Rogue System

FireArc Prototype

Operations Manual

This page should have the version crap on it.

The version of the doc is Alpha 4.0

The version of the game this doc goes with is 0.1.9.21.15

Version history

Alpha 1
- Rough test

Alpha 2
- Proper layout with page numbers and everything

Alpha 2.1
- Did you know the MFD was called the HMD?
- Added some of the HMD panels

Alpha 3
- Added Tuturial 3 checklist (Style 1)

Alpha 3.1
- Added Tutorial 5 checklist (Style 2)
- Added Version history like a dork

Alpha 3.2
- Changed Tutorial 3 to single column
- Split Forward panel into F1-F3

Alpha 3.3
- Added Tutorial 4 checklists
- Added panel and button information to tutorial 5

Alpha 4.0
- Cleaned up Tutorial 3

Table of Contents

Table of Contents

Table of Contents

This page left blank

1 How To Use This Document

How To Use This Document 1-2

In order to make everyone's lives easier this document is designed to provide a standard control panel scheme.

The panels are labeled forward to aft, top to bottom.
F= Forward
L=Left
R=Right
A=Aft

The buttons are labeled top to bottom, left to right.
The labels I am using for the buttons are from the tool tip hoover text.

An example of how I would use this is the first few steps of the docking tutorial

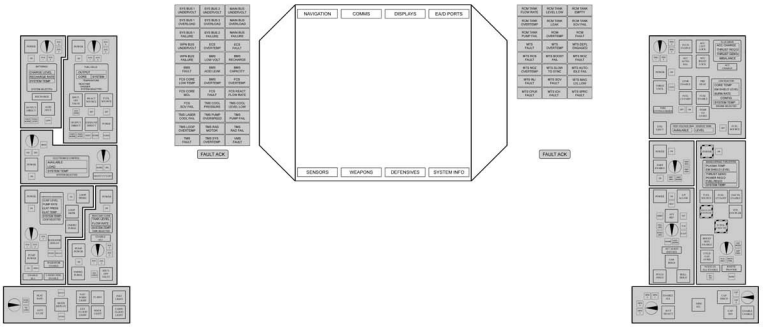
(The tutorial chunk that was here previously has been deleted because I wrote the whole thing in a later section)

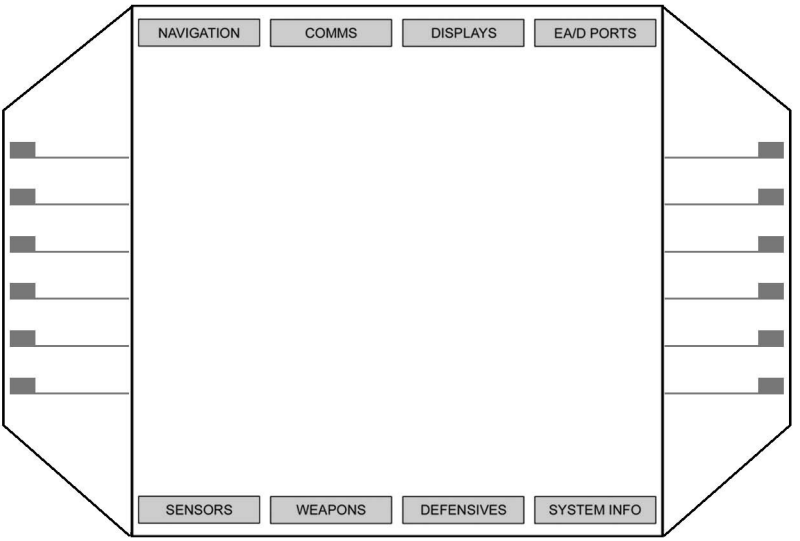
You can be all NASA with their cool checklists and tack on some useful information at the same time.

Sherpa

2 CONTROL PANEL OVERVIEW

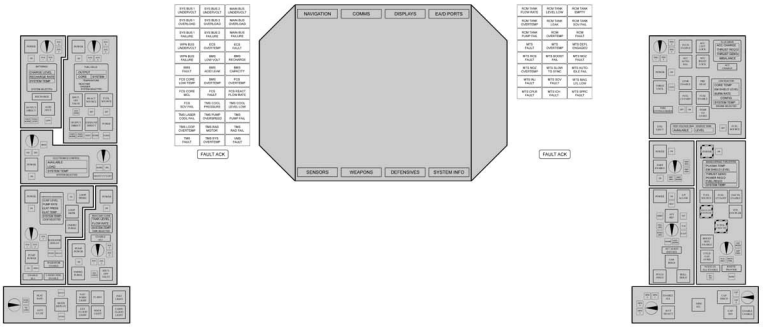
2.1 F2 Hard-Mounted Display (HMD)





The HMD has an entire section devoted to the individual screens. Check the table of contents.

2.2 F1/F3 Caution And Warning (CAW)



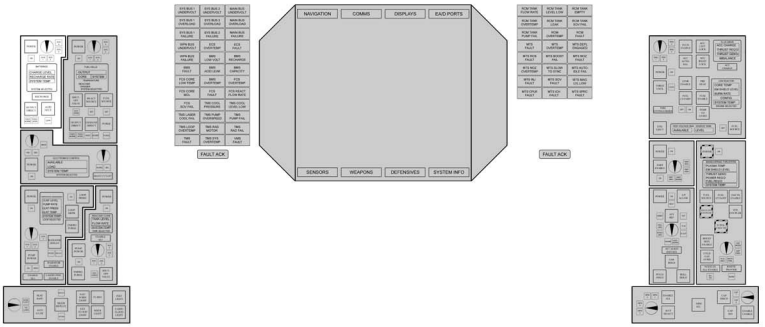
SYS BUS 1 UNDERVOLT	SYS BUS 2 UNDERVOLT	MAIN BUS UNDERVOLT
SYS BUS 1 OVERLOAD	SYS BUS 2 OVERLOAD	MAIN BUS OVERLOAD
SYS BUS 1 FAILURE	SYS BUS 2 FAILURE	MAIN BUS FAILURE
WPN BUS UNDERVOLT	ECS OVERTEMP	ECS FAULT
WPN BUS FAILURE	BMS LOW VOLT	BMS RECHARGE
BMS FAULT	BMS ACID LEAK	BMS CAPACITY
FCS CORE LOW TEMP	BMS OVERTEMP	FCS OVERTEMP
FCS CORE MCL	FCS FAULT	FCS REACT FLOW RATE
FCS SOV FAIL	TMS COOL PRESSURE	TMS COOL LEVEL LOW
TMS LASER COOL FAIL	TMS PUMP OVERSPEED	TMS PUMP FAIL
TMS LOOP OVERTEMP	TMS RAD MOTOR	TMS RAD FAIL
TMS FAULT	TMS SYS OVERTEMP	VMS FAULT

