2015

How to deal with emergencies
TWR and APP
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Chapter 1. General

1.1 Purpose

The main purpose of the *ATC Training Manual Norway FIR* is to provide standardized local and general procedures for controller in Norway FIR. This document is made in respect of all air traffic controllers who needs help to understand distressed situations. This document provides standardized emergency procedures within Europe *(source: EuroControl).*

We hope that this document can help you improve your aviation knowledge. Our goal is to make you understand the basics behind a controller unit who is controlling within Europe (more specific: Norway FIR).

On behalf of the crew in VATSIM Scandinavia and the creator of this document, Sebastian Rekdal (Chief of Training Norway), we wish you good luck with your air traffic control (ATC) training on VATSIM.

Welcome to VATSIM Scandinavia!

1.2 Credits

The *ATC Training Manual Norway FIR* was created by VATSIM Scandinavia. Original appendices published October 10, 2014 was made by Sebastian Rekdal (Chief of Training Norway). Thanks to:

- Sebastian Rekdal | Chief of Training Norway (accsca23@vatsim-scandinavia.org)

    Thanks to Oliver Rhodes (VATUK) for helping out with translating this manual

1.3 Feedback and contact information

If you have any questions, comments, suggestions or complains regarding this manual, please do not hesitate to contact us. Please let us know about your concern…

- **Chief of Training Norway** (Sebastian Rekdal): accsca23@vatsim-scandinavia.org
- **Director of Norway FIR** (Daniel Klepp): accsca4@vatsim-scandinavia.org
- **Discussion forum** (need forum-account): http://forum.vatsim-scandinavia.org/

If you find any errors, outdated procedures or typos in this manual, please do not hesitate to e-mail us: accsca23@vatsim-scandinavia.org. Help us keep the documents clean, realistic and updated!

Chapter 2. Introduction

2.1 What is an emergency?

An emergency is a situation that poses an immediate risk to an aircraft. The word "mayday" is an emergency procedure word used internationally as a signal in aviation voice communications. An emergency landing is a landing made by an aircraft in response to a crisis, and interferes with the operation of the aircraft.

There are several types of emergency landings:

- **Forced landing** is when the aircraft is forced to make a landing due to technical problems with the aircraft. Landing as soon as possible is a priority.
  Examples of problems that would initiate a forced landing include:
  - Engine failure
  - Engine flameout
  - Hydraulic leak
  - Fuel leak
- **Precautionary landing** may result from a planned landing at an aerodrome or location about which information is limited. This may be a result of problems with the aircraft, or a medical emergency (rarely seen in VATSIM).
  Examples of problems that would initiate a precautionary landing include:
  - Stuck landing gear
  - Wheel punctures
- **Ditching** is the same as forced landing, only on water. Ditching is, in similarity to precautionary landing, an unusual procedure on VATSIM
  Examples of problems that would initiate a ditching include:
  - Loss of all engines

As soon as there is any doubt as to the safe conduct of a flight, the flight crew (pilots) should immediately request assistance from ATC. They [the flight crews] should declare the situation early - it can always be cancelled!

- A distress call (situation where the aircraft requires immediate assistance) is prefixed: **MAYDAY, MAYDAY, MAYDAY.**
- An urgency message (situation not requiring immediate assistance) is prefixed: **PAN-PAN, PAN-PAN, PAN-PAN.**
- Crews should make the initial call on the frequency in use, but if that is not possible squawk 7700 and call on 121.5.
- The distress/urgency message shall contain (at least): the name of the station addressed; the callsign; nature of the emergency; fuel endurance and persons on board; and any supporting information such as position, level (climbing/descending), speed, heading, and the PIC's intentions.

2.2 Description of document

This manual will contain examples regarding aircraft stuck in an emergency procedure. It will focus on the air traffic control phraseology made by tower, approach and area control. Each controller station will be described in a separate chapter.

- Chapter 3. Tower procedures
- Chapter 4. Approach Procedures
- ~~Chapter 5. Area Control Procedures~~ (to be added)

Chapter 3. Tower procedures

3.1 Area of Responsibility

A tower controller is at all times responsible of his/her own control zone unless otherwise stated in local procedure regulations for the specific aerodrome. During an emergency, the tower controller is still responsible for traffic within his control zone and cannot utilize vectors for general air traffic (IFR/VFR).

3.2 Emergency on departure

If an aircraft is departing a controlled aerodrome, the tower controller shall acknowledge the emergency, instruct the pilot to squawk mayday (7700) if necessary and guide the aircraft in to a safe approach as soon as possible. Approach may be an option, however, the tower controller may instruct the aircraft to continue visual towards the active runway. This makes it easier for the pilot, as it is not required to change frequency. The tower controller shall make contact and coordinate with relevant approach sector if applicable. The emergency itself is not subject to prior coordination, but this is a normal procedure done by the tower controller to keep the approach controller informed and updated on the situation.

