Aviation Management Interoperability for Emergency Response and Recovery Support in British Columbia

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Primary Project Partners

“It’s a miracle no body was killed”

Source: Hurricane Katrina: Lessons for Army Planning and Operations

Air Resources

- US Coast Guard
- Air Force
- National Guard
- Army
- Navy
- Law enforcement
- Medical
- Media
- Civilian

From: Hurricane Katrina: Lessons for Army Planning and Operations, p39

- Over the first week of the response,
  - these helicopters performed over 900 search and rescue, evacuation, and supply delivery missions
  - over 4500 fixed-wing missions
- No unified command & control system
- Available aircraft spontaneously joined in the efforts to save lives. Many operated under their own tasking orders and relied on their own airspace coordinators

- This had the effect of multiple rescue teams operating in the same areas, while other areas were left uncovered.
- Once successful rescues were made, there was no formal direction on where to take them
- the urgent emphasis on getting victims to high ground meant that evacuees were often stranded at air-evacuation drop-off points, with the result that people saved from flood waters often suffered—some for days—in sweltering conditions, some without food or water

Impacts

An EQ at M6.5 to M8.5 (+), particularly affecting Juan de Fuca plate, could cause in southern Vancouver Island and Lower Mainland:

- 10-10,000 (+) deaths
- 100-100,000 (+) injuries
- $4 to $300B damage
- Including buildings, residences, transportation systems, water supply, food supply, health care, etc.

Observations

- Air assets will be heavily used initially; not enough helicopters for the tasks
- Multiple LGA's have identified same assets in their EM Plans
- Expectation that EMBC will take on operational coordination role under a provincial declaration of state of emergency
- Significant post-catastrophic event literature identified need for:
  - plan to manage aviation assets for catastrophic non-wildfire events
  - enabling technology to support its execution

Current Situation

- Ombudsman's Report (2014) = major energy going in to catastrophic earthquake file at EMBC
  - 2014/15 – Initial Response Planning
  - 2015/16 – Sustained Response Planning
  - 2016/17 – Recovery Planning
- Several initiatives underway
  - Many players

Rules of Engagement

- EMBC mandate to coordinate government support
- Provincial Declaration of State of Emergency
- Need system of coordinating scarce resources
- Needs to integrate with:
  - Local and regional response & recovery operations
  - Local, regional, provincial & (inter)national supply chain logistics support
  - Existing business practices to extent possible

The Challenge

- Air Mission Management
  - resource request & procurement
  - tasking & prioritization
  - situational awareness
- Airspace Management
  - aircraft tracking & separation
  - communications plan

The Solution

- Small group of subject matter experts develop a provincial air ops plan
- Create an organizational structure that leverages & compliments existing business practices
- Implement enabling technologies as required

Methodology

Initial Air Ops Team

- WMB
- BCAS
- DND
- RCMP
- NavCanada
- Selkirk Systems
- EMBC

Filters

- 80/20 rule (Pareto Principle)
  - ID 20% of activities required to meet 80% of critical response needs within 1st 72 hours
- Leverage existing business practices to extent possible
- Vetted through 1st three BCERMs response goals only

Methodology - Question

What critical air support activities needed for each of response and recovery operations in:

- the first 8 hours
- the first 24 hours
- the first 48 hours

Provincial emergency aviation management plan that:

- Leverages aviation expertise in key agencies (Coordinates existing protocols, not mandating changes to existing agency protocols)
- Extends aviation expertise and planning to all involved local governments & stakeholders
- Integrates with day to day operations wherever possible

Set of enabling technologies that provide:

- Interoperability between effected departments, ministries, and LGA's (F/P/L) via electronic "exchange" (AIX - aviation information exchange)
- Integration with existing agency aviation management mission management systems
- Appropriate authorization, authentication, and security controls (ex. Positive control over data exchange)
- Application toolset where systems don't exist or need additional supplementing (eg. Provincial prioritization)

Canadian Safety and Security Program

Programme canadien pour la sûreté et la sécurité

- The Canadian Safety and Security Program (CSSP) is a federally-funded program led by Defence Research and Development Canada's Centre for Security Science (DRDC CSS), in partnership with Public Safety Canada
- CSSP's collaborative model fosters, through different mechanisms, innovative science and technology advancements that contribute to the safety and security of Canadians
- works domestically and internationally in partnership with government, industry, and academia

Canadian Safety and Security Program

Programme canadien pour la sûreté et la sécurité

Vision:

"A safe and secure Canada through science and technology leadership"

Canadian Safety and Security Program

Programme canadien pour la sûreté et la sécurité

Mission:

- The Canadian Safety and Security Program's (CSSP) mission is to strengthen Canada's ability to anticipate, prevent, mitigate, prepare for, respond to, and recover from natural disasters, serious accidents, crime and terrorism through the convergence of science and technology (S&T) with policy, operations, and intelligence.