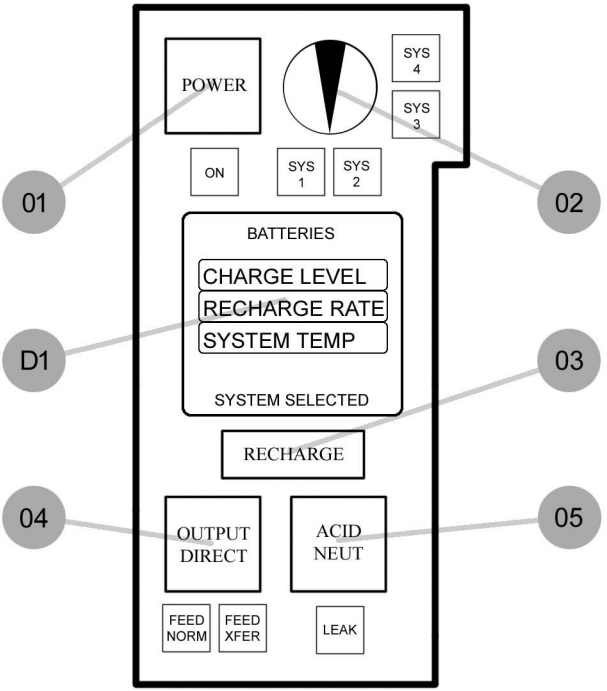
RCM TANK FLOW RATE	RCM TANK LEVEL LOW	RCM TANK EMPTY
RCM TANK OVERTEMP	RCM TANK LEAK	RCM TANK SOV FAIL
RCM TANK PUMP FAIL	RCM OVERTEMP	RCM FAULT
MTS FAULT	MTS OVERTEMP	MTS DEFL ENGAGED
MTS RCS FAULT	MTS BOOST FAIL	MTS NOZ FAULT
MTS NOZ OVERTEMP	MTS SLOW TO SYNC	MTS AUTO-IDLE FAIL
MTS INJ FAULT	MTS SOV FAULT	MTS MAG LVL LOW
MTS CPLR FAULT	MTS ICH FAULT	MTS SPRC FAULT

FAULT ACK 01 FAULT ACK

01) Fault Ack

2.3 L1 Battery Management System (BMS)



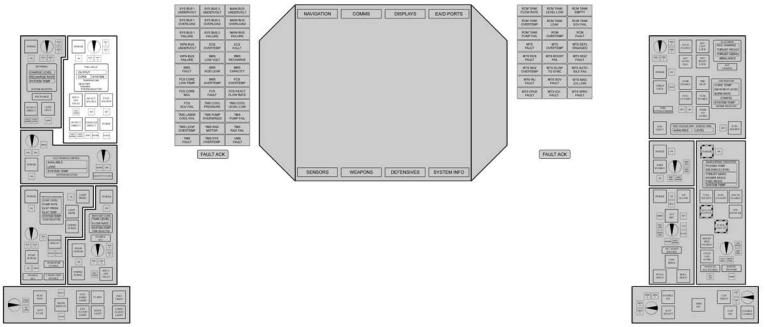


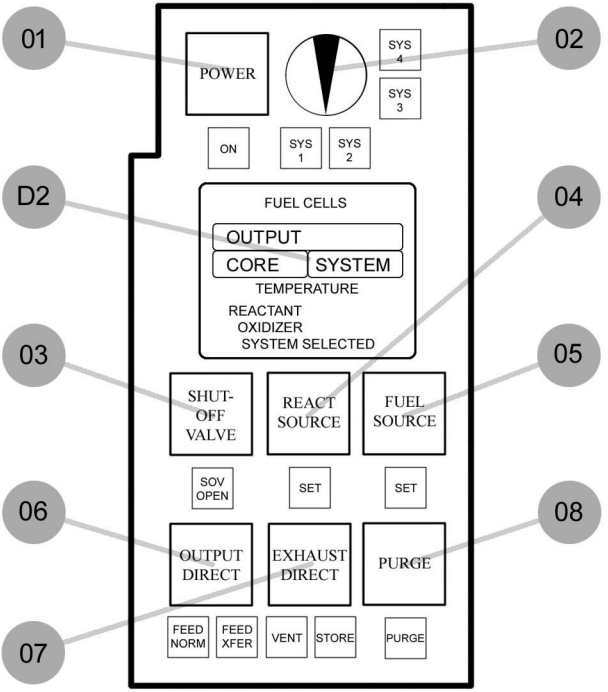
01) BMS Battery Enable
02) BMS Battery Select
03) BMS Battery Recharge
04) BMS Battery Output Select
05) BMS Acid Neutralizer

D1) BMS Display

The display will be covered in section XX

2.4 L2 Fuel Cell Manager (FCM)





01) FCS Cell Enable *
02) FCS Cell Select *
03) FCS Shut-Off Valve *
04) FCS Reactant Source Select *
05) FCS Fuel Select *
06) FCS Power Output Select *
07) FCS Bi-Product Disposal *
08) FCS Contamination Purge *

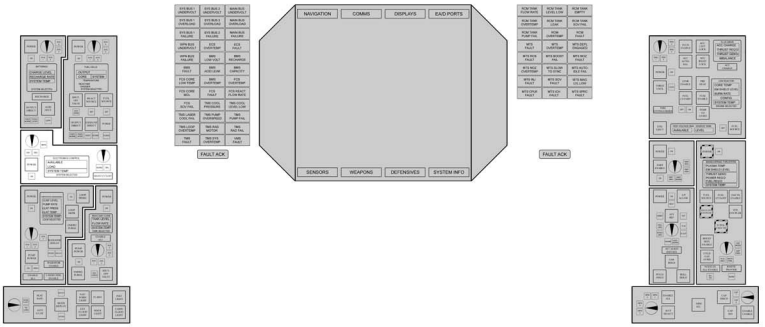
D2) FCM Display

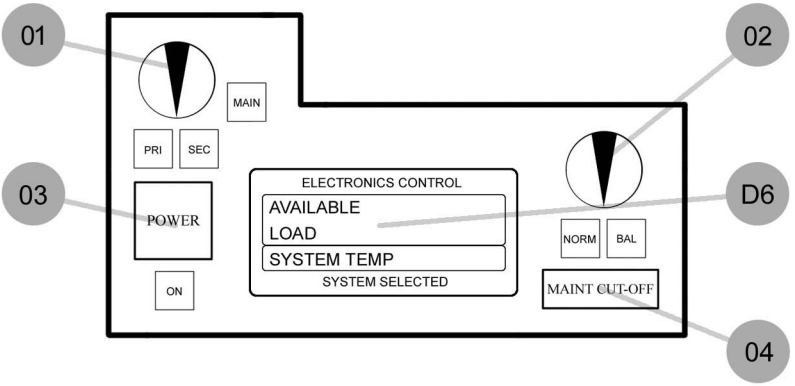
The display will be covered in section XX

NOTE:

* The tool tips use FCS however on the F1 HMD Systems Info page the sub system is called FCM so….yeah. That's a thing that should probably be changed one way or the other.

