

Powder River



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

Executive Summary



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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, Final Environmental Impact Statement (EIS). The entire EIS is on the CD in the pocket below and online at www.ellsworth.af.mil. To view the Final EIS (FEIS) on CD, you will need Adobe Acrobat® Reader, which can be downloaded at www.adobe.com. The CD files are read-only, which means you may view and/or print them from the CD.

The CD includes all comments received on the Draft EIS. FEIS Section 2.12.1 summarizes the comments received and explains how substantive comments received on the PRTC proposal were reviewed and responded to by either edits in the Final EIS or by explanation in Appendix G, Draft EIS Comments and Responses. The mitigations described in this Executive Summary are the result of public, agency, and tribal comments on the Draft EIS and other inputs including comments in Appendix H, FAA Circularization Comments and Aeronautical Study Inputs. To review the PRTC FEIS and all comments on the Draft EIS, please do the following:

- 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 FEIS.

A printed copy of the PRTC FEIS can be viewed 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.

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EXECUTIVE SUMMARY

ES.1 INTRODUCTION

This Executive Summary (ES) is designed to adequately and accurately summarize the Powder River Training Complex (PRTC) Final Environmental Impact Statement (EIS). This ES is comprised of text extracted from the Final EIS (FEIS) and explains the major conclusions and presents mitigations designed to address issues raised by agencies, the public, and tribes. The ES concludes with a comparison of environmental effects of the FEIS modified alternatives.

ES.2 PURPOSE AND NEED

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 policy 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.

The 28th Bomb Wing (28 BW), based at Ellsworth Air Force Base (AFB), South Dakota (SD), currently manages and trains in military training airspace overlying parts of the states of South Dakota, Wyoming, and Montana. The 5th Bomb Wing (5 BW), based at Minot AFB, North Dakota, also trains in the existing military training airspace. B-1 and B-52 aircraft have the range to reach and remain near a target area, combat capability to carry a variety of munitions, sensors for specific targets, responsiveness to be at the scene when needed, and flexibility to relocate and respond to time-sensitive targets. These capabilities make United States (U.S.) Air Force bombers flown by trained aircrews a key asset in national defense.

The proposed PRTC training airspace would provide aircrews the ability to develop conditioned responses to threats and provide additional space for realistic combat training maneuvers. PRTC would improve support for maneuvers and tactics and would improve aircrew combat success and survivability as mission capabilities evolve in response to national security objectives and other global missions. The proposed PRTC includes adjusting the boundaries of existing airspace, creating new airspace, improving pilot training realism, and deploying defensive countermeasures (chaff and flares), occasional large force exercises, and occasional supersonic maneuvers in the new airspace.

Figure ES-1 presents an overview of the modular nature of the proposed PRTC and describes the airspace segments of the PRTC. The summary of factors that drive the need to implement the proposed airspace is presented in Table ES-1.

The existing Powder River airspace includes the Powder River MOAs, associated Air Traffic Control Assigned Airspace (ATCAA), and an array of electronic threats and simulated targets.

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

Table ES-2 summarizes the improved training capabilities of the proposed PRTC depicted on Figure ES-1 and includes the section where the need is addressed in the EIS. Figure 1-3 in the EIS provides an overview of the existing Powder River airspace.

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

1. B-1 and B-52 missions, aircraft advanced technology capabilities, and training requirements have increased and will continue to increase, and the existing 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 require extensive on-ground maintenance hours for airframes to be ready for the next mission. Commuting long hours to training missions forces aircraft inspections and maintenance sooner than the same number of local training missions. 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 LFEs.
6. The number of users has increased, but the capacity of the existing Powder River airspace 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. Training must include detecting and reacting 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.

LFE = Large Force Exercise

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

1. Provides for aircrew training to implement and employ technology upgrades and fulfill both current and anticipated future operational requirements (Section EIS 2.10.5). **Addresses Need Factors 1, 4, 5, 6, 7, and 8 in Table ES-1.**
2. Enables aircrews to conduct diverse training missions while dramatically reducing commuting hours and issues of accessibility to remote ranges (EIS Section 2.10.5) and provides locally available airspace with scheduling priority for bombers (EIS Section 2.10.5.6). **Addresses Need Factors 2 and 3 in Table ES-1.**
3. Enables maintenance turnaround of the aircraft to generate adequate training sorties (EIS Section 2.10.5) and provides more efficient use of fuel resulting in realistic training to improve both training quality and quantity. **Addresses Need Factors 2 and 3 in Table ES-1.**
4. Accommodates approximately 85 percent of required aircrew complex multi-mission training sorties for both B-1 and B-52 aircrews (EIS Section 1.4). **Addresses Need Factors 1, 4, 5, 6, 7, and 8 in Table ES-1.**
5. Increases the proportion of training time for new and diversified training requirements, including defensive chaff and flares and diversified areas for low-altitude training (EIS Section 2.10.4). During LFEs, not to exceed 10 days per year, supersonic maneuvers permitted above 20,000 feet MSL for B-1 and above 10,000 feet AGL for fighters. **Addresses Need Factors 1, 4, 5, 6, 7, and 8 in Table ES-1.**
6. Improves integrated aircrew combat training operations by quarterly support of realistic tactics using various aircraft types and expanded network based operations training (EIS Section 2.8.4). **Addresses Need Factors 4, 5, 6, 7, and 8 in Table ES-1.**
7. Increases the availability of real world training at realistic distances for multiple, concurrent flights of aircraft from Ellsworth and Minot AFBs (EIS Section 2.10.5). **Addresses Need Factors 4, 5, 6, 7, and 8 in Table ES-1.**
8. Restructures and adds local airspace and capabilities to meet the training needs for the 28th Bomb Wing and Minot AFB 5th Bomb Wing aircrews (EIS Section 1.4). **Addresses Need Factors 1, 2, 3, 4, 5, 6, 7, and 8 in Table ES-1.**

AFB = Air Force Base; LFE = Large Force Exercise; PRTC = Powder River Training Complex

ES.3 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

Table ES-3 provides an overview of proposed PRTC airspace components for the FEIS Modified Alternative A, Modified Alternative B, Modified Alternative C, and the No- Action Alternative. These Modified Alternatives are detailed in the FEIS Sections 2.5 through 2.9. The Modified Alternatives were developed by the United States Air Force (Air Force) and Federal Aviation Administration (FAA) in response to issues and concerns raised by the public, tribes, and agencies during review of the Draft EIS and consultation under Section 106 of the National Historic Preservation Act (NHPA), as well as part of the Government-to-Government consultation.

The Modified Alternative A would expand the current Powder River Military Operations Area (MOA) into four separate Low and High MOA complexes for day-to-day training and maximum flexibility to accommodate non-military users of the airspace. The Modified Alternative A is the Air Force's Proposed Action and preferred alternative.

A comparison of Table ES-1 and Table ES-2 demonstrates that PRTC would provide bomber aircrews with adequately sized, configured, and available airspace to train as they would fight during worldwide deployment. The long time frame 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. During annual Large Force Exercises (LFEs), which would be scheduled an estimated four hours per day, not more than 10 days per year, one to three days per quarter, the MOA complexes would be connected by the Gap A, Gap B, and Gap C MOAs/Air Traffic Control Assigned Airspace (ATCAAs) so that bomber aircrews and pilots of an estimated 20 aircraft, such as fighters and tankers, would more readily "train as they will fight." PRTC would create training airspaces to realistically train for existing and expected combat conditions. 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.

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 (conditions with sufficient conditions to maintain visual separation from terrain and aircraft). 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 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

Table ES-3. Overview of Proposed PRTC Airspace Components

MOA/ATCAA	Description
Powder River 1A, PR-1B, PR-1C, and PR-1D MOA/ATCAA complex	Consists of PR-1A, PR-1B, PR-1C, and PR-1D MOAs, each of which would be stratified vertically into a Low MOA, a High MOA, and an ATCAA ^{1,2}
Powder River 2 MOA/ATCAA complex (PR-2)	Consists of the PR-2 MOAs, which basically consists of the existing training airspace comprised of Powder River A and B MOAs and associated ATCAAs. PR-2 would be stratified vertically into a Low MOA, a High MOA, and an ATCAA ¹
Powder River 3 MOA/ATCAA complex (PR-3)	Consists of the PR-3 MOAs, which would be stratified vertically into a Low MOA, a High MOA, and an ATCAA ¹
Powder River 4 MOA/ATCAA complex (PR-4)	Consists of the PR-4 MOA, which would be stratified vertically into a Low MOA (Modified Alternative B only), a High MOA, and an ATCAA ^{1,3}
Gap A MOA/ATCAA	Used only during LFEs and separates PR-1 and PR-2, would consist of a Low MOA, a High MOA, and an ATCAA ¹
Gap B MOA/ATCAA	Used only during LFEs and separates PR-2 and PR-3, would consist of a Low MOA, a High MOA, and an ATCAA ¹
Gap C MOA/ATCAA	Used only during LFEs and separates PR-3 and PR-4, would consist of a Low MOA (Modified Alternative B only), a High MOA, and an ATCAA ¹
Gateway ATCAA	Modified and expanded to create the Gateway West ATCAA and, only during LFEs, a Gateway East ATCAA ⁴

- Notes: 1. Low MOA = altitudes from 500 feet AGL up to, but not including 12,000 feet MSL; High MOA = altitudes from 12,000 feet MSL up to, but not including 18,000 feet MSL; ATCAA = altitudes from 18,000 feet MSL up to 26,000 feet MSL
2. PR-1A, B, C, and D MOAs are included in Modified Alternatives A and C. Modified Alternative B does not include the Powder River 1A, B, C, D or Gap A MOAs.
3. Modified Alternative B includes PR-4 Low and Gap C Low MOAs. Modified Alternative A does not include a PR-4 Low MOA or a Gap C Low MOA; Modified Alternative C does not include PR-4 or Gap C MOA.
4. Gateway ATCAA does not include a MOA and consists of Gateway West and Gateway East ATCAAs.

