



**STATO MAGGIORE DELL'ESERCITO
REPARTO IMPIEGO DELLE FORZE**

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(All. Aa008)



OGGETTO: RQ-1 PREDATOR - STANDARD OPERATING PROCEDURES

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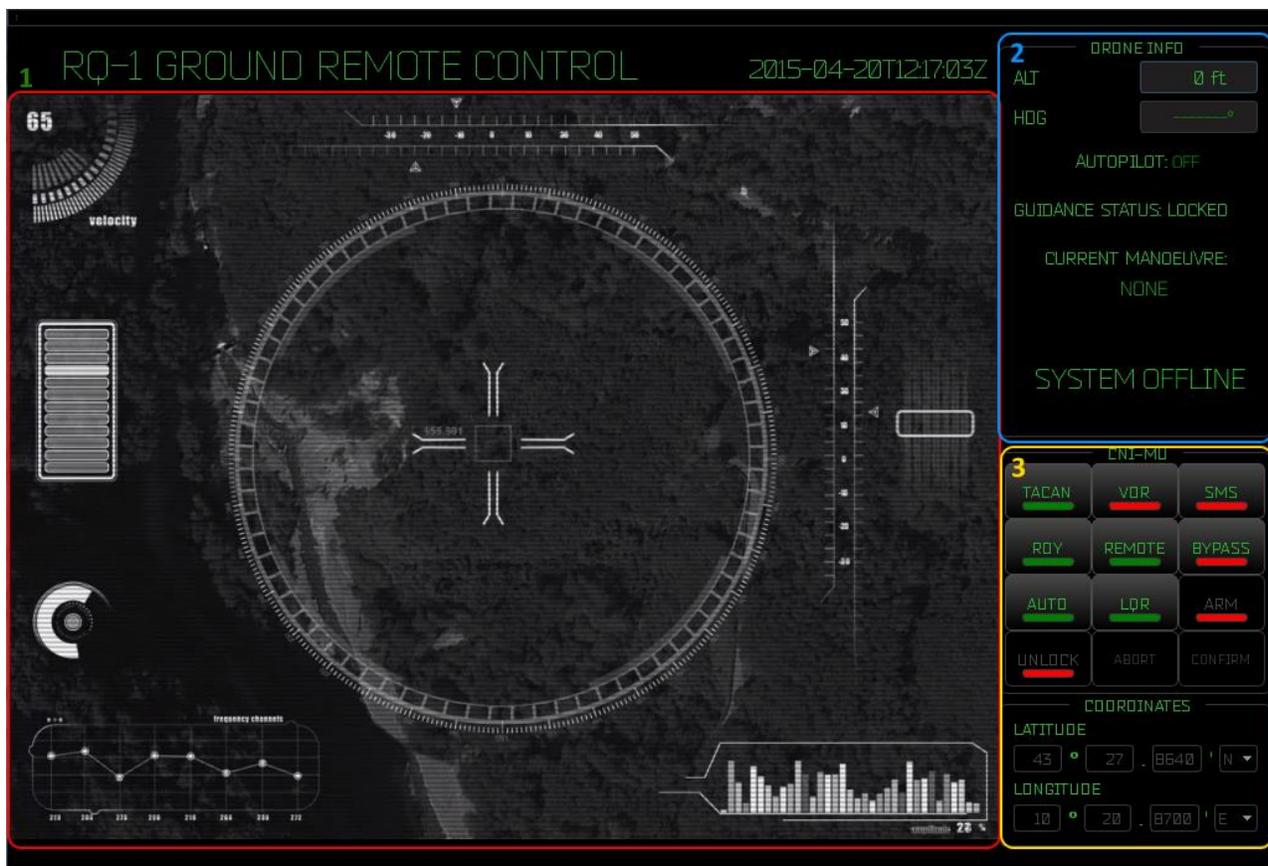
MQ-9A PREDATOR-B

STANDARD OPERATING PROCEDURES

SECTION 1: GREMCO OVERVIEW

1.1 THE GREMCO

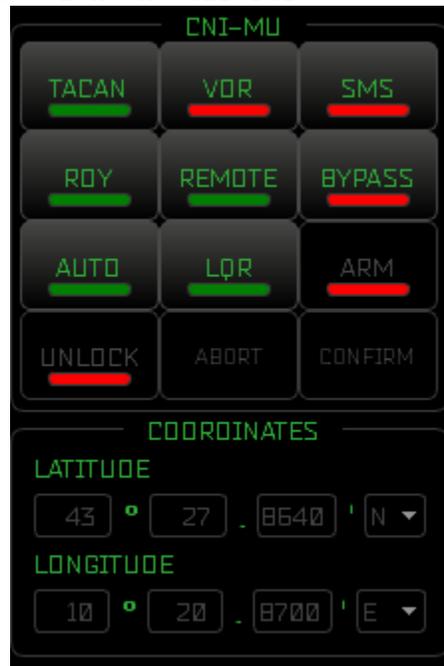
G.REM.CO. (Ground Remote Control) is the tool designed to allow *forward air controllers* and *special operations operators* to remotely control and to pilot a MQ-9A Predator-B drone. The tool is able to - with certain limitations - control the drone while it is in flight, to display the video output from its video camera, in order to increase situational awareness and mission effectiveness, to establish significant tactical advantage and allowing to launch attacks towards ground positions.



- (1) Video output: the GREMCO is capable of displaying the video stream received from the MQ-9A Predator-B video camera
- (2) Drone Information: displays the aircraft's current altitude, heading, autopilot status, current manoeuvre, connection and system status
- (3) CNI-MU (Communication/Navigation/Identification Management Unit)

1.2 THE CNI-MU

CNI-MU stands for Communication/Navigation/Identification Management Unit, and it's basically the control panel with which the GREMCO allows the user to send commands and interact with the aircraft.



