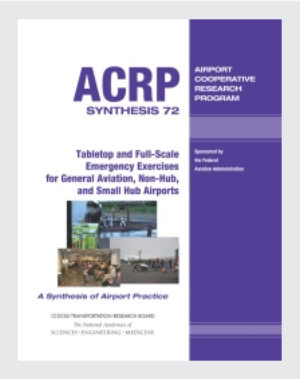

Tabletop and Full-Scale Emergency Exercises for General Aviation, Non-Hub, and Small Hub Airports

DETAILS

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AIRPORT COOPERATIVE RESEARCH PROGRAM

ACRP SYNTHESIS 72

Tabletop and Full-Scale Emergency Exercises for General Aviation, Non-Hub, and Small Hub Airports

A Synthesis of Airport Practice

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AIRPORT COOPERATIVE RESEARCH PROGRAM

Airports are vital national resources. They serve a key role in transportation of people and goods and in regional, national, and international commerce. They are where the nation's aviation system connects with other modes of transportation and where federal responsibility for managing and regulating air traffic operations intersects with the role of state and local governments that own and operate most airports. Research is necessary to solve common operating problems, to adapt appropriate new technologies from other industries, and to introduce innovations into the airport industry. The Airport Cooperative Research Program (ACRP) serves as one of the principal means by which the airport industry can develop innovative near-term solutions to meet demands placed on it.

The need for ACRP was identified in *TRB Special Report 272: Airport Research Needs: Cooperative Solutions* in 2003, based on a study sponsored by the Federal Aviation Administration (FAA). ACRP carries out applied research on problems that are shared by airport operating agencies and not being adequately addressed by existing federal research programs. ACRP is modeled after the successful National Cooperative Highway Research Program (NCHRP) and Transit Cooperative Research Program (TCRP). ACRP undertakes research and other technical activities in various airport subject areas, including design, construction, legal, maintenance, operations, safety, policy, planning, human resources, and administration. ACRP provides a forum where airport operators can cooperatively address common operational problems.

ACRP was authorized in December 2003 as part of the Vision 100—Century of Aviation Reauthorization Act. The primary participants in the ACRP are (1) an independent governing board, the ACRP Oversight Committee (AOC), appointed by the Secretary of the U.S. Department of Transportation with representation from airport operating agencies, other stakeholders, and relevant industry organizations such as the Airports Council International-North America (ACI-NA), the American Association of Airport Executives (AAAE), the National Association of State Aviation Officials (NASAO), Airlines for America (A4A), and the Airport Consultants Council (ACC) as vital links to the airport community; (2) TRB as program manager and secretariat for the governing board; and (3) the FAA as program sponsor. In October 2005, the FAA executed a contract with the National Academy of Sciences formally initiating the program.

ACRP benefits from the cooperation and participation of airport professionals, air carriers, shippers, state and local government officials, equipment and service suppliers, other airport users, and research organizations. Each of these participants has different interests and responsibilities, and each is an integral part of this cooperative research effort.

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Cover figure: Top right: Full-scale Exercise at Hector International Airport (FAR photo, used by permission). Lower left: Table Top Exercise at Denver International Airport (DEN photo, used by permission). Lower right: Table Top Exercise at Denver International Airport (DEN photo, used by permission).

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Throughout the study, the topic panel and the ACRP project officer provided sound advice, practical assistance, and encouragement.

FOREWORD

Airport administrators, engineers, and researchers often face problems for which information already exists, either in documented form or as undocumented experience and practice. This information may be fragmented, scattered, and unevaluated. As a consequence, full knowledge of what has been learned about a problem may not be brought to bear on its solution. Costly research findings may go unused, valuable experience may be overlooked, and due consideration may not be given to recommended practices for solving or alleviating the problem.

There is information on nearly every subject of concern to the airport industry. Much of it derives from research or from the work of practitioners faced with problems in their day-to-day work. To provide a systematic means for assembling and evaluating such useful information and to make it available to the entire airport community, the Airport Cooperative Research Program authorized the Transportation Research Board to undertake a continuing project. This project, ACRP Project 11-03, "Synthesis of Information Related to Airport Practices," searches out and synthesizes useful knowledge from all available sources and prepares concise, documented reports on specific topics. Reports from this endeavor constitute an ACRP report series, *Synthesis of Airport Practice.*

This synthesis series reports on current knowledge and practice, in a compact format, without the detailed directions usually found in handbooks or design manuals. Each report in the series provides a compendium of the best knowledge available on those measures found to be the most successful in resolving specific problems.

PREFACE

By Gail R. Staba
Senior Program Officer
Transportation Research Board

Every airport can find benefits from going beyond regulatory minima for training and exercises. This is true of the FAR Part 139 airports as well as for the general aviation airports. The focus of the report is on exercise practices that can be used by small airports; that is, general aviation, reliever, non-hub, and small hub airports. The most direct and useful parts of this report are the sample exercise tools and plans, the checklist of effective practices for tabletop and full-scale emergency exercises, and a road map for developing an effective exercise program. In every instance, this report seeks to enable the reader to be able "grab and go" with many of the ideas and sample exercise materials presented in this effort.

James F. Smith, Smith–Woolwine Associates, Inc; Ricardo E. Garcia; John M. Sawyer, JMS Airfield Safety Consulting LLC; and Kimberly A. Kenville, University of North Dakota, collected and synthesized the information and wrote the report. The members of the topic panel are acknowledged on the preceding page. This synthesis is an immediately useful document that records the practices that were acceptable within the limitations of the knowledge available at the time of its preparation. As progress in research and practice continues, new knowledge will be added to that now at hand.

CONTENTS

Note: Photographs, figures, and tables in this report may have been converted from color to grayscale for printing. The electronic version of the report (posted on the web at www.trb.org) retains the color versions.

ACRONYMS

AC	Advisory Circular (FAA)
AAE	Accredited Airport Executive
AAR	After action review
AAR/IP	After action review/improvement plan
A-CERT	Airport Community Emergency Response Team
ACE	Airport Certified Employee
ACI	Airports Council International
ACM	Airport certification manual
AEP	Airport emergency plan
AirTap	Airport Technical Assistance Program (Minnesota)
AOA	Air operations area
APA	Centennial Airport
API	Airport Performance Indicator
ARFF	Aircraft Rescue and Fire Fighting
ASE	Aspen/Pitken County Airport
ASP	Airport security program
ATC	Air traffic control
ATCT	Air traffic control tower
ATL	Hartsfield–Jackson Atlanta International Airport
AVSEC	Aviation Security
BFF	Western Nebraska Regional Airport
BIS	Bismarck International Airport
BOI	Boise International Airport
BUR	Bob Hope Airport
CBP	U.S. Customs and Border Protection
CDP	Center for Domestic Preparedness in Anniston, AL
CERT	Community Emergency Response Team
CFR	Code of Federal Regulations
CFRPC	Central Florida Regional Planning Commission
CM	Certified Member (AAAE)
COMM	Communications
COS	Colorado Springs Municipal Airport
CRW	Yeager Airport
CS	Non-primary commercial service airport in Essential Air Service program
CTOS	Center for Rad/Nuclear Training at the Nevada Test Site
DCA	Washington Ronald Reagan National Airport
DEN	Denver International Airport
DFW	Dallas/Fort Worth International Airport
DIA	Denver International Airport (acronym used by airport and city)
DVL	Devils Lake Regional Airport
DVT	Phoenix Deer Valley Airport
EAS	Essential Air Service
EGV	Eagle River Union Airport
EM	Emergency management
EMI	Emergency Management Institute (of FEMA)
EMP	Emergency Management Plan
EOC	Emergency operations center
EPG	Executive Policy Group
EPA	Environmental Protection Agency
EPM	Emergency Procedures Manual
EUG	Eugene Airport
EXPLAN	Exercise plan

FAR	Federal Aviation Regulation
FAR	Hector International Airport
FBO	Fixed base operator
FEMA	Federal Emergency Management Agency
FLL	Fort Lauderdale–Hollywood International Airport
FOD	Fort Dodge Regional Airport
FOUO	For official use only
FSD	Federal Security Director
GA	General aviation airport
GA	General aviation
GMJ	Grove Regional Airport
GYR	Phoenix Goodyear Airport
HAZMAT	Hazardous materials
HIB	Range Regional Airport
HSEEP	Homeland Security Exercise and Evaluation Program
IAEM	International Association of Emergency Managers
IAP	Incident action plan
IC	Incident commander
ICP	Incident command post
ICS	Incident Command System
IMT	Incident Management Team
IP	Improvement Plan
IT	Information technology
IWA	Phoenix–Mesa Gateway Airport
JAX	Jacksonville International Airport
JIC	Joint information center
JIO	Joint information officer
JLN	Joplin Regional Airport
LAL	Lakeland Linder Regional Airport
LAWA	Los Angeles World Airports
LAX	Los Angeles International Airport
LEO	Law enforcement officer, law enforcement organization
LEX	Blue Grass Airport
LH	Large hub airport
LPD	Lakeland (FL) Police Department
LVK	Livermore Municipal Airport
MAC	Metropolitan Airports Commission
MACC	Multi-agency coordination center
MCO	Orlando International Airport
MDAD	Miami–Dade Aviation Department
MDFR	Miami–Dade Fire Rescue
MDPD	Miami–Dade Police Department
MEM	Memphis International Airport
MH	Medium hub airport
MIA	Miami International Airport
MMU	Morristown Municipal Airport
MSEL	Master Scenario Events List
MSP	Minneapolis–St. Paul International Airport
MTV	Blue Ridge Airport
MVY	Martha's Vineyard Airport
MWAA	Metropolitan Washington Airports Authority
NAS	National Airspace System
Navaid	Navigation aid
NH	Non-hub primary airport
NIMS	National Incident Management System
NOTAM	Notice to Airmen
NPIAS	National Plan of Integrated Airport Systems

NTSB	National Transportation Safety Board
NYL	Yuma International Airport
O&M	Operations and maintenance
OPF	Miami–Opa Locka Executive Airport
ORK	North Little Rock Municipal Airport
OWA	Owatonna Degner Regional Airport
PA	Public address
PHX	Phoenix Sky Harbor International Airport
PIO	Public information officer
PR	Public relations
PSK	New River Valley International Airport
RDU	Raleigh–Durham International Airport
RL	Reliever airport
RNO	Reno–Tahoe International Airport
RSW	Southwest Florida International Airport
SAV	Savannah/Hilton Head International Airport
SEA	Seattle–Tacoma International Airport
SFO	San Francisco International Airport
SH	Small hub airport
SLC	Salt Lake City International Airport
SME	Subject matter expert
SOP	Standard operating procedure
SSI	Sensitive Security Information
STL	Lambert–St. Louis International Airport
SXQ	Soldotna Airport
TMB	Miami Executive Airport
TNT	Dade–Collier Training and Transition Airport
TTX	Tabletop exercise
UC	Unified command
UZA	Rock Hill–York County Airport
VQQ	Cecil Airport
WVI	Watsonville Municipal Airport
X51	Miami Homestead General Aviation Airport
YIP	Willow Run Airport

TABLETOP AND FULL-SCALE EMERGENCY EXERCISES FOR GENERAL AVIATION, NON-HUB, AND SMALL HUB AIRPORTS

SUMMARY

The focus of the report is on exercise practices that can be used by small airports; that is, general aviation, reliever, non-hub, and small hub airports. The most immediately useful parts of this report are the sample exercise tools and plans, the checklist of effective practices for tabletop and full-scale emergency exercises, and a road map for developing an effective exercise program. The purpose is to enable the reader to "grab and go" from the ideas and sample exercise materials, derived from a survey of 58 U.S. airports regarding specific exercise plans and procedures; and from six detailed case examples. The checklist is designed to assist airport managers, emergency managers, and planners in the development, implementation, and evaluation of effective exercise programs. The sample materials are introduced in chapter five and provided in Appendices C through Y. The checklist appears as Appendix Z to this report. Appendix AA is a road map for the development of an exercise program at an airport of any type or size.

Every airport in the study, general aviation as well as FAA Part 139, found benefits from going beyond regulatory minima for training and exercises. Many reported that the exercise guidance in the DHS Exercise and Evaluation Program (HSEEP, Figure 1) provides the most effective model for exercises, but most of those airports noted that extensive effort is required to prepare staff to use HSEEP and to adapt the HSEEP materials to fit the airport environment. Most often, airports said that they have received valuable assistance from local government agency partners in developing exercises, particularly exercises using HSEEP templates and forms. Exercises and their outcomes are meaningless unless the lessons learned are applied through a formal process.

Analysis of the data led to 13 conclusions, detailed in chapter six, "Conclusions and Suggestions for Further Research":

1. Small airports can and do have effective exercise programs.
2. Many airports in the study believe that an effective exercise program not only improves safety but also enhances customer service.
3. Even airports that are not required to have exercises by FAR Part 139 may choose to carry out tabletop and/or full-scale exercises.
4. Many larger airports have usable, scalable exercise tools that they are willing to share with smaller airports, which will save time and assist them in conducting effective exercises.
5. Small airports with limited resources may have difficult adapting HSEEP-based exercise materials to the airport environment, but requesting training from emergency management agencies that are already familiar with HSEEP procedures and/or resources can be helpful.
6. Airports can benefit from using a building-block approach; that is, beginning with discussion-based exercises that lead to tabletop exercises and then to full-scale exercise.
7. It is helpful if an airport's target capabilities determine the exercise, not the other way around. It is important that airports of all sizes consider various scenarios based on likelihood, severity, and impact of possible events.
8. Stakeholder involvement can minimize cost and maximize exercise effectiveness.
9. Airports that use exercise control teams structured on Incident Command System principles and use an explicit exercise safety plan are typically more satisfied.
10. It is productive to incorporate communications procedures and plans into tabletop and full-scale exercises.

FIGURE 1 Elements of HSEEP (DHS 2013).

11. It is typical for exercise plans to include formal evaluation procedures.
12. Airports that have a formal process for incorporating lessons learned from exercises into emergency plan and procedures appear to feel more secure about their preparedness and resiliency.
13. No evaluation criteria for emergency exercise effectiveness were reported.

Chapter one describes the types of exercises that airports currently use and the study methodology. Chapter two summarizes the results of a literature review concerning resources available to airports concerning emergency exercise planning and application, and criteria for follow-up interviews. Chapter three summarizes the information gleaned through the survey. Chapter four describes the six case examples, while chapter five outlines sample exercise materials reproduced in Appendices C through Y. Chapter six presents conclusions drawn from the synthesis and suggestions for further research.

CHAPTER ONE

INTRODUCTION

The objective of this study was to compile existing resources, experiences, and effective practices from U.S. airports that conduct tabletop and full-scale emergency exercises in order to make them more accessible and efficient by general aviation (GA), including reliever, non-hub, and small hub airports that may lack the resources (staff or financial) to develop a large-scale exercise or comprehensive exercise program on their own. This project provides airports, tenants, and other various internal and external stakeholders the airport emergency planning information required by the FAA.

Federal Aviation Regulations (FAR) Part 139 requires an airport serving certain air carrier operations to have emergency preparedness training on a regular basis as a part of the airport's emergency plan (AEP). Airport emergency planning and training usually deals with the response to an accident or incidents on the airport or nearby. Typical training exercises that most airports utilize and are required by FAR Part 139 are tabletop exercises (TTX) and full-scale emergency exercises. The materials presented in this study are equally useful for general aviation and reliever airports that are not subject to FAR Part 139 requirements but wish to enhance their preparedness through an effective exercise program.

Exercises required by the TSA as part of Parts 1540, 1542, and 1544 (Aviation Security/AVSEC) lie outside the scope of this study; however, several of the questions in the survey for this study addressed the extent to which TSA and other security partners are involved in airports' emergency exercise planning, execution, and evaluation. State aviation security exercise requirements also lie outside the scope of this study, but will be noted in passing when a respondent mentioned them.

This chapter describes these exercises, the methodology of this synthesis, and identifies how case example airports were chosen to illustrate some creative and effective practices in the industry.

DEFINITIONS OF TYPES OF EXERCISES

The DHS Homeland Security Exercise and Evaluation Program (HSEEP) defines seven types of exercises and divides the exercises into two classes: Discussion-Based Exercises and Operations-Based Exercises (DHS 2013, pp. 2.4–2.6). The DHS describes them as follows:

Discussion-Based Exercises

Discussion-based exercises include seminars, workshops, TTXs, and games. These types of exercises can be used to familiarize players with, or develop new, plans, policies, agreements, and procedures. Discussion-based exercises often focus on strategic, policy-related issues. Facilitators and/or presenters usually lead the discussion, keeping participants on track towards meeting exercise objectives.

Seminars

Seminars generally orient participants to, or provide an overview of, authorities, strategies, plans, policies, procedures, protocols, resources, concepts, and ideas. As a discussion-based exercise, seminars can be valuable for entities that are developing or making major changes to existing plans or procedures. Seminars can be similarly helpful when attempting to assess or gain awareness of the capabilities of interagency or inter-jurisdictional operations.

Workshops

Although similar to seminars, workshops differ in two important aspects: Participant interaction is increased, and the focus is placed on achieving or building a product. Effective workshops entail the broadest attendance by relevant stakeholders.

Products produced from a workshop can include new standard operating procedures (SOPs), emergency operations plans, continuity of operations plans, or mutual aid agreements. To be effective, workshops should have clearly defined objectives, products, or goals, and should focus on a specific issue.

Table Top Exercises (TTX)

A TTX is intended to generate discussion of various issues regarding a hypothetical, simulated emergency. Table top exercises can be used to enhance general awareness, validate plans and procedures, rehearse concepts, and/or assess the types of systems needed to guide the prevention of, protection from, mitigation of, response to, and recovery from a defined incident. Generally, table top exercises are aimed at facilitating conceptual understanding, identifying strengths and areas for improvement, and/or achieving changes in perceptions.

During a TTX, players are encouraged to discuss issues in depth, collaboratively examining areas of concern and solving problems. The effectiveness of a TTX is derived from the energetic involvement of participants and their assessment of recommended revisions to current policies, procedures, and plans.

Table top exercises can range from basic to complex. In a basic TTX (such as a Facilitated Discussion), the scenario is presented and remains constant—it describes an emergency and brings discussion participants up to the simulated present time. Players apply their knowledge and skills to a list of problems presented by the facilitator, problems are discussed as a group, and resolution is reached and documented for later analysis.

In a more advanced TTX, play advances as players receive pre-scripted messages that alter the original scenario. A facilitator usually introduces problems one at a time in the form of a written message, simulated telephone call, videotape, or other means. Players discuss the issues raised by each problem, referencing established authorities, plans, and procedures for guidance. Player decisions are incorporated as the scenario continues to unfold.

During a TTX, all participants should be encouraged to contribute to the discussion and be reminded that they are making decisions in a no-fault environment. Effective TTX facilitation is critical to keeping participants focused on exercise objectives and associated capability targets.

Games

A game is a simulation of operations that often involves two or more teams, usually in a competitive environment, using rules, data, and procedures designed to depict an actual or hypothetical situation. Games explore the consequences of player decisions and actions. They are useful tools for validating plans and procedures or evaluating resource requirements.

During game play, decision-making may be either slow and deliberate or rapid and more stressful, depending on the exercise design and objectives. The open, decision-based format of a game can incorporate "what if" questions that expand exercise benefits. Depending on the game's design, the consequences of player actions can be either pre-scripted or decided dynamically. Identifying critical decision-making points is a major factor in the success of evaluating a game.

Operations-Based Exercises

Operations-based exercises include drills, functional exercises (FEs), and full-scale exercises (FSEs). These exercises can be used to validate plans, policies, agreements, and procedures; clarify roles and responsibilities; and identify resource gaps. Operations-based exercises are characterized by actual reaction to an exercise scenario, such as initiating communications or mobilizing personnel and resources.

Drills

A drill is a coordinated, supervised activity usually employed to validate a specific function or capability in a single agency or organization. Drills are commonly used to provide training on new equipment, validate procedures, or practice and maintain current skills. For example, drills may be appropriate for establishing a community-designated disaster receiving center or shelter. Drills can also be used to determine if plans can be executed as designed, to assess whether more training is required, or to reinforce best practices. A drill is useful as a stand-alone tool, but a series of drills can be used to prepare several organizations to collaborate in an FSE.

For every drill, clearly defined plans, procedures, and protocols need to be in place. Personnel need to be familiar with those plans and trained in the processes and procedures to be drilled.

Functional Exercises

FEs are designed to validate and evaluate capabilities, multiple functions and/or sub-functions, or interdependent groups of functions. FEs are typically focused on exercising plans, policies, procedures, and staff members involved in management, direction, command, and control functions. In FEs, events are projected through an exercise scenario with event updates that drive activity typically at the management level. An FE is conducted in a realistic, real-time environment; however, movement of personnel and equipment is usually simulated.

FE controllers typically use a Master Scenario Events List (MSEL) to ensure participant activity remains within predefined boundaries and ensure exercise objectives are accomplished. Simulators in a Simulation Cell (SimCell) can inject scenario elements to simulate real events.

Full-Scale Exercises

FSEs are typically the most complex and resource-intensive type of exercise. They involve multiple agencies, organizations, and jurisdictions and validate many facets of preparedness. FSEs often include many players operating under cooperative systems such as the Incident Command System (ICS) or Unified Command.

In an FSE, events are projected through an exercise scenario with event updates that drive activity at the operational level. FSEs are usually conducted in a real-time, stressful environment that is intended to mirror a real incident. Personnel and resources may be mobilized and deployed to the scene, where actions are performed as if a real incident had occurred. The FSE simulates reality by presenting complex and realistic problems that require critical thinking, rapid problem solving, and effective responses by trained personnel.

The level of support needed to conduct an FSE is greater than that needed for other types of exercises. The exercise site for an FSE is usually large, and site logistics require close monitoring. Safety issues, particularly regarding the use of props and special effects, must be monitored. Throughout the duration of the exercise, many activities occur.

> If exercises are labeled "training," it may make it easier to get involvement and support from local fire, law enforcement, and emergency management agencies (R. Williams, personal communication, Nov. 17, 2015).

EXERCISES THAT AIRPORTS USE

The primary emergency exercise types that airports use are tabletop and full-scale exercises (FSEs). Tabletop exercises are designed to help an organization test airport emergency situations, such as aircraft accidents, personnel emergencies, fires, hazmat incidents, natural disasters, or security threats. Exercises evaluate groups' abilities to prepare, respond, recover, communicate, and work together. Full-scale exercises further test preparedness of all responders and cooperating organizations (mutual aid partners) and individuals in their ability to perform all roles necessary for successful emergency management. Many airports are innovative in their development of exercise scenarios, exercise methods, and exercise evaluation programs.

Airports subject to FAR Part 139, that is, airports served by commercial passenger aircraft over a certain size, are required to perform a full-scale exercise every 3 years and an annual TTX in the other 2 years. This is an absolute requirement for certification. It is one of two reasons that full-scale and tabletop exercises are the predominant types of exercises used by airports. The second reason is that they serve the practical needs of the airports, including non-Part 139 airports.

Airports also use the other five types of exercises, as documented in chapter three.

Irrespective of airport size or capability, there are multiple resources available to leverage the development of realistic tabletop and full-scale exercises.

STUDY METHODOLOGY

Selection of Airports

Sixty-four (64) U.S. airports were invited to participate in the survey, of which 60 responded (two declined). Airports in the sample were selected for convenience or because they were known as having exemplary emergency exercise programs or communications plans. The airports were selected to represent a range of all types and sizes of airports, while providing a wide variety of geographic regions. The lack of randomization and relatively small sample sizes preclude the generalizability of the statistical results beyond descriptive statistics. In addition to the 58 airports that agreed to be surveyed, a representative of one other, Rochester (Minnesota) International Airport (RST), was interviewed after the survey had been completed.

Literature Review

Available literature on topics associated with airport emergency exercises was reviewed using searches in both the open web (using Google.com) and the deep web (using the TRB database, ProQuest, EBSCO, LexisNexis, and LLIS). Peer-reviewed literature in the field of emergency exercises specifically related to airports is limited, but the literature review sought information on resources in general and particularly focused on exercise design, execution, and evaluation. Special attention was given to previous TRB reports referring to mass transit, highway transportation, and aviation practices that can be applied to exercises at airports.

Survey and Response Data

The online survey is reproduced in Appendix A. It was believed that the topics of airport emergency communications training and broader emergency exercise were closely linked. Using a single survey reduced the number of questionnaires sent to any one airport and allowed the inclusion of more airports in the study. It also allowed the exploration of possible interrelationships between airport emergency communications and emergency response and recovery exercises.

Fifty (50) airports submitted complete responses, four airports responded via an e-mailed memo, four airports submitted partial responses, and two airports declined to participate. With the two declinations included, the overall response rate to the survey was 94%. The 58 airports submitting surveys or responding by memo are listed in Appendix B.

TABLE 1
TYPES AND SIZES OF AIRPORTS RESPONDING TO SURVEY

NPIAS Category	Airports in Study	Airports in U.S.	Percentage in Study
Large Hub Airports	13	30[1]	43.3
Medium Hub Airports	6	33[1]	18.2
Small Hub Airports	8	71[1]	11.3
Non-Hub Primary Airports	7	250[1]	2.8
Commercial Service Airports (non-primary)	3	117[1]	2.6
Total of Service Airports	37	501[1]	7.4
Reliever Airports	11	268[2]	4.1
General Aviation Airports (public use airports only)	10	2,563[2]	0.4

Source: Smith, Kenville, Sawyer, and Garcia data.
[1]FAA (2014), CY13 enplanements.
[2]FAA (2014), National Plan of Integrated Airport Systems.

Appendix B provides each respondent's location, structure, and operational profile. Table 1 shows the distribution among the seven National Plan of Integrated Airport Systems (NPIAS) categories of the 58 airports in the study; it also shows the proportion of all U.S. public-use airports that is represented in the study. The responding airports are widely distributed geographically (Figure 2). Twenty-eight (28) states and all nine FAA regions are represented in the sample.

Case Examples

The following criteria were applied to determine case examples that illustrate tabletop and full-scale exercise policies, procedures, and tools that will be useful for GA, non-hub, and small hub airports:

- The airport's reported use of TTX, FSE, and other exercises;
- The range of exercise types, scenarios, and participants involved;
- Innovative measures used;
- The completeness of the airport's documentation of its exercises and its exercise programs; and
- The airport's willingness to serve as a case example and share its exercise materials and resources.

From the 30 airports that met these criteria, five case examples of actual airport exercise practices were selected and a sixth, Rochester International, was added based on information gathered through an interview for a case study for ACRP S15-04-16, *Emergency Communications Planning for Airports.*

The six case examples are:

- Large hub—Denver International Airport (DEN)
- Small hub—Boise Airport (BOI)
- Non-hub primary—Rochester (MN) International Airport (RST)
- Reliever—Lakeland Linder Regional Airport (LAL)
- Reliever—Miami–Opa Locka Airport (OPF)
- General Aviation—Owatonna Degner Regional Airport (OWA).

Follow-up interviews and document reviews allowed an in-depth examination of how these airports make their exercise programs effective.

Collection of Sample Exercise Materials

Airports that indicated a willingness to share sample emergency exercise materials were asked to provide copies. The materials were analyzed for potential usefulness to GA, non-hub, and small hub airports; a selection is reproduced in Appendix C.

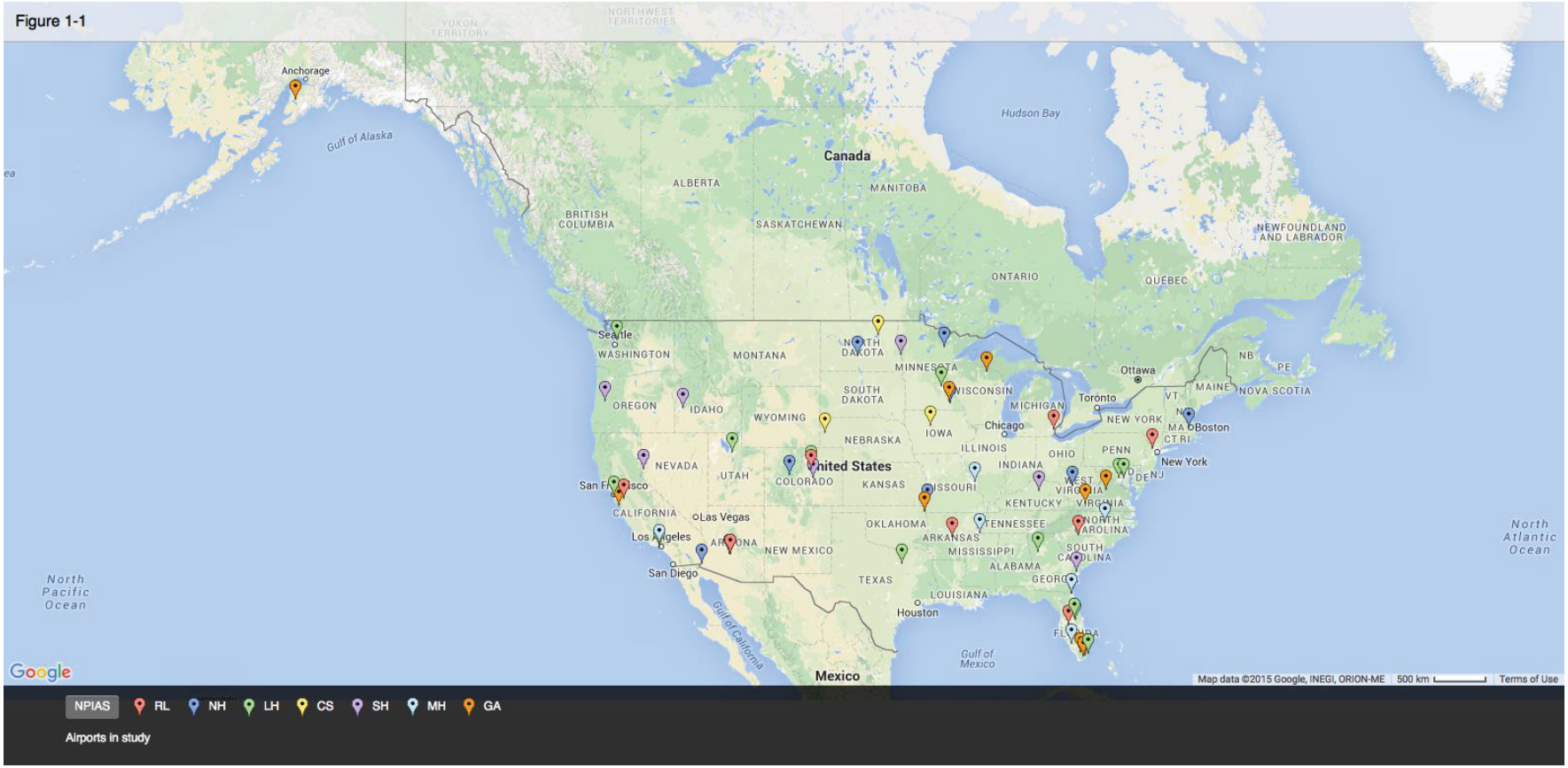

FIGURE 2 Location of airports in the study.

Data Analysis

The survey results, interviews with case example airports, and analysis of reports, plans, and other documents supplied by airports were used to identify effective approaches to exercises, evaluate suitability of methods for smaller airports, identify gaps, and extract lessons learned. These procedures were analyzed for common themes and alternative approaches to a given exercise objective, and the data arranged in spreadsheets that allowed isolation of procedures from any airport pertinent to a case example or to the synthesis of effective practices and major lessons learned. Cross-tabs were used extensively to examine relationships between variables.

RESULTS

Pertinent findings from the interviews, case examples, literature review, and data analysis are presented in five formats: a summary of survey data (chapter three); the case examples (chapter four); sample exercise materials (Appendices A–Y); a checklist for emergency exercises at GA, non-hub and small hub airports (Appendix Z); and a road map for planning emergency exercises at GA, non-hub and small hub airports (Appendix AA).

CHAPTER TWO

RESOURCES AVAILABLE TO AIRPORTS

The literature review targeted readily available and usable materials for the planning, design, execution, and evaluation of emergency exercises as well as systems for applying the lessons learned from such exercises. General, transportation-specific, and airport-specific resources were found, and the most relevant ones are summarized in this chapter.

PUBLICATIONS

General Publications on Exercise Planning, Execution, and Evaluation

"HSEEP uses a common methodology for planning and conducting individual exercises."—DHS 2013

In 2013, DHS published *Homeland Security Exercise and Evaluation Program*, a doctrinal document that consists of fundamental principles that frame a common approach to exercises. Supported by training, technology systems, tools, and technical assistance, this doctrine represents national best practices. According to the document, HSEEP "is intended to enhance consistency in exercise conduct and evaluation while ensuring exercises remain a flexible, accessible way to improve . . . national preparedness in all mission areas" (DHS 2013). Further, it states, "A common methodology ensures a consistent and interoperable approach to exercise design and development, conduct, evaluation, and improvement planning." The program is extensive, with in-depth explanations and forms, but small airports with staff and budget constraints may find it challenging to navigate the program. Additionally, HSEEP is generic to emergency management scenarios and requires extensive adaptation to be applied to an airport.

A second document, which builds on HSEEP, is *Exercise Handbook: What Transportation Security Preparedness Leaders Need to Know to Improve Emergency Preparedness* (Edwards and Goodrich 2014; Figure 3). This exercise handbook provides a much improved and simplified guide for exercises for the transportation sector, but still it is not airport-centric. It focuses on road and rail transportation exercises.

The third major resource reviewed was the EPA *Emergency Response Tabletop Exercises for Drinking Water and Wastewater Systems* (EPA 2005). Although not transportation-related at all, this EPA tabletop resource has a series of modifiable scenarios for local government departments (water and sewer) that have the right scale and complexity to allow an airport to adapt them.

The Emergency Management Institute (EMI) conducts a monthly series of virtual tabletop exercises (VTTX) using a video teleconference platform to provide a forum for disaster training for communities. The VTTX process involves key personnel from the emergency management community reviewing a prepackaged set of exercise materials and then convening for a four-hour tabletop exercise discussing a simulated disaster scenario. The event allows the connected sites to assess current plans, policies, and procedures while learning from the other sites providing perspective and practices when facing a similar situation (FEMA/EMI 2015a). EMI's VTTXs are based on HSEEP principles and incorporate NIMS and ICS.