ES.4 PRTC FINAL EIS DEVELOPMENT

In August 2010, in accordance with the National Environmental Policy Act (NEPA) and its implementing regulations, the Air Force released a Draft EIS. The Draft EIS presented the potential environmental consequences of the Air Force's proposal to improve training for primarily bomber aircrews assigned to Ellsworth AFB and Minot AFB.

As a result of public, agency, and tribal comments during the 100-day public comment period on the Draft EIS, and the FAA aeronautical review process, the Air Force, FAA, other federal and state agencies, and tribal governments have been consulting to mitigate concerns while continuing to meet national defense training requirements. The Air Force has participated in continued communication, consultation, and/or meetings with state agencies and tribal representatives from 2008 through 2014. Consultation and coordination on the environmental and related impacts will continue beyond completion of the EIS. The Air Force is the proponent for the PRTC and is the lead agency for the preparation of the EIS. The FAA is a cooperating agency as defined in 40 Code of Federal Regulations (CFR) §1508.5.

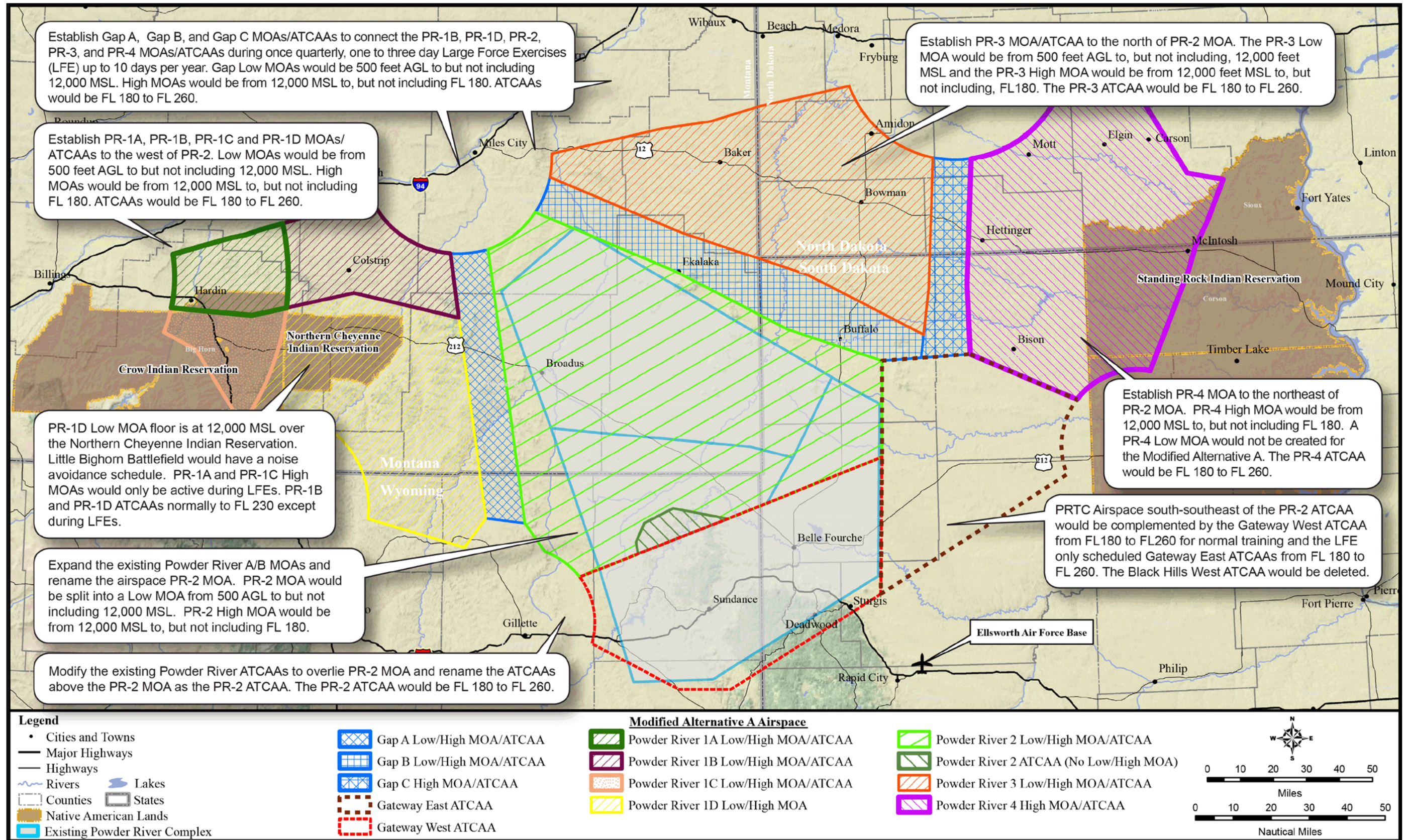


Figure ES-1. Modified Alternative A Airspace

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ES.5 DEVELOPMENT OF THE FEIS MODIFIED ALTERNATIVES

The Modified Alternatives described in ES.2 have been developed to address agency, tribal, and public environmental and aeronautical concerns about the proposal to expand and enhance the Powder River airspace to become the PRTC. The PRTC would address the training deficiencies and limitations described in ES.2. The Air Force conducted 19 public hearings on the Draft EIS during the public comment period from 20 August 2010 to 20 January 2011. Issues and concerns identified during public, state and federal agency, and tribal consultation and communication were reviewed by the Air Force and the FAA. In coordination with the FAA, the Air Force has developed Modified Alternatives that include the following changes to the Draft EIS Alternatives.

ES.5.1 MITIGATIONS INCORPORATED INTO THE FEIS MODIFIED ALTERNATIVES

The FEIS Modified Alternatives briefly described in ES.2 and detailed in FEIS Sections 2.5, 2.6, and 2.7, incorporate multiple mitigation measures to address public, agency, and tribal concerns. The mitigation measures, some of which were included in the Draft EIS, are:

1. Commercial and General Aviation Aircraft Operations
 - a. Limiting all PRTC activity to altitudes at or below Flight Level (FL) 260 to avoid some of the effect on aircraft utilizing high-altitude routing.
 - b. Moving airspace boundaries back from Billings and Miles City, Montana (MT), Dickinson and Bismarck North Dakota (ND); and Hulett, Gillette, and Sheridan, Wyoming (WY) to facilitate Instrument Flight Rules (IFR) procedures at these airports.
 - c. Dividing PR-1 into eight MOA segments to better enable arrivals and departures from local airports as well as to allow parts of the airspace to be used while other parts are avoided to reduce potential impacts on the ground.
 - d. Providing reasonable and timely aerial access to underlying private or public use land. Provisions are included in Section 4.1.3.1.4 to accommodate instrument arrivals/departures with minimum delay and for terminal Visual Flight Rules (VFR) and IFR operations.
 - e. Supporting general aviation flight operations by raising the floor of PR-4 MOA and Gap C MOA from 500 feet above ground level (AGL) to 12,000 feet mean sea level (MSL) (the average surface elevation is 2,300 feet MSL, resulting in the average floor of 9,700 feet AGL).
 - f. Reducing B-1 flight operations in the proposed PR-1, PR-3, and PR-4 MOAs by 12 percent from that proposed in the Draft EIS in accordance with the Ready Aircrew Program (RAP). (The RAP specifies the extent of training required by each aircrew member.)
 - g. Providing adequate navigation for civil aviation by adjusting the proposed Gap MOA boundaries.

