Tables ES-1 and ES-2 demonstrates that PRTC would provide bomber aircrews adequately sized, configured, and available airspace to train as they would fight during worldwide deployment. The long timeframe for any future bomber development places an even greater emphasis on B-1 capabilities and training. Bomber aircrews face reduced budgets, a reduced number of airframes, high aircraft utilization requirements, new multi-role taskings, and expanded capabilities to achieve U.S. military objectives. Bomber aircrews must train to be experts with their own weapons systems and to function as an integrated force package with other aircraft to leverage the capabilities of each weapon system and enhance survivability of the collective force. Expanding the existing Powder River airspace to form the PRTC would improve realistic combat training and increase flexibility and availability of limited resources and assets.

Table ES-3 summarizes the PRTC project elements for each alternative explained in the Draft EIS Chapter 2.0. Figure ES-3 presents the proposed PRTC airspace and identifies some of the geopolitical features of the potentially affected region and the communities under and on the periphery of the proposed airspace.

Table ES-1. Summary of Factors Which Establish the Need for Expanded Local Airspace

1. B-1 and B-52 missions, aircraft capabilities, and training requirements have increased and will continue to increase and the Powder River airspace cannot accommodate these requirements.
2. Commuting consumes limited available aircrew and aircraft flying hours without accomplishing essential training, and distant complexes that theoretically could provide needed training with long commutes have a limited accessibility because locally-based aircraft and other users have priority.
3. Flight hours spent commuting consumes excessive fuel and requires extensive on-ground maintenance hours for airframes to be ready for the next mission. Multiple hours with commuting missions force aircraft inspections and maintenance sooner than the same number of local mission training. This results in a reduction in available airframes for aircrew training.
4. Combat readiness requires complex multiple mission training, but the existing Powder River airspace accommodates approximately 46 percent of required B-1 aircrew training sorties and 31 percent of required B-52 aircrew training sorties.
5. The existing Powder River airspace does not permit certain required training activities essential to today's combat, such as supersonic flight, training in the deployment of defensive chaff and flares, diversified low-altitude training, or Large Force Exercises (LFEs).
6. The number of users has increased, but the Powder River airspace capacity does not provide for multiple or dissimilar aircraft training with current sensors and weapon capabilities.
7. The B-1 and B-52 aircrews currently face aircraft and threat systems with ranges far in excess of the existing Powder River airspace. Additionally, supersonic training is required for bomber aircrew proficiency as well as fighter tactical employment. Training must detect and react to such threats.
8. The existing Powder River airspace has inadequate space and diversity to accommodate necessary B-1 and B-52 training requirements for combat readiness.

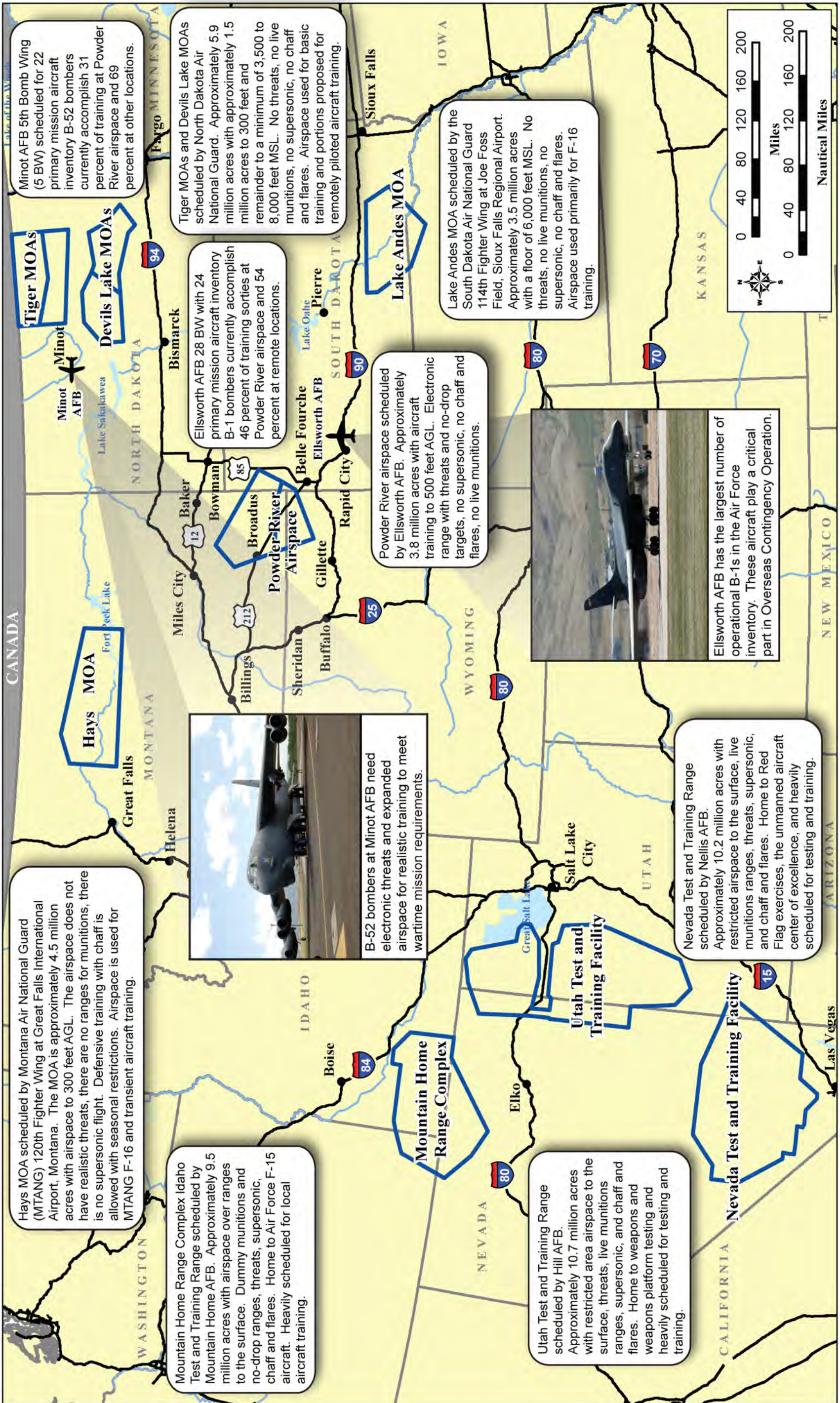


Figure ES-1. Regional Location of Powder River Airspace and Remote Training Airspaces and Ranges

