Attachment A

2004-520

King County International Airport
Boeing Field

ARFF FEASIBILITY ANALYSIS

King County
Department of Transportation
Airport Division

FINAL REPORT

AIRPORT RESCUE FIREFIGHTING (ARFF) FEASIBILITY ANALYSIS
KING COUNTY INTERNATIONAL AIRPORT/BOEING FIELD

Seattle, Washington

Prepared For:

King County Department of Transportation

Prepared By:

Armen DerHohannesian + Associates, LLC

1 September 2004

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INTRODUCTION

The primary objective of this analysis is to assess the current and future Airport Rescue + Fire Fighting (ARFF) program, including its regulatory requirements and organization, for King County International Airport/Boeing Field (KBFI) versus other alternatives. This assessment will address law enforcement services and requirements that may impact the existing organizational structure and overall ARFF and law enforcement missions.

The King County Sheriff's Office (KCSO) currently provides both ARFF and law enforcement services, as well as some operational disciplines, for KBFI. These services are provided on a contractual basis through a Memorandum of Understanding (MOU) and are the primary subject of this analysis.

This Report will conclude with a series of recommendations that collectively address the primary objective noted above.

This Report will be accomplished in seven (7) work tasks, namely:

Task 1.0 – Existing Fire and Law Enforcement Organization

This task will describe and document in depth the existing ARFF organizational structure at KBFI including staffing levels, equipment and facilities, operating and maintenance costs as well as capital improvement costs.

While Task 3.0 will address and assess FAR Part 139, subpart D, as to its "role" and potential impact on this analysis, there will be some basic information in this task with regard to this critical document.

In effect, this task, together with Task 2.0, is an inventory function that will establish a foundation for conducting the remaining work tasks.

Task 2.0 – Base Line Law Enforcement Program

This task will document and address the current law enforcement program at KBFI, including the KCSO mission, operational approach, access control and related facilities. Like Task 1.0, this task is an inventory function that subsequent tasks will be developed from.

Both Tasks 1.0 and 2.0 form a baseline against which the overall assessment will be applied towards.

Task 3.0 – FAR Part 139, Subpart D

The Federal Aviation Administration (FAA) is responsible for the certification of certain airports like KBFI that serve scheduled and non-scheduled small and large air carrier airlines. This certification is regulated through Federal Aviation Regulation (FAR) Part 139, in which Subpart D specifically addresses ARFF operational requirements. Such operational requirements include airport ARFF Index determination, minimum required

equipment and extinguishing agents and ARFF personnel training.

Since this is a critical aspect of this Report, this task will assess the current FAR Part 139, subpart D, as well as potential future changes to this regulation, which - if adopted – will have an impact upon the KBFI ARFF program as to the ARFF mission and services.

Task 4.0 – Alternative Strategies for ARFF Services

This task will develop alternative strategies for ARFF Services, including the advantages and disadvantages of each. By their very mission, law enforcement and fire services are interrelated public safety functions. This task will address what alternative strategies might be made to the current police/fire functions at KBFI to enhance current and future airport management and operational requirements.

In other words, the police (law enforcement) and fire (ARFF) functions must be addressed in concert with each other.

Task 5.0 – Alternative Strategies for Airport Security

This task will discuss access control issues promulgated by the Department of Homeland Security (DHS) through its Transportation Security Administration's (TSA) FAR Part 1542, Airport Security. The objective of this task will be to identify what is/may be required for KBFI by Part 1542, as well as a number of DHS initiatives currently being considered that collectively could impact KBFI's current Airport security program.

However, this task will not be an assessment on the type and level of security currently existing.

Task 6.0 – Preliminary Risk Assessment

Based upon the results of the previous five (5) tasks, this task will identify potential liability and address what the risks may be if no changes are made to the current organizational structure with regard to police and ARFF services. This task is not a full-blown risk assessment, rather it will identify what the potential risks might involve followed by an assessment of KBFI's potential vulnerability if no changes are made to the current situation.

Task 7.0 – Conclusions and Recommendations

Based upon the results of each of the previous tasks, this task will provide King County with a thorough and objective description of observations made during this analysis and resulting in conclusions addressing this report's objective. Based upon these conclusions, a series of recommendations will evolve if it is determined that alternatives to the current ARFF program could benefit King County as a whole, and the users of the Airport in particular.

The completed Report will enable Airport Management to make informed decisions with regard to the foreseeable future concerning ARFF and police services at KBFI.

TASK 1.0 – EXISTING FIRE AND LAW ENFORCEMENT ORGANIZATION

This task will describe and document in depth the existing Airport Rescue and Fire Fighting (ARFF) structure at King County International Airport/Boeing Field (KBFI) including staffing, equipment and facilities, capital costs, operating and maintenance costs, as well as the current organizational structure.

In effect, this task, together with Task 2.0, is an inventory function to establish a foundation for conducting subsequent work tasks 3.0 though 7.0.

1.1 – Background

KBFI is a public facility owned and operated by the King County Department of Transportation, Airport Division. The King County Council is the public body that ultimately makes decisions regarding, for example, budgetary considerations for KBFI capital improvements and personnel structure.

It is relevant to understand that each airport has its own unique problems; therefore, it has its own unique solutions. What makes KBFI unique is largely the Boeing Commercial Airplane Company, which has a very large complex on the Airport that serves as the final assembly and delivery point for new Boeing 737 and 757 type aircraft before being delivered to the customer. In addition, KBFI has a very large base of general aviation (GA) activity, including based aircraft. This GA activity includes many charters (using B727s, B737s, B757s and A 320s), as well as those for professional sport teams playing in the Seattle area. Lastly, KBFI has scheduled small air carrier activity.

In the current edition of the Federal Aviation Administration's (FAA) National Plan of Integrated Airport Systems (NPIAS), dated 28 August 2002, KBFI is included as a "Primary Commercial Service" (PR) airport. For an airport to be eligible for FAA funding, it must be a part of the NPIAS. Commercial service airports are subject to the FAA's Federal Aviation Regulation (FAR) Part 139, which regulation includes Subpart D, Operations. Subpart D, used to be entitled "ARFF Operations", but was changed to simply "Operations" on 10 February 2004.

Just as importantly, satisfying FAR Part 139 requirements is the means by which an airport like KBFI receives an Operating Certificate from the FAA, e.g., without that Certificate (when the certificate is revoked by the FAA) an airport's airfield cannot be used by commercial air carrier activity. Specifically, Part 139 prescribes certification ..."for airports serving scheduled air carrier operations in aircraft designed for more than 9 passenger seats"...

Sub-task 1.2 addresses Part 139 and how it applies to KBFI in more detail.

In 1999, the King County Sheriff Office (KCSO), under a Memorandum of Understanding (MOU), took over the operation and staffing of the ARFF unit, airport security, safety inspection, wildlife management, issuance of Notices to Airmen (NOTAM) and driver training for airport and tenant employees. The last four items are typically associated with airport "operations".

The Airport Director and his staff, is responsible for the overall development, operation and maintenance of KBFI, including public safety, e.g., fire and police.

In addition to the recent changes to FAR Part 139, a number of other events have impacted airports like KBFI, including the tragic events of 11 September 2001, which forever altered the "landscape" of airport safety and security. Although the state of the U.S. economy in general can be considered a short term problem, the combination of the countries economic downfall, 9/11, SARs and the resultant negative impact on Boeing Commercial Airplane Company have negatively impacted the Airport's overall operations, although aircraft operations (landings and takeoffs) have increased to 311,530 in CY 2003 from 290,400 in CY 2001.

Other than the General Aviation, charter and Boeing Commercial aircraft activity, there is currently scheduled service provided by San Juan Airlines, on a seasonal basis, using Cessna Grand Caravan 208Bs (9 passenger seats) and Piper Navajo Chieftains PA-31-350 (8 passenger seats). Scheduled service is also provided by Helijet on a daily basis with Beech 1900 turboprops (18 passenger seats). There are approximately 426 based aircraft at KBFI, both fixed-wing and rotor-wing.

Finally, there is daily scheduled all-cargo service provided by Airborne Express, with B767, DC8 and DC 9 aircraft; Aeroflight, with Senecas and Cessnas; Airpac with Chieftains and Senacas; Ameriflight with Beech 1900s, Chieftains, Lear 35 and Metroliners; BAX Global with DC-8; Methon with Beech 18s; UPS with B-767, B-757, A-300 and B-727s; and, Mountain High Aviation with Trilanders

1.2 – FAR Part 139

A major amendment to FAR Part 139 was issued by the FAA on 9 February 2003 that primarily impacts small airports, which heretofore were not required to meet Part 139 requirements, as well as airports like KBFI. This amendment has changed a number of items within Part 139, especially for those airports that receive only scheduled small air carrier service with aircraft designed for 10-30 passenger seats. The changes in the new rule include, but are not limited to:

- Airports serving unscheduled passenger carrying operations with aircraft designed for at least 31 passenger seats;
- Changed the current term "air carrier aircraft" to incorporate having a definition for "small" (10-30 passenger seats) and "large" (31 and more passenger seats) air carrier aircraft;
- Introduces and defines four (4) new classes of airports based upon the type of operations, namely, Classes I, II, III and IV. These are defined as follows:

Class I: An airport certificated to serve scheduled operations of large air carrier aircraft, as well as unscheduled passenger operations of large air carrier and/or scheduled small air carrier aircraft.

Class II: An airport certificated to serve scheduled operations of small air carrier and unscheduled passenger operations by large aircraft.

Class III: An airport certificated to serve scheduled operations of small air carrier aircraft, but can not serve scheduled or unscheduled large air carrier operations.

Class IV: An airport certificated to serve unscheduled large air carrier aircraft, but cannot serve scheduled small or large air carrier aircraft.

Based upon this new classification system, KBFI has now been classified by the FAA as a Class I airport. This means that the revised Airport Certification Manual (ACM), which is a requirement of Part 139, is due by 9 June 2005 and the revised Airport Emergency Plan (AEP), which is an integral part of the ACM is due no later than 9 June 2006 Finally, the implementation of Section 139.319 (procedures for meeting ARFF operating requirements) must be implemented by 9 June 2007.

Other noteworthy changes to Part 139 that will apply to KBFI include:

- Introduction of a new term "clean agent", which is a product that replaces Halon 1211;
- Specifies that ARFF personnel must participate in at least one (1) live-fire drill ***prior to initial performance*** and have recurrent training every 12 months;
- Tightens the training for air cargo hazards to include hazardous materials and dangerous goods incidents;
- Added a requirement for a vehicle communication method that requires personnel to have contact with the common traffic advisory frequency when an air traffic control tower is not in operation;
- The AEP provides for response to an emergency involving the largest air carrier aircraft serving the airport. Specifically, § 139.325, (a) (3) states: "To the extent practicable, provide for an emergency response for the largest air carrier aircraft in the Index group required by § 139.325;
- The AEP must include responses to fires at fuel farms and/or fuel storage areas;
- Requires coordination of the AEP with the ASP wherever applicable;
- Training requirements (initial and recurrent) for individuals conducting airport inspections;
- Requires that the wildlife hazard assessment be conducted by a "qualified wildlife damage management biologist", who has professional training and/or experience in wildlife hazard management at airports. The wildlife hazard management plan is part of the ACM.

While there are other changes to FAR Part 139 in the Final Rule that was just issued, the above are applicable to this Report.

Current Sections of FAR Part 139 Relevant to this Report

Other than the changes to Part 139, there are some aspects of the current regulation in Subpart D that are applicable to this Report.

- Concerning ARFF vehicle performance standards, an ARFF vehicle must reach the mid-point of the farthest runway serving air carrier aircraft from its assigned post within 3 minutes from when the alarm is struck. Or, reach any other specified point of comparable distance on the aircraft movement area used by air carrier aircraft and begin application of extinguishing agent. Within 4 minutes from the alarm being struck, all other required ARFF vehicles must have reached the same point and begin application of extinguishing agent.

  Currently, KBFI is an Index A airport, which is the minimum designated index. Index A requirements must have one (1) ARFF vehicle carrying at least 500 pounds of sodium-based dry chemical, halon 1211, or clean agent; ***or***, 450 pounds of potassium-based dry chemical and water with a commensurate quantity of AFFF to total 100 gallons for simultaneous dry chemical and AFFF application. The ARFF Index is determined by the length of the longest air carrier aircraft having five (5) or more daily scheduled departures, or in the event there are less than five (5) daily departures of a single index category serving the airport, the next lowest index group would be the index for that airport.

