SIKORSKY UH-60M BLACKHAWK

FOR X-PLANE 11

Overview

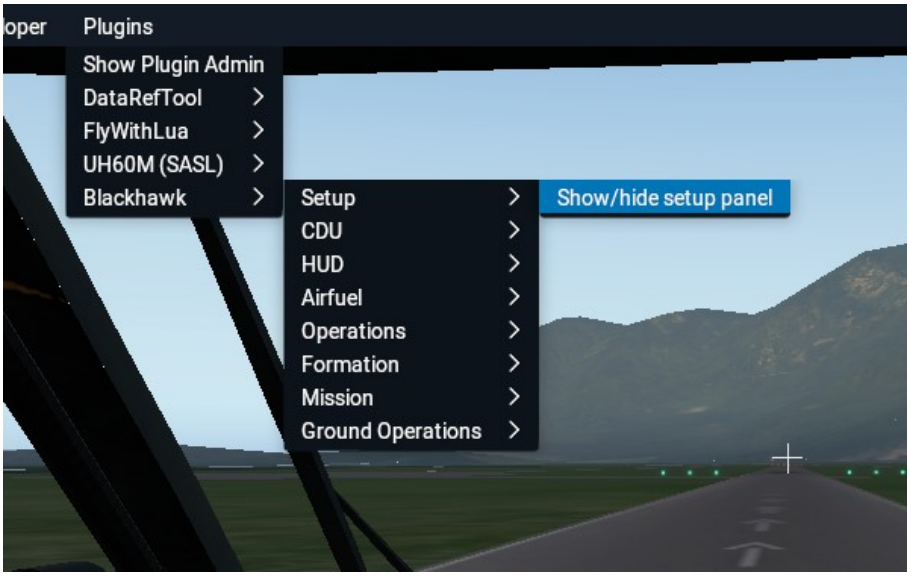
Quick Start

- **Make sure you do not have your joystick mapped to a „throttle“ axis. If you have a hardware throttle, use the „wing sweep“ axis instead !**

- **Start the helicopter either with „running engines“ or use the „autostart“ option from the „Flight“ pull-down menu.**

Configuration

To configure the Blackhawk you can open the „setup panel“ from the „Blackhawk“ setup sub-menue inside the „Plugins“ pull-down menu.



Alternatively you can click on the upper-right-corner of the cockpit dash. If uncertain use the „Show instrument click regions“ under the „View“ menu.

Other configurations can be done from the Multi-Function-Displays (MFD) under the „CONF“ button on the „EICAS“ screen (of course batteries have to be switched ON first).

Cold & Dark

On the SETUP panel you can select the CHECKLIST option. A popup will guide you interactively through the steps required to start the helicopter manually from cold&dark.

At the end of the list the engine-start can either be performed by pressing the white buttons on the throttle levers located on the over-head panel, or by assigning the appropriate command to a joystick button (see “Datarefs and Commands” section).

Please note that the “Ignition Key” needs to be set to the “ON” position !

Check messages on the EICAS screen and confirm them by pressing the CAUTION button or via the mapped command. Audible alarm can be configured in the CONF menu on the MFD.

CDU – Control and Display Unit
FMS – Flight Management System

The CDU or FMS is being used to control communication and navigation systems, flight plans and missions. A mission is similar to a flight plan but has additional functionality such as runnings X-Plane commands depending on programmable conditions. More about it in the “Missions” section.


CDU1
RNG 0.0 GPS 13:03:53
BRG 000 TTG 00:00:00
NXT 003 MSL 1784 GS 0
WND 0 / 0 K--- LOWI
FPN WPTS
ETSI
Ingolstadt
RUN
ANKER
waypoint
(3000/300)
EDDM
Munich
(4000/200)
FUEL
LATLO
waypoint
(5500/400)
MAP
VAROB
waypoint
(6500/300)
RTN
IDNT
D
BRT DIM PRV NXT
COM NAV EGI FPN DAT CLC FIX
CLR XPD INI ZRO STS TST PPS ENT
SPC


CDU1
RNG 0.0 GPS 13:04:12
BRG 000 TTG 00:00:00
NXT 003 MSL 1784 GS 0
WND 0 / 0 K--- LOWI
FPN EDIT
ETSI (48.72/11.53)
Ingolstadt
ADD
ANKER (48.57/12.00)
waypoint
(3000/300)
INS
EDDM (48.36/11.79)
Munich
(4000/200)
DEL
LATLO (47.68/12.81)
waypoint
(5500/400)
ALT
VAROB (47.63/12.54)
waypoint
(6500/300)
RTN
IDNT
D
BRT DIM PRV NXT
COM NAV EGI FPN DAT CLC FIX
CLR XPD INI ZRO STS TST PPS ENT
SPC