Airport-Centric Guidebook

The only comprehensive resource for emergency planning and for developing and conducting emergency exercises at a GA airport appears to be the *AirTap Emergency Guidebook for General Aviation*

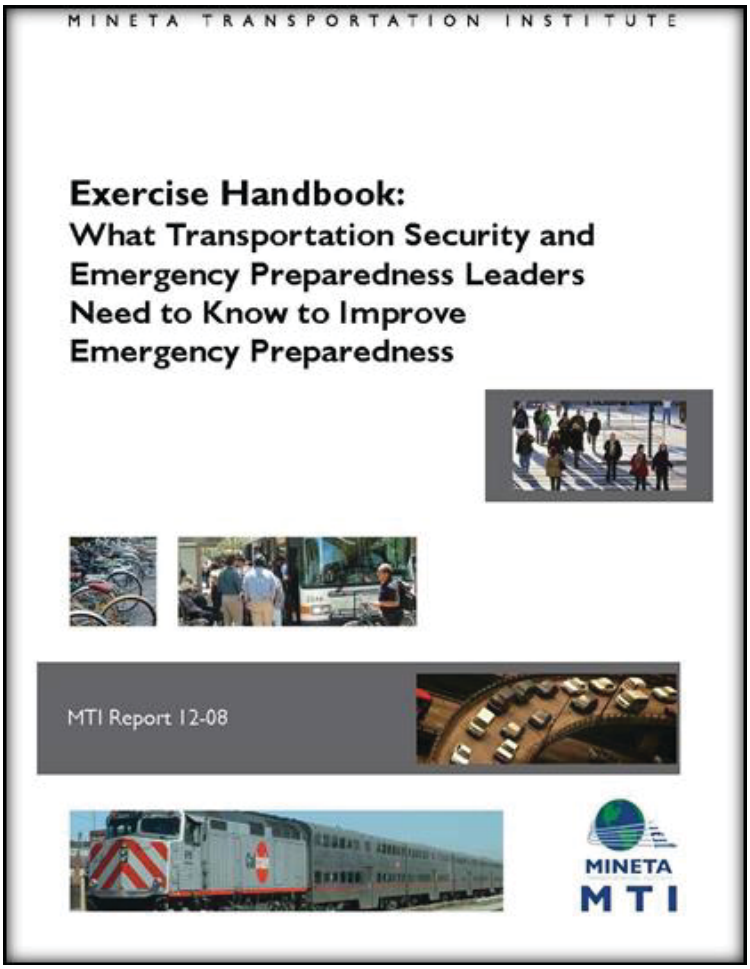

FIGURE 3 Cover of *What Transportation Security and Emergency Preparedness Leaders Need to Know to Improve Emergency Preparedness—Exercise Handbook* (Edwards and Goodrich 2014).

Airports from the Minnesota Airport Technical Assistance Program (AirTap n.d.; Figure 4). The guidebook has chapters on developing an airport emergency plan (AEP), conducting tabletop exercises and line exercises (i.e., full-scale exercises), NIMS, and mutual aid. The guidebook also includes guidance on developing an airport security plan and offers concise solutions that are scalable to larger non-hub and small hub airports. AirTap is the result of a cooperative program among the Minnesota Department of Transportation, the University of Minnesota's Center for Transportation Studies, and the Minnesota Council of Airports. A similar effort is underway in Wisconsin (S. Brummond, personal communication, Sept. 17, 2015).

COURSES

The principal exercise development course available to emergency management personnel is FEMA's Emergency Management Institute (EMI) Master Exercise Practitioner Program (MEPP). MEPP is a series of three courses (E0132, E0133, and E0136) focusing on advanced exercise design, conduct, and evaluation practices—the three phases of HSEEP. MEPP assigns candidates to an exercise planning team, where they are challenged to demonstrate their expertise at all levels of exercise design and conduct through in-class and take-home proficiency demonstrations. Candidates apply best practices and lessons learned from their organizations and experiences, as well as key learning concepts from

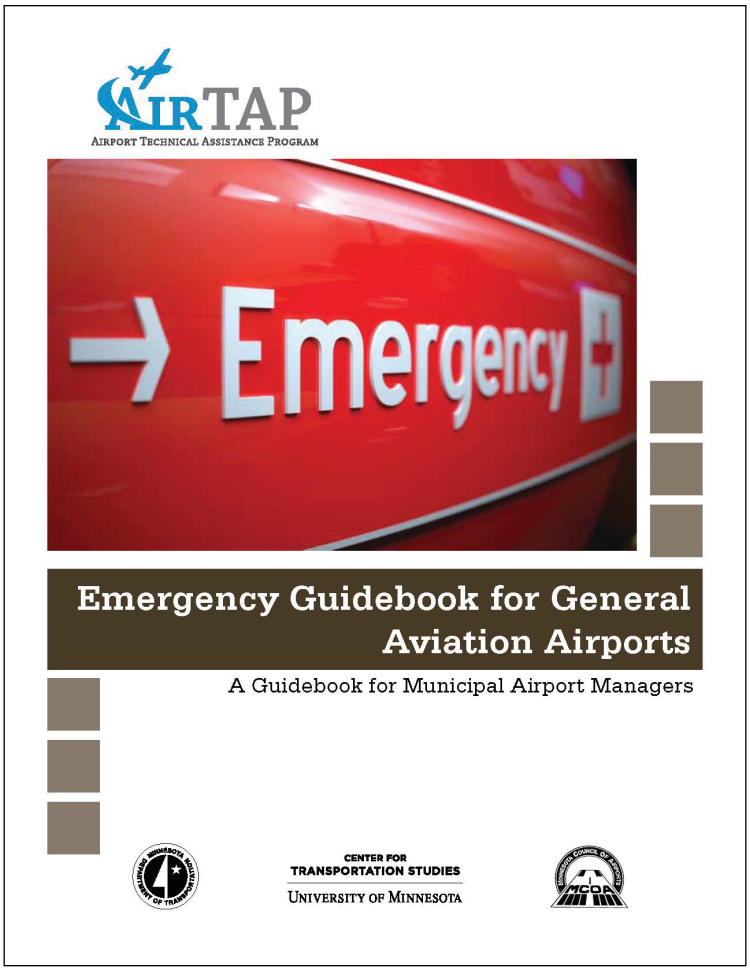

FIGURE 4 Cover of *AirTap Emergency Guidebook for General Aviation Airports.*

the MEPP curriculum to their exercise planning team assignments. The three-week residential program is held three times a year at EMI in Emmitsburg, Maryland. The basic EMI residential five-day course in HSEEP (K0146) is described at http://mil.wa.gov/uploads/pdf/emergency-management/K146_HSEEP_FFY15.pdf. The major constraint, at least for small airports, is the requirement for a participant to complete 10 prerequisite courses (nine online and one classroom) before enrolling in the MEPP courses (FEMA/EMI 2015b). Detailed information is available at http://www.training.fema.gov/mepp/. EMI provides funding for local government personnel to attend these and other courses at Emmitsburg.

Two of the independent study course that are MEPP prerequisites can be useful on their own as a starting point for an airport exercise managers: IS-120, An Introduction to Exercises, and IS-130, Exercise Evaluation and Improvement Planning, available online at http://www.training.fema.gov/is/courseoverview.aspx?code=IS-120.a and http://www.training.fema.gov/is/courseoverview.aspx?code=IS-130.

Three other training facilities offer free courses that are funded by DHS/FEMA. To apply, a potential student goes to the training organization's website and completes the application. A hard copy of the application may have to be completed and mailed to the airport's state emergency management contact. If the state EM representative approves the application, that person will

forward the application to the appropriate facility. Notification of acceptance and travel procedures goes directly to the student by e-mail (M. Smalley, personal communication, Nov. 16, 2015).

The first choice is CTOS—Center for Rad/Nuclear Training at the Nevada Test Site, where the most appropriate course for aviation staff is PER-241. All of these courses are applicable to airport operations staff, communications dispatchers, and emergency managers. CTOS flies students to Las Vegas and covers all applicable costs on site (meals, lodging, etc.). The program includes two nights in Las Vegas and the rest of the course at the Nevada Test Site in Mercury, Nevada. For more information, see http://www.ctosnnsa.org/pages/courses/courses_resident.htm.

The second is at New Mexico Tech, where the Energetic Materials Research and Testing Center offers two free courses: "Incident Response to Terrorist Bombing Incidents," and "Prevention and Response to Suicide Bombing Incidents." All expenses are paid. For more information, see http://www.emrtc.nmt.edu/training/irtb.php.

The third free training opportunity is offered through the Center for Domestic Preparedness (CDP) in Anniston, Alabama. CDP offers many courses at no cost to the participant. Two that are pertinent to airport personnel are "All Hazards Incident Response for CBNRE," and the "Hands-On Training for CBNRE Incidents." Students are flown into Atlanta and bused to Anniston. For more information, see https://cdp.dhs.gov.

Many community colleges offer emergency management degrees that include courses on exercise design, management, and evaluation. Examples are "Exercise Design, Management and Evaluation (EMHS 1906)" at Barton County Community College in Fort Riley, Kansas, and "Emergency Management Exercise Development (EMP 260)" at Owens Community College in Toledo, Ohio.

Many airports (including Blue Grass in Lexington, Kentucky, and Dallas/Fort Worth) provide aircraft rescue and firefighting (ARFF) training to other airports. The trainers who come to an airport revalidate their ARFF qualifications and then do an exercise. Such courses teach exercise procedures by example, but they are generally given only to fire and rescue personnel, who attend the external training courses.

The AAAE ARFF Working Group does not provide any formal training courses but it is in the process of updating the ARFF Working Group website (www.arffwg.org) to add some training components. ARFF Working Group representatives often make presentations at AAAE conferences, so ARFF Working Group materials are indirectly available as videos through the AAAE web-based training program. When the ARFF Working Group website is updated, probably in late 2016 or early 2017, the videos will be available there (D. Kann, personal communication, Sept. 22, 2015).

The Emergency Management Issues-Special Interest Group (EMI-SIG) is managed by the Oak Ridge Institute for Science and Education (ORISE) under the sponsorship of the U.S. Department of Energy. EMI-SIG has three online tutorials: "Developing Exercise Objectives," "Developing Exercise Scenarios," and "Basic Exercise Controller and Evaluator Tutorial." The three tutorials are available at http://orise.orau.gov/emi/training-products/.

VIDEOS

YouTube (www.youtube.com) includes some Part 139 triennial exercises for U.S. airports and has an extensive collection of ICAO Annex 14 biannual emergency exercises at a wide variety of airports outside the United States. Not only can such a video offer an airport new ideas for exercises, but videotaping an airport's own exercises can also be a valuable aid in hot washes, after action reviews, training, and public relations. Some of the airport exercise videos credit local television stations for providing footage.

BLOGS

No blog was found that focused explicitly on emergency exercises at airports or in general. However, two blogs were found that sometimes deal with emergency exercises at airports. They are the Airport EM Group at www.LinkedIn.com and the ARFF Working Group at www.arffwg.org. Both blogs are moderated and closed; however, any airport emergency manager or exercise coordinator will be approved for membership.

A number of professional organizations and for-profit companies also offer professional development courses, both online and on site, but there are typically charges for those courses.

CHAPTER THREE

SURVEY RESULTS

As noted in chapter one, this study investigated current practices regarding emergency exercises at airports of all types and sizes. Furthermore, the study also identified concepts, tools, and procedures that GA, non-hub, and small hub airports can use. This chapter summarizes and interprets the information gained through the survey; the complete raw data set is presented in Appendix A. The discussions in this chapter are keyed to the survey question numbers as they appear in that appendix.

AIRPORT STRUCTURE

Nearly half the airports are city departments, about two-fifths (42%) are authorities, 8% are county departments, one has a joint board, and one is privatized. See Question 8 in Appendix A.

NATIONAL INCIDENT MANAGEMENT SYSTEM AND INCIDENT COMMAND SYSTEM IMPLEMENTATION

Question 10 of the survey asked the airports which of their employees that would be involved in emergency exercises or in emergency communications, or both, had formal training in the implementation of National Incident Management System (NIMS) or in Incident Command System (ICS). The positions addressed by this question were emergency manager, emergency planning, training officer, exercise designer, operational program planner, operational evaluator, risk/hazard manager, public information officer, or other position identified by the airport. Table 2 shows the results by NPIAS category.

As the data indicate, most airports have at least one key position trained on NIMS and ICS, which is likely because of the importance of such training articulated by FEMA and the issuance of FAA Advisory Circular 150/5200-31C in 2009. This result holds across all seven NPIAS categories. A similar picture was seen across all governance structures. The result for smaller airports may be indicative of their close relationships with their community emergency response partners (Smith 2012, 2014).

The survey did not directly ask whether the airports found NIMS or ICS to be important for the creation and maintenance of an effective emergency exercise program. However, in an examination of post-event recovery practices at 37 airports, *ACRP Synthesis 60* (Smith et al. 2015) showed that the airports overwhelmingly found that application of NIMS and ICS aided their emergency management efforts. The data in Table 2 show a major commitment by more than 80% of the airports in this study to NIMS and ICS training. Again, it should be noted that the airports in this study are not a random sample, but were selected as likely to have superior emergency exercise or emergency communications programs.

AIRPORT STAFFING

Survey Questions 9 and 10 addressed the sorts of specialized positions the airports have for emergency management, exercises, and public information; analysis of their responses is presented in Table 3.

Thirty-two percent (32%) of the airports surveyed have emergency managers employed full time, and slightly more, 35%, have emergency management as part of an employee's duties, so the

TABLE 2
NIMS AND ICS TRAINING BY NPIAS CATEGORIES

NPIAS Category	No Position Has NIMS/ICS Training		One or More Positions Have NIMS/ICS Training		Do Not Know	
LH	0	0%	13	100%		
MH	1	17%	4	80%		
SH	0	0%	7	100%		
NH	1	14%	6	86%		
CS	1	33%	2	67%		
RL	1	25%	6	86%		
GA	2	25%	5	63%	1	12%
Total	6	13%	43	83%	1	2%

Source: Smith, Garcia, Sawyer, and Kenville data.

majority of the airports surveyed are dedicating human resources to the emergency management process at the nation's airports either full- or part-time. These findings apply not only to large airports but to the full range of airports in the study, as detailed in the sidebar.

All of the small hub airports, 84% of the non-hub primary airports, 67% of the commercial service airports, 78% of the reliever airports, and 75% of the general aviation airports have full-time or part-time emergency managers.

Forty of the 50 (80%) airports giving full responses have an emergency planner and 43 of the 50 (86%) have some type of emergency manager. This greatly improves the development, implementation, and refinement of AEPs and airports' certification requirements. This also signals the importance the airport management community has placed on emergency management and allocated resources appropriately.

When looking at the emergency exercises, 48% have some sort of emergency scenario designer and evaluator as part of their job description. This has likely increased in the preceding decade because of the rewrite of FAR Part 139 and the Presidential Homeland Security Directive (White House 2004).

TABLE 3
STAFFING CHARACTERISTICS OF SURVEYED AIRPORTS

Positions Reported from 50 Airports	Have FT on Airport Staff	Have PT on Airport Staff	Pay FT at Other Agency	Pay PT at Other Agency	FT Role Part of Current Duties	PT Role Part of Current Duties	Total
Public Information Officer (PIO)	26	2	4	3	6	7	48
Emergency Manager	14	1	3	1	9	15	43
Emergency Planner	7	1	2	0	12	18	40
Training Officer	14	1	1	1	10	12	39
Exercise Designer	5	1	2	2	11	19	40
Exercise Evaluator	5	0	4	3	9	19	40
Operational Program Planner	7	2	3	1	9	16	38
Operational Evaluator	6	1	3	1	9	19	39
Risk/Hazard Manager or Equivalent Role	15	2	4	3	7	11	42
ARFF Training Officer	1	0	0	0	0	0	1
Planner, Training, and Exercise Designer and Evaluator all done by Emergency Manager	1	0	0	0	0	0	1

Source: Smith, Garcia, Sawyer, and Kenville data.

TYPES OF EXERCISES USED

More than 80% of the responding airports reported utilizing tabletop and full-scale emergency exercises (Question 39 in Appendix B). This would follow the requirements of FAR Part 139 exactly; however, there are many other types of exercises and scenarios that can be utilized in an effort for ongoing self-improvement in emergency preparedness for airports. It is encouraging to see how many airports have created positions on their management teams for emergency management personnel; however, it appears that the airports are staying with the mandated types of exercises. Some airports indicate other methods used such as seminars/workshops, games, and simulations.

STAFF TRAINING FOR EXERCISE DEVELOPMENT

The surveyed airports reported a number of sources for exercise planning and development of their TTY and FSE personnel (Questions 37 and 38). When asked if the airport has undergone any type of specific training in the past 3 years to assist with the development and deployment of training exercises, over half (60%) responded "no" while 36% responded "yes," and 4% indicated they did not know. If GA and RL airports are removed, "yes" responses represent 44% and "no" 47%. Of those who responded positively, the most frequent source is the various iterations of training provided by FEMA, especially HSEEP (DHS 2013). This has worked well for airports that can afford to train their existing personnel to become subject matter experts (SMEs) for the development and staging of their exercises. Edwards and Goodrich (2014) estimated that developing a fully HSEEP-qualified exercise designer requires a 2- or 3-year commitment on the part of the individual and the organization, but other sources disagree (D. Kann, personal communication, Sept. 22, 2015).

Thirty-six percent (36%) of airports reported training to assist with the development and deployment of exercises; 60% had had no such training.

Training for exercise development was heavily skewed towards the larger airports, as shown in Table 4. The FAR Part 139 airports (large, medium, small-hub, non-hub and commercial) that are required to perform annual TTX and FSE every 3 years appear much likelier to commit staff time and funding to training in exercise development.

The results in Table 4 show the importance of having readily useful tools to help small airports conduct effective exercises where there may not be sufficient time needed to "pre-plan" the exercise as opposed merely to running it. Many airports consider the emergency manager a stand-alone position; however, at smaller airports it may be part of another position, which would likely limit pre-planning time. This could also be a reason why airports seem to rely heavily on the mandated exercise formats instead of trying new and different types of training.

One airport described an internal training consortium consisting of fire, police, maintenance, operations, security, training, emergency management, information technology, and engineering. All members of the group have been through HSEEP training and the complete NIMS and ICS training available from FEMA.

TABLE 4
STAFF WITH EXERCISE DEVELOPMENT TRAINING
BY NPIAS CATEGORIES

NPIAS Category	Have Staff with Exercise Development Training
LH	69%
MH	33%
SH	43%
NH	20%
CS	0%
RL	10%
GA	14%

Source: Smith, Garcia, Sawyer, and Kenville data.

Those who do not have trained exercise SMEs can attempt to directly access sample exercise materials from other airports or turn to local government emergency exercise SMEs, such as county or city emergency managers, for assistance.

Rochester International Airport (RST) differentiates between exercise planners and exercise players, bringing up the important concept that the same persons who plan an exercise may distort its effectiveness if they are also players in that exercise (K. Claussen, personal communication, Dec. 4, 2015).

EXERCISE DEVELOPMENT

FAA Advisory Circular 150/5300-31C provides clear guidance with regard to whom FAR Part 139 airports should involve in their planning for emergency exercises. Although many smaller airports are not required by FAA regulations to have AEPs, best practices and requirements for NIMS compliance have resulted in the vast majority of airport having some form of an airport-specific plan, and most have looked to FAA for guidance in the development of their plans. In addition, as noted in chapter two, the Minnesota Council of Airports, in conjunction with the University of Minnesota Center for Transportation Studies, has created a manual for general aviation airports to utilize for airport emergencies.

Airports of all sizes benefit from focusing on a wide spectrum of scenarios chosen by considering the factors of likelihood, severity, and impact of all possible events.

In addition, FAR Part 139 provides a good reference in this area even if the airport is not bound to it by regulation. FAR 139 states that at a minimum airports should coordinate with the following to ensure that they are trained in the airport's plan: law enforcement; rescue and firefighting; medical personnel and organizations; principal tenants; facilities personnel and agencies; all personnel having duties and responsibilities under the plan; and all other agencies having responsibilities under the plan.

EXERCISE DEVELOPMENT TOOLS AND PROCESSES USED

When analyzed, the responses to Question 43, summarized in Figure 5, show that a majority of airports in the study use internal subject matter experts, or SMEs, to develop their exercises. This may be difficult for smaller airports with limited human and capital resources, a constraint that supports the need for pre-prepared exercise materials.

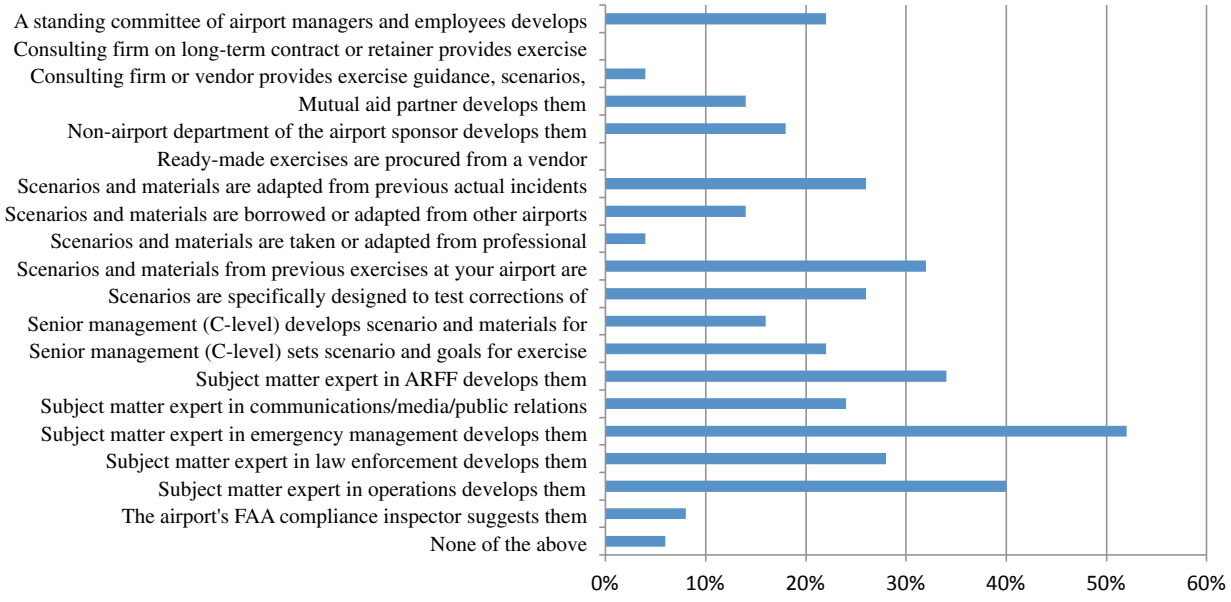

FIGURE 5 Processes and responsibilities for exercise design.

Airports reported involving a wide variety of outside agencies and partners in exercise development, including regional planning councils, mutual aid partners, military units on joint use airports, airlines, hospitals, local offices of emergency services, and voluntary organizations.

CONTACT LISTS

One of the crossover areas between this study and ACRP Synthesis S04-16, *Emergency Communications Planning for Airports*, is emergency contact lists. The survey obtained data on how the airports keep their contact lists updated (Question 30); whether the airports were satisfied with their method of updating contact lists (Question 31); and whether the airports' contact lists were consistent across all plans and documents that contain contact lists, such as AEPs (Question 32).

A critical element of emergency planning is contact list preparations. The vast majority of respondents manually update their lists. Airports may wish to consider whether a more exact, perhaps automated, method of updating electronic databases could be implemented.

A crucial yet often overlooked part of the emergency planning process is emergency contact list preparation. Even with today's technology, telephones are still most often utilized as the tried and true medium to reach people in times of emergency, as it is reliable and recordable. Nearly 86% of the airports surveyed rely on manual updating of their emergency contact lists, while only 8% use any type of electronic or technologically enhanced system. It would be useful to determine whether a more systematic method of creating electronic databases exists, one which is tied to a fixed schedule of modification or "updating," much like cellular phones on a nightly basis, might be available. Thirty-eight percent (38%) of the airports surveyed say they are on a fixed schedule, but one which may be semiannual at best; 42% were not sure if their lists were current and consistent at the time of the survey, and would likely welcome a solution to ensure their lists are accurate and up-to-date at all times. Whether by manual or automated process, it is essential that call lists be kept up to date, so that the appropriate parties can be reached in time of peril.

Half the airports said that they were satisfied with the method they use to maintain their contact lists; 32% said they were dissatisfied (Question 31). This topic is examined in detail in ACRP Synthesis S04-16. Exercises can be a successful way for airports to test the accuracy of their emergency contact lists. Functional exercises (e.g., call downs) are the most common test used, but exercises may not occur frequently enough to ensure that contact lists are adequate if an actual incident occurs. Problems with contact lists may be revealed during the response to actual emergencies (Smith et al. 2015).

Inconsistency in contact lists may create issues during exercises as well as real emergency responses. This was suggested by a comparison of the airports' level of satisfaction with their contact lists to whether airports' contact lists are consistent across AEPs and other plans and documents (Question 32), which revealed a similarity of the "yes" and "no" percentages (50/54% and 32/24%, respectively).

WHEN TABLETOP EXERCISES ARE USED

When asked on what occasions the airports use TTX (Question 50), responses reflected the importance of FAR Part 139 requirements. (Because airports could mark more than one answer to this question, it is important to examine the 10% that report never having done a TTX; these airports were all GA airports.) Of the 35% that reported doing TTX more frequently than once a year, some are on a monthly schedule, some use TTX to test new plans or procedures, and some use them to evaluate learning. The most interesting comment suggested using tabletop exercises as part of a building-block approach to preparation for a triennial full-scale exercise. Examination of the data indicates that LH airports are likelier than other sized airports to do TTX frequently, which may correlate with the number of employees dedicated to emergency management at the airport.

SCENARIOS

Fifty-two percent (52%) of the surveyed airports said that they use an SME to assist in developing the scenario for their exercise (see Figure 5 and refer to Question 43 in Appendix A). Only one respondent conducted a weather-related exercise, and it was in conjunction with an aircraft accident scenario. Another used an earthquake scenario, and three others conducted active shooter exercises. Some airports have also drilled using scenarios that reflected current events and incidents at other airports. However, a majority of the airports surveyed use training scenarios based on aircraft crashes (Alert III).

The overwhelming focus on aircraft accident exercises results from the FAR 139 regulatory compliance requirements for aircraft rescue and firefighting (Figure 6) or staffing and resource constraints, or both—despite the fact that many of the surveyed airports are in areas subject to major natural disasters such as earthquakes, hurricanes, tornadoes, and wildfires, which would affect not only the airport but the whole community and possibly the state. This could be attributed to the fact that many airports have found it beneficial to participate in regional disaster exercises organized by local or state governments, regional organizations, or federal agencies that generally focus on non-aircraft related scenarios (Smith 2014). Part 139 airports can perform non-aircraft incident certification exercises if they get prior approval from FAA certification inspectors (S. Demory, personal communication, Oct. 3, 2015; C. Stephens, personal communication, Oct. 29, 2015). Even though this may be a contributing factor in the narrow range of airport exercises, it also points to a significant gap within airport exercise environment.

Airports report most success by prioritizing exercise scenarios and target capabilities: Likelihood × Severity × Operational Impact = Exercise Priority. This is possibly a result of having to respond to regulatory mandates for AEP exercises or time or staff constraints.

The data from Questions 51 and 52 show that only 28% of the surveyed airports have ever conducted a full-scale exercise for any purpose other than FAR Part 139 recertification. The majority of additional FSEs were for active shooter incidents.

Table 5 is an index to the scenarios reported as having been used in the airports' most recent full-scale exercise, which most likely would have been a triennial recertification exercise at a FAR Part 139 airport but also include voluntary full-scale exercises at some GA and RA airports in the study. The scenarios are indexed according to the primary capabilities and secondary capabilities addressed in the full-scale exercise and the airport that used each scenario.

As indicated in Table 5, typical full-scale exercise scenarios are complex, often very complex. Full-scale exercises now usually include tests of mass casualty procedures and often address other

FIGURE 6 ARFF Equipment at Hector International Airport (FAR photo, used by permission).

TABLE 5
CAPABILITIES TESTED IN MOST RECENT FULL-SCALE EXERCISES BY AIRPORTS IN STUDY

Primary Capability		Secondary Capabilities														
		Communications	Alert & warning	Emergency public information	Protective actions	Law enforcement	Fire & rescue	Health & medical	Resource management	Operations & maintenance	Security	Safety	Utilities	Crowd Control	Other (Codes at bottom of table)	Airport
Active shooter		X	X	X	X	X	X	X	X	X	X	X				CRW
		X	X	X	X	X	X	X	X	X	X	X	X	X	5	NYL
Aircraft Accident	Aircraft Size Category in Exercise >200 passengers	X		X		X	X	X		X	X	X		X	4	SEA
		X	X	X	X	X	X	X		X	X	X		X	4	FLL
		X	X	X		X	X			X	X	X		X	4	ATL
		X	X	X		X	X		X		X	X		X	4, 6, 7	SLC
		X	X			X	X	X	X	X	X	X		X	4, 7	PHX
		X	X	X		X	X		X	X	X	X			4, 14	LAX
		X	X	X	X	X	X	X	X	X	X	X		X	4, 16	MCO
		X	X	X		X	X	X	X	X	X	X		X	4	DEN
		X				X	X		X		X	X		X	4, 3, 18, 20	SFO
	Aircraft Size Category in Exercise 100-200 passengers	X	X	X	X	X	X	X	X	X	X	X	X	X		LAL
		X	X	X	X	X	X	X	X	X	X	X	X	X	1, 2, 4, 12, 23	MIA
Aircraft Accident	Aircraft Size Category in Exercise >200 passengers	X	X		X	X	X	X	X	X	X	X			5, 4, 7, 9, 13, 14, 20	RSW
		X	X			X	X	X	X	X	X	X		X	4, 20	MSP
		X	X	X		X	X	X		X	X	X			4	RDU
				X	X	X	X	X	X	X	X	X			4	YIP
		X	X	X		X	X	X	X	X	X	X		X	4	BUR
		X	X	X	X	X	X	X	X	X	X	X	X	X	5, 4, 8	JAX
			X			X	X	X		X					4	STL
		X	X	X			X	X	X	X	X	X		X	4, 11, 20	DCA
	Aircraft Size Category in Exercise 30-49 passengers	X	X	X		X	X			X	X	X		X	5, 4	APA
															5, 9, 23	EGV
		X				X	X	X		X				X	4, 17, 20	DVL

TABLE 5
(*continued*)

Primary Capability		Secondary Capabilities														
		Communications	Alert & warning	Emergency public information	Protective actions	Law enforcement	Fire & rescue	Health & medical	Resource management	Operations & maintenance	Security	Safety	Utilities	Crowd Control	Other (Codes at bottom of table)	Airport
		X	X	X	X	X	X	X	X	X	X	X		X		BFF
	Aircraft Size Category in Exercise Regional Jet	X	X	X		X	X	X	X	X	X	X	X	X	4, 9, 14, 20	RNO
		X	X	X	X	X	X	X	X	X	X	X		X		FAR
		X	X	X	X	X	X	X			X	X		X	3, 23	OWA
		X				X	X			X					8	MEM
		X	X			X	X		X	X		X				SAV
		X	X	X	X	X	X	X	X	X	X	X	X	X	4, 6, 10, 20, 24	HIB
		X	X	X		X	X	X	X	X	X	X		X		BIS
		X	X	X	X	X	X	X		X	X	X	X	X	5, 12, 13	LEX
		X	X		X	X	X	X	X	X	X					JLN
		X	X			X					X					ASE
		X	X	X	X	X	X	X	X	X	X	X	X	X		BOI
		X	X	X	X	X	X	X	X	X	X	X	X	X	5	EUG
	Aircraft Size Category in Exercise <9 pax	X				X	X	X		X				X	9, 20	FOD
		X	X	X	X	X	X	X		X	X	X				DVT
		X					X			X						MMU
		X	X			X	X	X		X	X					OPF
	GA	X	X	X			X	X	X	X		X			4, 14, 20	WVI
Winter weather operations		X	X	X		X	X		X	X	X	X		X	4, 14, 19, 20, 21, 22	DFW

Other Secondary Capabilities
1. CBP/ICE screening of passengers for criminal
2. Transport of injured criminal to medical facility
3. Airline response

(continued on next page)

TABLE 5
(*continued*)

Primary Capability	Secondary Capabilities															
	Communications	Alert & warning	Emergency public information	Protective actions	Law enforcement	Fire & rescue	Health & medical	Resource management	Operations & maintenance	Security	Safety	Utilities	Crowd Control	Other (Codes at bottom of table)	Airport
4. Emergency Operations/Coordination Center 5. Haz-Mat 6. Crime scene handling 7. Family & Friends Reunification Center; Survivor, Friends and Relatives, and Family Assistance Centers 8. Terrorism 9. ARFF off airport 10. Radio communications 11. River rescue/water rescue 12. Fuel spill 13. Post-accident investigation (NTSB, FBI) 14. Multi Agency Coordination 15. Volunteer airlift team for regional relief (pilots, planes, ground crews) 16. Regional medical transport and treatment surge capacity test 17. Test AEP revisions 18. Airport senior management roles coordinating with airline 19. Aircraft accident 20. Mutual Aid 21. Social media messaging 22. Stranded passengers 23. Structural Fire 24. Terminal Evacuation															

Source: Smith, Garcia, Sawyer, and Kenville data.

functions. The detailed scenario used by Southwest Florida International Airport (RSW) gives an idea of the complexity that an airport can put into its scenario; it is reproduced in Appendix H.

A number of airports reported using the DHS Master Scenario Events List (MSEL) Package, which is based on HSEEP. It is a template for organizing the injects for an exercise based on the overall exercises objectives and the jurisdiction's overarching objectives for an exercise. The template has pre-formatted fill-in-the-blanks guides for generating a summary MSEL and an expanded MSEL. Orlando International Airport (MCO) was the only airport to note using MSEL in its survey replies, but most of the airports that noted use of HSEEP tools probably use MSELs. An MSEL from Range Regional Airport (HIB) is reproduced as Appendix L.