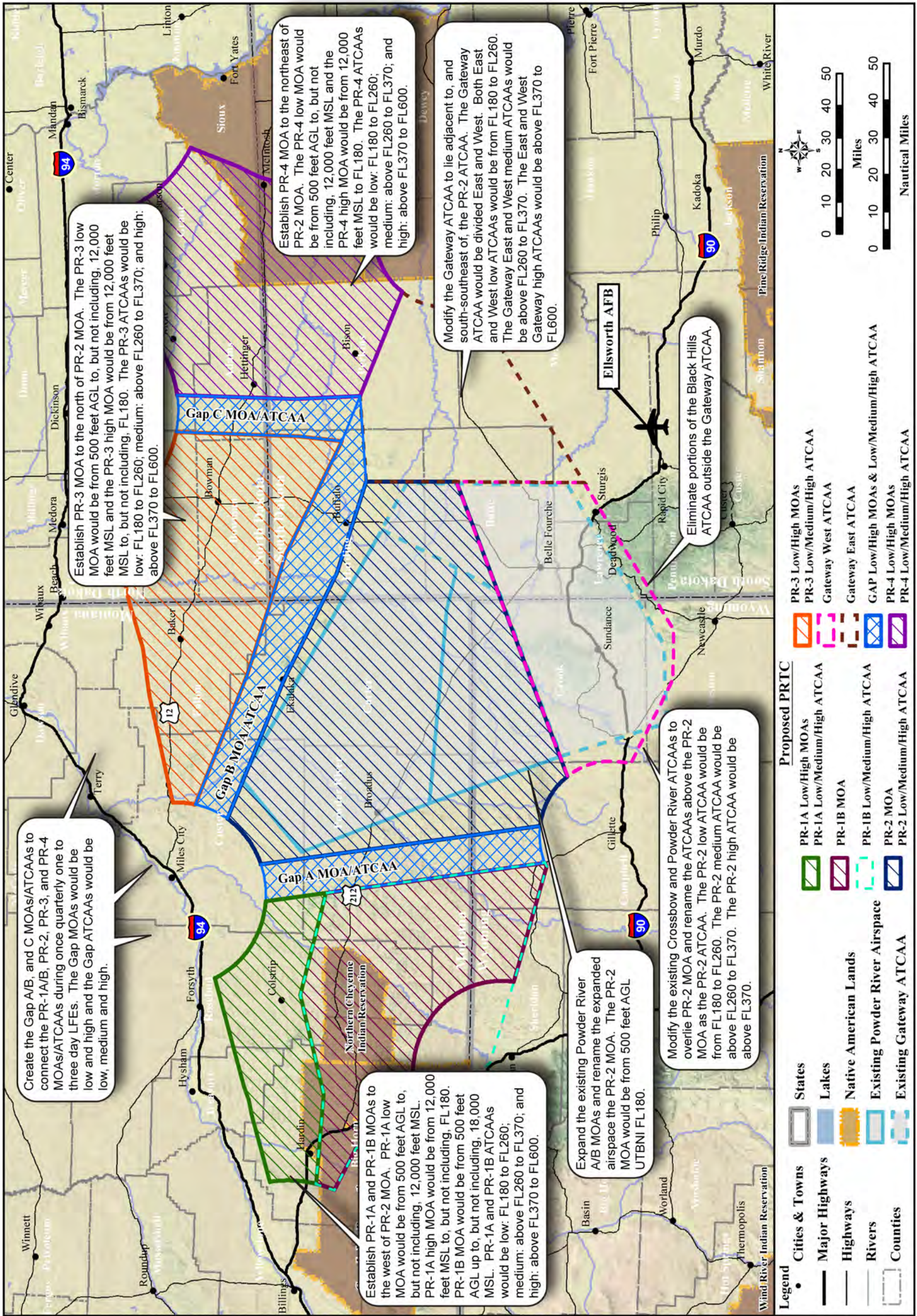


Figure ES-2. Overview of Ellsworth AFB, Minot AFB, and Proposed PRTC Airspace

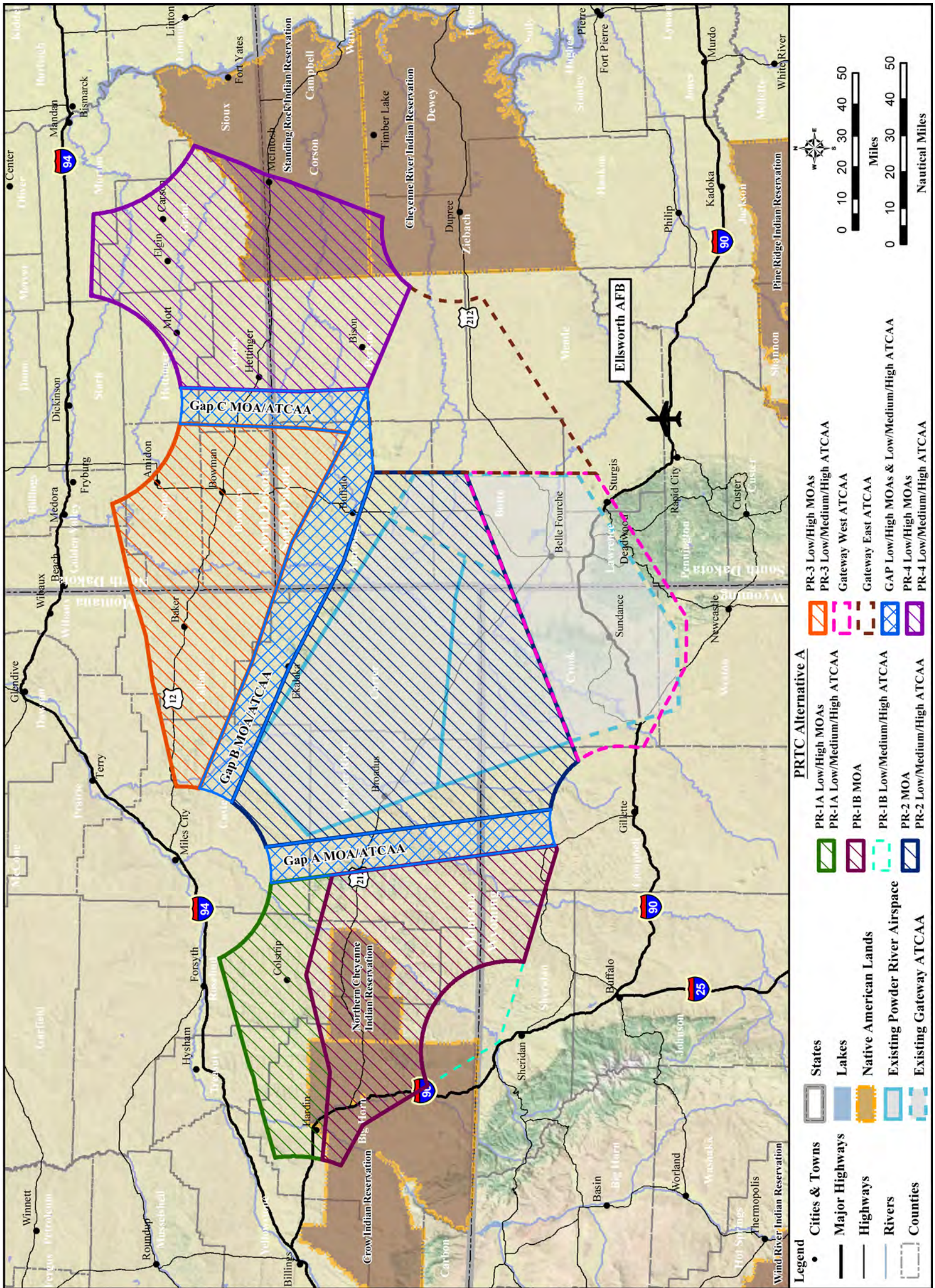


Figure ES-3. Extent of Proposed PRTC Airspace

Table ES-2. Summary of PRTC Purposes and Improved Training Capabilities

<p>1. Provides for aircrew training to implement and employ technology upgrades and fulfill both current and anticipated future operational requirements (Section 2.2.1). Addresses Need Factors 1, 4, 5, 6, 7, and 8 in Table ES-1.</p> <p>2. Enables aircrews to conduct diverse training missions while dramatically reducing commuting hours and issues of accessibility to remote ranges (Section 2.2.1.1) and provides locally available airspace with scheduling priority for bombers (Section 2.2.1.3). Addresses Need Factors 2 and 3 in Table ES-1.</p> <p>3. Enables maintenance turnaround of the aircraft to generate adequate training sorties (Section 2.2.2.4) and provides more efficient use of fuel resulting in training time to improve both training quality and quantity. Addresses Need Factors 2 and 3 in Table ES-1.</p> <p>4. Accommodates approximately 85 percent of required aircrew complex multi-mission training sorties for both B-1 and B-52 aircrews (Section 1.2). Addresses Need Factors 1, 4, 5, 6, 7, and 8 in Table ES-1.</p> <p>5. Increases the proportion of training time for new and diversified training requirements, including defensive chaff and flares, supersonic maneuvers during LFEs, and diversified areas for low-altitude training (Sections 2.2.1 and 2.2.2). Addresses Need Factors 1, 4, 5, 6, 7, and 8 in Table ES-1.</p> <p>6. Improves integrated aircrew combat training operations by quarterly support of LFEs engaging in realistic tactics using various aircraft types and expanded network based operations training (Section 2.3.2.4). Addresses Need Factors 4, 5, 6, 7, and 8 in Table ES-1.</p> <p>7. Increases the availability of real world training for multiple, concurrent flights of aircraft from Ellsworth and Minot AFBs (Section 2.3.2.2). Addresses Need Factors 4, 5, 6, 7, and 8 in Table ES-1.</p> <p>8. Restructures and adds local airspace to meet the training needs for 28 BW and 5th Bomb Wing (5 BW) aircrews (Section 1.3). Addresses Need Factors 1, 2, 3, 6, 7, and 8 in Table ES-1.</p>

**Table ES-3. Summary of Alternative Project Elements
(Page 1 of 2)**

Project Element	Proposed Action Alternative A	Alternative B	Alternative C	No-Action Alternative
Expand and reconfigure Powder River A and B MOAs to create the PR-2 MOA	Establish PR-2 MOA from 500 feet AGL to FL180 in place of Powder River A and B MOAs	Establish PR-2 MOA from 500 feet AGL to FL180 in place of Powder River A and B MOAs	Establish PR-2 MOA from 500 feet AGL to FL180 in place of Powder River A and B MOAs	Continued use of Powder River A and B MOAs for limited training
Establish the PR-1A and PR-1B and Gap A MOAs	Establish PR-1A and Gap A Low MOAs from 500 feet AGL to but not including 12,000 feet MSL and High MOA from 12,000 feet MSL to but not including FL180. Establish PR-1B MOA from 500 feet AGL to but not including FL180	No PR-1 A/B MOA or Gap A MOA	Establish PR-1A and Gap A Low MOAs from 500 feet AGL to but not including 12,000 feet MSL and High MOAs from 12,000 feet MSL to but not including FL180. Establish PR-1B MOA from 500 feet AGL to but not including FL180	No new MOAs or ATCAAs

**Table ES-3. Summary of Alternative Project Elements
(Page 2 of 2)**

Project Element	Proposed Action Alternative A	Alternative B	Alternative C	No-Action Alternative
Establish the PR-3 and Gap B MOAs	Establish PR-3 and Gap B Low MOAs from 500 feet AGL to but not including 12,000 feet MSL and High MOA from 12,000 feet MSL to but not including FL180	Establish PR-3 and Gap B Low MOAs from 500 feet AGL to but not including 12,000 feet MSL and High MOAs from 12,000 feet MSL to but not including FL180	Establish PR-3 and Gap B Low MOAs from 500 feet AGL to but not including 12,000 feet MSL and High MOAs from 12,000 feet MSL to but not including FL180	No new MOAs or ATCAAs
Establish the PR-4 and Gap C MOAs	Establish PR-4 and Gap C MOAs Low from 500 feet AGL to but not including 12,000 feet MSL and High from 12,000 feet MSL to but not including FL180	Establish PR-4 and Gap C MOAs Low from 500 feet AGL to but not including 12,000 feet MSL and High MOA from 12,000 feet MSL to but not including FL180	No PR-4 MOA or Gap C MOA	No new MOAs or ATCAAs
Establish PRTC ATCAAs and Gap ATCAAs and expand Gateway ATCAA	Establish Low ATCAAs from FL180 to FL260, Medium ATCAAs above FL260 to FL370, and High ATCAAs above FL370 to FL600	Establish Low ATCAAs from FL180 to FL260, Medium ATCAAs above FL260 to FL370, and High ATCAAs above FL370 to FL600	Establish Low ATCAAs from FL180 to FL260, Medium ATCAAs above FL260 to FL370, and High ATCAAs above FL370 to FL600	Continued training in Powder River Gateway, Crossbow, and Black Hills ATCAAs
Chaff and flare defensive training	Chaff except near major airports or other radars; flares 2,000 feet AGL and discontinue use in MOA when extreme fire conditions exist	Chaff except near major airports or other radars; flares 2,000 feet AGL and discontinue use in MOA when extreme fire conditions exist	Chaff except near major airports or other radars; flares 2,000 feet AGL and discontinue use in MOA when extreme fire conditions exist	No defensive chaff and flare training; bombers commute to remote ranges for defensive training with chaff and flares
Supersonic training only during 10 days of LFEs per year	B-1 supersonic above 20,000 feet MSL; transient fighters supersonic above 10,000 feet AGL during LFEs only	B-1 supersonic above 20,000 feet MSL; transient fighters supersonic above 10,000 feet AGL during LFEs only	B-1 supersonic above 20,000 feet MSL; transient fighters supersonic above 10,000 feet AGL during LFEs only	No supersonic training; B-1s commute to remote ranges for supersonic training
LFE with approximately 20 aircraft of various aircraft types	Conduct LFE a maximum of once per quarter 4 hours daily for 1 to 3 days a total of approximately 10 days per year; Gap MOA/ATCAAs; PR-3 and PR-4 Medium ATCAAs and all High ATCAAs during LFEs only	Conduct LFE a maximum of once per quarter 4 hours daily for 1 to 3 days a total of approximately 10 days per year; Gap MOA/ATCAAs; PR-3 and PR-4 Medium ATCAAs and all High ATCAAs during LFEs only	Conduct LFE a maximum of once per quarter 4 hours daily for 1 to 3 days a total of approximately 10 days per year; Gap MOA/ATCAAs; PR-3 and PR-4 Medium ATCAAs and all High ATCAAs during LFEs only	No LFEs; limited dissimilar training in existing Powder River airspace

