

6 SAFETY ASSESSMENT AND MANAGEMENT PROCESS

6.1 Executive Summary

The Austin-Bergstrom International Airport (ABIA) was originally constructed in 1999 and is now the 34th busiest airport for total passengers in the United States. The airport covers 4,242 acres, including two widely spaced parallel runways. The ABIA Barbara Jordan Terminal (BJT) was originally designed to serve 11 million annual passengers, and with the current East Terminal Expansion, this will be increased to 15 million annual passengers. When the East Terminal Expansion opens in early 2019, most of the BJT and other Airport facilities will be at capacity, so the next phase of airport improvements must begin. ABIA served 13.9 million annual passengers in 2017 and has expanded airline services to include additional direct international flights. The ABIA 2040 Master Plan project was initiated to address future airport needs, including managing an increase in travelers, additional domestic and international flights, and new industry technologies.

In accordance with FAA Safety Management System (SMS) guidelines, the FAA determined that a formal Safety Risk Management Panel (SRMP) should be formed to review ABIA's proposed airside improvements associated with the 2040 Master Plan Future Airport Layout Plan (ALP).

As part of a two-stage safety assessment, 17 potential airfield design hazards were reviewed during a formal Safety Assessment (SA) conducted on June 21, 2018. The session was attended by the SRMP comprising of 11 panelists (14 invited) and five observers/non-panel attendees. See Section 6.4.3.2 for additional meeting details including a list of attendees. The SRMP analysis was performed through review of the following items:

- Project drawings
- Safety concerns raised during a kickoff meeting on May 9, 2018 by ABIA and FAA staff
- Runway Incursion Mitigation (RIM) and Geocodes
- Aircraft taxi flows
- Aircraft Rescue and Firefighting (ARFF) response routes and times
- Crossfield taxiway options
- Runway Protection Zone (RPZ), Runway Safety Area (RSA), and Object Free Area (OFA)

Voting Panelists included representatives from:

- ABIA Planning & Engineering
- ABIA Safety & Security
- ABIA Airfield Operations
- ABIA Airfield Project Management
- ABIA ARFF
- FAA Airports Division Program Manager
- FAA Safety Management System (SMS)
- FAA Certification Inspection Representatives
- FAA Air Traffic Control Tower (ATCT)
- Airline Pilots Association (ALPA)/Delta Airlines pilot representative

The purpose of the review was to discuss identified potential hazards and existing controls, and the potential risks of each hazard, with respect to specific changes to the ABIA airside geometry. After discussing all documented hazards, existing controls, and additional safety controls, the SRMP concluded that three hazards were duplicates and four hazards were related to airport operations and not ALP revisions. All existing and additional outlined hazard controls were acceptable; however, eight of the hazards (Hazards 3, 4, 5, 6, 7, 9, 10, 11) required further airfield modifications as documented in **Appendix 6.1**, **Appendix 6.2**, and updated drawings provided in Section 6.4 and **Appendix 6.5**.

A summary of the total number of SRMP hazards reviewed are shown in **Table 6.1-1**.

Table 6.1-1: SRMP Hazards

DESCRIPTION	NUMBER OF HAZARDS
Hazards identified as part of the initial review and kick-off meeting	10
Additional hazards identified during the SRMP	7
Remaining hazards	10
Hazards risk ranked (severity and likelihood)	0
Hazards for additional mitigation and monitoring	0

6.2 FAA SAS-1 Signatures and Approvals

Exhibit 6.2-1 presents FAA and SRMP approvals of the formal FAA Safety Risk Management Process outlined in FAA’s Order 5200.11. The SAS-1 forms originate in the FAA’s Office of Airports and are included to demonstrate final signoff and approval of the SRMP Report.

Exhibit 6.2-1: FAA and SAS Panel Approvals (continued page 1 of 3)

Airports Safety Risk Management (SRM)		Page 1
Safety Assessment Screening for Projects (SAS-1)		
1. Project Location		
a. Locid	AUS	SMS ID: ASW-652A-385
b. Airport	AUSTIN-BERGSTROM INTL	
c. City	AUSTIN	
d. State	TX	
e. Sponsor	City of Austin	
f. Service Level	P M	
g. CFR 139 Date	06/1997	
h. CFR 139 Type	I D S	
2. Describe the Proposed Action (Include any identifying number or date of submission (e.g., date of ALP))		
Proposed airside revisions associated with the 2040 Master Plan Future Airport Layout Plan (ALP).		
3. Approval Action Type/Triggering Event (Select all that apply)		
a. <input checked="" type="checkbox"/> Airport Layout Plan (ALP) (new or update) b. <input type="checkbox"/> Airport construction review, coordination, and approval c. <input type="checkbox"/> Other airport changes not involving construction d. <input type="checkbox"/> Part 150 Noise Compatibility Program (measures that may affect aviation safety)		
4. Project Screening		
a. <input checked="" type="radio"/> A preliminary analysis indicates that an SRM review is required (Complete pages 2 & 3) b. <input type="radio"/> The proposal does not require further SRM review (Discard pages 2 & 3)		
Prepared by: Marcelino Sanchez	Signature: 	
Office: ASW-652A	Date: <u>9 AUG 2018</u>	
Title: Civil Engineer		

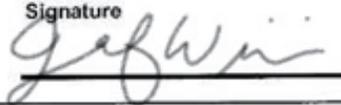
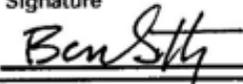
FAA Form 5200-8 (8-10)

Exhibit 6.2-1: FAA and SAS Panel Approvals (continued page 2 of 3)

Safety Assessment Screening for Projects (SAS-1)	Page 2	
SMS ID: ASW-652A-385		
5. Was the proposal reviewed by OE/AAA?		
a. <input type="radio"/> Yes <input checked="" type="radio"/> No (Skip to block number 6) b. Case Number: _____ c. Determination Date: _____ d. <input type="checkbox"/> OE/AAA review comments attached. e. <input type="checkbox"/> OE/AAA review indicates an objection to the proposal.		
6. A review of the proposal indicates the following: (Select all that apply)		
ARP System Safety Impact Checklist a. <input type="checkbox"/> The Proposed Action may deviate from applicable FAA standards b. <input checked="" type="checkbox"/> The Proposed Action may increase aviation safety risks, with existing controls in-place c. <input checked="" type="checkbox"/> The Proposed Action may adversely affect aviation operations with existing controls in-place d. <input type="checkbox"/> The Proposed Action may affect navigational aids e. <input type="checkbox"/> The Proposed Action may impact TERPS surfaces f. <input type="checkbox"/> Other Safety Impact: _____		
SRM Panel g. <input type="checkbox"/> The OE/AAA review indicates that an SRM panel is required. h. <input checked="" type="checkbox"/> The Safety Impact Checklist indicates that an SRM panel is required _____		
7. SRM Finding of No Increased Risk		
<i>The proposed action was reviewed with respect to known hazards and existing controls. Potential risks were evaluated with appropriate FAA personnel, airport operations, and other aviation officials with safety responsibilities. Based on this review, existing controls (including standard NOTAMS) will eliminate the probability of new risks being introduced into the aviation system. An SRM panel is not required.</i>		
Name and Title	Date	Signature
N/A	_____	_____
8. SRM Panel and Findings		
a. Report date: <u>6/21/2018</u>		
b. <input type="checkbox"/> Report attached		
9. Initial Risk Determination		
a. <input checked="" type="radio"/> Low initial Risk. Attach supporting documentation. b. <input type="radio"/> Medium Initial Risk. Attach detailed explanation of hazards. c. <input type="radio"/> High Initial Risk. Attach detailed explanation of hazards. (Requires review by ARP Safety Review Board)		
10. Final Risk Determination		
a. <input checked="" type="radio"/> Low Risk. Attach detailed explanation of mitigating measures, including NOTAM requirements. b. <input type="radio"/> Medium Risk. Attach detailed explanation of mitigating measures, including NOTAM requirements. c. <input type="radio"/> High Risk. The project proposal with risk mitigation in place is unacceptable.		

