

ACRP Report 65 Project Report

1.0 Introduction

Irregular operations (IROPS) have been a topic of interest for many years, and in light of recent hazardous weather and natural disasters, along with new rulemaking, IROPS have taken the center stage in the aviation industry. IROPS include flight cancellations, diversions, and extended tarmac delays, among other events which are caused by adverse weather conditions, natural disasters, terrorist attacks, and the like. The ACRP 10-10 Project Team was charged with developing a guidebook for airports of varying sizes to develop and implement site-specific contingency plans with airlines, Transportation Security Administration (TSA), US Customs and Border Patrol (CBP), and regional organizations, among others.

Several tasks were undertaken as a part of this 18-month long project, which are summarized in this report. The Project Team for this project included:

- Michael Nash (Aviation Innovation, LLC)
- Rose Agnew (Aviation Innovation, LLC)
- Stephanie Ward (Mead & Hunt, Inc)
- Regan Massey (Mead & Hunt, Inc)
- Tim Callister (Mead & Hunt, Inc)
- Ron McNeill (Mead & Hunt, Inc)
- Frank Barich (Barich, Inc)
- Justin Phy (Barich, Inc)
- Eric Tolton (Greater Toronto Airports Authority)

2.0 Task 1: Collect IROPS Materials

Task 1 involved the collection of existing IROPS materials including:

- The outcome of several IROPS workshops held at large hub airports
- A survey of United States and Canadian airports
- Airports Council International (ACI) and American Association of Airport Executives (AAAE) presentations
- Existing technology related to IROPS response
- A review with passenger advocacy groups and industry groups including Airports Council International – North America (ACI-NA), AAAE, and Air Transport Association (ATA)

Of the 400 airports surveyed as a part of Task 1, 116 responded resulting in an overall response rate of 29%. The majority of respondents were from large and medium hub airports. The information collected through workshop and survey efforts was analyzed and categorized into main themes including, but not limited to:

- Communication needs to be timely and enhanced in every aspect
- Provisions need to be in place to offer services to passengers
- Airports, Fixed Base Operators (FBOs), Transportation Security Administration (TSA), Customs and Border Protection (CBP), and other entities need to cooperate and collaborate
- On a regional level, hub and reliever airports need to be in constant communication with one another to ensure the correct equipment is available, capacity, vendors are open, and staff is available to assist.
- Airlines need to notify airports of IROPS and their plan to divert aircraft or cancel flights

In addition to collecting existing IROPS materials, several government agencies were contacted for their input and relation to IROPS. These agencies included the Department of Transportation (DOT), the Federal Aviation Administration (FAA), CBP, and TSA.

The Project Team was made aware of a similar project which was beginning at the same time, ACRP 03-18 “Operational and Business Continuity Planning for Prolonged Airport Disruptions” and held a conference call where the two projects were discussed to identify any overlapping issues. Through communications between the two project teams, a distinction between the projects was made. ACRP 10-10 is concerned with irregular operations whereas project 03-18 is focused on regular critical airport operations. **Figure 1** relates the focuses of each project.

Figure 1 – Continuity Planning



Source: ACRP 10-10 Team

Identification of technology related to IROPS contingency response capabilities was part of the information collection activities as well. Contact with individual technology providers was initiated during this Task by informal discussions held with exhibitors at two ACI-NA and AAEE industry conferences and by directly contacting the vendors by email and telephone. Additionally an internet search was conducted to identify other providers, including those in Canada and Europe.

Technology products were identified that address all phases of an IROPS event, including the identification and communication of aircraft status, passenger handling, resource management, data management, information dissemination, passenger processing, and baggage management. In addition, a variety of critical technology related services were identified that address the strategic planning, integration, and implementation of technology solutions. Task 3 examined the use of technology in IROPS situations in greater detail.

3.0 Task 2: Identify Practices

This task involved the identification of practices for contingency planning using information from Task 1 and supplemental research. Practices included communication, collaboration, and coordination with aviation system partners that need to occur before, during, and after IROPS events. A three-part approach was used by the Project Team to identify airport practices for IROPS contingency response planning:

1. DOT Model Contingency Plan

2. IROPS Workshops

- DFW IROPS Customer Care Workshop – September 2007
- ACI-NA IROPS Workshop – January 2008
- DFW Diversion Workshop - June 2008
- ATL Diversion Workshop – October 2008
- DFW IROPS and Pandemic Regional Coordination Workshop – August 2009
- DFW IROPS (Internal) Coordination Workshop – October 2009
- HOU and IAH IROPS Committee Workshops – March 2010
- HOU and IAH Local IROPS Workshops – April 2010
- HAS Regional IROPS Workshop – June 2010
- MSP Regional IROPS Work – October 2010

3. Airport Survey from Task 1

The DOT-National Task Force Model Contingency Plan was used as the foundation for research since it was the primary resource available for airports to utilize as a reference. The Project Team acknowledges that this document was generally focused on tarmac delays when it was developed; therefore the team expanded beyond its general guidance to address other issues which may present themselves as part of the Team's research. The following structure (from the Model Plan) was developed to collect examples of IROPS response contingency planning:

1. Pre-Planning
2. Recognition of Customer Needs
3. Airport Community Response Effort
4. Communication, Collaboration, and Coordination during an IROPS Event
5. Review of Effectiveness and Process Improvement

The following discussion highlights some key information collected and recorded at each identified step.