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The Air Force would employ the following measures during regular training and LFEs to address impacts:

- Airspace scheduled times of use are specified in the Air Force's aeronautical proposal summarized in EIS Section 2.5.1, Tables 2-10 and 2-11, and are published online at <http://sua.faa.gov/sua/Welcome.do>
- Airspace scheduled outside of normal published times of use is disseminated via Notice to Airmen (NOTAMs), available at <https://pilotweb.nas.faa.gov/>.
- Low and High MOAs allow ATC to vector IFR traffic as soon as training is completed in an airspace.
- Airspace use and long term planning information on deconfliction, fire-fighting operations, and special events/cultural events is available during normal business hours 8:00 am-5:00 pm Monday through Friday from the Ellsworth AFB Airspace Management Office at (605) 385-1230.
- Information posted on flyers and posters can be found at public airports underlying the airspace and is updated annually by the Ellsworth AFB Flight Safety Office as part of the Mid-Air Collision Avoidance Program at (605) 385-4419.
- The Ellsworth AFB Public Affairs Office is available to answer inquiries and complaints at (605) 385-5056 8:00 am-5:00 pm Monday through Friday. In the event of any damage or injury associated with PRTC operations, descriptive documentation related to the Air Force Claims Program can be sent in to the Ellsworth AFB Public Affairs Office.
- The Air Force would establish reasonable temporary or seasonal avoidance areas for Tribal activities or could adopt other measures identified in consultation with affected Tribes to reduce intrusive impacts.
- The Air Force would extend the current practice of establishing reasonable temporary or seasonal avoidance areas in response to affected ranchers who call Ellsworth AFB Public Affairs Office to identify locations of ranch operations, such as calving, weaning, and branding.
- Where schedule changes require use of airspace outside of published times of use, the Air Force would inform Air Route Traffic Control Centers (ARTCCs) at least 2 hours in advance in order to facilitate issuance of a NOTAM.
- The Air Force would publish a notice at least one month in advance of LFEs to help civil aircraft pilots and the public plan for LFE airspace activation.
- The Air Force would establish procedures to avoid low altitude overflight of, and frequency interference with, known blasting operations.
- The Air Force would establish communication procedures to ensure the ability to recall the military aircraft from the low altitude MOAs in PR-1A, PR-3, and PR-4 to allow civil IFR departures and arrivals.
- The Air Force would establish communication procedures to ensure deconfliction with emergency flight operations within the proposed airspace.

The following sections summarize the EIS findings for each alternative. The environmental consequences are presented for each resource identified as important during the public scoping period and during scoping meetings held throughout the region in June and July of 2008. The referenced sections are Draft EIS sections.

Summary of Environmental Consequences

Airspace/Air Traffic (See Draft EIS Section 4.1)

The PRTC would establish new MOAs and ATCAAs as depicted on Figure ES-2. The type, size, and configuration of the airspace elements are designed to meet training needs while avoiding, to the extent possible, impacts to civil aviation. The Gap MOAs are existing Victor Airways which provide corridors for aviation traffic. The proposed schedule for MOA activation would be Monday through Thursday 7:30 am to 12:00 pm and 6:00 pm to 11:30 pm and from 7:30 am to 12:00 pm on Friday local time, other times by NOTAMs. The proposed Powder River 1A (PR-1A), Powder River 1B (PR-1B), Powder River 2 (PR-2), Powder River 3 (PR-3), and Powder River 4 (PR-4) MOAs would not have civilian Instrument Flight Rules (IFR) flights when the MOA was activated. Visual Flight Rules (VFR) traffic can fly see-and-avoid in an active MOA, weather permitting. PR-2 is essentially the existing Powder River A and B MOAs and currently does not have IFR traffic when the MOAs are activated. The PRTC is overflown by a series of jet routes where commercial and other jet aircraft are typically flying above Flight Level (FL) 260 and mostly above FL300.

Alternative A: Proposed Action (See Draft EIS Section 4.1.3.1)

Victor Airways and MOAs: Civil aircraft pilots in the region often rely upon Global Positioning System (GPS) for point-to-point travel and do not rely on IFR below FL180 in much of the area because radar and radio communication are limited below 12,000 feet MSL and in some areas are limited below FL180. Following public and agency scoping, the Air Force proposed PR-1A, PR-3, PR-4, and Gap MOAs to have Low and High MOAs to support Air Traffic Control directed IFR traffic. PRTC would impact IFR and VFR traffic within the PR-1A, PR-1B, PR-2, PR-3, and PR-4 MOAs through ground hold, flying VFR see-and-avoid in an active MOA, and/or diversion. An estimated 129 civil operations could be impacted when Alternative A MOAs are activated Monday through Thursday (approximately one-third of that number on Friday morning). PR-1A/1B MOAs and ATCAAs were adjusted in the revised Air Force proposal to avoid impacts to major public airports including Billings, Bismarck, and Dickinson. Public participants during scoping were concerned that the absence of navigable routes and limited radar and radio frequency coverage could impact civil aviation when PRTC MOA segments were activated for day-to-day training and would have greater impacts during LFEs when all the Victory Airways traversing the airspace would be unavailable.

Public Airports and Private Airfields: There are two public airports and no private airfields identified under PR-1A (and Gap A), no public and one private under PR-1B, two public and one private under PR-2 (existing airspace), four public and eight private under PR-3 (and Gap B), six public and two private under PR-4 (and Gap C). There are 12 public airports and 9 private airfields on the periphery of the proposed MOAs. There are 13 airports and airfields under the Gateway ATCAAs and three civilian airports and airfields on the periphery of the Gateway ATCAAs. The numbers of airports and airfields, especially under PR-3 and PR-4, combined with limited communication capabilities in the region, create what is perceived as an impact by airport operators and users. Aircraft from these public or private airports would not be able to fly IFR in an active MOA, although they could fly VFR using see-and-avoid in an active MOA, weather permitting. Proposed hours for MOA scheduling during Monday through Friday morning are designed to provide times when the MOA would not be activated to support civil aviation.

Jet Routes and ATCAAs: Following public and agency scoping inputs, the Air Force revised the Proposed Action to include Low, Medium, and High ATCAAs. B-1s would normally conduct missions in the Low ATCAAs, although B-52s could require Medium or High ATCAAs. The segmented ATCAAs permit the Air Force to avoid impacting commercial and other traffic using existing jet routes and Canadian (CAN)

routes to avoid mid-West thunderstorms and congestion. An ATCAA to FL260 would provide for commercial and other jet traffic at higher altitudes while allowing 99 percent of B-1 training. B-52 training above FL260 and LFEs have the potential to significantly impact commercial traffic and would be scheduled by FAA. Depending on the 4-hour training periods, an LFE above FL260 could daily impact from 43 to 244 high altitude flights.

LFEs: During the estimated 10 days of LFEs, annually, approximately 20 aircraft of various types would perform combined training within the airspace. LFEs would activate MOAs and ATCAAs and impact civil aircraft traversing the region. Civil aircraft would be required to fly see-and-avoid in the airspace, weather permitting, ground-hold, divert to another airport for a period of 2 to 4 hours, or otherwise reschedule flights. Use of ATCAA airspace for LFE training would need careful scheduling to avoid significant impacts to en route commercial traffic typically above FL300. Commercial carriers or time-sensitive deliveries to provide personnel or equipment repair support to mining or agricultural activities would be unable to fly IFR in an activated MOA. If the pilots chose not to fly VFR, or could not due to weather, deliveries could be delayed by 2 to 4 hours. The LFEs could be viewed as a significant impact to airspace users.

Other Airspace Activities: Emergency access for firefighting, life flight, or other emergencies was identified as a concern during scoping. The Air Force would coordinate with Air Traffic Control (ATC) to relocate training aircraft from an area which needed emergency access, including during LFEs. This policy is currently applied to the Powder River A and B MOAs. Agricultural applications typically occur below 500 feet AGL, although aircraft may transit at higher altitudes. Aerial applications require calm conditions and are normally conducted in early morning hours. Aerial applicators fly at near gross weight with little maneuvering altitude and expressed serious concerns about random flight of low-altitude bombers. Applicators could face decisions as to whether they would fly in an activated MOA.

Weather modification and aerial mapping have special requirements, which include meteorological conditions and rapid access to accomplish mission-specific tasking. Gliding and skydiving under ATCAAs are not impacted. Additional communication would be required to coordinate with Air Force training missions so that these seasonal activities could be accomplished.

Alternative B (See Draft EIS Section 4.1.3.2)

Alternative B civilian aircraft flights below FL180 would be impacted in PR-2, PR-3, PR-4, and associated Gap MOAs as described for Alternative A. No PR-1A, PR-1B, or Gap A MOAs would be established beneath the ATCAA. An estimated 97 civil operations would be impacted Monday through Thursday (approximately one-third of that number on Friday morning) when the Alternative B MOAs are activated. Impacts would be a mix of ground delays, re-routing, or having to decide to fly VFR while the MOA is active. ATCAA impacts would be the same as described for Alternative A. Under Alternative B, low-altitude overflights would not occur below the PR-1A, PR-1B, or the Gap A ATCAAs. Aircraft and airports within the Billings-Miles City-Gillette triangle would not be impacted below FL180. LFE impacts for Alternative B would be as described for Alternative A, with the exception that Alternative B would not include military training overflights below FL180 in the Billings-Miles City-Gillette triangle.