FAA Form 5200-8 (8-10)

Exhibit 6.2-1: FAA and SAS Panel Approvals (continued page 3 of 3)

Safety Assessment Screening for Projects (SAS-1)					Page 3
SMS ID: ASW-652A-385					
11. SRM Panel Members and Certification					
<i>We certify that we have reviewed the project documentation and have fully considered the potential hazards (and any proposed mitigation measures) before reaching this determination. Dissenting opinions concerning the determination are included in the report.</i>					
Name	Organization	Title	Date	Signature	
Jennifer Williams	ABIA Planning & Engineering	Capital Improve Prg Mgr	8-20-2018	Email Approval Received	
Paul Greiner	ABIA Safety & Security	Mgr Dept. Occup. Safety	8-16-2018	Email Approval Received	
Scott Madole	ABIA Airfield Operations	Airfield Ops Manager	8-20-2018	Email Approval Received	
Ellen Brunjes-Brandt	ABIA Department of Aviation	Project Manager	8-20-2018	Email Approval Received	
Captain Frank Marek	ABIA ARFF	Battalion Fire Dept	8-18-2018	Email Approval Received	
Marcelino Sanchez	FAA SW Region, Airports Div	Program Manager	8-9-2018	Signature Acceptance Received	
Eric Swann	FAA SW Region, Airports Div	Regional SMS Specialist	8-13-2018	Email Approval Received	
Michael Fray	FAA SW Region, Airports Div	Airport Cert Safety Insp	8-23-2018	Email Approval Received	
Nancy De La Cruz	FAA Air Traffic Control Tower	ATCT Manager	9-7-2018¶	Email Approval Received¶	
Jeff Stein	FAA Air Traffic Control Tower	ATCT Support Specialist	8-29-2018¶	Email Approval Received¶	
<u>Robert (Rio) Torn</u>	<u>Airlines Pilots Association Int'l</u>	<u>Air Traffic Services Group</u>	8-17-2018	Email Approval Received	
12. Airport Certification and Acceptance					
As a duly authorized representative of the sponsor of the airport identified above, I hereby certify that I have reviewed and understand the hazards and mitigation measures identified in the attached documentation. I further certify that I understand it is our legal duty, as sponsor, to ensure that any and all airport-related mitigation measures are fulfilled and documented in a timely manner. Any such commitments on our part represent an obligation under our Federal grant assurances, regardless of whether the FAA participates in the funding of any part of the Proposed Action. Nothing in the FAA's review may be deemed as relieving the sponsor of its legal obligations as owner and operator of the airport.					
Name a	<u>Jennifer C. Williams, P.E.¶</u>	Date	<u>9-10-2018¶</u>	Signature	
	<u>Capital Improvement Program Manager¶</u>				
13. FAA SRM Approval					
Hazards were identified and analyzed using standard procedures and processes in accordance with FAA Order 5200.11. Mitigation measures, including draft NOTAM requirements, if necessary, are attached and are included with the formal FAA project approval action. These measures will help ensure safety levels are maintained at acceptable levels both during and after the proposed construction and non-construction airport changes.					
Name and Title	<u>Ben Guttery, Mgr Texas ADO</u>	Date	<u>8/30/18</u>	Signature	
					

6.3 Master Plan Overview and Proposed Changes

The ABIA 2040 Master Plan is a vision for the future of ABIA. This is a new Master Plan that will address emerging aviation technologies, future facility needs, and the cost of anticipated development over the next 20-year period. Since the Airport's opening in 1999, passenger growth has tripled with an average annual growth rate of 3.9 percent through 2017. The national average annual passenger growth rate is 2.8 percent (2011-2017). The passenger growth is anticipated to go from 13.9 million annual passengers (MAP) in 2017 to approximately 31 MAP in 2037.

The 2040 Master Plan objectives are to address the near-term (10 years) and long-term (20 years) airport expansion requirements. It will also need to address the following:

- Maintain or increase the number of available gates during construction of the next phase.
- Minimize disruption to passengers and aircraft operations during construction.
- Maintain or enhance passenger's experience.
- Invest in the near-term, while maintaining flexibility to adapt to industry trends and new technologies.

6.3.1 High-level Schedule

The ABIA 2040 Master Plan will be developed based on Planning Activity Levels (PALs) which correspond to specific passenger, aircraft, or cargo activity during the 20-year planning period. **Table 6.3-1** provides two PALs (10-years and 20-years) that will initiate specific development projects at ABIA.

Table 6.3-1: Planning Activity Level Schedule

	PAL 3	PAL 4
Million Annual Passengers	20-22	27-31
Annual Aircraft Operations	247,800-287,200	296,500-426,600
Tons of Enplaned Cargo	129,800-513,500	161,000-1,500,000

Source: Landrum & Brown Aviation Forecast analysis

The wide range in aircraft operations and cargo tonnage is dependent upon the introduction of e-commerce at ABIA at or around the 2027 time period.

6.3.2 Current State

The current ABIA service area covers 21 counties around the Austin Metropolitan Area. The ABIA campus includes the following and is shown in **Exhibit 6.3-1**.

- A total of 4,242 acres of land
- Two all-weather runways in the 17-35 orientation
- A total of 36 aircraft gates (including the South Terminal and the 90,000 square foot BJT East Terminal Expansion)
- Two FBO's (Atlantic and Signature)
- A new 49-acre Million Air Fixed Base Operator (FBO) in 2019
- A 27-acre Cargo facility (227,000 square feet of building space)
- A total of 13,882 Public Parking spaces (including new Garage #3)
- A new Airport Administration building
- A new Airport Maintenance facility (16.4 acres)

6.3.3 System Description and Proposed Changes

The ABIA 2040 Master Plan proposes the following design criteria and major airside projects:

- The new Midfield Concourse changes the airfield taxilane/taxiway geometry and aircraft taxi flows around the ramp area and between the parallel runways.
- The future number of gates will total 64.
- The future number of Remain Overnight (RON) hardstand positions will total 74.
- The future airfield design will accommodate the design aircraft (B-787-800) which is in the Aircraft Design Group V (ADG-V).
- The airfield will require an additional runway to accommodate the increase in passenger and aircraft traffic (post 20-year time period; however, its location was considered in this master plan).
- The new airport maintenance facility location will change airside service roadway traffic patterns.
- The Taxiway A centerline separation from Runway 17L-35R is 400 feet (ADG-III) and does not comply with current FAA ADG-V separation criteria of 500 feet.
- Runway 17L-35R cannot be used if an ADG-IV or larger aircraft is on Taxiway A.
- The need for an ADG-V crossfield taxiway.
- The requirement to maintain the existing Air Traffic Control Tower and the deicing containment facility.