1. Pre-Planning

- a. Record of past IROPS events
- b. Mutual support agreements
- c. IROPS response procedures
- d. Coordinated communication procedures (both aviation organizations and passengers)
- e. Local media procedures
- f. Response procedures for passenger medical needs
- g. Inventory and supply of resources

2. Recognition of Customer Needs

- a. Identify needs for additional resources beyond those available
- b. Coordination with airlines who are deplaning passengers
- c. Provide support for special needs passengers
- d. Procedure to keep passengers informed on IROPS situations
- e. Procedure to provide access to food, water, lavatories, lodging, and rest accommodations
- f. Coordination with local transportation
- g. Procedure to care and feed service animals and animals in transit

3. Airport Community Response Effort

- a. Coordinate IROPS planning with local aviation service providers
- b. Procedure for airlines to notify entities of pending IROPS events
- c. Establish local IROPS planning committee
- d. Provide outreach to FAA, TSA, CBP and regional diversion airports
- e. Coordinate service beyond normal hours when needed
- f. Procedure for addressing needs of diverted aircraft
- g. Host/participate in regional IROPS workshops

4. Communication, Collaboration, and Coordination during an IROPS event

- a. Procedure to provide continuous communication among all stakeholders
- b. Procedure to share status among service providers as needed to coordinate mutual support
- c. Coordinate procedures between airports and airlines for sharing aircraft status
- d. Procedure for shared use of empty gates as needed during IROPS
- e. Procedures to provide support for aircraft delayed with passengers onboard
- f. Procedures to provide support for deplaning passengers

5. Review of Effectiveness and Process Improvement

- a. Coordinate procedures for reviewing response effectiveness following an IROPS event
- b. Procedure for incorporating lessons learned into the airports IROPS response plan

Additional information collected through the IROPS workshops, whose attendance included: 57 airports, 21 airlines, and 5 government agencies as well as the airport survey effort from Task 1 was utilized by the Project Team in the development of the draft guidebook discussed later in this project report.

4.0 Task 3: Identify Technology

As a part of Task 3, the Project Team identified current and emerging technology that supports IROPS planning and execution. Software programs and other technologies that provide communication, collaboration, and coordination to stakeholders were considered in this task. Identification of current and emerging technology supporting IROPS activities was completed in a seven-part approach as described below:

1. Review technology solutions supporting IROPS
2. Review technology solutions supporting IROPS using web and literature searches
3. Contact with technology solution providers at ACI-NA and AAAE conferences
4. Contact with individual technology solution providers
 - a. Using the material collected from Task 1, current technology applications were associated with several practices identified in Task 2. These have been grouped into categories of common solution types and identified by the phases of IROPS response being before, during, and after the IROPS event, the operational implementation being airside or landside, and the key stakeholders. The technology solutions identified include Integration / Strategy Services, IT Support, Data Management, Weather Management, Passenger Handling, Shared Aircraft Status, Communication of Status, Resource Management, Baggage Management, Passenger Processing, etc.
5. Directory of technology solution providers
 - a. A directory of technology suppliers was developed starting with those identified in Task 1 and supplemented with a web and literature search of those suppliers offering related capabilities. Research included non-US suppliers with emphasis on those currently supporting airport or airline operations.
6. Case studies of successful IROPS solution implementation
 - a. Sensis at Atlanta Hartsfield - Using a set of sensors and antennas that can detect transponder codes emitted by aircraft, the system displays a bird's-eye view of the airport on monitors. The Web-based graphical display shows the location of all planes, including the ones parked at gates and those circling airspace within 10 miles.
 - b. Passur OPSNet at Denver - Denver International airport chose PASSUR OPSnet to implement a new program of communication, coordination and consistent information after suffering severe disruptions due to back-to-back blizzards in the winter of 2006-2007.

- c. Metron Aviation Air Traffic Flow Management - Metron Aviation's pioneering research, underlying algorithms, and preferred operating procedures have led to the creation of many successful traffic flow management technologies used by more than 100 FAA facilities and 24 participating airlines each day.
 - d. COBUS at Dallas /Ft. Worth - The airport has purchased a \$700,000 bus that can carry about 100 passengers from a plane to a terminal. The bus will be used to get passengers off planes in a hurry, especially when gates are unavailable.
 - e. Social Media at San Antonio Int'l Airport - San Antonio International Airport's social media sites were slow to take off. But after a year under the navigation of Public Relations Manager Rich Johnson, the Twitter and Facebook pages are starting to spread their wings.
 - f. Rockshore Situational Awareness - The Situational Awareness Platform was deployed at London's Heathrow Airport and accessed by a number of carriers, including British Airways. BA started using the system across a range of functions in April 2007 within their Global Operations Centre based at the airport. BA access the Situational Awareness Platform securely via the Internet from a variety of standard PCs within their estate.
7. Compilation of emerging technology solutions
- a. ADS-B
 - b. ASDE-X
 - c. Mobile device flight information
 - d. Text message distribution
 - e. ACI ACRIS
 - f. Social media
 - g. Information dashboard
 - h. A-CDM Consulting (Airport - Collaborative Decision Making Consulting)

It is important to note that the original results of this Task which were delivered to the Panel included specific manufacturer and company names. At the direction of the ACRP SPO, the Project Team removed specific vendor names from all documents. A new assessment of technology issues was developed which summarizes solution types and breaks down technology options based upon price.