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- h. Adjusting airspace boundaries to support navigation (such as the use of the global positioning system [GPS]) on Victor airways.
- i. Avoiding potential conflict with Victor Route 247 (V-247), an aircraft flight route between Sheridan, WY and Billings, MT, by adjusting the southwest border of the proposed PR-1B MOA/ATCAA.
- j. Publishing information about when a MOA is active and when a MOA is no longer active to general aviation using FAA-established frequencies, phone lines, and websites. The proposed PRTC airspace would have published times of use on FAA aeronautical charts and websites (such as <http://sua.faa.gov/sua/>). The Air Force and FAA would continue coordination to enhance the situational awareness of aircraft operators as to whether PRTC low-altitude MOAs (airspace below 12,000 feet MSL) were active. This would include practices, such as the use of existing data, equipment, and procedures, as well as integration of advancements in software and/or equipment. The procedures developed would also handle those nonparticipants (i.e., aircraft not participating in MOA training) operating IFR entirely within the PRTC while simultaneously supporting the expeditious completion of the training flight and the return of the affected airspace to Air Traffic Control (ATC).
- k. All PRTC training activity will be announced via Notices to Airmen (NOTAM). PRTC published times of use would be available on FAA aeronautical charts and specified in the Air Force's aeronautical proposal (Appendix A). NOTAM information is available by dialing 1-800-WXBRIEF, online at <https://www.1800wxbrief.com/>, or <https://pilotweb.nas.faa.gov/>, or in-flight by contacting Flight Service. Training activity scheduled within published times of use will be announced by NOTAM not later than 2 hours prior to training use of the airspace. Training activity scheduled outside of the published times of use will be announced by NOTAM not later than 4 hours prior to training use of the airspace. PRTC airspace would be activated by ATC, and when a flight is completed within a MOA, the airspace would be returned to ATC. For planning purposes, the airspace schedule will be entered into the Military Airspace Data Entry (MADE) system, no later than 1500 hrs (3:00 PM) Mountain Time the day prior to training use. This information automatically feeds into the FAA's Special Use Airspace Management System (SAMS), which disseminates information throughout the FAA, to the NOTAM system, and is available to the public via <http://sua.faa.gov/sua>.
- l. Scheduling of airspace outside of published times of use, and for airspace only used during LFEs, PRTC activity will be announced by NOTAM not later than 4 hours prior to use. NOTAM information is available by dialing 1-800-WXBRIEF, going online at <https://www.1800wxbrief.com> or <https://pilotweb.nas.faa.gov>, or in-flight by contacting Flight Service. All PRTC training activity outside published times of use will be announced by NOTAM.
- m. Allowing ATC to vector IFR traffic through Low and High MOAs as soon as training is completed in an airspace segment.

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- n. Although not regularly expected, 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 4 hours in advance to facilitate issuance of a NOTAM.
 - o. Establishing communication procedures to ensure the ability of the Air Force to recall the military aircraft from the low-altitude MOAs. Controlling agencies would recall the low MOA airspace whenever necessary to allow IFR aircraft access to and from public-use airports under the proposed MOA.
 - p. Establishing appropriate communication procedures to ensure the ability of the Air Force to control military aircraft and provide safe deconfliction with emergency flight operations and fire-fighting operations within the proposed airspace.
 - q. Posting informational flyers and posters at public airports underlying the airspace with annual updates by the Ellsworth AFB Flight Safety Office as part of the Mid-Air Collision Avoidance Program at (605) 385-4419.
 - r. Supporting civil aviation planning and scheduling by publishing at least 30 days in advance the LFE schedule and related information.
 - s. Committing to the use of a scheduled low MOA early in a mission so that, as the mission allows, the low MOA can be released as early as possible to the controlling agency.
 - t. Providing a NOTAM for activation of a scheduled MOA to disseminate the maximum information to civil aircraft regarding whether or not a scheduled MOA is to be activated even during published times of use.
2. Tribal Reservation Lands
- a. Avoiding low-altitude overflight of the Standing Rock and Cheyenne River Reservations under PR-4 by raising the MOA floor for Modified Alternatives A and C from 500 feet AGL (i.e., above ground level) to 12,000 feet MSL (i.e., mean sea level) (average surface elevation of 2,300 feet MSL).
 - b. Avoiding low-altitude overflight over the Northern Cheyenne Reservation under the proposed PR-1D by establishing an avoidance area over the reservation, that also encompasses Deer Medicine Rocks National Historic Landmark (NHL), with a floor of 12,000 feet MSL (average surface elevation of 3,785 feet).
 - c. Providing advance notice of LFEs, limited to no more than 3 days per quarter for a maximum of 10 days per year, to the Reservations at least 30 days before the LFE to inform of increased training flight activity.
 - d. Limiting supersonic flights to LFEs only (above 20,000 feet MSL for B-1 aircraft and above 10,000 feet AGL for transient fighter aircraft) and providing advance publication of LFEs to reduce noise concerns.
 - e. Scheduling no supersonic flights over the Little Bighorn Battlefield National Monument, located within the Crow Reservation, under PR-1C.

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- f. Establishing an ongoing Government-to-Government communication protocol to identify and periodically update avoidance areas for specific time periods.
 - g. Avoiding ceremonies identified in consultation with tribes by an appropriate distance, in no case less than 2,000 feet.
 - h. Establishing reasonable temporary or seasonal avoidance areas or adopting other measures to reduce intrusive impacts.
3. Cultural and Historic Areas
- a. Identifying sensitive cultural and historic areas in a Programmatic Agreement developed in consultation with the Air Force, federal and state agencies and federally recognized tribes (see FEIS Appendix N), which establishes a process to reduce overflight impacts.
 - b. Avoiding overflight below 5,000 feet AGL of the Little Bighorn Battlefield National Monument from 1 hour before to 1 hour after posted hours of operation and other times as coordinated with Park management.
 - c. Avoiding PRTC military flights over Devils Tower National Monument, WY and Deadwood NHL, South Dakota (SD) below 18,000 feet MSL, and Bear Butte State Park, SD by 10,000 feet AGL or 2 nautical miles (NM) horizontally.
 - d. Working with agencies and tribes to avoid sensitive areas to the extent possible, including by flying across the Tongue River Valley rather than lengthwise along the valley.
 - e. Prohibiting supersonic flights over the Little Bighorn Battlefield National Monument within PR-1C.
4. Communities and Ranching Operations
- a. Establishing avoidance areas as necessary for airports, airfields, and communities under the proposed airspace.
 - b. Continuing the current practice of establishing reasonable temporary or seasonal avoidance areas over residences, communities, and ranching operations, including those on reservations, to reduce the potential for impact during concentration of range animals for branding, calving, weaning, and/or other ranch operation.
 - c. Reducing the number of proposed B-1 operations from that presented in the Draft EIS by 12 percent in all segments of PR-1, PR-3, and PR-4 in accordance with training adjustments.
 - d. Limiting Low-altitude overflight over ranches or communities under PR-4 with the proposed raising of the PR-4 MOA floor for Modified Alternatives A and C from 500 feet AGL to 12,000 feet MSL (average surface elevation of 2,300 feet AGL).
5. Other Mitigation Measures
- a. Publishing a notice at least 30 days in advance of LFEs to the public, the aviation community, and Native American tribes, to help these parties plan for LFE airspace

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activation. All other signatories of the Programmatic Agreement will receive a minimum of 15 days' notice.

- b. Establishing procedures to avoid low-altitude overflight of and frequency interference with known blasting operations such as those associated with coal mining operations.
- c. Making available airspace use and long-term planning information on deconfliction of special events/cultural events during normal business hours, 8:00 AM to 5:00 PM local, Monday through Friday, from the Ellsworth AFB Airspace Management Office at (605) 385-1230.
- d. 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 Ellsworth AFB Public Affairs Office is available to answer inquiries and complaints at (605) 385-5056 8:00 a.m. to 5:00 p.m. Monday through Friday.
- e. Limiting deployment of chaff within 60 NM of airport approach radars to ensure that chaff does not interfere with ATC radars.
- f. Training with chaff comparable to that described in this EIS. The Air Force would conduct additional environmental analysis before the use of other chaff types.
- g. Limiting flare release altitudes within the PRTC airspace to above 2,000 feet AGL (flares burn out by the time they fall approximately 500 feet).
- h. Discontinuing flare releases in PRTC MOAs (e.g., PRTC 2 Low, 2 High MOA) above areas where the fire danger is rated very high or extreme under the National Fire Danger Rating System. Flare use in the PRTC ATCAAs would be discontinued when the fire danger rating is Extreme.
- i. Continuing cooperation with local fire agencies for mutual aid response to wildland fires attributable to Air Force operations.
- j. Coordinating with local fire departments underlying the airspace to educate them on flare identification and potential hazards. This education would include distributing flyers to fire departments describing chaff and flare deployments, residual materials and dud flares.

Application of the mitigations listed above would substantially reduce public, agency, and tribal concern regarding impacts or the potential for impacts. The FEIS Sections 2.3.2, 2.3.3, and 2.3.4 provide a brief explanation of the reduced impacts related to the FEIS Modified Alternatives when the mitigations listed above are applied.

ES.5.2 MITIGATION MANAGEMENT OVER TIME

Throughout the planning process to develop the proposed PRTC, it has become apparent that there may be various uncertainties concerning the significance and scope of environmental impacts until the operations can be experienced over time. In response, and within certain parameters, the Air Force may develop an adaptive management program as part of its overarching mitigation and monitoring program¹. In doing so, the Air Force would follow the President's Council on Environmental Quality mitigation and monitoring guidance², and other legal and generally accepted practices.