CDU1
RNG 0.0 GPS 13:04:30
BRG 000 TTG 00:00:00
NXT 003 MSL 1784 GS 0
WND 0 / 0 K--- LOWI
GPS
EDPK , 0km/0nm
Schönberg
DRCT
EDPC , 28km/11nm
Bad Endorf
XEDAF , 21km/11nm
Altötting
EDJG , 21km/11nm
Grabenstätt
EDNV , 24km/13nm
Vogtareuth
RTN
IDNT
D
BRT DIM PRV NXT
COM NAV EGI FPN DAT CLC FIX
CLR XPD INI ZRO STS TST PPS ENT
SPC


CDU1
RNG 0.0 GPS 13:04:51
BRG 000 TTG 00:00:00
NXT 003 MSL 1784 GS 0
WND 0 / 0 K--- LOWI
PRESETS
COM
NAV
GPS
RTN
IDNT
D
BRT DIM PRV NXT
COM NAV EGI FPN DAT CLC FIX
CLR XPD INI ZRO STS TST PPS ENT
SPC


CDU1
RNG 0.0 GPS 13:05:53
BRG 000 TTG 00:00:00
NXT 003 MSL 1784 GS 0
WND 0 / 0 K--- LOWI
NAV
NAV1
108.00
NAV2
108.30
ADF1
400
ADF2
115
→PRESET
RTN
FREQ:[___108.00]
IDNT
D
BRT DIM PRV NXT
COM NAV EGI FPN DAT CLC FIX
CLR XPD INI ZRO STS TST PPS ENT
SPC

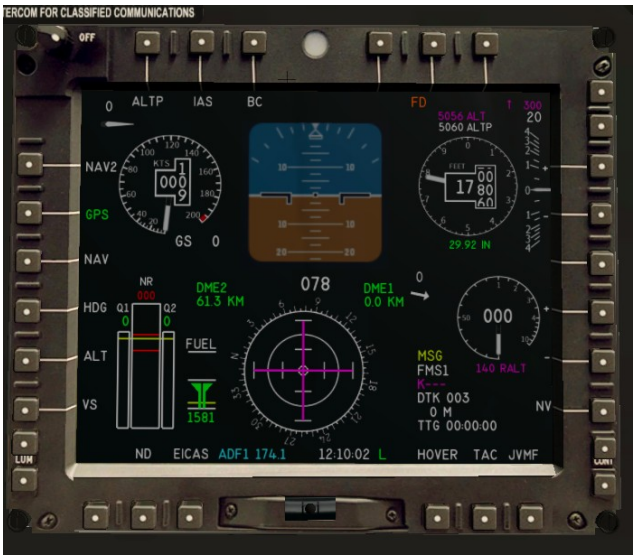

CDU1
RNG 0.0 GPS 13:05:27
BRG 000 TTG 00:00:00
NXT 003 MSL 1784 GS 0
WND 0 / 0 K--- LOWI
NAV PRE
02 THE-BALL
108.10
ILS-LOWI 07
111.10
03 TACAN-MAH
99X
ADF-MNW 08
338
04 VOR-MAH
115.20
ADF-MSW 09
400
05 VOR-MUN
112.30
06 ILS-ETSI
108.10
RTN
IDNT
D
BRT DIM PRV NXT
COM NAV EGI FPN DAT CLC FIX
CLR XPD INI ZRO STS TST PPS ENT
SPC

