


**SECTION 9****Pilot's Operating Handbook Supplement AS-11****Emergency Locator Transmitter (ELT) KANNAD 406 AF / AF-Compact**

This supplement is applicable and must be inserted into Section 9 of the POH when the 406 MHz-ELT KANNAD 406 AF or 406 AF-Compact is installed in the AQUILA AT01-100. The information in this supplement adds to or replaces information in the basic POH.

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15.10.2013  
Date, Signature Office of Airworthiness

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## 0.1 RECORD OF REVISIONS

Issue	Reason for Change	Effected Pages	Date of Issue
A.01	Initial Issue	All	28.05.2013
A.02	Editorial Changes	All	15.10.2013

## 0.2 LIST OF CURRENT PAGES

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1 - 12	A.01	28.05.2013
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## 1. GENERAL

This supplement provides a general description of the 406 MHz-ELT KANNAD 406 AF/AF-Compact, its basic operation and integration into the AQUILA AT01-100. For a more detailed description of the KANNAD 406 AF/AF-Compact and full operating instructions, please refer to the current issue of the KANNAD Installation Manual/Operation Manual/Inspection Log, DMA 174L Ref. 0139162L for the KANNAD 406 AF or DOC06006C Ref. 0141922C for the KANNAD 406 AF-Compact.

The information contained in this supplement is to be used together with the complete POH. Furthermore, the KANNAD Installation Manual/Operation Manual/Inspection Log must always be carried on board the aircraft during flight.

## 2. OPERATING LIMITATIONS

The KANNAD 406 AF/AF-Compact ELT is installed as optional equipment whose failure is uncritical under all operational conditions. The operating limitations defined in section 2 of the basic POH apply without any changes or restrictions.

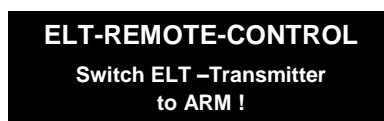
The ELT Remote Control Panel must be installed. Installation is not optional!

If the KANNAD 406 AF/AF-Compact ELT is installed in the aircraft, the following placards must be installed at the locations stated below:

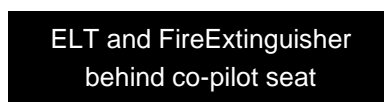
- 1) Placard on the outer surface of the fuselage in the vicinity of the ELT:



- 2) Placard on the instrument panel, beside the ELT Remote Control Panel:



- 3) Placard in the upper right section of the instrument panel:



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### 3. EMERGENCY PROCEDURES

The KANNAD 406 AF/AF-Compact ELT is installed as optional equipment whose failure is uncritical under all operational conditions. The emergency procedures defined in section 3 of the basic POH apply without any changes or restrictions.

### 4. NORMAL PROCEDURES

No change to the basic POH. A short description of the operation of the KANNAD 406 AF/AF-Compact ELT is contained in section 7 of this supplement.

### 5. PERFORMANCE

No change to the basic POH.

### 6. WEIGHT AND BALANCE

The change in empty weight and the corresponding center of gravity after the installation or removal of the KANNAD 406 AF/AF-Compact must be determined and recorded in accordance with section 6 of the basic POH.