Exhibit 6.3-1: ABIA Existing Airfield Layout

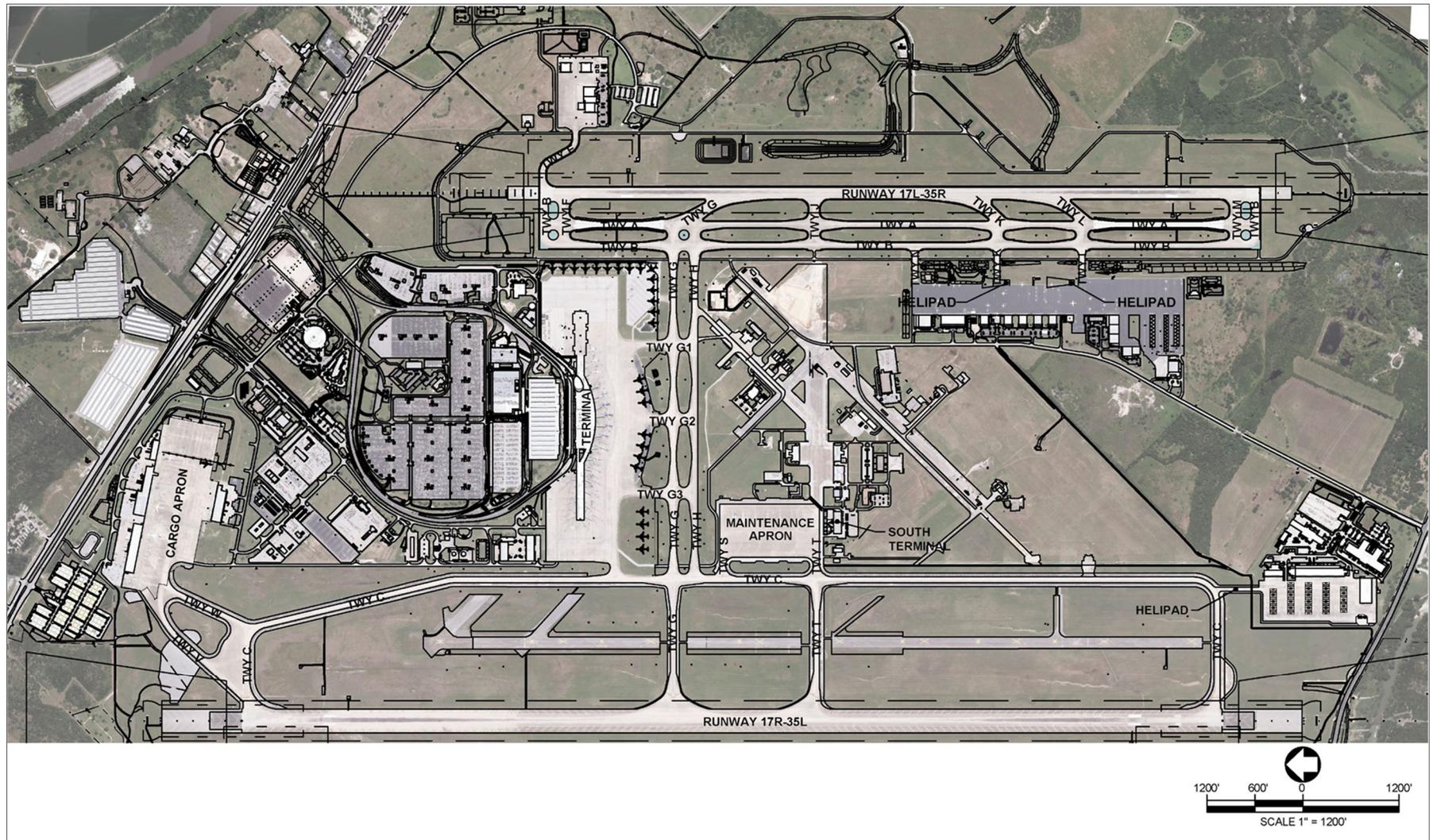


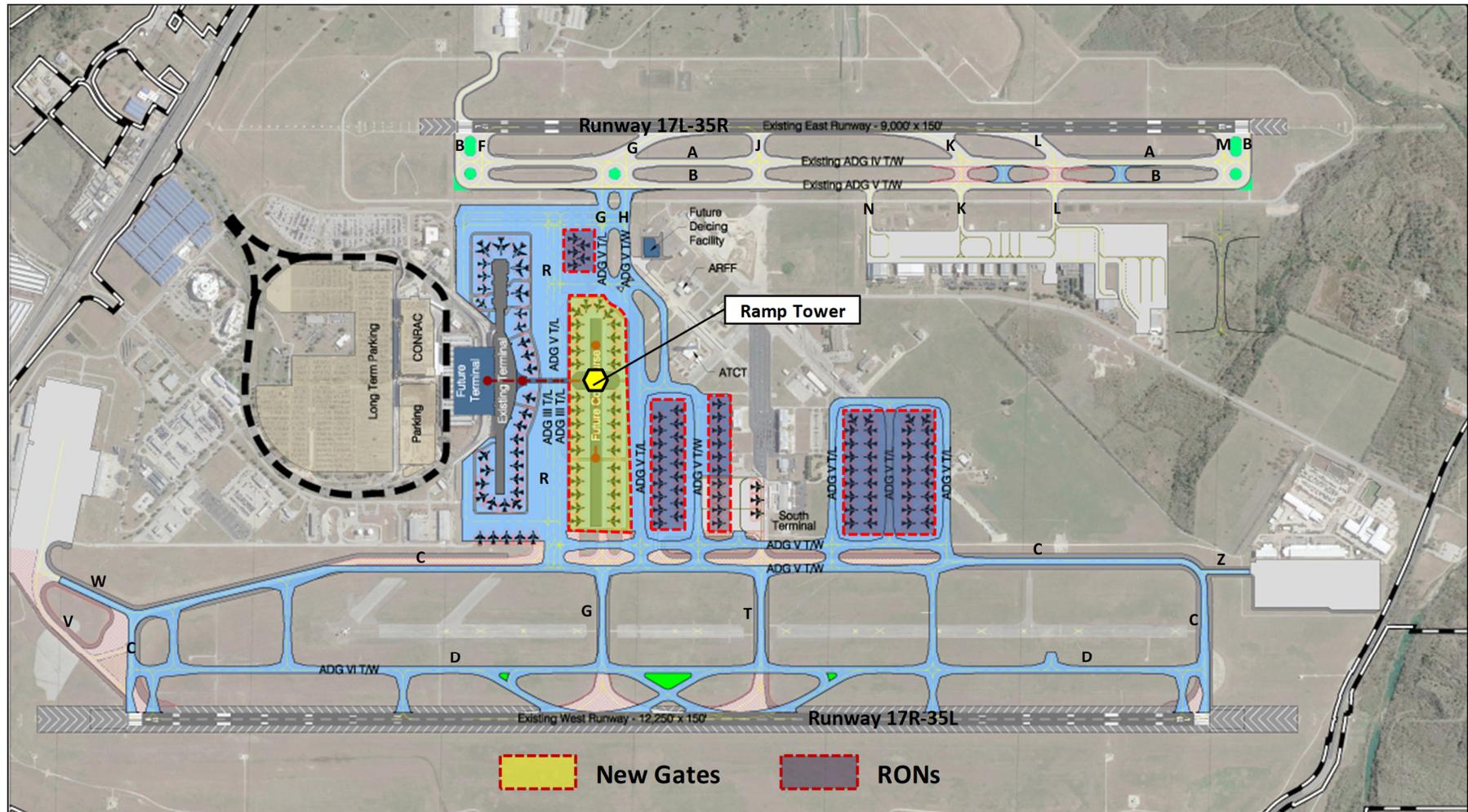
Exhibit 6.3-2 illustrates the proposed airfield layout for this 2040 Master Plan expansion program that was reviewed during the June 21st meeting. The scope identified for the Safety Assessment (SA) was bounded (restricted) by review of airside changes relating solely to the proposed future Airport Layout Plan (ALP). For example, hazards associated with operational or design concerns were not considered part of the SRMP review. However, identified design and construction concerns and operational challenges were documented for future consideration.

