Flight Operations Challenges from Air Traffic Management (ATM) Perspective in Remote Areas during Humanitarian Crisis

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Agenda

- Overview
- Type of events generating humanitarian crisis
- Impact on ATM
- Flight operations challenges
- Preventive and recovery measures
Overview

- Humanitarian Crisis
  - is an event or series of events that represents a critical threat to the health, safety, security or wellbeing of a community or other large group of people, usually over a wide area (https://www.humanitariancoalition.ca)
  - is a situation with high levels of human suffering in which basic human welfare is in danger on a large scale. (Internews Humanitarian Media Unit)
  - Humanitarian: Concerned with or seeking to promote human welfare
    Crisis: A time of intense difficulty or danger. (Oxford Dictionary)

Overview

- Air Traffic Management
  - The dynamic, integrated management of air traffic and airspace including air traffic services, airspace management and air traffic flow management — safely, economically and efficiently — through the provision of facilities and seamless services in collaboration with all parties and involving airborne and ground-based functions.
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Types of Events Generating Humanitarian Crisis

- Natural disasters
  - Natural hazards
    - Geophysical (tsunamis, earthquakes)
    - Hydrological (avalanches and floods)
    - Climatological (droughts, wildfires)
    - Meteorological (cyclones, storm waves)
    - Biological (disease epidemics)
  - Technological or Man-made hazards
    - Armed conflict
    - Plane and train accidents
    - Fire and industrial accidents
    - Nuclear event

- Complex emergencies
  - Food insecurity
  - Armed conflict
  - Displaced populations
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**Impact on ATM (1/2)**

- General impact analysis of type of events on ATM
  - ATS
  - ASM
  - ATFM

- Criteria
  - Safe, orderly and expeditious of flow of traffic in providing ATM services
  - ATC capacity modification
  - Airspace restrictions
  - Infrastructure/systems supporting ATM services
Impact on ATM (2/2)

- General impact analysis on ATM/ANS:
  - ATS:
    - ATCOs increased workload
    - ATC capacity utilized to the maximum extent possible
    - Infrastructure affected
  - ASM:
    - Airspace unavailable due to:
      - Reserved, restricted airspace for military operations
      - No COM or NAVAIDS coverage
  - ATFM:
    - Flight cancellation
    - Flight re-routing
    - Flight re-scheduling
    - Flight diversion
    - Flight delay

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Flight Operations Challenges

- Flight operations challenges from ATM perspective
  - **ATS:**
    - **ATS Units**
      - Procedural area control service
      - Procedural approach control service and aerodrome control service provided by TWR
      - ATS procedures not fully ICAO compliant – armed conflict
    - **CNS**
      - Limited coverage or degraded of radio COM
      - Basic NAV systems (NDB, VOR/DME)
      - Possible no radar coverage
    - **ATCO personnel**
      - Language barrier
      - Reduced level of competency for:
        - handling heavy traffic
        - conducting abnormal situations / emergency procedures
  - **Airspace Management:**
    - **Control Areas**
      - Possible Non RNAV routes (A,B,G,R 1-999)
      - Strict adherence to air routes
      - Possible air routes restrictions
    - **Terminal Areas**
      - Limited or unavailable STARs, IAPs and SIDs
      - Expect approach as a VFR flight
      - Possible no entry points
    - **Airspace Reservation, Airspace Restriction (D, R, P Areas)**
      - Located in CTAs, TMAs and CTRs
      - Flexible Use of Airspace (FUA) might not be implemented
Flight Operations Challenges

- Flight operations challenges from ATM perspective
  - Air Traffic Flow Management
    - Might not be implemented
    - AIP and Regional Supplementary Procedures might publish ATFM measures
    - ATFM centre - crisis management coordination position
  - Flight plan:
    - Submit ICAO flight plan format; expect AFIL
    - Roundtrip flight plan might be required
    - Prior Permission Request for armed conflict zones
    - Insert in Field Type 18 of FPL – Other information of FPL: STS/HUM

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Preventive and Recovery Measures

- **ATM Preventive measures**
  - Develop Contingency Plans/Procedures
    - Establish contacts
    - Define Operational Instructions (responsible, initiation of procedures, actions)
    - Make available tools
  - Allocate resources
    - Budget
    - People
    - Facilities
  - Building partnership
    - Relevant stakeholders at national, regional level for the preparation of crisis
  - Training/Exercises
    - Procedures
    - Internal and external communication
    - Adequate tools

- **ATM recovery measures**
  - Remediate and put into function the affected ATM systems
  - Inform relevant stakeholders
  - Conduct an evaluation
    - Lessons learned
    - Corrective action plan
Preventive and Recovery Measures

- Pilots/Air operators preventive measures
  - Pilots should do an adequate flight planning
    - Collect aeronautical information (AIP, NOTAM, ATFM messages):
      - Airspace structure (routes, STARs, IAPs and SIDs)
      - ATS procedures
      - Availability of CNS systems
  - Air Operators should:
    - Be involved in ATFM execution (strategic, pre-tactical and tactical phases)
    - Contact ATS authority

- UN/ICAO potential preventive measures
  - Developing a “Global Concept of Operations (CONOPS) for aviation domains during humanitarian crisis”
  - Analyzing the potential concept: “UN Humanitarian Aviation Rapid Deployable Cell”
    - Expertise
    - Technical support
    - Limited operational services
Preventive and Recovery Measures

- UN/ICAO Potential recovery measures during/after international armed conflict
  - ICAO cell provide expertise/assistance
  - Re-build State Safety Oversight System

Thank You!