New knowledge and information gained through experience can be incorporated into management options and recommendations to appropriate decision makers. Many of the mitigation measures listed in Section ES.5.1 incorporate continuing communication, consultation, and feedback to adapt PRTC operations to the needs of the public, agencies, and tribes as well as training aircrews. This EIS identifies and describes the affected environment and assesses the potential environmental impacts resulting from implementation of the proposed PRTC. The analysis identifies specific mitigation measures to prevent or minimize environmental impacts, if required. Air Force Environmental Impact Analysis Process (EIAP) regulations require the action proponent to prepare a mitigation plan and forward it to Headquarters (HQ), Air Force for review within 90 days of the signing of the Record of Decision (ROD). Among other things, the mitigation plan must specifically identify each mitigation measure, how the measures will be executed, and who will fund and implement the mitigations.

Requiring the detailed mitigation plan after the signing of the ROD enables the mitigation plan to be tailored precisely to the decision that is made. In the analysis of anticipated impacts in the EIS, the Air Force has done its best to accurately predict potential impacts and anticipate future conditions. However, given the nature of the alternatives analyzed and public, agency, and tribal interest, new information may become available, or the effectiveness of mitigation measures may be different than expected.

Adaptive management techniques are well suited to such circumstances. Since the adaptive management approach is being adopted as part of the implementation for the PRTC, the mitigation plan will have provisions for determining the success of the mitigations, as well as procedures for making necessary adaptations.

Where the proposed use of adaptations is considered, the Air Force will, before adapting, fully consider whether or not the adaptation triggers the need for additional analysis under the NEPA and the EIAP. For example, the Air Force could supplement this EIS or prepare a new NEPA analysis, as necessary. Thus, the post-ROD mitigation plan will include an adaptive

¹ NEPA's Section 101 goals to "protect, restore, and enhance the environment" (40 CFR 1500.1(c)) would be advanced with the development of the mitigation and monitoring program.

²"Appropriate Use of Mitigation and Monitoring and Clarifying the Appropriate Use of Mitigated Findings of No Significant Impact," January 14, 2011

management program incorporating, for example, the following kinds of adaptive management approaches.

- Identifying the type of monitoring for the action and each mitigation.
- Delineating how the monitoring will be executed.
- Identifying who will fund and oversee its implementation.
- Establishing the process and responsibilities for identifying and making changes to the action or mitigations to influence beneficial results or avoid/reduce adverse ones.

ES.6 COMPARISON OF ENVIRONMENTAL CONSEQUENCES

Table ES-4 summarizes the analysis included in EIS Chapter 4.0, *Environmental Consequences*, and compares the potential environmental consequences of the Modified Alternative A, Modified Alternative B, Modified Alternative C, and the No-Action Alternative.

Table ES-4. Summary of Impacts by Resource (Page 1 of 18)

Environmental Resource	Modified Alternative A
<p>Airspace/Air Traffic (EIS Section 4.1)</p>	<p>Airspace will be scheduled in advance and NOTAMs will be issued 2 to 4 hours prior to the initiation of military training in the airspace to provide near real-time information to civil aircraft. Section 2.3 lists multiple airspace mitigations designed to reduce effects upon airspace use and users. Mitigations include issuing NOTAMs to announce the activation of scheduled airspace, changing the shape of the proposed airspace to accommodate civil aviation, and restricting training to below FL260. The Air Force would not activate or use PR-1A, 1B, 1C, 1D, or PR-3 Low MOAs for Modified Alternative A or C or PR-3 or PR-4 Low MOAs for Modified Alternative B unless communication to recall training aircraft is in place. Proposed MOAs/ATCAAs have been adjusted to avoid traffic at major airports. MOAs were segmented high and low to support civil traffic. If all the MOAs were activated at one time for military training, the training could impact an estimated 86 civilian aircraft flights daily under the airspace during Monday through Thursday. If all the MOAs were activated Friday morning, there would be approximately 30 civilian aircraft operations impacted. Impacts include an estimated up to 4 hours of ground holds, diversions, or needing to fly VFR see-and-avoid in an active MOA. IFR arrivals and departures to airports within an active MOA would be accomplished by temporarily relocating the training aircraft to another airspace and vectoring the IFR aircraft. MOAs/ATCAAs are adjusted to avoid traffic at major airports. MOA published times of use are on FAA charts, daily scheduling is provided on sites such as http://sua.faa.gov, and NOTAMs would be issued for when a MOA is active. Information by NOTAM about MOA activation and expeditious release of the active MOA are designed to reduce uncertainty and support civil aviation. MOAs would not normally be scheduled from Friday noon through Monday morning to support higher volume weekend civil operations. Civil aircraft could fly VFR using see-and-avoid, weather permitting. Training aircraft will be relocated from an area that needs emergency access, as is currently done in the Powder River airspace, and the MOA would be deactivated to allow IFR emergency and related arrivals and departures from an airport under the MOA. Agricultural applicators with a near gross weight aircraft expressed concern that low-altitude training could affect operations. Increased information with NOTAM activation/deactivation of MOAs could reduce uncertainty, although aerial applications are driven by meteorological conditions. Coordination and communication on weather modification, aerial mapping, recreational gliding, and skydiving could avoid potential impacts.</p> <p>Daily training below FL230 avoids impacts to most overflying commercial traffic. LFEs would be scheduled at least 30 days in advance for 1 to 3 days quarterly, not to exceed 10 days per year. An LFE day could impact an estimated 78 civil aviation flights for a period of up to 4 hours. Any airspace constraints or communication requirements could be perceived as an impact by existing users of the airspace.</p>

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Table ES-4. Summary of Impacts by Resource (Page 2 of 18)

<i>Modified Alternative B</i>	<i>Modified Alternative C</i>	<i>No-Action Alternative</i>
<i>Airspace/Air Traffic, continued</i>		
<p>Airspace will be scheduled in advance and NOTAMs will be issued 2 to 4 hours prior to the initiation of military training in the airspace to provide near real-time information to civil aircraft. Public airports, private airfields, and civilian aircraft flights below FL180 would be impacted in PR-2, PR-3, PR-4, and associated Gap B and C MOAs (during LFEs) as described for Modified Alternative A. No PR-1 or Gap A MOAs would be established and civil aircraft operations within the Billings-Miles City-Gillette triangle would not be impacted below FL180. If all the MOAs were activated at one time for military training, the training could impact an estimated 107 civilian aircraft flights daily under the airspace during Monday through Thursday. If all the MOAs were activated Friday morning, there would be approximately 36 civilian aircraft operations impacted. Impacts would be a mix of ground delays, re-routing, or having to fly VFR see-and-avoid, weather permitting, in an active MOA. IFR arrivals and departures would be as described for Modified Alternative A. ATCAA effects would be comparable to Modified Alternative A. Modified Alternative B would not include military training overflights below FL180 in the Billings-Miles City-Gillette triangle. LFEs could impact an estimated 88 civil aviation flights as described for Modified Alternative A. Any airspace constraints or communication requirements could be perceived as an impact by existing users of the airspace.</p>	<p>Airspace will be scheduled in advance and NOTAMs will be issued 2 to 4 hours prior to the initiation of military training in the airspace to provide near real-time information to civil aircraft. Public airports, private airfields, and civilian aircraft flights below FL180 would be impacted in PR-1, PR-2, PR-3, and associated Gap A and B MOAs as described for Modified Alternative A. There would be no training below FL180 under PR-4 or Gap C ATCAAs. Civil aircraft operations in the Bismarck-Dickinson-Rapid City triangle would not be impacted below FL180. If all the MOAs were activated at one time for military training, the training could impact an estimated 80 civilian aircraft flights daily under the airspace during Monday through Thursday. If all the MOAs were activated Friday morning, there would be approximately 27 civilian aircraft operations impacted. Impacts would be a mix of delays, re-routing, or having to fly see-and-avoid, weather permitting, in an active MOA. IFR arrivals and departures would be as described for Modified Alternative A. ATCAA effects would be comparable to Modified Alternative A. Modified Alternative C would not include military training flights below FL180 in the Bismarck-Dickinson-Rapid City triangle. LFEs could impact an estimated 74 civil aviation flights as described for Modified Alternative A. Any airspace constraints or communication requirements could be perceived as an impact by existing users of the airspace.</p>	<p>The No-Action Alternative would not change projected baseline conditions with B-1 and B-52 flight training in the Powder River A/B MOAs (essentially all of the proposed PR-2 MOA). Projected operations in the existing Powder River airspace would be expected to be as described for PR-2. An estimated 24 civilian operations would be impacted weekdays by delay, re-routing, or having to fly VFR see-and-avoid in an active MOA. Flight training in Powder River ATCAAs would continue as permitted under existing letters of agreement with the FAA. Powder River airspace would continue to provide limited training to B-1 and B-52 aircrews.</p>

Table ES-4. Summary of Impacts by Resource (Page 3 of 18)