The CNI-MU consists of 12 buttons with a colored led indicating the status of the button itself:

- Green: the function associated to the button has been activated / is running
- Red: the function associated to the button has been de-activated / is not running

Not every button is available at any time: the enable status of each button depends on the current conditions in which the drone is operating: the current manoeuvre, the general status of the aircraft and of the other functions.

In order to press a button, position the mouse cursor over the button area (**not over the led, though**) and click the left mouse button.

The "ABORT" and "CONFIRM" buttons are special buttons that are enabled when the user is performing an operation that requires a specific confirmation.

In addition to the 12 buttons, the CNI-MU hosts a series of text boxes that allow the user to manually enter the geographical coordinates of a ground target. Also these text boxes are enabled under specific conditions.

Details on every single function are covered in the following chapters.

SECTION 4: EMERGENCY/ABNORMAL ACTIONS

4.1 GENERAL

There are three distinct phases in the management of emergencies and abnormal situations:

- establish and maintain aircraft control and verify the nature of the malfunction
- determine a course of action (i.e. continue, mission abort, return to base/divert field, etc.) and briefing the plan to the Command.
- monitor/manage degraded systems and, if necessary, preparing for an unscheduled landing.

| SITUATION | | PROCEDURE DESCRIPTION |
|-----------|---|-----------------------|
| 1 | Engine failure | Refer to Chapter 4.2 |
| 2 | Loss of Video stream | Refer to Chapter 4.3 |
| 3 | GREMCO locked due to hostile takeover | Refer to Chapter 4.4 |
| 4 | Fire on board | Refer to Chapter 4.5 |
| 5 | Corrupted or missing mission data | Refer to Chapter 4.6 |
| 6 | Manual Engagement of ground static target | Refer to Chapter 4.7 |
| 7 | Emergency landing needed | Refer to Chapter 4.8 |
| 8 | Connection offline | Refer to Chapter 4.9 |
| 9 | Weapons malfunctions | Refer to Chapter 4.10 |
| 10 | GPS signal lost | Refer to Chapter 4.11 |
| 11 | GREMCO jammed by enemy EW device | Refer to Chapter 4.12 |

Please refer to the corresponding chapter for a detailed description of the procedure.

4.4 Situation #03: GREMCO locked due to hostile takeover

When a GREMCO terminal falls into enemy's hand, and/or somebody tries to use it inappropriately, a security procedure automatically triggers, ensuring that:

- the autopilot is automatically engaged and starts following a circular path at a security altitude
- the CNI-MU is locked and can only be unlocked with a safety 10 digits passcode
- The only enabled button on a locked CNI-MU, is the UNLOCK button
- Even once unlocked, the autopilot cannot be switched off and the aircraft continues on a circular path until it is commanded to return to base from the Central Command.

| Unlocking GREMCO after hostile takeover | | |
|---|--|---|
| ACTION | | NOTES |
| 1 | Press the UNLOCK button on the CNI-MU |  |
| 2 | | A numeric keypad will appear |
| 3 | Enter the 10 digits safety passcode |  |
| 4 | | Press the buttons on the numeric keypad or on the computer's keyboard to compose the safety passcode. |
| 5 | | In case of a typo, press the CLEAR button or the DEL key to DELETE the safety passcode and type it all over again |
| 6 | | Once 10 digits have been entered, the CONFIRM button is enabled |
| 7 | Press the CONFIRM button on the numeric keypad | |
| 8 | | If the safety passcode is correct, the numeric keypad will be closed and the CNI-MU will be unlocked |

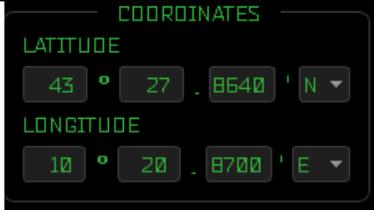
4.7 Situation #06: Manual Engagement of a ground static target

The MQ-9A Predator-B is able to engage targets on the ground following an IR guide or, if necessary, can direct a AGM-114 Hellfire towards a specific location on the ground.

Note that:

- the altimetric profile of the target must have been previously loaded into the MQ-9A system or the GREMCO will not allow a manual engagement
- the geographical coordinates must be entered in the following format:
hddd° .mm .mmm'
 where
 - o hddd° = degrees
 - o mm.mmm' = minutes and decimals
- **The geographical coordinates must be in the WGS-84 map datum**

In order to start the engagement procedure, the following actions must be performed on the CNI-MU.

| Manual engagement of a ground static target | | |
|---|---|--|
| ACTION | | NOTES |
| 1 | TACAN → OFF | The order in which these buttons are pressed is not crucial. |
| 2 | VOR → OFF | |
| 3 | SMS → ON | |
| 4 | RDY → OFF | |
| 5 | REMOTE → ON | |
| 6 | BYPASS → ON | |
| 7 | AUTO → ON | |
| 8 | LQR → OFF | |
| 9 | | The ARM button on the CNI-MU should be enabled at this point. If it's not enabled, please double check the buttons state |
| 10 | ARM → ON | |
| 11 | | The "ENTER TARGET COORDS" box, along with the "CONFIRM" and "ABORT" buttons on the CNI-MU are enabled at this point |
| 12 | Enter the geographical coordinates of the target |  |
| 13 | Press the CONFIRM button on the CNI-MU to engage the target | Once engaged, the attack procedure cannot be cancelled or stopped |

Note: if the aircraft is following a fixed circular path, it will engage the target only when a suitable position has been reached. In that case a countdown will be displayed indicating the Estimated Time of Arrival to the engagement starting point.