Alternative C (See Draft EIS Section 4.1.3.3)

Alternative C impacts to the Victor Airways on the west side of the PRTC airspace would be comparable to those described for Alternative A. Airspace impacts could include delays, re-routing, or having to fly see-and-avoid in an active MOA. An estimated 79 civil operations would be impacted Monday through Thursday (approximately one-third of that number on Friday morning) when the Alternative C MOAs are active. The PR-4 ATCAA and associated Gap C ATCAA would not have MOAs below them. This means that Alternative C would not impact airports in the Bismarck-Dickinson-Rapid City triangle below FL180.

Traffic on V-491 between Dickinson and Rapid City would be able to transit the area IFR below FL180 even during an LFE. Impacts to airports and airfields under PR-1A, PR-1B, PR-2, PR-3, and associated Gap MOAs would be as described for Alternative A. Jet route and high-altitude impacts for Alternative C would be as described for Alternative A. Emergency and related services would be given priority as with Alternative A. Aerial applications and skydiver/glider impacts would be comparable to Alternative A except under the PR-4 ATCAA where no low-altitude military flights would occur. Information and scheduling would be required to reduce the potential for impacts.

No-Action Alternative (See Draft EIS Section 4.1.3.4)

The No-Action Alternative would have no change in projected baseline conditions. Projected baseline conditions with aircraft returned to Ellsworth and Minot AFBs from overseas activities would be expected to increase annual sortie operations in the existing Powder River airspace. B-1 and B-52 flight training would continue in the Powder River A and B MOAs, which constitute nearly all of the proposed PR-2 MOA. The estimated number of civilian aircraft impacted daily by not flying IFR, delay, re-routing, or having to fly see-and-avoid in an active MOA is seven. Flight training in Powder River airspace ATCAAs would continue as permitted under existing letters of agreement with the FAA. The structure and management of the Powder River airspace would continue to provide limited training to B-1 and B-52 aircrews.

Noise (See Draft EIS Section 4.2)

Public concerns for noise focused on startle effect, interference with rural activities and the natural quiet of the area, potential startle effect safety risks associated with ranching operations, potential damage to structures from supersonic events, and conflict with tribal ceremonies and culturally sensitive sites.

Three aspects of noise could cause environmental impacts: (1) increases in ambient noise levels, (2) low-level startle effects, and (3) sonic booms.

Alternative A: Proposed Action (See Draft EIS Section 4.2.3.1)

Day-Night Average Sound Levels: Public scoping commenters expressed an appreciation for the wide-open space and relative low noise levels within the region. Ambient noise conditions are typically in the Day-Night Average Sound Level (DNL) less than 45 decibel (dB) range except under Powder River A and B MOAs where noise levels are DNL 53 to 54 dB. Calculated DNL noise levels from aircraft overflight within the proposed PR-1A, PR-1B, PR-3, and PR-4 MOAs would be expected to be in the 40 to 47 dB range. The U.S. Environmental Protection Agency (USEPA) has identified DNL of 55 dB as a level protective of the public health and welfare. Increases in the DNL and individual noise events from an aircraft overflight would be noticed and could be perceived as a significant impact by residents under the airspace.

Low-Level Effects: Low-level overflight of a bomber below 2,000 feet AGL within one-quarter mile of the flight path would be expected to occur over approximately 2 to 4 percent of each MOA each training day or an average at any location of 6 to 9 low-level overflights per year. The random nature of B-1 and B-52 training means any specific location could be overflowed at low altitude more or less than the average. The uncertainty of low-level overflight and the inability to anticipate when such an overflight could occur would contribute to the startle effect. The revised Air Force proposal has MOAs scheduled Monday through Thursday in the mornings and late afternoon/evenings and Friday mornings to somewhat reduce the uncertainty of when a low-altitude overflight could occur. During many low-level B-1 missions, the aircraft performs a rapid acceleration from below 2,000 feet AGL and climbs with afterburners, potentially creating a localized single event onset rate adjusted sound exposure level (SEL) of 133 dB. While operating at high speeds at 500 feet AGL and not climbing, B-1 aircraft generate SEL

noise levels of approximately 117 dB. B-52 aircraft typically generate an SEL_r of approximately 100 dB during overflight at 1,000 feet AGL, the lowest altitude at which B-52 aircraft would regularly fly in PRTC. Sudden onset sounds, such as the noise created by low-altitude high-speed aircraft, can be startling to humans and animals. In specific cases where ranching operations herd livestock for weaning and branding, low-level overflights have caused cattle to spook and resulted in damage to both the livestock and fencing. Within the Powder River A/B MOAs, ranchers have identified for the Air Force locations and seasonal times when low-level overflights have the potential to cause serious impacts. The Air Force has established temporary avoidance areas at these locations to reduce the potential for impacts from low-altitude overflights. During public scoping meetings, individuals expressed the opinion that such low-altitude overflights could be a significant impact.

Sonic Booms: Sonic booms are created by the movement of air in response to an aircraft traveling in excess of the speed of sound. Supersonic flights of B-1s above 20,000 feet MSL and fighters above 10,000 feet AGL during the 10 days of LFEs per year could result in an estimated average of approximately one sonic boom per LFE day at any given location on the ground. Areas under the PR-2, PR-3, and Gap B MOA/ATCAAs would be more likely to experience sonic booms than areas under other airspaces due to the flight pattern of training aircraft. Most sonic booms would be heard as thunder, although approximately 1,300 acres could experience sonic booms of 4 pounds per square foot (psf) and a smaller acreage could experience a higher focus boom. Glass, plaster, and other structural elements, normally in good condition, would not be expected to fail as a result of overpressures of 4 psf or greater, but failure would be possible. Infrequent, but sudden sonic booms can impact wildlife and ranch animals similarly to the impacts described for low-level overflights. Training aircraft do not have the ability to direct a sonic boom away from a specific area. Should a sonic boom occur during a hunting or ranching activity, it could result in a reaction on the part of domestic or wild animals. It is not likely that these reactions would significantly impact the species, but, at the very least, such impacts could be an annoyance to persons on the ground.

Alternative B (See Draft EIS Section 4.2.3.2)

Alternative B effects would be the same as Alternative A in nearly all respects except that low-level overflight would not occur under the PR-1A, PR-1B, or Gap A ATCAAs. Noise under these areas would be close to ambient conditions. Noise under PR-2, PR-3, PR-4, and Gap MOAs and ATCAAs would be as described for Alternative A. Infrequent sonic booms during LFEs and 6 to 9 low-altitude overflight effects would be as described for Alternative A for all areas except those under the PR-1A, PR-1B, or Gap A ATCAAs.

Alternative C (See Draft EIS Section 4.2.3.3)

Alternative C effects would be the same as Alternative A except that low-level overflight would not occur under the PR-4 or Gap C ATCAAs. Noise under these areas would be comparable to ambient conditions. Noise under PR-1A, PR-1B, PR-2, PR-3, and Gap MOAs and ATCAAs would be as described for Alternative A. Infrequent sonic booms during LFEs and 6 to 9 low-altitude overflight effects would be approximately as described for Alternative A for all areas except those under the PR-4 or Gap C ATCAAs.

No-Action Alternative (See Draft EIS Section 4.2.3.4)

Noise under the existing Powder River airspace would be at projected baseline conditions as the base returns to the peacetime operational tempo. Low-altitude startle effects would be experienced but supersonic flight would not be scheduled.

Safety (See Draft EIS Section 4.3)

Safety concerns expressed during scoping meetings dealt with the impacts of limited communication, flight safety, low-altitude military training flights, wake vortices, electronic emissions, potential for accidents, and use of chaff and flares.

Alternative A (See Draft EIS Section 4.3.3.1)

Communication: Limited communication and radar coverage impact safe civil aircraft operations at airports and for flights below 12,000 feet MSL in much of the proposed airspace and below FL180 in some areas. Communication limits are greatest in PR-3, the western portion of PR-4, the existing PR A/B (PR-2), and the eastern portion of PR-1A and PR-1B MOAs.

There is no proposal for increased radio frequency coverage or radar coverage for the PRTC airspace where current coverage is limited. General aviation pilots could receive status updates prior to flight by reviewing NOTAMs or could call the Ellsworth AFB airspace management office to determine the status of the MOAs. General aviation pilots accustomed to flying through the airspace with GPS coordinates perceived limited communication as an impact to their ability to transit the airspace.

Flight Safety: FAA has noted that agreements comparable to those for existing Powder River airspaces must be in place to restrict timing and altitude use of the PRTC ATCAAs. This would avoid the potential for significant flight safety impacts to commercial and other aircraft transiting the airspace especially above FL300. During LFEs, the use of ATCAA airspace above FL260 could require re-routing of 43 to 244 commercial and other high-altitude aircraft to avoid safety impacts.

The Air Force's revised aeronautical proposal reduces impacts to air traffic at large commercial airports such as the Billings and Bismarck airports. Potential impacts identified by the FAA include safety risks to civil aircraft unable to communicate while flying IFR on Victor Airways located in the GAP MOAs. The revised Air Force aeronautical proposal has Low and High MOAs in PR-1A, PR-3, PR-4, and Gap MOAs to reduce impacts to IFR traffic. Supersonic aircraft during the 10 days of annual LFEs would not be expected to impact civil aircraft flight safety.

Class A mishap and bird strike risks are expected to be proportional to the amount of training time in the proposed airspace and not expected to be significant. Based upon experience with current training in the Powder River airspace, the estimated annual bird strikes in the proposed PRTC would be 3 to 6 per year. Bird strikes could be higher in the PR-3 and PR-4 Low MOAs where migratory bird flyways converge.

Chaff and Flares: Chaff and flare use in the proposed PRTC would not be expected to result in significant impacts. Chaff are very fine (thinner than a human hair) strands of silica coated with aluminum to reflect radar. Specific types of chaff configured to reduce interference with FAA radar would be permitted for use within the PRTC. Flares would be restricted in release altitude to above 2,000 feet AGL and not deployed in a MOA during extreme fire conditions. Flares burn out in approximately 500 vertical feet, or a minimum of 1,500 feet above the ground. There would be a very slight potential for increased fire risk if flares were accidentally deployed substantially below authorized altitudes.