While the majority of the technology solutions were analyzed as a part of this task, the Project Team continued to collect information on additional technologies throughout the project duration. This information was incorporated into the draft guidebook and resources.

5.0 Task 4: Evaluate Results

The Project Team used a 3-part approach to evaluate the materials obtained in Tasks 1 through 3. The purpose of this evaluation was to determine the applicability of these materials in the development of a guidebook for airport operators to: (a) prepare, (b) evaluate, and (c) update their contingency plans for minimizing disruptions to passengers during IROPS events. Material collected, identified, and

categorized in Tasks 1, 2, and 3 were mapped into a draft step-by-step IROPS contingency response process.

The Team developed a structure for evaluating examples of IROPS response contingency plan material using the format outlined by the DOT-National Task Force Model Contingency Plan. This structure includes sections for:

1. Pre-Planning
2. Recognition of Customer Needs
3. Airport Community Response Effort
4. Communication, Collaboration, and Coordination During an IROPS Event
5. Review of Effectiveness and Process Improvement

This structure was further refined to reflect the Team’s evaluation of applicability of the material for airport operators as guidance for: (a) preparation of their plans, (b) evaluation of their plans, and (c) updating of their plans.

A description of recommended actions “meeting basic requirements” was identified to establish a baseline, answering essential questions for the smaller airports. Actions identified as representing “best practice examples” and as “exceeding requirements” were generally found at larger airports with both a more complex environment and greater access to resources.

Evaluation of Materials obtained in Tasks 1 through 3		
Guidance for:	Section of IROPS Contingency Response Planning Process	Results
(a) <i>Preparation of Airport IROPS Contingency Response Plans</i>	1. Pre-Planning 2. Recognition of Customer Needs 3. Airport Community Response Effort	Outline with Material Examples evaluated as: - Meeting Basic Requirements - Best Practice Examples - Exceeding Requirements Results in the following pages
(b) <i>Evaluation of Airport IROPS Contingency Response Plans</i>	4. Communication, Collaboration, and Coordination During an IROPS Event 5a. Review of Effectiveness and Process Improvement (part 1)	Outline with Material Examples evaluated as: - Meeting Basic Requirements - Best Practice Examples - Exceeding Requirements Results in the following pages
(c) <i>Updating of Airport IROPS Contingency Response Plans</i>	5b. Review of Effectiveness and Process Improvement (part 2)	Outline with Material Examples evaluated as: - Meeting Basic Requirements - Best Practice Examples - Exceeding Requirements Results in the following pages

All example actions shown for the recommended requirements reflect observations resulting from information collected in earlier Tasks in this Project. Where no information is provided for either “best practice” and/or an “exceeds basic requirements” it is an indication that no actual practice has yet been identified meeting these qualifiers.

It should be noted that the example requirements listed in the “Preparation”, “Evaluating”, and “Updating” tables below are not listed in any specific order in relation to sequence of recommended actions.

Guidance for: <i>Preparation</i> of Airport IROPS Contingency Response Plans			
Section of Response Planning Process	Meets Basic Requirements	Best Practice	Exceeds Basic Requirements
1. Pre-Planning	<ul style="list-style-type: none"> Record of Past IROPS Events at Airport 		
	Documented Summary of past IROPS Events	Documented Summary with Lessons Learned	
	<ul style="list-style-type: none"> Mutual Support Agreements 		
	Documented Mutual Support Agreements		
	<ul style="list-style-type: none"> IROPS Response Procedure 		
	Documented IROPS Response Procedures Coordinated between all Service Providers at Airport	Documented IROPS Response Procedures include coordination between Hub and Reliever Airports in Region	Documented and Coordinated IROPS Response Procedures include Hub and Reliever Airports in Region with Hub Airport accepting responsibility for coordinating overall situational awareness
	<ul style="list-style-type: none"> Communications Procedure 		
	Communications providing information to Service organizations and Passengers	Communications providing information between Hub and diversion Airports in Region as well as to local Service organizations and Passengers	Communications providing information for both local Service organizations and Passengers as well as between Hub and diversion Airports in Region with Hub Airport accepting responsibility for coordinating overall communications
	<ul style="list-style-type: none"> Working with Local Media 		
	Named Airport point of contact for local media	Documented procedure for coordinated interface with local media	Airport organization with overall responsibility for coordinated interface with local media
<ul style="list-style-type: none"> Passenger Medical Needs 			

Guidance for: <i>Preparation of Airport IROPS Contingency Response Plans</i>			
Section of Response	Meets Basic Requirements	Best Practice	Exceeds Basic Requirements
Planning Process	Documented response procedure for Passenger medical needs including utilizing local 911 services as needed	Documented response procedure for Passenger medical needs including utilizing local pharmacy and 911 services as needed	Airport organization with overall responsibility for coordinated provision of response to Passengers medical needs including pharmacy and utilizing local 911 services as needed
	<ul style="list-style-type: none"> • Inventory and Resupply of Resources 		
	Pre-Planning of resources inventory and resupply required for response based on past IROPS events	Pre-Planning of resources inventory and resupply required for response based on both past IROPS events and “worst case” scenarios	
2. Recognition of Customer Needs	<ul style="list-style-type: none"> • Passenger Support Resources 		
	Passenger needs are explicitly considered during resource inventory and resupply planning for response based on past IROPS events	Passenger needs are explicitly considered during resource inventory and resupply planning for response based on both past IROPS events and “worse case” scenarios	
	<ul style="list-style-type: none"> • Passenger Support Coordination with Airlines 		
	Documented coordination of IROPS response Plans between Airport and local Airlines	Documented coordination of IROPS response Plans between Airport and local Airlines including early notification of reaching “Trigger” events	
<ul style="list-style-type: none"> • Supporting Special Needs Passengers 			