Canadian Safety and Security Program

Programme canadien pour la sûreté et la sécurité

Funding Categories:

- Studies
- Research and Development
- Technology Demonstrations
- Technology Pilots
- Workshops
- Advice and Guidance
- Technology Acquisition
- S&T Transition
- Operational Support through S&T

www.science.gc.ca/cssp

Project Summary

- Fed funded = $1 million
- Outputs
  - Air Ops Plan inc resource requesting, mission prioritization, tasking, DA & SA
  - Interoperability tools
  - Transition Plan
- Timelines
  - October 2014 Project Start
  - March 2017 Project Completion
- Key Activities - Exercises
  - Table top (3)
  - Live field (2)
  - Smaller ones as opportunity presents

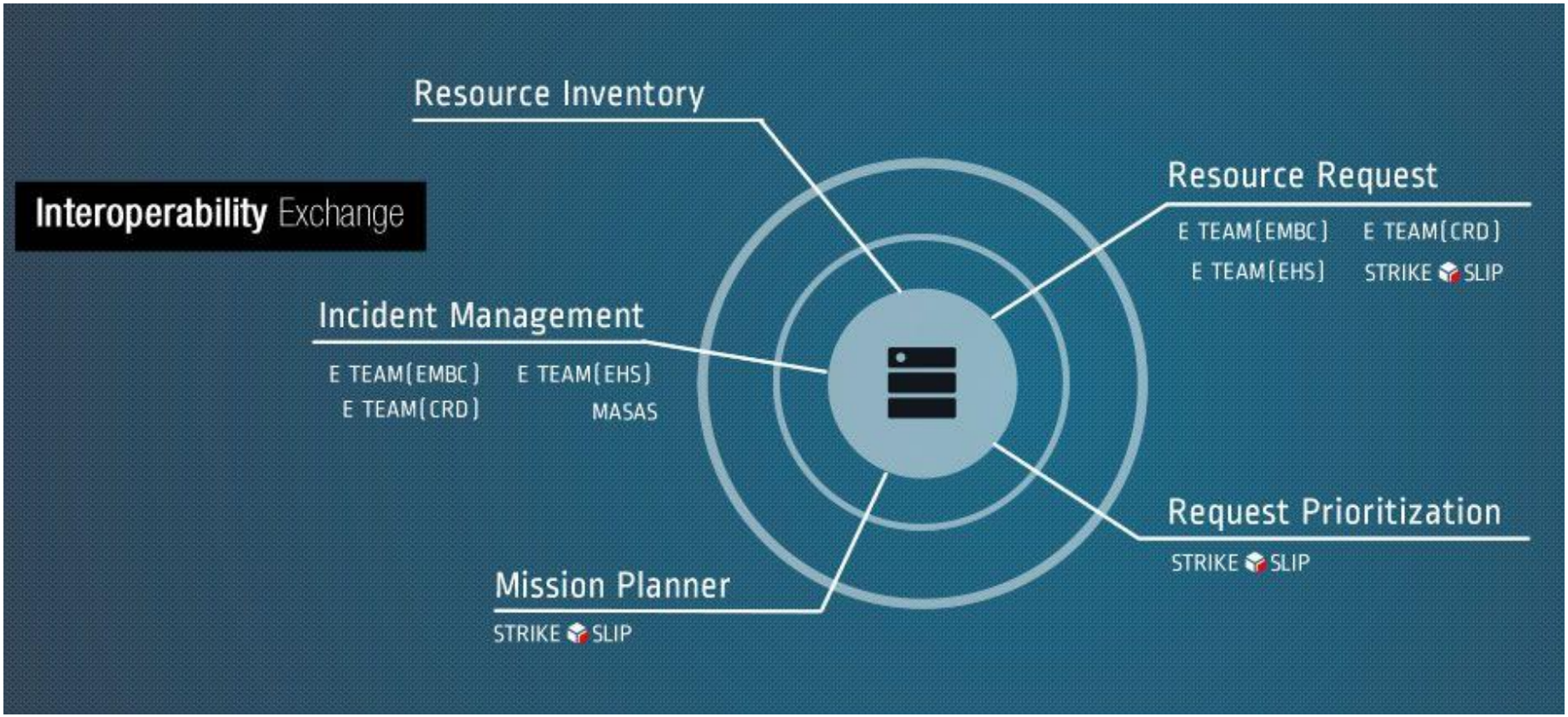
Design for catastrophic but scalable for large event & daily business