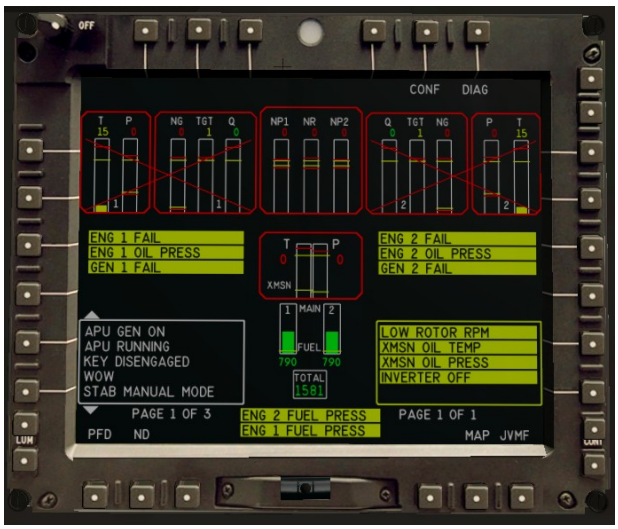

CDU1
RNG 0.0 GPS 13:06:08
BRG 000 TTG 00:00:00
NXT 003 MSL 1784 GS 0
WND 0 / 0 K--- LOWI
ZERO
MSN
ALL
COM
NAV
GPS
RTN
IDNT
D
BRT DIM PRV NXT
COM NAV EGI FPN DAT CLC FIX
CLR XPD INI ZRO STS TST PPS ENT
SPC

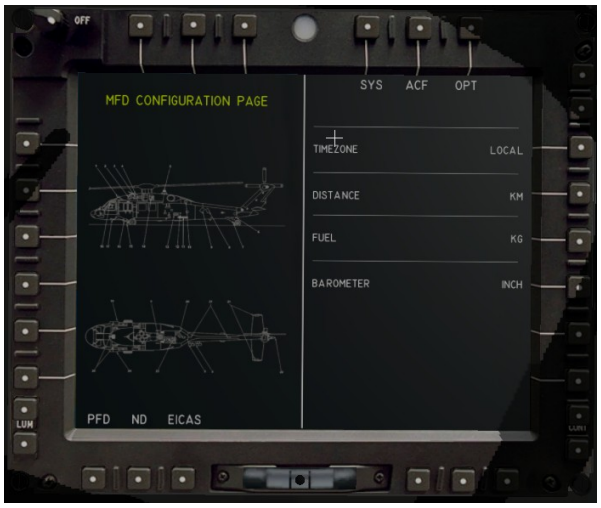

CDU1
RNG 0.0 GPS 13:06:26
BRG 000 TTG 00:00:00
NXT 003 MSL 1784 GS 0
WND 0 / 0 K--- LOWI
FUEL CALC
DISTANCE 397.3 KM
FUEL FLOW 0.0 LB/H
REQ FUEL N/A
FUEL FOR N/A
REM FUEL 3967 LBS
REM TIME N/A
KTS ACT
ETA
RTN
IDNT
D
BRT DIM PRV NXT
COM NAV EGI FPN DAT CLC FIX
CLR XPD INI ZRO STS TST PPS ENT
SPC

Clicking on the CDU displays in the pedestal will open a CDU popup. This can be helpful in VR. The popups are movable and resizable.

MFD – Multi Function Displays







Avitab support

Camera guided target locking

FDCP – Flight Director Control Panel

The FDCP is the control panel for the autopilot. The 5 rotaries for RALT (radio altimeter) , ALTP (programmed altitude). ALT (altitude), IAS (indicated airspeed) and HDG (heading) can be used to change the values in the displays. Pushing the rotaries syncs the display with the actual values (i.e. current altitude).

The black buttons under the displays allow to activate/deactivate the related "upper" AP (autopilot) function. If a function is activated it will be indicated by a greed LED inside the button. Some function also have an "armed" state, which is indicated by an amber LED.

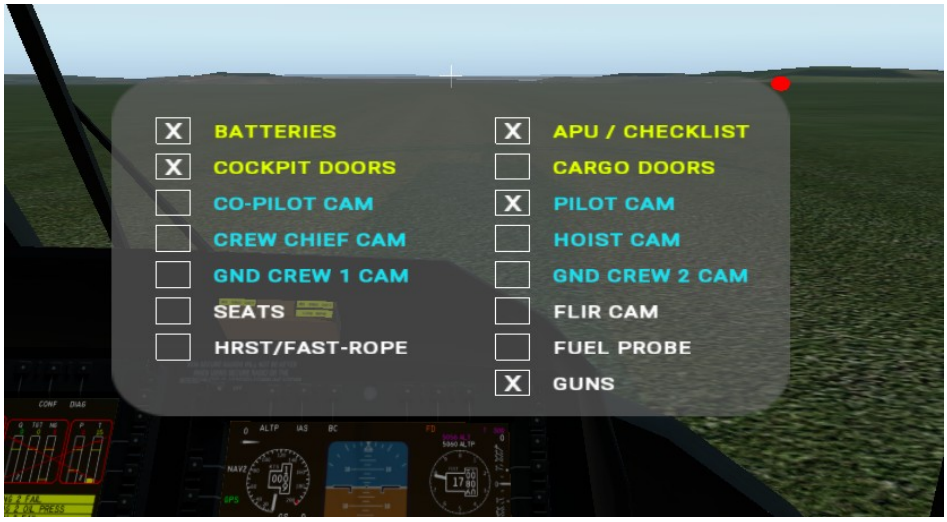
The very right button in the upper row controls and show whether the FD (flight director) is engaged/coupled. If it is coupled (CPLD) then the FD controls the aircraft.