Guidance for: <i>Preparation of Airport IROPS Contingency Response Plans</i>			
Section of Response Planning Process	Meets Basic Requirements	Best Practice	Exceeds Basic Requirements
	Procedure for providing special needs passengers support as required	Documented coordination between all local service providers for providing special needs passengers support as needed	
• Communication with Passengers			
	Procedure for keeping passengers informed while inside the terminal	Procedure for keeping passengers informed while inside the terminal and means allowing them to communicate their status with others outside the terminal	
• Access to Food, Hydration, and Lavatory Facilities			
	Procedure allowing passengers access to food, hydration, and lavatory facilities during an IROPS event	Procedure allowing both passengers and those meeting them access to food, hydration, and lavatory facilities during an IROPS event	
• Information on Lodging and Rest Accommodations			
	Procedure to provide information on lodging and rest accommodations in Airport during extended IROPS events	Establish pre-planned additional capability for providing lodging and rest accommodations in Airport for use during extended IROPS events	
• Local Transportation			
	Procedure to provide information on local transportation as needed during extended IROPS event	Establish pre-planned additional capability for local transportation service for use during extended IROPS event	
• Service Animals and Animals in Transit			
	Procedure to provide care and feeding for service animals and animals in transit during extended IROPS events	Establish special area in or near the terminal for care and feeding of service animals and animals in transit during extended IROPS events	

Guidance for: <i>Preparation of Airport IROPS Contingency Response Plans</i>			
Section of Response Planning Process	Meets Basic Requirements	Best Practice	Exceeds Basic Requirements
3. Airport Community Response Effort	<ul style="list-style-type: none"> Local Aviation Service Providers 		
	Documented coordination of IROPS response Plan between Airport and local community organizations	Documented coordination of IROPS response Plans between Airport and local community organizations including documented mutual support agreements	
	<ul style="list-style-type: none"> Pending IROPS Event 		
	Procedure for Airlines to notify Airport Operations of pending IROPS event	Procedure for Airlines to notify Airport Operations of pending IROPS event including early notification of reaching "Trigger" events	
	<ul style="list-style-type: none"> IROPS Response Planning 		
	IROPS response planning committee with representatives of all local airlines and support organizations	IROPS response planning committee with representatives of both local airlines local support organizations and of diversion airports in the region	
	<ul style="list-style-type: none"> Government organizations (FAA, TSA, CBP, CDC) 		
	Documented agreement with Government organizations (FAA, TSA, CBP, and CDC) on obtaining their support during IROPS event as needed	Government organization are members of IROPS Response Planning committee where procedures for obtaining their support during IROPS events are coordinated and documented	
<ul style="list-style-type: none"> Regional Diversion Airports 			

Guidance for: <i>Preparation of Airport IROPS Contingency Response Plans</i>			
Section of Response Planning Process	Meets Basic Requirements	Best Practice	Exceeds Basic Requirements
	Both Hub and diversion airports in the region have established, documented, and communicated their procedures for maintaining a 24-hour point of contact		
	<ul style="list-style-type: none"> • Service Hours 		
	Procedures for extending local service hours during IROPS event		
	<ul style="list-style-type: none"> • Diverted Aircraft 		
	Procedure for Airlines to provide timely notification to new airport when decision is made to divert an aircraft from its planned destination	Coordinated pre-planning among both Airlines and Airports in the region of capability and status to support aircraft at the diversion airports as well as timely notification that the decision has been made to divert an aircraft from its planned destination	
	<ul style="list-style-type: none"> • IROPS Response Workshops 		
Host periodic IROPS response workshops with participation by all local Airlines, service providers, and Government organizations - participate if invited to IROPS response workshop hosted by another airport	Host periodic regional IROPS response workshops with participation by both local Airlines, service providers, and Government organizations and by diversion airports in the region - participate if invited to IROPS response workshop hosted by another airport		

Guidance for: <i>Evaluation of Airport IROPS Contingency Response Plans</i>			
Section of Response Planning Process	Meets Basic Requirements	Best Practice	Exceeds Basic Requirements
4. Communication, Collaboration, and Coordination during an IROPS Event	<ul style="list-style-type: none"> • Communication During an IROPS Event 		
	<p>Procedure all service providers to communicate during an IROPS event</p>	<p>Coordinated procedure for communications among all local service providers and with diversion airports during an IROPS event</p>	<p>Coordinated procedure for communications among all local service providers and with diversion airports during an IROPS event with Hub Airport accepting responsibility for coordinating overall communications</p>
	<ul style="list-style-type: none"> • Status Sharing Among Service Providers 		
	<p>Procedure for all local service providers to share their response status as needed for coordination of mutual support during an IROPS event</p>	<p>Coordinated procedure for sharing response status among both local service providers and diversion airports as needed for coordination of mutual support during an IROPS event</p>	<p>Coordinated procedure for sharing response status among both local service providers and diversion airports as needed for coordination of mutual support during an IROPS event with Hub Airport accepting responsibility for coordinating overall communications</p>