DESIGN OF EXERCISES

FAR 139.325 Airport Emergency Plan, section G, 1,2,3,4, states that each certificate holder must:

1. Coordinate the plan with law enforcement agencies, rescue and firefighting agencies, medical personnel and organizations, the principal tenants at the airport, and all other persons who have responsibility under the plan;
2. To the extent practicable provide for participation by all facilities, agencies, and personnel specified earlier in the development of the plan;
3. Ensure that all airport personnel having duties and responsibilities under the plan are familiar with their assignments and are properly trained; and
4. At least once every 12 consecutive calendar months, review the plan with all parties with whom the plan is coordinated, as specified [previously], to ensure that all parties know their responsibilities and that all of the information in the plan is current.

FAA Advisory Circular 150/5200-31C lists 10 functions at an airport that the AEP and exercises at FAR Part 139 airports must address: command and control; communications; alert notification and warning; emergency public information; protective actions; law enforcement/security; firefighting and rescue; health and medical; resource management; and airport operations and maintenance (FAA 2009, pp. 37–38).

FAA guidance also states that these functions are not all-inclusive; thus, each airport needs to assess its own needs, adding functions as applicable by its own emergency planning team. To these issues, this study added four: security, safety, utilities, and crowd control (survey questions 41 and 42). The survey also allowed airports to list other functions that they tested

The main deficiencies in typical exercise designs are insufficient attention to resource management and on utilities. This is important because many emergency management situations involve eventual reimbursement from an insurance company, through a lawsuit, or from FEMA in the case of Presidential declarations of emergencies. Reimbursement requires proper record-keeping and tracking of resource allocation and utilization. Utilities are important, as the most common disruptions of airport operations are failure of electrical supply (Griffith et al. 2015) and delays in restoring electricity (Smith et al. 2015).

For tabletop exercises (Question 41), the proportion of airports testing each of the 10 required functions ranged from a low of 50% (for protective actions) to a high of 90% (for communications). The average for the 10 functions was 72%. If the GA airports are excluded, the average rises to 82% and the range becomes 60%–100%. It is nevertheless clear that airports are making efforts to use TTX to test preparedness, procedures, and training results for most of the 10 functions and for safety and crowd control. Overall, the frequencies for the 10 required functions ranged between 50% for protective actions and 90% for communications. Most values were between 75% and 90%. For the four additional functions for all airports in the study, the range for TTXs was 32% (utilities) to 74% (security, safety).

With regard to which of the 10 FAR Part 139 requirements were addressed in most recent full-scale exercises (Question 42), the range was from 40% (protective actions) to 82% (command and control, fire and rescue). The average for all 10 required functions was 68%. Removing the 10 GA airports produced a range of 50% to 100% and an average of 77%. For all airports in the study, the results for the four additional functions for full-scale exercises ranged from 20% (utilities) to 68% (safety, security).

As can be seen in the results for Questions 41 and 42, a small number of airports reported testing other functions. The most common of these were mass care and family assistance centers.

Comparison of the functions tested in full-scale exercises (Question 42) with those tested in tabletop exercises (Question 41) showed very similar results. The greatest apparent difference is that communications are tested more often in TTX (90%) than in FSEs (76%). Utilities are also tested less often in FSEs (30% compared with 20%).

PARTICIPANTS IN EXERCISES

To Question 41, "Who participated in your most recent triennial/recertification or full-scale exercise?", the surveyed airports gave the responses shown in Figure 7.

The highest values of around 80% resulted from the number of GA and reliever airports that answered "N/A" because they were not required to have full-scale exercises. As noted in Table 5, some airports used an active shooter scenario for their most recent FSEs. In addition to the survey findings reflected in Figure 7, several case example and other airports in the study noted the importance of having airport volunteers—airport ambassadors, information booth volunteers, tenant associations, AOPA chapters, and airport community emergency response teams (A-CERT)—participate in exercises.

TSA participated in nearly all FSEs at FAR Part 139 airports.

Although the exercises addressed in this study are all related to FAA requirements or airport operational needs and are not primarily

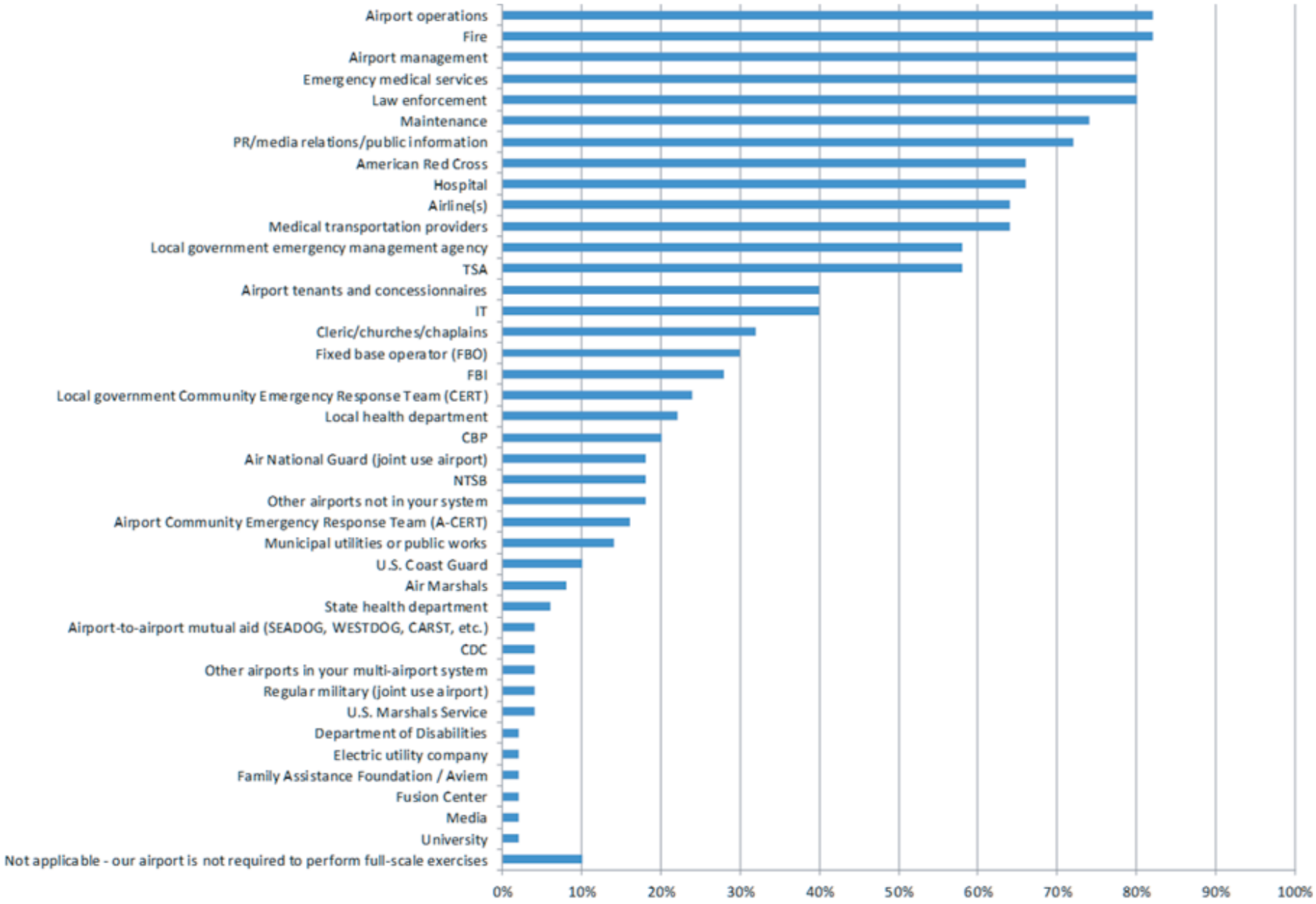

FIGURE 7 Participants in most recent full-scale exercise.

aviation security (AVSEC) exercises, the high degree of participation by security-related agencies is worth noting. TSA participated in almost 60% of the TTX but in nearly all the full-scale exercises at FAR Part 139 airports. The Federal Bureau of Investigation and U.S. Marshals Service also participated, typically at large hub airports.

SETTINGS AND LOCATIONS

The surveyed airports indicated the use of more than 20 different settings and locations in their most recent full-scale exercises (Question 47). By far the most frequently used exercise setting was the aircraft operating area (AOA), which is consistent with the strong focus on aircraft crash scenarios. Some airports used off-airport crash scenarios.

Other on-airport settings noted by surveyed airports included ARFF training facilities, Air National Guard bases, FBOs, museums, and law enforcement defensive driving areas. Other off-airport settings included community sports complex, hotels, local state park, friends and family reception centers, hospitals, military command centers, and radio facilities around the city.

PROPS AND EQUIPMENT USED IN EXERCISES

The most commonly used props and equipment used by the airports were make-up (moulage), in-service vehicles, mannequins, and physical simulators (Figure 8; Question 48). Communications systems such as telephones, cell phones, radios, and the Internet were not included in the survey, as they were assumed essential regardless of scenario.

OTHER TYPES OF EXERCISES

In addition to tabletop and full-scale exercises, the survey airports reported doing drills (58% of surveyed airports), functional exercises (52%), workshops (30%), seminars (22%), and games/simulations (8%) (Question 39). Ten percent (10%) reported doing no exercises of any type; these were all GA or reliever airports. Exercise types other than tabletop and functional exercises lie outside the score of this study except for noting that they are useful building-blocks for preparing for a full-scale exercise.

EXERCISE EVALUATION

Evaluating and assessing training initiatives is critical for a continuous learning organization and is a highly sought-after attribute. It is encouraging to see the number of airports that have contributed resources to

Exercise evaluation is probably the most critical component of an exercise program.

FIGURE 8 Full-scale exercise at Rochester (Minnesota) International Airport (Peggy Gray photo, used by permission).

hiring emergency management professionals or have allowed time for personnel to develop subject matter experts among their staff. Equally encouraging are those airports that have utilized outside SMEs to design scenarios and enhance their training efforts. As important as investment in staff and training is introspective assessment. Probably one of the more difficult pieces of the continuous learning loop is feedback and its incorporation into established airport procedures; this is addressed later in this chapter.

Exercise evaluation, based on an airport's AEP, is probably the most critical component of an exercise program, since it identifies best practices to replicate and deficiencies to correct. HSEEP, the AirTap *Emergency Guidebook for General Aviation Airports*, and the *Mineta Transportation Institute Exercise Handbook* (Edwards and Goodrich 2014) contain valuable guidance on exercise evaluation; however, these resources are either focused on first response institutions and emergency management agencies for HSEEP and overland transportation systems for the later two. FAA Advisory Circular 150/5200-31C, Appendix 3, provides a series of checklists to evaluate full-scale AEP exercises, which are tailor-made for the aviation sector, but the checklists only address full-scale triennial exercises. NFPA 424-13 provides an Emergency Exercise Critique Form filled out for an imaginary international airport (NFPA 2013, Figure A.15.4.2). The NFPA form is more compact than the HSEEP or FAA A/C forms for evaluating full-scale exercises.

ACRP Report 19: Developing an Airport Performance-Measurement System makes an emphatic case for performance metrics at airports: "Measurement captures the quantitative and qualitative progress of the strategies, initiatives, products, and services that position the organization to achieve its goals and make definitive progress towards a defined vision" (Infrastructure Management Group et al. 2010, p. 8). In other words, measuring outcomes is necessary for an airport's success and continuous improvement efforts. Unfortunately, *ACRP Report 19* does not address emergency management or emergency exercises.

ACRP Guidebook 19A: Resource Guide to Airport Performance Indicators does not deal with methods to assess emergency training and exercises (Hazel et al. 2011). There are several ARFF metrics, but those are based on ARFF costs per enplanement, operations, and response time adherence. In the comments section following the ARFF metrics it states, "At present [2011], there are few widely used ARFF APIs" (p. 43). It appears that despite this recent effort to create widely accepted metrics for emergency management training, such metrics remain unavailable and warrant further research. FEMA's HSEEP program has a series of guides and templates that are intended to improve the quality of evaluation of exercises and the likelihood that lessons learned will be used to improve plans (FEMA 2015). The evaluation guides appear to be primarily based on the ESF (Essential Support Function) concept; therefore, they are not easily applicable by most airports. The guides do not contain airport-specific materials. Only a few of the surveyed airports reported using the After-Action Report/Improvement Plan (AAR-IP) Template (FEMA 2015a). The FEMA HSEEP data collection guide (FEMA 2015b) grades exercises on how well the exercise's capability targets are performed. Four ratings are used:

P—Performed without challenge
S—Performed with some challenges
M—Performed with major challenges
U—Unable to be performed.

The guide does not consolidate the ratings for a single score, but keeps the target capabilities and the score for each as discrete items in the after-action report and in the improvement plan.

The most frequently used evaluation tools used for the surveyed airports' full-scale exercises (Question 49) are after-action reviews and reports, hot washes, and checklists. Although these are beneficial, it is important that quantifiable assessments are taken so the continuous loop of self-improvement can continue.

DEFINING A SUCCESSFUL EXERCISE

The review of available literature did not find specific metrics to determine the success of an exercise. However, the participants in the survey identified, from a provided list of nine statements, those that they though would identify a successful exercise (Question 44). The top four gauges for exercise success were reported as:

1. Were the major target capabilities and exercise objectives in the exercise plan achieved? (74% of responses)
2. Were the strengths and weaknesses of the AEP identified? (74%)
3. Was the exercise completed safely? (72%)
4. Were FAA certification requirements satisfied? (70%)

Between 66% and 74% of the surveyed airports reported using checklists, hot wash, or after action reports as their main tools for assessing the exercise.

APPLYING THE LESSONS LEARNED FROM EXERCISES

Lessons learned from exercises must be captured during the evaluation phase of the exercise and reported in a manner that allows for follow-up. Action items and appropriate assignments must be made and tracked in order to ensure improvement. Use of schedules and action tracking can ensure that the action items are completed in a reasonable amount of time. As with the need to issue and track work orders in airport maintenance and construction, there needs to be a way to track the process of improvement or revision.

Use of schedules and action tracking can ensure that the action items to apply lessons learned are completed in a reasonable amount of time.

None of the airports in this study seemed to do exercises purely to satisfy certification or other regulatory purposes. To understand how airports promote the application of lessons learned, airports were specifically asked if they had a formal process for implementing lessons learned from exercises into their written plans and procedures such as AEPs, SOPs, or communications plans (Question 53). Nearly half (48%) of the surveyed airports have a formal system, and an equal number do not. About one-fifth of the airports (22%) have a written process for capturing and applying lessons learned.

Ten of the surveyed airports—all among the 22% that reported having a written process for applying lessons learned—reported the use of one or more of five basic tools:

- After action reviews and reports (AAR)
- Improvement plans (IP)
- Explicit provisions in AEP specifying process and individual responsibilities
- HSEEP AAR/IR Improvement Matrix (DHS 2013)
- Active tracking of the implementation of lessons learned, either by a committee or by assigned individuals.

If the lessons learned from an airport's emergency exercises are not applied to future behavior and investments, the airport is wasting a major opportunity for self-improvement.

The survey results show that these tools are sometimes used in combination; this is also the recommendation of HSEEP (DHS 2013).

It is important because of the resources that have been expended on planning that airports continue the final process of assessment with metrics that can be implemented and compliance gained in the next exercise, otherwise the effort could be viewed as futile.

Identifiable and trackable means of providing feedback to an emergency manager to ensure deliberate updating of the emergency response based on data gathered from exercises will fulfill the need for continuous feedback.

EXERCISE MATERIALS DESIRED BY AIRPORTS

When asked to rate the desirability of having specific types of exercise materials and tools to aid the planning, execution, and evaluation of future exercises (Question 55), the airports ranked 17 exercise aids. The top six exercise aids that the airports would like to have are exercise

planning checklists, exercise evaluation forms, training and exercise event checklists, examples of AARs, examples of exercise communications plans, and summaries of lessons learned (Table 6).

TABLE 6
DESIRED EXERCISE PLANNING, EXECUTION, AND EVALUATION AIDS

Exercise Aid	Rating	Rank out of 5
Exercise planning checklists	★★★★½	4.34
Exercise evaluation forms	★★★★☆	4.06
Training and exercise event checklist	★★★★☆	4.02
Examples of after action review reports	★★★★☆	3.96
Examples of exercise communications plans	★★★★☆	3.88
Summaries of lessons learned	★★★½☆	3.66
Examples of full-scale exercise scenarios	★★★½☆	3.62
List of functions typically exercised	★★★½☆	3.54
Examples of TTX scenarios	★★★½☆	3.52
Examples of exercise safety plans	★★★½☆	3.50
Exercise “success” criteria	★★★½☆	3.46
Budget and cost information about exercises	★★★½☆	3.18
List of stakeholders involved in exercise execution	★★★☆☆	3.10
Examples of value of the exercise statements	★★★☆☆	3.08
Timelines for developing exercises	★★★☆☆	3.08
Outside training options	★★★☆☆	3.02
List of stakeholders involved in exercise design	★★★☆☆	2.98

Source: Smith, Garcia, Sawyer and Kenville data.

CHAPTER FOUR

CASE EXAMPLES

Six case examples present the range of exercise practices that were discovered in this study. Highly useful, effective practices were found at airports ranging in size from a small general aviation airport to the 15th busiest airport in the world, Denver International Airport (DEN). The important point is that good ideas and practices from any of these airports can be scaled to fit the circumstances of any other airport, regardless of size, and adapted to improve its exercises, emergency plans, and overall readiness.

DEN, which is Case Example 1, represents the gold standard for exercise design, implementation, evaluation, and use of lessons learned. DEN's size, budget, and staff need not deter interest. Moreover, DEN reaches out through professional conferences and training events to demonstrate the benefits of the exercise tools they use.

> Every one of DEN's tools is potentially useful for the managers at a general aviation, non-hub or small hub airport to read and consider adapting for use.

Case examples 2 through 6 are drawn from a small hub, a non-hub primary airport, two reliever airports, and a GA airport, respectively. These airports were selected because they exhibit high levels of commitment and innovation. As with DEN, the tools and procedures are scalable and adaptable by airports of any type and size, even large and medium hubs. As noted by Smith et al. (2015), small airports are often freer to innovate. Indeed, they are sometimes driven to innovation by staffing and funding constraints. In addition, smaller airports may be more likely to involve external partners in all aspects of emergency management (Smith 2014).

Together, the six case examples present a broad spectrum of ways to achieve an effective emergency exercise program.

CASE EXAMPLE 1: DENVER INTERNATIONAL AIRPORT (DEN) TRAINING EXERCISE AND DESIGN GROUP

Denver International Airport (DEN) is the 15th busiest airport in the world and the fifth busiest in the United States, with more than 53 million passengers each year (Figure 9). The airport is the primary economic engine for the state of Colorado, generating more than $26 billion for the region annually. The primary source for this case example was an interview with Director of Operations–Support Steve Lee, AAE, and Jason Taussig, Manager of Training and Exercise.

FIGURE 9 Denver International Airport (*Source*: Denver International Airport).

Airport Demographics:

NPIAS category: Large hub

FAR Part 139: Yes

Number of passengers (2014): 53,472,514

Amount of cargo (2014): 1,314,752,910 tons

Number of operations (2014): 575,161

Number of airport employees: Approximately 1375 employees (not including fire, paramedic, or police employees)

Number of airport employees (person-years) devoted to exercise development and execution: two full-time employees and one manager

Budget for exercises: Varies significantly year to year depending on the exercise types. The estimate below would reflect a year similar to 2015, which included one full-scale exercise hosted by DEN, one full-scale exercise DEN fully executed, and a major functional as the primary operational exercises. This would include the communication exercises but not the training elements for communications; however, there is some overlap. The vast majority of non-personnel costs are associated with the execution. The planning and evaluation costs come primarily from the personnel and printing lines.

For the most part, participating agencies cover their own personnel/equipment costs in their operating budgets. DEN works very hard to get the airport's activities as part of their routine training and exercise lines. In addition, DEN often receives in-kind donations or other groups assume some of the costs. When this occurs, the airport reprograms exercise money towards the improvement items.

Personnel = $230,000

Materials = $10,000

Software including social media simulation, camera subscriptions, and document sharing/briefing information = $8,000

Refreshments/meals = $5,000

Awards/gifts/souvenirs for participants = $2,000

Total budget (2015) = $255,000

Governance: City/county departments.

Description of Airport's Exercise Program

Since its opening on February 28, 1995, DEN has been exercising procedures for emergency response. In its early years, it had an airport operations manager tasked with organizing and conducting exercises when required to do so by either the FAA or the TSA. Eventually, DEN began to shift the overall training, exercise, and evaluation program to dedicated personnel, with the goal of developing a program that could be proactive and have both human and capital resources dedicated to expanding exercises. Today, DEN's Training and Exercise Design group consists of two full-time employees.

There were a number of factors that led to the creation of the group. One high profile event was the failure of the airport's train (Figure 10) when its control sensor system malfunctioned. Even though there was no risk to life or public safety, it caused serious impact to the airport's business continuity. The airport's critical function of moving and processing passengers was halted until a work-around procedure or repairs could be put in place. The airport quickly learned that such work-around and maintenance response procedures needed to be effectively trained for, exercised, and evaluated as seriously as its safety emergency response procedures. The airport needed to assure its customers that it could deliver the highest possible level of response and recovery to train failures. Then-operations director John Kinney assigned specific resources and personnel to focus on the exercise program. This expansion of DEN's exercise program proved very effective, and has now been applied to a number of critical business-related events and functions.

DEN uses a sequence of discussion-based exercises, TTX, and functional exercises to lead up to triennial full-scale exercises. The airport also uses discussion-based exercises to evaluate training outcomes and to test new plans and procedures.

Occasions or Frequency of Exercises

DEN uses tabletop exercises more than once a year to evaluate training and to evaluate or teach new procedures and policies. DEN uses discussion-based exercises—seminars and games—to build towards the tabletop and functional exercises that the airport uses to prepare for the triennial full-scale exercises. DEN uses all five types of exercises described in chapter five, and adds full-scale exercises when local or national events suggest the need to enhance preparedness.

Nature of Airport's Emergency Exercise Planning Process

Once an airport community has identified its critical capabilities, it needs to identify exercise objective related to each capability. These, and associated objectives, are then used to develop the scenarios that drive the exercises. DEN has found involving the entire airport community in developing exercise capabilities and objectives highly successful. DEN encourages airports to ask their communities to help identify areas of strength as well as those that need to be improved.

FIGURE 10 Train at Denver International Airport (DEN photo, used by permission).

Exercise Control

DEN follows the HSEEP process for planning, conducting, and evaluating its exercises using a high level of customization, including some continual improvement and applied agile program management. Its advice to smaller airports is to use the HSEEP tools as a process, but not to be afraid to make them their own. When planning an exercise, it helps if the coordinator has some program and project management skills and experience. When conducting large operational exercises, it also helps to organize around the concepts of unity of command, span of control, and management by objectives. DEN and other airports use a typical ICS structure to manage their exercise events. Using the ICS structure, a single Incident Commander or Exercise Commander directs the operations, logistics, planning, finance, etc. In addition, appropriate sub-groups are also identified.

Evaluation of Effectiveness of Emergency Exercises

Evaluation of the exercise is another critical component of the process, when lessons learned are communicated, recognized, and documented. HSEEP provides very detailed and lengthy evaluation tools which DEN encourages other airports to adapt; DEN currently uses much simpler and shorter templates than those found in HSEEP. DEN documents the action items identified during the evaluation process and works with those deemed responsible for each item to ensure that the wording and representation of the identified action is agreeable and understandable to all involved. It then tracks each item to ensure the actions are completed.

How Lessons Learned Are Applied

Player education is also critical. Players in the exercise must be fully briefed on the safety and communication plans as well as on the simulations involved; that is, what are they expected to simulate and what are they required actually to do? Comprehensive checklists and detailed timelines, maps, and process mapping software are all utilized in the planning and orchestrating of an exercise at DEN. At a smaller airport, a detailed Excel spreadsheet checklist and timeline could serve the same purpose. Keeping the exercise on track and meeting the expectations of those involved is key. When partner groups become involved, DEN tries very hard to add value for them and ensure that partners meet their objectives. It also tries very hard to manage the expectations of volunteer participants and actors by providing each participant with a timeline detailing what to expect and when. It provides host personnel to answer questions and offer aid; for example, providing water, refreshments, restroom location, etc. Staff tries to fill idle time with meaningful training, presentations, etc.

Challenges and Barriers to Effective Exercises and How to Overcome Them

One challenge to proactive program-based exercises is those “hot button” items. These are usually driven by recent or current national events. Politics or world events will always trigger mandates for specific kinds of exercise scenarios. When this happens at DEN, staff always tries to stick to its proactive program approach, going back to pre-identified capabilities and associated objectives and molding them into the hot button scenario. Mandates for exercises will be unavoidable, but a strong established program can absorb these mandates while still staying on track with the program’s established capabilities and objectives.

Often exercises are used when other forms or training might be far more effective and appropriate. Interviewees suggest that airports avoid trying to do an operational exercise on something that is so new that nobody is familiar with it. DEN trains new procedures or systems using PowerPoints, workshops, or seminars before using a discussion based (TTX) or operational exercise (FSE). DEN advises that airports “should avoid going straight to an operational exercise. If the objectives can be accommodated by a discussion-based exercise, then do that first. This will save time and money. Build from the capabilities and objectives smaller discussion based exercises, and then, if needed, proceed to a full-scale or operational exercise” (J. Taussig, personal communication, Oct. 4, 2015).

Benefits

DEN has found that its overall operational efficiency and level of customer service have been enhanced by its active training, exercise, and evaluation program. DEN encourages a proactive rather than a reactive approach to airport exercises and scenario choices: It believes the benefits are maximized by fixing problems before trying an exercise aimed at the problem. It is DEN's opinion that there is no point in exercising something that you know is broken. Fix it, train for it, and then ask whether an exercise is necessary; in many cases it will not be (J. Taussig, personal communications, Oct. 4, 2015).

Advice to an Airport Starting to Develop Its Emergency Exercise Program

[*Note*: Any directive language and imperative verbs used in this section reflect the voice and perspective of the interviewee(s) at the case example airports. They are not meant to be recommendations from the study team.]

DEN believes that smaller airports can learn from DEN's experiences. It understands that smaller airports may not be able to build and facilitate a program like that at DEN. However, because DEN has such a robust system, scheduling anywhere between 30 and 50 exercises each year, it has a great deal of experience. Experience has shown DEN that some exercises would not cost the airport a great deal of money; in fact, some exercises can be done with little or no money.

> Building partnerships with state and local emergency agencies is a way to overcome budgetary constraints.

Its number one suggestion on developing an effective low-cost exercise program is to build partnerships with other local and regional emergency management agencies, allowing the airport to leverage the efforts of these agencies to assist in meeting the airport's needs. In Denver, these include state, county, and city emergency management groups, the Urban Area Security Initiative Group, and partnering groups such as police, paramedics, hospitals, and fire responders. DEN recommends airports partner with other agencies and try to include their requirements as they build an airport program around what other agencies are required to do. This can include agencies and companies internal to the airport as well. Most agencies, as well as many large companies, have requirements and budgets for conducting exercises. The regional roles of airports, as well as the airport setting, are an asset that can bring value to the exercise requirements of these groups. In most cases, agencies/companies will welcome the idea of an airport partnership.

Another strong suggestion from DEN to all airports is to explore and adopt the HSEEP building-blocks model for their exercise program. This comes with the predication that airports must understand that HSEEP's concepts and its supporting templates must be highly customized to have a practical application for the airport. The HSEEP documents are extremely detailed, and even a large airport such as DEN found it necessary to customize the forms and the program to fit its needs. Even so, this is a great starting point, and DEN encourages every airport to adopt it.

> Focusing the exercise on the airport's specific targeted objectives will help to ensure continuous improvement.

The HSEEP approach of using a series of small discussion-based exercises, then building to a larger live operational exercise, contributes to DEN's ability to conduct multiple exercises annually. It is vital that airports identify a set of targeted capabilities, develop objectives around those capabilities, and then select a scenario that would involve those objectives. Identifying these capabilities can benefit all scenarios, not just the event being exercised. Too often, airports pick the scenario first and then let the scenario dictate the capabilities to be targeted in the exercise without even establishing clear targeted objectives. This scenario-first approach can lead to airports exercising what they do well versus what needs to be improved. To focus on exercising areas that truly need to be improved makes sense at any airport, but especially at those with limited time and resources. Focusing the exercise on the airport's specific targeted objectives will help to ensure continuous improvement.

> DEN encourages smaller airports to use the HSEEP process model as a foundation to help map out an organized approach for exercise planning.

DEN has also found real value in inclusion. It explores the needs and requirements of its partners and tries to find ways it can leverage these needs towards a common benefit. It involves its partner community from the beginning, developing targeted capabilities and objectives with these groups and including their needs as well as the needs of the airport. Often these capabilities and objectives have clear commonalities that can be used to address the needs of the community as a whole.

CASE EXAMPLE 2: BOISE INTERNATIONAL AIRPORT (BOI)

Boise (Idaho) Airport is a small hub that is the main airport for the state of Idaho and is served by six legacy and low cost air carriers. BOI is a FAR Part 139 airport. BOI is a department of the city of Boise, and is overseen by a seven-member Airport Commission. Though municipally owned, BOI operates as a self-supporting enterprise. The Boise Airport's mission is to provide a world-class gateway to the city. The airport has two parallel runways with an ILS Category III landing system. This case example is based on an interview with Ms. Sarah Demory, AAE, Airport Deputy Director.

Airport Demographics

NPIAS category: Small hub

FAR Part 139: Yes

Number of passengers (2014): 2.7 million

Amount of cargo (2014): 343,847,570 pounds

Number of operations (2014): 325/day

Number of airport employees: 105

Number of airport employees (person-years) devoted to exercise development and execution: 1–5 FTE (but shared with other city departments)

Budget for exercises: $25,000 for most recent triennial full-scale exercise.

Governance: County department, multi-airport system.

Description of Airport's Exercise Program

BOI uses TTX and full-scale exercises to test its emergency operations preparedness skills. The frequency of the drill schedule coincides with the FAA FAR Part 139 requirements for FSEs every 3 years and a tabletop exercise in the other years. The airport's operations department leads the exercises with close coordination with ARFF and law enforcement. Other participants in the exercises are the airport's tenants, and external stakeholders such as the hospital, county, and city of Boise.

Nature of Airport's Emergency Exercise Planning Process

The airport's training exercises are completed on a fairly low-tech basis using such tools as PowerPoint or training videos and communicating with the use of NIMS and ICS on all levels. The

deputy airport director is a member of the city's Incident Command Team (ICT), which ensures that there is regular interaction with the emergency management process with the airport and the city of Boise. The training gained with this team is not airport-centric but nevertheless follows all NIMS and FEMA training ideals, so the need for contracted outside assistance is not utilized owing to the relationship and ownership with the city of Boise and the city's ICT.

What Sources and Resources Are Used

BOI's exercise program is strongly based on HSEEP templates and forms but with extensive local adaptation. Boise tracks the expenses associated with a full-scale emergency exercise and the previous budget designated approximately $25,000 was for the event.

Evaluation of Effectiveness of Emergency Exercises

The airport has employed outside SMEs on occasion if the exercise is testing something specific. For example, in 2010 and 2014, an SME was brought in to specifically evaluate the airport's use and adherence to NIMS/ICS. The airport has an internal evaluation team, the airport emergency operations team that consists of ARFF/LE and Operations. This team reviews the AAR and determines if any document or protocol changes are warranted. If major changes are needed, the total concurrence of the team may be required to make appropriate changes to ACM, AEP, or the airport's Emergency Communications Plan.

> "The airport emergency operations team then personally visits with the stakeholder groups and hand delivers any changes to documents, checklists, or plans based on the after action reports. This is a unique and personal touch that works extremely well in Boise."—S. Demory

Advice to an Airport Starting to Develop Its Emergency Exercise Program

Demory strongly urges airports to "learn from your peers! Gather as much information that you can in terms of templates, checklists, sample reports and exercises and then tailor them for your airport. Nothing beats experience and document what works and what doesn't to continually improve your organization. Utilize already-established resources (training and teams) in the immediate area if available" (S. Demory, personal communication, Oct. 3, 2015).

CASE EXAMPLE 3: ROCHESTER INTERNATIONAL AIRPORT (RST)

While final data was being collected for ACRP Synthesis S04-16 "Emergency Communications Planning for Airports," the project that was included in the joint survey used for this present study, a recent full-scale exercise at Rochester (Minnesota) International Airport (RST) that was highly innovative and that showed the benefits that pre-planning and imagination can yield for an airport's exercise program was reported. This case example is based on Shaw (2015) and follow-up interviews with Tiana Rossow, Airport Marketing and Communications Manager, and Ken Jones, City of Rochester Emergency Manager.

Airport Demographics

NPIAS category: Non-hub primary airport

FAR Part 139: Yes

Number of passengers (2014): 237,341

Amount of cargo (2014): 25,000,000 pounds

Number of operations (2014): 107/day

Number of airport employees: 18

Number of airport employees (person-years) devoted to exercise development and execution: Staff is divided between planners and players, so 2 planners on the airport side of the house and 2–3 on the city EM side

Budget for exercises: No official budget, they had to purchase items, mobile trainer for exercise and equipment on the day.

Governance: City-owned but operated by subsidiary of Mayo Clinic.

With permission of the author and publisher of *Airport Improvement* magazine, the following article was amended to delete any explicit or implied endorsement of specific commercial products in order to conform to the policies of the TRB. The original article by Kristin Vanderhey Shaw is featured in the November/December 2015 issue of *Airport Improvement* and can be viewed online at http://www.airportimprovement.com/article/emergency-drill-rochester-intl-includes-social-media-simulation.

2015 Recertification Full-Scale Exercise with Emphasis on Social Media Use Rochester, MN (RST)—Navigating Social Media within an Airport Emergency Exercise

Rochester International Airport (RST) recently enhanced its training regimen by adding crisis communication components to its latest full-scale safety exercise. Aircraft rescue and firefighting staff, ramp workers and other frontline employees were under scrutiny during the Minnesota airport's four-hour mock disaster; but employees handling media relations were also put to the test. To increase realism, RST added the wildcard factor of social media.

To put it mildly, social media has turned the field of crisis communications on its head. Whether it's a hurricane, inflight incident or trouble in the terminal, the public expects information and updates much faster and more often than it did just a few years ago. Typically, people learn details and see photos through Facebook, Instagram, and Twitter before airports issue official statements—often well before reliable facts and information are available.