<i>Environmental Resource</i>	<i>Modified Alternative A</i>
<p>Noise (EIS Section 4.2)</p>	<p>Day-night average sound level (DNL) under the proposed PR-1, PR-3, and PR-4 MOAs would be expected to change from existing less than 45 dB to a calculated <45 to 48 dB range. If such a change were discerned, it could be seen as an annoyance. DNL under existing Powder River A and B MOAs would minimally decline from 49 dB DNL to 47 dB. Noise levels under the existing Gateway ATCAAs would remain below 45 dB DNL. USEPA had identified DNL of 55 dB as the level above which to assess public health and welfare. Increased noise from a sudden low overflight would be noticed and could be perceived as a significant impact by residents under the airspace. Low-altitude overflight of a bomber, defined as 2,000 feet AGL or below to a minimum of 500 feet AGL within 0.25 mile of the flight path, would be expected to occur over 2 to 4 percent of each active MOA each training day, or an average at any given location under a Low MOA in PR-1, PR-2, or PR-3 of 6 to 9 low-level overflights per year (could be more or fewer than average at any specific location). Issuing NOTAMs to announce MOA activation could reduce uncertainty about when a low-altitude flight could occur. While operating at high speeds at 500 feet AGL, B-1 aircraft generate a localized single event onset rate adjusted sound exposure level (SEL_r) of 117 dB. B-52 aircraft generate an SEL_r of 100 dB during overflight at 1,000 feet AGL. Rapid B-1 acceleration and climb with afterburners, performed once per training mission, creates an SEL_r of 133 dB. Sudden onset sounds can be startling to humans and animals and have resulted in damage to penned cattle and fencing. Sudden low-level overflights were identified as an impact by public commenters. The Air Force would extend the Powder River airspace policy of establishing seasonal avoidance areas to reduce potential impacts to ranching, other sensitive areas, and cultural/historic resources. Supersonic flight during LFEs (not to exceed 10 days per year) with B-1s above 20,000 feet MSL and fighters above 10,000 feet AGL could result in an average of one sonic boom per LFE day at any given location on the ground. Most sonic booms are heard as thunder although a boom could result in a local area experiencing an overpressure of 4 psf or greater. Glass, plaster, and other structural elements in good condition normally would not be expected to fail as a result of overpressures, but failure would be possible. Should a sonic boom or low-level overflight occur during a hunting or ranching operation, it could result in a reaction on the part of the animals. Reactions would not be likely to significantly impact the species but could be an annoyance to persons on the ground.</p>

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Table ES-4. Summary of Impacts by Resource (Page 4 of 18)

<i>Modified Alternative B</i>	<i>Modified Alternative C</i>	<i>No-Action Alternative</i>
Noise, continued		
<p>PR-4 low-level overflight impacts would be as described for PR-3 under Modified Alternative A. Sudden onset noise from 6 to 9 low-altitude overflights per year, an average of one sonic boom per LFE day, and startle effects would occur under PR-2, PR-3, and PR-4 MOAs. Low-level overflights would not occur under PR-1 or Gap A ATCAAs. Noise under these areas range from 47 dB DNL to less than 45 dB DNL.</p>	<p>Noise under PR-1, PR-2, PR-3, and associated Gap MOAs and ATCAAs would be as described for Modified Alternative A. Sudden onset noise from 6 to 9 low-altitude overflights per year, an average of one sonic boom per LFE day, and startle effects in these MOAs would be as described under Modified Alternative A. Low-level overflights would not occur under PR-4 or Gap C ATCAAs. Noise under these areas would range from 47 dB DNL to less than 45 dB DNL.</p>	<p>Noise under the existing Powder River airspace would continue at 49 dB DNL as the base returns to the peacetime operational tempo. Low-altitude startle effects would continue to be experienced within Powder River A/B MOAs. Supersonic flight would not be authorized.</p>

Table ES-4. Summary of Impacts by Resource (Page 5 of 18)

<i>Environmental Resource</i>	<i>Modified Alternative A</i>
Safety (EIS Section 4.3)	<p>The FEIS has proposed airspace altitude caps at FL260, MOA boundaries moved back from major airports, MOAs segmented, Gap MOA boundaries adjusted, and NOTAMs for MOA activation to address public concerns. The Air Force and FAA would continue coordination to enhance the situational awareness of aircraft operators as to whether PRTC low-altitude MOAs (airspace below 12,000 feet MSL) were active. This may include best practices for use of existing data, equipment, and procedures as well as integration of advancements in software and equipment. Capabilities to communicate with and recall training aircraft would be in place prior to activating PR-1A, 1B, 1C, 1D, or PR-3 Low MOAs for Modified Alternative A or C or PR-3 or PR-4 Low MOAs for Modified Alternative B. IFR traffic would incur no undue delay during departure and arrival operations to/from airports beneath PRTC. General aviation pilots accustomed to flying through the airspace with GPS coordinates could perceive communication requirements as an impact to their transit of the airspace.</p> <p>Class A mishap and bird strikes are expected to be proportional to the amount of training time in the proposed airspace. Having no PR-4 Low MOA would reduce training flights in a migration flyway. Chaff or flare residual materials would not result in a safety impact, although finding a piece of chaff or flare material on the ground could annoy persons. Flare use would be restricted to above 2,000 feet AGL and discontinued in airspace with very high to extreme fire conditions. Flares would not be expected to increase fire risk. There would be little safety risk from an estimated one dud flare falling within the entire airspace every three years. Large aircraft wake vortex of air turbulence at the wing tips could, in rapid maneuvering and unusual meteorological conditions, damage windmills. Atmospheric conditions and winds such as those common to the ROI cause accelerated vortex decay and dissipation. Most wake vortices would not reach ground level. Wake vortices from low-altitude military training aircraft were identified as a safety concern by crop dusters and other small aircraft operators. A light aircraft could experience the effects of a wake vortex in the unlikely event that the aircraft flew through the trail of a low-altitude training military aircraft. Procedures would be established to communicate with known mining operations regarding potential interference with mining radio frequencies to avoid significant impacts from aircraft electronic emissions inadvertently setting off mining or construction explosives.</p> <p>Startle effects from low-altitude overflight or sonic booms during LFEs could impact the safety of recreationists or ranchers. Low-altitude training flights would overfly any given location under a Low MOA an average of 6 to 9 times per year. The number of actual overflights experienced at any given location could be more or fewer than average. An unexpected low-altitude overflight could have safety impacts to a recreationist on a horse or a rancher working penned cattle. Seasonal or temporary avoidance of sensitive locations areas could reduce potential impacts. Communication regarding seasonal ranching operations and seasonal avoidance areas could reduce impacts to ranching or other sensitive activities.</p>
Air Quality (EIS Section 4.4)	<p>B-1 and B-52 low-level overflight in PR-1B and PR-1D would contribute approximately 2.06 tons of PM₁₀ per year within the Lame Deer nonattainment area and 1.43 tons of PM₁₀ per year within the Sheridan nonattainment area. Emissions would not increase the number of days when the PM₁₀ air quality standard is exceeded. Training aircraft would not produce enough emissions to affect air quality or visibility to nearest PSD Class I areas (Wind Caves National Park and Badlands National Park) or the Northern Cheyenne Reservation. Defensive flare emissions are insignificant. National GHG emissions would be the same as the No-Action Alternative with training aircraft flying essentially the same amount of time to achieve lesser quality training in more distant ranges. Modified Alternative A would not be expected to produce emissions that would significantly affect air quality or visibility within the four-state region.</p>

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Table ES-4. Summary of Impacts by Resource (Page 6 of 18)

<i>Modified Alternative B</i>	<i>Modified Alternative C</i>	<i>No-Action Alternative</i>
<i>Safety, continued</i>		
<p>Modified Alternative B includes the same mitigations to improve flight safety and ground safety effects under PR-2, PR-3, PR-4, and associated Gap MOAs and ATCAAs as explained for Modified Alternative A. PR-4 Low MOA would have low-altitude and startle effects as described for Low MOAs under Modified Alternative A. Under the PR-1 and Gap A ATCAAs, there would be no low-altitude startle effects and few environmental impacts other than very infrequent sonic booms and chaff and flare residual materials. There would be no impacts to mining or construction under the PR-1 ATCAAs.</p>	<p>Modified Alternative C includes the same mitigations to improve flight safety and ground safety effects under PR-1, PR-2, PR-3, and associated Gap MOAs and ATCAAs as explained for Modified Alternative A. There would not be low-flying startle or other environmental effects under the PR-4 and Gap C ATCAAs. Few impacts from infrequent sonic booms and chaff and flare residual materials would occur under PR-4 and Gap C ATCAAs.</p>	<p>For the No-Action Alternative, no changes to Powder River airspace would be made. Low-level overflights would continue in the Powder River A/B MOAs, and communication would continue to be required to identify seasonal avoidance areas and reduce impacts from low-level overflight to ranching, recreation, or other activities.</p>
<i>Air Quality, continued</i>		
<p>Modified Alternative B would not be expected to produce emissions that would significantly affect air quality or visibility within the four-state region. Aircraft training would not impact any federal PSD Class I areas. National 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.</p>	<p>Modified Alternative C would not be expected to produce emissions that would significantly affect air quality or visibility within the four-state region. Potential effects to air quality would be comparable to those described under Modified Alternative A, including low-level overflight in Lame Deer and Sheridan nonattainment areas (PR-1). National GHG emissions would not substantially change from the No-Action Alternative.</p>	<p>There would be no anticipated air quality impacts. Overflights below 3,000 feet AGL would continue within Powder River A/B MOAs.</p>