2.5 L3 Electronic Control System (ECS)



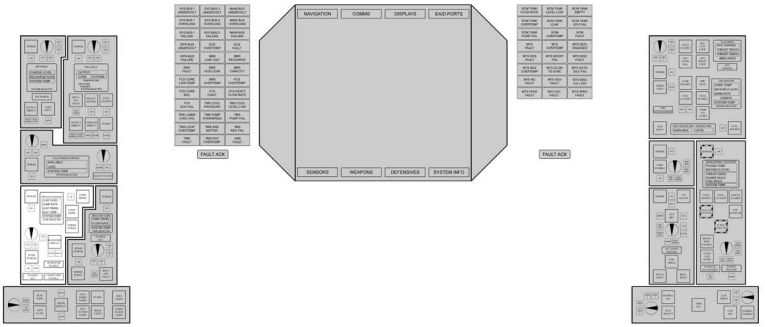


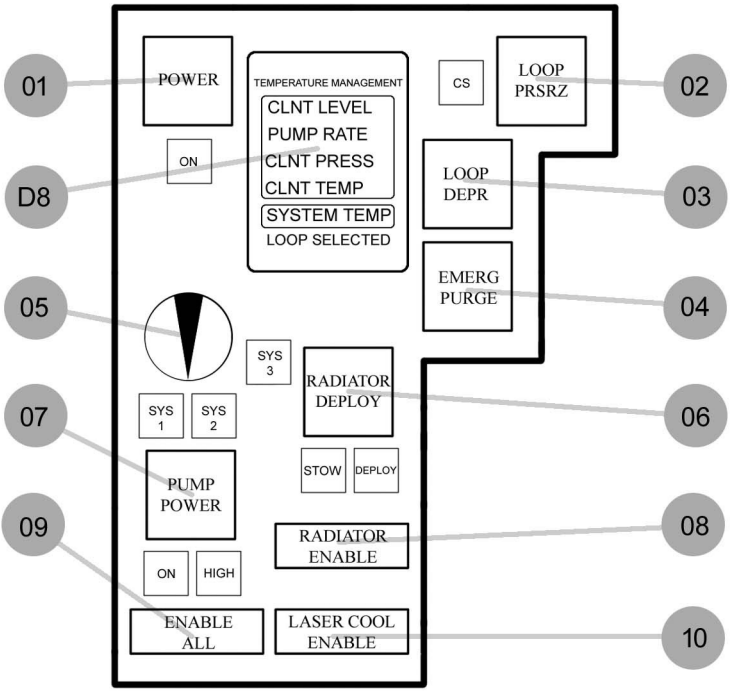
01) ECS Bus Select
02) ECS Bus Distribution Mode
03) ECS Bus Enable
04) ECS Maintenance Cut-Off

D6) ECS Display

The display will be covered in section XX

2.6 L4 Temperature Management System (TMS)





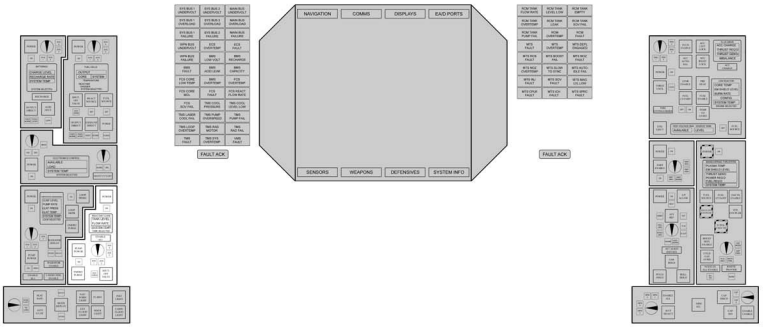
01) TMS Loop Enable
02) TMS Loop Pressurize
03) TMS Loop Depressurize
04) TMS Flash Cool (Vent) Loop
05) TMS Loop Select
06) TMS Loop Radiator Deploy
07) TMS Loop Power *
08) TMS TMS Loop Radiator Enable
09) TMS Enable All Pumps
10) TMS Loop Laser Cooling Enable

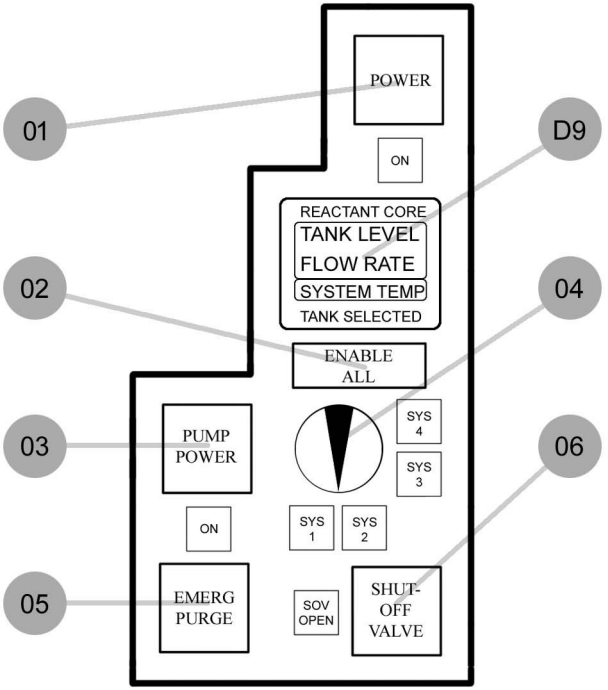
D8) TMS Display
The display will be covered in section XX

NOTE:

* The TMS Loop Power button is a three position toggle.
If anyone has a good suggestion on how I can draw that, I'm listening.