Allowing RST's communications staff to feel the breakneck speed of social media during a staged training scenario helped them understand how news of airport disasters literally races forward. Firsthand experience trying to keep pace with a story—and possibly get ahead of it—was deemed highly beneficial.

"We knew it would be a very good learning experience," says Tiana Rossow, the airport's marketing and communications manager. "In the real world, we needed to know how the communication would be conveyed."

Facebook Factor

Having conducted "tabletop" exercises in 2013 and 2014, the airport staged a full-scale training event in September that simulated an aircraft crash. For the media relations element, RST not only included its own communications staff, the airport also included employees from local fire and police departments; Red Cross; Mayo Clinic; Rochester Airport Company (the airport's management company, a subsidiary of Mayo Clinic); Rochester Emergency Management and various city departments. To ensure it could mobilize even wider resources during an actual emergency, the airport also invited representatives from a variety of other organizations. The multi-agency

communications team used a cloud-based application simulation [from a vendor] to train privately on social media tools without compromising security and safety. The system replicates the functionality of Facebook, Twitter, Instagram, YouTube and web blogs, as well as more traditional media such as television, newspapers, and radio.

"Social media and other emerging digital technologies are playing an increasingly essential role in responses to natural disasters, terrorist attacks, civil and political unrest, criminal investigations, and military operations," says Mark Amann, senior vice president and chief executive officer of [the vendor] that RST utilized. "These technologies not only provide a unique opportunity for organizations to communicate directly with the public, but they also are a source for previously unavailable situational awareness and intelligence."

Down to the Nitty-Gritty

Beyond social media, RST's training scenario addressed scene command operations, triage and transport of victims, scene investigation, fatality management operations, family assistance, and joint information system operations (including mass-alerting public messages in multiple languages).

"In 2012, the triennial airport exercise tried to accomplish unified scene command, public information and family assistance, and we were partially successful," recalls Ken Jones, director of emergency management for the city of Rochester. "For 2015, our goal was to emphasize the need for true unified operations at the scene, comprehensive family assistance operations, and joint public information center activities."

The exercise specifically tackled the common issues of conflicting command teams and uncoordinated public messages. When command teams did not appear to be working together, trainers used "injects" to steer teams together and force them to work in a unified command (UC) structure. Family assistance center operations were extended to the community Emergency Operations Center and hospital family support center. A new fatality management plan that was created after the 2012 exercise provided a live playing field to train medical examiner staff and police department investigators.

"This exercise was deeper and more challenging, and the team's benefited greatly," Jones reports.

Although the previous full-scale exercise identified one person as the sole public information officer, this year's exercise used a community team to coordinate scene communications with social media messages and press releases.

"Tiana (Rossow) is the only person on the airport staff who handles communications, so in an emergency situation we would rely on the surrounding community to act as public information officers," explains Jones. "When you thrust people into an emergency situation, it's hard to get everyone together. In the exercise, we wanted to get them used to working together."

During the 2012 exercise, the team discovered that the public information officer became so engrossed in some aspects of rescue duty it became difficult to provide timely information to the media. In that case, Mayo Clinic was forced to handle media inquiries, which proved to be inefficient.

"With such a small staff, it's important for us to have community helpers in a case like this," says Rossow. "This simulation helped us get to know each other and ensure we have each other's contact information so we know who to rely on."

Given the opportunity to learn how to respond during an airport emergency, she elaborates, community resources outside of airport operations, such as personnel from the library or public utilities, could be great assets if we understand how to work together.

During the exercise, the RST team established a Joint Information Center, which was specifically designated for members of the airport/community communications team, as well as a separate Media Center for outside newsgatherers on airport grounds. Team members also held a simulated press conference, with mock media members trained to ask tough questions like real reporters.

"Using the simulation product, we could respond to radio and TV reports, and we got to follow Twitter and Facebook posts to practice how to respond after the incident," recalls Rossow. "Very quickly, you see how the airport can be affected by the public perception."

One of the biggest lessons was learning how to ensure a good flow of information without communicating too much. '"Everything happens so quickly that you have to be able to react quickly, but not with anything that could be inaccurate," she explains. "You have to be able to confirm details before you put them out."

Not speaking on behalf of the airline was another key takeaway. "As the airport operator, there is very limited information we can speak about," Rossow relates. "We just want the public to know that we're communicating and involved."

[The simulation] also prompted the communications team to consider logistic details such as information technology resources needed to operate remotely. "If I don't have access to my office, I need to know how to respond," she explains. "What would I need? Where is that backup location? How do I get more hands on deck to help with the fast-paced information that is flowing? Taking the time to think about that is important."

Navigating New Media

With RST's full-scale exercise complete, participants are still reflecting on lessons learned in September. The power and speed of social media made an impression on the communications team. It is important that each airport undertaking their full scale and tabletop exercises go beyond the usual training requirements under FAR Part 139, and really strive to incorporate new issues (social media) into their usual scenarios of aircraft incidents. This exercise has undoubtedly provided some impressive skill growth for the Rochester International Airport.

"Better decisions help us save lives and protect our employees and customers. These exercises are a great opportunity to fail in a risk-free event. We had a chance to make mistakes in a good way, and we learned so much from our mistakes. In the case of a real disaster, we are as prepared as we can be, and that's important," says Ken Jones, City of Rochester Emergency Manager.

Facts and Figures

Project: Full-scale emergency simulation

Location: Rochester (MN) International Airport

Timeline: Planning began in spring for September drill

New Strategy: Communications staff practiced using social media during an emergency and leveraging local public information resources from outside the airport

Primary Exercise Participants: Airport personnel; fire and police departments; Red Cross; various city departments; Mayo Clinic; Rochester Emergency Management

Other Participants: Public works; public library; public utilities; public schools; Minnesota Department of Transportation; Department of Public Health, county sheriff's office

Unique Dynamic: City-owned airport is managed by Rochester Airport Company, a subsidiary of Mayo Clinic

Author Shaw, airport marketing, communications director Rossow, and Rochester city emergency manager Jones were contacted for follow-up interviews.

Shaw is a staff writer for *Airport Improvement* with experience in social media and marketing airport technology. When asked what words of advice she would give airports working with social media, she cautioned that an airport should not let untrained personnel respond using the airport's social media channels—with improper procedures in place for communication, it could become one disaster on top of another disaster. From her perspective working in the aviation industry, she thought a comprehensive crisis communication plan (CCP) would be most advantageous to

airports with single point of contact, such as the one Rochester has put into place. “It would prove difficult for airports to have multiple plans, especially when they have limited staff to deploy those plans.”

Shaw also thought it would be much easier to drill with a single plan rather than multiple CCPs, and where mutual aid is initiated, a single plan and single point of contact would seem to be the most efficient use of resources. The main points that the article author thought were important with RST included: (1) It has a plan; (2) it is involving the community and has the community’s support; (3) it is daring to drill on new and difficult topics in order to “get it right” when the time comes; and (4) it is very clear on duties and precisely who will speak for the airport to the media.

Rossow indicated that she was relatively new to the marketing/communications position at the airport and had very little time to be a major part of the exercise planning team; and that Jones took the lead by introducing the simulation of social media into the exercise. The city purchased the simulation in conjunction with the local healthcare system that is the management company of the airport, Mayo Clinic. Rossow said the important aspects to consider in the planning stages are the fact that the airport has a limited amount of staff that can be utilized and when mutual aid is activated there will be a UC and joint information center (JIC), so the better prepared the non-airport personnel can be, the better off the airport will be in the long run. Working together by designing and implementing exercises allows everyone to be better prepared. The airport employees were manning the disaster itself, and other city/county/Mayo employees were manning the UC/JIC, so “this exercise allowed us to make connections and build our recovery team.”

Jones discussed the role of social media and emergency management, noting that people will seek validation or creditability when they hear a warning or find out that some sort of disaster has occurred. “When people hear a siren, they usually don’t take cover, but instead go outside to see what’s going on” to substantiate what they have just heard. In the past, “people would ask friends or neighbors, but in today’s world, people want to sort out what they’ve heard and they turn to social media to validate the information. Therefore, the emergency manager has an opportunity to provide meaningful, credible information, and will have to utilize all types of social media; it is simply another communication tool.”

The goal of the 2015 exercise was to improve upon the 2012 exercise, which Jones considered adequate; but in the spirit of continuous improvement, he wanted to further refine the medical examiner’s fatality management plan, family assistance plan with the airlines, and the public information plan. It was determined after 2012 that one person at the airport acting as a PIO, in addition to other duties, was not sufficient, so the goal was to broaden the Joint Information System (JIS) with city, county and Mayo employees and their respective resources.

Jones purchased a 1-year subscription to the simulation product for public information, including social media. The vendor came in on separate occasions to train staff and run small scenarios during the year leading up to the airport’s triennial exercise. Since then, the healthcare system in the city of Rochester has purchased the simulation software and is now the lead in a regional JIS effort.

In the design of the exercise, RST and the city emergency manager used the DHS HSEEP as a guide, but adapted it where necessary. When asked if the exercise had an assessment component, Jones said, “it is about continuous improvement—it is not about a score.” He believes that airport managers and their first responder partners should be less judgmental and more realistic, and concentrate on improving the training and exercising until the group feels confident with the particular item being tested, and move to another item.

RST’s example shows what any airport can do with exercises if it applies imagination, innovation, and careful pre-planning in an atmosphere of collegial cooperation with emergency response partners and major stakeholders. RST has a huge advantage in being part of a city and a famous medical institution that both have reputations for forward-looking applications of technology and emergency preparedness training, but the airport has gained maximum advantage from its two-way relationships with both organizations. The exercise described in this case example is notable in its extensive use of social media—both incoming and outgoing.

CASE EXAMPLE 4: LAKELAND LINDER REGIONAL AIRPORT (LAL)

Lakeland Linder (Florida) Regional Airport is a reliever airport that is also a FAR Part 139 airport, albeit currently without commercial air service. Its regional economic impact is more than $284 million. LAL is home to Sun 'n Fun Fly-In, the second largest air show and exposition in the United States. Sun 'n Fun draws more than 200,000 visitors a year. The primary source for this case example was an interview with Assistant Airport Director Nan Walsh and Adam Lunn, Airport Operations Coordinator—Exercise Planner, as well as follow-up emails with ARFF Chief John Maddox.

Airport Demographics

NPIAS category: Reliever.

FAR Part 139: Yes. LAL is technically a Class I FAR Part 139 airport, but it has not had commercial service since the end of 2013. Some charter flights (Part 135).

Number of passengers (2014): 0 (0 Part 139, unknown Part 135)

Amount of cargo (2014): 0

Number of operations (2014): 103,039

Number of airport employees: 16

Number of airport employees (person-years) devoted to exercise development and execution:

- 1 Employee: 12 Hours of Planning (Planning Group Meetings)
- 1 to 3 Employees: 8 Hours for Exercise Set-up/Teardown
- 16 Employees: 4 Hours for the Exercise Itself
- 1 Employee or Central Florida Regional Planning Commission (CFRPC): 20 Hours estimated to write the exercise

Budget for exercises:

Governance: City department.

Description of Airport's Exercise Program

LAL has an active exercise program. The airport has chosen to keep itself "commercial service ready," so it ensures that it meets all FAR Part 139 exercise and AEP requirements. Sun 'n Fun affects the exercise program in many ways. LAL mostly devises its exercises in-house but sometimes contracts with an outside exercise writer. LAL works closely with city, county, regional, and state agencies to leverage assets for effective exercises.

Why Are Specific Types Used?

LAL conducted a tabletop exercise the year before the triennial test to identify any issues with the AEP prior to the full-scale test.

LAL conducts monthly three-minute drills involving ARFF, air traffic control tower (ATCT), operations, and dispatch. For this "surprise" or no-notice drill, the scenario sheet (see Appendix I for sample) is distributed to only the Lakeland Police Department (LFD) Dispatch Supervisor and the ATCT controllers. At the designated time, the control tower will ring out the alert. Station 7

(ARFF, Heavy Rescue 73, and Engine 71) along with operations, and ARFF and operations will respond accordingly. Locations and scenarios are varied from month to month. Some are simple staging drills while others may require response to an Alert III location. LAL has had excellent feedback from all agencies saying that doing this is a great help. Once the drill is complete, LAL usually conducts a short debriefing to critique communications, response time, and other decisions made by each participant. The exercise manager also sends an e-mail to the ATCT Manager, ARFF Chief, and the 911 Communications Manager to ask them to share any items that might need to be worked on. The reason LAL designated a standard time (the third Sunday of every month at 0900) was to find a slot when participating agencies (Lakeland Fire Department, 911, ATCT) typically had a lighter than normal work load.

In addition, an annual functional exercise is conducted to familiarize participants with response responsibilities for the annual air show. Tabletop exercises are typically used to prepare for the annual exercise as well as the air show.

Full-scale exercises conducted every 3 years as required by FAR Part 139. Although LAL does not now have commercial air service, it maintains its Part 139 status.

Nature of Airport's Emergency Exercise Planning Process

LAL airport drives the overall exercise scenario while the cooperating agencies develop their individual core competencies to be tested, thus creating a planning team. This allows the airport stakeholders to establish ownership of their specific areas and become vested in the success of the exercise. Once the scenario and core competencies have been identified, the airport works with a writer, contracted or in-house, who begins the process of developing the HSEEP planning documents. The writer for the last exercise was contracted through the Central Florida Regional Planning Council (CFRPC) with funding provided by grants through Polk County Emergency Management's Team Play Exercise. For the airport's 2016 Triennial, LAL is working with the CFRPC to obtain an HSEEP planning grant through the Florida Department of Transportation (FDOT) to contract an exercise writer. If funding is not awarded, the airport will, in partnership with other stakeholders, write the plan itself.

Planning Exercises Participants

Exercises at LAL are planned by the fullest possible range of airport departments and stakeholders, as well as community organizations that wish to become involved. LAL involves the eventual exercise evaluators from the beginning of the planning process: SMEs drawn from airport operations, ARFF, law enforcement, emergency management, and PIOs. LAL also involves its outside sponsors (i.e., entities that contribute funding or in-kind support) in exercise planning. This includes FBOs, tenants, and contractors.

At least one major aspect of communications is included in every exercise. Communications are critical during any incident and the same applies for all of LAL's emergency exercises. The airport's western edge is located a half-mile from Hillsborough County and is surrounded by unincorporated Polk County on three sides, so numerous agencies from across the greater Lakeland area would probably become involved in a large incident at the airport. During its 2013 Triennial, LAL specifically tested its ability to establish and maintain multidisciplinary/multijurisdictional communications, which it identified as Objective 3.

Sources and Resources Used

- HSEEP Planning Documents:
  - Situation Manual (SITMAN)
  - Exercise Plan (EXPLAN)

  - Controller and Evaluator (CE) Handbook
  - Master Scenario Events List (MSEL) Package
  - After Action Report/Improvement Plan (AAR/IP).
- Actors including students from local high schools and colleges.
- Funding from departmental budget, grants, and sponsorships from contractors, tenants, and the FBO.
- The airport hotel, which provides a venue for meetings and serves as the Airport's JIC.
- Scenarios and materials from previous exercises, which are adapted and/or edited for the new exercise.
- Scenarios specifically designed to correct of discrepancies or weaknesses revealed by drills, exercises, inspections, or actual incidents.

Use of NIMS and ICS

LAL's first objective for the 2013 Triennial was the evaluation of ICS implementation and the effective transition to a UC. The airport ensures that its entire operations staff is trained in NIMS/ICS, and all incidents (and some larger events) are managed through the ICS framework.

Tabletop Exercises

LAL's last TTX was conducted in a similar manner to the airport's full-scale exercise in that it was based on HSEEP planning documents.

After any drill or exercise, the airport will participate in a hot wash with all participating agencies and any evaluators if they are present. Resulting comments and suggestions are then incorporated into a full AAR approximately one week later. Any follow-up items will be addressed at this review, and changes to the AEP will be finalized at this meeting. Implementation of corrective actions is immediate and approved by the airport's FAA Safety and Certification Inspector with the submittal of an updated AEP.

Full-Scale Exercises

LAL currently uses HSEEP documents such as checklists and timeline planning tools. In addition, the airport uses software programs to develop the exercise map and a master scenario events list and injury sheet. LAL uses these specific HSEEP templates and forms:

- Actor waiver form
- CE briefing
- CE debriefing
- Elected and appointed officials briefing
- Exercise actor briefing
- Exercise badges
- HSEEP participant feedback form
- Name tents (i.e., place cards)
- Observer briefing
- Player briefing template
- Symptomatology card
- Tabletop exercise briefing
- Exercise evaluation guides
- After Action Report/Improvement Planning (AAR-IP).

LAL has a group of exercise controllers and a safety officer who observe to make sure the players are operating within the predefined timeline and script, and to ensure the safety of players and role

players actively involved in the exercise. LAL always has a formal exercise safety plan. Its requirements are outlined in chapter two (page 5) of the airport's Exercise Plan (EXPLAN).

Evaluation of Effectiveness of Emergency Exercises

The exercise planning team develops core competencies to be tested during the exercise. Exercise evaluators are then briefed on the targeted competencies and provide feedback to the associated agency during the hot wash following the exercise. In addition, an evaluator checklist is used that identifies specific elements of the response to be evaluated.

How Lessons Learned Are Applied

As noted, lessons learned are incorporated into an AAR which is reviewed by each participating agency approximately one week after the exercise and submitted to the airport's certification inspector. Critical items identified in the AAR might be incorporated immediately.

One real-life example involved a weather-related crisis that occurred in 2011 during the Sun 'n Fun International Fly-In and Expo. This event draws more than 150,000 spectators, 5,000 aircraft, and top airshow performers from across the United States. During the 2011 fly-in, a tornado ripped through the airport, overturning more than 40 aircraft and collapsing several large tents set up for the event. After the tornado passed, the airport could not account for all of its personnel. Some staff members had not been issued a city radio, and the airport did not have an established rally point for its staff. The airport immediately instituted an assembly point for future situations and purchased radios for every employee.

Challenges and Barriers to Effective Exercises and How They May Be Overcome

Funding is always a challenge for these types of exercises. It is important that airports consider the resources needed to pay for overtime and back-fill of employees, supplies for moulage, etc., and props, as well as food and water for participants. LAL overcame this challenge through grants and sponsorships and by budgeting funds for the exercise. In addition, relationships with other agencies such as the CFRDC, Polk County Emergency Management (PCEM), and other partners opened doors to funding that would otherwise be unavailable to an airport sponsor. Taking other agencies' requirements into account in a manner that allowed them to "piggy-back" off LAL's triennial exercise made additional non-airport funding available.

Benefits

LAL has greatly improved its efficiency when responding to aircraft incidents. Before 2011, the airport was a Class IV airport and not required to conduct triennial exercises. In 2011, the airport launched regularly scheduled commercial air service and upgraded to a Class I airport, which must complete a triennial exercise. Prior to the implementation of these exercises, it took approximately 4 hours to clear a major incident and reopen the airport. Through increased drills, enhanced training, and the development of relationships with other agencies such as the Lakeland fire and police departments and the FAA Flight Standards District Office, the airport has cut that time down to less than one hour.

Advice to an Airport Starting to Develop Its Emergency Exercise Program

"Reach out to your mutual aid partners and get them involved with your exercise. Come armed with the reasons why it's beneficial for them to participate. Build relationships with other airports from your region and lean on them for advice and evaluators as your program evolves. Another critical element is finding a qualified individual to write and direct your exercise within the NIMS/ICS framework" (N. Walsh, personal communication).

CASE EXAMPLE 5: MIAMI–OPA LOCKA EXECUTIVE AIRPORT (OPF)

OPF is one of five airports in the Miami–Dade Aviation Department (MDAD) system. It is one of two reliever airports and one of the busiest GA airports in the country. OPF is not a FAR Part 139 airport. MDAD handles the emergency management and preparedness of all five airports in a highly integrated manner. The exercise described in the case example was the first full-scale exercise not conducted at Miami International Airport (MIA). The primary bases for this case example were interviews with Nelson Mejias, General Aviation Airport Supervisor of Miami–Dade Aviation Department; and Captain Nick Marian of Miami–Dade Fire Rescue. The full-scale exercise was observed by a member of the study team.

Airport Demographics

NPIAS category: Reliever

Number of passengers (2014): 0 (no FAR Part 139), some Part 135 charter passengers

Amount of cargo (2014): Approximately 7 million pounds (3,500 tons), amount not tracked, mainly international outbound, no international inbound

Number of operations (2014): 145,465, of which 9,734 (7%) were military operations (U.S. Coast Guard Air Station Miami)

Number of airport employees: 15

Number of airport employees (person-years) devoted to exercise development and execution: Estimated 30 hours

Budget for exercises: The estimated cost for this drill (MDAD, MDFR, MDPD, ATCT, and aircraft partner) was approximately $12,000.00–$15,000.00, all taken from current operating budgets. Each entity assumed the cost out of their budgets, including the aircraft partner.

Governance: County department, multi-airport system.

Description of Airport's Exercise Program

Before September 2015, OPF's exercise program mostly consisted of OPF personnel participating in or observing exercises at MIA. As a change of approach to enhance preparedness at OPF, the airport's manager decided to perform a full-scale exercise. Because this was a first-ever full-scale exercise at OPF, the original intention was to keep it simple, but it quickly became larger and more complex than expected. Many of the airport's partners wanted to participate, which turned out to be a good thing.

For this first full-scale exercise, OPF and its partners developed a timeline in the first planning meeting. A planning checklist was not used. A drill briefing was prepared. OPF used an exercise control team. A formal written exercise safety plan was prepared and emailed to all exercise

developers. Perhaps the most important lesson learned was that the airport needs a dedicated notification phone line between the tower and the Miami–Dade County Police regional dispatch to be able to activate police immediately in case of an emergency, just as fire and airport operations are notified (N. Mejias, personal communication, May 9, 2016).

Miami–Dade Fire Rescue (MIA ARFF) led the exercise planning process with direction from OPF airport operations. Participants in the planning process included the charter operator, FBO, MDAD, OPF Operations and Maintenance, MIA Operations and Maintenance, Miami–Dade Police Department, MIA ARFF and OPF-ARFF. An AAR was used to evaluate the effectiveness of the exercise.

Frequency of Exercises

OPF plans to do a full-scale exercise every 3 years and a tabletop exercise in each of the intervening years. However, it has not yet conducted a tabletop exercise.

How Communications Are Incorporated in Emergency Exercises

Testing of communications procedures and methods is intentionally incorporated in exercises. Radio and visual supervision were used to control the exercise. NIMS and ICS guidelines are incorporated into all aspects of running and controlling the exercise.

How Lessons Learned Are Applied

OPF does not have a formal AEP; the airport uses MDAD Policies and Procedures and OPF-specific standard operating procedures (SOPs) for day-to-day operations. OPF plans to complete development of its AEP in 2016. Meetings are scheduled to review AARs, and issues identified have already led to changes in SOPs. Lessons learned have already been used to improve training. Future exercises—probably the next two TTX—will be used to test the development of the new AEP. These feedback loops are intentional.

Challenges and Barriers to Effective Exercises and How Overcome

Interviewees reported issues with funding, lack of personnel, and how an exercise affects day-to-day operations. “How do you drill without shutting down the airport?”

Benefits

Preliminary analysis of the September 2015 full-scale exercise identified:

- Communications issues during the planning phase that forced the airport to establish a notification link from the ACTC to the MIA police department
- IC structure challenges when responding with limited staff
- ATC procedures that impeded response
- Unfamiliarity with established emergency plan by airport personnel.

Advice to an Airport Starting to Develop Its Emergency Exercise Program

OPF decided to start its own exercise program in addition to the MDAD training and exercise program. In doing so, it jumped into the deep end of the pool and started with a full-scale exercise that involved a wide range of the airport’s partners. A conscious decision to bring partners into the process led to a complex but rewarding exercise, results of which will be used to help develop OPF’s new AEP. “Get emergency response partners to tell you [how] they would respond to an incident in your airport. And work from there” (N. Mejias, personal communication, Oct. 2016).

CASE EXAMPLE 6: OWATONNA DEGNER REGIONAL AIRPORT (OWA)

Owatonna Degner Regional Airport (OWA) is a city-owned general aviation airport in rural Minnesota. OWA is not a FAR Part 139 airport. This case example is based on an interview with Airport Director Dave Beaver.

Airport Demographics:

NPIAS category: General aviation

Number of passengers (2014): None except occasional charter flights

Amount of cargo (2014): N/A

Number of operations (2014): Approximately 29,000

Number of airport employees: 3 airport, about 10 at on-site activities

Number of airport employees devoted to exercise development and execution: Part-time airport manager

Budget for exercises: $12,000 for last full-scale; $3,500/year (includes exercises and training)

Governance: City department.

Description of Airport's Exercise Program

According to airport director Beaver (D. Beaver, personal communication, Sept. 25, 2015). "OWA's exercise program is based on its airport emergency plan. The AEP [see textbox] includes a requirement for tabletop exercises and live exercises. The live exercises vary in nature between functional exercises and a limited full-scale exercise. The objectives are to make sure the AEP is reviewed and updated regularly and to enhance training. OWA's commitment to exercises has grown out of experiencing four crashes in the past 15 years. Two of the crashes were off-airport, but OWA was the nearest airport to the crash scene and therefore became centrally involved in the response and investigation. The exercise and training program has improved how OWA operates and its preparedness."

Types of Exercises Used

OWA employs TTX, drills, functional exercises, and full-scale exercises, most of which grew out of lessons learned from Beaver's experiences with the four crashes and involvement with community emergency training, including the city fire department. The airport manager is on the Owatonna Fire Department training planning committee, which ensures that airport training is an integral part of the city's overall emergency training program.

The most recent full-scale exercise was based on an aircraft accident scenario. It tested an airline's response to a remote airport location, mutual aid response, communications, and search and rescue.

AEP Extract (OWA)

4. Administration and Review

General

The Airport Manager shall be responsible for ensuring that the plan is updated as revisions become necessary. Personnel should periodically review the Airport Emergency Plan (AEP) and become familiar with policies, procedures, organizational responsibilities, and related information.

Schedule of Review

The following schedules of review shall be coordinated by the Airport Manager:

- Telephone numbers contained in the AEP will be reviewed and revised as needed bi-annually to insure accuracy.
- Radio frequencies used in support of the AEP will be tested at least monthly.
- Emergency Resources shall be inspected at least monthly or in accordance with organizational policies.
- Mutual aid agreements should be reviewed annually or as specified in the agreements.

Training

- At least every twelve (12) months the Airport Manager is responsible for conducting a review of the emergency plan. This review will involve all of the agencies that have responsibilities in the execution of the emergency plan.
- At least every three (3) years a table-top review of the emergency plan will be conducted.
- At least every five (5) years a live exercise will be conducted.

Occasions or Frequency of Exercises

OWA's AEP requires a TTX and AEP review at least every 3 years and a live exercise at least every 5 years. The last complete full-scale exercise was in 2000, but live exercises are undertaken more often than 5 years apart. Live exercises tend to focus on one or two items and only involve the specific partners for those functions, which makes doing live exercises more practical and efficient.

Use of Sources and Resources

OWA has benefitted through its active involvement in the Minnesota Council of Airports (MCOA), which provides guidebooks and other materials including exercise ideas. One notable resource for GA airports is the *AirTap Guidebook.* The OWA airport manager served on the steering committee for the development of AirTap.

Everyone involved in live exercises at OWA has had NIMS and ICS training, but no one has had specific training in the past 3 years to assist with the development and deployment of exercises. Volunteers may not have NIMS or ICS training.

For the last full-scale exercise, in 2000, the total budget was $12,000, with funding participation from a grant from the Minnesota Department of Emergency Management. Incorporation of HAZMAT response in that exercise allowed the city and airport to qualify for the grant. Otherwise, exercise funding comes from individual city departments' training budgets. The airport department's training budget is approximately $3,500/year, and it is for all types of training, not just emergency training.

How Communications Are Incorporated in Emergency Exercises

Communications are always a factor in actual responses and in all exercises. Communications are intentionally included in all TTX and live exercises. Testing of interoperability is an objective

of every exercise, and the statewide 800 MHz system is the main tool. OWA's exercises use ICS structure and follow NIMS policies, including the role of PIOs. The AEP includes specifics on radio frequencies and procedures to promote interoperability with non-airport emergency response partners. Exercises are designed to train outside responders on how to communicate in airport environment.

Tabletop and Full-Scale Exercises

OWA uses a detailed scenario to plan both TTX and live exercises, but the process is informal. The 2000 full-scale exercise was planned using a detailed timeline.

OWA does not generally use an exercise control team. The airport manager generally directs or facilitates exercises. Overall, performing dual roles—exercise participant and exercise facilitator—is beneficial, as it gives the airport manager a better understanding of the issues.

OWA does not use a formal exercise safety plan. However, there is always a clear safety briefing including nature of a "safety stop" at the beginning of every exercise.

Evaluation of Effectiveness of Exercises

Exercise evaluation and extraction of lessons learned is always a challenge at OWA. Evaluators from tenants or fire department rate the exercise for whether exercise objectives have been met, but the AAR process tends to be informal for most functional exercises. The results come back to the airport manager for implementation. No specific tools such as HSEEP templates are used to evaluate exercises.

How Lessons Learned Are Applied

OWA airport manager incorporates lessons learned into the AEP, into airport training plans and materials, into city training plans and materials, and into future exercises. Although the process is informal, the feedback loop is intentional. Steele County has a strong emergency management program. The director of the county emergency management department, who is also the Owatonna City Fire Chief, strongly encourages and assists in the application of lessons learned at the airport. The AEP is fully integrated into the county's emergency plans. The AEP is accessible through the county's emergency management website.

Challenges and Barriers to Effective Exercises and How Overcome

The main barriers reported are the limited staff, limited budget, time constraints, and multiple roles of airport employees. These challenges have been addressed by OWA's decision to make addressing emergency preparedness a priority. The main tools for overcoming the barriers have been building relationships with other departments, committing the airport manager's time, and becoming a champion for emergency preparedness. OWA had an edge in these efforts because of its experience in dealing with the four crashes.

Benefits

OWA reports the following benefits from its exercise program:

- Enhanced preparedness for emergencies
- Strong relationships with partners
- Better understanding of capabilities and responsibilities
- Support from the city council and airport commission, who understand a plan is in place
- Testing of hazard analysis.

Advice to an Airport Starting to Develop Its Emergency Exercise Program

"It is important to design an exercise program that is compatible with the airport's specific needs and resources. It is important to build relationships with partner agencies and to leverage those agencies' resources to assist the airport's exercise needs" (D. Beaver, personal communication, Sept. 24, 2015).

Any airport should start by developing an AEP.

OWA demonstrates that a very small GA airport with only three employees and 82 operations per day can have an active and effective exercise program. Partnering with local agencies and mutual aid partners leverages assets, reduces costs, and increases the scope of exercises. Having an AEP and incorporating exercise requirements in it are beneficial for a GA airport, even though neither is an FAA requirement. The airport has a lower frequency of tabletop and full-scale exercises than is set by FAA for FAR Part 139 airports, but nevertheless believes that the exercises have improved the airport's preparedness.

COMMON THEMES FROM CASE EXAMPLES

The common thread among the case example airports is an acute need to control the outcomes of emergencies. The exercise at DEN pinpointed a need to control customer service events within the airport, primarily as the consequences of issues with the airport's train. There have been other events in Denver, and nationally, that may create a need for an airport to take control over the customer service experience for their shared customers at the airport. As customer service pertains to emergencies, it can be affected by the level of response and recovery from an incident at other airports. The airports used in as case examples all have:

Each airport has spent time and resources developing a training regimen that is specialized for their airport while collaborating with outside agencies.

- Dedicated resources to the development of, training for, and assessment of emergency management operations;
- Engaged in significant collaboration with their regional jurisdictions to assist in the development, training, and assessment of their activities; and
- Followed FEMA guidelines in the adoption of NIMS/ICS and HSEEP documents to improve efficiency in response and recovery activities.

This investment in effort and resources further underlies the importance airports place on customer service. Each airport also devoted significant resources to developing a customized training regimen; and reached out to collaborate with outside agencies, to establish a team atmosphere that will bolster the likelihood of successful outcomes. Good relationships with partner agencies allow an airport to leverage those agencies' resources to assist in its exercise needs.

Government regulations provide a framework for certification, but not the steps needed to reach beyond a minimum standard. The airports represented in the case studies are willing to go beyond regulatory baselines to provide the highest level of customer service and safety, and see improved safety as a conduit to customer satisfaction.

CHAPTER FIVE

ENHANCING EXERCISES AT GENERAL AVIATION, NON-HUB AND SMALL HUB AIRPORTS

SAMPLE EMERGENCY EXERCISE MATERIALS

In addition to the six case example airports discussed in chapter four, 30 other airports volunteered to share exercise planning, execution, and evaluation materials. Those materials were analyzed for relevance to the exercise needs of general aviation, non-hub, and small hub airports and for practicality of use.

The sample materials are reproduced in Appendices C through X, which are organized around nine tools commonly used for planning and conducting a full-scale exercise. Wherever possible, HSEEP-based tools are presented. The same tools can be used to plan and conduct a tabletop exercise.