Guidance for: <i>Evaluation of Airport IROPS Contingency Response Plans</i>			
Section of Response Planning Process	Meets Basic Requirements	Best Practice	Exceeds Basic Requirements
	<ul style="list-style-type: none"> • Coordination between Airport and Airlines 		
	Procedure for sharing aircraft status between Airlines and the Airport during an IROPS event	Procedure for sharing aircraft status between Airlines and the Airport during an IROPS event including early notification of reaching “Trigger” events	Procedure for sharing aircraft status between Airlines and the Airport during an IROPS event including early notification of reaching “Trigger” events by mutual utilization of status tracking systems
	<ul style="list-style-type: none"> • Shared Use of Gates 		
	Procedure for shared use of empty gates as needed during an IROPS event		
	<ul style="list-style-type: none"> • Aircraft on Ground with Passengers Onboard 		
	Procedures to provide support as needed for aircraft delayed on the ground with passengers onboard		
	<ul style="list-style-type: none"> • Deplaning Passengers from Remote Locations 		
	Procedures to provide support as needed for deplaning of passengers from remote locations		
	<ul style="list-style-type: none"> • Deplaning Passengers During Extended Hours of Operation 		
	Procedures to provide support as needed to accommodate passengers in terminal during extended hours of operation		

Guidance for: <i>Evaluation of Airport IROPS Contingency Response Plans</i>			
Section of Response Planning Process	Meets Basic Requirements	Best Practice	Exceeds Basic Requirements
5a. Review of Effectiveness and Process Improvement (Part 1)	<ul style="list-style-type: none"> Reviewing Effectiveness Following IROPS Event 		
	Procedure for reviewing response effectiveness following an IROPS event including documentation of Lessons Learned	Procedure for reviewing response effectiveness across all service providers following an IROPS event including the coordinated documentation of Lessons Learned	

Guidance for: <i>Updating of Airport IROPS Contingency Response Plans</i>			
Section of Response Planning Process	Meets Basic Requirements	Best Practice	Exceeds Basic Requirements
5b. Review of Effectiveness and Process Improvement (Part 2)	<ul style="list-style-type: none"> Lessons Learned 		
	Procedure for incorporating Lessons Learned into Airport IROPS response plan	Coordination procedure for incorporating Lessons Learned into IROPS response plans of Airport and all local Airlines and service providers - results included in coordinated periodic training for IROPS response	

6.0 Task 5 – Technical Memorandum

The technical memorandum which was developed as a part of Task 5 summarized the work effort and findings of Tasks 1-4. This summary was provided to the project panel for their review and was discussed during the panel call in March 2011.

7.0 Task 6 – Draft Guidebook

After the technical memorandum was developed and distributed, the Project Team made a great deal of progress on the draft guidebook. The Project Team conducted workshops at JFK and Newark in February 2011 to gather additional information on how airports are dealing with IROPS events and to determine what would be the most helpful to include in the guidebook for end users of the product. Attendees included station managers, terminal managers, representatives from the Port Authority of New York and New Jersey, landside and airside operations managers, and more. The Project Team led

workshop attendees through a series of exercises to get to the core of how IROPS events are handled and to take away their lessons learned.

Since several documents would be delivered as the final product, the Project Team organized the documents into five parts along with a quick instruction guide to get the user started. Parts 3-5 are support pieces that were developed by the Project Team to support the guidebook and the model plan. These additional resources were not originally anticipated in the research plan.

Standalone -	Quick Instruction Guide
Part 1	Guidebook
Part 2	Model Plan and Task Sheets
Part 3	Passenger's Needs
Part 4	Technology Overview
Part 5	Tools (Preliminary List) 1. During an Event Checklist 2. IROPS Kickoff Questionnaire 3. IROPS Planning Roadmaps 4. During an Event 5. Concessions Checklist 6. Partnering for Success 7. IROPS Self –Assessment

A team meeting was held in Minneapolis in March to refine the draft guidebook. Following the recommendations of several team members, it was determined that the text of the guidebook (with the exception of appendices) needed to be kept to a brief length if it was to be used effectively by airport management. For this reason, the guidebook was initially reduced to 19 pages and additional guidance was provided in Parts 3-5 of the draft deliverables. The following outline was developed for the 10-10 draft guidebook as a result of the Project Team's research efforts and Team member's experience in the industry. The draft guidebook and supporting materials were used during the June 29, 2011 Panel meeting, and the same draft version of the guidebook was utilized in Task 8B – Test Guidebook with Airports.