Exhibit 6.3-2 also shows the proposed 2037 airfield layout for the SRMP review and comment. This proposed airfield includes the following:

- New parallel Taxiway D on the east side of Runway 17R-35L
- Runway 17R-35L Rapid Exit Taxiways (RETs)
- Connector taxiways to the terminal/concourse ramp area
- The new 32 gate Midfield Concourse
- The new RON hardstand positions
- Ramp taxilanes
- ADG-V crossfield taxiway
- Relocation of Taxiway K and L connectors

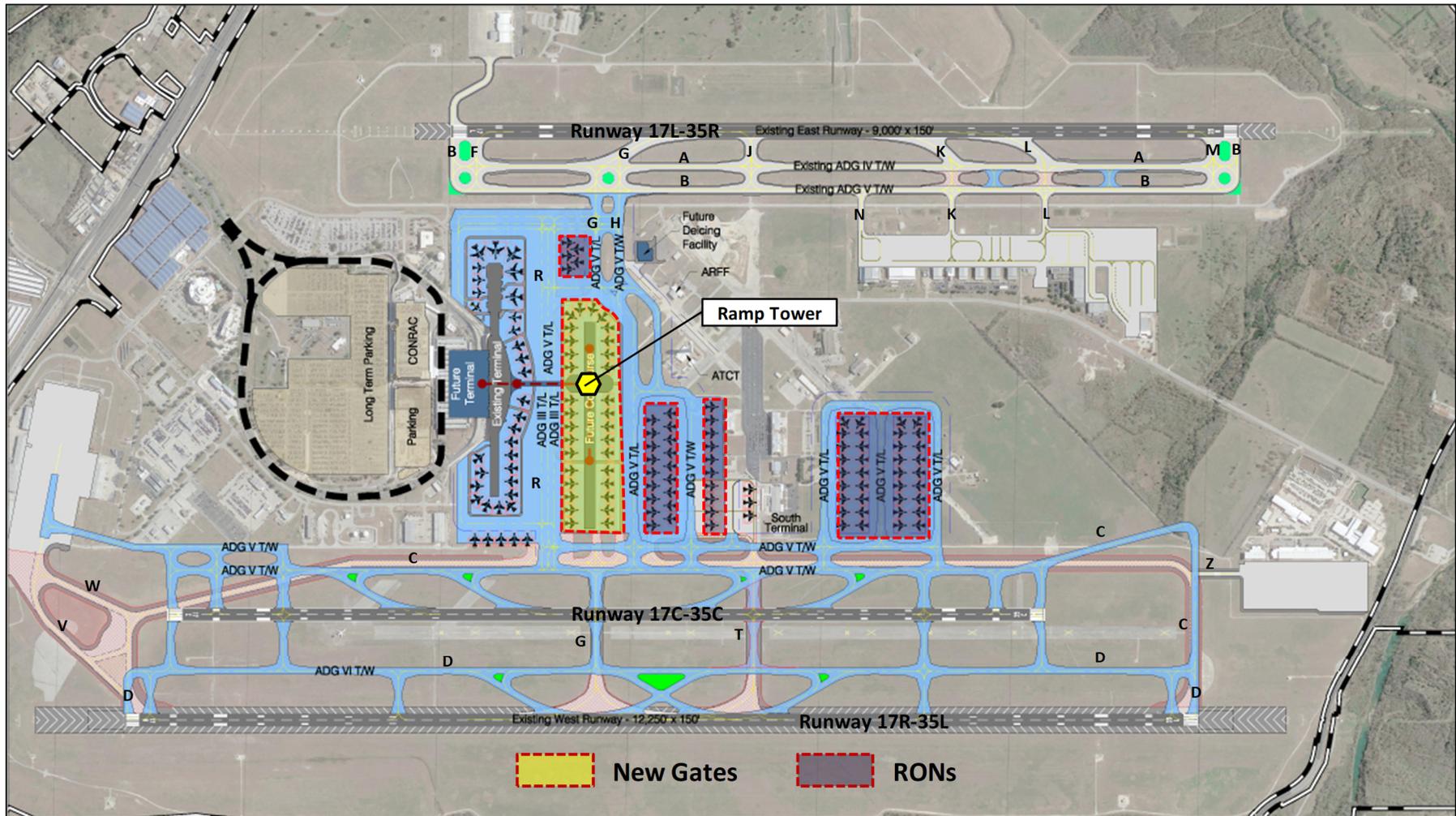
Exhibit 6.3-3 shows the proposed post-2037 new Runway 17C-35C and its associated RETs and parallel taxiway system that was also reviewed during the June 21st meeting. This new runway is not required within this 20-year Master Plan time horizon; however, it has been reviewed to assure there are no conflicts with the proposed 20-year development plan that would preclude construction of this runway in the future.

Exhibit 6.3-2: Proposed Airfield Layout (2037)



Source: Landrum & Brown analysis

Exhibit 6.3-3: New Runway 17C-35C Layout



Source: Landrum & Brown analysis

6.4 Hazard Identification and Review Process

This section describes the SRMP approach used to assess and document safety areas, potential hazards, existing controls, mitigations, risk ranking, actions, and recommendations. The ABIA 2040 Master Plan/ALP hazard review process included multiple ABIA, FAA, Landrum & Brown (L&B) Master Plan Team (Planning Team), and Safety Risk Management Consultant (Consultant Team) assessment, review, and documentation steps including:

- 1) Compiling and reviewing safety assessment areas
- 2) Listing hazards, worst case outcome, and existing controls
- 3) Conducting two safety reviews (an initial kickoff meeting and a formal SRMP Session)
- 4) Documenting SRMP discussions and recommendations for hazards and controls

A description of each process is presented in Sections 6.4.1 through 6.4.4.