1. Goals and Objectives—Three statements of goals and objectives are provided as Appendices C, D, and E. The first two are from an airport that wishes not to be identified; the third is from LAL.
2. Scenario—Two tabletop scenarios from Jacksonville International Airport (JAX) and Reno-Tahoe International Airport (RSW) and presented in Appendices F and G; and two full-scale scenarios from (Appendices H and I) are provided. The tabletop scenarios are from JAX and RSW, and the full-scale scenarios are from RNO and Southwest Florida International Airport (RSW).
3. Functional Drill—LAL conducts a monthly "no-notice" drill to test various emergency response functions. Appendix J presents a typical LAL scenario.
4. Planning Checklist—Two exercise planning checklists are provided, one for a TTX at RNO in Appendix K; and one for a full-scale exercise at Phoenix Sky Harbor International Airport (PHX) in Appendix L.
5. Detailed Timeline—Appendix M presents the detailed timeline for the most recent full-scale exercise at Range Regional Airport in Hibbing, Minnesota (HIB). It uses HSEEP's Master Scenario Events List format.
6. Exercise Brief—An exercise brief is a short statement describing the goals and nature of an exercise. It is given at the start of an exercise. A sample exercise brief from Joplin Regional Airport in Webb City, Missouri (JNL) is provided in Appendix N.
7. Exercise Communication Plan—Some airports in the study did not have written exercise communications plans. The airports that did have such plans have made them Sensitive Security Information (SSI). JAX shared the exercise communications plan that is reproduced in Appendix O.
8. Exercise Safety Plan—The exercise safety plan, extracted from an LAL full-scale exercise, is reproduced in Appendix Free-standing safety plans are apparently rare, as each exercise typically requires its own safety plan.
9. Evaluation Plan and Forms—Evaluation forms to be completed by exercise participants from RNO and Eugene (Oregon) Airport are reproduced in Appendices Q and R. Appendix S reproduces RNO's exercise evaluation checklist, which is detailed and extensive.
10. Post-Event Documentation—The three basic types of post-event documentation are hot wash summaries, after action reports, and improvement plans. Appendix T presents hot wash summaries from RNO (HSEEP format) and Appendix U presents the hot wash from EUG (meeting minutes format). Appendix V presents an after action report from JAX, and Appendix W is an improvement plan from LAL. Since after action report sand improvement plans are often combined, the table of contents for LAL's most recent AAR/IP is reproduced (Appendix X).

To show how all the basic HSEEP tools fit together for an airport full-scale exercise, the complete EUG plan for its 2014 triennial exercise is reproduced in Appendix Y. The only modification in the

It is easier to do effective exercises with adequate funding, but an airport without a budget for exercises can create a highly effective exercise program by using free training opportunities and by working jointly with local, regional, state, and federal agencies in order to leverage and mobilize their resources. Aligning preparedness goals and building relationships cost nothing but can yield large benefits.

plan has been to remove heading styles. EUG uses HSEEP with only the bare minimum of local adaptations.

ESSENTIAL AND DESIRABLE ELEMENTS TO ENHANCE EMERGENCY EXERCISES

The results of the literature review, survey, case examples, and analysis of the sample exercise materials have been summarized in a checklist of 41 essential and desirable elements to enhance emergency exercises at GA, non-hub, and small hub airports. The checklist addresses exercise planning, design, execution, and evaluation as well as methods to promote the application of lessons learned from exercises. The checklist is in Appendix Z.

Examination of items in the checklist reveals the overwhelming importance that planning has in relation to a successful exercise program. Fortunately, many of the steps can be shortened by obtaining exercise materials from other airports or through partnerships with local emergency management agencies.

Appendix AA provides a road map for the development of TTX or full-scale emergency exercises at airports. The road map is a concise extract from HSEEP.

CHAPTER SIX

CONCLUSIONS AND SUGGESTIONS FOR FURTHER RESEARCH

Analysis of the data led to 13 conclusions:

1. The survey data and case examples demonstrate that smaller airports can and do have active, effective exercise programs.
2. Many airports in the study, including four of the case example airports, view exercises as a conduit from safety to enhancing customer service.
3. Many airports that are not required to have exercises by FAR Part 139 choose to carry out tabletop and full-scale exercises.
4. Smaller airports benefit from having readily useful tools, which will save time and assist them in conducting effective exercises where there is a lack of capacity for training and development of exercises. Many larger airports and some smaller airports have usable, scalable exercise tools that they are willing to share with other airports.
5. A number of airports use exercise materials based on the DHS Homeland Security Exercise and Evaluation Program (HSEEP) but adapt them extensively to fit the airport environment. HSEEP is extremely detailed, which makes it harder to use by small airports with limited resources, but not impossible. Use of HSEEP may actually assist in the planning process, especially if the airport gets HSEEP training or support from community emergency management agencies that are familiar with the HSEEP process and/or has HSEEP resource models to follow from other airports.
6. Airports that use tabletop or full-scale exercises find benefits from using a building-block approach to exercises; that is, discussion-based exercises leading to tabletop exercises that lead to a full-scale exercise.
7. It is most helpful if an airport's target capabilities determine the exercise scenario, not the other way round. It is important that airports of all sizes focus on a wide spectrum of scenarios chosen by considering the factors of likelihood, severity, and impact of all possible events.
8. Broad involvement of stakeholders, including both on-airport and off-airport partners, appears to be beneficial or even highly beneficial. Such partnering can minimize cost and maximize effectiveness of exercises.
9. Airports that use exercise control teams structured on Incident Command System principles and using an explicit exercise safety plan are typically more satisfied with their exercises.
10. Exercising communications procedures and plans is an important aspect that can be productively incorporated into tabletop and full-scale exercises.
11. Formal evaluation forms and procedures are typically included in the plan for every exercise.
12. Airports that have an intentional, formal process for incorporating lessons learned from exercises into airport emergency plans, other plans, and procedures seem to be more satisfied with their preparedness and resiliency.
13. Metrics for emergency exercise effectiveness were not found.

In addition, seven topics for further research that could be beneficial were identified:

1. A parallel study of aviation security (AVSEC) exercises for general aviation, reliever, non-hub, and small hub airports.
2. Potential for statewide or regional consortia for training and exercises for general aviation, non-hub, and small hub airports to share expertise and scarce resources.
3. Training and exercise guidance for local law enforcement agencies when responding to an incident at an airport, including how to enter airport and move around AOA.

4. HSEEP guidance specifically intended for airports. The present study may fill this need, but guidance in additional arenas would be helpful.
5. Methods for automated updating of call list databases and making databases and call lists consistent across all airport plans such as airport emergency plans, standard operating procedures, and airport security programs.
6. A possible connection among excellence in emergency management, customer service, traveler experience, and airport revenues.
7. Development and verification of widely accepted metrics for emergency management training, exercises, preparedness, and resiliency.

GLOSSARY

Advisory Circular	Instructions from the FAA on how to comply with federal aviation laws and regulations.
After-action review	A review, usually internal, conducted after response and recovery from an incident are complete for the purpose of evaluating performance and fine-tuning plans and procedures for future incidents.
Air operations area	Any area of the airport used or intended to be used for the landing, takeoff, or surface maneuvering of aircraft.
Air traffic control	The process by which aircraft are safely separated in the sky as they fly and at the airports where they land and take off.
Air traffic control tower	A tower at an airfield from which air traffic is controlled by radio and observed physically and by radar.
Aircraft Rescue and Fire Fighting	Specialized fire fighters, rescuers, procedures, and equipment to deal with aircraft accidents at an airport.
Airport Community Emergency Response Team	A Community Emergency Response Team (see entry) that is specially trained to assist in defined functions at the airport to which it is attached.
Airport emergency plan	A comprehensive plan for dealing with all hazards reasonably expected to affect a given airport, required for all Part 139 airports and recommended for all other airports.
Command and control	The exercise of authority and direction by a properly designated commander over assigned and attached forces in the accomplishment of the mission through an arrangement of personnel, equipment, communications, facilities, and procedures employed by a commander in planning, directing, coordinating, and controlling forces and operations in the accomplishment of goals and objectives
Communication	The transmission of thoughts, messages, or information.
Community Emergency Response Team (CERT)	A key component of Citizen Corps, the CERT program trains citizens to be better prepared to respond to emergency situations in their communities. When emergencies occur, CERT members can provide critical support to first responders, provide immediate assistance to victims, and organize volunteers at a disaster site.
Departmental operations center	The operations center that supervises normal operations, emergency operations, or both for a department of a larger organization.
Drill	A coordinated, supervised activity usually used to test a single specific operation or function in a single agency.
Emergency	Any occasion or instance that warrants action to save lives and protect property, public health, and safety.
Emergency management	The coordination and integration of all activities necessary to build, sustain, and improve the capabilities to prepare for, respond to, recover from, or mitigate against threatened or actual disasters or emergencies, regardless of cause.
Emergency operations center	A protected site from which emergency officials coordinate, monitor, and direct response activities during an emergency.
Exercise	A planned, staged implementation of the critical incident plan to evaluate processes that work and identify those needing improvement.
Federal Aviation Regulation	Rules prescribed by the Federal Aviation Administration (FAA) governing all aviation activities in the United States, the FARs are part of Title 14 of the Code of Federal Regulations (CFR).
Full-scale exercise	The most complex and resource-intensive type of exercise. They involve multiple agencies, organizations, and jurisdictions and validate many facets of preparedness. FSEs often include many players operating under cooperative systems such as the Incident Command System (ICS) or Unified Command.

Functional exercise	An exercise that is designed to validate and evaluate capabilities, multiple functions and/or sub-functions, or interdependent groups of functions.
Game	A simulation of operations that often involves two or more teams, usually in a competitive environment, using rules, data, and procedures designed to depict an actual or hypothetical situation.
General aviation airport	An airport that does not meet the criteria for classification as a commercial service airport may be included in the NPIAS as a general aviation airport if they account for enough activity (having usually at least 10 locally based aircraft) and are at least 20 miles from the nearest NPIAS airport
Hub	A very busy commercial service airport.
Incident	An occurrence or event, natural or manmade, that requires a response to protect life or property
Incident action plan	An organized course of events that addresses all phases of incident control within a specified time. An IAP is necessary to affect successful outcomes in any situation, especially emergency operations, in a timely manner.
Incident command post	The physical location of the Incident Commander
Incident Command System	A standardized organizational structure used to command, control, and coordinate the use of resources and personnel that have responded to the scene of an emergency
Incident Commander	The individual responsible for all incident activities, including development of strategies and tactics and ordering and release of resources.
Incident Management Team	An Incident Commander and the appropriate Command and General Staff personnel assigned to an incident, the level of training and experience of the IMT members, coupled with the identified formal response requirements and responsibilities of the IMT, are factors in determining "type," or level, of IMT.
Interoperability	The ability of systems, personnel, and equipment to provide and receive functionality, data, information, and/or services to and from other systems, personnel, and equipment, between both public and private agencies, departments, and other organizations, in a manner enabling them to operate effectively together.
Large hub airport	An airport with at least one percent of total U.S. passenger enplanements.
Law enforcement officer	A government employee responsible for the prevention, investigation, apprehension, or detention of individuals suspected or convicted of offenses against the criminal laws.
Mass care	Actions taken to protect evacuees and other disaster victims from the effects of a disaster.
Medium hub airport	An airport with between 0.25 percent and 1 percent of total U.S. passenger enplanements.
Mutual aid	Reciprocal assistance by emergency services under a predetermined plan.
Mutual aid agreement	A voluntary, non-contractual arrangement to provide emergency or disaster assistance between two or more entities. It typically does not involve payment, reimbursement, liability, or mandatory responses.
National Incident Management System	A systematic, proactive approach guiding government agencies at all levels, the private sector, and nongovernmental organizations to prepare for, prevent, respond to, recover from, and mitigate the effects of incidents, regardless of cause, size, location, or complexity, in order to reduce the loss of life and property and reduce harm to the environment.
National Plan of Integrated Airport Systems (NPIAS)	A national airport plan prepared by the FAA in accordance with Section 47103 of Title 49 of the United States Code, NPIAS includes as primary and commercial service airports selected general aviation airports as well as all general aviation airports designated as reliever airports by the FAA.

Navigation aid (Navaid)	Any visual or electronic device airborne or on the surface which provides point-to-point guidance information or position data to aircraft in flight.
Non-hub primary airport	An airport that enplanes less than 0.05 percent of all commercial passenger enplanements but has more than 10,000 annual enplanements.
Non-primary Commercial Service airport	A non-hub airport with at least 2,500 and no more than 10,000 passengers a year, typically an airport with commercial passenger service subsidized by the Essential Air Service Program
Notice to Airmen	A notice or advisory distributed by means of telecommunication containing information concerning the establishment, conditions or change in any aeronautical facility, service, procedure, or hazard, the timely knowledge of which is essential to personnel and systems concerned with flight operations.
Operations and maintenance	All the services required to assure that the built environment will perform the functions for which a facility was designed and constructed.
Part 139 airport	An airport that serves scheduled and unscheduled air carrier aircraft with more than 30 seats, serves scheduled air carrier operations in aircraft with more than nine seats but less than 31 seats, and is required by the FAA Administrator to have a certificate for operation.
Primary airport	Public airports receiving scheduled passenger service and having more than 10,000 annual passenger enplanements.
Public address system	An electronic amplification system used as a communication system in public areas.
Public information officer	The person responsible for communicating with the public, media, and/or coordinating with other agencies, as necessary, with incident-related information requirements.
Public relations	The practice of managing the dissemination of information between an individual or organization and the public.
Reliever airports	A high-capacity general aviation airport in a major metropolitan area, such airports must have 100 or more based aircraft or 25,000 annual itinerant operations, the FAA officially designates reliever airports.
Risk analysis	The systematic objective examination or reexamination of the risks and hazards that may affect a facility, program, operation, or procedure.
Seminar (exercise)	A discussion-based exercise to orient participants or provide an overview of authorities, strategies, plans, policies, procedures, protocols, resources, concepts, and ideas.
Small hub airport	An airport with 0.05 percent to 0.25 percent of total U.S. passenger enplanements.
Tabletop exercise	An activity that involves key personnel discussing simulated scenarios in an informal setting. This type of exercise can be used to assess plans, policies, and procedures or to assess the systems needed to guide the prevention of, response to, and recovery from a defined incident. TTXs are typically aimed at facilitating understanding of concepts, identifying strengths and shortfalls, and generating positive changes in attitude. Participants are encouraged to discuss issues in depth and develop solutions through slow-paced problem solving as opposed to the rapid, spontaneous decision making that occurs under actual or simulated emergency conditions.
Unified Command	The Unified Command organization operating within NIMS consists of the Incident Commanders from the various jurisdictions or organizations operating together to form a single command structure.
Workshop (exercise)	A discussion-based exercise similar to a seminar except that participant interaction is increased, and the focus is placed on achieving or building a product.

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APPENDIX A

Survey Questions and Responses

This appendix presents the questions and responses from the joint ACRP S04-16 and ACRP S04-17 survey that are pertinent to S04-17. Analytical results and interpretations are presented in chapter three.

[Questions 1–7 gathered information on the airport name and person completing the survey.]

Question 8: What is the structure of your airport?

Governance Structure	Percent in Study	Number
City department (including enterprise department or revenue department)	46.0	23
County department	8.0	4
Joint city–county department (e.g., KSFO)	0.0	0
State (e.g., KBWI)	0.0	0
Authority within one state	40.0	20
Multi-state authority	2.0	1
Private corporation/privatized/concessioned	2.0	1
Joint board	2.0	1
Total		50

Smith, Garcia, Sawyer and Kenville data.

Question 9: Which of the following positions are staff positions at your airport (FT or PT), or are staff positions supported with airport funds to another agency (FT or PT). The two "current duties" choices pertain to an airport manager or operations supervisor, or comparable department head position. If a position exists but is vacant, please mark it in the appropriate column.

	Have FT on airport staff		Have PT on airport staff		Pay FT at other agency		Pay PT at other agency		FT role part of current duties		PT role part of current duties		Total	
Public information officer (PIO)	26	54.2%	2	4.2%	4	8.3%	3	6.3%	6	12.5%	7	14.6%	48	100%
Emergency manager	14	32.6%	1	2.3%	3	7.0%	1	2.3%	9	20.9%	15	34.9%	43	100%
Emergency planner	7	17.5%	1	2.5%	2	5.0%	0	0.0%	12	30.0%	18	45.0%	40	100%
Training officer	14	35.9%	1	2.6%	1	2.6%	1	2.6%	10	25.6%	12	30.8%	39	100%
Exercise designer	5	12.5%	1	2.5%	2	5.0%	2	5.0%	11	27.5%	19	47.5%	40	100%

	Have FT on airport staff		Have PT on airport staff		Pay FT at other agency		Pay PT at other agency		FT role part of current duties		PT role part of current duties		Total	
Exercise evaluator	5	12.5%	0	0.0%	4	10.0%	3	7.5%	9	22.5%	19	47.5%	40	100%
Operational program planner	7	18.4%	2	5.3%	3	7.9%	1	2.6%	9	23.7%	16	42.1%	38	100%
Operational evaluator	6	15.4%	1	2.6%	3	7.7%	1	2.6%	9	23.1%	19	48.7%	39	100%
Risk/hazard manager or equivalent role	15	35.7%	2	4.8%	4	9.5%	3	7.1%	7	16.7%	11	26.2%	42	100%
ARFF training officer	1	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	100%
Airport manager	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	100%
Aviation director	1	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	100%
Deputy aviation director	1	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	100%
Emergency manager position vacant	1	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	100%
Emergency manager position is vacant	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	100%
Fire chief	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	100%
GAA supervisor	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	100%
Manager	1	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	100%
Operations	1	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	100%
Planner, training, and exercise designer & evaluator all done by emergency manager	1	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	100%

Smith, Garcia, Sawyer and Kenville data.

Question 10: Of your staffed positions which level of training applies—Both NIMS and ICS training, NIMS training only, ICS training only, Neither NIMS nor ICS training, Don't know?

	Both NIMS and ICS training		NIMS training only		ICS training only		Neither NIMS nor ICS training		Don't know		Total	
Public information officer (PIO)	31	66.0%	2	4.3%	2	4.3%	9	19.1%	3	6.4%	47	100%
Emergency manager	35	81.4%	0	0.0%	1	2.3%	6	14.0%	1	2.3%	43	100%
Emergency planner	30	76.9%	1	2.6%	1	2.6%	6	15.4%	1	2.6%	39	100%
Training officer	26	65.0%	3	7.5%	2	5.0%	6	15.0%	3	7.5%	40	100%
Exercise designer	30	73.2%	1	2.4%	1	2.4%	6	14.6%	3	7.3%	41	100%
Exercise evaluator	32	78.0%	0	0.0%	0	0.0%	6	14.6%	3	7.3%	41	100%
Operational program planner	28	71.8%	2	5.1%	0	0.0%	5	12.8%	4	10.3%	39	100%
Operational evaluator	30	76.9%	0	0.0%	0	0.0%	5	12.8%	4	10.3%	39	100%
Risk/hazard manager or equivalent role	26	63.4%	3	7.3%	1	2.4%	6	14.6%	5	12.2%	41	100%
Airport firefighter	1	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	100%
Airport manager	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	100%
Aviation director	1	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	100%
Deputy aviation director	1	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	100%
Emergency manager position is vacant	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	100%
Fire chief	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	100%
GAA Supervisor	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	100%
Manager	0	0.0%	0	0.0%	1	100.0%	0	0.0%	0	0.0%	1	100%
Operations	0	0.0%	0	0.0%	1	100.0%	0	0.0%	0	0.0%	1	100%

	Both NIMS and ICS training		NIMS training only		ICS training only		Neither NIMS nor ICS training		Don't know		Total	
All directors and senior managers	1	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	100%
Anyone who works in ECC/EOC	1	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	100%

Smith, Garcia, Sawyer and Kenville data.

[Questions 11–27 and 29–32 pertained to ACRP S04-16 (Emergency Communications Planning for Airports) and are addressed in the synthesis report for that project.]

Question 28: Excluding daily crash phone tests with the air traffic control tower, how often do you test or exercise your emergency communications plan/plans? (Please mark all that apply.)

Frequency	Percent	Count
Daily	2.0	1
Weekly	10.0	5
Monthly	10.0	5
Quarterly	22.0	11
Annually	56.0	28
When something changes	18.0	9
Never	6.0	3
Other (required)	18.0	9
Total		50

Smith, Garcia, Sawyer and Kenville data.

[Questions 33–36 requested contact information on person completing the section of the survey pertaining to exercises.]

Question 37: Has your airport undergone any type of specific training in the past three years to assist with the development and deployment of training exercises? NOTE: This question pertains to training regarding how to create training exercises; it does not pertain to training to prepare for being tested by an exercise.

Training in Exercise Design and Execution	Percent	Count
Yes, internal training	18.0	9
Yes, outside training	18.0	9
No	60.0	30
Don't know	4.0	2
Total		50

Smith, Garcia, Sawyer and Kenville data.

Question 38: If you answered yes to question 37, please describe the sources and nature of the training. We would especially like to hear of innovative and cost-effective training methods and tools you have found.

Source of Training	Count
American Red Cross	1
An airport training and exercise design consortium that is made up of staff from Police, Fire, Maintenance, Operations, Security, Training and Emergency MGT with IT, Environmental and Engineering subsequently added. This group all went thru HSEEP training and have all had ICS/NIMS 700,100, 200, 300, 400 along w/other FEMA courses like IC/EOC interface.	1
An all-volunteer Airlift Team staff by on field tenants and pilots	
FEMA and FEMA contractors	6
HSEEP instructors on airport staff	3
HSEEP offered by the state or local government	2
Local emergency management agency	1
Local emergency planning council	1
Local employee development division	1
Local law enforcement and fire rescue programs	6
Master Exercise Practitioner Training and Certification, SEMS EOC Action Planning Workshop, etc.	1
Non-HSEEP trainers on airport staff	1
State Emergency Response Team (SERT)	1
Videos of previous exercises and personal experience used to educate personnel on the steps necessary to plan and execute an exercise	1

Smith, Garcia, Sawyer and Kenville data.

Question 39: What types of exercises does your airport use? (Please mark all that apply.)

Exercise Type Used	Percent	Count
Table top exercise (TTX)	86.0	43
Full-scale exercise	80.0	40
Drill	58.0	29
Functional exercise	52.0	26
Workshop	30.0	15
Seminar	22.0	11
Game/simulation	8.0	4
None of the above	8.0	4
Full-scale exercise at another airport	2.0	1
Informal walk-abouts	2.0	1
Total		50

Smith, Garcia, Sawyer and Kenville data.

Question 40: What was the scenario of your most recent full-scale or triennial/recertification exercise? Please include sub-scenarios included in the exercise.

[The results for question 40 are summarized and analyzed in Table 4.]

Question 41: What functions were addressed in your airport's table top exercises in the past three years? (Please mark all that apply.)

Function	Percent	Count
Command and control	80.0	40
Communications	90.0	45
Alert & warning	74.0	37
Emergency public information	66.0	33
Protective actions	50.0	25
Law enforcement	80.0	40
Fire & rescue	84.0	42
Health & medical	62.0	31
Resource management	58.0	29
Operations & maintenance	78.0	39
Security	74.0	37
Safety	74.0	37
Utilities	32.0	16
Crowd control	54.0	27
Friends & family center	4.0	2
Mass care and uninjured care	4.0	2
Airlift of Red Cross supplies	2.0	1
Social media	2.0	2
None of the above	8.0	4
Total		50

Smith, Garcia, Sawyer and Kenville data.

Question 42: What functions were addressed in your airport's most recent full-scale exercise? (Please mark all that apply.)

Function	Percent	Count
Command and control	82.0	41
Communications	78.0	39
Alert & warning	70.0	35
Emergency public information	62.0	31
Protective actions	40.0	20
Law enforcement	76.0	38
Fire & rescue	82.0	41
Health & medical	62.0	31
Resource management	52.0	26
Operations & maintenance	74.0	37
Security	68.0	34
Safety	68.0	34
Utilities	20.0	10
Crowd control	50.0	25
Airlift of Red Cross supplies	2.0	1
EOC activation	2.0	1
Helicopter operations	2.0	1
Mass care/uninjured care	2.0	1
Mutual aid capabilities	2.0	1
Social media	2.0	1
Volunteer management	2.0	1
None of the above	14.0	7
Total		50

Smith, Garcia, Sawyer and Kenville data.

Question 43: What processes are used by your airport to develop its exercise scenarios and materials? (Please mark all that apply.)

Exercise Development Process Used	Percent	Count
Senior management (C-level) sets scenario and goals for exercise (C-level would be CEO, COO, CFO, CIO, etc.)	22.0	11
Senior management (C-level) develops scenario and materials for exercise	16.0	8
Subject matter expert in ARFF develops them	34.0	17
Subject matter expert in law enforcement develops them	28.0	14
Subject matter expert in emergency management develops them	52.0	26
Subject matter expert in operations develops them	40.0	20
Subject matter expert in communications/media/public relations develops them	24.0	12
A standing committee of airport managers and employees develops them	22.0	11
The airport's FAA compliance inspector suggests them	8.0	4
Mutual aid partner develops them	14.0	7
Non-airport department of the airport sponsor (e.g., city or county) develops them	18.0	9
Scenarios and materials are borrowed or adapted from other airports	14.0	7
Scenarios and materials are taken or adapted from professional publications	4.0	2
Scenarios and materials from previous exercises at your airport are adapted or edited for the new exercise	32.0	16
Scenarios and materials are adapted from previous actual incidents at your airport or another airport	26.0	13
Scenarios are specifically designed to test corrections of discrepancies or weaknesses revealed by drills, exercises, inspections, or actual incidents	26.0	13
Ready-made exercises are procured from a vendor	0.0	0
A consulting firm or vendor provides exercise guidance, scenarios, and materials on a case-by-case basis	4.0	2
A consulting firm on long-term contract or retainer provides exercise guidance, scenarios, and materials	0.0	0
Jointly with military on joint use airport	2.0	1
Regional planning commission	2.0	1
Other (required)	18.0	9
None of the above	6.0	3
Total		50

Smith, Garcia, Sawyer and Kenville data.

Question 44: Which of the following questions do you use to define a "successful" exercise? (Please mark all that apply.)

Definition of "Successful"	Percent	Count
Was the exercise conducted safely without damage to persons or property?	72.0	36
Did the exercise satisfy the applicable regulatory requirements (FAA, state, etc.)?	70.0	35
Were the major target Capabilities and Exercise Objectives of your Exercise Plan achieved?	74.0	37
Did all key stakeholders participate?	66.0	33
Were problems and issues clearly identified in the Hot Wash or After Action Review/Report?	68.0	34
Have strengths and weaknesses of the Airport Emergency Plan (AEP) been identified?	74.0	37
Was a well-defined list of action items to be accomplished before the next exercise developed?	54.0	27
Were lessons learned and necessary changes incorporated into the AEP or other applicable documents?	66.0	33
Were the changes that were made and incorporated tested to ensure they were working and sufficient?	44.0	22
Did the participants evaluate the exercise as engaging and relevant?	2.0	1
None of the above	4.0	2
Total		50

Smith, Garcia, Sawyer and Kenville data.

Question 45: If you use a quantitative metric to judge the success of your exercises, please describe it. If you do not use a quantitative metric, please leave this question blank.

Two airports reported what appear to be quantitative metrics:

1) Number of items identified by tenants and stakeholders to incorporate into revision of AEP.
2) Response times
    1. Receipt of alert
    2. Time to process alert
    3. Time to dispatch of call
    4. Actual response time
    5. How long it takes to contain the emergency
    6. Patient Care
        1. Time from initial arrival to completion of triage.
        2. Time to completion of field treatment.
        3. Time to transport to hospital.

Question 46: Who participated in your most recent triennial/recertification or full-scale exercise? (Please mark all that apply.)

Participants		Count
Airport operations	82.0	41
Fire	82.0	41
Airport management	80.0	40
Emergency medical services	80.0	40
Law enforcement	80.0	40
Maintenance	74.0	37
PR/media relations/public information	72.0	36
American Red Cross	66.0	33
Hospital	66.0	33
Airline(s)	64.0	32
Medical transportation providers	64.0	32
Local government emergency management agency	58.0	29
TSA	58.0	29
Airport tenants and concessionaires	40.0	20
IT	40.0	20
Cleric/churches/chaplains	32.0	16
Fixed base operator (FBO)	30.0	15
FBI	28.0	14
Local government Community Emergency Response Team (CERT)	24.0	12
Local health department	22.0	11
CBP	20.0	10
Air National Guard (joint use airport)	18.0	9
Other airports not in your system	18.0	9
Airport Community Emergency Response Team (A-CERT)	16.0	8
Municipal utilities or public works	14.0	7
U.S. Coast Guard	10.0	5
Air Marshals	8.0	4
State health department	6.0	3
Airport-to-airport mutual aid (SEADOG, WESTDOG, CARST, etc.)	4.0	2

Participants		Count
CDC	4.0	2
Other airports in your multi-airport system	4.0	2
Regular military (joint use airport)	4.0	2
U.S. Marshals Service	4.0	2
City department on disabilities	2.0	1
Electric utility company	2.0	1
Family Assistance Foundation/Aviem	2.0	1
Fusion center	2.0	1
NTSB	2.0	1
University	2.0	1
Not applicable—our airport is not required to perform full-scale exercises	10.0	5
Total		50

Smith, Garcia, Sawyer and Kenville data.

Question 47: Which settings did your airport use for its most recent full-scale exercise? (Please mark all that apply.)

Settings Used for Full-scale Exercise	Percent	Count
Aircraft operating area (AOA)	74.0	37
ARFF station or fire station	30.0	15
EOC/DOC	38.0	19
Hangars	8.0	4
Landside	22.0	11
Terminals	30.0	15
Conference room	30.0	15
Administrative offices	24.0	12
Online (virtual settings)	6.0	3
Other on-airport	22.0	11
Other off-airport	18.0	9
Total		50

Smith, Garcia, Sawyer and Kenville data.

Question 48: What props or equipment do you use for your full-scale exercises? (Please mark all that apply.)

Props and Equipment Used for Full-scale Exercise	Percent	Count
Make-up/moulage	62.0	31
In-service vehicles	48.0	24
Mannequins	40.0	20
“Paper and pencil” (i.e., injects on cards)	32.0	16
Simulators (physical)	32.0	16
Baggage	30.0	15
Decommissioned aircraft	30.0	15
Decommissioned vehicles	26.0	13
In-service aircraft	18.0	9
Burn pit	16.0	8
Projection system	10.0	5
Volunteers as victims	10.0	5
Simulators (virtual/software)	4.0	2
ARFF mobile trainer	2.0	1
Burn building	2.0	1
Inflatable aircraft (RATT)	2.0	1
Military equipment at joint use airport	2.0	1
Pyrotechnics	2.0	1
Total		50

Smith, Garcia, Sawyer and Kenville data.

Question 49: Which of the following methods has been used by your airport to develop formal evaluation of any full-scale exercise? (Please mark all that apply.)

Methods to Develop Formal Evaluation of Full-scale Exercise	Percent	Count
After Action Review (AAR)	74.0	37
Hot wash	68.0	34
Training and Exercise Event checklist	66.0	33
Peer review	44.0	22
No formal evaluation is performed	12.0	6
Contracted subject matter expert	10.0	5
Written or oral test or examination	6.0	3
HSEEP evaluation checklists	4.0	2
Exercise Planning Team	2.0	1
Survey of participants	2.0	1
Preparation of a Value of the Exercise statement	0.0	0
Total		50

Smith, Garcia, Sawyer and Kenville data.

Question 50: On what occasions or intervals does your airport use table top exercises (TTXs)? (Please mark all that apply.)

Occasions or Intervals for Use of TTXs	Percent	Count
Annually in years without full-scale/triennial/recertification exercise	42.0	21
More frequently than annually	36.0	18
To evaluate and/or teach new procedures and/or policies	26.0	13
To evaluate learning from training	20.0	10
Our airport is not required to have annual table top exercises	16.0	8
When there are significant personnel changes	10.0	5
Annually including triennial years	6.0	3
Our airport has never had a table top exercise or participated in one	4.0	2
Building blocks approach leading up to full-scale	2.0	1
When requested by airlines, stakeholders, and other airport partners	2.0	1
Total		50

Smith, Garcia, Sawyer and Kenville data.

Question 51: Has your airport completed a full-scale exercise for any purpose OTHER than FAA Part 139 recertification?

Value	Percent	Count
Yes	28.0	14
No	64.0	32
Don't know	8.0	4
Total		50

Smith, Garcia, Sawyer and Kenville data.

Question 52: If you answered "Yes" to question 51, please specific the reason(s) for the full-scale exercise.

Reason for Full-scale Exercises NOT for Part 139 Certification	Count
Airport not Part 139 but maintains the standards	4
Active shooter	5
Address active threats/1542	1
Annual exercises purposed to learn and improve not just to check the box	1
Annual full-scale exercises for additional training, relationship building and overall familiarization with the plan	1
Bomb threat	1
Bomb threat on board an aircraft	1
Do annual full-scale exercises	1
Hijacking	1
National Disaster Medical System	1
Radio communication/EOC operation exercise to test recently issued 800 MHz radios	1
Security breach	1
Terminal evacuation preparation response	1
The airport participates annually with the MCAS Yuma	1
To test emergency response at reliever airport	1
Train failure	1

Smith, Garcia, Sawyer and Kenville data.

Question 53: Do you have a formal process for implementing lessons learned from exercises into your written plans and procedures (AEP, SOPs)?

Formal Process for Implementing Lessons Learned from Exercises	Percent	Count
Yes, a written process	22.0	11
Yes, an unwritten process	26.0	13
No	48.0	24
Don't know	4.0	2
Total		50

Smith, Garcia, Sawyer and Kenville data.

Question 54: If you have a formal process for implementing lessons learned from exercises, please describe it. If you have a written policy or procedure, please give the title of the document.

Nature of Formal Process for Implementing Lessons Learned	Count
After Action Report and Improvement Plan (AAR/IP)	3
After action reviews result in AEP changes.	2
Airport Emergency Plan (AEP) has written process for revisions on basis of lessons learned from exercises and actual incidents	2
HSEEP AAR/IP Improvement Matrix	2
After action meeting with participants and then creating an after action report	1

Smith, Garcia, Sawyer and Kenville data.

Question 55: Which of the following will best aid your airport in planning and exercising future exercises? (Five stars indicate a tool that would be highly useful to you, one star indicates would not be useful at all to you.) You must rate every item to move beyond this question.

[The responses to Question 55 are summarized in Table 5 in chapter three.]

Question 56: Are there any of the following that your airport has and would be willing to share? (Please mark all that you are willing to share.)

Plans and Documents that Airport Is Willing to Share	Percent	Count
Scenarios	46.0	23
Exercises	36.0	18
Evaluation forms or checklists	34.0	17
Communications plans (SSI redacted if necessary)	28.0	14
None of the above	26.0	13
Sample phone lists/contact lists (with names and numbers redacted)	22.0	11
After action reports	20.0	10
After action report templates	18.0	9
Hot wash summary	14.0	7
AEP	2.0	1
CE Handbook	2.0	1
Exercise plan	2.0	1
MSEL	2.0	1
Videos of past full-scale exercises	2.0	1
Total		50

Smith, Garcia, Sawyer and Kenville data.

Question 57: Who is the best person to contact to obtain copies of the materials you indicated in question 56?