  In the case of KBFI, the longest air carrier aircraft with five (5) or more daily flights is less than 90 feet, which falls into the Index A category. Furthermore, there is no current requirement in Part 139 to provide an Index level based upon all-cargo aircraft or charter (FAR Part 91) operations. Boeing aircraft that operate to/from KBFI are air carrier aircraft and do not operate under FAR Part 121

- ARFF training is a very critical segment of an ARFF unit's program. All ARFF personnel must be trained ***prior to initial performance*** of ARFF duties in a manner acceptable to the FAA. An airport's ARFF training curriculum for initial and recurrent training shall include at least the following areas:

  Airport familiarization (including airport signs, marking and lighting)
  Aircraft familiarization
  Rescue and fire fighting personnel safety
  Emergency airport communication systems, including fire alarms
  Use of fire hoses, nozzles, turrets and other appliances
  Application of all types of required extinguishing agents
  Emergency aircraft evacuation assistance
  Fire fighting operations
  Adapting and using structural and fire fighting equipment for aircraft rescue
  Aircraft cargo hazards
  Familiarization with fire fighters duties specified in the AEP

- At least one of the personnel on duty during air carrier operations must be trained and be current in basic emergency medical services (EMS), which includes 40 hours covering, as a minimum, the following areas:

  Bleeding
  Cardiopulmonary resuscitation
  Shock
  Primary patient survey
  Injuries to the skull, spine and extremities
  Internal injuries
  Moving patients
  Burns
  Triage

  This individual shall be trained prior to initial performance of EMS.

- In addition to the above, all ARFF personnel must participate in at least one (1) live fire drill ***prior to initial performance*** of ARFF duties and every 12 consecutive calendar months thereafter and a full-blown mock exercise held once every three (3) years.

These and other aspects of FAR Part 139 will be discussed in tasks 3.0 and 4.0 with regard to the current ARFF mode at KBFI with reference to alternatives.

1.3 – Overview of Current Airport Management Organization

The current organizational structure of Airport Management at KBFI is discussed in order to provide the backdrop for subsequent discussion concerning ARFF and law enforcement personnel. As previously noted, these two "public safety" services are provided by the King County Sheriff's Office under a Memorandum of Understanding (MOU). The Sheriff is an elected official of the County.

The MOU was effective on 1 January 1999 with a term of 6 months (through 30 June 1999)..."or until a replacement agreement has been executed, if such an agreement is finalized prior to 30 June 1999". A "replacement agreement" has not been executed.

The other employees are all full time Airport employees (FTE) administered by an Airport Director:

- Assistant Airport Director
- Business and Finance Manager
- Engineering Manager
- Planning Manager

Directly under the position of Assistant Airport Director are three operational sections including ARFF/Police, Operations and Compliance, and Maintenance.

1.4 – ARFF and Police Complement

The ARFF unit is comprised of 17 officers and one Captain contracted through the King County Sheriff's Office. This unit performs ARFF and police duties as well as some operational functions.

There are three (3) shifts, 0600-1400 (first), 1400-2200 (second) and 2200-0600 (third) hours for which there are, generally, 3-4 ARFF/Police personnel by shift, as well as three (3) administrative personnel (40 hour week) during the first shift, Monday through Friday. Besides the Captain, there is a Fire Prevention person and a Training Coordinator. The split between ARFF and police by shift is such that there will be a minimum of one (1) ARFF personnel to meet FAR Part 139 and the rest are assigned to the law enforcement/operational unit. Each member of the unit has a "take-home" police cruiser. As the personnel are cross-trained under both disciplines those who are on police duty carry their firefighting gear ("silvers", boots and SCBA's) in their cruiser trunks in case of an aircraft emergency or other event on airport requiring their involvement. Although this approach is in the minority, this arrangement is not unusual as there are other airports (New York's JFK and LaGuardia to name some) with cross-trained personnel within the "public-safety" sector.

The unit's ARFF Mission is comprised of the following:

- Aircraft Accident or Incident
- Aircraft Hijacking
- Bomb Threat
- Natural Disasters
- Civil Disorders
- Structural Fires

The current AEP discusses each of the above mission elements, some of which need elaboration at this point. An "aircraft accident or incident" is clearly the key element of the ARFF mission. However, some are not. For example:

Aircraft Hijacking: Primarily a law enforcement event that is the responsibility of the FBI, FAA and affected air carrier, while the Airport's role is limited to the coordination of forces on the Airport and providing assistance, as directed, to these agencies, even though the Airport's ARFF and law enforcement units will in all likelihood be first on the scene. As such, their role will be to prevent the situation from escalating until the FBI et al arrive.

Bomb Threat: Primarily a law enforcement event that will involve police from the King County Sheriff's Office Bomb Squad, Seattle Police Department Bomb Squad, FBI, Seattle and Tukwila Fire Departments, as well as the Boeing Company Fire Department.

Structural Fires: The Seattle Fire Department is the primary agency for combating structural fires on the Airport and the Tukwila Fire Department for a portion of East Marginal Way. The ARFF unit will respond within the Airport's boundaries, and back-up will be provided by the Boeing Company Fire Department.

Natural Disasters: Largely a law enforcement and Airport Division/Operations event.

Civil Disorders: Largely a law enforcement event.

The existing ARFF station provides the space for the ARFF vehicles, lockers, offices, as well as a holding cell and arms storage. See subtask 1.6 for more detailed information.

1.5 – Mutual Aid Agreements

The concept of mutual-aid is based upon one agency assisting another, upon request, without charge during an emergency and is viewed as a two-way street. In today's post 9/11 environment, it is not a question of whether or not there should be mutual aid agreements but with whom.

It should always be kept in mind that a mutual-aid partner may not always be available at the time they are needed because other agencies have their own mission and may be out on a call at the time needed.

Currently, there are no mutual-aid agreements in place at KBFI, except some "Letter of Agreements" (LOA) with the FAA's Air Traffic Control Tower (ATCT) at the Airport. These LOAs are for:

- Positive Control of Service Vehicles on Movement Areas
- Aircraft Emergencies (Procedures)
- Control of Aeronautical Lighting + other Visual Aids Owned and Maintained by KBFI and operated by the ATCT

In general, mutual-aid agreements between an airport operator and on/off airport agency, or communities, should be very clear as to the specific(s) and response. Beyond achieving that objective, there are no 'hard and fast' rules as to an agreement's contents but the following subjects should be addressed:

- Purpose of Agreement
- Scope of Agreement
- Definition of Terms
- Specific Responsibilities
- Available of Specific Equipment
- Specific Operational Procedures
- General Items and Amendments
- Signature Page

Currently, KBFI does not have any formal mutual aid agreements with any abutting community (the cities of Seattle and Tukwila), nor with the Boeing Commercial Airplane Company, which leases land on the Airport from the KBFI. This is mentioned because Boeing has its own ARFF department on the Airport that is used for the arrival and departure of Boeing aircraft only.

However, there exist informal agreements with these elements to "dispatch whatever equipment is available at the time of the emergency". Accordingly, the AEP includes the "anticipated mutual aid response" to be:

- Boeing Company Fire: 3 ARFF trucks
- Boeing Security: 6 cars
- Seattle Fire: 3 engines, 1 ladder, Medic 1 and aid cars
- Tukwila Fire: 2 engines and 1 aid car
- Seattle Police: 8 cars
- King County police: 5 cars

- Shepard Ambulance: 14 ambulances

1.6 – Existing ARFF Station

This sub-task documents the existing ARFF station at KBFI, which is located west of Taxiway 'B', roughly opposite Taxiway 'B-4', and just to the north of the ATCT. This building is 30 plus years old and is both outmoded and crowded. The building has two floors of roughly 2,700 square feet each, defined as follows:

First Floor

Apparatus Bays (2)
Holding Cell
Laundry
Exercise Room
Telephone room
Foam + Dry Chemical Storage and Equipment/Supplies

Second Floor

M/F Restrooms
Offices
Kitchen
Training Room
Computer Room
Observation Cab (Watch Room)

Since its initial construction, this facility has been expanded to add the second ARFF vehicle bay.

1.7 – ARFF Vehicles

As previously mentioned on page I-4, KBFI is an ARFF Index A airport, which means it must have, as a minimum, one (1) ARFF vehicle. KBFI, in fact has two (2) ARFF vehicles. Although not required by FAR Part 139 for Index A, having two (2) vehicles provides KBFI with a number of positives:

- Operational flexibility for attacking an aircraft fire;
- Ability to keep one truck on-scene, while the other returns to the ARFF station for foam and water re-supply;
- Trucks require maintenance from time to time, but if one vehicle is down for scheduled or unscheduled maintenance the other truck can still provide Index A coverage allowing the airfield to remain open.

This is not at all unusual as many other airports have the same approach for the above reasons and others.

The two vehicles are described as follows:

Fire Rescue 1 – 1993 Oshkosh 1500

1500 Gallons of water
205 Gallons of AFFF (Aqueous Film Forming Foam) Concentrate
500 Pounds of Halotron

Fire Rescue 2 – International Loadstar 1700

568 Gallons of Water
42 Gallons of AFFF Concentrate
500 pounds of Halon

For the purposes of this Report, it is not necessary to go into any more detail than above. However, it should be noted that the above vehicle capacities actually meet ARFF Index B minimum requirements.

1.8 – Operating Costs

The contents of this sub-task are based upon input and cost data from the Airport Director's office at KBFI as it applies to the KCSO's airport functions. According to the Airport, the costs for these functions account for approximately 22% of available financial resources and represents 25% of the Airport's staff (FTE).

The following table shows projected Annual Labor and Overhead costs based upon the existing contract between the Airport and the KCSO, although the figure for 2004 is an estimate.

Table 1
Projected Annual Labor + Overhead Costs
KCSO

	2004	2005	2006	2007	2008	2009	2010
LABOR + OVERHEAD	2,270,482	2,338,596	2,408,753	2,481,016	2,555,446	2,632,109	2,711,072
OPERATING EXPEN'S	227,740	234,572	241,609	248,857	256,323	264,013	271,933
TOTAL O + M	**$2,498,222**	**$2,573,168**	**$2,650,362**	**$2,729,873**	**$2,811,769**	**$2,896,122**	**$2,983,005**

Capital improvement costs (CIP) related to the Contract costs are projected to be as follows:

Table 2
Projected ARFF CIP Costs

	2004	2005	2006	2007	2008	2009	2010
Fire Truck (3000 gals)			$ 1,500,000				
Fire Truck (1500 gals)							1,000,000
EMT/Command Vehicle			75,000				
EOC Improvements			30,000		15,000		

The following table presents the historical ARFF labor and operational costs, on an annual basis, for the KCSO at KBFI. See Table

Table 3
Historical Annual ARFF Labor and Operational Costs
KCSO

	1999	2000	2001	2002	2003
LABOR	$ 1,273,240	$ 1,306,476	$ 1,538,319	$ 1,616,208	$ 1,643,591
OVERHEAD	179,062	190,185	209,075	219,529	345,042
DIRECT NON-LABOR COSTS	139,479	174,015	135,849	145,791	165,684
KBFI DIRECT COSTS	14,135	16,341	17,255	112,047	204,637
TOTAL	**$ 1,605,916**	**$ 1,687,017**	**$ 1,900,489**	**$ 2,093,575**	**$ 2,358,954**
% INCREASE BY YEAR		5%	13%	10%	13%

Based upon the estimated costs for 2004 ($ 2,498,222), the percentage increase over 2003 would be 6%. Thus, the total increase from 1999 through 2004 would be $ 892,306 or an average of 9.4% per year.

1.9 – Airport Emergency Plan

One of the requirements in FAR Part 139 is that an airport like KBFI must have an approved Airport Emergency Plan (AEP). Specifically, FAR Part 139.325 requires each commercial service airport with scheduled service with aircraft having 10 or more revenue passenger seats to develop and maintain an AEP. The AEP is the document by which the Airport's ARFF unit operates and

must be approved by the FAA. KBFI's AEP was approved on 21 March 2001, while an amendment to the document was recently approved on 23 February 2004.

1.10 – Operational Alternatives

There are four (4) basic alternatives to an airport for providing ARFF and police services and are (in no particular order of importance):

- Contract (as is currently the case)
- Internal Airport departments
- Airport tenants
- Privatization

A snapshot of these is discussed as follows:

Contract Services

This alternative is the current situation, which includes agreement between the KCSO and Airport Division regarding the number of personnel provided by the KCSO and operating expenses (ARFF vehicles and police cruisers, radios, clothing, etc.). Contract services are typically for a specific term.