6.4.1 Safety Assessment Areas

The Planning Team and Consultants jointly compiled a list of key Safety Assessment Areas to document and identify potential hazards. The Safety Assessment Areas included the following key topics for review:

- Runway and Taxiway Geometry including Runway Incursion Mitigation and Geometry Codes (Geocodes)¹
- Runway Protection Zone, Runway Safety Area, and Object Free Area
- Ramp Access Routes and Configurations
- ARFF Response Routes and Times
- Air Traffic Control Visibility and Potential Line of Sight Constraints
- Vehicle Service Road (VSR) Locations and Configurations
- New and Existing Hot Spots
- Overall Airfield Areas including north and south flows

A comprehensive list of all documented Safety Assessment Areas is presented in Appendix 6.2 and includes additional areas introduced by FAA and ABIA staff members, actions, responses from the Team, references to hazards, and resolutions. The Safety Assessments Area document was tracked and revised throughout the SA process providing updates, actions, and references to drawing changes and decisions. Note that not all safety assessment areas raised were related to the 2040 Master Plan/ALP SRM review; however, all concerns and responses have been retained for reference purposes.

¹ https://www.faa.gov/airports/southwest/airports_news_events/2018_conference/media/session-c-runway-incursion-mitigation.pdf

6.4.2 Hazard Compilation

A list of ten potential hazards and existing controls was developed in conjunction with the Safety Assessment Areas. The list of hazards evolved throughout the review process and additional controls were developed and presented between the kickoff meeting and the SRMP session. The list of ten hazards was presented to the SRMP for additional discussion, SRMP expertise, and perspectives. Seven additional hazards were identified during the SRMP session and are included in the final hazard worksheet located in Appendix 6.1. Within the SRMP review process, a total of seven hazards were removed from consideration; the SRMP concluded that three hazards were duplicates and four hazards were related to operations and not part of the proposed ALP revisions. All remaining hazards were considered acceptable and sufficiently managed by documented controls; however, eight of the hazards (Hazards 3, 4, 5, 6, 7, 9, 10, and 11) required further airfield modification and revised drawings as documented in Appendix 6.1 and Appendix 6.2 and are described in Section 6.4.4.

6.4.3 Safety Reviews

In addition to internal Planning and Consultant Team reviews, two formal safety assessments were performed.

6.4.3.1 Kickoff Meeting

An initial Kickoff Meeting was held on May 9, 2018 and included a smaller team of FAA, ABIA, and L&B Planning Team experts that reviewed the Safety Assessment Areas, the airfield drawings, and the initial list of potential hazards. Information collected from the kickoff meeting aided the Team in refining drawings and supplementing the list of Safety Assessment Areas. These documents were updated and prepared for the SRMP Session.

6.4.3.2 SRMP Session

The formal SRMP meeting was held on June 21, 2018, and included additional representatives forming the SRMP for hazard assessment, risk ranking, and SRMP Report review and sign off. Additional description of each review meeting is provided in the following sections.

6.4.3.3 SRM Kickoff Review Meeting

To proactively identify hazards associated with the ABIA Master Plan project in advance of the SRMP, a kickoff meeting was conducted at the ABIA Planning & Engineering (P&E) offices, Conference Room 157 on May 9, 2018. Meeting attendees included representatives from ABIA, FAA, and project team members. The 2.5-hour SRM kickoff meeting offered the participating review member's time to consider initial hazards and prepare specific drawings and examples prior to discussions during the SRMP Session. By compiling documentation in advance of the SRMP session, the kickoff meeting intent was to improve the safety assessment process and ensure that panelists could make knowledgeable and informed decisions on hazards, controls, and risks.

The kickoff meeting participants provided project insights relating to potential airside planning hazards and the Team documented planning controls. In addition to identified hazards, the kickoff meeting incorporated review of the Safety Assessment Areas (See Appendix 6.2). Concerns regarding safety and hazards were discussed and additional controls were added as solutions were designed, developed, and incorporated into drawings.

The meeting included the following objectives:

- Review and confirm the SRMP Process with FAA
- Assess and discuss an initial list of potential 2040 Master Plan ALP hazards and Safety Assessment Areas
- Identify documentation required for the SRMP to conduct an informed hazard assessment
- Discuss the SRMP session objectives, processes, attendees, alternates, and content
- Determine SRMP session date, schedule, and next steps

The kickoff meeting was accomplished in collaboration with ABIA, FAA, and Master Plan Team subject matter experts including the participants listed in **Table 6.4-1**. Also, see **Appendix 6.3** for the kickoff meeting sign-in/sign-out sheet.

Table 6.4-1: ABIA Master SRMP Plan Kickoff Meeting Attendees

	ATTENDEE	ROLE/POSITION	EMAIL/CONTACT INFORMATION	REPRESENTING
1.	Eric Swann	Regional SMS/NAS Integration Specialist	eric.swann@faa.gov	FAA Southwest Region, Airports Division (Phone)
2.	Mike Fray	Airport Certification Safety Inspector	Michael.Fray@faa.gov	FAA Southwest Region, Airports Division (Phone)
3.	Marcelino Sanchez	Program Manager	Marcelino.Sanchez@faa.gov	FAA Southwest Region, Airports Division (Phone)
4.	Jeff Stein	FAA, ATCT Support Specialist	jeffrey.c.stein@faa.gov	FAA Air Traffic Control Tower (ATCT)
5.	Nancy De La Cruz	FAA, ATCT Manager	Nancy.delacruz@faa.gov	FAA Air Traffic Control Tower (ATCT)
6.	Jennifer Williams	Capital Improvement Program Manager	Jennifer.williams@austintexas.gov	ABIA Planning & Engineering
7.	Scott Madole	Airfield Operations Manager	Scott.madole@austintexas.gov	ABIA Airfield Operations
8.	Shane Harbinson	Planning & Engineering Assistant Director	Shane.harbinson@austin.texas.gov	ABIA Planning & Engineering
9.	Joe Mercer	Project Management Engineering Technician	Joseph.mercer@austintexas.gov	ABIA Planning & Engineering
10.	Loren Lintner	Airport Duty Manager	Loren.lintner@austintexas.gov	ABIA Airfield Operations
11.	Lyn Estabrook	Project Manager Supervisor	Lyn.eastabrook@austintexas.gov	ABIA Planning & Engineering
12.	Robert Mercado	Project Manager	Robert.mercado@austintexas.gov	ABIA Planning & Engineering
13.	Russell Blanck	MP Project Manager	rblanck@landrum-brown.com	Landrum & Brown
14.	Joanne Landry	SRMP Facilitator	joanne@landryconsultants.com	Landry Consulting
15.	Tim O'Krongley	Aviation Planning Director	TEOkrongley@garverUSA.com	Garver
16.	Nathan Polsgrove	Senior Aviation Planner	NRPolsgrove@GarverUSA.com	Garver

6.4.3.4 Safety Assessment/SRM Panel Session

After completion of the kickoff meeting, the Master Plan Team updated documentation including project drawings, presentation slide descriptions of the five-step SRM Process, project background and research information, and distributed the Safety Assessment Areas to the SRMP members for review prior to the SA.