Table ES-4. Summary of Impacts by Resource (Page 7 of 18)

<i>Environmental Resource</i>	<i>Modified Alternative A</i>
Physical Sciences (EIS Section 4.5)	No construction or direct impact to water or soils is expected. Chaff particles on the surface would be chemically stable and subject to mechanical degradation. The soils' pH is outside the range necessary to degrade the aluminum coating on chaff particles. Chaff and flare residual materials would be inert and not in sufficient quantities to impact physical resources. No impact to soils or water bodies is expected.
Biological Sciences (EIS Section 4.6)	<p>Loud, sudden noises combined with a visual stimulus produce the most intense reaction by animals. Most species within the areas under the proposed PRTC already occupy comparable environments under the Powder River A/B MOAs where low-level overflights occur. Sound exposure levels (SEs) above 90 dB are associated with a number of behaviors such as retreating from the sound, freezing, or a strong startle response. Animals under the newly proposed PR-1, PR-3, PR-4, and associated Gap MOAs would be expected to be temporarily more sensitive to noise due to lower previous exposure. Animals typically exhibit continually decreasing responses to noise exposure, and this suggests habituation as the noise is not perceived as a threat.</p> <p>Minimal to no effects are expected to threatened, endangered, and other special status species including greater sage-grouse or rare migrants, such as the piping plover, least tern, whooping crane, or yellow-billed cuckoo. Any impact to sensitive species would likely be short-term and unlikely to significantly affect the population. Potential bird aircraft strikes could occur in the PR-2 Low MOA where migratory flyways converge. No change in effects to flyways would be expected under PR-4 High MOA. Migratory bird species involved in bird-aircraft strike would be considered an incidental taking and would be exempt from any permitting requirement. An infrequent special status bird-aircraft strike would not be expected to adversely affect any populations.</p> <p>There is no evidence of chaff and flare residual materials or chaff fibers affecting wildlife or domestic animals through ingestion, inhalation, or direct body contact. The potential for fire as a result of Air Force activity is minimal and is not considered a significant risk to wildlife habitat quality or quantity.</p>

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Table ES-4. Summary of Impacts by Resource (Page 8 of 18)

<i>Modified Alternative B</i>	<i>Modified Alternative C</i>	<i>No-Action Alternative</i>
<i>Physical Sciences, continued</i>		
Modified Alternative B effects on physical resources would be the same as those described for Modified Alternative A.	Modified Alternative C effects on physical resources would be the same as those described under Modified Alternative A.	The No-Action Alternative would not affect physical resources under the Powder River airspace.
<i>Biological Sciences, continued</i>		
Modified Alternative B has same effects as Modified Alternative A with exception that the more environmentally diversified area and higher terrain under the PR-1 and Gap A ATCAAs would not be subject to low-level overflights. This would result in no low-altitude noise impacts to species in those areas. The PR-4 Low MOA would be over migratory flyways, and species under the PR-4 Low MOA would be subject to low-level overflights. Impacts to other areas of proposed low-altitude airspace would be as described for Modified Alternative A. Modified Alternative B biological effects could be somewhat greater than Modified Alternative A due to the eastern PR-4 Low MOA.	Modified Alternative C would be expected to have the same effects as those described for Modified Alternative A. The more-agricultural area under the proposed PR-4 and Gap C ATCAAs would not be subject to low-level overflights. This would result in no expected low-altitude startle impacts or bird-aircraft strikes to species in those areas. No effects to flyways would be anticipated under the PR-4 ATCAA. The more environmentally diversified area under the PR-1 MOAs are included in Modified Alternatives A and C. Modified Alternative C biological effects would be expected to be somewhat less than for Modified Alternative A or Modified Alternative B.	Low-level overflight of the Powder River A/B MOAs would continue. Existing biological conditions would continue.

Table ES-4. Summary of Impacts by Resource (Page 9 of 18)

<i>Environmental Resource</i>	<i>Modified Alternative A</i>
<p>Cultural and Historic Resources (EIS Section 4.7)</p>	<p>As of spring 2014, there were 241 National Register of Historic Places (NRHP)-listed sites under Modified Alternative A MOA and ATCAA airspace. Impacts to cultural resources at any given location under the Low MOAs could occur from an estimated average of 6 to 9 low-level overflights per year (at or below 2,000 feet AGL and above 500 feet AGL) or from approximately one sonic boom per LFE day (1 to 3 days per quarter, not more than 10 days per year). Sonic booms are normally experienced as distant thunder, though a boom could result in local areas experiencing an overpressure of 4 psf or greater. Infrequent and random sonic booms are not expected to cause structural damage to historic buildings, but bric-a-brac could be vibrated off shelves and structures subject to a focus boom could be impacted. Even infrequent sonic booms at historic landmarks such as Bear Butte NHL, national monuments such as Devils Tower National Monument or the Little Bighorn Battlefield National Monument, or locations such as the Deadwood Historic District could be seen as intrusions.</p> <p>The Little Bighorn Battlefield National Monument would not have overflights below 5,000 feet AGL during operating hours, or from 1 hour before park opening to 1 hour after park closing or other times as coordinated. The change in setting created by increased noise from 6 to 9 low-level overflights per year and even infrequent sonic booms could be seen as an adverse effect upon traditional cultural properties and cultural landscapes. Visual intrusions can include overflights of a tribal ceremony or residual materials from chaff and flares. Amish and Hutterite settlements may be similarly impacted under the proposed PR-1D MOA. 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. No overflights below 12,000 feet MSL would occur over the Standing Rock, Cheyenne River, or Northern Cheyenne Reservations. Noise analysis demonstrated that although increased noise during overflights could affect historic properties and traditional cultural properties, it would be sporadic and temporary, and avoidance measures over sensitive areas would result in no adverse effect to historic properties or traditional cultural properties on these three reservations. Visual analysis documents the infrequency of visual intrusions in the airspace, and the implementation of horizontal and vertical avoidance areas. No adverse effect would be anticipated to historical properties on the Standing Rock, Cheyenne River, or Northern Cheyenne Reservations from noise or visual intrusions.</p> <p>The change in setting on portions of the Crow Reservation created by increased noise and low-level training overflights has the potential to create an adverse effect. Crow Reservation residents would experience noise and startle effects from an estimated annual average of 6 to 9 low-level overflights at or below 2,000 feet AGL and above 500 feet AGL. The noise, startle effects, and uncertainty of low-level overflights at any given location under an activated low MOA are identified as adverse impacts. An average of one sonic boom per day could be experienced at any given location under the airspace during LFEs, 1 to 3 days quarterly, not to exceed 10 days per year. The Air Force would establish a Government-to-Government communication protocol to identify reasonable avoidance areas for specific time periods, provide advance notice of LFEs, adopt other measures identified in Government-to-Government consultation to reduce intrusive impacts, and adhere to provisions stipulated in a Programmatic Agreement (refer to Appendix N). The Air Force has reasonably determined per 36 CFR 800.6(b)(2), in the light of consultations, that modifying the undertaking and adopting mitigations in the Programmatic Agreement would resolve potential adverse effects to historic properties on the Crow tribal lands.</p>

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Table ES-4. Summary of Impacts by Resource (Page 10 of 18)

<i>Modified Alternative B</i>	<i>Modified Alternative C</i>	<i>No-Action Alternative</i>
<i>Cultural and Historic Resources, continued</i>		
<p>Modified Alternative B has 207 NRHP-listed sites under the Modified Alternative B MOAs/ATCAAs, with impacts similar to those described for Modified Alternative A. The exception is that there would be no overflight below FL180 over the Little Bighorn Battlefield National Monument, Deer Medicine Rocks NHL, the Tongue River Cultural Landscape, the Crow Reservation, or the Northern Cheyenne Reservation. Intrusions could occur to sites under the PR-1 ATCAAs from infrequent sonic booms but not from low-level overflights (below 2,000 feet AGL). There would be an estimated one sonic boom experienced at any given location during LFEs that take place 1 to 3 days per quarter, not to exceed 10 days per year. Effects to Devils Tower National Monument, Bear Butte NHL, the Deadwood Historic District, and other historic locations could occur as under Modified Alternative A. Portions of the Standing Rock and Cheyenne River Reservations would be affected by low-altitude overflights and sonic booms, though populations are not concentrated in areas overflown. Mitigations noted for Modified Alternative A would be applied to appropriate airspaces under Modified Alternative B, although additional consultations would likely be necessary to identify further mitigations. Sonic boom impacts to cultural resources would be as described for Modified Alternative A.</p>	<p>Modified Alternative C has 213 NRHP-listed sites under the MOAs and ATCAAs with impacts similar to those described for Modified Alternative A. Impacts from infrequent sonic booms and low-level overflights would generally be comparable to those described for Modified Alternative A, including impacts to the Little Bighorn Battlefield National Monument and traditional cultural properties under the PR-1 MOAs. Portions of the Crow Reservation could experience an average of 6 to 9 low-level overflights (below 2,000 feet AGL) at any given location. Similar to Modified Alternative A, application of mitigations identified in the Programmatic Agreement would resolve potential adverse impacts on the Crow Reservation. Additionally, the Air Force would avoid adverse effects to the Standing Rock, Cheyenne River, and Northern Cheyenne Reservations by establishing avoidance areas up to 12,000 feet MSL over these reservations. Sonic boom impacts to cultural resources would be as described for Modified Alternative A.</p>	<p>There would be no change to overflight of historic properties within the Powder River airspace. PR-A and PR-B MOAs do not overlie Native American reservations.</p>