A dud flare is a flare which does not ignite and falls to the surface of the ground. Based on scheduled flare usage, one dud flare every 3 years is estimated fall to the ground under the entire proposed PRTC airspace. The likelihood of a person finding a dud flare is very low. It would take a hot fire to ignite the flare, although a dud flare could be ignited by a strike with a power saw or a bullet. Should a dud flare be encountered, the public should not touch it but should notify a public safety authority of its location.

When defensive chaff or flares are deployed, plastic and felt pieces, typically of 1 to 2 inches by 1/4 inch, and aluminum coated wrapping which could be 5 by 11 inches, fall to the ground. The surface area of the chaff or flare residual material is such that the largest plastic piece would fall with an impact of a large hailstone or a Bic-type lighter. Chaff or flare residual materials are not expected to result in a safety impact, although, if a rancher or recreationist were to find such a piece of chaff or flare material on the ground and identify the piece of plastic or aluminum-coated duct tape-type wrapping material as having come from a deployed chaff or flare, the individual could be annoyed.

Ground Safety: Startle effects from low-altitude overflight or sonic booms during LFEs could impact the safety of recreationists and/or ranch workers. The low-level training activity could occur anywhere within a proposed MOA such as PR-1A, PR-1B, PR-2, PR-3, or PR-4 during weekday scheduled training or under the Gap MOAs during LFEs. The MOA land areas and training time were used to calculate the average annual number of times any specific location would be directly overflown within one quarter of a mile by a bomber flying 2,000 feet AGL or below. Any area under a MOA would have a low-level overflight an average of 6 to 9 times a year. This is an annual average and the number of actual overflights experienced by a location could be more or less. Should an unexpected low overflight occur, the resulting safety impacts to a recreationist on a horse which could be spooked or a rancher working cattle in open range could be seen as significant by the individual experiencing the low-level overflight. Temporary or long-term avoidance areas would be established to reduce the potential for safety impacts associated with low-level training overflight. Communication regarding seasonal ranching operations, combined with implementing avoidance areas, could reduce impacts to ranching.

Sonic booms cannot be directed and avoidance areas could not be established to prevent sonic booms in a particular area. Supersonic overpressures could impact physical items beneath the airspace. Fighter aircraft are proposed to be supersonic at or above 10,000 feet AGL and B-1s at or above 20,000 feet MSL. A calculated average of approximately one sonic boom could occur per 10 days of LFEs per year anywhere under the airspace. Most sonic booms would be experienced as thunder, although localized sonic booms could be 4 psf or greater. Bric-a-brac balanced on shelf edges, such as on mantles or book cases, could be vibrated off and fall and break. Depending upon the sonic boom pressure at a specific location, windows could be damaged. If a person were inside or near such damaged or falling objects, the person could be injured. The random nature of training flights and the infrequent quarterly LFE supersonic events would not be expected to cause frequent safety impacts. Scoping concerns included the desire for fair compensation for property damage. In the event of damage, there is an established procedure for claims which begins by contacting Ellsworth AFB Public Affairs.

Wake Vortices: Large aircraft can create an air disturbance called a wake vortex of air turbulence at the wing tips. The FAA has restrictions on aircraft flying through a wake vortex which dissipates close to the ground but may persist for a minute or more at altitude. FAA regulations dictate safe following distances and procedures to avoid wake turbulence both in flight and during landing or takeoff. Additionally, air traffic control at airports will typically sequence aircraft using time or distance for departures or arrivals to avoid wake vortices. Most wake vortices decay and dissipate quickly, although the existence of wake vortices could be seen as a potential impact by crop dusters or other light aircraft.

Rare, rapid turns or a pull-up maneuver by a B-1 or B-52 flying between 500 and 1,000 feet AGL can result in wing vortex wind velocities greater than 27 mph at 22 feet AGL. These infrequent high-energy wing vortices, although extremely improbable, could damage a stock watering windmill structure. Structures, objects, persons, wildlife, and livestock in the area underlying the proposed airspace are frequently subject to average winds and wind gusts that match potential wing vortex wind speeds. There have been no recorded cases of wing vortex wind impacts to stock watering windmills or any other structure under the existing Powder River A or B MOAs.

Safety procedures associated with the use of explosives for mining are designed to prevent an inadvertent explosion caused by vibrations or electronic emissions. Significant impacts could result from training aircraft radio frequencies inadvertently or prematurely setting off mining or construction explosives or otherwise impacting such operations. No current procedures are in place for the Air Force to communicate with mining operators to determine whether training could interfere with radio frequencies used for mining operations. Safety impacts from mining operations could be significant without establishing and implementing such procedures.

Alternative B (See Draft EIS Section 4.3.3.2)

Alternative B includes communication, flight safety, and ground safety impacts under PR-2, PR-3, PR-4, associated Gap MOAs, and ATCAAs as explained for Alternative A. Under the PR-1A/1B ATCAAs and the Gap A ATCAA underlying MOAs would not be created and there would be few environmental impacts other than very infrequent sonic booms and chaff and flare residual materials. No mining impacts would be expected under PR-1A or PR-1B ATCAAs.

Alternative C (See Draft EIS Section 4.3.3.3)

Alternative C includes communication, flight safety, and ground safety impacts under PR-1A, PR-1B, PR-2, PR-3, associated Gap MOAs, and ATCAAs as explained for Alternative A. There would be few impacts under the PR-4 ATCAA or the Gap C ATCAA because underlying MOAs would not be created. Under the PR-4 ATCAA and the Gap C ATCAA, there would be very few environmental impacts other than the infrequent sonic booms and chaff and flare residual materials. Mining impacts would be as described for Alternative A.

No-Action Alternative (See Draft EIS Section 4.3.3.4)

No changes to training airspace would occur. Low-level overflights would continue in the Powder River A and B MOAs, and communication would continue to be required to identify seasonal avoidance areas and reduce impacts from low-level overflight to ranching or recreational activities.

Air Quality (See Draft EIS Section 4.4)

Air quality is generally in attainment throughout the four-state region encompassed by the proposed PRTC. Alternatives A, B, C, or No-Action would not result in annual emissions in excess of any of the applicable PM₁₀ general conformity *de minimis* threshold of 100 tons per year or in excess of any other general conformity *de minimis* threshold.

Alternative A: Proposed Action (See Draft EIS Section 4.4.3.1)

Alternative A would not be expected to result in significant air quality impacts within the region. The majority of the airspace is located in areas in attainment for all NAAQS. The only areas which had been in nonattainment are the Lame Deer, MT and Sheridan, WY nonattainment areas where particulate matter less than 10 microns in diameter (PM₁₀) standards have been exceeded. B-1 and B-52 aircraft would contribute approximately 1.65 tons of PM₁₀ per year within the Lame Deer nonattainment area and 0.02 tons of PM₁₀ per year within the Sheridan nonattainment area. This amount of annual emissions would not be expected to increase the number of days when the PM₁₀ air quality standard is exceeded, as the aircraft emissions are intermittent, occur well above ground level, and are dispersed over a large area. Defensive flare emissions are insignificant. B-1 and B-52 training aircraft would not produce enough emissions to affect air quality or visibility. Alternative A would not affect the air quality of the nearest PSD Class I area (Wind Caves National Park and Badland National Park) or the Northern Cheyenne Reservation. National greenhouse gas (GHG) emissions would not change from the No-Action Alternative because B-1 and B-52 aircraft would continue to fly essentially the same amount of time to achieve lesser quality training.

Alternative B (See Draft EIS Section 4.4.3.2)

There would be no anticipated significant air quality impacts with Alternative B. There would be no low level overflight of the Lame Deer or Sheridan areas. Aircraft training operations would not fly over any Federal PSD Class I areas; therefore, Alternative B would produce less than significant air quality impacts to the potentially affected Class I areas. National greenhouse gas (GHG) emissions would not substantially change from the No-Action Alternative under which B-1 and B-52 aircraft would continue to fly essentially the same amount of time to achieve lesser quality training.

Alternative C (See Draft EIS Section 4.4.3.3)

Alternative C effects would be the same as described for Alternative A. Alternative C includes the PR-1A MOA, which is the only area with the potential for nonattainment. B-1 and B-52 aircraft training operations emissions would not be expected to increase the number of days when the PM₁₀ air quality standard is exceeded in the Lame Deer and Sheridan nonattainment areas, as the emissions are intermittent, occur well above ground level, and are dispersed over a large area. There would be no change in national GHG emissions. No impacts would be expected to Class 1 areas as described in Alternative A.

No-Action Alternative (See Draft EIS Section 4.4.3.4)

No-Action would result in continued overflight below 3,000 AGL within the Powder River A/B MOAs. No-Action does not impact air quality.

Physical Sciences and Hazardous Materials (See Draft EIS Section 4.5)

Physical sciences include soils and water resources under the proposed PRTC airspace.

Alternative A: Proposed Action (See Draft EIS Section 4.5.3.1)

Soils and water bodies under the PRTC are neutral to slightly alkaline in pH. This pH is outside the range necessary to degrade aluminum coating on chaff particles. Chaff particles on the surface would be chemically stable and subject to mechanical degradation. Chaff or flare residual plastic pieces or wrappers would be inert and not in sufficient quantities to impact physical resources. No impact to soils or water bodies would be expected.

Alternative B (See Draft EIS Section 4.5.3.3)

Physical effects would be the same as those described for Alternative A. No significant impacts to physical resources are anticipated.

Alternative C (See Draft EIS Section 4.5.3.3)

Alternative C effects would be the same as those described for Alternative A. No significant impacts to physical resources are anticipated.

No-Action Alternative (See Draft EIS Section 4.5.3.4)

No-Action would not affect physical resources under the Powder River airspace.

Biological Sciences (See Draft EIS Section 4.6)

Biological sciences consider legal, commercial, recreational, ecological, and important biological species under the proposed PRTC airspace. Impacts are considered in terms of context and intensity. Potential impact sources would be chaff and flare use, overflight, and sonic booms.