The very left button in the upper row engages RNAV (radio navigation) which means the selected navigation source is providing input to the AP. Valid sources are NAV1, NAV2, LOC1, LOC2 , FMS. They can be selected with the outer ring of the very left rotary in the upper row.

"GO ARND" = GoAround will set the AP to climb with 700 ft/sec and 70 kts.
"LVL HOLD" = LevelHold enables the PID controller which keeps the current altitude-above-ground. It is armed (amber LED) unless vertical speed is less 0.1 m/sec and kias <= 40 kts. Then it will change to green.
"HVR POS" = HoverHold enables the PID pid controller which keeps the current position if the helicopter hovers with less the 1.5 m/sec horizontal speed.
NOTE: All AP functions are DISENGAGED if we have WOW (weight-on-wheels). This also applies to all weapons !!

Cameras

The Blackhawk comes with a built-in multi-camera system. It allows you to do role-playing games.



The system tracks each individual cam position and also allows to save, load and recall position sequences (i.e. preflight check)

The cameras can be selected through the setup-menu or by using one of the available commands (see DataRefs and Commands).

For example in combination with LVL-HOLD and HVR-HOLD you can observe HRST operations as a Crew Chief while sitting in the Cargo Area.

Hint: make sure you engage your AP before you leave your pilots seat ;)

Operations

HRST Fast-Rope-Extraction
Requirement: "HRST" option enabled in setup menu
Command: uh60m/ops/drop_dude

Every time the command gets called, a Seal will slide down on one of the ropes and if on the ground, moves to a random "defense position"

Air-Refuel
Requirement: "REFUEL PROBE" enabled in setup menu
Command: uh60m/ops/c130_show

First command will call the C130. It will adopt to your heading and speed
Second command will end operation. C130 will climb and disappear
Third command will delete the C130 immediately

Target tracking
Requirement: "FLIR CAM" enabled in setup menu

On MFD1 select TAC and then TGT. Clicking the mouse into MFD display will show a red aiming mark which allows to control the cam with the mouse. Pressing the LCK button (or use the equiv. command) will lock the camera to the aimed position. A yellow pole will show up at the locked location. A 2nd click will release the target and the camera moves back to the default position.

Extract Seal
An OSM query is being used to select a random location in the range of 20km to place a Seal at. A JVMF order is being created to get him home. If the message is ACKnowledged, the FMS is programmed with the location. Fly to the Seal and land next to him to take him on board.