Initial Draft of the Guidebook

TABLE OF CONTENTS

CHAPTER I: INTRODUCTION

- 1.1 Purpose of the Guidebook
- 1.2 Project Organization
- 1.3 Structure of Guidebook
- 1.4 Irregular Operations (IROPS)
- 1.5 Planning for IROPS Contingency Response
- 1.6 Structure of Model Airport IROPS Contingency Response Plan
- 1.7 Recommendations for Successful Implementation

CHAPTER II: BEFORE AN IROPS EVENT

- 2.1 Establishing an Airport IROPS Contingency Response Committee
- 2.2 Airport IROPS Contingency Response Committee Pre-Planning
- 2.3 Establishing Agreements with other Airport Service Providers
- 2.4 Conducting an Airport IROPS Coordination Workshop
- 2.5 Conducting IROPS Contingency Coordination Training

CHAPTER III: DURING AN IROPS EVENT

- 3.1 Tracking Aircraft Status
- 3.2 Communications During IROPS Event
- 3.3 Passenger Support
- 3.4 Concessions
- 3.5 Ground Transportations
- 3.6 Government Agencies (FAA, TSA, and CBP)

CHAPTER IV: AFTER AN IROPS EVENT

- 4.1 Debriefing
- 4.2 Lessons Learned

8.0 Task 7a – Interim Report

An interim report for the ACRP 10-10 project was developed by the Project Team and was submitted to the Panel and the ACRP SPO in May 2011. The interim report provided a summary of Tasks 1-6 of the project, an updated project schedule, and requested permission from the Panel to utilize Microsoft Word to develop the interactive CD. Since several concerns arose regarding the usability of the interactive CD by end users due to software constraints, internet connections, and the ability to be tailored to airports of all sizes, Microsoft Word was the chosen format with permission from the Panel during Task 7b.

9.0 Task 7b – Review Draft Guidebook with Panel

The Project Team traveled to Washington D.C. to meet with the ACRP 10-10 Panel at ACRP offices. The draft guidebook and supporting materials were mailed out the month prior (May, 2011) to give Panel members time to review prior to the meeting. During the meeting, the Project Team presented its findings to date and requested feedback from the Panel on the guidebook and associated components. The Panel agreed to let the Project Team use Microsoft Word for the development of the interactive CD materials and provided feedback both written and oral on all of the initial draft documents. The Project Team collected all of the feedback and the material reviewed prior to beginning Task 8B - Test Guidebook with Airports.

10.0 Task 8a – Update Guidebook

Since there were no comments which drastically changed the format or intent of the guidebook, the Project Team decided to keep the guidebook in its initial draft form for testing. The Project Team updated the guidebook, model plan, and additional resources after Task 8B – Test Guidebook with Airports was completed. At that time the Project Team incorporated not only the comments from the Panel on the draft guidebook, but also the feedback which was captured during the airport site testing.

11.0 Task 8b – Test Guidebook with Airports

Five airports were selected as test sites based on both size (small, medium, and large) and geographic and operational diversity. A guidebook testing plan was submitted to the Panel in April 2011 for consideration. Several airports were suggested by the team for potential testing sites and an explanation of the proposed testing process was presented. Minimal comments were received on the suggested sites, and therefore a subsequent email was sent out to request comments/revisions/suggestions to the testing plan and proposed testing sites. Once Panel comments were received, the following sites were chosen (listed by order of completion):

- *Waco, Texas (ACT)*
- *Salt Lake City, Utah (SLC)*
- *Ft. Wayne, Indiana (FWA)*
- *Milwaukee, WI (MKE)*
- *New York, New York (JFK)*

Goals for the testing included evaluating how well the guidebook helped:

- Airports develop and execute IROPS contingency plans at airports that did not previously have one
- Airports update, and evaluate existing IROPS contingency plans at airports that had a plan prior to receiving the guidebook

Test sites were asked to evaluate how well the guidebook met the needs of airports with consideration of the level of outside facilitation required for efficient implementation.

The first step of each airport test was to coordinate with airport management and organize an IROPS committee for each site which included station managers, terminal managers, concessions management, ground transportation, and landside and airside operations. The coordination of this group was done in cooperation with the selected airports and was orchestrated via telephone calls, e-mails, and a webinar with the attendees prior to actual site visits. A 2-day visit to each test site was carried out as part of the research effort. The first day included a meeting of the established IROPS committee for the Project Team to observe how well the guidebook was received and used; the second day included a meeting of the IROPS committee to work through an IROPS table-top exercise which the Project Team developed specifically for each airport.

The following sections list the attendees which were present at each of the meetings.

Waco Regional Airport – Waco, TX

Task 8B began at the Waco Regional Airport in Waco, Texas. Six attendees were present at the meeting besides the Project Team. Attendees included:

Joel Martinez – Waco Regional Airport
Kendal Butler – FAA TRACON
Brent Price – TSA
Candice – Colgan Air
Sue Holderson – American Eagle
Paul Martinez – Dallas/Fort Worth International Airport (ACRP Panel Member)

Salt Lake International Airport – Salt Lake City, UT

The second testing site was the Salt Lake International Airport in Salt Lake City, Utah. 17 attendees were present at the meeting besides the Project Team. Attendees included:

Brad Wolfe – SLCD A
Jeff Thomas – SLCFD
Ed Cherry – SLCD A IT
Pete Higgins – SLCD A Maintenance
Randall Berg – SLCD A

ACRP 10-10 Final Project Report

Terry Craven – SLCD A
Ken Whitaker – FAA
Ty Alred – Delta SLC
Kim Bradshaw – Skywest
Don McLeish – DL
Connie Proctor – SLCD A Operations
Alvin Stuart – SLCD A Operations
Mark Lewis – TSA
Craig Vargo – SLCD O A Police
Pat McFadden – CBP
Bruce Barclay – SLCD A Operations
Medardo Gomez – SLCD A Maintenance