Internal Airport Departments

This alternative would mean the ARFF personnel would be FTEs of Airport Division, while law enforcement could be provided in a number of ways. For example, as part of a "Public Safety" Department, which is commonly done at many commercial airports, e.g., ARFF and Police as FTEs to Airport Management, are placed under a "Director (or Manager) of Public Safety". Another alternative is to have the KCSO continue to provide law enforcement services only under an MOU or contract as is currently the case. Yet another alternative is to use Municipal or State police, who would be assigned to KBFI as "full-time employees". This latter approach is used at many airports, but wouldn't be much different than the current situation at KBFI with the KCSO.

Airport Tenants

At some airports, ARFF services, meeting the requirements of FAR Part 139 Subpart D, are provided by an on-airport military unit. This service can be either entirely provided by the military, or in support of an airport's ARFF department. Jackson International Airport (MS) and Pease International Tradeport (NH) are just two examples where the military provides all ARFF services. Honolulu International Airport is an example where the military ARFF unit (on Hickam Field) provides support to the airport's civilian ARFF department (and vice-versa in this instance).

Yet another alternative is where an airport tenant, similar to the Boeing Company's posture at KBFI, provides ARFF services in support of the airport's ARFF unit. An example of this is Memphis International Airport where FedEx has its own fire department for its facilities

and aircraft, and provides support to the airport's ARFF department. Such arrangements are typically spelled out in an MOU.

Privatization

This alternative is a variation of contractual services, the primary difference being that the "contract" would be with a private company as opposed to a public entity. While this approach exists at a few U.S. airports, there are not too many companies that provide ARFF service. These companies and their personnel would still have to meet all appropriate FAR Part 139 minimum requirements.

The advantages and disadvantages of each of the above will be discussed in sub-tasks 4.0 and 5.0.

1.11 – Terminologies

Very often, the use of certain terms and their definition can vary from airport to airport, sometimes causing unnecessary confusion.

Such is the possibility in this analysis for two words, which are defined as follows for this report:

Security: relates to federal regulations regarding development and implementation of airport security programs.

Law Enforcement: relates to an airport's law enforcement unit, with the power of arrest, responsible for enforcement of King County laws and the support of federal security regulations.

TASK 2.0 – BASELINE LAW ENFORCEMENT PROGRAM

This task documents and addresses the current security and law enforcement program at KBFI, including the mission, operational aspect, security, access control and related facilities. Like Task 1.0, this is an inventory function for use in subsequent tasks.

Some of the contents of Task 1.0 relate specifically to both ARFF and law enforcement at KBFI and will not be repeated in this task, specifically sub-tasks 1.1, 1.3, 1.4, 1.5, and 1.8. Furthermore, Task 5.0 addresses related aspects concerning federally mandated airport security requirements and what they might mean for KBFI.

2.1 – Current Law Enforcement Mission

In addition to the ARFF Mission provided by the King County Sheriff's Office (KCSO), as described in sub-task 1.4, the KCSO provides law enforcement services at King County International Airport (KBFI), as well as some operational functions.

The unit's current policing roll includes (in no particular order of importance):

- Random security checks (patrol) of the Airport perimeter including vehicle access gates;
- Airfield patrol;
- Monitor airside access and terminal building airside doors
- Escort of prisoner buses for U.S. Marshals; and
- Directs aircraft parking for some charter flights.
- Driver training on the airfield for airport employees

In addition, the unit provides what can be termed as functions typically undertaken by an "airport operations unit", and are:

- Self-Inspection Program;
- Wildlife Hazard Management;
- Fuel Inspection: and,
- Issuance of Notices to Airmen (NOTAMs).

An elaboration of the above is appropriate:

Driver Training

The KCSO is responsible for testing individuals applying for a driver's permit for operating on the aircraft operating area (AOA).

Self-Inspection Program

Section 327 of the Airport Certification Manual (ACM) addresses this function and states that there will be daily inspection using "Inspection Report" checklist. In addition to the daily inspection, inspection will take place when required by unusual conditions (weather or construction activity), or immediately following an aircraft accident or incident. FAR Part 139.317 includes specific "initial and recurrent" training regarding this task "to ensure qualified personnel perform the inspections" to include:

- Airport familiarization including airport signs, marking and lighting;
- Airport emergency plan;
- NOTAM notification procedures;
- Procedures for pedestrians and ground vehicles in movement and safety areas;
- Discrepancy reporting procedures.

This section of Part 139 prescribes a reporting system to ensure the prompt correction of unsafe conditions, as well as record keeping procedures. Some of these are "new" requirements found in the latest revisions to FAR Part 139.

Wildlife Hazard Management

This function is described in Section 337 of the ACM, although no specific roles or procedures are outlined. This function must comply with § 139.337 of FAR Part 139 recently revised with some major changes. For example, the assessment has to be done by a "wildlife biologist who has professional training and/or experience in wildlife hazard management at airports". A review of the plan has to be done annually.

Fuel Inspection

Section 321 of the ACM addresses this critical function, stating that there will be an inspection of all fuel related facilities (including fuel farms) and vehicles conducted every three (3) months. Per FAR Part 139.321, this function should occur "at least once every three months" and records maintained of these inspections for at least 12 consecutive calendar months.

Airport Condition Reporting

Section 339 of the ACM discusses the procedures concerning the issuance of Notices to Airmen (NOTAMs).

Additional KCSO specialty units are located on Airport property ("7300 Building) including:

- K-9 Teams;
- SWAT Team; and,
- Bomb Squad.

These units are resources available to the Airport upon request. A mobile command post is located at this site and is available for use during an emergency.

2.2 – Passenger Security Checkpoints

The following discussion is provided under the scenario if in the future "mainline" scheduled air carrier activity is provided at KBFI, therein, TSA operated passenger screening checkpoints would be required. The following describes the potential impact on law enforcement and security at the Airport.

The Transportation Security Administration's (TSA) 49 CFR Part 1542, Airport Security, specifically § 1542.215 addresses what an airport operator must provide with regard to law enforcement personnel. Basically, this regulation says that the airport operator shall provide law enforcement personnel (LEP) in numbers and in a manner adequate to provide support to the Airport Security Program (ASP) and to the passenger screening checkpoint. Other related sections are § 1542.213 (Training) and § 1542.219 (supplemental law enforcement personnel).

The KCSO presently does not provide LEO coverage at the Terminal for San Juan and Helijet operations, nor are they required to do so. A commercial airport must have a TSA approved ASP, not currently required at KBFI. To implement a passenger-screening checkpoint, the LEP would have to:

- provide an armed deterrence to criminal activity;
- respond to situations where an individual(s) is interfering with the activities of the screening checkpoint;
- take appropriate action if a violation of law occurs;
- when requested by an on-duty screener, assist in preventing prohibited items from entering the sterile area;
- notify Federal authorities to determine if the case will be handled in the Federal venue;
- provide for the overall security of the screening checkpoint, screener and passengers;
- take control of illegal items that are discovered at the checkpoint, such as firearms.

3.0 – FAR PART 139, SUBPART D

This task will document and address current and future changes (by issue) to FAR Part 139, Subpart D, Operations. The "future" aspect will include what may be needed if there is an introduction of "mainline" scheduled air carrier service at the Airport.

Current requirements of FAR Part 139, including the recently adopted changes dated 9 February 2004, were presented in sub-task 1.2 and will not be repeated here. Future requirements, discussed in subtask 3.1, will focus on the potential modifications and adjustments to the current ARFF program depending upon possible further changes to FAR Part 139 and/or air carrier operations.

3.1 – Possible Further Changes to FAR Part 139

In addition to the recent changes to FAR Part 139, Subpart D, presented in sub-task 1.2, there are, yet, other potential changes coming to FAR Part 139. A major review of Subpart D was submitted during the week of 15 March 2004 by the ARFF Requirements Working Group (ARFFRWG), which has been tasked by the Aviation Rulemaking Advisory Committee (ARAC) to study, rewrite, edit and/or delete portions of that document.

The ARFFRWG was established in the summer of 2001 and one of the key aspects regarding the formulation of the Working Group (WG) was to establish a balanced group that included equal representation from each stakeholder organization (aviation). In addition, the Co-Chairs sought to include airports from a range of ARFF Indexes, as well as diverse geographic locations.

The FAA uses the ARAC for the expressed purpose of developing new aviation related regulations, or revising existing ones. While the ARAC has a leadership role in revising existing regulatory or evolving new regulator documents, it is the FAA that has the final say as to what is and isn't changed or adopted. Nevertheless, the WG's recommendations play a key role in the adoption of aviation related regulations.

The ARFFRWG's enormous task included addressing, as a minimum, four (4) key issues:

- Minimum number of ARFF personnel (139.303);
- Airport ARFF Index (139.315);
- Minimum number of ARFF vehicles and amount of extinguishing agent (139.317);
- ARFF response times and location (139.319).

As previously mentioned, ARFF services are a very critical aspect of airport operations demanding more attention today than ever before. Consider the fact that ARFF operations are one of the few aspects of airport operations that must meet federal law, including the four issues mentioned above.

It is important to repeat that the above issues in Subpart D, essentially, have not been "touched" since 1972, during which time there have been many technological advances in aviation that – until now – have not been factored into these issues.

The WG's recommendations were submitted to the ARAC in February, 2004 and will be reviewed by ARAC before submitting the document to the FAA for their action. Given the number of years (4) that the newly adopted changes took to 'navigate' the course, it is difficult to estimate when this document will be accepted and then adopted by the FAA.

3.2 – Current FAR Part 139 and Future ARFF Operational Needs

Given the ever changing dynamics of civil aviation it is prudent to properly prepare for the future. In this regard, King County adopted the Airport's Master Plan which includes a "Forecasts of Aviation Demand". These forecasts "drive" the development of facility requirements, which in turn generate other related aspects such as airport operational needs. These "needs" would include ARFF and Police programs.

The forecasts in this Master Plan indicate that there could be scheduled service in the future with a "mainline" air carrier and that the 'critical aircraft' could be the B 737-700. If this forecast evolves KBFI's ARFF Index would change as follows:

- According to FAR Part 139.315, the B 737-700 (105' + long) would change the Airport's ARFF Index to change from A to B. Index B includes aircraft at least 90' but less than 126' in length.

The following depicts the minimum ARFF apparatus and extinguishing agent needed to meet the minimum requirements of Index B.

Index B – (Either of the Following):

- One vehicle carrying at least 500 pounds of sodium-based dry chemical, halon 1211, or clean agent and 1,500 gallons of water and the commensurate quantity of AFFF for foam production. Or,

- Two vehicles, one carrying either 500 pounds of sodium-based dry chemical, halon 1211, or clean agent; ***or*** one carrying 450 pounds of potassium-based dry chemical and water with a commensurate quantity of AFFF to total 100 gallons for simultaneous dry chemical and AFFF application. One carrying an amount of water and the commensurate quantity of AFFF so the total quantity of water for foam production carried by both vehicles is at least 1,500 gallons.

As outlined in sub-task 1.7, the two (2) current ARFF vehicles owned by KBFI meet and exceed the above minimum requirements for ARFF Index B. However, the current ARFF vehicles are quite old and will eventually need to be replaced.

As an aside, ARFF Index C would be required if scheduled air carrier passenger service were provided using B 737-900 "large air carrier" aircraft.

ARFF Training

As previously noted in Task 1.0, page I-4, a very critical aspect of the recently revised Part 139 is ARFF training requirements, however, that discussion will not repeated here.

Currently the KCSO provides ARFF training in two phases, an overview of which is as follows:

Phase One

- Airport familiarization;
- Operational area inspection;
- Fuel spills and wildlife management protocols;
- ARFF duties – personal protective gear;
- ARFF apparatus familiarization;
- Extrication and rescue equipment familiarization;
- Aircraft fire suppression systems;
- Onboard hazardous materials;
- Tactical ARFF considerations;
- Communication procedures, evidentiary and scene management;
- Hazardous materials – aircraft hazards;
- ARFF – certification training.

The ARFF unit candidate must be able to successfully perform the above requirements. Upon successful completion of Phase One, the candidate will obtain fully qualified status. Phase Two will be completed when the candidate is assigned to a shift with a mentor.

Phase Two

- Airport orientation;
- Familiarization with special event facilities, supplemental aircraft parking and protocols, etc;
- Miscellaneous duties and responsibilities required of an airport police and ARFF unit officer;
- ARFF apparatus familiarization;
- Extrication and rescue equipment familiarization (tools, ladders, etc.);
- Tactical firefighting procedures (onboard hazardous materials);
- Aircraft onboard systems familiarization;
- Communication procedures – evidentiary and scene management (planning a response route, etc.);
- Hazardous materials – aircraft hazards (working knowledge of potential hazmat carried by all-cargo carriers, etc.);
- Critical incident stress debriefing;
- ARFF – outside training (live-fire, etc.);
- Supplemental structural/ARFF training;
- Supplemental airport operational training (basic airport safety operations and dealing with utility emergencies);
- In-house (knowledge of hydrants, standpipes, EMS/CPR, etc.).