The one-day SRMP took place at the ABIA P&E Offices in Conference Room 174 on June 21, 2018 (8:30 am to 3:15 pm). The session was attended by a panel of experts comprising 11 panelists (14 invited) and five observers/non-panel attendees. The SRMP analysis was performed through review of the following items:

- Project drawings
- Safety concerns raised during the kickoff meeting on May 9, 2018 by ABIA and FAA staff
- RIM and Geocodes
- Aircraft taxi flows
- ARFF response routes and times
- ADG-V crossfield taxiway options
- Runway Protection Zone, Runway Safety Area, and Object Free Area

Voting Panelists included representatives from:

- ABIA Planning & Engineering
- ABIA Safety & Security
- ABIA Airfield Operations
- ABIA Airfield Project Management
- ABIA ARFF
- FAA Airports Division Program Manager
- FAA Safety Management System
- FAA Certification Inspection Representatives
- FAA Air Traffic Control Tower
- Airline Pilots Association/Delta Airlines pilot representative

Table 6.4-2 lists the identified SRMP panelist and project team members and their affiliations. Also, see **Appendix 6.4** for a complete list of session attendees.

Table 6.4-2: ABIA Master Plan SRMP Panelists and Project Team

	ATTENDEE	ROLE / POSITION	EMAIL / CONTACT INFORMATION	REPRESENTING
1.	Jennifer Williams	Capital Improvement Program Manager	Jennifer.williams@austintexas.gov	ABIA Planning & Engineering
2.	Paul Greiner	Manager Dept. of Occupational Safety	Paul.greiner@austintexas.gov	ABIA Safety & Security
3.	Scott Madole	Airfield Operations Manager	Scott.madole@austintexas.gov	ABIA Airfield Operations
4.	Ellen Brumes-Brandt	Project Manager	Ellen.brandt@austintexas.gov	ABIA Department of Aviation
5.	Captain Frank Marek	ARFF Battalion Fire Dept. (2 nd in command)	Franklin.Marek@austintexas.gov	ABIA ARFF
6.	Marcelino Sanchez	Program Manager	Marcelino.Sanchez@faa.gov	FAA Southwest Region, Airports Division
7.	Eric Swann	Regional SMS/NAS Integration Specialist	eric.swann@faa.gov	FAA Southwest Region, Airports Division
8.	Michael Fray	Airport Certification Safety Inspector	Michael.Fray@faa.gov	FAA Southwest Region, Airports Division
9.	Nancy De La Cruz	FAA, ATCT Manager	Nancy.delacruz@faa.gov	FAA Air Traffic Control Tower
10.	Jeff Stein	FAA, ATCT Support Specialist	jeffrey.c.stein@faa.gov	FAA Air Traffic Control Tower
11.	Robert (Rip) Torn	Air Traffic Services Group	Rip.TOrn@alpa.org	Airlines Pilots Association International
12.	Russell Blanck	MP Project Manager	rblanck@landrum-brown.com	Landrum & Brown
13.	Joanne Landry	SRMP Facilitator	joanne@landryconsultants.com	Landry Consulting
14.	Derek Cone	Co-SRMP Facilitator	derek.cone@aerosys.net	AERO Systems
15.	Tim O'Krongley	Aviation Planning Director	TEOkrongley@garverUSA.com	Garver
16.	Nathan Polsgrove	Senior Aviation Planner	NRPolsgrove@GarverUSA.com	Garver

The SRMP followed the standard 5-step formal SRM process as outlined below:

- 1) **Define the System:** Identify all related systems and include operational, procedural, organizational, and environmental factors as well as physical characteristics.
- 2) **Identify the Hazards:** Identify any condition or situation that could create adverse safety consequences for the airport, users, and surrounding community. Include operational, personnel, organizational, and environmental factors.
- 3) **Analyze the Risk:** For each hazard, identify the worst-case outcomes that are reasonable or credible within the operational lifetime of the system. Review consequences and existing controls. Determine likelihood and initial risk level.
- 4) **Assess the Risk:** Severity and likelihood are used to determine associated risk using a risk matrix as shown in **Exhibit 6.4-1**.
- 5) **Mitigate the Risk:** Identify actions, controls, mitigations or other measures to reduce the likelihood of consequences associated with a hazard. Reduce the predicted risk level to medium or low.

After a thorough review of the project drawings the SRMP panelists, as subject matter experts, provided project industry knowledge, technical and regulatory expertise, and operational perspectives relating to the compiled safety assessment areas and ten initial hazards associated with the proposed and revised airside geometry. Each safety assessment area, potential hazard, existing controls, and possible effect were discussed and documented by the facilitation team. The Panelists assessed existing controls, suggested additional or revised controls, and determined if documented controls were sufficient to manage the hazard.

The SRMP was asked to identify additional hazards and perform a risk assessment (if needed). Seven additional hazards were identified; however, after reviewing the hazard list, the SRMP concluded that three hazards were duplicates and four hazards were related to operations and not to ALP revisions. All existing and additional outlined hazard controls were acceptable; however, eight of the hazards (Hazards 3, 4, 5, 6, 7, 9, 10, and 11) required further airfield modifications as documented in Appendix 6.1 and Appendix 6.2.

The SRMP agreed that if existing documented controls were deemed ineffective, the SRMP would analyze and assess risks using the FAA Order 5200.11, Change 2, Appendix C, Risk Matrix (see Exhibit 6.4-1), and develop appropriate mitigations following the standard SRM five-step process described above. After careful consideration, the SRMP determined that all identified hazards were sufficiently controlled and would not require a risk ranking exercise. The hazard worksheet in Appendix 6.1 reflects this outcome and no risk ranking information is present in the hazard worksheet's columns 8 through 15.

Exhibit 6.4-1: FAA Risk Matrix used for SRMP Session

Severity \ Likelihood	Minimal 5 Negligible safety effect	Minor 4 <ul style="list-style-type: none"> Physical discomfort to persons Slight damage to aircraft / vehicle 	Major 3 <ul style="list-style-type: none"> Physical distress or injuries to persons Substantial damage to aircraft / vehicle 	Hazardous 2 Multiple serious injuries; fatal injury to a relatively small number of persons (one or two); or a hull loss without fatalities	Catastrophic 1 Multiple fatalities (or fatality to all on board) usually with the loss of aircraft / vehicle
Frequent A Expected to occur routinely					
Probable B Expected to occur often					
Remote C Expected to occur infrequently					
Extremely Remote D Expected to occur rarely					
Extremely Improbable E So unlikely that it is not expected to occur, but it is not impossible					*

Note: *Unacceptable with Single Point and / or Common Cause Failures

Source: FAA Order 5200.11 Appendix C Change 2

As an outcome of the SRMP session, various actions, reviews, and revisions were agreed and documented within the Safety Assessment Areas (see Appendix 6.2) and Hazard Worksheet (see Appendix 6.1). The SRMP session attendees were assigned with completing ALP-related tasks to be included in this SRMP Report. Other actions and recommendations were included for future phases of the design, construction, and operations aspect of the ABIA airside projects. Section 6.4.4 provides a description of each hazard, discussions relating to controls, actions, and final determination of the hazard.