Fort Wayne International Airport – Fort Wayne, IN

The third testing site was the Fort Wayne International Airport in Fort Wayne, Indiana. 20 attendees were present at the meeting besides the Project Team. Attendees included:

Kim Fuhrmann – FWA
Lisa Scott – TSA
Kennis Bourne – TSA
Mary Burke – TSA
Beth Coleman – DL/UA
Andrea Ash – DL/UA
Fred Boucher – FAA
Mike Snaer – FAA
Ronald Mudrack – Atlantic
Rose Lindbo – 122 Fighter Wing
Eddie York – 122 Fighter Wing
Scott Krieg – 122 Fighter Wing
Dennis Hollopeter – FWA/Public Safety Department
Scott Hinderman – FWA
Michelle Lockridge – First Class Concessions
Mike Melendez – American Eagle & Allegiant Air
Troy Coleman – American Eagle & Allegiant Air
Katie Scherer – FWA/Public Safety Department
Dan Rak – FWA Operations
John Simons – U.S. Customs and Border Patrol

General Mitchell International Airport – Milwaukee, WI

The fourth testing site was the General Mitchell International Airport in Milwaukee, Wisconsin. 23 attendees were present at the meeting besides the Project Team. Attendees included:

Beth Nacker – Frontier Airlines
Mark Parlson – Frontier Airlines
Kathie David – GMIA Operations
Mike Keegan – GMIA Security
Jim Grava – GMIA Operations
Jim Davisson – Delta
Ann Nienas – Delta
Frank Pipia – TSA
Holly Ricks – GMIA Landside
John Moore – GMIA Landside
Jay Bailey – FAA ATCT
Doug Drescher – Signature ASIG
Frank Jayne – ASIG
Jeff Plizka – ASIG
William Braun – CBP
Amanda Key – CBP
John Hardy – CBP
Amy Bartlett – 128 ARW
Monet Mayo – GMIA Public Relations
Ryan McAdams – GMIA Public Relations
Tom Czajkowski – Delta
Ed Wewel – US Airways
Kathy Nelson – GMIA

John F. Kennedy International Airport – New York, NY

The fifth and final testing site was the John F. Kennedy International Airport in New York, New York in November of 2011. 21 attendees were present at the meeting besides the Project Team. Attendees included:

Stephen D. Tomasso – Port Authority of New York & New Jersey
Peter Carbonaro – Port Authority of New York & New Jersey
Steven Brocchini – Port Authority of New York & New Jersey
Frantz Constant – Port Authority of New York & New Jersey
Hilda Perez – Port Authority of New York & New Jersey
Jon Winslow – Port Authority of New York & New Jersey
David Willner – OTG Management
Michael Murphy – OTG Management

Tim VonHollweg – OTG Management

Jon Balan – Delta Airlines

John Barile – Delta Airlines

John Grasser – JFK International Airport

Susana Cunha – JFK International Airport

Frank DiMola – Transportation Funding Advisory Commission

Nishal Nawbatt – Jet Blue Airlines

Joseph Maltezo – Transportation Security Administration.

Robert H. Junge – Port Authority of New York & New Jersey

Heidi K. Nassallek – Customs & Border Protection

Brian Roe – Customs & Border Protection

Gary Steiner – Customs & Border Protection

Al Graser – ACRP Panel Member

12.0 Task 9 – Lessons Learned

Results from guidebook testing with the five airports in Task 8 were reviewed by the Project Team to identify lessons learned. These were documented in a technical memorandum for potential incorporation into the final guidebook. The technical memorandum was published and provided to the ACRP SPO and Panel after completion of Task 8b. A summary of lessons learned is listed below:

- Organization of presentation of guidebook and supporting material
 - move customer focus items to earlier Topic
- Review and refocus emphasis of airport point of view discussions concerning IROPS events
 - needs increased focus on potential IROPS event impacts on the airport (vs. having major focus on potential causes of an IROPS event)
- Recognition that airports with existing IROPS response plans have a different approach to planning than airports that do not have an existing IROPS response plan
 - revise Introduction to acknowledge difference in perspective of guidebook and supporting material
 - add descriptive "paths" for those with and without existing response plans
 - observe that those Airports following the "without an existing plan" path will subsequently move to the "with an existing plan" path when they begin reviewing their lessons learned following subsequent IROPS events at their airport
 - document terminology revision to have series of "18 Topics of Interest" vs. the current "18 Tasks" with each having its unique set of accompanying Support Material with identifying title
 - provide accompanying set of "Questions for Consideration" to help guide airports through their appropriate path
- Successful implementation requires clear understanding and recognition by each Airport of their local commitment by their:

- Executive ownership and commitment to support
- Operational leadership with responsibility and authority to implement
- IROPS response planning Champion providing local understanding of and key point-of-contact for implementing guidebook and supporting material
- Planning process facilitator providing support needed to coordinate local participation by the several airport organizations
- embracing a local process that provides venue for organizations to share experiences and discussion "as equals" of ways to improve their collective IROPS response capabilities
- embracing a continuous improvement environment providing key elements of "know, act, confirm, and improve" of their airport's IROPS response plan

13.0 Task 10a – Draft Guidebook

The final draft version of the guidebook was prepared and submitted to ACRP for review and Panel comment on December 22, 2011. The submission of the draft guidebook was well over a month ahead of the proposed schedule. The Project Team received the Panel's comments on January 5th/6th and made the necessary revisions as well as responded to each comment individually.