It should be noted that some of the above are included due to the airport operational aspects of the current MOU. They are not required for meeting Part 139 training requirements. In the spring of 2004, the FAA approved the current ARFF training program at KBFI per the minimum requirements of FAR Part 139.

Emergency Medical Services

According to the current Airport Emergency Plan (AEP), Emergency Medical Services (EMS) are provided by the City of Seattle or Tukwila Fire Departments.

TASK 4.0 – ALTERNATE STRATEGIES FOR ARFF SERVICES

The purpose of this task is to discuss realistic alternative strategies for ARFF services at KBFI compliant with FAR Part 139, subpart D, including the advantages and disadvantages of each alternative. Due to the unique way these services are currently provided, this analysis will describe alternative strategies regarding law enforcement services.

By their very mission law enforcement and fire services are separate. This means that one discipline cannot be discussed in a vacuum without the other. In accepting this axiom, this task will also address what alternate strategies might be made to the current ARFF functions at KBFI to enhance current and meet future airport requirements and operational structure needs.

To express it another way, the law enforcement and ARFF functions at KBFI must be addressed in concert with each other.

4.1 – Factors To Be Considered

Before discussing each alternative strategy, which will begin with a baseline condition (or the existing situation), a discussion of various advantages and disadvantages from an airport operating perspective is appropriate to 'set the table' for the recommendations that will be made in Task 7.0. These factors will be applied to each alternative strategy.

These factors are not in any order of priority:

- Efficiency.
- Flexibility.
- Operating and labor costs.
- Applicable federal and county regulations.

While there may be other factors, the above are the more critical elements to be address with regard to the Airport's situation and needs. Some factors will overlap with others and some can be combined "efficiency and flexibility".

4.2 – Baseline Condition

A brief review of the existing situation at KBFI with regard to ARFF and law enforcement (public safety) services is appropriate. This baseline condition is one of the alternative strategies that will be addressed in this task.

To repeat, both public safety functions are provided by the King County Sheriff's Office (KCSO) under contract to KBFI wherein the KCSO personnel at the Airport are cross-trained in order to provide services for both functions.

It is important to this analysis to correlate the baseline alternative with the current operating scenario at KBFI, which can be summarized as follows:

- KBFI is an ARFF Index A facility;
- KBFI is not required to provide law enforcement support per Transportation Security Administration's 49 CFR Part 1542, Airport Security, which includes not having to develop an Airport Security Plan (ASP) for TSA's approval;

- The Boeing Company provides ARFF services on the Airport during the operation (landing and takeoff) of Boeing aircraft only, or if requested by the KBFI in support of all other aircraft operations. The Boeing Fire Department is full-service and responds to EMS, Haz Mat, rescue/mitigation, structural, aircraft accidents, confined space rescue, water rescue and motor vehicle accidents;

- The KCSO mission includes selective "airport operational" roles;

- The current size of the KCSO unit at KBFI is 17 personnel, plus a Captain for ARFF, police and airport operational functions;

- ARFF, police and operational coverage is provided 24/7.

An Airport Operations + Compliance unit is responsible for aircraft noise impacts, FAR Part 139 compliance, the ACM and AEP, event coordination, facility scheduling, tenant lease compliance and construction coordination. This unit reports to the Assistant Airport Director.

4.2.1 – Operational Efficiency/Flexibility

The argument can be made that the existing situation, e.g., cross-training of personnel, provides an efficient operation with a great deal of flexibility. Aside from the existing MOU, this argument can be expanded for this analysis.

Even though there is always 'danger' in comparing one airport to another, it is best to compare airports with e.g. similar size, operations, ARFF Index. It is appropriate to relate the current condition at KBFI with that of another airport, albeit an airport much larger in terms of scheduled passenger operations and physical 'plant', in this case Dallas/Ft. Worth International Airport (DFW).

Similar to KBFI, DFW's police and fire services, until October 1, 2003, were provided by cross-trained personnel, except they did not perform any operational role. DFW's staff was all trained as ARFF, law enforcement officers (LEOs) and Emergency Medical Technicians (EMTs). This is no longer the case, as DFW changed to a Public Safety Department with separate ARFF and Law Enforcement departments under a "Director of Public Safety".

Why did DFW make this change? Here are some reasons:

- Personnel wanted the opportunity and preferred to be "one or the other" (fire fighters or law enforcement personnel);
- Greater efficiency and proficiency;
- Lower training costs (both initial and recurrent);
- Savings in overall operating costs.

Their decision was based upon the evolution of DFW and related safety service demands. DFW management identified inefficiencies and costs in having to certify all public safety personnel in law enforcement, ARFF and Emergency Medical Services (EMS) disciplines and the need to maintain skills in each discipline. Further, because of personnel rotation requirements, many ended up in a position they did not want. Personnel now apply to the service discipline they desire. Members

are provided the opportunity to decide which discipline they want at the time of hiring. Those already employed were placed in the discipline they were in at the time of the change over. Only a handful wanted to be on the other "side" on the day of the change. Since the change over, training costs have been reduced and performance within each discipline has been increased.

It should be noted that DFW still provides some basic training for both disciplines regardless of which 'side' they choose. This relates back to the obvious overlaps in both disciplines, for example, cardiopulmonary resuscitation (life-saving techniques). Also, the fact that the impact of 9/11 and subsequent terrorist events, as well as emerging public health threats (SARs, ECOLI and other infectious diseases), demand a different approach. Today, airports must provide public safety functions over and above that required in the past. This last point should not be ignored for one very good reason and that is, if there is a terrorist type of attack on an airport, ARFF and law enforcement units will be the first responders, not mutual-aid. Thus, the preparation and training for these possibilities become an added element of the public safety mission.

Flexibility from the standpoint of staffing under this scenario is not easily assessed. Take, for example, the person assigned on a shift as a fire fighter who becomes ill and is sent home. From the standpoint of cross-trained personnel, it can be argued that flexibility is enhanced because a person on the police side can be used to fill the void on the ARFF side. This, currently, is important because the ARFF services are regulated by FAR Part 139, i.e., even though Part 139 indicates minimum numbers of ARFF personnel only by virtue of the number of the required ARFF vehicles. Law enforcement services in support of security at KBFI are not currently regulated by Federal Law.

However, the same argument could be made if the ARFF and law enforcement services were separate units, as another fire fighter could be called in to supplant the void. This aspect (flexibility), then, can be considered a "wash", e.g., no clear cut advantage one way or another.

It is difficult to assess if cross-trained personnel (versus a separate ARFF unit) would provide improved services in response to an aircraft accident. Training becomes a critical element as well. It can be argued that both approaches would include initial and recurrent training, as required by FAR Part 139, in addition to an individual's self-training program. The latter point is important as a person dedicated to ARFF services only would probably take the time and effort to further their career through self-training in addition to what FAR Part 139 requires as a minimum. And the reverse would be true, e.g., a person entering the KCSO unit may not want to be a firefighter, only a law enforcement officer. All of this discussion impacts potentially, efficiency and proficiency.

One important item that is applicable to the discussion of ARFF training is that the latest revisions to FAR Part 139 clearly states that ARFF personnel must participate in at least one live-fire training drill ***prior to initial performance*** and a recurrent live-fire drill every 12 consecutive calendar months. The KCSO does require live-fire training for each applicant to the Airport prior to receiving their commission. Further, training requirements for ARFF personnel were changed to include an expectation of on-going training, in addition to just a once-a-year course.

Other changes to FAR Part 139 that could impact this current situation include, but are not limited to:

Wildlife Hazard Management

Must be undertaken by a "wildlife biologist, who has professional training and/or experience in wildlife hazard management at airports".

Self-Inspection Program

Requires initial and recurrent training for persons conducting airport self-inspections and adds more items on which the individual must be trained.

Since the existing situation includes the fact that the KCSO undertakes these and other airport operational issues, the above become germane to this discussion.

Similarly, airport security has become more critical due to 9/11 and other events, which mean improvements of airport security need to be made where applicable including:

- Threat assessment procedures;
- Use of technological enhancements;
- Development of an Airport Security Program.

A dedicated law enforcement unit could better serve these and potentially other factors associated with airport security.

4.2.2 – Current Airport Operating and Labor Costs

Certainly operating and labor costs can be considered as the most major factor in this analysis. Much of the following discussion is based upon data provided by Airport Management, which is responsible for capital improvements, operation and maintenance of KBFI.

As pointed out in Task 1.0, KCSO took over ARFF services, law enforcement and selective operational functions in 1999, through an MOU. Since 1999, labor, overhead, direct costs to KBFI and operating expenses have increased by $892,306.

According to Airport Management, KBFI cannot continue to absorb increases of this magnitude. Currently, the KCSO operation at KBFI accounts for 22% of available financial resources and 25% of the staff assigned to the Airport. Costs by the KCSO operation have risen by more than 29% over the past three (3) years

Since 2001, the Airport has experienced reductions in aircraft operations (landings and take offs) with the commensurate drop in revenue generators. For example, fuel usage by aircraft has slowed resulting in declining fuel flowage fees and transient aircraft operations, which generate landing fees. However, aircraft operations have been increasing in recent times as shown on page I-2 in Task 1.0.

Operating costs have surpassed revenue resulting in operating deficits, which have caused a reduction in the Airport's Fund Balance. During the 2004 Budget Preparation process, the Airport balanced the budget not only for 2004, but, also, for 2005 through 2007. A balanced budget

preserves the Airport's Fund Balance by providing a cash reserve to meet extraordinary expenses, which are unanticipated costs. In order to balance the budget, Airport Management developed a cost containment plan that reduced costs while simultaneously providing the means to properly maintain and repair the Airport's infrastructure and building assets.

Table 1 in Task 1.0 presented projected annual labor and overhead costs for the KCSO from 2004 through 2010, which represents an approximate increase of 19.5% over that span of 6 years based on an average of 3.0% per year.

4.2.3 – Applicable Federal and County Regulations

The applicability of Federal regulations, through FAR Part 139, would apply to any scenario for the provision of ARFF services. Currently, there are no such Federal regulations for law enforcement in support of security services at KBFI, which means this factor would be the same regardless of the alternative. However, as mentioned in Task 2.0, under a "what if" scenario, if scheduled passenger service by a large air carrier aircraft starts in the future, Federal security regulations as promulgated by the Transportation Security Administration (TSA) would need to be met, as well as higher ARFF Index requirements.

The Airport will need to comply with forthcoming regulations from the TSA with regard to all-cargo and General Aviation security. For more discussion on this issue, refer to Task 5.0, which discusses the potential TSA requirements concerning air cargo and GA security. Furthermore, KBFI has aircraft operators that must comply with TSA 1544, e.g., for private charters.

4.3 – Department of Public Safety

Simply put, establishment of a Department of Public Safety (DPS) would be a separate department within the Airport Division that has a "Director" of Public Safety, who would report to the Assistant Airport Director. This is a very common approach at many U.S. airports.

4.3.1 – Operational Efficiency/Flexibility

Much of the discussion under 4.2.1 is applicable to this subtask and will not be repeated, except to summarize by stating that:

- A DPS provides the employee with the opportunity to be either a firefighter or an LEO, e.g., there are persons who do not like being available to either discipline;
- A DPS can provide just as much – if not more - efficiency and proficiency;
- A DPS can lower training costs;
- A DPS can provide the opportunity to lower operating costs.

An elaboration of each of these statements is appropriate;

Department of Public Safety

The focus on fire protection and emergency medical services should consider the statutory and regulatory requirements for these disciplines. A "service delivery" baseline needs to be established (what's required) by a risk assessment from which a systemic support program (including mutual aid, identified, or, projected risks and hazards) can be evolved. The baseline is built around the probability rate of an event, for example it is logical to conclude from a risk standpoint that an EMS response is more likely to occur than an aircraft accident.

Establishing such a baseline can be undertaken using a systemic approach for life-safety issues as follows:

- Risk management program;
- Hazard reduction program;
- Accident prevention program;
- Development and execution of emergency plans, resource lists and support (mutual aid) agreements;
- Undertaking of training programs, drills and exercises;
- Development of rapid response teams and intervention;
- Reduce the possibility of secondary damage (escalation of a fire);
- The rapid recovery and restoration of the airport to pre-emergency conditions.

Airports, regardless of their size and mission, are vulnerable to a multitude of potential emergency and disaster situations, which can cause widespread disruption to the operation of the airport, affecting the lives of people and consequent adverse impact to an airport's economic 'engine'.