6.4.4 Hazard and Control Determination

The SRMP reviewed the ten hazards resulting from the kickoff meeting and subsequent review, and seven additional potential hazards identified during the SRMP. Hazards are described below including key discussions, dissensions (none occurred), and associated action items resulting from the SRMP review. Note that all the hazards were reviewed and discussed; however, additional research was conducted and revisions made to drawings prior to the final SRMP Report. Results of the research and revisions are included in the hazard worksheet and associated controls. See below for relevant narrative discussions and Appendix 6.1, Hazard Worksheet and Appendix 6.2, Safety Assessment Areas.

6.4.4.1 Hazard #1 – Taxiway Geometry

Existing Taxiways K and L have direct access from the General Aviation ramp to Runway 17L-35R which, per FAA and identified Geocode #8 “Taxiways that lead directly from an apron to a runway are not recommended. These configurations may create the false expectation of a parallel taxiway prior to the runway which could lead to confusion and runway incursions.”

Action: To resolve this hazard, the proposed solution is to modify the Taxiways K and L access into the General Aviation/Fixed Base Operator (GA/FBO) ramp area (see Proposed New Airfield Layout in **Exhibit 6.4-2**). With the applied solution, this potential hazard was eliminated.

6.4.4.2 Hazard #2 – Change in Airfield Geometry

The taxiway intersection to the new Runway 17C-35C design will have connector taxiways crossing the runway from existing Taxiway D. This could result in pilot loss of situational awareness and the pilot could inadvertently cross-Runway 17C-35C prior to contacting ATC. Note this hazard becomes an issue only when the new proposed Runway 17C-35C is built (post 20 yrs.).

Action: Taxiway G will be eliminated with the implementation of the new proposed Runway 17C-35C. The first Rapid Exit Taxiway in each direction will be eliminated on Runway 17C-35C. Taxiway T will remain in place and a new 90-degree exit will be located approximately 3,000 feet from the 17C threshold. These proposed solutions as shown in **Exhibit 6.4-3** were determined by the SRMP to be sufficient to eliminate this potential hazard.

6.4.4.3 Hazard #3 – Pilot Loss of Situational Awareness

There is no direct taxiway flow between the east and west runways and the proposed future taxiway layout and flows do not provide a straight-line access from one side of the airfield to the other. This configuration would require multiple transitions between taxiways and taxilanes to access one side of the airfield to the other. These transitions could be confusing and lead to pilot confusion and multiple communications with ATC. A single or dual ADG-V taxiway could be provided south of the existing South Terminal and north of the GA/FBO facilities to eliminate this issue.

Action: Created Option 3 to add an ADG-V crossfield taxiway and remove the 90-degree taxiway bend south of the remote concourse (see Exhibit 6.4-2).

Action: Additional analysis will be required to determine the final location of the next remote concourse and to determine the final location of a cross-field taxiway system. This new crossfield taxiway will be depicted on the ALP drawing.

Action/ATCT SRMP Comment and Report Approval Qualification: The SRMP Report is approved noting that “the proposed cross-field taxiway is below the tower and therefore not visible. This must be mitigated prior to or during the design phase. ATCT is opposed to any taxiways that make several turns like the proposed ADG V taxiway below the tower. ATCT strongly urges and would support straight parallel cross-field taxiways.”

6.4.4.4 Hazard #4 – Air Traffic Controller Line of Sight Impact

The height of the new Midfield Concourse may restrict the FAA’s ATC view of the existing and future taxiways, runways and apron areas. Height restrictions will be assessed as part of the final master plan design for the new North Terminal and Midfield Concourse to assure ATC has a clear line-of-site to these aircraft movement areas. Closed-circuit televisions (CCTV’s) and ground surveillance might be required for improved visibility. All solutions will comply with FAA Order 6480.4A, *Airport Traffic Control Tower Siting* and FAA AC 150/5300-13, *Airport Design*.

Action: An ATCT line-of-sight analysis (including recent analysis by FAA) will be conducted to determine future sighting issues and identified controls will be recommended to mitigate line-of-sight issues (e.g., concourse height restrictions, new ATCT, CCTV’s, visual/ramp tower, etc.).

Action/ATCT SRMP Comment and Report Approval Qualification: SRMP Report is approved noting, “The new Midfield Concourse will definitely create a line of sight issue for the tower. ATCT believes that a new tower must be included in the long-term plan that would have 100% visibility of the “movement areas.” ATCT is sure that this is a significant cost, but it would be much easier and better to include it in the design and perhaps not have to build it than it would be to not include it and need it.”

6.4.4.5 Hazard #5 – Deicing Operations

Increased congestion on the ramp may affect aircraft push back operations during deicing operations at the new North Terminal and Midfield Concourse gate areas. Increased congestion may also result in exceeded deicing fluid hold over times and require the need to deice an aircraft a second time before departing. To potentially remove these operational hazards, a future centralized deicing pad(s) will be identified and located on the ALP. The deicing pad location will ensure adequate access is provided from the aircraft gates to the pad and runway ends.

Action: Identify and show future centralized aircraft deicing pad location on the ALP. Preliminary indications suggest that there will be a need for 15 to 19 aircraft deicing positions during the peak morning hours. It is recommended that these deicing positions be located in the northern most RON ramp area, just south of the Midfield Concourse.

6.4.4.6 Hazard #6 – Jet Blast

Jet blast of heavy aircraft (ADG-V) transitioning from inner taxilanes in close proximity to the western, eastern, and mid-terminal end-cap gates raise ramp safety concerns from jet blast. It is anticipated that the majority of future aircraft operating at ABIA will continue to be in the ADG-III category and that most breakaway thrust will be applied along the taxiway/taxilane straight sections, and thereby minimize the velocity of jet blast on the end gate positions.

Action: Jet blast study to be performed as part of the new North Terminal and Midfield Concourse project design phase.

6.4.4.7 Hazard #7 – Blind Spots

The proposed new North Terminal and Midfield Concourse gate layout might create various blind spot(s) during aircraft pushback and aircraft taxi operations from the existing ATCT. The new Midfield Concourse height might also create blind spots from the ATCT on active taxiways and taxilanes. A proposed new ramp control would allow for visibility /management of ground control operations and hand off to ATCT in these areas.

Action: Use of visual/ramp control tower or CCTV's to maintain visual control of aircraft pushback operations would be recommended to manage any potential blind spots.

Action/ATCT SRMP Comment and Report Approval Qualification: SRMP Report is approved noting that “If there is going to be a ramp control tower (non-FAA), there needs to be designated IN and OUT taxiways. Although this sounds like an operational issue, it is more a design issue. In other words, it must be included in the design and not left to be worked out after being built.”