14.0 Task 10b – Final Guidebook

The final version of the guidebook was prepared and submitted to ACRP on January 31, 2012 after going through two rounds of technical edits by TRB's editors and a complete format so that it could go straight to the printer for mass production. This submission was well over a month ahead of schedule and included work that was outside of the original project scope.

Interactive CD

Work on developing the interactive CD was ongoing in tandem with the development of the draft guidebook. Concerns arose regarding the format and software to be used for the CD. Due to the unique nature of contingency plans and the variation in the size and operation of airports as the end users, it was necessary for the worksheets on the CD to be able to be altered and modified to suit the varying needs of the end users. Furthermore, as airports piece together the worksheets in the development of their individual contingency plan, data will need to be saved and revised as IROPS events occur and modifications to the contingency plan are necessary. After the Project Team's effort to find free software that would allow the tailoring of individual worksheets and the ability to save and revise data, none were found. It was for these reasons that the Project Team suggested the use of Microsoft Word to develop the interactive CD. It was anticipated that the majority of the end users would likely already have the Office software package installed on their computers, eliminating the need to download a program or pay a fee for new software.

Since the final publication of ACRP Report 65 was significantly accelerated, ACRP directed the Project Team to disregard the CD, and only provide the electronic Word versions of Resource A – Topics for IROPS Plan Development, Resource B – Model IROPS Contingency Plan, and Resource C – Tools for

online publication on TRB's website. The Project Team submitted these along with the RFR to the ACRP SPO on January 31, 2012.

Final Project Report

Following receipt of comments from the Panel on all preliminary draft final deliverables under Task 10, the Project Team prepared revised final deliverables. The final project report (this document) documents the Project Team's research findings, including our methodology, interpretations, and recommendations from each of the project tasks (1 through 10). This report also includes the final version of our implementation plan, described in the following section.

Implementation plan

Developing a method to disseminate the findings of the research and the guidebook itself is critical to the success of the project. The project team recommends that a multi-phase approach be used to disseminate the information into the industry. The proposed approach is based upon both the project team's experience with the topic of IROPS, as well as the success realized as part of the Guidebook testing as part of this project. Additionally, the recognition from the industry that this document is needed has also contributed to the proposed plan.

Regional Forums – The Project Team had initially contemplated the use of regional forums to disseminate the information. Their format would be modeled after several regional workshops that the project team had been involved in prior to the ACRP 10-10 project. As the project has evolved, especially over the past few months, it has become apparent that regional forums would be advantageous to reach a wide audience and connect various stakeholders. It is recommended that the ACRP consider the pursuit of these forums as a follow-on to the study itself.

Industry Distribution of the Document – Similar to the distribution of Report 32 to all GA airports, it is recommended that the FAA or the ACRP consider the distribution of a copy of the resulting Report 65 to over 400 airports that experience or have the potential to experience commercial service operations that could result in IROPS events. By providing the document directly to the airport operators, it places the document directly at their use and doesn't put the report in a position of having to be "found" by the airport sponsors. Obviously, having the document on the ACRP web page is important but we are still finding that there are a number of airports that are not actively engaged in the ACRP program and would not be aware of Report 65.

Industry Presentations – Much like the previous 64 reports that ACRP has produced, we'd look to speaking engagements at a number of the industry events, tied to the various trade organizations and stakeholder groups. This would include the airport perspectives such as ACI-NA, AAAE, NASAO, and ACI as well as resource agencies such as the CBP and TSA and the many branches of the FAA including Airports and Air Traffic. Airline groups would also benefit from a presentation that would showcase that airports are looking for an active relationship and positive interaction before an IROPS event to develop coordinated response to the events when they happen.

15.0 Schedule

The following schedule outlines the milestones of the project and their completion dates. The Project Team began work in November 2010, and completed the final deliverables in January 2012, two months ahead of schedule, at the request of the ACRP and the FAA. It was requested by these agencies to get the documents into the hands of industry professionals.

ACRP 10-10 Project Timeline	
Task Description	Schedule
Phase I	
Task 1: Collect IROPS Materials	November 2010 – December 2010
Task 2: Identify IROPS Practices	December 2010 – January 2011
Task 3: Identify IROPS Technology	December 2010 – January 2011
Task 4: Evaluate Results	January 2011 – March 2011
Task 5: Technical Summary & ACRP Panel Teleconference	March 2011 – April 2011
Task 6: Draft Guidebook & CD	May 2011
Task 7a: Interim Report	May 2011
Call with Panel to review testing sites	May 2011
Task 7B: Review Draft Guidebook & Updated Work Plan with ACRP Panel in D.C.	June 2011
Phase II	
Task 8a: Update Guidebook	Mid-July 2011 – December 2011
Task 8b: Test Guidebook with Five (5) Airports	Mid-July 2011 – Mid-November, 2011
Task 9: Lessons Learned	October 2011– November 2011
Task 10a: Draft Guidebook	November 2011 – December 2011
Panel Review	December 2011– January 2012
Task 10b: Final Guidebook	January 2012