### 7. SYSTEMS DESCRIPTION

#### 7.1 GENERAL

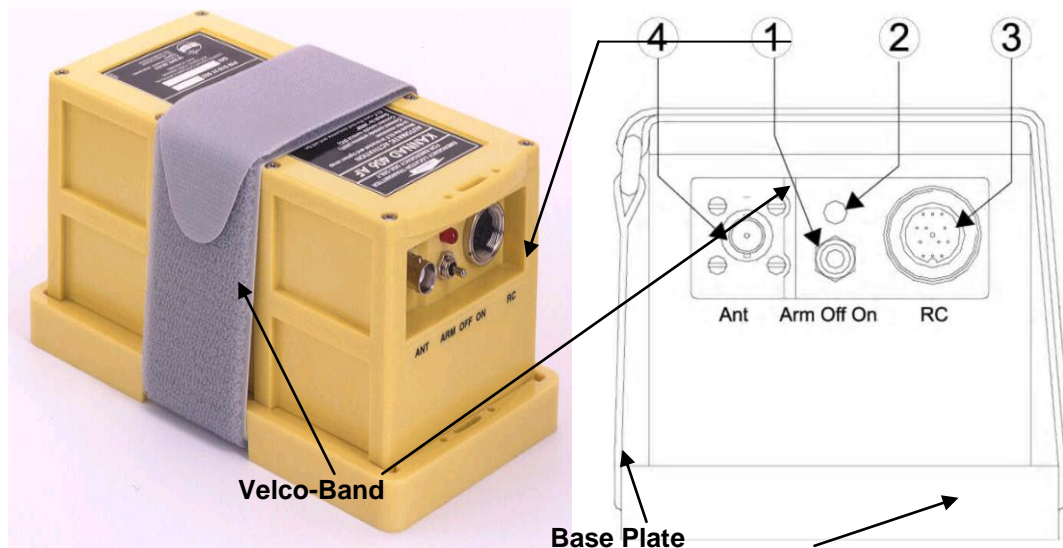
The Emergency Locator Transmitter (ELT) is an emergency transmitter that, if activated, transmits a signal on the international civilian emergency frequency (121.5 MHz) and on the military emergency frequency (243.0 MHz). This enables rescue teams to locate a lost aircraft in a shorter period of time. Furthermore, the ELT transmits digital messages on 406 MHz that can be processed by COSPAS-SARSAT system satellites to aid and coordinate search and rescue (SAR) operations all over the world. Besides processing and relaying signals received on 406 MHz, these satellites also relay signals transmitted on both international emergency frequencies 121.5 and 243 MHz to one of 64 ground stations within the COSPAS-SARSAT system. Here SAR operations are initiated and coordinated. The signal transmitted on 406 MHz carries data which identifies the aircraft in distress and helps facilitate SAR operations. The aircraft is located using the Doppler Effect with a precision of app. 2 NM at any point on the earth.

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## INTEGRATION OF THE KANNAD ELT INTO THE AQUILA AT01-100

The ELT is installed on the right side of the baggage compartment floor behind the copilot's seat. The ELT antenna (RAYAN ANT 300) is mounted outboard on the upper fuselage skin behind the baggage compartment bulkhead of the aircraft. A remote control panel for the ELT is installed in the right section of the instrument panel above the engine instruments. The ELT is connected to the remote control panel with a separate cable harness which is routed along with the fuselage cable harness through the cockpit. On the ELT side, the cable harness is equipped with a DIN-12 connector and with a D-SUB 9-pin receptacle on the remote control panel side.

## KANNAD 406 AF/AF-COMPACT FRONT VIEW



## CONTROLS & CONNECTORS

The following controls are found on the ELT front panel (refer to picture above):

3-position switch ARM/OFF/ON \*

1. Red light (LED) \*
2. DIN 12 socket for connection to remote control panel, CS144 interface module (KANNAD 406 AF only), dongle or programming equipment
3. BNC connector for the antenna

\* *Position 1 and 2 are interchanged for the KANNAD 406 AF-Compact ELT.*

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The red light (LED) gives an indication to the current mode of the beacon:

- After the self-test:  
a series of short flashes indicate the self-test found a problem, one long flash indicates that the self-test is OK.
- In operating mode:  
periodic flashes during 121.5/243 MHz transmissions and a long flash during 406 MHz transmission.

A buzzer gives an aural indication to the current mode of the beacon:

- |                                 |                    |
|---------------------------------|--------------------|
| ▪ Self-test                     | Continuous tone    |
| ▪ Transmitting on 121,5/243 MHz | 2 beeps per second |
| ▪ Transmitting on 406 MHz       | No tone            |

### ELT-REMOTE CONTROL PANEL

The ELT-Remote Control Panel (RC200) is installed in the right section of the instrument panel above the engine instruments.