Under the Robert T. Stafford Disaster Relief and Emergency Assistance ACT, P.L. 93-288 as amended, both statutory and governmental authorities are legally responsible for ensuring that necessary and appropriate actions are taken to protect people and property from the consequences of emergencies and disasters.

Consideration, therefore, must be given to not only just meeting the minimum requirements of FAR Part 139 but going the "extra mile" by instituting measures to reduce the risk of loss of human life as well as economic and environmental costs. Beyond FAR Part 139, appropriate attention must be given to ensure compliance with applicable state, county and/or local fire life-safety codes, which will be required with any airport renovations or new building construction. Having dedicated ARFF and law enforcement units would help to foster this need.

Efficiency and Proficiency

While there is no 'hard and fast' model regarding fiscal efficiency and operational proficiency to refer to, the use of dedicated fire and police service units, versus cross-trained personnel, can enhance skill levels through a single discipline that is focused on in-service and specialty training, as well as with multi-agency exercises. Further, proactive programs can be launched with airport tenants in the areas of risk management, property loss reduction, fire safety inspections, etc.

As a dedicated unit, ARFF and EMT (Emergency Medical Technician) personnel would be able to stay abreast with innovations and emerging technologies concerning advances in life-safety techniques, equipment and associated training requirements. More efficient integration will be realized with off-airport mutual-aid departments in the area of equipment compatibility. It is

incumbent upon the airport operator to ensure that fire fighting equipment is compatible with these other departments (mutual-aid) since they will be supporting emergency operations on the airport.

To put this in another way, ***interoperability*** is a key word. Experience has shown that there are cost savings when multiple fire departments purchase similar equipment using the same specifications.

Another example of why there is support for a dedicated ARFF department is that airport fire services need to ensure that there are adequate fire hydrant and water distribution systems (sprinkler systems) to support fire fighting operations on the airport. A dedicated fire unit would be able to comply with these issues, e.g., they would not lose sight of these statutory issues and better understand requirements involving life-safety codes, etc., as they would be dealing with these issues on a daily basis.

Does someone wishing to be an LEO have an interest and knowledge of fire statutory requirements? An individual dedicated to fire service is needed "at the table" to address statutory and regulatory needs.

Based upon risk factors (an aircraft accident, hazmat spill, etc.), airports generally have a leadership role in disaster planning with a multitude of agencies and jurisdictions at the local, state and federal levels. Essentially, on-airport emergency services represent a first tier response element that must be supported by a supplemental emergency response system including specialty teams such as Hazmat, technical rescue (confined space and below grade rescue) and, if applicable, water rescue, all of which require varying degrees of training over and above minimum requirements (pro-active program).

Typically, over the course of a year at a commercial airport, emergency medical incidents 'generate' the highest number of responses for an ARFF department. Therefore, an airport needs to have an integrated emergency medical and public health response system, with transportation links to medical care facilities. This means that system protocols and mechanisms must be in place. For example, patient care and transfer protocols are needed today due to new age threats, etc.

The objective is to prevent the escalation of an incident and to ensure there is a hi-performance response with mutual-aid partners.

Training Costs

Under a DPS, the minimal annual training requirements, based upon experience at two airports elsewhere in the country, are discussed as follows:

	Law Enforcement		ARFF
Certification:	40 Hours	FAR Part 139:	120 Hours
First Aid:	8	EMT:	40 - 160
Hazmat:	8	Hazmat:	8 - 160

According to one airport, the above law enforcement training is not done while the participant is "in-service" (on-duty), which would require that person's position to be back-filled. This probably

means having to incur overtime, as opposed to the ARFF training which is typically done while in-service. The above are basic minimum requirements no matter the structure of the ARFF unit, although requirements may vary from state to state, locally, etc.

The hours shown under ARFF above generally include initial to recurrent training, while the "160 hour" figure for EMT training would mean for certification, as well as for Hazmat wherein the "160 hour" figure would be for technical certification. The "8 hour" figure for Hazmat training is only for basic training, e.g., awareness, identification and containment.

Additional training is required for structural fire fighting and/or proficiencies under special operations categories, e.g., technical rescues.

Operating Costs

A proactive program of safety, working in partnership with airport tenants with appropriate measures to reduce risks and rates of incidents, can optimize life-safety and reduce costs associated with the disruption of daily airport operations.

A dedicated ARFF unit should be able to provide greater rapid intervention as part of a broader fire protection strategy that will improve an airport's Insurance Service Organization (ISO) rating, resulting in lower fire insurance rates. Also, a dedicated ARFF unit is well trained, for example in the case of an aircraft accident or incident, to get the airfield "re-opened" as quickly as possible and, therefore, get the airport back in business.

Operating expenses associated with a dedicated unit would be lower because such items as a cruiser and all the associated costs for each member of the KCSO at the airport would be eliminated or reduced.

4.3.2 – Projected Airport Operating and Labor Costs

Based upon data provided by the Airport Division the following tables compare the "Contract" approach with having a separate (internal) ARFF unit as part of a Public Safety Department for both projected labor and operating expenses.

Table 3
Projected Annual Labor + Overhead Costs
Contract V. Internal

	2005	2006	2007	2008	2009	2010
CONTRACT	$ 2,338,596	$ 2,408,753	$ 2,481,016	$ 2,555,446	$ 2,632,109	$ 2,711,072
INTERNAL (SEPARATE ARFF UNIT)	1,149,943	1,184,441	1,219,974	1,256,573	1,294,270	1,333,098

The "Contract" figures include labor and overhead, while the "Internal" figures include labor and overtime.

A similar comparison of projected operating costs is as follows:

Table 4
Projected Annual Operating Expenses
Contract V. Internal

	2005	2006	2007	2008	2009	2010
CONTRACT	$ 234,572	$ 241,609	$ 248,857	$ 256,323	$ 264,013	$ 271,933
INTERNAL (SEPARATE ARFF UNIT)	211,000	141,665	144,707	147,823	151,015	154,285

Projected capital improvement related to ARFF and police functions were not included since these costs could be attributed to any alternative considered and would be the same regardless of the alternative recommended.

The basis for the projected labor and overhead costs established for a separate ARFF unit (as part of a Public Safety Department) is as follows, using 2004 starting salaries :

Position	***Annual Salary***	***Benefits***	***Total Cost***
ARFF Chief (1)	$ 81,500.00	$ 28,525.00	$ 110,025.00
Admin. Assistant (1)	$ 37,500.00	$ 13,125.00	$ 50,625.00
ARFF Officer (4)	$260,000.00	$ 91,000.00	$ 351,000.00
Firefighter (8)	$448,000.00	$156,800.00	$ 604,800.00
	$ 827,000.00	***$ 289,450.00***	***$ 1,116,450.00***

Table 3 depicts these salaries from 2005 through 2010, while the above reflect 2004 for the purposes of this analysis. Furthermore, the number of personnel are based upon the current Airport ARFF Index and twenty-four (24) hour shifts each staffed by one (1) officer and two (2) firefighters in a four (4) platoon system. A typical work schedule would be:

- 24 hours on
- 48 hours off
- 24 hours on
- 4 days off

The ARFF Chief and Administrative Assistant would be on a 40 hour week, Monday through Friday.

4.4 – Airport Tenants

As explained in Task 1.0, subtask 1.10, ARFF Services can be provided by on-airport military or another airport tenant, still having to meet the requirements of FAR Part 139. The "costs" for such services are usually developed as part of the tenant's lease agreement with the airport. Since there is no military unit on the Airport to be considered for this role, the only 'player', potentially,

under this scenario would be the Boeing Company, which leases land from the Airport Division and who has a fire department on the Airport with the following equipment:

- Two (2) 3,000 gallon Oshkosh ARFF Vehicles
- One (1) 5,000 gallon water tanker
- EMS unit
- Structural unit

The structural unit is used only for responses to Boeing facilities on the Airport, however, if requested by the Airport, can provide back-up service to other Airport facilities. Currently the ARFF vehicles are used for Boeing aircraft operations (landings and takeoffs) and, when requested by KBFI for all other operations. The two (2) ARFF vehicles would easily meet the current ARFF Index requirements of FAR Part 139 for KBFI.

Since the costs for an airport tenant to provide ARFF services is normally an integral part of a tenant lease, the costs cannot be known for the purposes of this analysis. However, under the right circumstances, this could be a viable alternative as it could be viewed as a "win-win" situation for both the tenant and the airport. An example – recognizing each airport is unique – can be where a tenant provides ARFF services in exchange for reduced lease fees, as well as other 'enhancements'. Boeing is viewed as a major stakeholder and might be receptive to a program in which their ARFF unit plays an increased role.

4.5 - Privatization

As with any alternative, this one would have to meet or exceed minimum FAR Part 139 requirements. As alluded to in Task 1.0, there are not many companies in the U.S. that provide such services and there is a reluctance to deviate far from their geographic location. A major difference with this approach is that ARFF services are put out for bid. Typically, the bid document contains the following provisos with some variations:

- Five (5) year term. Some could some specify a specific term (like 3 years) with two additional option years;

- The airport establishes the number of total full time Employees (FTE) personnel, as well as the number per shift with hours of coverage. At an Index C airport the bid specified fourteen (14) personnel with a minimum of four (4) per shift, which includes one (1) officer. In addition, there would be a full-time ARFF Chief during normal business hours Monday through Friday;

- The contractor would maintain the ARFF vehicles, equipment and ARFF station in a clean and neat appearance;

- The airport operator would provide all ARFF vehicles and equipment although the contractor is liable for damages to the ARFF vehicles. The airport operator would provide medical equipment and supplies, foam, etc.;

- The contractor could be responsible for maintaining and recharging SCBAs, with repair costs covered by the airport;

- The airport would establish minimum mandatory requirements and qualifications for all of the contractor's ARFF employees, including the Chief;
- The contractor would be responsible for the cost of employee training (including the training equipment) and uniforms, protective clothing, etc.;
- The airport would establish the ARFF mission;
- The airport would require that all contracted employees are qualified EMTs with a minimum of one (1) EMT on duty at all times;
- The airport could propose recommended starting rates for each position.

Since this alternative is based upon a bid process, it is not feasible to estimate the total bid costs. Although bid costs from other regions could be stated, they might not be applicable due to differences in cost of living, etc.

Nevertheless, this alternative would be similar to having a separate (internal) unit providing ARFF services in terms of costs and control of their operations.

4.6 – Law Enforcement Options

Similar to alternatives available to an airport operator for ARFF services, such options exist for providing law enforcement at an airport:

- A State, county or municipal police force under contract to the airport owner and operator;
- The airport's own police force;
- Private Contractor.

It should be noted that a privatized police force is not a viable option due to the fact that they would have to be armed. This could pose complications with regard to applicable state or county laws and working within a public facility for a public entity.

A law enforcement unit as part of a new "Department of Public Safety" provides many advantages, including:

- LEOs would be under the same direction and control as the ARFF unit, thereby, providing a viable and cohesive unit to respond to the possible future scenario of scheduled large air carrier service. If that event occurs, the extensive security requirements of the Transportation Security Administration (TSA) could be facilitated by a dedicated law enforcement unit. See further discussion in subtask 4.6.1;
- Under one Director to foster a unified and cohesive unit;
- Provide an opportunity for those who prefer to be a law enforcement officer only to devote 100% of their time to security related matters including training;

- Improved labor and operating cost controls;

Assuming costs can be controlled, a viable option would be to contract with a state, county or municipal police force through a fair negotiation process. Depending upon the on the number of flights, LEOs could be assigned to the airport for just the hours of air carrier activity if it is for only a few flights. However, other police activity like perimeter patrol on a 24/7 basis would have to be considered.

4.6.1 – Other Potential Security Impacts

With the possibility of future scheduled air carrier service, meeting TSA Part 1542 requirements and other considerations would impact the Airport's work load in support of these security requirements. For example, it is conceivable that staff LEOs) would need to be hired to operate an EOC, e.g., observe camera monitors, operate (toggle) camera monitors and the access control system. Also, LEOs would need to be within adequate proximity of passenger screening checkpoints in order to respond to an incident within a specific time frame. This requirement of Part 1542 suggests that a person with 100% of their time devoted to law enforcement can meet the security related needs of Part 1542. It is conceivable that with the current KBFI's cross-trained approach that Part 1542 requirements might be difficult to meet, given the possibility that an officer would have to respond ***as a firefighter*** to assist the ARFF personnel (1-2) on duty.

Additional discussion is provided in Task 5.0.