2.7 L5 Reactant Core Manager (RCM)

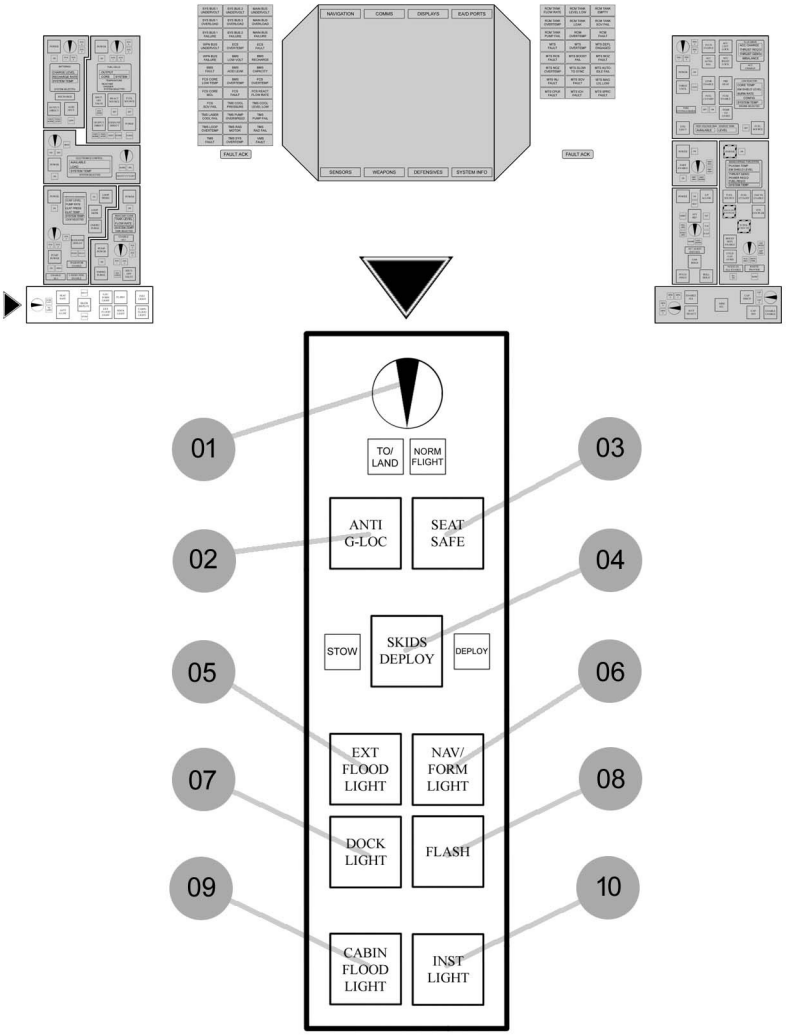




01) RCM System Enable
02) RCM Enable All Pumps
03) RCM Tank Pump Power
04) RCM Tank Select
05) RCM Tank Emergency Overboard Dump
06) RCM Tank Shut-Off Valve

D9) RCM Display
The display will be covered in section XX

2.8 L6 Core Ship Systems Manager



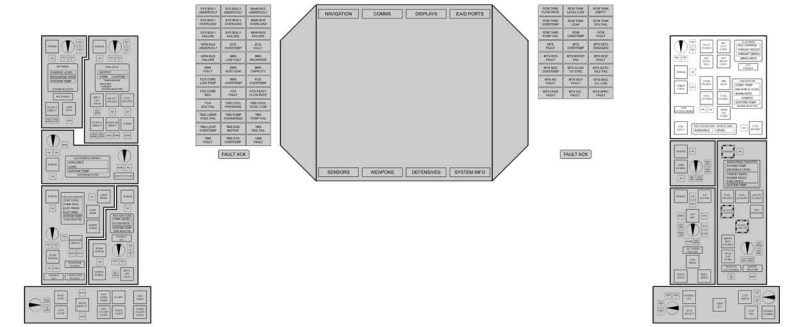
01) Seat Flight Mode Select
02) Seat Anti-G Enable
03) Seat Safe For Flight
04) CSSM Skids Deploy *
05) CSSM Exterior Flood Lighting
06) CSSM Navigation/Formation Lighting
07) CSSM Docking Port Lighting
08) CSSM Strobe Beacon Lighting
09) CSSM Cabin Flood Lighting
10) CSSM Instrument Lighting

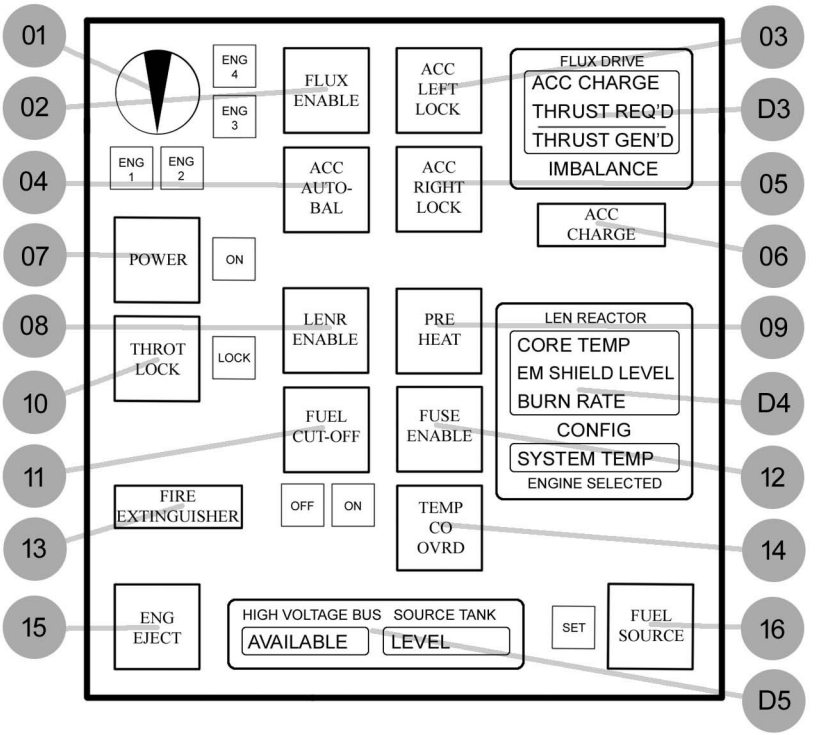
NOTE:

* The tool tip for Skids Deploy incorrectly shows as CSSM Navigation/Formation Lighting. Be careful which one you click on when internally docked.