Alternative A: Proposed Action (See Draft EIS Section 4.6.3.1)

Chaff and Flares: Chaff and flare materials have not been found to affect wildlife or domestic animals through ingestion, inhalation, or direct body contact. The average deposition of chaff and flare residual plastic or wrapping material would be approximately one piece per approximately 115 acres annually. Chaff deposition would be estimated at 0.0049 ounces per acre annually. There is no evidence of chaff affecting vegetation or biological species. Chaff or flare residual plastic or wrapper pieces are not expected to produce chemical effects on biological resources. There is a low concentration of chaff or flare residual materials; chaff and flare releases would have minimal effect on biological species.

Aircraft Overflight Noise and Sonic Booms: Low-level overflight and infrequent supersonic events create noise and potentially startle species on the ground. Studies addressing the effects of overflight noise and sonic booms on wildlife suggest that impacts vary, depending on the species and a number of other factors, including duration, frequency of flights, type of aircraft, and proximity to the species. Individual animal responses to a given noise event can vary widely. Noises that are close, loud, and sudden and that are combined with a visual stimulus produce the most intense reaction. Rotary-winged aircraft (helicopters) generally induce a more frequent startle effect than fixed-wing aircraft. Most species within the areas under the proposed PRTC already occupy comparable environments under the Powder River A and B MOAs (approximately proposed PR-2) where low-level overflights occur. Animals under the proposed PR-1A, PR-1B, PR-3, PR-4, and associated Gap MOAs are expected to be temporarily more sensitive to noise due to lower previous exposure. Sound exposure levels (SEL) above 40dB are associated with a number of behaviors such as retreat from the sound, freezing, or a strong startle response. The estimated average of one sonic boom per LFE day, and the average of 6 to 9 low-level overflights per year would not be expected to impact any specific populations although individuals could be startled. Many studies of animal behavior found that animals exhibited continually decreasing responses to noise exposure. This suggests habituation.

Species of Special Concern: Threatened, endangered, and other special status species include rare migrants, such as the piping plover, least tern, whooping crane, and yellow-billed cuckoo. The greater sage-grouse is of recent concern in Western states because the species have demonstrated historic decline and it is a popular game bird. Sage-grouse have been found to avoid areas of increasing human activity, such as drilling rigs and producing wells. Startle effects from noise, low-level overflights and supersonic events are distributed randomly across the airspace and are expected to be infrequent. Many studies have shown that wildlife have the ability to habituate to noise and become tolerant to overflight. Any impact to sensitive species would likely be short-term and unlikely to significantly affect the population.

Bird-aircraft strike data from 1999 through 2007 indicate that Ellsworth AFB-based aircraft experienced 11 bird strikes in the Powder River A/B MOAs during that period, for an average of one to two per year. The proposed PR-3 and PR-4 Low MOAs are where migratory flyways converge and the potential for bird-aircraft strikes would be the greatest in these MOAs. Low-altitude training within the PRTC could result in an average of three to six bird-aircraft strikes per year. If a migratory bird species were involved in bird aircraft strike, it would be considered an incidental taking during military training and would be exempt from any permitting requirement. An infrequent special status bird aircraft strike would not be expected to adversely affect any populations.

The risk of a flare-caused fire is very low; however, any increased fire risk in the area has the potential to impact species and natural vegetation. Vegetation types such as grasslands can quickly recover from fire. Woodlands and shrubland communities recover over a longer time period. The potential for wildland fire as a result of Air Force activity is minimal and not considered a significant risk to wildlife habitat quality or quantity under the proposed PRTC.

Alternative B (See Draft EIS Section 4.6.3.2)

Alternative B would have the same effects as those described for Alternative A, with the exception that the more environmentally diversified area and higher terrain under the proposed PR-1A and PR-1B ATCAAs would not be subject to low-level overflights. This would result in no expected impact to species in those areas. Alternative B would be expected to produce slightly lower effects to wildlife and sensitive species when compared to Alternative A. Infrequent sonic booms and chaff and flare use would continue to affect all areas under the ATCAAs.

Alternative C (See Draft EIS Section 4.6.3.3)

Alternative C would have the same effects as those described for Alternative A, with the exception that the more agricultural area under the proposed PR-4 ATCAA would not be subject to low-level overflight. This would result in no expected impact to species in those areas. Because the more diversified environmental under the PR-1A/PR-1B MOAs would be included in Alternative C, the biological effects of Alternative C would be somewhat less than Alternative A but somewhat greater than Alternative B. Infrequent sonic booms and chaff and flare use would continue to affect all areas under the ATCAAs.

No-Action Alternative (See Draft EIS Section 4.6.3.4)

Low-level overflight of the Powder River A/B MOAs would continue. Existing biological conditions would continue.

Cultural and Historic (See Draft EIS Section 4.7)

Adverse impacts to cultural resources could occur if direct impacts physically altered, damaged, or destroyed a cultural resource eligible for listing on the National Register of Historic Places (NRHP) or a resource with traditional significance for Native American groups.

Alternative A: Proposed Action (See Draft EIS Section 4.7.3.1)

Overflights and Sonic Booms: Impacts to cultural resources could occur from either subsonic or supersonic noise. Low-level overflights would have a startle effect. Most sonic booms would be experienced as distant thunder although random areas could experience overpressure in the 4 pounds per square foot or greater range. As of spring 2010, there were 239 NRHP properties under the Alternative A airspace. Historic standing structures within the land beneath the affected airspace consist primarily of wood or log building, with no window glass, and/or some adobe or earth block structures. The infrequent and random nature of sonic booms suggests that structural damage to historic buildings would not be expected. Bric-a-brac could be vibrated off shelves, but this would not be expected to result in structural damage to historic properties. Locations such as Devils Tower, Bear Butte, and Deadwood would not be overflowed at altitudes below 18,000 feet MSL and should not be impacted except by an infrequent thunder-like sonic boom.

Visual intrusions can include overflight of a Tribal ceremony. During Government-to-Government consultations, Tribal members regularly cited their concerns that low-level overflights with both noise and visual effects would intrude upon their ceremonies and quests. Air Force representatives assured the Tribal members that, when told of a specific location to avoid, the Air Force would establish reasonable avoidance areas to protect the privacy of participants. Typical avoidance areas have a specified distance and altitude above the sensitive location. The residual materials from chaff and flares can be a visual intrusion. Such materials fall to the ground in a dispersed fashion and do not collect in quantities great enough to adversely affect the NRHP status of archaeological or architectural resources or to affect the appreciation or use of traditional cultural resources.

Even infrequent sonic booms at historic landmarks, such as Bear Butte, national monuments, such as Devils Tower or the Little Bighorn Battlefield, or locations such as the Deadwood Historic District could be seen as intrusions. Two of the sites within the Little Bighorn Battlefield have overflight restrictions below 2,000 feet AGL. An estimated 6 to 9 low level overflights per year could occur at any location under a MOA. Infrequent overflights above 2,000 feet AGL would not be expected to be perceived as a significant intrusion to a national monument.

Tribal Reservations: The change in setting created by increased noise from low-altitude overflights and even infrequent sonic booms could have an adverse impact upon Traditional Cultural Properties (TCPs) and cultural landscapes.

During consultations, Native Americans from the four directly impacted reservations explained that low-level overflights and intrusive noise would be detrimental to their cultural practices. The change in setting created by increased noise and low level training overflights could be seen as having a significant impact to Native American Reservations. Amish and Hutterite settlements under the proposed PR-1B MOA could be similarly impacted. The Air Force would establish reasonable temporary or seasonal avoidance areas or could adopt other measures identified in Government-to-Government consultation with affected Tribes to reduce intrusive impacts.

Alternative B (See Draft EIS Section 4.7.3.2)

Alternative B would have impacts similar to those described for Alternative A with the exception that there would be reduced impacts on the Crow and Northern Cheyenne Native American Reservations under the PR-1A and PR-1B ATCAAs when compared with Alternative A. Alternative B has 202 NHRP properties under the airspace with impacts comparable to those described for Alternative A. There would be no low-level overflight over the Crow or Northern Cheyenne Reservations, the Little Bighorn Battlefield National Monument, or the Tongue River Cultural Landscape. Intrusions to other sites under the PR-1A and PR-1B ATCAAs would be those from infrequent sonic booms and residual chaff and flare materials and not from low-level overflights. Effects to Devils Tower, Bear Butte, the Deadwood Historic District, and other historic locations could occur as under Alternative A. Portions of the Standing Rock and Cheyenne River Native American Reservation would be affected by low altitude overflights and sonic booms. Significant impacts to cultural resources would be as described for Alternative A.

Alternative C (See Draft EIS Section 4.7.3.3)

Alternative C would have impacts similar to those described for Alternative A with the exception that Alternative C would not have low altitude training over the Standing Rock and Cheyenne River Reservations. Alternative C has 208 NHRP properties under the airspace with impacts comparable to those described for Alternative A. Impacts from Alternative C on the Standing Rock and Cheyenne River Native American Reservations would be reduced when compared with Alternative A. Impacts from infrequent sonic booms and low-level overflights would generally be comparable to those described for Alternative A, including impacts to the Little Bighorn Battlefield and Traditional Cultural Places under the PR-1A and PR-1B MOAs. Portions of the Crow and all of the Northern Cheyenne Native American Reservations would be affected by low-altitude overflights and infrequent sonic booms. Significant impacts to cultural resources would be as described for Alternative A.

No-Action Alternative (See Draft EIS Section 4.7.3.4)

There would be no change to overflight of historic properties within the Powder River airspace. PR-A and PR-B MOAs do not overly Native American Reservations. Powder River training aircraft wouldn't overfly Devils Tower, Bear Butte, and fly adjacent to Deadwood at altitudes above 18,000 feet MSL.

Land Use (See Draft EIS Section 4.8)

Land use issues of concern included ranching activities, recreational activities, and the ability to access the airspace. Public concerns at scoping included the effect of sonic booms and low-level overflight on their use of the land. Airspace access impacts are presented under the Airspace/Air Traffic discussion above.