ATC: *Scandinavian 123, wind 0120 degrees 6 knots, runway 01, cleared for takeoff.*

PILOT: *Cleared for takeoff runway 01, Scandinavian 123.*

PILOT: *Mayday, Mayday, Mayday! Scandinavian 123 crossing 1 200 feet, climbing 4000 feet. Engine flameout number 1, I repeat engine flameout number 1.*

ATC: *Scandinavian 123, copy Mayday. All runways are available for landing. Are you able to accept a visual approach?*

PILOT: *Roger, request visual approach runway 01L, Scandinavian 123.*

ATC: *Mayday Scandinavian 123, join left downwind for (visual approach) runway 01. Squawk mayday (7700).*

PILOT: *Joining left downwind for runway 01L, squawking 7700, Scandinavian 123.*

A tower controller **shall not** communicate with other traffic while handling a distressed situation. All other traffic needs to be set 'on hold' and must not be cleared to do anything. Traffic that might be a factor (such as traffic on the runway, lining up, landing) must be instructed to cancel instructions and hold position (or go around). This is to maintain separation between all aircraft.

A tower controller's task is to ensure that all runways are available, stop departing and arriving traffic, and give way for the emergency aircraft. Tower is in charge of all runways on the aerodrome. It is therefore important that he/she coordinates with the relevant approach controller and inform them about the distressed situation, his options and relevant information regarding traffic, weather, runway etc.

TWR: *ICAO Approach, ICAO Tower.*

APP: *ICAO Tower, go ahead.*

TWR: *Scandinavian 123, runway 01, climbing from 1 200 feet to 4000 feet. Engine flameout number 1. (squawking 7700), requested immediate diversion to aerodrome. All runways available. All arriving and departing traffic are stopped!*

APP: *Roger that. Scandinavian 123 climbing 4000 ft. engine failure number 1 (squawking 7700). Immediate diversion to the aerodrome and all runways available. I will stop arriving traffic.*

TWR: *Correct.*

APP: *Roger. Coordinated.*

3.3 Emergency on approach

The approach controller shall transfer the emergency aircraft when established on final approach. The tower controller will pass a normal landing clearance and shall not cause any delay for Scandinavian 123 as he/she is the number 1 priority in such a situation.

PILOT: *Scandinavian 123, 7 mile final.*

ATC: *Scandinavian 123, tower. Wind 010 degrees 10 knots, runway 01 cleared to land. (emergency vehicle standing by)*

PILOT: *Cleared to land runway 01, Scandinavian 123.*

The pilot may also execute a visual approach. The requirement for initiating visual approaches is Visual Meteorological Conditions (VMC).

If the airport is operating with two or more runways, the tower controller may instruct other traffic to depart and land on the second runway. This will not cause Scandinavian 123 any delay.

In case the pilot finds it appropriate to cancel the emergency, the tower controller should reply as follows:

ATC: *Scandinavian 123, roger mayday cancelled time '30 zulu [followed by message].*

Source: blog.wsj.com – © 2014

Chapter 4. Approach procedures

4.1 Area of Responsibility

An approach controller is at all times responsible for his/her TMA (or approach sector). During a mid-air emergency, the approach controller will guide the aircraft to the closest available runway and get the aircraft safely down using efficacy and priority. The approach controller will still be responsible for the other relevant traffic within his approach sector. He may use vectors, holding, climbing and descending to avoid conflicts.

4.2 Emergency on departure

As in the previous example (see section 2.2), tower will transfer Scandinavian 123 to approach for immediate diversion. From this point on, the approach controller is in charge of Scandinavian 123, and is responsible for getting him down safely. Approach may utilize vectors. This might be necessary, as it is more efficient to use vectors than STAR transitions in such situations.

The conversation below will continue from the previous one (see section 2.2):

PILOT: *Approach, Mayday Scandinavian 123 passing 2500 feet climbing 4000 feet.*

ATC: *Mayday Scandinavian 123, Approach, radar contact. Climb altitude 6000 feet and turn right heading 280.*

PILOT: *Climbing 6000 feet and turning right heading 280, Scandinavian 123.*

The approach controller should provide vectors to the emergency aircraft and offer the aircraft a visual approach if the weather allows it (see Meteorology for VMC minimums). In case of IMC (instrument meteorology conditions), the approach controller shall provide vectors for ILS or MLS approach if applicable.

4.3 Emergency on approach

An approach controller shall direct an emergency aircraft towards the closest available runway or airport. In the unlikely event of an emergency, the approach controller shall guide all other relevant traffic away from the emergency aircraft. Use hold or vectors if necessary. The approach controller shall focus on the emergency aircraft and shall not, under any circumstances, clear aircraft for approach before the emergency aircraft.

> *Note: this is only applicable if the aircraft is cleared approach on same runway.*

The approach controller may use vectors or direct routing, whichever is faster, to guide the emergency aircraft towards the arrival runway. Approach shall hand traffic over to tower as normal. However, tower shall be informed at least 5 minutes upon arrival in order to clear or close the runway.