Air Ops Plan Components

- Concept of operations
- Key partners & their roles
- Organizational structure & positions in regional/provincial air coordination group
- Authorities of air coordination group
- Air mission resource request protocols (electronic A/C booking)
- Air mission prioritization & tasking protocols
- Temporary flight restriction protocols
- Airspace management protocols

Enabling Technologies

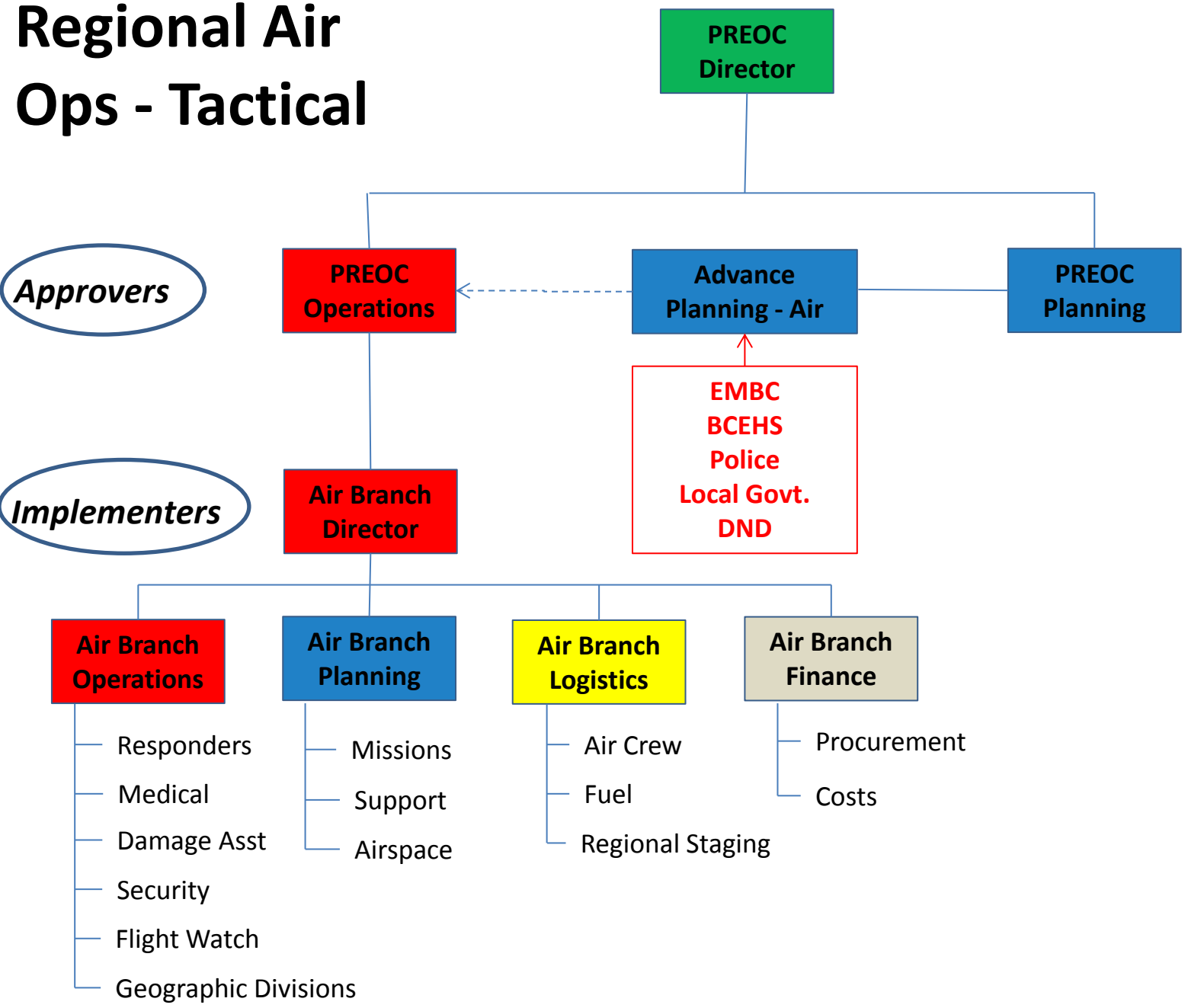
- Information Exchange between Agency mission management / aviation management systems
- Application tool set to supplement / provide:
  - Common operating picture, situational awareness, and reporting
  - Shared view of asset availability, status, location, and use
  - Mission management, requesting, and tasking
  - Prioritization
- How it can be used in daily operations
  - eg. electronic aircraft booking
- MASAS interoperability
- Interact with, not replace, existing in-house systems