Alternative A: Proposed Action (See Draft EIS Section 4.8.3.1)

Overflight: Land uses under the existing Powder River airspace have been overflowed by a variety of military aircraft for approximately twenty years. Much of the area covered by the PRTC Proposal has been overflowed by low altitude military aircraft during the Cold War era on Military Training Routes. The primary concerns expressed at scoping meetings regarding land use under the proposed PRTC airspace included the potential for impacts from noise, low-level overflight, or supersonic events. Supersonic training would be scheduled only during LFEs and an estimated average of one sonic boom per LFE day could be experienced at any given location under the airspace. Low-level overflight activity could cause individual annoyance and could result in sleep disturbance or temporarily interfere with personal communication. Approximately 2 to 4 percent of the MOAs would be overflowed by a military training aircraft at 2,000 feet AGL or below during scheduled weekdays. The random nature of the aircraft overflight could result in any location under a MOA being overflowed an average of approximately 6 to 9 times per year although any given location could be overflowed more or less frequently during a year. Such overflight frequency is not expected to impact overall land use although some individuals could become annoyed. The Air Force proposes scheduled times of MOA activation Monday through Friday to provide information about when low-level overflights would not be experienced. Low-level overflight impacts to ranching land uses could be reduced through communication with Air Force schedulers to identify temporary avoidance areas. Such avoidance areas would reduce the potential for impacts to ranching operations, such as weaning and branding. Supersonic training would be during LFEs although sonic booms cannot be directed to avoid a particular area. Hunting and other recreational pursuits may be disturbed by low-level military flights although no military training would generally be scheduled from noon Friday through Monday morning. The extent of overflight and the random nature of the overflight could result in a hunter or recreationist never experiencing an overflight or sonic boom or experiencing more than one overflight or sonic boom. Many people recreate on weekends when military training would generally not occur. This would somewhat reduce the potential for significant impacts upon recreationists.

Life flight, firefighting, fire observation, and other emergency-related activities would be avoided by military training aircraft. Should an emergency occur, ATC would notify the training aircraft of the emergency, and the military aircraft would avoid the affected area, move to another active airspace or return to base in accordance with agreed-to procedures.

Energy Development: Land uses currently under the Powder River airspace within Wyoming, South Dakota, and Montana are comparable to those in other portions of the area proposed for the PRTC airspace. Energy development land uses within the PRTC are not expected to be significantly impacted by low-level overflight or sonic booms. Safety aspects are described in the Safety discussion above.

Chaff and Flares: Chaff and flare use would not be expected to produce impacts upon land use. Chaff or flares would not affect ranching operations. Chaff or flare residual materials, which consist of small plastic pieces or wrapping material, would not be expected to affect land uses but could cause annoyance if found.

Alternative B (See Draft EIS Section 4.8.3.2)

Alternative B would have similar effects to land use as those described for Alternative A. Areas under the PR-1A and PR-1B ATCAAs and associated Gap A ATCAA would not be subject to low-level overflight. This means that civil aircraft flight access below FL180 would occur as under existing conditions. Land uses, which include ranching and recreational activities, would not be affected by low-level overflight in these areas. The remainder of the airspace would be subject to low-level overflight an average of approximately 6 to 9 times per year. Areas under the center of the airspace would be subject to an estimate of one sonic boom per LFE day. These events would not be expected to impact land use although this could be seen as an annoyance to persons using the land.

Alternative C (See Draft EIS Section 4.8.3.3)

Alternative C would have similar effects to land use as those described for Alternative A. Areas under the PR-4 ATCAA and associated Gap C ATCAA would not be subject to low-level overflight. Civil aircraft flight access below FL180 would occur as under existing conditions. Land uses, which include ranching and recreational activities, would not be affected by low-level overflight in these areas. The remainder of the MOA airspace would be subject to low-level overflight and all areas under the ATCAAs could experience intermittent sonic booms as described for Alternative A. An estimated annual average of 6 to 9 low level events would be experienced by residents living under the low MOAs. This could be seen as an annoyance to persons using the land.

No-Action Alternative (See Draft EIS Section 4.8.3.4)

No-Action would not change effects upon land use under the existing Powder River airspace.

Socioeconomics (See Draft EIS Section 4.9)

Socioeconomics evaluates the potential effects of the proposed airspace modifications and associated military training activities upon the social and economic resources associated with the proposed PRTC.

Alternative A: Proposed Action (See Draft EIS Section 4.9.3.1)

Civil Aviation in ATCAAs: Alternative A could affect commercial aviation in the ATCAAs, particularly above FL260. FAA data demonstrate that commercial traffic above FL260 is heaviest after 12:00 noon. Hours from 4:00 a.m. through 10:00 a.m. would have less impact to civil aviation in the ATCAAs than other times. During an LFE day, depending upon when a four-hour exercise was conducted, between 43 and 244 commercial and other high-altitude civil aircraft could be impacted along with 76 civil operations in the MOAs. FAA has stated there would be limited access above FL300 to avoid significant impacts upon air carrier economics and regional and national air traffic.

Civil Aviation in MOAs: Alternative A would affect civil aviation in the proposed MOAs. MOAs would have a posted morning and late afternoon/evening schedule Monday through Thursday, Friday mornings, and otherwise be activated by NOTAM. Civil aviation would not be able to fly IFR in an activated MOA. VFR flight could use see-and-avoid rules in an active MOA, weather permitting. During scoping, civilian pilots expressed concern that the perceived risk of flying VFR in an active MOA would impact their use of the airspace. Public airports would have avoidance areas established over them. However, communication throughout the area is limited. Radar tracking is unavailable through much of the area, and radio frequencies cannot provide adequate communication below 12,000 feet MSL in many of the proposed MOAs and below FL180 in some areas.

Public airports and private airfields under the proposed airspace would be impacted by reduced ability to fly IFR and uncertainty regarding VFR flight in an active MOA. An estimated 129 civilian aircraft under the airspace Monday through Thursday (approximately one-third of that number on Friday morning)

could be impacted. The impact could be delay, re-routing, seeking to fly VFR in an active MOA, or not being able to fly IFR. During LFEs, the entire airspace would be unavailable for IFR or overflight traffic for a period of up to 2 to 4 hours a day for one to three days a quarter. Delays could be 2 to 4 hours and could be seen as an economic impact especially in the case of time sensitive replacement parts or personnel for such businesses as mining or agriculture.

Aerial applications are performed below 500 feet AGL and aircraft typically fly fully loaded well under 2,000 feet AGL. Applications normally occur in the early morning hours to avoid wind dispersion of the material. The inability of an aerial applicator to know where and at what altitude a training bomber could fly over the area could impact business decisions and economics.

Property Values: Property value concerns were mentioned at scoping meetings. Review of assessor procedures and state laws have shown that the existence of a MOA is not considered in the valuation of property under the Powder River A or B MOAs and is not a requirement for disclosure under Montana, North Dakota, South Dakota, or Wyoming state laws. No quantifiable property value impacts would be anticipated.

Energy Resources: Establishing the airspace and use of the MOAs for overflight would not be expected to impact most energy resource development. Altitude overflight restrictions would be established over tall structures, such as tall construction cranes, power plant stacks, and wind farms. Coordination would be required between mine operators and the Air Force to ensure that radio frequencies used for mining are not used by Air Force aircraft during training. The potential for aircraft frequencies to result in a triggering of explosives used in mining could have significant impacts upon mine operations. Additional communication procedures and avoidance areas may be required for locations where existing and potential mining or major construction operations could occur.

During public scoping meetings, several participants expressed concern that low-level overflights and/or supersonic activity could impact their lives. Alternative A DNL increases in PR-1A, PR-1B, PR-3, and PR-4 change from an estimated less than 45 dB DNL to an aircraft calculated DNL of 40 to 47 dB. This change could be noticeable and may be perceived as an impact although calculated DNL would be below the USEPA-identified DNL of 55 dB which is a level protective of the public health and welfare.

Ranching and Other Activities: Low-level overflights could impact ranching operations, especially during times when range stock are penned, such as during weaning and branding. Within the Powder River A/B MOAs, ranchers have coordinated with the Air Force to identify temporary avoidance areas so that the potential for low-altitude overflight impact could be reduced. Approximately 2 to 4 percent of each MOA would be overflowed by a B-1 or B-52 at 2,000 feet AGL or below on the Monday through Friday schedule. This means that, on average, a location could experience 6 to 9 low-level overflights per year. The random nature of the aircraft overflights could result in some areas experiencing no overflights and other areas experiencing more than average. Anywhere under the airspace could experience an average of one sonic boom per LFE day. The sonic boom would typically be experienced as thunder, but approximately 1,300 acres could experience an overpressure of four psf or greater which have the potential for window or other damage. Public commentors at scoping expressed the opinion that the sudden onset noise of a low-level overflight or a sonic boom would be considered a significant impact. During scoping, the estimated number of low-level overflights or sonic booms per year had not yet been calculated.

Chaff and flare usage would result in an estimated deposition of 0.0049 ounces of chaff per acre per year with approximately one piece of plastic or wrapping residual material from a deployed chaff or flare being deposited on an average of approximately 115 acres per year. Flare release altitudes of 2,000 feet above ground level, or discontinued in a MOA during extreme fire conditions, would not be expected to contribute to increase fire risk. Chaff and flare impacts would not be expected, although an

individual finding a piece of chaff or flare residual material, such as a two inch by one inch by 1/4 inch piece of plastic, could be annoyed.

Emergency flight operations such as firefighting and air ambulance would continue under ATC emergency flight procedures. The Air Force would immediately move training activities outside the required airspace to meet emergency needs.

Alternative B (See Draft EIS Section 4.9.3.2)

Alternative B impacts would be comparable to those described for Alternative A. The primary difference is that Alternative B does not have airspace below FL180 under the PR-1A, PR-1B, and Gap A ATCAAs. This means that existing or proposed mining operations under the PR-1A, PR-1B, or Gap A ATCAAs would not experience low-altitude overflights. Activities under the PR-1A or PR-1B ATCAAs, such as ranching, Tribal, and recreational activities, would also be unaffected by low-level overflights. LFE daily civil aviation impacts would include 43 to 244 civil operations above FL180 plus 76 civil operations in the MOAs.

Alternative B would have an estimated average of 97 daily civil aircraft operations impacted Monday through Thursday (approximately one-third of that number on Friday morning) as described for Alternative A.