Lights

Search light

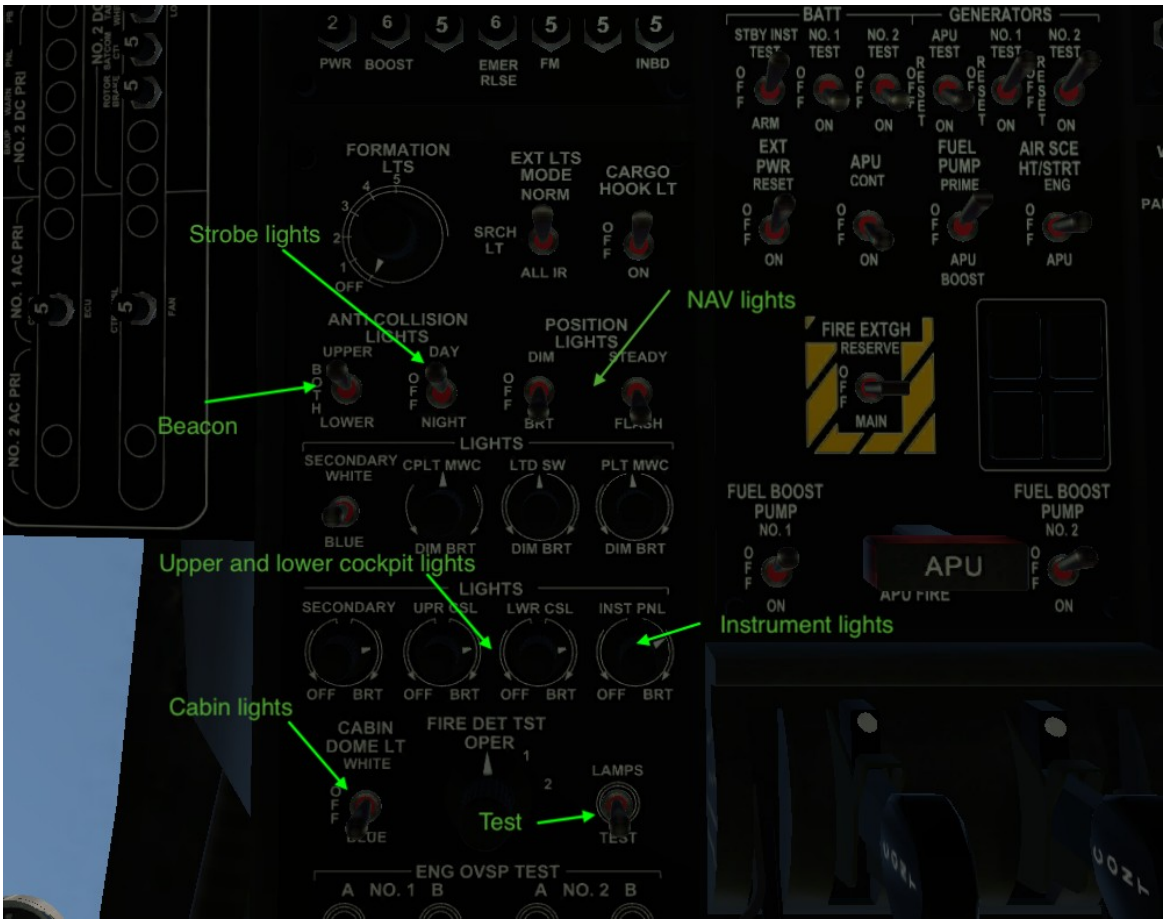
Use command “uh60m/lights/srch_lt_on” to switch search lite on and off. Other commands to steer the search light: ‘srch_lt_up’, ‘srch_lt_dn’,‘srch_lt_lft’ and ‘srch_lt_rgt’. On ground (wow) the search light is coupled to the yaw axis.

Landing light

Use command “uh60m/lights/ldg_lt_on” to switch landing lite on and off.

Instrument lights

Cockpit, Cabin dome and external lights



Clock

Weapons

GUNS
Requirement: “GUNS” enabled in setup menu
Commands: uh60m/weapons/arm_guns & uh60m/weapons/fire_guns

Both “gunner doors” need to be open !

The guns are tied to the yaw axis. So they will follow the tail rotor pedals.

CHAFF
Commands: uh60m/weapons/arm_flares & uh60m/weapons/deploy_chaff

FLARE
Commands: uh60m/weapons/arm_flares & uh60m/weapons/deploy_flares

Note: weapons are disabled as long as we have WOW (weight on wheels)

See also: https://www.youtube.com/watch?v=zKQfuxRcJ8I

Videos

UH60M Videos playlist

https://www.youtube.com/watch?v=MuvI8dFNZUo&list=PLtspyUlCsgSZDCGbs1DjPPdm96kQ2mA7F

HowTo-clips playlist:

https://www.youtube.com/watch?v=AfriXZv96VE&list=PLtspyUlCsgSaIVPmxsf2exIWePyU4dzOE

Make sure you subscribe to this YouTube channel to not miss new videos

Missions

TBD

see MISSIONS_HOWTO.TXT in “missions” folder

Datarefs and Commands

Door commands

uh60m/doors/door_right_open	**Cockpit doors**
uh60m/doors/door_right_close	
uh60m/doors/door_right_toggle	
uh60m/doors/door_left_open	
uh60m/doors/door_left_close	
uh60m/doors/door_left_toggle	
uh60m/doors/cargo_right_open	**Cargo doors**
uh60m/doors/cargo_right_close	
uh60m/doors/cargo_right_toggle	
uh60m/doors/cargor_left_open	
uh60m/doors/cargo_left_close	
uh60m/doors/cargo_left_toggle	
uh60m/doors/gun_right_open	**Gunner doors**
uh60m/doors/gun_right_close	
uh60m/doors/gun_right_toggle	
uh60m/doors/gun_left_open	
uh60m/doors/gun_left_close	
uh60m/doors/gun_left_toggle	
uh60m/doors/avionics_open	**Avionics bay door**
uh60m/doors/avionics_close	
uh60m/doors/avionics_toggle	
uh60m/doors/hydraulics_open	**Hydraulics bay door**
uh60m/doors/hydraulics_close	
uh60m/doors/hydraulics_toggle	
uh60m/doors/engines_open	**Engine cowlings**
uh60m/doors/engines_close	
uh60m/doors/engines_toggle	
uh60m/doors/toggle_all	**Toggle all doors**
uh60m/doors/toggle_one	**Select door by dataref**