Interoperability Exchange
Resource Inventory
Incident Management
E TEAM(EMBC)
E TEAM(EHS)
E TEAM(CRD)
MASAS
Mission Planner
STRIKE SLIP
Resource Request
E TEAM(EMBC)
E TEAM(CRD)
E TEAM(EHS)
STRIKE SLIP
Request Prioritization
STRIKE SLIP

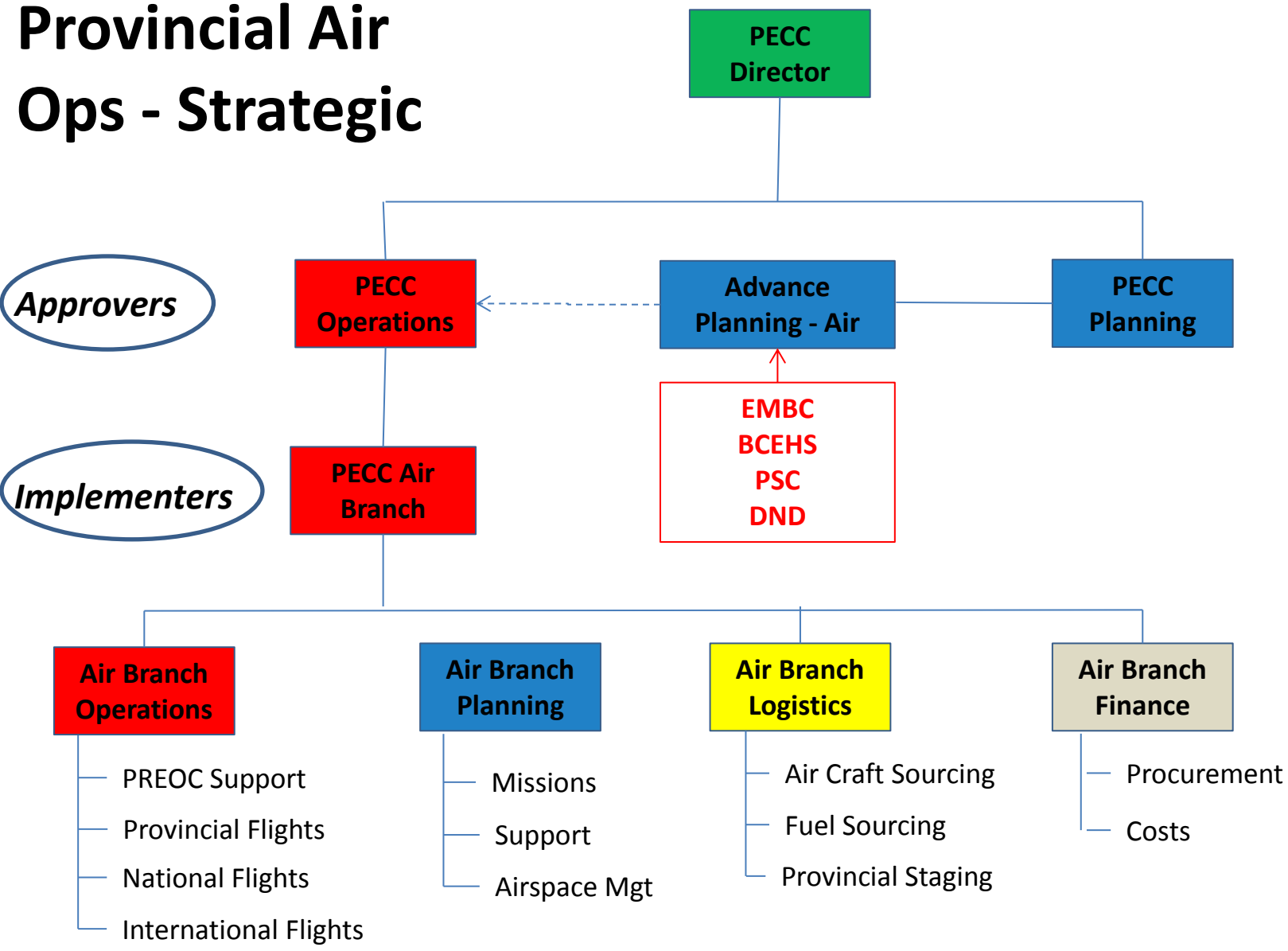
Anticipated Benefits

- Positive & timely situational awareness
- Better airspace management for safety & mission effectiveness
- Rapid initial assessment of threats & damaged critical infrastructure
- Coordination & management of scarce resources, their utilization, & support logistics
- Air mission prioritization protocol
- Provincial air ops plan for catastrophic event