Alternative C (See Draft EIS Section 4.9.3.3)

Alternative C impacts would be comparable to those described for Alternative A. The difference is that Alternative C does not have airspace below FL180 under the PR-4 and Gap C ATCAAs. This means that ranching, recreational, and other activities within this area would be unaffected by low-altitude overflights. The number of civil aircraft operations daily impacted by Alternative C is estimated at 79 Monday through Thursday (approximately one-third of that number on Friday morning). Impacts would be as described for Alternative A. Impacts to mining, recreation, and other activities within the PR-1A and PR-1B MOAs would be as described for Alternative A. LFE daily civil aviation impacts would include 43 to 244 civil operations above FL180 plus 48 civil operations in the MOAs.

No-Action Alternative (See Draft EIS Section 4.9.3.4)

The Air Force would continue to use the existing Powder River airspace for training. Low-level overflights would continue throughout Powder River A/B MOAs. There would be no change in socioeconomic effects. An estimated 7 civil operations are impacted daily with impacts as described for Alternative A.

Environmental Justice and Protection of Children (See Draft EIS Section 4.10)

Environmental justice applies to potential adverse environmental impacts disproportionately felt by minorities or low income population. Environmental justice includes the protection of children from health and safety risks if the potential for such risks are driven by an environmental impact.

Alternative A: Proposed Action (See Draft EIS Section 4.10.3.1)

Under the airspace proposed for Alternative A, the affected population is 84,420 persons including affected populations on four Native American reservations: Crow, Northern Cheyenne, Standing Rock, and Cheyenne River. The affected minority population is 12,661 and 13,831 persons live below the poverty line.

The primary minority and low income populations under Alternative A reside on portions of the Crow Reservation and the entire Northern Cheyenne Native American Reservation under the proposed PR-1A

and PR-1B MOAs. The total population under these MOAs is 16,746 of whom 9,717 are minority, 4,734 live below the poverty level, and 6,074 are children. These population estimates include the populations on the Crow and Northern Cheyenne Reservations. Under the PR-2, PR-3, and PR-4 MOAs, which would be subject to low-level overflights, the affected population is 20,122 persons of which 558 are minority, 2,932 persons live below the poverty level, and 5,016 are children, including the affected populations within the Standing Rock and Cheyenne River Reservations. The PR-4 MOA on the eastern side of the airspace would not have training aircraft overfly population concentrations of the Cheyenne River or Standing Rock Reservations. All four Tribes have sacred sites for spiritual ceremonies and vision quests. Because these sites are located on or near reservations and the ceremonies are conducted by Native Americans, the potential for adverse impacts to these cultural resources would be disproportionate for the four reservations located beneath the proposed PRTC. During Government-to-Government consultations, the Air Force has sought to identify sacred sites and specific times of the year when avoidance areas could be established to reduce the potential disruptions from aircraft noise and visual disturbances. Coordinating flight schedules establishing altitude restriction, and identifying avoidance areas could reduce the potential for impacts to tribal lands although significant impacts would be anticipated, particularly to tribal lands under PR-1B.

Youth populations in the affected counties are generally proportional to the state levels. Reaction to infrequent low level overflight or sonic booms could temporarily disrupt classrooms but no long term learning or health impact upon children would be expected. The primary exception is under the proposed PR-1B MOA where a concentration of youth exists. The Northern Cheyenne and Crow Reservations have greater proportions of minority, low income, and children than any other areas beneath the proposed airspace. These reservations have the potential for adverse impacts which would be disproportionate to the affected populations on the Northern Cheyenne and Crow Reservations.

Alternative B (See Draft EIS Section 4.10.3.2)

Alternative B would not establish PR-1B and would not overfly the Crow or Northern Cheyenne Reservations below FL180 although it does have the potential to impact the Standing Rock and Cheyenne River Reservations located beneath the proposed PR-4 MOA. Minority, low income, and impacts to children are substantially less for Alternative B than for Alternative A or Alternative C. The potential for disproportionate adverse impact on the cultural resources of Native American Reservations under PR-4 is less than for Alternative A or Alternative C. Effects on youth populations would generally be less than described for Alternative A. Coordinating flight schedules establishing altitude restriction and identifying avoidance areas could reduce the potential for impacts to tribal lands although significant impacts could still be anticipated.

Alternative C (See Draft EIS Section 4.10.3.3)

Alternative C would have the potential to impact portions of the Crow Reservation and all of the Northern Cheyenne Reservation located beneath the proposed PR-1B MOA. Alternative C does not include low-level overflights of the Standing Rock and Cheyenne River Reservations. There would be the potential for disproportionate adverse impact on the Crow and Northern Cheyenne Native American Reservations. Coordinating flight schedules establishing altitude restriction, and identifying avoidance areas could reduce the potential for impacts to tribal lands although significant impacts, particularly under PR-1B, could be expected. Effects on youth populations would be generally as described for Alternative A. There is a higher proportion on youth impacted under the PR-1B MOA than under any other proposed airspace.

No-Action Alternative (See Draft EIS Section 4.10.3.4)

No Tribal lands are located under the existing Powder River airspace. There is no disproportionate impact upon environmental justice population associated with the existing Powder River airspace.

Cumulative (See Draft EIS Chapter 5.0)

Cumulative effects consider the potential environmental impacts resulting from the incremental impacts of the PRTC action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such actions.

Other Projects and Uses: A variety of past, present, and reasonably foreseeable actions are proposed or planned under the extensive airspace overflowed by the proposed PRTC. These projects range from additional energy development to mining operations to new rail lines for coal shipment to expanded wind farms. Potential cumulative projects in the ROI include plans and permits to develop mineral reserves, including oil, gas, and coal reserves, and transportation of excavated resources. The energy exploration and development has been a stimulus to economic activity within the region. Other cumulative projects include the beddown of an additional B-52 squadron at Minot AFB, airspace actions in North Dakota and Utah, and the potential for additional threat emitters and simulated targets comparable to those used for existing Powder River airspace to add realism to PRTC aircrew training. A number of the projects are BLM management actions. The general trend in the region has been one of creation of larger farming operations, growth in larger communities, and decline of smaller communities. Recreational uses have historically continued to grow, with many hunters and fisherman coming to the region in search of game.

Cumulative Effects: Airspace, Noise, and Safety. The additional B-52 squadron has been included throughout the EIS as a baseline condition. Cumulative potential effects upon other airspace users or potential users have been included throughout this EIS. These effects include impacts to airspace access and impacts to time-sensitive deliveries as a result of the inability to fly IFR through an active MOA. Approximately 2 to 4 hour delays or re-routing could impact time-sensitive deliveries to existing or proposed mining development, transportation projects, industrial development, or agricultural operations. Limited communication and radar coverage which impact safe civil aircraft operations and airports would continue below 12,000 feet MSL in much of the proposed airspace. The B-1 or B-52 would randomly overfly at levels of 2,000 feet AGL or below approximately 2 to 4 percent of each MOA during any training workday. This level of overflight and potential startle effect is not expected to significantly alter or cumulatively affect any development plan or resources within the region. Infrequent sonic booms during LFEs would not be expected to interfere or cumulatively affect other ongoing or proposed activities. Aircraft training overflights would be random and would not cumulatively interact with construction sites. Coordination and communication with mining or other blasting related activities, such as new rail lines, would be required for safety to avoid significant cumulative impacts. No cumulative effects to noise or safety from PRTC would be expected in conjunction with other projects in the ROI.

Cumulative Effects: Physical Resources and Air Quality. Mineral excavation, transportation line construction, and industrial operations could potentially impact large amounts of soil and water resources and could contribute to air quality impacts. Separate environmental analyses, prepared for the projects, will document impacts and mitigations. Potential construction of emitter sites would not be expected to have an impact on soils, water, or air quality resource. Any threat emitters on 15-acre sites would be subject to environmental review. Siting criteria would include being near power for electricity to run the threat emitters, so no air quality effects from generators would be anticipated. Aircraft overflights do not produce an amount of emissions which could contribute to cumulative air

quality impacts or result in discernible contributions to present or future nonattainment areas. No cumulative effects are anticipated to physical resources or air quality as a result of the proposed PRTC.

Cumulative Effects: Natural and Cultural Resources. Mineral excavation and transportation line construction could impact natural and cultural resources. Construction and other ground-disturbing projects could impact Tribal lands and cultural resources. Separate environmental documentation would assess direct and indirect impacts of these projects. Cultural resources on Tribal lands experiencing construction or other ground-disturbing effects could be impacted directly as a result of other projects in the ROI. Some cumulative effects could occur from infrequent low-level overflights in conjunction with extensive planned mineral operations on and near Tribal lands. Potential construction of emitter sites would not be expected to have a cumulative impact in conjunction with large scale mining projects based on the relatively small size of the emitter sites and the need for sites to be on an open rise where they could project out as far as possible. Emitters would be located to avoid environmentally sensitive areas and would not be expected to cumulatively contribute to disturbance of natural or cultural resources.

Cumulative Effects: Land Use, Socioeconomics, and Environmental Justice. Substantial construction projects in the ROI would alter employment patterns in industrial areas of mineral development or transportation projects. Construction projects and additional large-scale mining would contribute to regional employment while changing the nature of the economy. Agreements regarding construction and operation jobs for Tribal members could improve economic opportunities for minority and low income populations. Temporary avoidance areas would be established over construction sites where tall cranes or helicopters would be used in the construction. Permanent avoidance areas would be mapped for tall structures such as smokestacks or wind generation machines. Cumulative impacts from overflight in conjunction with mining operations would not be anticipated. Low-level overflight and associated hunting and other recreation continue throughout the area overlain by the existing Powder River A/B MOAs. The fact that recreation occurs in areas of current low-level overflights suggests that the actual military aircraft overflight impacts could be less than the uncertainty of an average of 6 to 9 low-level overflights per year. Civilian air operations and cultural resources would be individually and cumulatively impacted. For all other environmental resources, the establishment of the PRTC in combination with any other ongoing activities by federal or other agencies or enterprises would not be expected to have incremental impacts when added to other past, present, and reasonably foreseeable future actions.

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To request further information contact:

Captain Matthew Reese
28 BW/PA, Ellsworth AFB, SD
Phone: (605) 385-5056

To submit comments on the Draft EIS, contact:

Linda DeVine, Program Manager
ACC/A7PS
129 Andrews St., Suite 337
Langley AFB, VA 23665-2701
Fax: (757) 764-1975