This panel has been rotated clockwise from its actual orientation
It seemed like a good idea at the time?

2.9 R1 Main Engine System (MES)

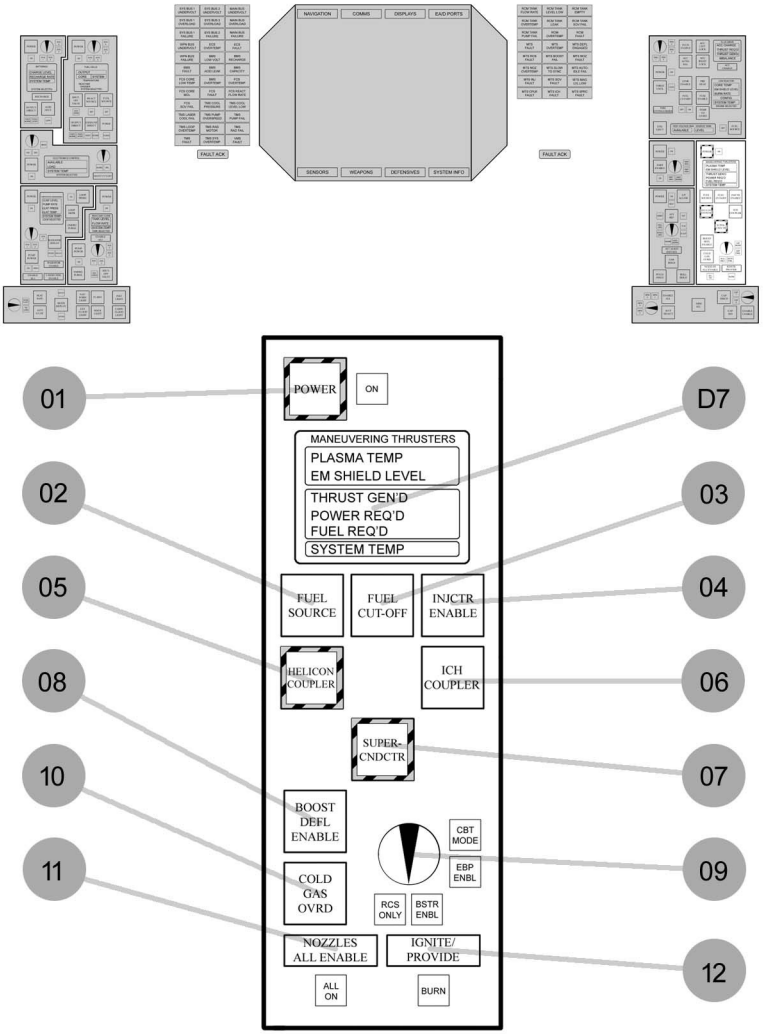




01) MES Engine Select
02) MES Flux Drive Enable
03) MES Accumulator (Left) Lock
04) MES Accumulator Auto Balance
05) MES Accumulator (Right) Lock
06) MES Accumulator Charge
07) MES System Enable
08) MES LENR Enable
09) MES Chamber Pre-Heater
10) MES Throttle Lock
11) MES Fuel Cut-Off
12) MES LENR Fuse Enable
13) MES Extinguisher
14) MES Temperature Cut-Off Override
15) MES Engine Jettison
16) MES LENR Fuel Source Select

D3 MES Flux Drive Display
The display will be covered in section XX
D4 MES LEN Reactor Display
The display will be covered in section XX
D5 MES Display
The display will be covered in section XX

2.10 R2 Maneuvering Thruster System (MTS)



01) MTS System Enable *
02) MTS Fuel Source Select
03) MTS Fuel Cut-Off Valve
04) MTS Fuel Injector Enable **
05) MTS Helicon Ionize-Enable *
06) MTS ICH Cyclotron Enable
07) MTS Superconductor Enable *
08) MTS Boost Deflector
09) MTS Thrust Mode Select
10) MTS Cold Gas Override
11) MTS Nozzle All Enable
12) MTS Core Ignitor/Thrust Provide ***

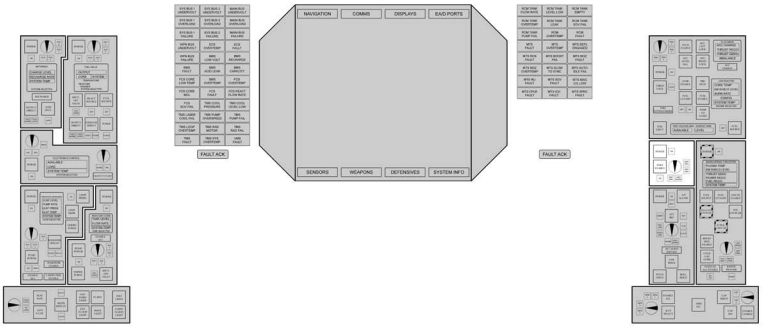
NOTE:

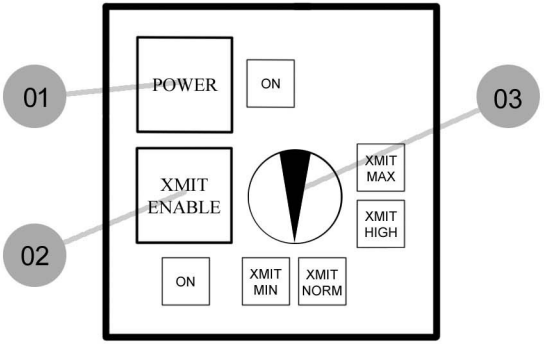
* These switches have safety covers on them. It is probably for a good reason