[Contact individuals at the 37 airports willing to share information]

Question 58: Is your airport interested and willing to be considered as one of the three to six case examples to complete each of the two syntheses? Being a case example airport would involve one or a few short telephone interviews and perhaps additional document requests.

Value	Percent	Count
Yes, either synthesis	40.0	20
Yes, but only the emergency communications planning synthesis	0.0	0
Yes, but only the table top and full-scale exercise synthesis	6.0	3
Maybe, contact me if the survey data and literature review suggest that my airport would be a good candidate for a case example	40.0	20
No	14.0	7
Total		50

Smith, Garcia, Sawyer and Kenville data.

Question 59: Do you wish to make any comments or observations concerning any matter related to emergency communications planning and/or exercises, or about this survey?

[No negative comments]

APPENDIX B

Participating Airports

Airport	Code	NPIAS (2013)	Part 139	Governance	State	FAA Reg.	FAA Passenger Enplanements CY14	Total Cargo (pounds) CY14	Daily Ops
Aspen/Pitkin County Airport	ASE	NH	Y	County	CO	NM	217,648	—	97
Bismarck International Airport	BIS	NH	Y	City	ND	GL	248,316	—	141
Blue Grass Airport	LEX	SH	Y	Authority	KY	SO	595,083	—	180
Blue Ridge Airport	MTV	GA	N	Authority	VA	EA	—	—	66
Boise International Airport	BOI	SH	Y	City	ID	NM	1,378,352	343,847,570	325
Burbank Bob Hope Airport	BUR	MH	Y	Authority	CA	WP	1,928,491	—	329
Cecil Airport	VQQ	GA	N	Authority	FL	SO	—	—	286
Centennial Airport	APA	RL	N	County	CO	NM	—	—	825
Colorado Springs Municipal Airport	COS	SH	Y	City/lease to military	CO	NM	624,317	108,568,776	350
Dade–Collier Training and Transition Airport	TNT	GA	N	County	FL	SO	—	—	40
Denver International Airport	DEN	LH	Y	City & county	CO	NM	26,000,591	1,314,752,910	1,575
Devils Lake Regional Airport	DVL	CS	Y	Authority	ND	GL	3,050	—	64
DFW International Airport	DFW	LH	Y	Authority/corp.	TX	SW	30,766,940	3,140,733,270	1,848
Eagle River Union Airport	EGV	GA	N	City	WI	GL	—	—	55
Eugene Airport	EUG	SH	Y	City	OR	WP	440,198	—	171
Fort Dodge Regional Airport	FOD	CS	N	City	IA	CE	3,083*	—	55
Fort Lauderdale–Hollywood International Airport	FLL	LH	Y	County	FL	SO	11,987,607	508,118,870	734
Grove Regional Airport	GMJ	GA	N	City	OK	SW	—	—	81
Hartsfield–Jackson Atlanta International Airport	ATL	LH	Y	City	GA	SO	46,604,273	2,262,892,910	2,549
Hector International Airport	FAR	SH	Y	Authority	ND	GL	456,372	—	220
Jacksonville International Airport	JAX	MH	Y	Authority	FL	SO	2,589,198	395,653,090	241
Joplin Regional Airport	JLN	NH	Y	City	MO	CE	26,380	—	73
Lakeland Linder Regional Airport	LAL	RL	Y	City	FL	SO	—	—	283

Lambert–St. Louis International Airport	STL	MH	Y	City	MO	CE	6,108,758	381,204,028	362
Livermore Municipal Airport	LVK	RL	N	City	CA	WP	—	—	394
Los Angeles International Airport	LAX	LH	Y	City	CA	WP	34,314,197	4,297,359,912	1,741
Martha's Vineyard Airport	MVY	NH	Y	County	MA	NE	52,362	—	128
Memphis International Airport	MEM	MH	Y	Authority	TN	SO	1,800,268	23,760,172,569	604
Miami Executive Airport	TMB	RL	N	County	FL	SO	—	—	531
Miami Homestead General Aviation Airport	X51	GA	N	County	FL	SO	—	—	210
Miami International Airport	MIA	LH	Y	County	FL	SO	19,468,523	7,192,790,882	1,188
Miami–Opa Locka Executive Airport	OPF	RL	N	County	FL	SO	—	—	331
Minneapolis–St. Paul International Airport	MSP	LH	Y	Authority	MN	GL	16,972,678	972,664,080	1,130
Morristown Municipal Airport	MMU	RL	N	Privatized	NJ	EA	17,136	—	189
New River Valley International Airport	PSK	GA	N	Authority	VA	EA	—	—	29
North Little Rock Municipal Airport	ORK	RL	N	City	AR	SW	—	—	88
Orlando International Airport	MCO	LH	Y	Authority	FL	SO	17,278,608	756,120,798	905
Owatonna Degner Regional Airport	OWA	GA	N	City	MN	GL	—	—	82
Phoenix Deer Valley Airport	DVT	RL	N	City	AZ	WP	—	—	956
Phoenix Goodyear Airport	GYR	RL	N	City	AZ	WP	—	—	331
Phoenix Sky Harbor International Airport	PHX	LH	Y	City	AZ	WP	20,344,867	1,436,921,968	1,183
Phoenix–Mesa Gateway Airport	IWA	SH	Y	Authority	AZ	WP	669,807	—	625
Raleigh–Durham International Airport	RDU	MH	Y	Authority	NC	SO	4,673,869	439,980,600	251
Range Regional Airport	HIB	NH	Y	Authority	MN	GL	11,617	—	83

Airport	Code	NPIAS (2013)	Part 139	Governance	State	FAA Reg.	FAA Passenger Enplanements CY14	Total Cargo (pounds) CY14	Daily Ops
Reno–Tahoe International Airport	RNO	SH	Y	Authority	CA	WP	1,611,572	467,324,320	202
Rochester International Airport#	RST	NH	Y	City/private management	MN	GL	119,874	—	107
Rock Hill–York County Airport	UZA	RL	N	City	SC	SO	—	—	99
Ronald Reagan Washington National Airport	DCA	LH	Y	Authority	VA	EA	10,057,794	—	847
Salt Lake City International Airport	SLC	LH	Y	City	UT	NM	10,139,065	962,293,488	895
San Francisco International Airport	SFO	LH	Y	City & County	CA	WP	22,756,008	1,245,416,930	1,183
Savannah–Hilton Head International Airport	SAV	SH	Y	Authority	GA	SO	932,416	—	226
Seattle–Tacoma International Airport	SEA	LH	Y	Authority	WA	NM	17,888,080	1,574,603,394	932
Soldotna Airport	SXQ	GA	N	City	AK	AL	—	—	41
Southwest Florida International Airport	RSW	MH	Y	Authority	FL	SO	3,942,387	119,577,700	236
Watsonville Municipal Airport	WVI	GA	N	City	CA	WP	—	—	178
Western Nebraska Regional Airport	BFF	CS	Y	Authority	NE	CE	5,594	—	79
Willow Run Airport	YIP	RL	N	Authority	MI	GL	—	194,188,703	172
Yeager Airport	CRW	NH	Y	Authority	WV	EA	241,566	—	323
Yuma International Airport	NYL	NH	Y	Joint City/USMC	AZ	WP	90,732	—	550

*FOD passenger data for CY13; change in aircraft size for scheduled service removed them from FAA (2015a).

#RST added after survey complete.

FAA (2014), FAA (2015a, b), www.airnav.com.

APPENDIX C

Goals and Objectives: Functional Exercise #1—Alert 3 Time Response and ICP Exercise

Exercise Objectives—Part A

The objectives of this portion of the exercise are:

- For Airport Operations, Maintenance and APD staff to practice reporting to the new ICP location, establish an ICS structure and a communications plan
- For mutual aid participants to locate and report to the initial ICP and the identified Staging Area

Exercise Goals—Part A

1. Dispatch Center shall immediately activate the Countywide Communication Plan and assign a Tier.
2. Mutual Aid Fire and EMS units shall be dispatched to Staging Area 1 and Gate xx.
3. MUTUAL AID FIRE shall initiate the staging area officer position and begin accountability for units in Staging. MUTUAL AID FIRE shall contact the IC on the appropriate Talkgroup.
4. Airport Operations, Maintenance, APD and one ARFF Officer shall immediately respond to the primary ICP location.
5. EMS Supervisor and MUTUAL AID FIRE Officer shall immediately report to Gate xxx and await escort.
6. Maintenance staff shall provide escorts from Gate XXX to the ICP.

APPENDIX D

Goals and Objectives: Tarmac Evacuation Exercise

Goals & Objectives

1. To review the response to the Unified Incident Command Post and the benefit of all 4 line departments staffing this location
   - 1.1 To discuss the initial actions and priorities of each department
   - 1.2 To discuss who would be the lead department/Incident commander initially
   - 1.3 To appoint one spokesperson to communicate with the Airport Coordination Center, when and if established.
   - 1.4 To practice on scene coordination with the airline staff and discuss how they are notified and where they respond.
   - 1.5 To determine what portions of the airfield are closed/restricted and the overall impacts to other areas of the airport such as the terminal.
2. To review the Airline Emergency Response Process
   - 2.1 Review the reconciliation process considering some passengers may be transported to local hospitals, while others are taken directly to the terminal
   - 2.2 To discuss where the passengers would be initially taken and released.
3. To review how other responders can assist to insure an orderly and safe evacuation of passengers.
   - 3.1 Review where mutual aid should report and what there assignment will be
   - 3.2 Review communications plan with incoming mutual aid
   - 3.3 Review the escort process, considering who is available and time of day
4. To review what resources are available
   - 4.1 To discuss what resources are needed and who will request them. Resources might include emergency and non-emergency care, equipment such as busses, wheel chairs, air stairs and personnel such as TSA, CPB or others.
   - 4.2 Discuss the potential need for activation of Team and airline Care Team.

APPENDIX E

Goals and Objectives: Overall Objectives LAL

1. **Incident Command System (ICS)/Unified Command.** Evaluate the local decision making process, the capability to implement the ICS, and effective transition to Unified Command in response to a terrorist incident. Examine the communities' ability to use various ICS functions.
2. **Mobilize and Manage First Responders.** Evaluate the ability of the local first responder community to react to an airplane crash and the resulting mass casualty event including fire suppression, the evacuation of injured persons, the removal of deceased persons and the security of the crash site.
3. **Communications.** Assess the ability to establish and maintain a multidisciplinary/multijurisdictional communications network during a response to an airplane crash and the resulting mass casualty event.
4. **Provide Information to the Public.** Assess the capability and adequacy of public information agencies to pass information to the media in a timely and accurate manner.
5. **Fully Integrate the Lakeland Linder Regional Airport in the response.** Insure that the LAL staff is fully integrated into the response to this event including their actions with appropriate Federal and State agencies.

Participating Organization Overarching Objectives

Lakeland Linder Regional Airport

1. Meet FAA FAR 139 Airport Requirements/Conduct and document the Full-scale Triennial Exercise.
2. Assess the Airports initial response to emergency incidents/meet response time requirements and communications standards established in the AEP.
3. Improve the airports recovery phase after an incident/minimize the recovery time while maintaining conformance with AEP/ACM procedures.
4. Assess the flow of information from the PIO and JIC/ensure effective coordination between PIOs and ensure a single message is delivered to the public.
5. Assess the airports ability to provide family assistance/ensure that airport staff effectively responds and assists family members.

City of Lakeland Fire Department

Incident Command System

a. Established
b. Proper implementation of the incident command system including selection of personnel to staff all necessary positions
c. Span of control for all positions is effective
d. Construction and implementation of an effective incident action plan
e. Delegation of appropriate actives and operations
f. Proper movement from an incident command to a unified command
g. Operation periods are clearly defined and planned
h. System is designed for tracking of on-site resources
i. Identify resources to help supplement command and control operation
j. Accountability system is utilized.

City of Lakeland Fire Department/Airport Facility

1. ARFF Protection
   a. Ring down from the tower
   b. Agent Flow—Foam/Dry Powder
   c. Re-servicing ARFF 1 (foam & water)
2. Fire Department ICS
   a. 1st Unit, passing command & staff
   b. Mutual aid (city, county, LAL)
   c. Radio Systems
3. Initial Triage
   a. ARFF 1
   b. 2nd Due
   c. Rescue Chief

City of Lakeland Police—Communications

1. Support radio and telephone communication needs of operational field units.
   a. Test ability to conduct fire dispatch and police dispatch on pre-designated channels and patch those channels per SOP.
2. Test ability to operate multiple radio channels beyond those available on dispatch consoles simultaneously via portable radios.
   a. Ability to coordinate designation of Polk County radio disaster channels
   b. Determine how many different radio channels are needed for fire, medical, and law enforcement operations
   c. Ability to move LFD-G and LPD-D to designated Polk County Disaster channels.
3. Test ability to establish radio interoperability via channel patch or utilization of FIN
   a. Patch multiple channels via console
   b. Patch statewide mutual aid channels via FIN.
4. Test ability to utilize resource contact lists
   a. Ability to make timely notifications via phone, radio or SMS.

Polk County Fire Rescue

1. Effective management of incident and personnel within assigned IC roles.
2. Ability to manage multiple transport agencies during and MCI. Including utilization of staging/route to treatment area/transport with tracking.
3. Effective execution of
   a. Triage (includes use of ribbons and tracking tags)
   b. Treatment (includes set up and management of treatment areas)
   c. Transport (includes tracking of patients).
4. Ability to communicate with required agencies and hospitals.

Public Information Officers

1. Establish a JIC (Where is it? Who is the Lead PIO? Who is the spokesperson? Who are the support PIO's)
2. Media staging area
3. Conduct media Interviews
4. Family staging
5. Create and disseminate messages based on information on scene from the IC.

APPENDIX F

Table Top Drill Scenario: Hurricane (JAX)

JAX Table Top Exercise Scenario—Hurricane

The National Hurricane Center is warning this afternoon that Hurricane Zulu has strengthened into a dangerous Category 3 storm and it is tracking toward Duval County. Models indicate possible landfall over the region as early as Monday morning. But forecasters are not sure if the storm will strengthen or weaken over the next couple of days.

The Governor is not taking chances. He has ordered the evacuation of all citizens and tourists within 10 miles of the coast, meaning that approximately 85,000 homes will be displaced. Local highways are already jammed with traffic, and some gas stations have already run out of gas.

The Hurricane Center is warning that if Zulu strengthens to Category 4 or 5, many homes and buildings will be damaged or destroyed. Mobile homes are especially vulnerable, they could be completely destroyed. Any building that is unsound could collapse. With the storm surge and rains, there could be major damage to lower floors of all buildings located up to 15 feet above sea level and within 500 yards of the shoreline. Again the Governor has ordered a mandatory evacuation for everyone within 10 miles of the coast.

APPENDIX G

Table Top Drill Scenario: Family Assistance (RSW)

Family and Friends Waiting Area Table Top Exercise

You and your group are the primary agency representatives managing the family assistance operation in response to an aviation accident.

Determine the best way to work thru the scenarios and tasks.

Facts regarding the flight

Air Carrier/Flight: Acme Air 987—departure scheduled for 11:00

Operation: FAR Part 121 Air Carrier

Departure/ETD: xxx at 11:30 (30 minutes late)

Arrival/ETA: xxx at 13:15

Aircraft: B737, Capacity 171

Crew: 1 Captain, 1 FO and 3 FA

Facts about the passengers

Total of 171 passengers

Facts about the airport

11 airlines operate from xx, three are international air carriers

The FFWA can serve 60–100 family members

The TEAM includes 45 volunteer LCPA staff members.

ACME AIRLINES

ACME has 55 general staff (ticket agents, baggage handlers, CSO's etc.) including 20 trained CARE Team members.

ACME typically has 26 daily departures and up to 51 in the winter and operates a fleet of 737 aircraft.

Accident Timeline and Tasks

1300 22 people arrive at xxx to meet 11 passengers expected to arrive at 13:15. All of these people are local residents.

1316 Report of an accident at xxx, emergency responders are en route to the scene.

1318 ARFF and APD on scene, it initially appears to be a huge fireball

1320 Acme Airlines notified of event by Airport Operations. TEAM activated. Emergency Management requested to activate Red Cross and Medical Reserve Team. County EOC also activated for resource requests.

1326 Breaking news: "An accident occurred at xxx airport at 1315 p.m.; all we know is that a "Big fireball" can be seen from the camera at xxx. Stay tuned for details."

TASK 1—Is a Family Reception Center (FRC) necessary at xxx? If you do not think so, justify your answer.

TASK 2—Staff should quickly describe the activation, personnel call out and room set up. What is needed at the FFWA for it to open?

TASK 3—What immediate needs may be met in the FFWA? What organizations are called to help meet these needs?

TEAM TO MOBILIZE AND SET UP THE FFWA, REGISTER THE FAMILY MEMBERS AND INVITE THEM IN

RED CROSS AND SPIRITUAL TEAM ENROUTE TO HELP

TEAM and AIRLINE STAFF TO WORK TOGETHER WITH FAMILY MEMBERS.

APPENDIX H

Full-scale Scenario: Aircraft Emergency (RNO)

RNO Full-scale Exercise Scenario

Hanson Air Flight 5960 from Arizona is set to arrive at 10:50.

Due to construction runway 16R 34L is closed.

1045 Hanson Air Flight 5960 contacts tower with a report of a passenger locked in the lavatory and smoke filling the cabin.

53 souls on board

2,500 lbs. of fuel on board

Approximately 5 minutes out

CRJ 200

1049 As Hanson Air Flight 5960 approaches 16L 34R there is an explosion and the left engine falls from the plane with fiery debris landing on home it into flames.

The remaining portion of Hanson Air Flight 5960 lands on runway 16L 34R.

1050 Hanson Air Flight 5960 erupts into flames and comes to a stop at B1.

23 Injured

21 Deceased

9 Uninjured

APPENDIX I

Full-scale Scenario: Complex Scenario (RSW)

Aircraft accident with multiple casualties and fatalities. Setting: Normal airport operations, the date is October 23, time is 9:00 a.m. on a Tuesday morning. The weather is sunny and hot, with gusty winds between 10 and 15 mph, with thunderstorms in the area. A high temperature of 90°F is expected to be reached at 1:00 p.m. and thunderstorms will remain in the forecast for the next two days. Narrative: Oceanic Air Flight #987, an Airbus A320, with 150 passengers and 6 crew is enroute from BOS to RSW on a routine flight. Upon lowering the landing gear, the pilot notices that the right main gear does not indicate a "down and locked" position in the cockpit. The pilot advises Ft Myers Approach Control that they would like to execute a "fly-by" of the Tower and requests that the Tower Controller advise if the gear appears down. The ATCT Controller clears the aircraft for the low approach/fly-by on Runway 24 and also activates the Crash Phone, announcing an Alert 2. After several fly-bys, the tower advises that the gear appears to be extended, but cannot advise if it is down and locked. The indication in the cockpit is that the gear is not locked. ARFF vehicles are in standby position. Other airport departments (Maintenance/APD/ARFF Command/OPS) have set up an initial command post near the Perimeter Road/Terminal Ramp. Approximately 10 minutes after the Alert 2 is announced, the pilot attempts to land the aircraft. Upon landing 1,000 feet down Runway 24, the right gear collapses and the aircraft skids down the runway approximately 2,000 feet, traverses the north side of the runway safety area and Taxiway A, and stops on the North Ramp. Numerous passengers receive back and neck injuries from the impact. Many more injuries occur during the evacuation. ARFF vehicles proceed directly to the scene. The ICP Command group determines that the ICP should be relocated closer to the scene. The Airport Coordination Center is activated to Level 2 during the Alert 2 and then activated to Level 3 after the accident. The Airport Coordination Center is activated to facilitate policymaking, coordination, and overall direction of responding forces in emergency situations. The Unified Area Commanders shall initially report to this location. The Unified Area Command is made up of the four (4) Aviation Directors or designees: Operations Director, Fire Chief, Police Chief, and Maintenance Director. Other department directors or staff may fill in other roles within the ICS structure as needed when called upon. The Unified Area Commanders are responsible for:

- Setting overall agency objectives,
- Allocating critical resources based on priorities,
- Ensuring that incidents are properly managed,
- Ensuring that incident objectives are met and don't conflict with each other,
- Determining what other staff/ICS position are needed in the ACC,
- Approving the Incident Action Plan for extended events, and
- Authorizing demobilization.

The Airport Coordination Center is activated in order to assist with overall coordination when multiple ICPs have been established to handle different events. Each event may include a separate Incident Command structure and be labeled as follows: Incident 1 (crash site), Incident 2 (Station 92—Walking Wounded), and Incident 3 (FFWA; Family and Friends Waiting Area). Several groups of family members, many with small children, arrive to see the flight arrive. They are awaiting the arrival of ten employees from the Yabba Dabba Doo Company who have been working in Europe for the last three months. Some people were in the terminal at the time of the arrival and others were in the cell phone parking lot waiting for their loved one to call once they had collected their luggage in Baggage Claim. (The FIRST Team will be activated in real time and respond to set up the room, ready supplies, establish check in, and assist the family members. Family members should be kept in the mezzanine until the room is ready.) The FIRST volunteers shall set up an ICS structure. Priority 3 patients are taken to Station 92. Some people will remain as Priority 3 and several others will decompensate and become "yellow" tagged. EMS should transport the yellows from Station 92. Others will be monitored by Medical Reserve Corp. (This is the first time the new Station will be utilized for Priority 3. Some areas may be set up in advance.) Hospital Waiting Area—Approximately 12 people arrive at Lee Memorial Emergency Room Lobby looking for family members. They have no information, they just saw the news, and knew that their loved ones might be on the flight. One couple arrives after being told at the airport that "this is where everyone was being taken." The husband is very agitated and states he is a lawyer.

APPENDIX J

Functional Drill: Monthly No-notice Functional Drill Scenario from LAL

Date:	9/20/2015	Time:	9:00 a.m.
ARFF Personnel	C Shift		
OPS Personnel	Phillip Herrington		
Tower Personnel			
Dispatch Personnel	Delta Squad		

SCENARIO FACTS

ALERT: 1 **2** 3 (Circle One)

COMUNICATIONS: Simulated Live (Circle One)

AIRPORT LOCATION	RWY 9		
AIRCRAFT TYPE	Cessna 172		
SOULS ONBOARD	2	FUEL ONBOARD	25gal

SCENARIO

A Cessna 172 N123AB reported an engine failure two miles west of the airport. The pilot declared an emergency with Air Traffic Control and will be making a straight in approach to Runway 9. His estimated time of arrival is 3 minutes. ***ARFF and Airport Operations Responds and stages for the inbound emergency. Once in position the drill is complete.***

EVALUATION

ARFF STAGING TIME ARFF		STAGING TIME OPS	
ON SCENE TIME ARFF		ON SCENE TIME OPS	

ON SCENE REPORT

COMMENTS ARFF

COMMENTS OPS

DRILL EVALUATOR NAME/SIGNATURE _____

OPS PERSONNEL NAME/SIGNATURE _____

ARFF PERSONNEL NAME/SIGNATURE _____

APPENDIX K

Exercise Planning Checklist for Table Top (RNO)

Table Top Planning Checklist from RNO

Task	Start Date	End Date	Staff Assigned	Status
1. Early Development	Week 1			
Determine Planning Team				
Establish Target Date for Exercise				
2. Planning the Exercise	Week 2–6			
Schedule Planning Meetings—(Concept and Objectives Meeting and 2–3 Planning Meetings)				
Schedule Orientation and Training Meetings for Participants				
Establish Purpose				
Establish Scope				
Develop Objectives				
Obtain Most Recent AEP				
Choose a Scenario				
Determine Tabletop Model				
Determine Moderator—2–3 facilitators of breakout model if used				
Identify Participants (invitee list)				
Invite Participants (flyers and emails)				
Identify and reserve the room for the exercise (including any equipment; e.g., projectors, screens, consider space for registration, refreshments, breakout areas if applicable)				
Identify observer and media area, if applicable				

Task	Start Date	End Date	Staff Assigned	Status
3. Exercise Development	Week 2–4			
Write scenario to reflect facility features and SOPs				
Modify and finalize scenario and create slides and associated materials				
Develop the agenda for the TTX				
Finalize the After-Exercise Survey				
Finalize any participant narratives				
Finalize any injects and create handouts if needed				
Make copies of all handouts				
Attendance/sign-in form				
Create name tags, if desired				
4. Preparing the Exercise	Last week before the exercise			
Procure the flipcharts, markers, pens and paper				
Provide radio and phone directories (updated)				
Order beverages or food, if appropriate				
Provide scenario packet (narrative, slides, injects, generic and specific questions) to evaluators for review				
Review responsibilities with moderator and facilitators				
Test any electronic equipment				
Conduct an abbreviated “dry-run” of the presentation				
5. Conducting the Exercise	Exercise Day			
Review the exercise ground rules with participants				
Discuss the scope of the tabletop				
Review safety and security precautions				
Conduct the exercise				
Conduct the hotwash				
Distribute and collect After-Exercise Survey				

Task	Start Date	End Date	Staff Assigned	Status
6. Evaluate the Exercise	Post Exercise			
Conduct a post-exercise debriefing session				
Compile and review survey results and notes				
Develop an After-Action Report				
Share results with participants and other appropriate staff				
7. Post Exercise Activities	Post Exercise			
Develop Corrective Action Plan				
Track Corrective Actions				
Track Lessons Learned				
Recognition for key participants				

APPENDIX L

Exercise Planning Checklist and Timeline: Full-scale Exercise (PHX)

Exercise Planning Checklist

Type of Exercise:	Full-scale Air Crash / EOC and PDFA Exercise
Exercise Date:	2/21/2009
Start Time:	5:00 p.m.
End Time:	7:00 p.m.

X = exercise date & time

Timing		Action Item	TARGET Date	Completed Date
X - 101 days	X	Tentative date set		
X - 101 days	X	Tentative objectives set		
X - 101 days	X	Definite date set 2/21/2009		
X - 101 days	X	Definite objectives set (tab 4)		
X - 101 days		Invite host airline(s)		
X - 101 days	X	Set initial planning meeting date (X- 84 days)		
X - 101 days	X	Schedule second planning meeting (X-70 days) (Tab 4)		
X - 101 days		Draft exercise scenario and sequence of events (Tab 5)		
X - 101 days		Review exercise invitation list (Tab 6)		
X - 101 days		Review drill time line		

X - 101 days		Reserve Airport Marriott for post-disaster-family-assistance exercise		
X - 101 days		Draft invitation letter (Tab 7)		
X - 101 days		Select exercise Coordination Teams (Tab 9)		
X - 101 days		Conduct initial planning meeting (Tab 10)		
X - 80 days		Review duties and responsibilities with host airline(s) (Tab 8)		
X - 80 days		Drill manifest / volunteer meeting		
X - 80 days		Finalize exercise invitation list (Tab 6)		
X - 80 days		Finalize the logistics needs list		
X - 80 days		Conduct second planning meeting (Tab 4)		
X - 80 days		Create agency and department participants list (Tab 3)		
X - 80 days		Media viewing meeting (PIO) Media plan		
X - 80 days		Select, guest, site, and victim coordinators (Tab 9)		
X - 80 days		Conduct final ATC meeting regarding movement area closures for exercise		
X - 80 days		Mail exercise invitation letters (Tab 7)		
X - 80 days		Conduct second planning meeting (Tab 10)		

Timing		Action Item		Projected Date	Completed Date
X - 80 days	☐	Coordinate still and video photography requirements (Tab 12)		☐	☐
X - 80 days	☐	Review agency and department participants list (Tab 3)			
X - 60 days	☐	Coordinate post-disaster-family-assistance planning meeting		☐	☐
	☐	Red Cross and County Mental Health (Tab 13)			
X - 60 days	☐	Prepare exercise manifest coordinate USAirways / CERT		☐	☐
X - 60 days	☐	Schedule second table-top exercise (Tab 15)	_____	☐	☐
X - 60 days	☐	Contact moulage coordinator (Tab 16)			☐
X - 60 days	☐	Confirm number of volunteer victims with volunteer provider (Tab 17)			☐
X - 60 days	☐	Schedule US Airways support meeting (X-25 days) (Tab 19)	_____		☐
X - 60 days	☐	Conduct post-disaster-family-assistance planning meeting			
X - 60 days	☐	Schedule Fire mutual aid briefing (X-15 days) (Tab 18)	_____		☐
	☐	Review exercise resources and site set-up			☐
X - 60 days	☐	Communication Plan meeting			

X - 60 days	☐	Evaluator packet development		
X - 60 days	☐	EOC Dry run #1		
X - 60 days	☐	Order portable toilets for exercise prep and main sites (Tab 20)		☐
X - 60 days	☐	Submit maintenance requests (Tab 15)	☐	☐
X - 50 days	☐	EOC Dry run #2		
X - 50 days	☐	Invite Clergy Emergency Response team (Tab 21)		☐
X - 40 days	☐	2nd post-disaster-family-assistance exercise planning meeting (Tab 13)	☐	
X - 40 days	☐	Request bus support (Tab 22)	☐	☐
X - 40 days	☐	Review RSVPs and order refreshments accordingly (Tab 23)	☐	☐
X - 40 days	☐	Print credentials and exercise passenger identities and manifest. triage tags	☐	☐
X - 40 days	☐	Final staff assignment/ (Tab 14)	☐	
X - 40 days	☐	Schedule final host airline(s) meeting (X-14 days) (Tab 8)		☐
X - 40 days	☐	PIO, Prepare and submit press release to Community Affairs (Tab 25)	☐	☐
X - 30 days	☐	Parking Meeting		
X - 30 days	☐	Final Evaluator packet		

X - 30 days		Draft NOTAM			
X - 30 days		Send injury list to moulage coordinator (Tab 16)			
X - 30 days		Final EOC exercise Plan			
X - 30 days		Notify all aeronautical tenants via NOTAM (Tab 26)			
X - 30 days		Notify airport management and staff (Tab 26)			
X - 30 days		Notify Airport Advisory Board (Tab 26)			
X - 30 days		TSA meeting to final security waivers			
X - 30 days		Schedule volunteer victim briefing (X-5 days) (Tab 17)			
X - 30 days		Confirm still and video photography support (Tab 12)			
X - 30 days					
X - 21 days		Conduct 3rd post-disaster-family-assistance meeting	3/28/2006		
X - 21 days		with Clergy, Red Cross, ANG (Tab 13)			
X - 21 days					
X - 21 days		Final follow up with AWA (Tab 15)			
X - 21 days		Mail info packets to volunteer victims (Tab 17)			
X - 21 days		Conduct final planning meeting (Tab 24)			
X - 21 days		Conduct Tactical Team meeting			

X - 21 days	☐	Obtain final confirmation and costs (Tab 16)			☐
X - 21 days	☐	Conduct Logistical Team meeting (Tab 19)			☐
X - 21 days	☐	Conduct final Safety Team meeting		☐	☐
X - 21 days	☐	Finalize exercise invitation list (Tab 6)			☐
X - 21 days	☐	Confirm food and drink requests (Tab 23)		☐	☐
X - 21 days	☐	Confirm transportation requests (Tab 22)			☐
X - 5 days	☐	Site Safety inspection			
X - 5 days	☐	Schedule bus support orientation (X-5 days) (Tab 22)	☐		☐
X - 5 days	☐	Review possible GA or cargo operations near exercise site			☐
X - 5 days	☐	Obtain exercise forecast from NWS (Tab 29)		☐	☐
X - 5 days	☐	Conduct final staff training			☐
	☐				☐
X - 5 days	☐	Inspect exercise site		☐	☐
X - 5 days	☐	Inspect exercise preparation area			☐
	☐				☐

Timing		Action Item	Projected Date or Time	Completed Date
X - 5 days		Conduct exercise officials briefing (Tab 9)		
X - 5 days		Brief volunteer victims (Tab 17)		
X - 4 days		Review maintenance requests (Tab 15)		
X - 5 days		Confirm maintenance support personnel (Tab 15)		
X - 5 days		Confirm delivery times and locations for food and drink (Tab 23)		
X - 5 days		Obtain exercise forecast from NWS (Tab 29)		
X - 1 days		Site Safety Inspection		
X - 24 hours		Review all checklists		
X - 24 hours		Review all maintenance requests (Tab 15)		
X - 24 hours		Forecast from NWS - confirm landing runways with tower (Tab 29)		
X - 24 hours		Inspect exercise site(s) and equipment		
X - 3 hours		Begin moulage		
X - 3 hours		Food and drink at rehab		
X - 3 hours		Food and drink arrive for volunteer victims and moulage contractor staff		

X - 2 hours	☐	Aircraft and support equipment in position	☐
X - 1 hour	☐	Guests and observers begin arriving	☐
X - 3 hours	☐	Food and drink arrive at exercise site	
X - 30 minutes	☐	All response forces in staging area	☐
X - 20 minutes	☐	Volunteer victims enter exercise aircraft with Aircraft Coordinator	☐
X - 10 minutes	☐	All victims inside aircraft	☐
X - 5 minutes	☐	Exercise Director and Coordinators conduct final checks	☐
X	☐	Tower sounds Alert 3 alarm and smoke is deployed - exercise begins	☐
	☐	(Refer to Sequence of Events for exercise actions and timing)	
X + 1 hour	☐	Exercise frozen - guests and observers tour exercise site	☐
X + 1.5 hours	☐	Tactical portion of exercise ends - guests/observers tour site	☐
	☐	Tactical debriefings begin	
X + 2 hours	☐	Tactical operations concluded - start recovery/take-down procedures	☐
X + 2.5 hours	☐	Minor-/non-injured activities end - volunteers return from terminal areas	☐
X + 4.5 hours	☐	Exercise debriefing begins	☐
	☐		_____

X + 6.5 hours	☐	Exercise debriefing ends	☐	
X + 24 hours	☐	Inspect exercise site and preparation areas for clean-up	☐	☐
	☐	Inspect exercise response equipment		☐
X + 3 days	☐	Complete rough draft of exercise report (Tab 30)	☐	☐
X + 7 days	☐	Send letters of appreciation to agencies and departments (Tab 3)	☐	☐
	☐	Complete certificates of appreciation for volunteer victims (Tab 17)		☐
X + 10 days	☐	Complete final draft of exercise report (Tab 30)	☐	☐
	☐	Distribute certificates of appreciation for volunteer victims		☐
X + 14 days	☐	Distribute exercise report to departments and agencies	☐	☐

APPENDIX M

Full-scale Scenario: Detailed Timeline for Exercise/Master Scenario Events List (MSEL) (HIB)

HIB Triennial Full-scale Exercise—Master Scenario Events List (MSEL)

#	Time	From	To	Message	Expected Actions
0					
1	1630	Exercise Director	All Controllers	Start-EX	
2	1640	Airport Controller (acting as pilot or DLH tower)	Airline	XYZ Flight 3433 has been diverted from DLH to HIB due to heavy fog in the area. Requesting permission to land, ETA 17:00 h	Airport directs Fuel Staff to the ARFF station and preps airport for incoming commercial passenger aircraft.
3	1650	Airport Controller (acting as pilot)	Airline	This is XYZ Flight 3433 requesting Law Enforcement intercept of an out of control and very aggressive passenger. Passenger appears to be intoxicated and is upset that they flight is not landing at DLH. Passenger has already physically assaulted a flight attended and was restrained by other passengers.	Airline personnel calls 911, asks for Law Enforcement assistance
4	1651	911 Dispatch Controller (or real)	HPD	We have a situation with an aggressive passenger on a commercial aircraft landing at HIB with an ETA of 1700 h. The Pilot is requesting assistance detaining the passenger and has indicated the passenger has assaulted one of the flight attendants.	HPD dispatches (x number) of cars and officers to HIB
5	1652	911 Dispatch Controller (or real)	Airport EOC	HPD is enroute with an ETA of 1655hrs	HPD Arrives at HIB Temporary Terminal
6	1702	Airport Controller	All players on site	XYZ Flight 3433, a CRJ200 carrying 50 passengers and 3 crew has just experienced a hard landing after a wind event pushed the plane down just prior to landing. This caused the right landing gear to crumble under the stress and the body of the aircraft slapped to the ground. Passengers are beginning to self-evacuate from the aircraft's emergency exits.	HIB ARFF deploys to scene and calls 911 to request assistance with a “plane crash” with up to 53 on board. 911 Dispatch then calls EMS, Fire and PD to HIB

7	1706				ARFF arrives on scene and begins to assess the scene and direct people to an on-site location, safe distance.
8	1706	Airport Controller	Actor (victim) Controller		45 people evacuating the plane trying to find somewhere to go, most are completely uninjured, just a little sore with a few bruises. HPD along with HIB ARFF attempt to direct these passengers to an on-site location, safe distance.
9	1710–15				Passengers begin to walk to site as directed looking for somewhere to go. Drunk aggressive passenger is doing his best to go unnoticed in the chaos.
10	1710–15			Evacuate all but the 5 medical passengers from the plane.	HFD/EMS/HPD arrive to secure the location and evacuate the injured from the plane. 1 passenger is in critical condition (piece of overhead luggage struck them in the head, unconscious and bleeding profusely from the head), 3 have various leg and back injuries and are unable to move themselves from their seats. 1 other passenger appears to have a compound fracture in her arm and is in shock completely unwilling to move. Complicating the situation, these 4 passengers are covered in an unidentifiable white powder. All are coughing and in respiratory distress.
11	1725				Extrication activities occur
12	1726(?)	Airport Controller	Scene Responders	After evacuating the final passenger from the plane, the right wing of the plane that had been supporting the weight of the plane buckles and the fuselage falls to the ground. Jet A spills from the plane and is ignited (magically…)	Fire suppression activities begin
13	1725–1830			Coordinate bus transport to terminal.	Airport/XYZ staff along with HPD work to calm the passengers collects passenger information, and work through the passenger tracking process.
14	1725–45				1 critical passenger is airlifted to Hennepin County Medical Center because they are unable to fly into Duluth.