uh60m/doors/load_door_preset	**dref: uh60m/doors/preset**

Light commands

uh60m/lights/ldg_lt_on	**Landing light toggle**
uh60m/lights/srch_lt_on	**Search light toggle**
uh60m/lights/srch_lt_up	**Search light up**
uh60m/lights/srch_lt_dn	**Search light down**
uh60m/lights/srch_lt_lft	**Search light left**
uh60m/lights/srch_lt_rgt	**Search light right**
uh60m/lights/dome_blue	**Cargo dome light blue**
uh60m/lights/dome_white	**Cargo dome light white**
uh60m/lights/light_dn	**Dim cockpit lights**
uh60m/lights/light_up	**Brighten cockpit lights**
uh60m/lights/cockpit_flood	**Bright flood light toggle**

System and Engines commands

uh60m/engn/start_engine0	**Start engine 1**
uh60m/engn/start_engine1	**Start engine 2**
uh60m/engn/idle_stop0	**Release idle stop latch 1**
uh60m/engn/idle_stop1	**Release idle stop latch 2**
uh60m/sys/hover_hold	**en/disable hover hold**
uh60m/sys/level_hold	**en/disable level hold**
uh60m/sys/sas_boost	**en/disable SAS boost**
uh60m/sys/hstab_up	**Move stabilator manually up**
uh60m/sys/hstab_dn	**Move stabilator manually down**
uh60m/sys/clock_sel	**Select clock/timer mode**
uh60m/sys/clock_ctrl	**start/stop/reset timer**
uh60m/sys/ftr	**Force Trim Release**
uh60m/caution_ack	**Acknowledge caution warnings**
uh60m/menu	**Open setup menu**

OPS commands

uh60m/ops/winch_prep	
uh60m/ops/winch_ena	
uh60m/ops/winch_conn	
uh60m/ops/winch_up	
uh60m/ops/winch_down	
uh60m/ops/rescuer_hook_only	
uh60m/ops/ipad_home	**Ipad home button**
uh60m/ops/ipad_toggle	**Ipad show toggle**
uh60m/ops/fuel_probe_out	**Extend fuel probe**
uh60m/ops/fuel_probe_in	**Retract fuel probe**
uh60m/ops/fuel_probe_toggle	**Toggle fuel probe**
uh60m/ops/rope_out	**Show ropes**
uh60m/ops/rope_in	**Hide ropes**
uh60m/ops/drop_dude	**Drop seal**
uh60m/ops/extract_seal	**Place Seal at OSM pos and set FMS**
uh60m/ops/iff_emerg	**Sets transponder to 7700**

Nav commands

uh60m/nav/nav_src_up	**Select next RNAV source**
uh60m/nav/nav_src_dn	**Select previous RNAV source**

Weapon commands

uh60m/weapons/arm_guns	**Arm GUNS**
uh60m/weapons/fire_guns	**Fire GUNS**
uh60m/weapons/arm_flares	**Arm CHAFF and FLARES**
uh60m/weapons/deploy_flares	**Deploy FLARES**
uh60m/weapons/deploy_chaff	**Deploy CHAFF**

Camera commands

uh60m/cam/p1_select	**Select Pilot camera**
uh60m/cam/p2_select	**Select CoPilot camera**
uh60m/cam/c1_select	**Select CrewChief camera**

uh60m/cam/g1_select	Select ground crew 1 camera
uh60m/cam/g2_select	Select ground crew 2 camera
uh60m/cam/hoist_select	Select hoist camera
uh60m/cam/add	Add position to path
uh60m/cam/next	Go to next path position
uh60m/cam/reset	Go to first path position
uh60m/cam/clear	Clear path
uh60m/cam/save	Save paths to new.cam
uh60m/cam/update	Update current position
uh60m/cam/load	Load paths from default.cam
uh60m/cam/load_preflight	Load preflight path