The following controls are to be found on the remote control panel:

- 3-position switch (ON/ARMED/RESET TEST)
- Red light (LED adjacent to the "ON" marking)

#### **NOTE**

*The ELT can only be operated by the remote control panel if the ELT switch is in the "ARM"-Position.*

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## **TRANSMITTER**

The KANNAD 406 AF/AF-Compact can be activated either automatically by the shock sensor (when a crash occurs) or manually by the switch on the ELT or with the remote control panel. The ELT is designed to transmit on the following frequencies:

- On the international emergency frequencies 121.5 and 243 MHz as well as 406 MHz for COSPAS/SARSAT services (**KANNAD 406 AF only**)
- On the international emergency frequency 121.5 MHz as well as 406 MHz for COSPAS/SARSAT services (**KANNAD 406 AF-Compact**)

Both international emergency frequencies (121.5 and 243 MHz) are primarily used for homing during the final stages of the SAR (Search and Rescue) operations. The 406 MHz frequency is used to pinpoint the location and identify the aircraft in distress using the COSPAS-SARSAT system. Once activated, the transmitter operates continuously on 121.5 MHz (and 243 MHz for the KANNAD 406 AF) with an output power of 100 mW. During the first 24 hours of operation, a digital message is transmitted on 406 MHz every 50 seconds to the COSPAS-SARSAT satellites with an output of apx. 5W. Afterwards, the KANNAD 406 AF stops transmitting on 406 MHz to maintain the 121.5/243 MHz transmissions for as long as possible. The KANNAD 406 AF-Compact ELT continues transmitting on 406 MHz even after the first 24 hours.

## **POWER SUPPLY**

The ELT is supplied with electrical power independent from the on board electrical system of the aircraft. The energy supply is provided by a battery pack composed of three (KANNAD 406 AF) or one (KANNAD 406 AF-Compact) LiMnO<sub>2</sub> D cells. With new batteries, the battery pack allows close to 100 hours of transmission on 121.5/243 MHz at -20°C for the KANNAD 406 AF and more than 48 hours at -20°C for the KANNAD 406 AF-Compact.

<b>WARNING</b>
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*The battery pack cannot be recharged!*

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The transmitter battery expiry date is 6 years after manufacturing.

The battery pack must be replaced every 6 years, if no activation of the ELT has occurred during the lifetime of the battery, or if one of the following apply:

- a) After the transmitter has been used in an emergency situation (including any inadvertent activation of unknown duration).
- b) After the transmitter has accumulated more than one hour of operation (e.g. time accumulated in several tests and inadvertent activations of known duration).
- c) On or before the battery replacement date (battery replacement date is marked on the battery pack and on the label at the end of the transmitter).

## **REGISTRATION AND PROGRAMMING**

**CAUTION**

*The ELT must be registered with the local registration authority prior to installation in the aircraft. Change of ownership must also be reported to the local registration authority.*

For the declaration and registration of the 406 MHz ELT the forms available from the local registration authority must be used. A data sheet to program the ELT, which contains all the necessary data for the COSPAS-SARSAT protocol, must be completed and returned to the distributor so that the unit can be properly configured. For more information, refer to the Installation/Operation Manual of the ELT or contact your local registration authority.

## **7.2 ACTIVATION AND OPERATING MODES**

### **FAMILIARIZATION WITH THE OPERATION**

It is recommended to observe the following instructions to ensure reliable operation in the event of an emergency:

- (a) Become thoroughly familiar with the operation of the unit.
- (b) Always carry the Installation/Operation Manual of the ELT along with this supplement on board the aircraft during flight.
- (c) Visually inspect the unit at regular intervals, as specified in the Installation/Operation Manual. Check the ELT attachment, the antenna mounting and all cable connections for secure attachment.

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### OPERATING MODES OF KANNAD 406 AF/AF-COMPACT ELT

The ELT is installed on the right side of the baggage compartment floor behind the copilot's seat. A remote control panel for the ELT is installed in the right section of the instrument panel above the engine instruments.

