GENERAL ATOMICS

MQ-9A
Predator-B

Standard
Operating
Procedures

MQ-9A PREDATOR-B

STANDARD OPERATING PROCEDURES

SECTION 1: GREMCO OVERVIEW

1.1 THE GREMCO

G.REM.CO. (Ground Remote Control) is a tool designed to enable forward air controllers and special operations operators to remotely control and pilot an MQ-9A Predator-B drone. With certain limitations, the tool can control the drone while it is in flight, display the video output from its camera to enhance situational awareness and mission effectiveness, establish a significant tactical advantage, and allow for launching attacks on ground positions.
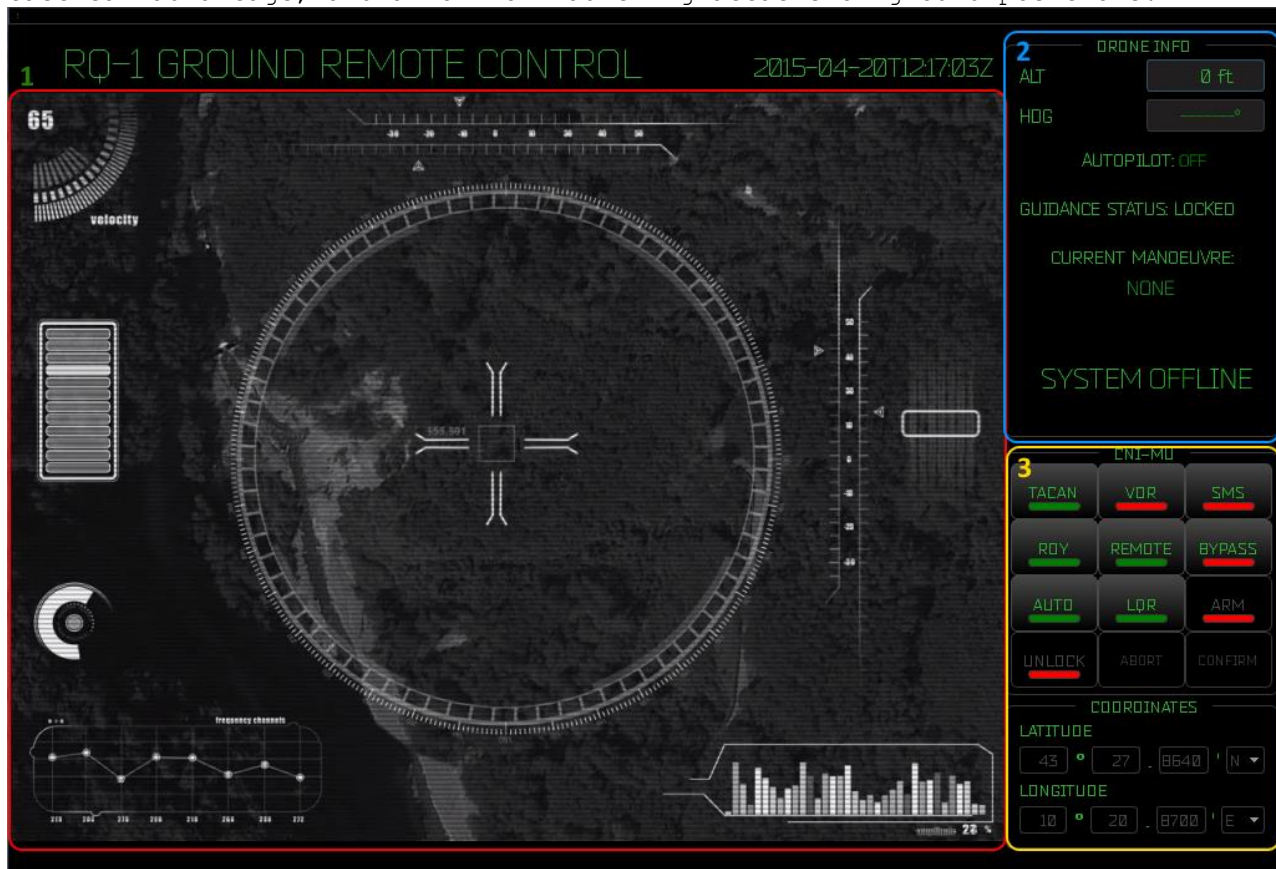
1) Video Output: The G.REM.CO. is capable of displaying the video stream received from the MQ-9A Predator-B's camera.
2) Drone Information: Displays the aircraft's current altitude, heading, autopilot status, current maneuver, connection, and system status.
3) CNI-MU (Communication/Navigation/Identification Management Unit): Serves as the primary tool for managing all functions of the G.REM.CO., including communication, navigation, and identification.

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1.2 THE CNI-MU

CNI-MU (Communication/Navigation/Identification Management Unit) is essentially the control panel through which the G.REM.CO. allows the user to send commands and interact with the aircraft.

The CNI-MU consists of 12 buttons, each with a colored LED indicating the status of the button:

 - Green: The function associated with the button is activated/running.
 - Red: The function associated with the button is deactivated/not running.

Not every button is available at all times; the enable status of each button depends on the current conditions in which the drone is operating, including the current maneuver, the general status of the aircraft, and other functions.

To press a button, position the mouse cursor over the button area (but not over the LED) 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 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. These text boxes are also enabled under specific conditions.

Details on each function are covered in the following chapters.

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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 (e.g. continue, mission abort, return to base/divert field, etc.) and brief the plan to the Command.
- monitor/manage degraded systems and, if necessary, prepare 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 each procedure.

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4.4 Situation #03: GREMCO locked due to hostile takeover

When a G.REM.CO. terminal falls into enemy hands, and/or someone 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 secure altitude.
- The CNI-MU is locked and can only be unlocked with a 10-digit safety 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 by 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-digit 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 again
6		Once 10 digits have been entered, the CONFIRM button will be enabled
7	Press the CONFIRM button on the numeric keypad	
8		If the safety passcode is correct, the numeric keypad will close and the CNI-MU will be unlocked

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

The MQ-9A Predator-B is capable of engaging ground targets using an IR guide or, if necessary, directing an AGM-114 Hellfire missile towards a specific location on the ground.

Note that:

- 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**
- All calculations to hit the target are performed automatically by the G.REM.CO. based solely on the user-provided coordinates. All other target data, such as its altimetric profile, are calculated automatically using preloaded cartographic data.

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	
2	VOR	→ OFF	The order in which these buttons are pressed is not crucial.
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 state of all buttons on the CNI-MU		
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
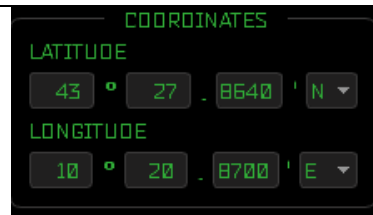
Note: if the aircraft is following a fixed circular path, it will engage the target only when a suitable position has been reached. In that case, a countdown will be displayed indicating the Estimated Time of Arrival (ETA) to the engagement starting point.

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