5.0 – ALTERNATE STRATEGIES – AIRPORT SECURITY

The primary purpose of this task is to examine not only access control issues under the Transportation Security Administration (TSA) §1542, but the general influences that may evolve in other TSA and Department of Homeland Security initiatives that could affect KBFI now and in the future. One objective will be to identify what would be required by TSA if scheduled passenger service by aircraft with 31 or more seats were to be provided in the future at KBFI.

This task will discuss alternative strategies as to how best to provide security services that would be required under this "what if" scenario, much like the preceding task regarding ARFF services.

Finally, based upon this task and Task 2.0, a series of recommendations will be developed for the Airport Division to consider in Task 7.0.

5.1 – Department of Homeland Security

Department of Homeland Security (DHS) is currently evolving into the "super agency" of domestic security initiatives; there are 22 Federal agencies being merged into the single DHS oversight agency including TSA, Customs, Immigration, Federal Protective Service, Animal & Plant Health Inspection Service (APHIS), Federal Emergency Management Administration (FEMA), Office of Domestic Preparedness, and many more. While in the context of KBFI development, the Airport Division is primarily interested in the potential impact of TSA regulatory requirements. However, KBFI must remain aware of the fact that TSA has intermodal responsibilities, and that other DHS agencies also have the potential for an extensive operational and regulatory impact. For example, Immigration + Customs will have significant impacts on trans-border cargo traffic and the resulting security requirements for design, staffing and operations. Moreover, since DHS is only recently addressing other transportation modes, it is difficult to 'anticipate' what changes might be forthcoming for airports as a result of new initiatives emanating from security regulations for these other modes.

While this task will address potential TSA requirements in the following sub-task, a brief examination of legislative history will help to put DHS influences into perspective.

Following the 9/11/01 terrorist attacks, Congress passed the Aviation Transportation Security Act (ATSA) on 16 November 2001, which created the TSA and took effect on February 17, 2002. Although TSA was created to be a multi-modal agency with responsibilities in aviation, maritime, rail, highways and pipelines, its first order of business was a significant number of aviation-specific Congressional mandates with relatively short deadlines.

TSA immediately began to transition FAA security jurisdiction to TSA, and although most of the FAA security regulations were retained as-is by TSA, at that time, the new agency began to structure itself to meet the new and considerably higher-level security environment paying almost exclusive attention to aviation.

DHS was not created until June 2002 and was structured to bring 22 Federal agencies under one regulatory roof. There were a number of both expected and unanticipated administrative hurdles in simply identifying the missions, tasks and hierarchies of those various agencies and their existing and expanded roles, including those of the still developing and expanding TSA.

The point of this discussion is that TSA had already begun its developmental processes independent of the then non-existent DHS, and was progressing down its regulatory road as part of the Department or Transportation when it then had to regroup under the aegis of DHS and numerous other Federal agencies, including several with conflicting and overlapping law enforcement jurisdictions.

As of this writing, there are a number of DHS jurisdictional issues still to be resolved, including several that directly affect TSA, and a rather extensive array of possible outcomes on many fronts. This is not to say they are either negative or positive, or even neutral influences, only that many issues remain unknown as KBFI seeks to make its mid-to-long term planning decisions. Thus, any decisions must retain a degree of flexibility to accommodate what will most certainly be a series of changes in the regulatory structure of both DHS and TSA.

There are also a number of parallel Federal and DHS programs, such as Customs and Immigration (discussed below) that would come into play in the event that various forms of commercial traffic come to KBFI in the future. Some have the potential to enhance the marketing position of the Airport, while some could prove to be expensive and operationally burdensome for the level of traffic that may be gained. For example, Immigration and Customs currently have major influence on security design for airports with international traffic. In this regard, the issue of on-site, or on-call, FIS services could be costly if the latter.

5.2 Potential TSA Requirements

Subtask 2.2 of this report referenced the requirement for airports to provide adequate Law Enforcement Personnel (LEP) to carry out an airport's approved Airport Security Program (ASP). The next issue that the Airport should be cognizant of is whether the TSA will require KBFI, if scheduled commercial traffic is ever realized, to adopt a Complete ASP, a Supporting ASP, or a Partial ASP, each of which requires certain levels of security and will impact the operations and responsibilities of LEP.

In considering the advantages and disadvantages of each of the following approaches, one must recognize that the type of ASP that must be adopted by an airport is dependent upon the level of air carrier service that an airport provides the public. This level of service will determine the security requirements that an airport must implement. Understandably, larger aircraft get more extensive security, which may or may not be appropriate to the threat, whether real or perceived. Further, in addition to added physical security, that "more extensive security" has a fairly heavy administrative component in the form of training, record keeping, reporting and TSA oversight that may be disproportional to the added levels of commercial service.

Beyond the protection or diversion of the traveling public from presumed threats of terrorism or other criminal activity, there are few added advantages beyond protection of the airport and air carrier assets. Security is virtually all a considerable overhead expense whose major payback is an avoidance or mitigation of disastrous occurrences.

Levels of Service

Airports that accommodate *scheduled passenger* or *public charter* service in aircraft with seating configuration of OVER 60 seats are required to adopt the **Complete Program**. It is important to note that the actual seating configuration of an aircraft is not relevant to this threshold. The test is whether the aircraft was *certificated* for over 60 seats, not how it may be currently configured.

A Complete Program will require an airport to establish at least one Secure area, along with advanced access controls to the Secure Area, a Security Identification Display Areas (SIDAs), and an Air Operations Areas (AOAs), as well as establishing adequate law enforcement support to carry out security functions outlined in the Complete Program.

There are 21 elements, many with sub-elements that must be contained in a complete program. Rather than listing them here (they can be found in TSR §1542.103), the point to be made is that there is an extensive commitment in terms of both management and personnel resources and in capital improvements that ***must*** be approved and met ***prior to*** the onset of ***any*** commercial service. And, there will also be an immediate related and probably expensive influx of TSA presence, space requirements, operational constraints and regulatory oversight.

One of the most significant and burdensome issues would be the immediate need to meet TSA passenger screening requirements – staffing levels, Explosive Detection System (EDS) equipment, redesign of concourses and/or terminal space, as well as baggage and cargo handling areas, and more. This is a mandate, not an option.

Airports may adopt a less onerous **Supporting Program** under the following conditions:

- The airport accommodates *scheduled passenger* or *public charter* service with aircraft configured for LESS than 61 seats, and the passengers enplane from or deplane into a sterile area, OR

- The airport accommodates *private charter* operations of any size where passengers are enplaned from or deplaned into a sterile area.

A Supporting Program requires adherence to 8 of the 21 required security items of a complete program, 2 of which are concerned primarily with how the airport will train and use law enforcement personnel to carry out its program in support of the commercial carriers. While in this instance the establishment of secured areas, ID badging and elaborate access controls are not required, it is nonetheless clearly in the best interests of an airport to provide these functions to some degree.

Finally, an airport might resort to the least restrictive **Partial Program** when:

- The airport accommodates *scheduled passenger* or *public charter* service with aircraft configured for MORE than 30, but LESS than 61 seats, not enplaning from or deplaning into a sterile area, OR

- The airport accommodates *scheduled passenger* or *public charter* service with LESS than 61 seats, TO, FROM, or OUTSIDE the US, and not enplaning from or deplaning into a sterile area.

A Partial Program requires that airports train and use law enforcement personnel in order to carry out its ASP but does not require a security Contingency plan.

Although both supporting and partial programs do not require an ID system, for law enforcement and asset protection reasons, it is advisable to do so. The current program in place at KBFI needs to be reviewed as to whether it would meet the regulatory requirements with only minor adjustments.

Thus, the decision as to what kind of security program must be put in place is not one made on the basis of architectural design or prudent security requirements – just the opposite. The decision is driven by the capacity of commercial passenger aircraft serving an airport and the related ability of the airport law enforcement community to respond. Further, if the aircraft service capacity changes from below to above 60 seats, the Airport Security Program requirements will also increase from supporting to complete programs and must be in place and approved before the new schedules can take effect.

The long history of airport security has functioned under a system of "categories" of airports [Category X, I, II, III, IV] based on the aircraft capacity, which in turn were based on the number of persons screened on an annual basis and the LEP response time to the screening checkpoint.

Since 9/11, TSA and DHS have introduced several restructuring concepts, including an effort to re-categorize all commercial airports, another to align levels of airport security to the Homeland color codes, and yet another which sought to establish threat-based divisions called "tiers". This is brought to the attention of the Airport Division only as a strong caution that considerable uncertainty remains at TSA and throughout the industry as to which of these systems, if any, might survive in current or modified form. While the so-called categories remain in place, industry believes them to be an anachronism and there is considerable pressure for change.

The overall point is that much of airport security remains a "moving target" as DHS continues to recognize its 22 component agencies, several of which are independently restructuring at several lower levels and new regulations are evolving in a constantly changing threat environment.

Opt-Out Test Program

One upcoming possibility in passenger screening operations is a current TSA testing program which, *if* implemented, would allow an airport to "opt out" of the TSA passenger screening program and perform those services itself, or by entering into private contracts. It is far too early to make any recommendations on whether this might be a potential viable option for KBFI, since it is yet to be determined whether TSA itself will accept this option, and if so, under what operational and contractual conditions.

TSA just recently published an extensive study that strongly suggests there is little or no difference between private and 'public' (TSA) screeners. Indeed, the DHS Inspector general (IG) said "the two groups performed about the same, which is to say, equally poorly", a reference to detection of weapons and contraband, not to operational cost or efficiency. Thus, a critical issue for the Airport to consider in the future is whether the acceptance of a higher level of liability implied by opting out of the Federal program can be overcome by any potential cost-benefit and/or operational efficiencies and proficiency.

It should also be noted that where an airport serves only charters, the passenger screening functions and the law enforcement functions are the responsibility of the charter operator, although the airport and/or private companies often typically provide them under contract to the carrier. Nonetheless, this requires that the airport's charter-handling capabilities and facility design, be it terminal or Fixed Base Operator (FBO), accommodate the equipment and operational space requirements of the screening functions and personnel.

Federal Funding

Although TSA has taken over virtually all of FAA's previous security functions, the historically prevalent capital funding mechanism found in the Airport Improvement Program (AIP) remains within FAA. Security has historically been only one of many competing priorities for AIP capital funds. It remains unclear if and when any earmarked TSA and/or DHS funds might become available for airport improvements beyond the present focus on accommodation of TSA's screening checkpoints and EDS in-line and lobby installations. Either of which might present unique design and operational problems for KBFI if implemented.

Inter-modality Security

This also raises the issue of inter-modality. TSA and DHS clearly have transportation security responsibilities that extend far beyond just aviation – as previously noted they are also responsible for maritime, highways (including buses and trucks), and rail, including trains and subway systems. While it is not at all clear just how much influence or attention the agencies have paid to each mode of transportation, or what their planning priorities might be, it is nonetheless certain that any such intermodal activities anticipated at KBFI, or any other airport seeking to introduce new service, will attract the attention of TSA and DHS. While this is not necessarily a bad thing, one can be certain the airport's planning and design process will be significantly influenced, both operationally and financially, and potentially delayed, by the introduction of another layer of Federal oversight and regulations.

Customs and Immigration

Customs and Immigration services are another major influence on security planning and design. Both agencies are now a part of DHS and currently have very specific and very extensive security design requirements that are significantly removed from the underlying philosophy of the airport development programs. Such issues as separation from domestic traffic, numbers of stations, capacity and throughput, choke points, paths of travel, baggage screening, and private interview rooms, to name a few, will have to be taken into account if KBFI anticipates international traffic in the future.

Cargo Security

As previously noted, there is extensive scheduled all cargo activity at KBFI, which are likely to be affected by TSA's response to the recently proposed Aviation Security Advisory Committee's (ASAC) "Cargo Security Guidelines". Although primarily geared toward the carriers and freight-forwarders' handling and transport of cargo, the guidelines will influence a number of airport security programs, including the design and protection of any new or upgraded cargo handling facilities at KBFI.

For example, among the guidelines are recommendations that would likely directly effect airport law enforcement operations and budgets in such areas as:

- Enhanced airport perimeter access controls (improved technologies, perimeter fencing and other means of providing separation/protection between scheduled air carrier service and cargo/GA facilities);

- Expanded criminal history record checks (CHRC) for a widened population;
- Expansion of the physical areas in which the CHRC would be required;
- Securing/sealing unattended aircraft overnight;
- Screening of persons with access to air cargo and aircraft;
- Aircraft searches;
- Law enforcement incident response (generally expanded requirements in support of TSA);
- Dilution of law enforcement during elevated security conditions (when TSA raises the threat level, several of the contingency measures require additional LEP and/or security personnel for numerous additional tasks).