MFD commands

uh60m/mfd/cam_power	FLIR Camera power
uh60m/mfd/cam_lock	FLIR Camera locked to target
uh60m/mfd/mfd1_pwr	Power button on MFD1
uh60m/mfd/mfd1_t1	MFD1 top row button 1
uh60m/mfd/mfd1_t2	MFD1 top row button 2 ... 6
uh60m/mfd/mfd1_r1	MFD1 right row button 1
uh60m/mfd/mfd1_r2	MFD1 right row button 2 6
uh60m/mfd/mfd1_b1	MFD1 bottom row button 1
uh60m/mfd/mfd1_b2	MFD1 bottom row button 2 ... 6
uh60m/mfd/mfd1_l1	MFD1 left row button 1
uh60m/mfd/mfd1_l2	MFD1 left row button 2 ... 6
uh60m/mfd/q1up	Queue 1 (yellow) msg box up
uh60m/mfd/q1dn	Queue 1 (yellow) msg box down
uh60m/mfd/q2up	Queue 2 (white) msg box up
uh60m/mfd/q2dn	Queue 2 (white) msg box down
uh60m/mfd/mfd_inc	Increment selected instrument
uh60m/mfd/mfd_dec	Decrement selected instrument
uh60m/mfd/mfd_inc2	Increment fast sel. Instr.
uh60m/mfd/mfd_dec2	Decrement fast sel. Instr.

uh60m/mfd/mfd_push	Push selected instrument
uh60m/mfd/mfd1_s1	MFD 1 select field 1
uh60m/mfd/mfd1_s2	MFD 1 select field 2
uh60m/mfd/mfd1_s3	MFD 1 select field 3
uh60m/mfd/mfd1_s4	MFD 1 select field 4
uh60m/mfd/mfd1_s5	MFD 1 select field 5
uh60m/mfd/mfd1_s6	MFD 1 select field 6

FDCP commands

uh60m/mfd/fdcp1d11	FDCP 1 Display 1 button 1
uh60m/mfd/fdcp1d12	FDCP 1 Display 1 button 2
uh60m/mfd/fdcp1d13	
uh60m/mfd/fdcp1d21	
uh60m/mfd/fdcp1d22	
uh60m/mfd/fdcp1d23	
uh60m/mfd/fdcp1d31	
uh60m/mfd/fdcp1d32	
uh60m/mfd/fdcp1d33	
uh60m/mfd/fdcp1d41	
uh60m/mfd/fdcp1d42	
uh60m/mfd/fdcp1d51	
uh60m/mfd/fdcp1d52	
uh60m/mfd/fdcp2d33	
uh60m/mfd/fdcp1_push1	Push rotary 1
uh60m/mfd/fdcp1_push2	Push rotary 2
uh60m/mfd/fdcp1_push3	Push rotary 3
uh60m/mfd/fdcp1_push4	Push rotary 4
uh60m/mfd/fdcp1_push5	Push rotary 5
uh60m/mfd/fdcp1_nxt_but	Select next button
uh60m/mfd/fdcp1_prv_but	Select previous button
uh60m/mfd/fdcp1_sel_but	Push selected button
uh60m/mfd/fdcp1_nxt_psh	Select next rotary

uh60m/mfd/fdcp1_prv_psh	**Select previous rotary**
uh60m/mfd/fdcp1_sel_psh	**Push selected rotary**
uh60m/mfd/fdcp1_rot_inc	**Increment selected rotary**
uh60m/mfd/fdcp1_rot_dec	**Decrement selected rotary**

CDU commands

uh60m/cdu/CDU1-popup	**Open CDU1 popup**
uh60m/cdu/CDU2-popup	**Open CDU2 popup**
uh60m/cdu/CDU1_L1	
uh60m/cdu/CDU1_L2	
uh60m/cdu/CDU1_L3	
uh60m/cdu/CDU1_L4	
uh60m/cdu/CDU1_L5	
uh60m/cdu/CDU1_R1	
uh60m/cdu/CDU1_R2	
uh60m/cdu/CDU1_R3	
uh60m/cdu/CDU1_R4	
uh60m/cdu/CDU1_R5	
uh60m/cdu/CDU1_CLR	
uh60m/cdu/CDU1_COM	
uh60m/cdu/CDU1_NAV	
uh60m/cdu/CDU1_FPN	
uh60m/cdu/CDU1_DAT	
uh60m/cdu/CDU1_INI	
uh60m/cdu/CDU1_XPDR	
uh60m/cdu/CDU1_ZRO	
uh60m/cdu/CDU1_ENT	
uh60m/cdu/CDU1_NXT	
uh60m/cdu/CDU1_PRV	
uh60m/cdu/CDU1_DIM	
uh60m/cdu/CDU1_BRT	