#	Time	From	To	Message	Expected Actions
15	1725–45				4 injured are gross deconed and transported via EMS to Fairview Range for treatment
16	1745–1800				Passenger tracking and identification efforts continue, hospital performs fine decon on the passengers requiring treatment and begins treatment.
17	1800–1830				Hospital stabilizes all its patients from the aircraft. HPD identifies and apprehends the unruly passenger. Family reunification process continues. Media has arrived and is looking for someone to talk to about this incident. People in the airport are getting frustrated that they can't leave, they want their bags off the plane...someone has to pay for everything they lost.
18	1830–1900				Crowds of people have gathered on Highway 37 to watch the plane burn. Police officers are working to clear the traffic and maintain a safe perimeter around the scene.
19	1900–1930				Allow identification and tracking process to continue. Red Cross and Airline Communicate long-term needs.
20	1930			END EXERCISE	
21	1930–2000			Media Briefing—General Aviation Building, Conf. Room	

APPENDIX N

Exercise Brief: Aircraft Emergency Table Top with Mutual Aid Partners (JNL)

Exercise Brief from JNL

Executive Summary

The Joplin Regional Airport Tabletop Disaster Drill is an exercise designed to support the local airport's requirement to hold an airport exercise annually. This exercise is designed to point out the strengths and weaknesses involved in an aircraft emergency response.

During the exercise we learn how to implement the use of Incident Command, triages, and the best staging areas for medical personnel transporting patients. All parties work as a team to analyze, understand, respond, and react to the ever changing scenario. Another major strength is the obvious ability of the local agencies to handle such an event. Equipment, manpower, and training are evident throughout the entire exercise.

Areas that require improvement are always present. Some such identified here include: lines of communication through the use of airport command, continued and more frequent review of the Airport Emergency Plan and responsibilities associated to all agencies involved, as well as more airport familiarization training between agencies. More aircraft familiarization and protocols training would be advisable as well.

All-in-all during the event we learn to work as a team, all with the same purpose in mind: save lives, protect property, and exercise safety at all times.

APPENDIX O

Exercise Communication Plan (JAX)

Exercise Communications Plan from JAX

1. Incident Name: 2011 Airport Disaster Drill	2. Operational Period (Date / Time) From: Wednesday- October 19, 2011- 7:00 AM To: Wednesday- October 19, 2011- 5:00 PM			INCIDENT RADIO COMMUNICATIONS PLAN ICS 205-OS	
3. BASIC RADIO CHANNEL USE					
SYSTEM / CACHE	**CHANNEL**	**FUNCTION**	**FREQUENCY**	**ASSIGNMENT**	**REMARKS**
First Coast 800 MHz Radio System (FCRS) JFRD Radio System	C10-EOC	Unified Command	C10	Joint communications between participating agency commanders	
FCRS/ JFRD Radio System	B13	Fire Ground Communications	B13-FGC5	Ground operations/ Incident Commander	Primary talk group for incident operations
FCRS/ JFRD Radio System	B14	Fire Ground Communications expansion channel	B14-FGC6	Expansion Channel Medical Group/ Treatment/Triage/ Transportation	Expansion of incident operations/ may be used for medical operations Treatment/Triage/Transportation
FCRS/ JFRD Radio System	B15	Fire Ground Communications Expansion channel	B15- FGC7	Expansion Channel	Expansion of incident operations/
FCRS/ JFRD Radio System	B16	Fire Ground Communications Announcement channel	B16- FGC5A	Communications across talk groups B13-B15	For use by Incident Commander to communicate across talk groups B13-B15 simultaneously
FCRS/JFRD Radio System					
?	?	JIA Operations	?	?	?
	?	Controllers	?	?	
4. Prepared by: (Communications Unit:)					

APPENDIX P

Exercise Safety Plan: Full-scale Exercise Safety Plan (LAL)

EXERCISE SAFETY PLAN FROM LAL

Safety Requirements

General

Exercise participant safety takes priority over exercise events. Although the participants involved in exercise Mallard Challenge come from various response agencies, they share the basic responsibility for ensuring a safe environment for all personnel involved in the exercise. Because aspects of an emergency response are dangerous, professional health and safety ethics should guide all participants to operate in their assigned roles in the safest manner possible. The following general requirements apply to the exercise:

A Safety Controller will be identified and will be responsible for participant safety.

All controllers, evaluators, and exercise staff members will serve as safety observers while exercise activities are underway. Any safety concerns must be immediately reported to the nearest Controller or Evaluator.

Participants will be responsible for their own and each other's safety during the exercise. All persons associated with the exercise must stop play if, in their opinion, a real safety problem exists. After the problem is corrected, exercise play can be resumed.

All organizations will comply with their respective environmental, health, and safety plans and procedures, as well as appropriate Federal, State, and local environmental health and safety regulations.

Exercise Setup

Exercise setup involves prestaging and dispersal of exercise materials, including registration materials, documentation, signage, and other equipment as appropriate.

Electrical and Generating Device Hazards

All electrical and generating devices will be clearly marked to prevent inadvertent contact. All generating devices will be located in areas where exhaust gases will not pose any potential exposure to exercise participants (i.e., away from buildings to prevent buildup of carbon monoxide inside).

Fire Safety

The local fire department will be notified and should provide support in case of fire. The following fire safety requirements apply to Exercise Mallard Challenge:

Firefighting equipment will be readily available and in close proximity.

Particular care will be taken to ensure that no exercise operations cause unintentional fires.

Resupply fuels (e.g., gasoline, kerosene, and diesel fuel) will be stored in approved containers, clearly labeled for content, and stored away from combustible materials. These fuels will not be stored within 50 feet of an ignition source (e.g., open flames, electrical or gas-operated equipment). "No smoking" signs will be posted near the storage area. Fire extinguishers and other safety equipment will be stored close to the fuel storage area but not with the containers. Fuels will be handled safely.

Emergency Medical Services (EMS)

A dedicated, nonparticipating advanced life support (ALS) ambulance and crew will be onsite throughout the exercise to provide any needed real-world medical support.

Accident Reporting and Real Emergencies

For an emergency that requires assistance, use the phrase "real-world emergency." The following procedures should be used in case of a real emergency during the exercise:

Anyone who observes a participant who is seriously ill or injured will first advise the nearest controller and then, if possible, render aid, provided the aid does not exceed his or her training.

The controller who is made aware of a real emergency will initiate the "real-world emergency" broadcast on the controller radio network and provide the following information to the Senior Controller and Exercise Director:

Venue and Function

Location within the venue and function

Condition

Requirements

The SIMCELL will be notified as soon as possible if a real emergency occurs.

If the nature of the emergency requires suspension of the exercise at the venue or function, all exercise activities at that facility will immediately cease. Exercise play may resume at that venue or function after the situation has been addressed.

Exercise play at other venues and functions should not cease if one venue or function has declared a real-world emergency, unless they rely on the affected venue.

If a real emergency occurs that affects the entire exercise, the exercise may be suspended or terminated at the discretion of the Exercise Director and Senior Controller. Notification will be made from the SIMCELL.

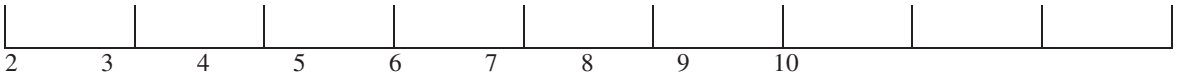
APPENDIX Q

Evaluation Plan and Forms: Emergency Exercise Evaluation Form (EUG 2014)

Evaluation Form—2014 Eugene Airport—Emergency Exercise Evaluation Form

Please take a few minutes to fill out this form. Your opinions and suggestions will help us prepare better exercises in the future.

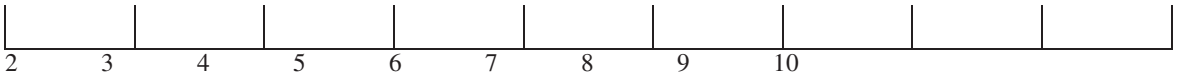
1. Please rate the overall exercise on the following scale.



1 2 3 4 5 6 7 8 9 10

Very Poor Very Good

2. Compared to previous exercises, this one was:



1 2 3 4 5 6 7 8 9 10

Very Poor Very Good

3. Did the exercise effectively simulate the emergency environment and emergency response activities?
   Yes _____ No _____
   If no, briefly explain why:

4. Did the problems presented in the exercise adequately test readiness capability to implement the plan?
   Yes _____ No _____
   If no, briefly explain why:

5. The following situations/conditions should be deleted or revised:

6. I suggest you add the following situations/conditions for the next exercise.

7. Please add any other comments or suggestions.

APPENDIX R

Evaluation Forms: Participant Feedback Summary Form (RNO 2015)

PARTICIPANT FEEDBACK SUMMARY

The Exercise offers a unique training environment to prepare the Airport and all of the associated organizations for the possibility of a crisis event here at the Reno Tahoe Airport Authority. Please be candid and forthright with any suggestions that we can implement to make these training exercises more applicable or improve our response/recovery from such events.

PARTICIPANT FEEDBACK FORM

Exercise Name: 2015 1542 Tabletop Exercise

Exercise Date: September 9, 2015

Participant Name:_____ Title: _____

Agency:_____

Role:_____ Participants __ Observer _____ RTAA Planning Team

PART I: RECOMMENDATIONS AND CORRECTIVE ACTIONS

1. Based on the discussion today, list up to 3 improvements that need to be made to plans and procedures for responding to a threat aircraft.

2. Identify the action steps that should be taken to address the issues identified above. For each action, indicate who or what agency should be assigned responsibility for it.

3. Describe the action steps that you wish to take in your area of responsibility.

4. List the applicable equipment, training, policies, plans, and procedures that should be reviewed, revised, or developed. Indicate the priority level for each.

PART II: EXERCISE DESIGN AND CONDUCT: ASSESSMENT

Please rate, on a scale of 1 to 5, your overall assessment of the exercise relative to the statements provided below, with **1** indicating **strong disagreement** with the statement and **5** indicating **strong agreement.**

TABLE 1
PARTICIPANT ASSESSMENT

Assessment Factor	Strongly Disagree				Strongly Agree
a. The exercise was well structured and organized.	1	2	3	4	5
b. The exercise scenario was plausible and realistic.	1	2	3	4	5
c. The facilitator/controller(s) was knowledgeable about the area of play and kept the exercise on target.	1	2	3	4	5
d. The exercise documentation provided to assist in preparing for and participating in the exercise was useful.	1	2	3	4	5
e. Participation in the exercise was appropriate for someone in my position.	1	2	3	4	5
f. The participants included the right people in terms of level and mix of disciplines.	1	2	3	4	5
g. This exercise allowed my agency/jurisdiction to practice and improve priority capabilities.	1	2	3	4	5
h. After this exercise, I believe my agency/jurisdiction is better prepared to deal successfully with the scenario that was exercised.	1	2	3	4	5

PART III: PARTICIPANT FEEDBACK

Please provide any recommendations on how this exercise or future exercises could be improved or enhanced.

APPENDIX S

Evaluation Checklist: Evaluation Checklist for Table Top Exercise (RNO 2015)

Exercise Evaluation Checklist

Aircraft Incident—May 20, 2015

Initial Response and Incident Command

☐ Identify immediate response requirements.

☐ Immediately carry out those action requirements necessary to preserve life and or property, including the deployment of required resources.

☐ Establish command post(s) as needed.

☐ Establish an incident staging area for resources.

☐ Evaluate overall situational awareness based on incident information.

☐ Establish the "hot zone" for operations.

☐ Establish traffic control in the area as well as scene access control; i.e., ingress and egress routes.

☐ Establish communications with responding mutual aid units.

☐ Establish or facilitate unified command with agencies likely to respond as necessary, such as fire departments, regional hazmat teams, REMSA, ARFF, mortuary, etc.

☐ Establish an ICS organization based on needs of the incident, Command Staff, Operations Section Chief and Branch Directors.

☐ Activate the EOC as appropriate. (EOC Manager)

- Organize or establish the EOC based on operational procedures and the needs of agencies involved.
- Identify key personnel, their roles, and responsibilities for the initial operating period.
- Establish who will be responsible for normal day-to-day operations during the incident.
- Establish objectives and tasks to be carried out by the EOC staff to support the IC in the field.

☐ Issue alerts and warnings based on procedure, as warranted.

☐ Establish communications with responding agencies. Establish a written communication plan.

☐ Through communications with responding agencies determine as quickly as possible:

- Approximate number of killed or injured
- The general boundary of the affected area
- The general extent of damages
- The general extent of power or other utility disruption
- Immediate needs of response forces
- If voluntary evacuations of the population have begun
- Location of any triage area
- Location of any congregate care area established or ad hoc.

☐ Declare an MCI if necessary and request the appropriate services and resources for this type of event.

☐ Establish communications with a liaison from the airline, airport if appropriate to do so.

☐ On order, evacuate effected areas with assistance from response forces.

☐ Conduct first staff briefing as soon as practical after EOC activation.

☐ Establish a schedule for briefings.

☐ Brief the city, county, airport, and public works officials as soon as practical.

☐ Provide PIO with updated information.

☐ Provide response forces with updated information, as appropriate.

☐ Issue action guidance as appropriate to responders and IC staff.

☐ Activate an event log utilizing WEB EOC.

☐ Activate damage assessment and follow damage assessment procedures.

☐ Develop an initial incident action plan (12 hours) with objectives to be accomplished.

☐ Conduct a "second shift" or relieving shift briefing.

☐ Discuss with and present to your relief, a review of the initial incident action plan and any continuing incident action plans if available, as required.

PIO/Media Functions

☐ Establish who will be the on-scene PIO and who will be the designated media spokesperson.

☐ Coordinate with local broadcast media to ensure timely and accurate Emergency Alert System activation if applicable.

☐ Activate or establish rumor control through the public information officer. (PIO)

☐ Determine what social media management procedures should be put in place, monitoring.

☐ Cause public information to be released, via the public information officer (PIO) as soon as practical, in coordination with airline and airport.

☐ Establish a media plan and discuss with the EOC and IC regarding approval for media releases.

- An initial Media Release should be written in coordination with other agencies.
- A media staging area established away from the incident and updates planned at regular intervals as appropriate.
- Discuss who will liaison with the IC and who will manage written releases and interviews given if any.

Expanding Response and Stabilizing the Scene

☐ Develop a 12-hour incident action plan for the second operational period outlining actions that must be accomplished.

☐ Designate who will be the relief IC for the second operation period.

☐ Coordinate with ATCT (FAA) officials on the status of the Airfield and determine the impact on flight safety in the region.

☐ Establish communications with the FAA, FBI, and or NTSB as appropriate regarding the aircraft crash.

☐ Conduct hazard analysis of vital facilities, utilities, and traffic corridors and the impact of an aircraft accident near one or more of those resources.

☐ Determine the availability of mobile and or portable mortuary services. Where will a temporary morgue be established, and who will provide security?

☐ Establish communications with the County Coroner/Medical Examiner Team. Resources may be limited and a task force called in from other parts of the state. (NDEM)

☐ Establish a Family Assistance Center (FAC) for family members and victims. Communicate how many facilities will be established and where.

☐ Determine what community services such as psychosocial support and welfare support may be needed and designate a person to coordinate those services.

☐ Coordinate with the airline (if applicable) for response and information regarding the aircraft involved and the passengers and crew.

☐ Coordinate with Red Cross and other public agencies for shelter as needed and other facilities related to the public welfare.

☐ Coordinate with Red Cross (or designated lead agency) the opening of appropriate number of shelters, based on shelter procedures.

☐ Activate formal resource request procedures and resource tracking.

☐ Review and follow resource procurement procedures.

☐ Establish 24/7 duty roster for the EOC and/or command post.

☐ Develop and post any required maps or diagrams of the impacted area.

☐ Develop a plan for multi day perimeter security and establish facilities for investigators.

☐ Determine what if any additional resources or equipment that may be used or called upon for use in the field and EOC over the duration of the incident.

☐ Determine what requirements are needed to rehabilitate/maintain any equipment that may be deployed.

☐ Determine what services or resources are required to support and rehabilitate responders in the field, to support EOC and support groups for extended periods of time.

- Food, water, clothes, personal equipment, etc.
- Demobilization procedures.

☐ Determine if a dedicated communications line needs to be established for this incident and who will carry out that function if necessary.

Recovery Phase

☐ Gather damage assessment information (public, housing, business) from damage assessment teams.

☐ Obtain information from Red Cross regarding number of persons sheltered and support necessary for continued operation.

☐ Obtain from Red Cross an estimated duration period for continued shelter operations, if any.

☐ Obtain information from the Red Cross regarding disposition of victims hospitalized/treated for injuries.

☐ Coordinate with the Coroner/ME to identify and give final disposition on all remains of victims deceased.

☐ Obtain information from the airline or airport regarding safety, debris removal, NTSB guidelines, etc.

☐ Establish a location and necessary personnel to support the NTSB or FBI with investigative functions.

☐ Maintain scene security and prevent persons from interfering with the on-going investigation.

☐ Establish when the site can be recovered to include:

- Removal of the aircraft and debris, NTSB.
- Determine the procedures for removal of the wreckage and what location will be utilized to house the wreckage for evaluation. NTSB
- Inspection of the buildings and facilities involved
- Return of residents to the affected areas.

☐ Determine what services for crisis counseling services and support teams will be needed on an ongoing basis.

☐ Assess citizen/community needs for individual assistance and or public assistance, if applicable.

☐ Activate financial tracking plan coordinated by the Finance Officer, as appropriate and coordinate with other agencies.

☐ Gather financial information from the Finance Officer. As appropriate gather additional information to include:

- Personnel that responded and the time involved in the response.
- Time sheets or time logs.
- Supplies used
- Contracts issued if applicable
- Purchase orders issued or P-Card purchase data
- Any other expenditures
- Damages to public buildings, equipment, utilities, etc.
- Loss of life of any public servant
- Documents regarding economic impact.

Notation: Most costs associated with an aircraft accident are borne by the airline or the aircraft owner and are billable as such. Such items as volunteer response, if not a contracted service (i.e., volunteer fire department personnel) may not be reimbursable.

☐ Develop or generate reports of the incident as appropriate for internal use and outside agencies.

☐ Coordinate recovery organizations including federal and state agencies and private or volunteer relief organizations.

☐ Perform an incident critique as soon as possible with all possible response organizations.

☐ Review agency and self-performance.

☐ Review the weaknesses of the emergency plan.

☐ Brief public officials with updated information and incident recovery progress.

APPENDIX T

Post-event Documentation/Hot Wash Summary: Hot Wash Comments from LAL Full-scale Exercise (LAL)

Hot Wash Comments from LAL Full-scale Exercise		
Sustain	Improve—Recommend	Comment
X		Use of identification vests within Incident Command was helpful.
X		The staging area was well out of the way and did not create its own set of problems.
	X	Need a better way to communicate other than the crash truck PA system.
	X	No comfort facilities at the WAITING AREA. Should have coordinated for Porta Pots.
X		Professionalism was displayed by all participants.
	X	Due to the geographic area that the exercise encompassed there was a need for multiple safety officers.
X		The walking wounded were quickly directed to a safe area.
	X	A single paramedic was in charge of the "Red" patients and quickly became overwhelmed.
	X	Develop some method of marking the command post(s) so that they can be identified quickly.
	X	It was recommended to have bullhorns on site to assist in communicating with those in areas of high noise volume.
X		No lost patients. Patient numbers matched the number evacuated to local hospitals.
	X	Insure that the civilian ambulances have the correct radio frequencies.
	X	Control at the waiting area. Several agencies "self-dispatched" rather than wait for a call forward or dispatch directive. Follow the MSEL
X		Continue to emphasize the need to control ambulatory patients. Move them to a location and have someone supervise and keep them in one spot.
	X	Develop a method of marking the various triage sites that can be seen from a long distance… flags or banners in multiple colors.
	x	Create pre-templated ICS charts on white board that can be used to lay out the organization structure.
X		Unified Command team located themselves in a position that did not create conflicts with the Operations Section Chief.
	X	Recommend bringing in a Critical Incident Stress Team early in the event.
X		Standing up the city and county EOCs was a smart idea.
X	X	Establishment of the inner security perimeter went very well; outer perimeter was too close and did not include some of the vehicles involved in the crash.
	X	Have a cache of maps and diagrams for the airport complex that can be pulled out quickly and distributed to assets as needed. Aerial photos work best if they are up to date.
	X	Many elements self-deployed creating some confusion concerning what was there and what was still on the way.
	X	Several comments that the staging area was too close to the Command Post and created a bottle neck of vehicles at times.
	X	The primary and assistant safety officers were not clearly identified.
	X	Continue to integrate NIMS and ICS training into all exercises and in service training.
	X	Establish a plan on how to incorporate PCSO and/or PCFR dispatchers into the overall communications plan.
	X	Conduct FIN training/ refresher on a regular basis.
X		Great attention to detail and safety awareness. Almost 200 participants and over 40 moving vehicles and no "real world" injuries.
	X	Develop a method of "crowd control" for the ambulatory patients. The quicker they are moved away from the scene the less confusion there will be with other patients.
	X	There were problems with the "Jaws of Life" power plant. They needed a hose reel so that they didn't have to manhandle the power plant around the scene.
X		Safety and heavy rescue techniques were properly used during the extrication process.

APPENDIX U

Post-event Documentation/Hot Wash Summary: Hot Wash Debrief for Triennial Exercise (EUG 2014)

Eugene Airport Triennial Exercise

Hot Wash Debrief

September 24, 2014

The Triennial exercise is to meet FAA requirements.

[Airport Director] thanked everyone for participation in the exercise.

Hot Wash Debrief is to review:

What went well?

What could be improved?

_____, Emergency Management & _____, Airport Operations Duty Officer, Facilitators

Be sure to fill out an evaluation sheet with your comments, to assist in planning the next Emergency Exercise.

_____ commented that his handwriting skills could be improved (all of us!)

Fire – Police – Field Ops – Ops – Command Center

What went well:

Fire

No one was hurt in the drill

Response was timely

Simulated fire was put out

Extra resources went well

Communications overall, was smooth

The pace in the Command Center was manageable and questions dealt with in a reasonable manner.

_____, City PIO

Escort to Media, interview with KEZI will be on the evening news.

_____, Assistant Airport Director, AIC

Communication sheets worked really well.

The NCR provides a copy to keep, and the Runner comes back with a response.

Easier to keep track of and close the loop.

Positive—Tweeted it first. Like it or not, 30% gets information that way first. Chose a tweet from a pre-approved list. Press releases were approved by Unified Command in the AOC.

_____, Observer of Friends & Family

Airlines (_____, especially) did a great job of calming down a passenger.

Friends & Family area went well.

DGS Staff

In the drill, it was 4 airline staff to 10 Friends & Family.

In Real World it would be more like 50–60 Friends & Family, and 4 airline staff is not enough. Friends & Family provide their personal information and family information. Get them isolated to an area to shuttle quickly, otherwise the more time they have to think about it, they won't want to leave.

_____, Runner

Notes going back and forth to the Command Center worked well.

Except the [Hotel 1] Shuttle & LTD Bus, and LTD ended up reassigned.

Discussion

Technically, the Airline will lead the coordination of shuttling Friends & Family with assistance from Airport staff. Shuttle would be about 25 people every 40 minutes. In Real World, would use [Hotel 2] Shuttle to transfer people to LCC as a holding area for Friends & Family, then LTD to hotel, so that they can all be taken together. Passengers are free to leave if they want to. Although we try to keep them together, if they want to do something else, they are free to do so.

LTD used for Friends & Family and Walking Wounded.

LTD can shuttle 50 people at one time.

Confusion as to what LTD was for. Ultimately had LTD stand by, and then used to transport Walking Wounded.

_____, Field Safety Observer

Everyone was careful, taking time to process and do what needed to be done.

Reminder to lift carefully and properly, so no further injuries occur.

_____, Controller

Good communication flow in each room.

[Vendor] & [Airline] worked very well together.

_____, City Risk Services

Activated the City's EOC in conjunction with our Emergency Exercise.

It was good for them to go through.

Discussion

Notification to the Policy Group is in the City's Emergency Plan, but not in the Airport Emergency Plan, but needs to be. Policy Room would be the Mayor, City Manager, Execs. The City's EOC is at the Fire Station at Sheldon at Willakenzie.

_____ is an emergency volunteer, and a Ham Radio Operator stationed at Sheldon.

The Call Out List has not been updated in quite some time, and needs to be.

Fire (Field crew)

Fire was on the scene ASAP.

The whole thing went well.

Was a simple response.

There was some confusion as to where the zones were (hot zone, warm zone, cold zone). In Real World, they would know this immediately.

Two firemen on the crash truck, applied water and got passengers out within 10 minutes.

_____, EMS

Communication/Radio's . . . real life issues when batteries go dead.

Took a while to get a good flow of communication going.

In the end, able to report what numbers went to which hospital.

Discussion

6 agencies in the field, 30–40 people.

Did a great job.

SENS message was hard to understand.

Original call out—because of the drill situation, needed to be clear in the notification. Not a reverse 9-1-1 to the community, but thought about incorporating that.

There was a 3 minute lag time. The first pickup of the red phone, the tone did not go off. The second time, the tone went off.

9:09 first call, waiting for tone

9:14 tone went out

Fire wants drills to dispatch correctly.

Frequency issue—Drill related hiccups in the process.

_____, Eugene Police Department (EPD)

EPD trying to get assets to most logical intersections.

Having two sets of eyes on the perimeter is helpful.

[Assistant Airport Director] assisted EPD with knowing roadway access.

Determined that EPD would allow SIDA badge holders in.

Those without, could not.

LTD Bus escorted by EPD.

Discussion

All flights cancelled for 4 hours.

Technically, FAA & NTSB requires the Airport to be open and functions as soon as it is ARFF compliant.

Discussion around ticketed passengers, whether TSA or EPD could check tickets.

Decided that this was an impossibility to do that.

Airline staff agreed that passengers don't always know what airline, where they are flying to, or even what time their flight is.

Airline agent with manifest & EPD support, should be the only ones to screen passengers who get through for a flight.

Road would be closed for transport only, then opened again.

General Discussion

Emergency Support Center & Base Camp

E-mails that something is going on.

E-mailed out to emergency team, new Base Camp postings of situational awareness.

Needs to be approved by Incident Command before posting anything to Base Camp.

Could have used radios.

Issue with the hitch on the emergency trailer.

Fire/EMS hitch changed to a ball a few years ago, and this has been an issue ever since. Their equipment only has ball hitches—2-5/8". They may have quicker access and the equipment to hook up and get it where it needs to be; in Real World the Airport Staff may need them to do that.

Storm Water & Spill Prevention Plan manuals should be in the EOC.

Airport Admin needs an Airport Emergency Plan binder.

Please fill out an evaluation form before you leave.

Thank you to all who participated!

APPENDIX V

Post-event Documentation/After Action Report: AAR for TTX (JAX 2013)

2013 FAR Part 139 TABLETOP EXERCISE
June 5, 2013
AFTER ACTION REPORT
IMPROVEMENT PLAN

Prepared By:
Supervisor, Airport Emergency Operations

SECTION 1: EXERCISE OVERVIEW

Exercise Details

Exercise Name
2013 FAR Part 139 Tabletop Exercise

Type of Exercise
Tabletop Exercise

Exercise Start Date
June 5, 2013

Exercise End Date
June 5, 2013

Duration
Four (4) Hours

Location
Jacksonville Aviation Authority (JAA) Administration Building

Sponsor
Airport Operations Department

Program
Emergency Preparedness Team (EPT)

Mission

The EPT is a JAA project operated by the Airport Operations department to establish policies, procedures, and an organizational structure for response to emergencies that cause a significant disruption to the daily operations at any one of the four airports in Jacksonville: Jacksonville International Airport, Cecil Airport, Herlong Recreational Airport and Jacksonville Executive at Craig Airport. The purpose of the Emergency Preparedness Program is to coordinate the activities of various departments within the Airport System who are responsible for continued operations during disasters, manage inter-local agreements for use of resources, communicate with city, state and federal agencies, and provide education and training.

Capabilities

Plane crash response, coordination of efforts between multiple agencies and departments, activation of agency—specific plans

Scenario Type

Delta Plane Crash producing mass casualty

Participating Organizations

- ☐ Delta Air Lines
- ☐ United Air Lines
- ☐ American Air Lines
- ☐ Southwest Air Lines
- ☐ US Airways
- ☐ JAA Operations
- ☐ JAA Police Department
- ☐ American Red Cross
- ☐ Florida Air National Guard (FANG)
- ☐ JAA Media Relations
- ☐ US Customs and Border Patrol
- ☐ Transportation Security Administration (TSA)
- ☐ Signature Flight Support
- ☐ Jacksonville Fire and Rescue Department (JFRD)

Number of Participants

The following numbers are estimates based on the sign in log.

- ☐ 2 Facilitators
- ☐ 10 Evaluators
- ☐ 42 Participants

SECTION 2: FINDINGS

Activity 1

No matter what position you hold, be it for Delta, the police department, Operations, etc., each of you are responsible for individual actions when a plane crashes at JAX. Your job, as a group, is to develop an initial response plan once you are notified that a crash has occurred. In order to successfully accomplish this task, you are to act as if you five employees are the ones responsible for your agency's response. For example, if you are a Delta ticket agent, explain what you would do within the confines of your position once you are notified of a crash (IE, concerned passengers, influx of media and family inquiries). Utilize your prior training and company regulations when formulating your response. As a group, document your initial responses on your white board and work with your team to figure out if inter-agency coordination is required. For example, the police department and Operations should have initial coordination prior to, and arrival upon, the crash site. Each group should choose a presenter that will explain their findings to the rest of the room.

Findings

☐ Delta:

1. Activate the LERAP
2. Call OCC and open LLC line
3. Begin notification process
4. Establish Command Center in Delta Operations
5. Delegate Delta representative to respond to AEOC

☐ JAA Operations:

1. Close the airfield with NOTAM
2. Contact all airlines and advise of situation
3. Open Staging Areas
4. Activate Emergency Notification List
5. Close the airport
6. Activate AEOC
7. Key role is central communications

☐ JAA Police Department Airport Security Officers

1. Secure perimeter of crash site
2. Dispatch security officers to gates
3. Take control of roads around the airport

☐ Other airlines

1. Offer assistance to Delta
2. Stop check in and boarding
3. Notify customers that the airport is closed
4. Notify corporate offices

☐ TSA

1. Represent FSD until he arrives on scene
2. Assist FSD
3. Coordination between uniformed personnel and FSD staff

☐ Customs and Border Patrol

1. Respond, assess and coordinate

☐ FANG

1. Respond to primary crash site
2. Provide fire suppression
3. Triage
4. Search impact area
5. Provide lighting, if required
6. Mobile water supply
7. Provide manpower
8. Contact all senior leadership
9. Standby to support JAA and Delta

☐ Signature Flight Support

1. Get employees back to base
2. Open facility for any agencies that need to stage on the ramp
3. Open hangars, conference room, equipment, etc.