Further, the design and operation of those facilities will differ according to the nature of the carrier's operations, whether full-freighter aircraft or belly freight carried in passenger aircraft. The ability of each to meet schedules will be affected by the need for physical space for cargo inspections, as well as the procedural and operational delays introduced by cargo profiling and screening processes. The ATSA mandates that all cargo transported on passenger aircraft be screened, a requirement currently being met by application of the "Known Shipper" program.

The methods of screening and inspection permitted will be established by TSA, but may include canines (K-9), X-ray or other non-intrusive inspections, physical inspections, decompression and/or radiation detection, all of which have significant space and design implications for the airport. While not an ASAC recommendation, it should be noted that the issue of whether "positive shipper identification" (by fingerprint or other biometric methods) might be an acceptable substitute for physical inspection has been raised, which in turn raises the question of whether such systems must be compatible with an airport's own identification system? If they are not, how might such parallel systems impact airport staffing, operations and facility design?

Finally, in February 2004, Congressman Edward J. Markey introduced a new bill (Secure Existing Aviation Loopholes Act), HR 3789, to amend the Homeland Security Act of 2002 to improve aviation security in a myriad of areas including air cargo, which states that there shall be mandatory physical inspection of all cargo transported on passenger aircraft. Just one more factor to consider if passed.

TWIC

The above discussion leads to a brief consideration of another important issue: TSA's proposed Transportation Worker Identification Card (TWIC). Generally, it's stated purpose is to ultimately issue a single common ID card for ***all*** workers in the various modes of transportation not just air cargo. There are a number of pros and cons on this issue, as well as numerous industry positions both in opposition and in support of the concept.

It is not the object of this Report to resolve these issues but merely to note that the potential requirement for a TWIC would evoke such concerns as incompatibility with an airport's own access control system, access to employee records in numerous incompatible data bases nationwide and the potential vulnerability introduced at hundreds of airports, including KBFI, by multiple facilities issuing multi-model ID badges.

General Aviation Security

TSA is expected to imminently issue General Aviation (GA) security guidelines, based on the Aviation Security Advisory Committee guidelines developed late last year. At that time, it was TSA's stated intent to issue security guidelines that would affect 5400 general aviation airports nationwide; it is reasonable to assume that KBFI's location, size and GA activity levels would place it high among those included on the list. Thus, even if KBFI attracts no new commercial traffic whatsoever, it's presence as a dominant General Aviation airport in the Seattle area will most likely require some significant security changes. It is not yet evident what they might be but from a GA perspective they would not include passenger screening. They would likely include new access controls, law enforcement presence and some level of security program for tenants.

The pre-eminent concern of most GA airports in the country is that whatever recommended security enhancements may evolve, that they not be unfunded federal mandates. The Airport Improvement Program (AIP) continues to bear a significant portion of the aviation security funding burden and, as those funds are expended primarily for improvements at commercial service airports, only a portion of which are security-related projects, the maintenance and vitality of current GA infrastructure dims. As increasingly larger slices of the AIP are used for security costs, many GA facilities are finding it difficult to compete for and obtain slices of the pie dedicated to GA airport improvements. Currently, no dedicated aviation trust funds are available for enhancing GA security.

It should be noted that Passenger Facility Charges (PFC), which are based upon scheduled passenger activity, provide another source of funding for a commercial airport. PFC funds are typically associated with a terminal complex and public roadway improvements, not GA.

If KBFI should attract significant scheduled air carrier passenger traffic, the Airport is likely to become engaged in the complex process of seeking AIP funding to meet the needs of the commercial service security enhancements. It might include improvements and augmentations for GA operations, since the two are inextricably inter-dependent. Lacking a comprehensive security risk assessment for all elements of the Airport, it is important that GA not be isolated and yet not be required to follow security practices that are beyond those required of the other transportation services. To state it another way, the resulting impact of meeting Section 1542 requirements could be significant for GA activity and FBOs.

Therefore, at some point it must be established where, and to what extent, charters will operate from the terminal and/or the GA areas, since that will directly influence the need for passengers and baggage screening facilities, maintaining secure overnight aircraft parking accommodations, capabilities for LEP response, etc.

Similarly, the GA recommendations are expected to include elements concerning flight schools, student pilots and transient GA aircraft and pilots. Where GA and commercial operations are in close proximity, the lowest level of commercial security measures is likely to be higher than the GA requirements. This could require design and operational accommodations in such issues as vehicle and aircraft access, transient traffic and training. It could also impact the extent to which an airport's overall security program and contingency measures include or exclude GA with respect to such sensitive issues as access to threat information and the airport's mitigation measures.

GA is a very large element at KBFI. The Airport would have to act on threat information from the TSA with regard to commercial traffic security measures without conveying such information to the GA 'family' that uses the Airport.

It is worth noting here that an existing FAA document is a useful tool in determining various alternative approaches to airport security; it is titled *"Recommended Security Guidelines for Airport Planning, Design and Construction"* (June 2001). Its underlying premise is that security planning is critical in the earliest phases of planning and design, rather than trying to impose security-critical change orders on an otherwise operationally settled design – how to deal with lines of sight, separation of secure and non-secure areas, queuing challenges, passenger screening checkpoints, paths of travel on both public and secure sides, electro-magnetic interference, and many other related issues.

If the airport requires a re-design or upgrade of an access control system, it would also be helpful to consider the guidance found in the RTCA document DO-230A, *"Standards for Airport Security Access Control Systems"* (April 10, 2003)

5.3 Operating Strategies

Possible changes to the current means by which ARFF and law enforcement services are provided at KBFI have been touched upon in a number of previous subtasks, namely 4.1, 4.2, 4.2.2, 4.3.2 and 4.6. The operating strategies offered for ARFF services (contract services, internal airport department, airport tenant and privatization) also apply to law enforcement services except for the airport tenant and privatization options because they would not have the Power of Arrest.

Contract services means by either a municipality, county or state organization, as it is now with the KCSO. Law enforcement services through an "internal airport department" involve the establishment of a Department of Public Safety (DPS). It should be noted that even if a DPS were to be established, the law enforcement services could still be provided by the KCSO for police and security support services only.

Subtask 4.6 discussed some of the options in providing law enforcement services, as well as the advantages of establishing a DPS. If such a department were to be realized and – regardless if it is a separate internal unit or one provided by contract services by the KCSO – the existing role of providing some airport operational services by the KCSO is not typical airport management practice.

Law Enforcement Services

If scheduled air carrier service by airlines using large aircraft (31 seats or more) arrives at KBFI, the impact on law enforcement services in support of security requirements will increase together with GA and air cargo security requirements as discussed above. These potential impacts will have a clear affect upon how law enforcement services are provided at KBFI.

Given the extent of GA and air cargo activity, without considering the potential impact of potential scheduled passenger service and the related security requirements, there would be a need for a dedicated unit concentrating solely on law enforcement and security on the Airport.

Future security requirements for KBFI (passenger screening, GA and air cargo), underscores the critical nature of this issue, which will be addressed in Task 7.0 along with other key issues.

TASK 6.0 – PRELIMINARY RISK ASSESSMENT

Based upon the results of the previous Tasks 1.0 – 5.0, the objective of this task is to identify and evaluate what the potential risks may involve if no changes are made to the current organizational structure with regard to Aircraft Rescue + Fire Fighting (ARFF) and law enforcement services at King County International Airport (KBFI).

This task is ***not***, however, a comprehensive risk analysis, which would typically include vulnerability and threat assessments, potential impacts upon insurance costs, losses and claims, the review of tenant leases with regard to insurance costs, workman's compensation, the mathematical probability of an event, etc.

Nor should it be construed as a criticism of the current organizational structure, rather it is intended to provide answer(s) to the question: Is there a way to enhance the current organizational structure and, thereby, mitigate, or reduce, risk for KBFI?

6.1 – Definition of Risk

There are a number of definitions of risk, what is involved and the course of action often taken to mitigate risk and so forth. It is important to define what is exactly going to be addressed in this task with regard to "what is/are the risk(s) if no change(s) is/are made to the current organizational structure at KBFI for ARFF and law enforcement services"?

With regard to public safety related services (the model) for airport operators, risk is often discussed in terms of the potential for aircraft accidents and incidents (incidents can lead to accidents and, therefore, need to be included), e.g., what organizational and/or procedures can an airport operator establish to further reduce the risk of injury or death to passengers, crew ***and*** emergency response personnel?

It must be noted that there are other stakeholders that can and will impact risk mitigation, including the Federal Aviation Administration (FAA), airlines, Fixed Base Operators (FBO), etc. The FAA, through FAR Part 139 and other FAA documents regarding airfield design, etc., dictate minimums with regard to safety that airport operators ***must*** comply with in order to maintain their operating certificate, without which they would have to close the airfield to commercial traffic.

A question for airport operators is how to determine what their organizational structure, operational procedures and facilities/equipment should be with regard to ARFF services over and above that required by Part 139? Can it be assumed that a positive response to this question would reduce an airport's level of risk? Part 139 currently defines the aircraft type (by its length and 5 or more daily scheduled departures) at a given airport that minimum ARFF services must prepare for and, thereby, indirectly establishes the potential hazard posed by that aircraft type. Do the FAA's minimum safety requirements represent the minimum level of risk, e.g., does exceeding these minimums mean an even lower level of risk will be realized? If so, what does this potentially mean to an airport operator?

As noted in Task 1.0, per Part 139, KBFI is an ARFF Index A airport, which requires one (1) ARFF response vehicle. KBFI, however, has opted to have two (2) ARFF response vehicles (and for good reason as noted in Task 1.0), a 100% increase over and above what is required. Does this mean that the risks associated with an aircraft accident or incident is lessened by some numerical factor at KBFI? This operational approach (exceeding FAR Part 139 minimum requirements) is not at all unusual and exists at many other airports.

A key principle of risk management is that while it may not be possible to prevent all aircraft accidents, it may be possible to affect the circumstances that will minimize the overall impact and outcome of an accident or incident.

With regard to law enforcement, the same hypothesis can be applied given the minimum requirements of 49 CFR Part 1542, Airport Security, and the real world situation involving terrorism, although KBFI is not yet required to comply with TSA airport security regulations. Given the current level and type of activity at the Airport, to what length should the Airport Division go to provide security? Can risk be adequately and reasonably mitigated with the current organization structure for public safety services at the Airport?

As previously indicated, risk is generally accepted to be a function of both the severity of a given event and the probability of that event occurring. While an aircraft accident has the potential to be truly a catastrophic event, such events also occur at an extremely low rate of probability. Nevertheless, the rupture of aircraft fuel tanks when coupled with the presence of very hot engine components, or other sources of ignition, will always present a risk of post-crash fire. Therein, the eradication of aircraft-related fire hazards can never be completely ruled out.

The ability to define risk "exactly" in this context is certainly difficult, which is why this task is limited to assessing risk with regard to the current organizational structure. Indeed, this assessment is not easy to address given all the other factors potentially impacting the question: what adequate safety measures can/would reduce risk? There are factors that are out of the control of the airport operator. For example, what is the impact of a commercial airliner's design upon this entire discussion? We know that the materials used in a modern commercial airliner are designed, in part, to delay the burn-through of an ***intact*** fuselage, or by slowing a fire's propagation through compartments and furnishings in the event of an accident or incident to improve survivability?

6.2 – Risk Culture

Airports like KBFI have evolved as business centers and economic engines to the region(s) they serve. Continued evolution of this premise will continue to drive change and create challenges in meeting the needs and service demands of airports by virtue of their economic and strategic significance as the aviation industry growth improves in general and that of King County specifically. As alluded to in previous tasks, safety and emergency response requirements extend beyond basic ARFF and LEO missions. That is, airport public safety trends now involve emerging demands versus service needs (new age threats, public health issues, criminal acts, etc.).

The ability to meet/exceed existing and future federal regulations (both for ARFF and law enforcement) in their totality will challenge the Airport's existing "public safety" services. A LEO based system is culturally LEO driven, which may potentially impact the ability of the Aviation Division to build a diverse and multi-dimensional emergency support system for ARFF, police, EMS and others. A career path for public safety professionals in a particular service is one of choice and desire. Assignment to something other than what is desired may affect professional commitment and performance.

Successful airport economic development will largely depend upon the correlation between capacity, efficiency, safety and security. The driver to change the existing service model is the concept of building these multi-dimensional systems to reduce the risk of loss of life, economic and environmental costs. An effective airport safety management system needs to be proactive, a program that all of the stakeholders can and would "buy into".

6.3 – Potential Risks

Within the context of this task's objective, the level of risk concerns the ability of the Airport Division to meet or exceed current regulatory requirements for ARFF services under the present operational structure, as well as potentially that of future changes to FAR Part 139 should the existing culture remain unchanged.