Table ES-4. Summary of Impacts by Resource (Page 11 of 18)

<i>Environmental Resource</i>	<i>Modified Alternative A</i>
<p>Land Use (EIS Section 4.8)</p>	<p>Land uses under the existing Powder River airspace have been overflown by a variety of military aircraft for over 20 years. Public concerns during the Draft EIS review included the effect of sonic booms and low-level overflight on the use of the land. Land uses under existing Powder River airspace within Wyoming, South Dakota, and Montana are comparable to those in other portions of the area proposed for the PRTC airspace. Supersonic training would be scheduled only during LFEs 1 to 3 days per quarter, not to exceed 10 days per year and an estimate of one sonic boom could be experienced at any given location per LFE day (not to exceed 10 days per year). Infrequent sonic booms would not be expected to impact land uses.</p> <p>Approximately 2 to 4 percent of the MOAs would be overflown by an aircraft at 2,000 feet AGL or below and above 500 feet AGL on a daily basis. Low-level overflight in Low MOAs could cause individual annoyance and could result in sleep disturbance or temporarily interfere with personal communication. The random nature of the aircraft overflight could result in any given location under Low MOAs being overflown an average of approximately 6 to 9 times per year (any given location could be overflown more or less frequently). Overflight is not expected to impact overall land use although some individuals could be annoyed. Low-level overflight impacts to communities, ranches, and other land uses could be reduced through communication with Air Force to identify temporary or seasonal avoidance areas. Hunting and other recreational land uses coexist with military training in the existing Powder River airspace. Such land uses may be disturbed by infrequent low-level military flights but overall land use is not expected to be impacted. Military training would generally not be scheduled from Friday noon through Monday morning, and weekend recreation would not be expected to be impacted. Land use for energy development would not be impacted, assuming Air Force electronic emissions are coordinated for mine and construction safety. Chaff or flare residual debris, which consists of plastic pieces or wrapping material, would not be expected to affect land uses but could cause annoyance if found.</p>

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Table ES-4. Summary of Impacts by Resource (Page 12 of 18)

<i>Modified Alternative B</i>	<i>Modified Alternative C</i>	<i>No-Action Alternative</i>
<i>Land Use, continued</i>		
<p>Modified Alternative B land use effects would be comparable to those described for Modified Alternative A. Land uses under the PR-1 and associated Gap A ATCAAs would not be subject to low-level overflight. Low MOA airspace would be subject to low-level overflight an average of approximately 6 to 9 times per year. These events and infrequent supersonic events would not be expected to impact land use, though this could be seen as an annoyance to persons using the land.</p>	<p>Modified Alternative C land use effects would be comparable to those described for Modified Alternative A. Areas under PR-4 and associated Gap C ATCAAs would not be subject to low-level overflight. PR-1, PR-2, and PR-3 Low MOAs would be subject to low-level overflight and intermittent sonic booms as described for Modified Alternative A. Land uses would not be expected to be impacted, though frequent low-level overflights and infrequent supersonic events could be seen as an annoyance to persons using the land.</p>	<p>The No-Action Alternative would not change effects on land use under the existing Powder River airspace.</p>

Table ES-4. Summary of Impacts by Resource (Page 13 of 18)

<i>Environmental Resource</i>	<i>Modified Alternative A</i>
<p>Socioeconomics (EIS Section 4.9)</p>	<p>Establishing avoidance areas, reduced B-1 operations from those proposed in the Draft EIS, resizing the MOAs, advanced scheduling, and NOTAMs to activate training airspace are all designed to reduce potential socioeconomic impacts. If all the MOAs were activated at one time for military training, the training could impact an estimated 86 civilian aircraft flights daily under the airspace during Monday through Thursday. If all the MOAs were activated Friday morning, there would be approximately 30 civilian aircraft operations impacted. Impacts could include delay, re-routing, needing to fly VFR in an active MOA, or not being able to transit IFR. IFR arrivals or departures would be given priority in training airspace. Delays of up to 4 hours could be seen as an economic impact at public airports and private airfields under the affected airspace.</p> <p>During LFEs, 1 to 3 days per quarter, not to exceed 10 days per year, the entire airspace would be unavailable for IFR traffic for a period of up to 4 hours per day. LFE civil aviation impacts are estimated to be 78 civilian flights per LFE day.</p> <p>Issuing NOTAMs to announce activation of the MOA airspaces reduces uncertainty for civil aviation. Crop duster aerial applicators unwilling to fly in an active Low MOA could be impacted and affect business decisions and economics. Knowing where and at what altitude a training bomber could fly over an area could reduce uncertainty. Review of assessor procedures and Montana, North Dakota, South Dakota, or Wyoming state laws has shown no requirement for disclosure under a MOA. The existing Powder River MOAs are not considered relevant by assessors in Montana, South Dakota, and Wyoming. No quantifiable property value impacts are anticipated. The proposed PRTC is not expected to impact energy resource development. Time-critical deliveries flying IFR would incur no undue delay during departure and arrival operations to/from airports beneath PRTC. Coordination would be required between mine operators or other blasting operations and the Air Force to ensure that radio frequencies used for mining are not used by Air Force aircraft during training. Modified Alternative A noise level changes in PR-1, PR-3, and PR-4 from a DNL of <45 dB DNL to between <45 dB DNL to 48 dB would not normally be noticeable but could be perceived as an impact, though noise levels would be below the USEPA-identified DNL of 55 dB, which is a noise protective of the public health and welfare.</p> <p>An average of 6 to 9 low-level overflights would be experienced at any given location under a Low MOA. Approximately one sonic boom could be experienced at any given location under the airspace during LFEs, 1 to 3 days per quarter, not to exceed 10 days per year. Sudden noise or visual effects could impact ranching operations, especially when range stock are penned. The public expressed extensive concern about low-level overflight. Low-altitude overflight impacts include uncertainty, startle effects, and noise.</p> <p>The Air Force would continue the process within the Powder River A/B MOAs whereby ranchers have coordinated with the Air Force to identify temporary avoidance areas to reduce the potential for low-altitude aircraft impacts. Sonic booms cannot be directed to avoid a location, although the schedule for LFEs would be published in advance. Chaff and flare impacts would not affect economic activity, although an individual finding a piece of chaff or flare plastic or wrapper residual material could be annoyed. Emergency flight operations such as firefighting and air ambulance would continue under ATC emergency flight procedures. No impact would be expected because the Air Force would expeditiously move training activities outside the required airspace to meet the emergency.</p>

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Table ES-4. Summary of Impacts by Resource (Page 14 of 18)

<i>Modified Alternative B</i>	<i>Modified Alternative C</i>	<i>No-Action Alternative</i>
<i>Socioeconomics, continued</i>		
<p>All mitigations noted for Modified Alternative A would apply to Modified Alternative B. If all the MOAs were activated at one time for military training, the training could impact an estimated 107 civilian aircraft flights daily under the airspace during Monday through Thursday. If all the MOAs were activated Friday morning, there would be approximately 36 civilian aircraft operations impacted. Modified Alternative B low-level impacts would occur under PR-2, PR-3, and PR-4. These impacts would be comparable to those described for Modified Alternative A. Modified Alternative B does not have airspace below FL180 under the PR-1, and Gap A ATCAAs. This means no low-altitude overflights over existing or proposed mining operations in the area. Ranching, tribal, other settlements, and recreational activities in the Billings-Miles City-Gillette triangle are not overflown below FL180. Any given location could experience an average of one sonic boom per LFE day, 1 to 3 days per quarter, not to exceed 10 days per year. During LFEs, there would be an estimated 88 civil operations impacted as described for Modified Alternative A. Impacts to other areas are as described for Modified Alternative A.</p>	<p>All mitigations noted for Modified Alternative A would apply to Modified Alternative C. If all the MOAs were activated at one time for military training, the training could impact an estimated 80 civilian aircraft flights daily under the airspace during Monday through Thursday. If all the MOAs were activated Friday morning, there would be approximately 27 civilian aircraft operations impacted. Modified Alternative C impacts include adverse, low-level effects under PR-1, PR-2, and PR-3 Low MOAs. Modified Alternative C does not have airspace below FL180 under the PR-4 and Gap C ATCAAs. This means that tribal lands, ranching, recreation, and other activities within this area would not experience low-altitude overflights. During LFEs, 1 to 3 days per quarter, not to exceed 10 days per year, an estimated 74 civil operations in MOAs could be expected to be impacted by delays of up to 4 hours. Impacts to other areas are as described for Modified Alternative A.</p>	<p>Under the No-Action Alternative, training would continue as it is now, including low-level overflights in Powder River airspace with an estimated 7 civilian operations impacted daily and no change in socioeconomic effects.</p>