☐ Red Cross

1. Contact Command Post
2. Monitor situation

SECTION 3: QUESTIONS/ANSWERS

Activity 1 Questions/Answers

☐ Where does the "Go Team" land, if the airport is closed?

The "Go Team" will land at the next closest airport. For the purposes of this exercise, that would be Cecil Airport.

☐ Is the airspace restricted for media helicopters?

The airspace is controlled by FAA. At this time, we do not have an answer to this question. We will, however, inform everyone when the question has been answered.

☐ Where would the temporary morgue be set up, since the Piedmont Hangar is no longer available?

The decision to move deceased passengers is the Chief Medical Examiner's decision. If the bodies cannot be moved, sheets will be laid over the bodies until further direction is advised.

☐ Could the aircraft crew be used as interpreters?

This decision would be made on a case-by-case basis. CBP and the FBI would play a role in the decision-making process.

☐ Due to the Clarion going through a rehab period, where would the Reunification Center be set up?

At this time, we do not have an answer to this question. We will, however, inform everyone when the question has been answered.

☐ What type of access do we have to the First Coast News Camera atop of the Clarion?

This camera is the property of First Coast News.

☐ Due to the location of the event, would we close down "A" Concourse?

Most likely, if this event were to occur at JAX, the entire airport would be shut down. So yes, Concourse "A" would be shut down.

☐ Would employees who are coming to work be notified of the situation? How would they get into the airport if the airport is closed?

If the airport is closed, and the employee is deemed "non-essential" personnel, they may be told that they cannot drive onto airport property. The Station Managers would be notified once the decision has been made to close the airport. It would then be their responsibility to notify their employees.

☐ How would we handle cell phone issues?

At this time, we do not have an answer to this question.

☐ Would the checkpoint be closed?

Yes, the checkpoint would be closed once the decision has been made to close the airport.

☐ Would a message through the PA system be disseminated?

Yes, the Airport Operations department is responsible for disseminating messages throughout the airport on the PA system. Real time updates would also be given through the PA system.

SECTION 4: ADDITIONAL INFORMATION

When there is a major incident that occurs at JAX, help may be needed from other jurisdictions, the state and the federal government. Through the National Incident Management System (NIMS), responders from different jurisdictions and disciplines can work together better to respond to natural disasters and emergencies. NIMS benefits include a unified approach to incident management, standard command and management structures, and emphasis on preparedness, mutual aid and resource management.

Below is the link to free, NIMS training courses. For a basic overview of NIMS and Incident Command System (ICS), I recommend IS 100.b. These courses are self-paced and can be taken online. Once you successfully complete the course and pass the test, you will be emailed a certificate.

If you are interested in other courses, or would like more information in regards to NIMS and/or ICS, please contact Meaghan Smalley.

http://training.fema.gov/IS/NIMS.aspx

APPENDIX W

Post-event Documentation/After Action Review: AAR/Emergency Plan Review (OPF 2015)

EMERGENCY PLAN REVIEW

SECTION 1. Contact Information

*First Name:	*Last Name:
*Email:	*Agency:

* Not Required - Your contact information will help us contact you if we have specific questions regarding your comments on how to improve the design and execution of the exercise. It will not be released to anyone outside of the exercise design team.

SECTION 2. Agency Information

Profession:
(Please check all that apply)

- ☐ Law Enforcement
- ☐ Miami-Dade Fire Rescue
- ☐ Miami-Dade Police Department
- ☐ Miami-Dade Aviation Department
- ☐ FAA
- ☐ Governmental
- ☐ Aircraft Owner/Operator

SECTION 3. Exercise Information

Exercise Name:	Operation Readiness Exercise
Sponsor Agencies:	MDPD, MDFR, MDAD
Type of Exercise:	
Scenario:	Small Scale
Date:	
Location:	

SECTION 4. Evaluation & Comments

On a scale of 1-5, with 5 being the highest, please rate the exercise in the following areas and provide comments as you see fit.

1. Was the exercise scenario realistic?	☐1. ☐2. ☐3. ☐4. ☐5.
2. Did the exercise make sense to you as a player?	☐1. ☐2. ☐3. ☐4. ☐5.
3. Were the training aids (maps, scenarios, graphics, evaluation guides, etc…) useful?	☐1. ☐2. ☐3. ☐4. ☐5.
4. Did we have the appropriate attendees?	☐1. ☐2. ☐3. ☐4. ☐5.
5. Was the venue suitable for an exercise such as this?	☐1. ☐2. ☐3. ☐4. ☐5.
6. Was the time schedule sufficient to conduct the exercise?	☐1. ☐2. ☐3. ☐4. ☐5.
7. Do we need more time or less?	☐1. ☐2. ☐3. ☐4. ☐5.
8. Did the exercise challenge you to think about options that are "outside the box"?	☐1. ☐2. ☐3. ☐4. ☐5.
9. Did the exercise meet your expectations?	☐1. ☐2. ☐3. ☐4. ☐5.

10. If you could change one thing to make the exercise better, what would it be?

11. Who should be added to an exercise such as this?

12. Who should we remove?

General Comments:

Please e-mail completed form to _____@miami-airport.com

APPENDIX X

Post-event Documentation/After Action Review & Improvement Plan (AAR/IP LAL 2013)

When HSEEP is followed strictly, improvement plans are combined with an after action report to form an After Action Report/Improvement Plan (AAR/IP). An AAR/IP for a full-scale exercise can be lengthy, for example, LAL's most recent AAR/IP is 41 pages. Here is its Table of Contents and the Improvement Plan section.

LAL 2013 AAR/IP Table of Contents

CONTENTS

Improvement Plan from LAL 2013 AAR/IP

Appendix A: Improvement Plan

This IP has been developed specifically for Lakeland Linder Regional Airport, Lakeland Fire Department and Polk County Emergency Management as a result of Full-scale Exercise "Mallard Challenge" conducted on February 6, 2013. These recommendations draw on both the After Action Report and the After Action Conference.

TABLE A.1
IMPROVEMENT PLAN MATRIX

Capability	Activity Title	Recommendation	Corrective Action Description	Capability Element	Primary Responsible Agency	Agency POC	Start Date	Completion Date
Exercise Objective 1: Exercise Incident Command System (ICS)/Unified Command.								
Capability 1.1: Onsite Incident Management	1.1.1 Direct On-Site Incident Management	1. Conduct training with the ARFF crews to reinforce that they must establish IC upon arrival on site.	Schedule training	Planning	LFD	Bn Chief Maddox	May 1, 2013	July 31, 2013
	1.1.2. Implement On-Site Incident Management	2. Insure that as the initial IC is replaced with senior leadership that a face to face meeting occurs in order to conduct a hand-off of control to the new IC.	Update SOPs/SOGs Schedule training	Planning	LFD	Bn Chief Maddox	May 1, 2013	July 31, 2013
		3. Use some type of flag or banner that can be seen at a long distance to mark the IC location during hours of daylight.	Update SOPs/SOGs	Logistics	LFD	Bn Chief Maddox	May 1, 2013	July 31, 2013
Capability 1.2: Fatality Management	1.2.1: Direct Fatality Management Tactical Operations.	4. Insure that all LPD personnel are familiar with their responsibilities associated with locating, documenting and evacuation of deceased persons.	Conduct Training	Training Planning	LPD	SGT Mumbauer	May 1, 2013	July 1, 2013
		1. Verify that LPD has appropriate GPS equipment to assist in the marking of deceased persons in support of the NTSB.	Prepare a “mass casualty” deployment box with needed equipment	Logistics Planning	LPD	SGT Mumbauer	May 1, 2013	July 1, 2013

Exercise Objective 2: Mobilize and Manage First Responders								
Capability 2.1: Fire Incident Response Support	2.1.1: Activate Fire Incident Response Support	6. Conduct a "no-notice" drill to assess the response of the ARFF crew during hours of darkness and/or inclement weather.	Schedule Drill	Training	LFD	Bn Chief Maddox	May 1, 2013	Sep 30, 2013
	2.1.2: Size Up	7. The ARFF crew must provide a basic Size Up and submit a list of additional support that will be needed simultaneously providing fire suppression on site.	Update SOPs/SOGs Schedule training	Planning Training	LFD	Bn Chief Maddox	May 1, 2013	July 31, 2013
		8. The second arriving first responder, regardless of discipline, must assume the IC responsibilities in order to release the ARFF to continue firefighting	Update SOPs/SOGs Schedule training	Planning Training	LFD LPD	Bn Chief Maddox SGT Mumbauer	May 1, 2013	On-Going
	2.1.3: Direct Fire Incident Response Support Tactical Operations	9. Schedule and conduct a similar drill (on a smaller scale) during hours of limited visibility.	Schedule drill	Planning Training	LFD	Bn Chief Maddox	May 1, 2013	Sep 30, 2013
	2.1.4: Search Scene and Rescue	10. Develop methods and protocols to assist in the movement of "walking wounded" away from the scene as quickly as possible.	Update SOPs/SOGs	Planning	LFD	Bn Chief Maddox	May 1, 2013	July 31, 2013
		11. Continue to work with EMS to hone the interaction needed to conduct triage and move critical persons in a timely manner.	Schedule training	Training	LFD	Bn Chief Maddox	May 1, 2013	On-Going
Capability 2.2: Emergency Triage and Pre-Hospital Treatment	2.2.2: Activate Triage and Pre-Hospital Treatment	12. Continue to include out of county assets and private ambulance companies in future exercises.	Schedule training	Training Mutual Aid Agreements	LFD	Bn Chief Maddox	May 1, 2013	On-Going
	2.2.3: Triage	13. Geographically separate the casualties by injury level.	Update SOPs/SOGs	Planning Training	LFD	Bn Chief Maddox	May 1, 2013	On-Going

(*continued on next page*)

TABLE A.1
(*continued*)

Capability	Activity Title	Recommendation	Corrective Action Description	Capability Element	Primary Responsible Agency	Agency POC	Start Date	Completion Date
		14. Continue and expand on the use of fire fighters to conduct the initial triage while EMS are setting up and preparing to receive patients.	Update SOPs/SOGs Coordinate with Polk EMS	Planning Training	LFD Polk EMS	Bn Chief Maddox Benny Luke	May 1, 2013	On-Going
Capability 2.3: Critical Resource Logistics and Distribution Operations	2.3.1: Activate Critical Resource Logistics and Distribution Operations.	15. As resources become available consider building a second trailer and stock it specifically for the most serious casualties.	Update SOPs/SOGs Coordinate with Polk EMS	Planning Training	LFD Polk EMS	Bn Chief Maddox Benny Luke	May 1, 2013	On-Going
		16. Develop a plan for a logistical staging area and a method by which to mark it for daylight or hours of darkness.	Update SOPs/SOGs	Planning Training	LFD	Bn Chief Maddox	May 1, 2013	July 31, 2013
Exercise Objective 3: Communications								
Capability 3.1: Communications	3.1.1: Alert and dispatch	17. Create "plug and play" generic communications plans for the alert and dispatch of first responders engaged in the most common events.	Update SOPs/SOGs	Planning	LPD	Bill LePere	May 1, 2013	July 31, 2013
	3.1.2: Provide Incident Command-First Responder–First Receiver Interoperable Communications	18. Create "plug and play" generic communications plans for the alert and dispatch of first responders engaged in the most common events.	Update SOPs/SOGs	Planning	LPD	Bill LePere	May 1, 2013	July 31, 2013
		19. Reinforce the use of plain text instead of "10" codes and signals.	Conduct training	Training	All Agencys	Leadership	May 1, 2013	July 31, 2013
		20. Run a communications only table top exercise to familiarize dispatchers and agency leaders on what the communications equipment/personnel can and cannot do.	Schedule exercise	Planning	All Agencys	Bill LePere	May 1, 2013	Sep 30, 2013

Exercise Objective 4: Provide Information to the Public								
Capability 4.1: Emergency Public Information and Warning	4.1.1: Establish Joint Information Center	21. Mandate that all agency PIOs participate in exercises and training	Update SOPs/SOGs	Planning Training	All Agencys	Brad Ruhmann	May 1, 2013	July 31, 2013
	4.1.2 Conduct Joint Information Center Operations.	22. Conduct a PIO only table top exercise or drill in order to practice skills needed to keep the public informed.	Schedule exercise	Planning	All Agencys	Brad Ruhmann	May 1, 2013	July 31, 2013
Exercise Objective 5: Fully Integrate the Lakeland Linder Regional Airport Into the Response Plan.								
Capability 5.1: Planning	5.1.1: Conduct Strategic Planning	23. Continue to review and update this plan on an annual basis or when any significant change occurs in the capabilities of either the Airport or the City of Lakeland assets.	Update SOPs/SOGs	Planning	Lakeland Linder Regional Airport (LLRA) LFD LPD	Brett Fay	May 1, 2013	On-Going
	5.1.2: Develop – Revise Operational Plans	24. Continue to develop/revise operational plans as needed.	Update SOPs/SOGs	Planning	LLRA LFD LPD	Brett Fay Bn Chief Maddox SGT Mumbauer	May 1, 2013	On-Going
	5.1.3: Validate Plans	25. Conduct an annual exercise to test parts of the plan.	Schedule Exercise	Planning	LLRA LFD LPD	Brett Fay Bn Chief Maddox SGT Mumbauer	May 1, 2013	On-Going

APPENDIX Y

Complete Full-scale Exercise Plan (HSEEP-based) (EUG 2014)

TRIENNIAL AIRPORT EXERCISE

Exercise Plan

9/24/14

The Exercise Plan (ExPlan) gives elected and appointed officials, observers, media personnel, and players from participating organizations information they need to observe or participate in the exercise. Some exercise material is intended for the exclusive use of exercise planners, controllers, and evaluators, but players may view other materials that are necessary to their performance. All exercise participants may view the ExPlan.

Exercise Plan	[Exercise Name]
(ExPlan)	[Exercise Name Continued]

Exercise Overview

Exercise Name:	Triennial Airport Exercise
Exercise Dates:	September 24, 2014
Scope:	This exercise is a full-scale, planned for one operational period at Eugene Airport. Exercise play is limited to [exercise parameters].
Mission Area(s):	Response, and/or recovery
Core Capabilities:	[List the core capabilities being exercised]
Objectives:	[List exercise objectives]
Threat or Hazard:	Airplane crash
Scenario:	As Hanson Air Flight 5960 approaches 16L 34R there is an explosion and the left engine falls from the plane with fiery debris landing on Tiny Drakes home igniting it on fire.
Sponsor:	City of Eugene Airport
Participating: Organizations:	Eugene Airport, Lane County, Lane Fire Authority, Eugene/Springfield Fire, Eugene Police, Airline, Peace Health, Eugene Emergency Management, Valley River Inn
Point of Contact:	Tammie Hartje Forrest Chambers

General Information

Exercise Objectives and Core Capabilities

The following exercise objectives in Table 1 describe the expected outcomes for the exercise. The objectives are linked to core capabilities, which are distinct critical elements necessary to achieve the specific mission area(s). The objectives and aligned core capabilities are guided by elected and appointed officials and selected by the Exercise Planning Team.

TABLE 1
EXERCISE OBJECTIVES AND ASSOCIATED CORE CAPABILITIES

Exercise Objective	Core Capability
Test Airport Emergency Plan	
Triage / Treatment / Transport of patients	
Simulate Family and Friends Re-Unification	

Participant Roles and Responsibilities

The term *participant* encompasses many groups of people, not just those playing in the exercise. Groups of participants involved in the exercise, and their respective roles and responsibilities, are as follows:

- **Players.** Players are personnel who have an active role in discussing or performing their regular roles and responsibilities during the exercise. Players discuss or initiate actions in response to the simulated emergency.
- **Controllers.** Controllers plan and manage exercise play, set up and operate the exercise site, and act in the roles of organizations or individuals that are not playing in the exercise. Controllers direct the pace of the exercise, provide key data to players, and may prompt or initiate certain player actions to ensure exercise continuity. In addition, they issue exercise material to players as required, monitor the exercise timeline, and supervise the safety of all exercise participants.
- **Simulators.** Simulators are control staff personnel who role play nonparticipating organizations or individuals. They most often operate out of the Simulation Cell (SimCell), but they may occasionally have face-to-face contact with players. Simulators function semi-independently under the supervision of SimCell controllers, enacting roles (e.g., media reporters or next of kin) in accordance with instructions provided in the Master Scenario Events List (MSEL). All simulators are ultimately accountable to the Exercise Director and Senior Controller.
- **Evaluators.** Evaluators evaluate and provide feedback on a designated functional area of the exercise. Evaluators observe and document performance against established capability targets and critical tasks, in accordance with the Exercise Evaluation Guides (EEGs).
- **Actors.** Actors simulate specific roles during exercise play, typically victims or other bystanders.
- **Observers.** Observers visit or view selected segments of the exercise. Observers do not play in the exercise, nor do they perform any control or evaluation functions. Observers view the exercise from a designated observation area and must remain within the observation area during the exercise. Very Important Persons (VIPs) are also observers, but they frequently are grouped separately.
- **Media Personnel.** Some media personnel may be present as observers, pending approval by the sponsor organization and the Exercise Planning Team.
- **Support Staff.** The exercise support staff includes individuals who perform administrative and logistical support tasks during the exercise (e.g., registration, catering).

Exercise Assumptions and Artificialities

In any exercise, assumptions and artificialities may be necessary to complete play in the time allotted and/or account for logistical limitations. Exercise participants should accept that assumptions and artificialities are inherent in any exercise, and should not allow these considerations to negatively impact their participation.

Assumptions

Assumptions constitute the implied factual foundation for the exercise and, as such, are assumed to be present before the exercise starts. The following assumptions apply to the exercise:

- The exercise is conducted in a no-fault learning environment wherein capabilities, plans, systems, and processes will be evaluated.
- The exercise scenario is plausible, and events occur as they are presented.
- Exercise simulation contains sufficient detail to allow players to react to information and situations as they are presented as if the simulated incident were real.
- Participating agencies may need to balance exercise play with real-world emergencies. Real-world emergencies take priority.

Artificialities

During this exercise, the following artificialities apply:

- Exercise communication and coordination is limited to participating exercise organizations, venues, and the SimCell.
- Only communication methods listed in the Communications Directory are available for players to use during the exercise.

Exercise Logistics

Safety

Exercise participant safety takes priority over exercise events. The following general requirements apply to the exercise:

- A Safety Controller is responsible for participant safety, any safety concerns must be immediately reported to the Safety Controller. The Safety Controller and Exercise Director will determine if a real-world emergency warrants a pause in exercise play and when exercise play can be resumed.
- For an emergency that requires assistance, use the phrase [“real-world emergency.”] The following procedures should be used in case of a real emergency during the exercise:
  - Anyone who observes a participant who is seriously ill or injured will immediately notify emergency services and the closest controller, and, within reason and training, render aid.
  - The controller aware of a real emergency will initiate the [“real-world emergency”] broadcast and provide the Safety Controller, Senior Controller, and Exercise Director with the location of the emergency and resources needed, if any. The Senior Controller will notify the SimCell as soon as possible if a real emergency occurs.

Fire Safety

Standard fire and safety regulations relevant to the City of Eugene will be followed during the exercise.

Emergency Medical Services

The sponsor organization will coordinate with local emergency medical services in the event of a real-world emergency. Eugene/Springfield Fire will have Ambulance on site for treatment.

Site Access

Security

If entry control is required for the exercise venue(s), the sponsor organization is responsible for arranging appropriate security measures. To prevent interruption of the exercise, access to exercise sites and the SimCell] is limited to exercise participants. Players should advise their venue’s controller or evaluator of any unauthorized persons.

Media/Observer Coordination

Organizations with media personnel and/or observers attending the event should coordinate with the sponsor organization for access to the exercise site. Media/Observers are escorted to designated areas and accompanied by an exercise controller at all times. Sponsor organization representatives and/or the observer controller may be present to explain exercise conduct and answer questions. Exercise participants should be advised of media and/or observer presence.

Exercise Identification

Exercise staff may be identified by badges, hats, and/or vests to clearly display exercise roles, additionally, uniform clothing may be worn to show agency affiliation. Table 2 describes these identification items.

TABLE 2
EXERCISE IDENTIFICATION

Group	Color
Exercise Director	White
Facilitator	White
Controllers	Yellow
Evaluators	Yellow
Actors	
Support Staff	
Observers/VIPs	orange
Media Personnel	
Players, Uniformed	
Players, Civilian Clothes	

Post-exercise and Evaluation Activities

Debriefings

Post-exercise debriefings aim to collect sufficient relevant data to support effective evaluation and improvement planning.

Hot Wash

At the conclusion of exercise play, controllers facilitate a Hot Wash to allow players to discuss strengths and areas for improvement, and evaluators to seek clarification regarding player actions and decision-making processes. All participants may attend; however, observers are not encouraged to attend the meeting. The Hot Wash should not exceed 30 minutes.

Controller and Evaluator Debriefing

Controllers and evaluators attend a facilitated C/E Debriefing immediately following the exercise. During this debriefing, controllers and evaluators provide an overview of their observed functional areas and discuss strengths and areas for improvement.

Participant Feedback Forms

Participant Feedback Forms provide players with the opportunity to comment candidly on exercise activities and exercise design. Participant Feedback Forms should be collected at the conclusion of the Hot Wash.

Evaluation

Exercise Evaluation Guides

EEGs assist evaluators in collecting relevant exercise observations. EEGs document exercise objectives and aligned core capabilities, capability targets, and critical tasks. Each EEG provides evaluators with information on what they should expect to see demonstrated in their functional area. The EEGs, coupled with Participant Feedback Forms and Hot Wash notes, are used to evaluate the exercise and compile the After-Action Report (AAR).

After-Action Report

The AAR summarizes key information related to evaluation. The AAR primarily focuses on the analysis of core capabilities, including capability performance, strengths, and areas for improvement. AARs also include basic exercise information, including the exercise name, type of exercise, dates, location, participating organizations, mission area(s), specific threat or hazard, a brief scenario description, and the name of the exercise sponsor and POC.

Improvement Planning

Improvement planning is the process by which the observations recorded in the AAR are resolved through development of concrete corrective actions, which are prioritized and tracked as a part of a continuous corrective action program.

After-Action Meeting

The After-Action Meeting (AAM) is a meeting held among decision- and policy-makers from the exercising organizations, as well as the Lead Evaluator and members of the Exercise Planning Team, to debrief the exercise and to review and refine the draft AAR and Improvement Plan (IP). The AAM should be an interactive session, providing attendees the opportunity to discuss and validate the observations and corrective actions in the draft AAR/IP.

Improvement Plan

The IP identifies specific corrective actions, assigns them to responsible parties, and establishes target dates for their completion. It is created by elected and appointed officials from the organizations participating in the exercise, and discussed and validated during the AAM.

Participant Information and Guidance

Exercise Rules

The following general rules govern exercise play:

- Real-world emergency actions take priority over exercise actions.
- Exercise players will comply with real-world emergency procedures, unless otherwise directed by the control staff.
- All communications (including written, radio, telephone, and e-mail) during the exercise will begin and end with the statement **"This is an exercise."**
- Exercise players who place telephone calls or initiate radio communication with the SimCell must identify the organization or individual with whom they wish to speak.

Players Instructions

Players should follow certain guidelines before, during, and after the exercise to ensure a safe and effective exercise.

Before the Exercise

- Review appropriate organizational plans, procedures, and exercise support documents.
- Be at the appropriate site at least 30 minutes before the exercise starts. Wear the appropriate uniform and/or identification item(s).
- Sign in when you arrive.
- If you gain knowledge of the scenario before the exercise, notify a controller so that appropriate actions can be taken to ensure a valid evaluation.
- [Read your Player Information Handout, which includes information on exercise safety.]

During the Exercise

- Respond to exercise events and information as if the emergency were real, unless otherwise directed by an exercise controller.
- Controllers will give you only information they are specifically directed to disseminate. You are expected to obtain other necessary information through existing emergency information channels.
- Do not engage in personal conversations with controllers, evaluators, observers, or media personnel. If you are asked an exercise-related question, give a short, concise answer. If you are busy and cannot immediately respond, indicate that, but report back with an answer as soon as possible.

- If you do not understand the scope of the exercise, or if you are uncertain about an organization's participation in an exercise, ask a controller.
- Parts of the scenario may seem implausible. Recognize that the exercise has objectives to satisfy and may require incorporation of unrealistic aspects. Every effort has been made by the exercise's trusted agents to balance realism with safety and to create an effective learning and evaluation environment.
- All exercise communications will begin and end with the statement [**"This is an exercise."**] This precaution is taken so that anyone who overhears the conversation will not mistake exercise play for a real-world emergency.
- When you communicate with the SimCell, identify the organization or individual with whom you wish to speak.
- Speak when you take an action. This procedure will ensure that evaluators are aware of critical actions as they occur.
- Maintain a log of your activities. Many times, this log may include documentation of activities that were missed by a controller or evaluator.

After the Exercise

- Participate in the Hot Wash at your venue with controllers and evaluators.
- Complete the Participant Feedback Form. This form allows you to comment candidly on emergency response activities and exercise effectiveness. Provide the completed form to a controller or evaluator.
- Provide any notes or materials generated from the exercise to your controller or evaluator for review and inclusion in the AAR.

Simulation Guidelines

Because the exercise is of limited duration and scope, certain details will be simulated. The physical description of what would fully occur at the incident sites and surrounding areas will be relayed to players by simulators or controllers. A SimCell will simulate the roles and interactions of nonparticipating organizations or individuals.

Appendix A: Exercise Schedule

[**Note:** Because this information is updated throughout the exercise planning process, appendices may be developed as stand-alone documents rather than part of the ExPlan.]

Time	Personnel	Activity	Location
9/24/14			
0830	Controllers, evaluators, and exercise staff	Controller and Evaluator Briefing	Airport Admin
As needed	Controllers and exercise staff	Set up control cell and walkthrough	Airport Admin
9/24/14			
0800333	Controllers and exercise staff	Check-in for final instructions and communications check	Airport Admin
0830	Media	Media Briefing	Airport Admin
0830	VIPs and selected exercise staff	VIP Controller Briefing	Airport Admin
0845	Controllers and evaluators	Controllers and evaluators in starting positions	Exercise location
0845	All	Controllers provide player briefs	Exercise location
0900	All	Exercise starts	Exercise location
1130	All	Exercise ends	Exercise location
Immediately Following the Exercise	All	Venue Hot Washes/turn in all Participant Feedback Forms	FS 12, Airport Admin, LFA,
TBD			
TBD	Controllers, evaluators, and elected and appointed officials	Controller and Evaluator After Action Review	TBD

Appendix B: Exercise Participants

Participating Organizations
Federal
FAA
State
City of Eugene
Eugene/Springfield Fire, Eugene Airport, Eugene Police,
Outside agencies and businesses
Lane Fire Authority, Valley River Inn, Lane Community College,

Appendix C: Communications Plan

Appendix D: Exercise Site Maps

FIGURE D.1

FIGURE D.2

Appendix E: Acronyms

Acronym	Term
DHS	U.S. Department of Homeland Security
ExPlan	Exercise Plan
HSEEP	Homeland Security Exercise and Evaluation Program
SME	Subject Matter Expert
LFA	Lane Fire Authority
ESFD	Eugene Springfield Fire

APPENDIX Z

Checklist for Creating and Improving Emergency Exercises at GA, Non-hub, and Small Hub Airports

Stage	Action	Applies to Airport	Done
Planning	Insert exercise requirement and schedule in airport emergency plan (AEP) even if airport is not required to have an AEP by FAR Part 139 and FAA Advisory Circular 150-5200-31C.		
Planning	Use building block approach to build exercise program (discussion-based exercises leading to table top exercises leading to full-scale exercises.		
Planning	Avoid jumping into an overly complex full-scale exercise without building towards it through training, discussion-based exercises, table top exercises, and functional exercises.		
Planning	Create culture that an effective exercise program is a conduit to enhanced customer service.		
Planning	Involve widest appropriate range of stakeholders and partners in planning of exercises.		
Planning	Include airlines and private pilots who use the airport.		
Planning	Involve airport's volunteers or community volunteer groups in planning of and training for exercise.		
Planning	Request exercise materials and tools from other airports.		
Planning	Seek HSEEP training for airport staff member(s) or even just precursor FEMA EMI courses.		
Planning	Develop relationships with partner agencies to get access to HSEEP-trained personnel and exercise assistance..		
Planning	Budget realistically for exercise costs.		
Planning	Conduct realistic hazard analysis to determine likelihood (probability), severity, and impact of all possible events.		
Planning	Use likelihood, severity, and impact to determine priorities of target capabilities that airport needs to address in exercise.		
Planning	Develop target capabilities for exercises based on realistic hazard analysis.		
Planning	Let target capabilities determine exercise scenario.		
Planning	Define what the airport means by "success" in each exercise.		
Planning	Develop goals and objectives for every exercise.		
Planning	Develop drill scenario statement.		
Planning	Use exercise planning checklist.		
Planning	Develop and use a detailed timeline for table top and full-scale exercises (e.g., MSEL or similar).		
Planning	Prepare an exercise brief to give before start of exercise.		

Planning	Include an exercise safety plan for every exercise, but particularly in full-scale exercises.		
Planning	Include an exercise communications plan for every exercise, but particularly in full-scale exercises.		
Planning	Include an access plan, escort plan, and security plan as appropriate in the exercise plan.		
Planning	Include an exercise evaluation plan including formal evaluation tools and procedures in exercise plan.		
Planning	Invite the media to observe or potentially participate in full-scale exercises and possibly even some functional exercises.		
Planning	Prepare and issue public announcements and press releases about a full-scale exercise.		
Planning	Consider creating or joining a (future) statewide or regional consortium of airports for training and exercise support.		
Execution	Involve broadest possible range of stakeholders including both on-airport and off-airport partners in actual exercise.		
Execution	Use an exercise control team structured on ICS principles.		
Execution	Test actual communications procedures and plans including contact lists in table top and full-scale exercises.		
Execution	Gather data as specified in exercise evaluation plan using evaluation forms and checklists.		
Execution	Consider videotaping exercise for after action analysis, future training, and possible public relations use.		
Evaluation	Conduct hot wash immediately after completion of exercise.		
Evaluation	Conduct formal after action review involving leadership of participating agencies.		
Evaluation	Distribute written after action report to appropriate stakeholders and partners.		
Use of Exercise Results	Have an intentional, formal process for incorporating lessons learned from exercises into AEPs, other plans, and procedures.		
Use of Exercise Results	Assign responsibility to a committee or an individual to track the application of lessons learned.		
Use of Exercise Results	Incorporate lessons learned regarding deficiencies or gaps into training and exercise plans.		
Use of Exercise Results	Use future exercise(s) to test whether lessons learned have been applied.		
Use of Exercise Results	Share lessons learned and other post-event documents with other airports.		

APPENDIX AA

Road Map for Development of Exercise Program

Step	Action	Product	Lead/Participants	Reference(s) [links in References list]	Due	Done
1	Develop AEP (even if a non-FAR Part 139 airport)	Airport Emergency Plan incorporating by reference exercise requirements, frequencies, and program for applying lessons learned, etc.		CFR Part 139.325 Airport Emergency Plan		
2	Develop Training and Exercise Plan	Multi-year exercise and training program documenting and prioritizing the training and exercises to be conducted.		HSEEP Exercise Program Management, User Guide; HSEEP Exercise Program Management, Workshop Presentation; HSEEP Exercise Program Management, Training and Exercise Plan Template		
3	Design and Develop the Exercise	Exercise Plan; use HSEEP Master Task List Template.		HSEEP Exercise and Development; HSEEP Exercise and Development, Master Task List; HSEEP Exercise and Development, Exercise Plan & Prepare Ohio, Sample Master Scenario Events List (MSEL)		
4	Develop Exercise Evaluation Process	Exercise Evaluation Plan		HSEEP Exercise Evaluation		
5	Conduct Exercise	Brief actors, participants, evaluators, officials		HSEEP Exercise Conduct, toolkit containing various templates for exercise briefings, debriefings, and documentation.		
6	Exercise Evaluation	Evaluate the exercise using the Exercise Evaluation Guides developed for the exercise.		HSEEP Exercise Evaluation; Exercise Evaluation Guides Instructions; Exercise Evaluation Guides, Samples; FEMA Core Capabilities		
7	Improvement Planning	Conduct and After-Action/Improvement Plan meeting to develop and AAR/IP		HSEEP Improvement Planning		

Notes:

1. Stakeholder involvement in all stages of exercise program planning is essential.

2. Using alternative title of “Training” instead of “Exercise” may make participation in planned evolutions more attractive to fire, law enforcement, and other first responders to show up and gain airport familiarity.

Source: Smith, Garcia, Sawyer and Kenville, adapted from HSEEP primary documents as noted.

Abbreviations and acronyms used without definitions in TRB publications:

A4A	Airlines for America
AAAE	American Association of Airport Executives
AASHO	American Association of State Highway Officials
AASHTO	American Association of State Highway and Transportation Officials
ACI–NA	Airports Council International–North America
ACRP	Airport Cooperative Research Program
ADA	Americans with Disabilities Act
APTA	American Public Transportation Association
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
ATA	American Trucking Associations
CTAA	Community Transportation Association of America
CTBSSP	Commercial Truck and Bus Safety Synthesis Program
DHS	Department of Homeland Security
DOE	Department of Energy
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FAST	Fixing America's Surface Transportation Act (2015)
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carrier Safety Administration
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
HMCRP	Hazardous Materials Cooperative Research Program
IEEE	Institute of Electrical and Electronics Engineers
ISTEA	Intermodal Surface Transportation Efficiency Act of 1991
ITE	Institute of Transportation Engineers
MAP-21	Moving Ahead for Progress in the 21st Century Act (2012)
NASA	National Aeronautics and Space Administration
NASAO	National Association of State Aviation Officials
NCFRP	National Cooperative Freight Research Program
NCHRP	National Cooperative Highway Research Program
NHTSA	National Highway Traffic Safety Administration
NTSB	National Transportation Safety Board
PHMSA	Pipeline and Hazardous Materials Safety Administration
RITA	Research and Innovative Technology Administration
SAE	Society of Automotive Engineers
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (2005)
TCRP	Transit Cooperative Research Program
TDC	Transit Development Corporation
TEA-21	Transportation Equity Act for the 21st Century (1998)
TRB	Transportation Research Board
TSA	Transportation Security Administration
U.S.DOT	United States Department of Transportation

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