The following table provides an overview of the different operating modes of the ELT:

KANNAD 406 AF/AF-COMPACT ELT		
Mode	Switch on ELT Unit/Remote Control Panel (RCP)	Function
ARMED/ STANDBY	„ARM“ (normal flight setting)	Stand-by mode for automatic activation of the ELT by the crash sensor (g-sensor). This mode is mandatory during flight. The switch on the ELT unit must be in the “ARM” position to allow operation of the ELT via the remote control panel.
ON	„ON“	Overrides the crash sensor and activates ELT transmission manually (refer to the Installation Manual of the ELT for testing).
OFF	„OFF“ (ELT unit only)	Turns the ELT off for maintenance or to terminate the emergency signal transmission after rescue or inadvertent operation.
RESET TEST	“RESET TEST” (remote control panel only)	To initiate the self-test function of the ELT and to terminate transmission of an activated ELT on the remote control panel.

In order to be automatically activated by the crash sensor, the ELT must be in standby (**ARM**) mode. This mode is mandatory during flight. The ELT can only be operated with the remote control panel if it is in the stand-by mode (**ARM**). It is recommended to only switch the ELT OFF during maintenance or when the aircraft is parked for a longer period of time. Ensure that the ELT antenna is clear of obstructions.

After an emergency landing, it is recommended to tune in 121.5 MHz on the COM transceiver to check if the ELT has been activated. Once the ELT is activated, it can be manually deactivated by setting the ELT switch to the “OFF” position or by pressing the switch to the “RESET TEST” position on the ELT remote control panel for at least 1 second, and then returning the switch to the “ARMED” position. In the case of unintentional activation, national regulations with regard to informing Air Traffic Control must be observed.

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### **7.3 FUNCTIONAL TESTING**

#### **GENERAL**

The ELT is furnished with a self-test function to perform an operational check to detect any possible malfunctions. An operational check using the self-test function must be conducted regularly by the pilot or maintenance personnel. The manufacturer recommends conducting a self-test once a month and after every system maintenance, but not more than once a week since every self-test consumes energy from the batteries. If the self-test is carried out more often than specified above, the battery life-time is reduced accordingly. Functional and operational tests beyond the scope of a self-test, such as transmission tests, must be conducted by certified maintenance personnel in accordance with the procedures defined in the Installation Manual/Operation Manual/Inspection Log of the ELT. These types of tests must be conducted after the initial installation of the ELT as well as at regular intervals, according to national regulations.

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**SELF-TEST PROCEDURE****CAUTION**

*Do not perform a self-test without the antenna connected because the transmitter could be damaged!*

SELF-TEST		KANNAD 406 AF/AF-Compact
1	Set ELT switch to the "OFF" position	The ELT is installed on the right side of the baggage compartment floor behind the copilot's seat. The ELT switches to the OFF mode.
2	Set ELT switch to the "ARM" position	A buzzer sounds during the whole self-test procedure. After a few seconds, the test result is displayed with the LED as follows: <ul style="list-style-type: none"><li>• One long flash indicates that the system is operational and that no errors were found.</li><li>• A series of short flashes indicates that the test has failed and error conditions were found.</li></ul>
3	Return the ELT switch to the "OFF" position or retain the "ARM" position	Setting the ELT switch back to the OFF position turns the ELT off. Before the next flight, the ELT must be switched to the ARMED mode (Stand-by mode).

**CAUTION**

*Provided that the ELT switch is in the ARM position, the self-test may also be initiated through the remote control panel by pushing the switch to the RESET TEST position. The self-test sequence is the same as described above for the ELT unit.*

If the self-test fails, contact the manufacturer/distributor as soon as possible.

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Remark:

The number of flashes gives an indication to the fault detected during the self-test.

Number of flashes	FAILURE MODE
3+1	LOW BATTERY VOLTAGE
3+2	LOW RF POWER
3+3	FAULTY VCO LOCKING
3+4	NO IDENTIFICATION PROGRAMMED

## 8. HANDLING, SERVICE AND MAINTENANCE

The ELT batteries have a limited service life and must be replaced every 6 years if no ELT activation has occurs before. Refer to the Installation Manual/Operation Manual/Inspection Log of the ELT and the Maintenance Manual of the AQUILA AT01-100 for more details and a detailed maintenance schedule.

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