Can a direct correlation be drawn between airport activity and emergency service demands? What types of incidents or accidents have a high rate of probability – as compared to the low probability of an aircraft accident – upon emergency demands? A representative list might include:

- Emergency Medical Services (EMS) regarding personal injury and/or health related issues;
- Ramp Accidents especially if ramps are congested;
- Motor Vehicle Accidents on public roads;
- Structural Fires, or alarm activations;
- Fuel Spills and other Hazmat accidents and incidents.

Realistically, the so-called new-age threats have to be considered within this spectrum as well.

Besides the potential loss of human life – or injury to - there is a potential economic loss to the airport operator with each of the above events due to the temporary disruption of airport operations and the potential loss of use of airport facilities.

Is there an unacceptable risk associated with the current structure, e.g., the use of cross-trained law enforcement personnel for both ARFF and LEO functions? The problem is that there could be many answers that to one extent or another could be construed to reflect the minimization of risk.

From the standpoint of meeting current FAR Part 139 requirements, the King County Sheriff Office (KCSO) personnel meet FAR Part 139, subpart D. Indeed, a current certification inspection by the FAA was undertaken earlier this year, which inspection was deemed acceptable.

It must be understood that complying with the regulatory requirements of FAR Part 139, subpart D, is a minimum qualification criteria and – while certainly acceptable to the FAA – it may not prevail in litigation resulting from a loss of life, or property damage. This possibility, in part, stems from the lack of an ARFF Command structure (Fire Chief, etc.) that has ARFF experience or incident command training at the Airport.

6.4 – Summation

With the above being carefully considered, it is reasonable to summarize this task by stating that separate ARFF and law enforcement units can mitigate risk by:

- Improving focus on issues requiring a rapid emergency response to prevent escalation of an event, to mitigate that event and to enhance a quick recovery to normal airport operations;

- Enhancing the economic vitality of KBFI by providing dedicated units within their respective disciplines that can be used as a major factor in attracting new business to the Airport. For example, insurance providers might provide lower rates to airport tenants knowing the Airport's proactive approach to safety and risk mitigation;

- Realizing that the current agreement with the KCSO includes escalating personnel and equipment costs, which factors could be a possible detriment over time to attracting new business, or, indeed, retaining existing users of the Airport (due to higher rates);

- Understanding that incidents and accidents at airports come under intense scrutiny, the qualifications and experience levels of incident managers and response personnel will be closely examined by federal and state authorities and will be a significant factor in litigation. The consequence for non-compliance with statutory and regulatory requirements, or industry-wide standards and practices, on the part of the airport operator is itself an ultimate risk factor. Maintaining training, operational certification requirements and personnel skill sets (performance competency and proficiency) will provide a combined service model and lead to administrative and operational efficiencies;

  For example, not having a Fire Chief and Deputy (or Assistant, or senior officer per shift) with ARFF experience and training means greater exposure to risk. Related to this is the matter of Incident Command and its relationship with mutual-aid. Who is in charge when the Seattle Fire Department arrives on scene?

- Using a risk-based approach that focuses on a worst-case scenario, an in-house staffing task analysis should identify the number of emergency response personnel needed to undertake identified mission tasks in real time prior to the arrival of supporting external resources to assist the ARFF unit. This approach can be viewed as one means to mitigate an airport operator's risk;

- Providing a more direct airport management oversight of emergency services will improve operational flexibility and ensure they adapt to corporate business philosophy, vision and commitment. This will provide better standards of accountability, customer service and more pro-active emergency services. A separate, but related service model may well lend itself to a systematic approach to airport safety management system that includes mechanisms for the prevention, preparedness, response and recovery associated with airport safety.

7.0 – CONCLUSIONS AND RECOMMENDATIONS

The previous six (6) tasks established the framework for an assessment of the current Aircraft Rescue and Firefighting (ARFF) services at King County International Airport/Boeing Field (KBFI). This assessment considered the provision of ARFF services with regard to how best to respond to existing and future needs at the Airport in an operational efficient and cost effective manner.

Therein, is it with the existing use of King County Sheriff's Office (KCSO) for both ARFF and law enforcement services, or is there an alternative approach?

As stated in a previous task, the ARFF unit provides both aircraft fire fighting and law enforcement services at the Airport. These two services – ARFF and law enforcement – are clearly interrelated not only because they both are "public safety" functions, but, also, because both services at KBFI have been provided by the King County Sheriff's Office (KCSO) since 1999 under a Memorandum of Understanding (MOU. Having a unit cross-trained in both law enforcement and aircraft fire fighting is not that unusual; however, as mentioned in task 4.0, the majority of commercial airports like KBFI finds it more efficient and can provide a higher quality of service by treating law enforcement and ARFF as separate and dedicated units.

At those airports with separate units, regardless of the organizational structure, law enforcement and ARFF typically fall under the responsibility of "Public Safety" or "Airport Operations". Furthermore, these services come under the direction of one individual, such as the "Director/Manager of Public Safety", or "Deputy Director of Operations", or other similar variations.

The law enforcement aspect of services currently in place at KBFI is a professional operation with well-trained personnel. The question that has been raised concerns the lack of experienced ARFF leadership and the operational costs (labor and equipment) being incurred by the Airport. The response to this concern must be thought of not only in terms of current aviation demands at KBFI, but, also, in terms of potential changes to aviation demands including federal regulatory changes in the near future. For example, what if scheduled air carrier service should begin at KBFI with aircraft having 31 or more passenger seats? Further to this point of potential change are the forthcoming changes to FAR Part 139, subpart D, which regulates ARFF operations.

One area of concern that has emerged from this analysis is the fact that there is no Fire Chief or Deputy Fire Chief for the ARFF unit. Rather, the senior person during the day shift is a Sheriff Captain appointed by KSCO, who is in charge of both services at KBFI. Although this individual has been well trained and has years of experience in the law enforcement profession, he has a limited background or expertise in ARFF services and has never performed in the capacity of an ARFF Chief prior to assignment at KBFI.

Similarly, the relevant ARFF experience of unit personnel is minimal. ARFF personnel at the Airport must work "part-time" as aircraft fire fighters and "part-time" as deputy sheriffs, making it difficult to fully satisfy the requirements of either service.

Other factors impacting the prime question include the cost associated with operating the current structure and organization of the ARFF unit and the cost of initial and recurrent training. As reported in the last FAA certification inspection earlier this year, the ARFF unit is in compliance with FAR Part 139, which represents minimal requirements. Generally, a person dedicated to the fire service desires to be a fire fighter and will make the effort to become more proficient over and above that required by the FAA. The same can be said of those wanting to be in law enforcement. The point here is that each individual must receive ARFF and law enforcement initial and recurrent training and equipment, which is costly.

Lastly, KCSO requires the Airport Division to fund the costs for each KCSO member assigned to the Airport to have a personal (take-home) KCSO law enforcement vehicle (cruiser). These cruiser costs (purchase, operational and maintenance) are in addition to the costs the Airport pays these KCSO personnel for overhead, salaries, equipment and ARFF clothing.

Other conclusions related to training and proficiency that need to be considered within this operational framework for ARFF services can be summarized as follows (not prioritized):

- An individual who ***only*** wants to be a fire fighter would be self-motivated to become more proficient in his/her profession over and above meeting the minimal training requirements proscribed by FAR part 139;

- Potential law enforcement roles for commercial airports will have a significant impact on daily operations at KBFI in ***support*** of federal security requirements associated with air cargo, general aviation (GA) and, possibly, scheduled air carrier activity. The KCSO is well positioned to take-on these added roles led by a Captain with the requisite law enforcement experience;

- There is a distinct possibility that, in the event of an aircraft accident in particular, the Airport faces greater risk and liability exposure because there is no experienced ARFF leadership with the current structure. This should be of concern to King County;

- Since the majority of ARFF personnel are not currently trained in Emergency Medical Services (EMS), the ARFF unit and Airport rely on either the City of Seattle or Tukwila Fire Departments to provide this response to the Airport. Again, there is a risk and liability with this current situation. What if the responding agency is out on another call at the time of an EMS call from the Airport? A person suffering from cardiac arrest, which is a time sensitive situation, the person's estate could easily target the Airport if he/she should experience complications, or death, due to a lengthy response time by a mutual-aid partner. FAR Part 139 now requires a minimum of one (1) EMT during air carrier operations with a minimum of 40 hours of basic emergency medical training. Currently only two KSCO personnel are trained as an EMT, e.g., meeting the minimum requirements. Clearly, this is very marginal situation.

Given the above primary conclusions, the following are recommendations for this Report.

Recommendations

For the above reasoning and conclusions reached, as well as the material presented in Tasks 1 through 6, the following recommendations are presented for the Airport and King County Council consideration.

1. Provide separate – but integrated – units for both ARFF and law enforcement services under a reorganization of the current Airport Management structure by creating either a "Department of Public Safety" 'model' or under the Deputy Airport Director in charge of airport operations. In either case, this person would report directly to the Airport Director.

   This concept would mean:

   - Individuals who wish to be ***only*** firefighters ***or*** law enforcement personnel have the option, which should result in a greater efficiency and proficiency within their respective roles;

   - Having a Fire Chief and senior ARFF officer with prior ARFF experience to operate the ARFF unit on a 24/7 basis. Also, a savings in both operational and training (initial and recurrent) costs;

   - The mitigation of risk exposure, e.g., ARFF can devote time with risk management functions, including risk analysis, fire/safety inspections and emergency response planning. ISO classification has significant overhead cost implications and having on-site airport fire prevention models could reduce rates, which, in turn, may be used to attract new business;

   - Ensure compliance with Fire and Life Safety codes during building renovations and new construction, which would include fire detection and protection systems of all structures. Also, this would ensure standardization of fire hydrant and water systems, e.g., spacing, installation and water pressure/flow;

   - Positioning the Airport to better meet the public safety functions in anticipation of federal regulatory changes, as well as potential changes in air service at KBFI;

   - Ensure compliance with Department of Homeland Security Presidential Directive 5 that requires local, state and federal agencies to undertake "all hazards" planning and management for all emergencies under a national incident management system (unified command);

   - A Department of Public Safety (DPS), or some equivalent organizational structure, will enhance proficiency through performance and productivity, as well as efficiency - through a regional system – and costs. Clear lines of authority and functional responsibility can be realized under the DPS 'model';

   - The ability to develop a comprehensive Airport/Community emergency planning effort to provide for a high degree of pre-arranged mutual-aid system and compliance with FAR Part 139, Airport Emergency Plan standards. Further, appropriate planning will lead to the development of MOU's for automatic mutual-aid response, as well as for table-top and full-scale exercises. Also, this would ensure

compatibility of equipment with mutual-aid fire jurisdictions. Further, to improve services and ensure appropriate mutual-aid resources, this 'model' would better serve the need to evolve automatic aid into the dispatch for specific incidents.

2. Regardless of the realization of an organizational change, it is recommended that the existing airport operational aspects currently undertaken by the KSCO be undertaken by the Airport Operations and Compliance Department. Clearly, KSCO personnel could better use their time to spend on public safety issues, training, etc. This point can be underscored by the fact that the law enforcement role is going to significantly increase through Department of Home Security (DHS) initiatives and Transportation Security Administration (TSA) requirements that will soon be fact (air cargo and GA). This will mean that the time for law enforcement involvement in support of federal security mandates will become greater, e.g., having airport operations-related duties could possibly interfere with this forthcoming need.

   The Airport's current organizational structure is well suited to accept the airport operations-related duties currently performed by the KCSO.

3. Continue the use of KSCO personnel for the Airport's law enforcement function only, and if warranted, in support of federal security requirements as will be mandated by DHS in the near future. Current KSCO personnel are well positioned to continue in this role given their familiarity with the Airport and its facilities.

4. Explore the establishment of a permanent Emergency Operations Center (EOC), which could be part of the scope of work in the upcoming Airport Security Study. Related to this is the recommendation to explore the use of the KCSO mobile Command Unit for on-Airport emergencies.

5. A viable option to providing ARFF services at KBFI, should a DPS not be realized, would be to pursue the viability of using the Boeing Commercial Airplane Company ARFF unit for this purpose.

6. Evolve written agreements, or Memorandums of Understanding (MOUs), with key mutual-aid partners including the Boeing Commercial Airplane Company, Seattle and Tukwila Fire Departments to name some.

It is the hope that these conclusions and recommendations will provide the basis for meaningful discussion between the Airport Division and KCSO, which should be focused on providing the very best and most cost effective public safety services to the users of KBFI today and in the future.