** Insert VTEC Kicked in Yo joke here

*** This is a press and hold button.
If anyone has a good suggestion on how I can draw that, I'm listening.

2.11 R3 Communication System (COMMS)

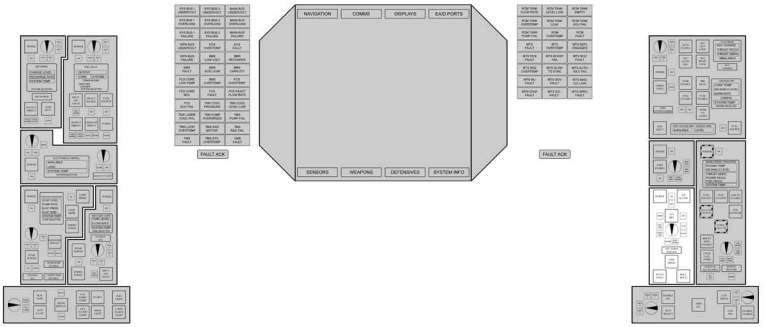


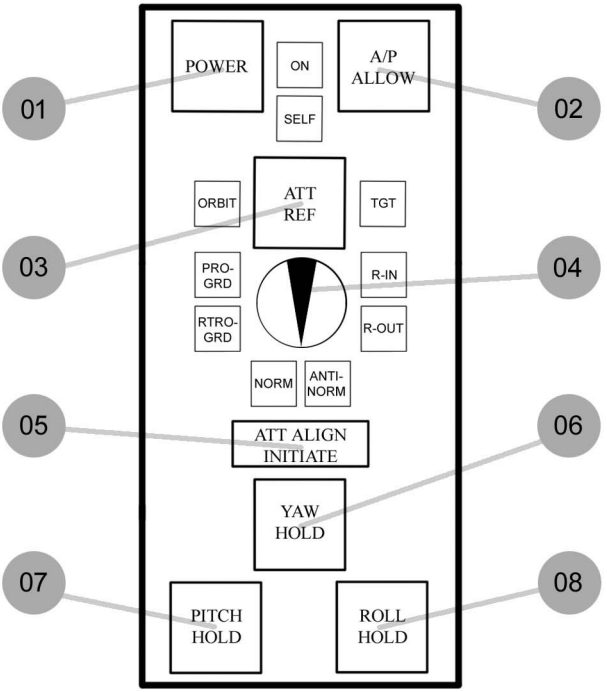


01) COMMS System Enable
02) COMMS Transmitter Enable
03) COMMS Transmission Power Select

I bet some lore fluff would fit nicely here. Or Comms war stories, whatever. I'm easy.

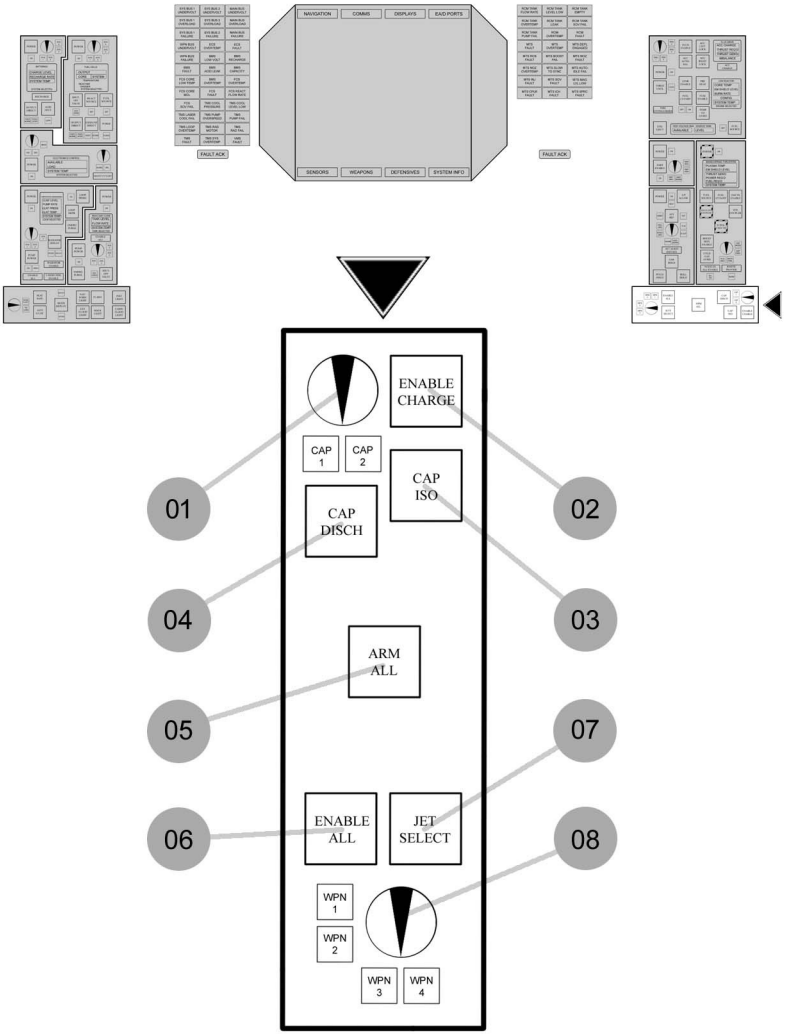
2.12 R4 Navigation/Auto-Pilot System (NAS)





01) NAS System Enable
02) NAS Auto Pilot Allow
03) NAS Attitude Reference Select
04) NAS Attitude Mode Select
05) NAS Align Initiate
06) NAS Yaw Hold
07) NAS Pitch Hold
08) NAS Roll Hold

2.13 R5 Weapon Management System (WMS)



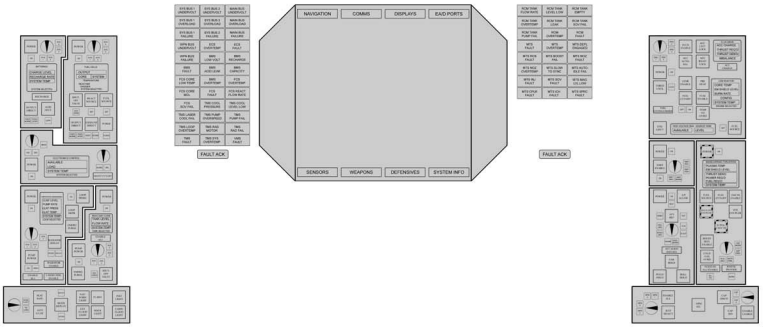
01) WMS Weapon Select
02) WMS Weapon Capacitor Enable/Charge
03) WMS Weapon Capacitor Isolate
04) WMS Weapon Capacitor Discharge
05) Weapon Arm All *
06) Weapon Enable All *
07) Weapon Jettison Selected
08) Weapon Selected

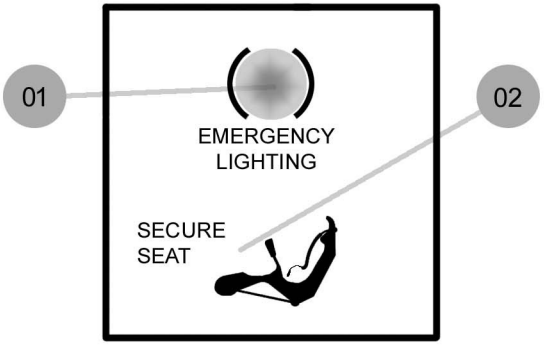
NOTE:

* None of these switches have a cover so watch your step when entering or exiting the seat when the ship is operational

This panel has been rotated counterclockwise from its actual orientation
It seemed like a good idea at the time?