Regional Air Ops - Tactical



Provincial Air Ops - Strategic



Exercise 1 Table Top

Date: February 16-19, 2015

Location: Vancouver

Participants: BCEHS, WFS, EMBC

Objectives:

- Demonstrate and observe current BCEHS, WFS, and EMBC business practices for aviation management as they would apply to a catastrophic event on the lower mainland.
- Identify best practices, gap analysis on current business practices and opportunities.
- Inform development of provincial aviation concept of operations for large and catastrophic events.

Exercise 2 Table Top

Date: Nov 16, 2015

Location: North Vancouver

Participants: NSEMO, EMBC

Objectives:

- Demonstrate and test the information flow around the requesting of aviation assets to a centralized management structure within municipal government environment.
- Demonstrate and test the prioritization of resource requests

Exercise 3 Table Top

Date: February 2016

Location: South Vancouver Island (TBD)

Participants: Local governments, EMBC

Objectives:

- Demonstrate and test the centralized Air Branch model at regional level (PREOC)
- Identify and test the prioritization and approval of resource requests with local government & CI owners.
- Demonstrate and test the exchange of aviation asset information between systems.

Exercise 4 Live Exercise: Coastal Response

Date: June 7-10, 2016

Location: Port Alberni

Participants: BCEHS, WFS, EMBC

Objectives:

- Demonstrate and test the centralized Air Branch model. Live activation and flights.
- Demonstrate and test the prioritization and approval of resource requests.
- Demonstrate and test the exchange of aviation asset information between systems.

Exercise 5 Live Exercise:

Date: February 2017

Location: Kamloops

Participants: BCEHS, WFS, EMBC

Objectives:

- Demonstrate and test the centralized Air Branch model at regional level and provincial level remotely in Kamloops.
- Demonstrate and test the prioritization and approval of resource requests.
- Demonstrate and test the exchange of aviation asset information between systems.

Exercise # 2 - Thanks

- Architectural Institute of BC
- Assn. Of Professional Engineers & Geoscientists of BC
- BCEHS (BCAS)
- BC Disaster Psycho-Social Team
- BC Ferries
- BC Housing
- BC Hydro
- BC Ministry of Transportation & Infrastructure
- BC Wildfire Services
- Canexus Chemicals
- CN Rail
- Coast Guard
- Dept. of Foreign Affairs, Trade & Development
- EMBC
- Environment Canada
- ESRI Canada
- Lehigh Hanson Materials Ltd
- Lions Gate Hospital
- McIlhanney Consulting Services
- Metro Vancouver
- North Shore Rescue
- Port Metro Vancouver
- RCMP
- Royal Canadian Marine SAR
- Selkirk Systems
- The Salvation Army
- Translink
- Truvian Labs
- Tymac Launch Services
- Univar Canada
- Vancouver HUSAR Team
- West Vancouver Police

Aviation Participants

- PEP Air
- Talon Helicopters
- Transport Canada/Environment Canada
- Canadian Coast Guard

Exercise # 2 Special Thanks

- North Shore Emergency Management Office
  - City of North Vancouver
  - District of North Vancouver
  - District of West Vancouver
- Mike Andrews
- All the volunteers & staff (est. 350 – 400)
- Emergency Preparedness Conference

Challenges

- Local government support & resource requesting is mature practice
- Many provincial government agencies deal directly with PECC for support or have never had to; they attend regional PREOC's but don't always get support at that level
- CI owners typically haven't had to come to EMBC for support and it would likely be at PECC level
- Fed agencies haven't had to integrate in to large air operations or be managed by provincial entity
- Policies, policies, policies

Key Take-Aways

- Coordinated, integrated management of all aircraft is necessary for safety and effectiveness
- Under Provincial Declaration aircraft are considered critical resources and will be managed by the Province in early response stage
- Aviation needs will be prioritized at regional level