6.4.4.8 Hazard #8 – ATCT Blind Spots in Push Back Operations

Duplicate hazard; see Hazard #7 above.

6.4.4.9 Hazard #9 – ARFF Routes

ARFF response time may be increased by the new airfield configuration and current location of the existing fire station resulting in delayed emergency responses, and an increased chance of injuries / fatalities. ARFF routes and response times were analyzed using ARFF index standards for the new future airfield configuration, including equipment requirements for larger aircraft classifications. The existing ARFF station response times are noted on **Table 6.4-3**.

Action: Master Plan Team to conduct additional assessment for new south ARFF station. See Exhibit 6.4-3, Modified ABIA Airfield Geometry for the proposed location of the new south ARFF facility located just south of the proposed midfield taxiway.

Action: Master Plan Team coordinated with ARFF staff to ensure proper response time analysis and specific routes to be taken were identified. See Appendix 6.2 Item #28 for additional comments from the ARFF team and existing/future south ARFF station response routes and times.

6.4.4.10 Hazard #10 – RPZ Area

People and property are located in the Runway Protection Zone of the future Runway 17C-35C. Specifically, the U.S. Armed Forces Reserve Center is located in the future RPZ to Runway 35C. Staff and structure are operational 24/7 at the facility; however, the proposed runway not needed until approximately year 2047 and relocation of various facilities is not an issue at that time. Management and changes to new RPZ areas must comply with current standards specified in FAA Advisory Circular 150/5300-13A, *Airport Design*.

Action: To ensure future options are documented, the FAA Texas Airport District Office (FAA TX ADO) performed a review of the RPZ analysis to assist in identifying level of action required. Results and related actions of the review are provided in the bulleted list below. FAA indicates that all new RPZs must remain clear of development (existing or future). This will require relocation of the U.S. Army Reserve (Rwy. 35C) and The Parking Spot (Rwy. 17C) facilities. FAA will not accept the use of declared distance criteria or displaced thresholds with new runways.

- Existing Runway 17R-RPZ- Acquire Avigation Easement
- Existing Runway 35L-RPZ- No Action Required
- Existing Runway 17L-RPZ- Acquire Avigation Easement
- Existing Runway 35R-RPZ- No Action Required
- Future Runway 17C-RPZ- Acquire Land & Remove Parking Facilities
- Future Runway 35C-RPZ- Relocate Army Facilities

6.4.4.11 Hazard #11 – Taxiway E Access to Runway

The existing TxDOT Taxiway E accesses Runway 17L-34R and per Geocode #8, no direct taxiing access to runways from ramp areas is allowed. The TxDOT ramp does not have direct access (not a straight/direct line) access to Runway 17L-34R, which reduces likelihood of inadvertent access to Runway 17L-34R. To reduce the likelihood further, it is proposed to create a new parallel taxiway east of Runway 17L-34R and thus eliminating a direct route from the TxDOT ramp to Runway 17L-34R.

Action: Add partial parallel taxiway to the east side of Runway 17L-35R to eliminate this hazard. (See **Exhibit 6.4-3**).

6.4.4.12 Hazard #12 – Taxiways G and H shape as a ‘Y’

Operational hazard; not related to changes to ALP.

Action: (unrelated to Master Plan SRM)

FAA ATC to assess aircraft taxi flows in this area with the new Midfield Concourse and modified airfield geometry as shown in Exhibit 6.4-3.

6.4.4.13 Hazard #13 – Pushbacks into a congested area

Operational hazard; not related to changes to ALP.

6.4.4.14 Hazard #14 – Multiple 90-degree routes

Handoffs between ramp control and ATCT; duplicate hazard; see Hazard #3.

6.4.4.15 Hazard #15 – Jet blast

Duplicate hazard; see Hazard #6.

6.4.4.16 Hazard #16 – ATC Contact Procedures

Taxiway crossings and ATC contact for emergency vehicle operations on airfield; Operational hazard, not related to changes to ALP.

6.4.4.17 Hazard #17 – RPZ

Potential emergency access issue in the RPZ at the Onion Creek swamp area; Operational hazard, not related to changes to ALP.

Table 6.4-3: ARFF Response Times

LOCATION	DISPATCH TIME [sec]	PREPARATION TIME [sec]	TRAVEL TIME [sec]	TOTAL TRAVEL DISTANCE [ft.]	AVERAGE ACCELERATION TIME TO 50 MPH [sec]	RATE OF ACCELERATION [ft. sec ²]	ACCELERATION DISTANCE TO 50 MPH [ft.]	TRAVEL DISTANCE @ CONSTANT 50 MPH [ft.]	TRAVEL TIME @ 50 MPH [sec]	TOTAL RESPONSE TIME [sec]	TOTAL RESPONSE TIME [min-sec]
Existing ARFF Station											
Existing Rwy. 17R-35L Midpoint	15	25	140	6,000	35	1.43	875	5,125	70	105	1:45
Existing Rwy. 17L-35R Midpoint	15	25	140	4,800	35	1.43	875	3,925	54	89	1:29
Future Rwy. 17C-35C Midpoint	15	25	140	4,200	35	1.43	875	3,325	45	80	1:20
Future South ARFF Station											
Existing Rwy. 17R-35L Midpoint	15	25	140	5,875	35	1.43	875	5,000	68	103	1:43
Existing Rwy. 17L-35R Midpoint	15	25	140	3,500	35	1.43	875	2,625	36	71	1:11
Future Rwy. 17C-35C Midpoint	15	25	140	5,125	35	1.43	875	4,250	58	93	1:33

Note: Average acceleration time to reach 50 mph = 35 seconds (Striker 8x8)
 Source: Landrum & Brown analysis

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6.5 Risk Analysis/Assessment

The SRMP determined that all identified hazards were sufficiently managed with existing controls, additional controls as discussed during the SRMP meeting, and as documented within the updated final version of the SRMP Report and revised drawings. The SRMP agreed that due to sufficient existing controls, no further analysis, assessment, risk ranking, or mitigations were necessary for the identified hazards. Thus, the SRMP completed Steps one through three of the five-step process for those hazards, as listed in Section 6.4.3.4, Safety Assessment/SRMP Session. The SRMP also discussed and documented best practice suggestions for future airside design, construction, and operations; however, recommendations are not intended to serve as formal guidance and actions fall under the ABIA responsibility for future consideration and adoption.

6.6 Mitigations and Monitoring

Mitigations and monitoring were not included in the Master Plan SRMP process; these SRM steps were determined unnecessary. Actions and revisions documented during the SRMP session and included in the SRMP Report were considered sufficient to ensure the final ALP would reflect the safety review.

6.7 Project Hazards and Airfield Safety Compliance

Based on the SRMP review, the proposed airfield geometry changes (with existing and proposed additional controls) does not deviate from applicable FAA standard and does not increase aviation safety risks.

The SRMP also concluded that ABIA is in compliance with FAA Order 5200.11 with final approvals including confirmed ABIA Sponsor and FAA signatures on the Safety Assessment Screening (SAS-1) form.

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