2.14 A1 Access Panel





01) CSM Cabin Flood Lights*

02) SEAT Safe/Unsafe

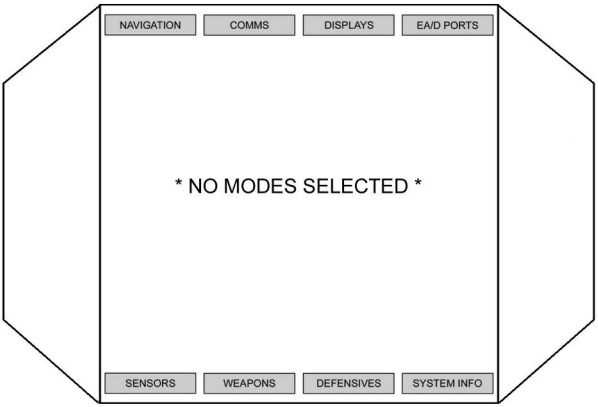
Note:

* I think we're missing an S from CSSM here.

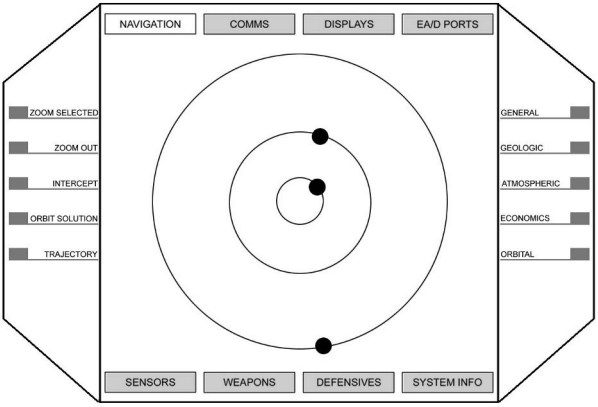
This page left blank

3 HMD PANELS

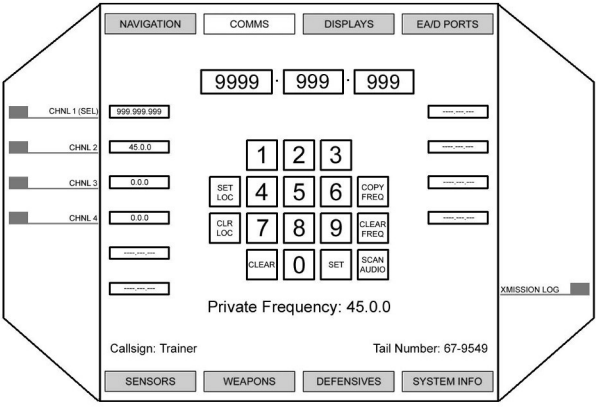
3.1 HMD No Modes Selected



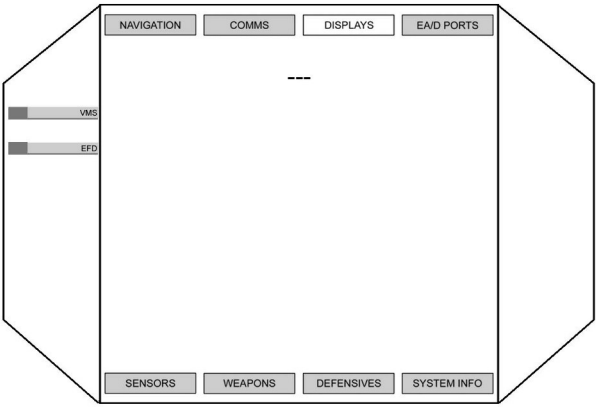
3.2 HMD Navigation



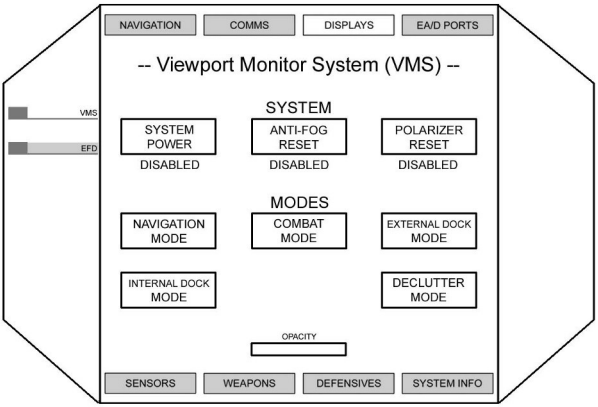
3.3 HMD COMMS



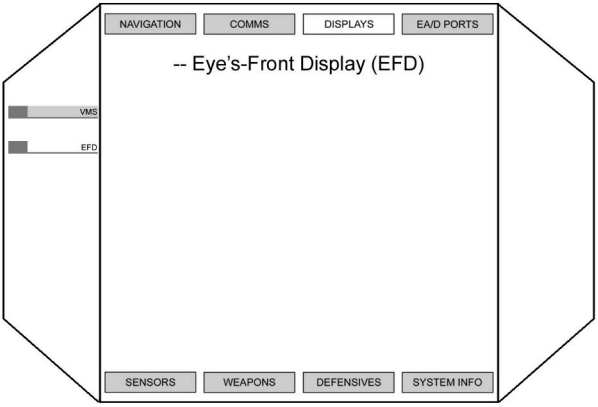
3.4 HMD Displays



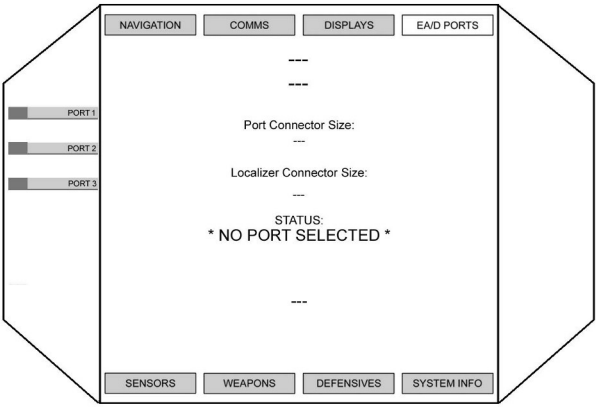
3.5 HMD Displays – VMS



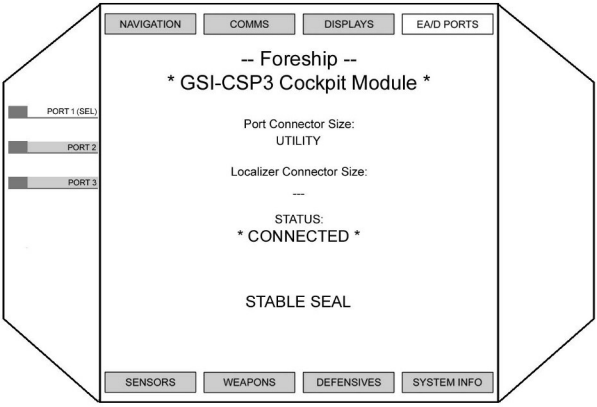
3.6 HMD Displays – EFD



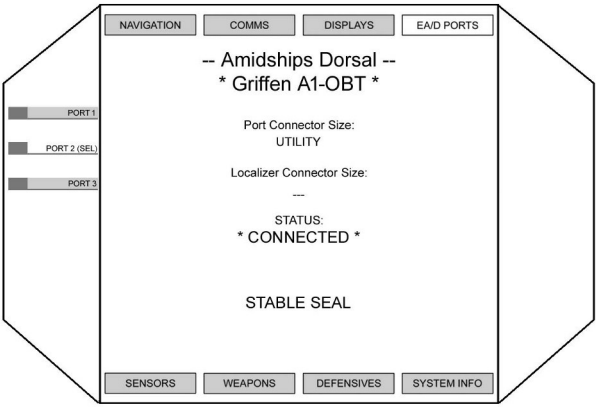
3.7 HMD EA/D Ports