uh60m/cdu/CDU1_N0	
uh60m/cdu/CDU1_N1	
uh60m/cdu/CDU1_N2	
uh60m/cdu/CDU1_N3	
uh60m/cdu/CDU1_N4	
uh60m/cdu/CDU1_N5	
uh60m/cdu/CDU1_N6	
uh60m/cdu/CDU1_N7	
uh60m/cdu/CDU1_N8	
uh60m/cdu/CDU1_N9	
uh60m/cdu/CDU1_NMIN	
uh60m/cdu/CDU1_NDOT	
uh60m/cdu/CDU1_LFT	**Cursor left**
uh60m/cdu/CDU1_RGT	**Cursor right**
uh60m/cdu/CDU1_UP	**Cursor up**
uh60m/cdu/CDU1_DN	**Cursor down**

Mission commands

uh60m/mission/start	**Start mission**
uh60m/mission/stop	**Stop/Hold mission**
uh60m/mission/load	**Load mission from file**
uh60m/mission/download	**Download mission from server**
uh60m/mission/save	
uh60m/mission/reset	
uh60m/mission/clear	
uh60m/mission/add_wpt	**Add current position to WPT list**
uh60m/mission/skip	**Skip current wpt or task**
uh60m/mission/delete	
uh60m/mission/insert	
uh60m/mission/add	

Airfuel commands

uh60m/ops/c130_show	**Toggle aerial refueling C130**

Datarefs

uh60m/cdu/mission_name	**Name of selected mission file name**
uh60m/door/preset	**Selected door preset**
uh60m/conf/probe	**Refuel probe installed**
uh60m/conf/probe_ext	**Refuel probe extended**
uh60m/conf/hoist	**Hoist winch installed**
uh60m/conf/hrst	**Rope mount installed**
uh60m/conf/doors	**Cockoit doors installed**
uh60m/conf/seats	**Cargo seats installed**
uh60m/conf/cargo	
uh60m/conf/guns	**Guns installed**
uh60m/conf/pilots	**Pilots installed**
uh60m/conf/flir	**FLIR cam installed**
uh60m/conf/earplugs	**Earplug / Headset**
uh60m/sys/sw/hstab	**HSTAB switch**
uh60m/sys/sw/sas1	**SAS1 switch**
uh60m/sys/sw/sas2	**SAS2 switch**
uh60m/sys/sw/sas_boost	**SAS boost switch**
uh60m/sys/sw/tailwheel	**Tailwheel lock switch**
uh60m/sys/sw/egi1	**EGI 1 switch**
uh60m/sys/sw/egi2	**EGI 2 switch**
uh60m/sys/sw/ralt_test	**Radio altimeter test**
uh60m/sys/sw/hydr_bkup	**Hydraulic backup switch**
uh60m/sys/sw/air_src	**Air source for starter**
uh60m/sys/sw/stby_inst	**Backup / Standby instrument**
uh60m/sys/sw/lamp_test	**Lamp test**
uh60m/sys/sw/fire_test	**Fire test**
uh60m/sys/hover_mode	**HSI Hover mode**

uh60m/sys/hover_hold	**Hover hold state**
uh60m/sys/level_hold	**Level hold state**
uh60m/sys/fps_on	**FPS / Heading-hold**
uh60m/cam/selected	**Selected camera**
uh60m/ops/winch_ena	**Winch enabled**
uh60m/weapons/flares_armed	**CHAFF/FLARE armed**
uh60m/mfd/on	**Array/4 – MFD on**
uh60m/mfd/page	**Array/4 – MFD page**
uh60m/mfd/tgt_mode	
uh60m/mfd/hsi_mode	
uh60m/mfd/show_efis	
uh60m/mfd/show_wxr	**Show EFIS weather radar**
uh60m/sys/CB	**Array/100 – circuit breakers**

functional CBs

CB_hstab = 8
CB_sas = 9
CB_vhf1 = 12 → com1 & com2 power
CB_tail_lock = 13
CB_master_wrn = 15
CB_egi1 = 34 → gps power
CB_egi2 = 16 → gps2 power
CB_hydr_pump = 24