Table ES-4. Summary of Impacts by Resource (Page 15 of 18)

<i>Environmental Resource</i>	<i>Modified Alternative A</i>
<p>Environmental Justice (EIS Section 4.10)</p>	<p>Native Americans typically account for between 86 and 96 percent of the minority populations within the counties in the area of effect. Under PR-1, the minority and low-income population concentrations are on the Northern Cheyenne Reservation and portions of the Crow Reservation. PR-4 overlies portions of the Standing Rock and Cheyenne River reservations, but does not directly overly major population centers on these reservations. FEIS mitigations exclude overflight below 12,000 feet MSL of the Northern Cheyenne, Standing Rock, and Cheyenne River Reservations. Noise conditions under the four reservations would not exceed 48 dB DNL_{mr}. Within PR-1, there are 12,316 persons, of whom 4,560 are minority, 1,391 live below the poverty level, and 2,788 are children. Nearly all of the minority persons potentially affected by low-level overflights reside on portions of the Crow Reservation.</p> <p>The uncertainty of low-level overflights and the average of 6 to 9 low-level overflights of 2,000 feet AGL within 0.25 mile of the aircraft flight track at any given location under the Low MOAs are identified as adverse impacts to the general human population under the proposed Low MOA airspace. The PR-1A, PR-1C, and PR-1D MOAs overlie portions of the Crow Reservation that have a minority population in excess of 50 percent. If there is an adverse impact not adequately or acceptably mitigated, such as by the proposed mitigations in Section 2.3.1, there would be a potential for a disproportionately high and adverse effect on that population (Air Force 1997b).</p> <p>Traditional cultural properties, battlefield sites, archaeological sites, and landscape areas that have been identified as probable sacred sites are beneath the proposed airspace. Throughout the year, many Native Americans visit these and other sacred sites for spiritual ceremonies, vision quests or other cultural activities. If these ceremonies were to occur during the 10 days per year when a sonic boom could be heard or at a location and time when a low-level overflight would occur, an average of 6 to 9 times per year, there would be a startle effect and the potential to disrupt activities at sacred sites and to disturb participating tribal members. Youth populations potentially impacted by low-level overflights are concentrated on the Crow Reservation under PR-1. Reaction to an estimated 6 to 9 low-level overflights per year or a sonic boom during the 10 days per year of LFEs could temporarily disrupt classrooms but would not be expected to have long-term learning or health effects upon children.</p> <p>The Air Force is continuing Government-to-Government consultations and has committed to coordinating flight schedules and avoidance areas with affected tribes to reduce the potential for effects to identified sacred sites or ceremonies at specific times of year. Advance coordination between the Air Force and the tribes on scheduling LFEs could address potential effects from sonic booms on the larger ceremonies conducted under the airspace. Despite these consultations, there is the potential that small, individual, or unidentified ceremonies could be disturbed. The potential exists for such disturbance to be perceived as an adverse effect to these Native American cultural resources.</p> <p>Modified Alternative A could produce annoyance from visual and audible intrusion and annoyance to persons on the Northern Cheyenne, Standing Rock, or Cheyenne River Reservations. The level of effect would not be expected to have a negative effect on human health or the environment that is significant, unacceptable or above generally accepted norms.</p> <p>The mitigations identified in Section 2.3.1 and the Programmatic Agreement adequately mitigate impacts to less than significant under NEPA and resolve or avoid adverse effects under NHPA. Consequently, Modified Alternative A with the specified mitigations would not result in disproportionately high and adverse impacts within the context of environmental justice.</p>

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Table ES-4. Summary of Impacts by Resource (Page 16 of 18)

<i>Modified Alternative B</i>	<i>Modified Alternative C</i>	<i>No-Action Alternative</i>
<i>Environmental Justice, continued</i>		
<p>The western one-third of the Standing Rock Indian Reservation and the northwest corner of the Cheyenne River Reservation would be located beneath the PR-4 Low MOA. An estimated annual average 6 to 9 low-level overflights at any given location could be experienced under the PR-4 Low MOA. Should this alternative be selected, and without changes to flying protocols, areas overflowed on these two reservations would experience a change in the noise and visual setting as described for PR-1 under Modified Alternative A. The minority population under PR-4 is much less than under PR-1. Tribal members of the Cheyenne River Reservation and Standing Rock Reservation who live on the reservations and under the PR-4 Low MOA would be impacted by the uncertainty and actual low-level overflights comparable to the impacts described for the portions of the Crow Reservation under Modified Alternative A.</p> <p>Schools would be considered a compatible land use although infrequent low-level overflights may temporarily disrupt learning. No other health or environmental conditions have been identified that could adversely impact children.</p> <p>Modified Alternative B has no overflight below 18,000 feet MSL (FL180) of the Crow or Northern Cheyenne Reservations, so there would be no anticipated adverse effects to these reservations.</p> <p>The Air Force is continuing Government-to-Government consultations and has committed to coordinating flight schedules with affected tribes to avoid ceremonies at identified sacred sites at specific times of year. Advance coordination between the Air Force and the tribes on scheduling LFEs could address potential effects from sonic booms on the larger ceremonies conducted under the airspace. There is the potential that small or individual ceremonies could be disturbed, and the potential exists for such disturbance to be perceived as an adverse effect to these Native American cultural resources. Under Modified Alternative B there would be adverse effects to low-income and minority populations, as compared to Modified Alternative A or C, where adverse effects would be resolved or avoided under NHPA. Modified Alternative B, though, would not result in disproportionately high human health or environmental effects in the context of environmental justice.</p>	<p>The population on the Crow Reservation under the proposed MOAs would be potentially subject to the uncertainty and an estimated average of 6 to 9 low-level flight operations at any given location annually. The Air Force would continue to work with tribes and agencies to identify and avoid, during specified periods, traditional cultural properties and other cultural sites. Audible or visual intrusion into sacred sites and spiritual ceremonies conducted by Native Americans under the proposed airspace could be perceived as being adversely affected by training overflights at any altitude.</p> <p>Modified Alternative C has no overflight below 18,000 feet MSL (FL180) of the Cheyenne River or Standing Rock Reservations, so there would be no anticipated adverse effects to these reservations.</p> <p>Impacts under the PR-1 MOAs of Modified Alternative C would be effectively the same as those for Modified Alternative A. As discussed under that alternative, the mitigations identified in Section 2.3.1 and committed to in the Programmatic Agreement would resolve or avoid adverse effects under NHPA. Consequently Modified Alternative C with the specified mitigations would not result in disproportionately high and adverse human health and environmental effects in the context of environmental justice.</p>	<p>The Air Force would continue to use the existing Powder River airspace, which does not directly affect Native American reservations or other areas where the populations of concern may be disproportionately represented.</p>

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<i>Environmental Resource</i>	<i>Cumulative</i>
<p>Cumulative (EIS Section 5.0)</p>	<p>Cumulative effects analysis considers the potential incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions, regardless of which agency or person undertakes any such action. Potential cumulative projects in the region of influence include plans and permits to develop mineral reserves, including oil, gas, and coal reserves, and transportation of excavated resources. Other cumulative projects include the recent beddown of an additional B-52 squadron at Minot AFB, airspace actions in North Dakota and Utah, and potential addition of threat emitters and simulated targets to add realism to aircrew training.</p> <p>Airspace, Noise, and Safety</p> <p>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, including impacts to airspace access and impacts to time-sensitive deliveries as a result of delays in transiting an active MOA IFR. Training aircraft would be relocated from the airspace segment to accommodate IFR arrivals and departures to airports under the airspace. Delays up to 4 hours or re-routing could affect time-sensitive deliveries to existing or proposed mining, 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 low-level MOA during any training workday. This low 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 not expected to interfere or cumulatively affect other ongoing or proposed activities. Aircraft training overflight noise is expected to 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 region of influence.</p> <p>Physical Sciences and Air Quality</p> <p>Mineral excavation and transportation line construction 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 resources. No threat emitters are proposed as part of PRTC and 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 that 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.</p>

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Table ES-4. Summary of Impacts by Resource (Page 18 of 18)

<i>Environmental Resource</i>	<i>Cumulative</i>
Cumulative (EIS Section 5.0) (continued)	<p>Natural and Cultural Resources</p> <p>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 region of influence. Some cumulative effects could occur from infrequent low-level overflights in conjunction with extensive planned mineral operations on 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.</p> <p>Land Use, Socioeconomics, and Environmental Justice</p> <p>Substantial construction projects in the region of influence would alter employment patterns in 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. For all environmental resources except civilian air operations and cultural resources to which impacts would occur, the establishment of the PRTC in combination with any other ongoing activity by federal or other agencies or enterprises would not be expected to cumulatively impact environmental resources.</p>

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