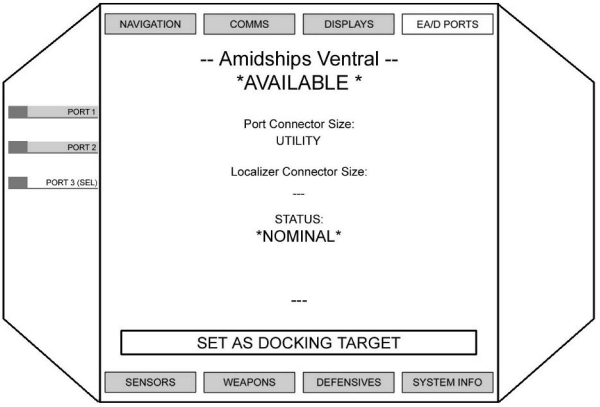
3.8 HMD EA/D Ports – Port 1



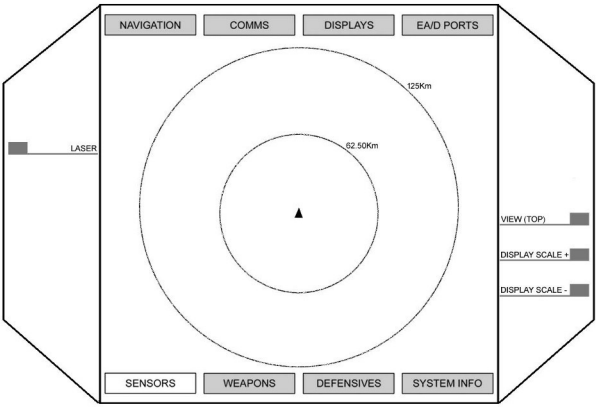
3.9 HMD EA/D Ports – Port 2



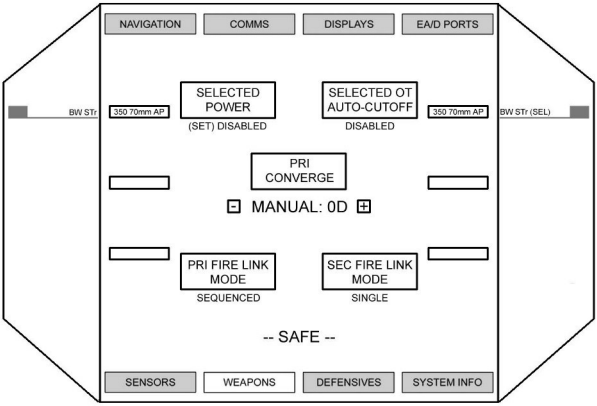
3.10 HMD EA/D Ports – Port 3



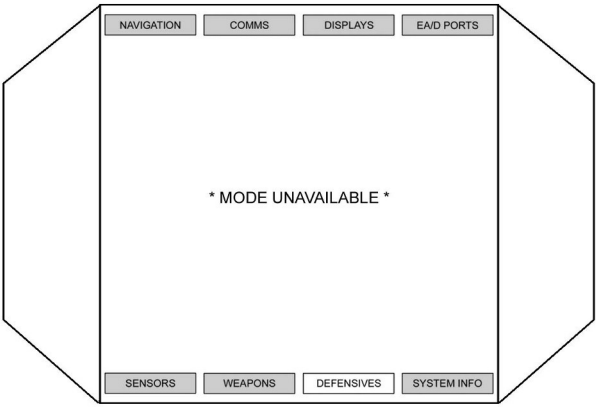
3.11 HMD Sensors



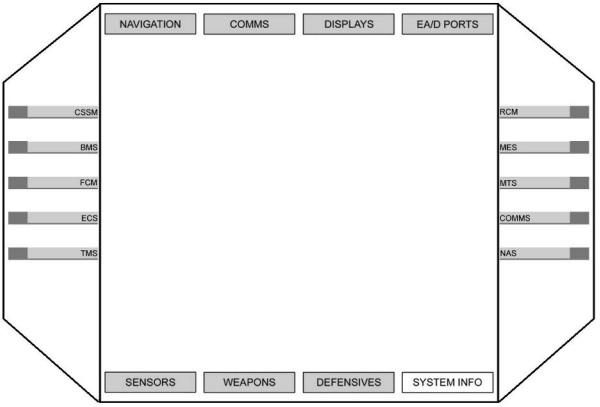
3.12 HMD Weapons



3.13 HMD Defensives



3.14 HMD Systems Info



3.15 HMD Systems Info – CSSM

This page left blank

4 Tutorial Checklist

4.1 Tutorial 3 System Startup

Entering Cockpit

There is a panel right outside the cockpit hatch but I haven't drawn it yet
MDR-01 Mid Deck Right Panel One
01 COCKPIT HATCH – OPEN

A1 Aft Panel
02 SECURE SEAT – UNSECURE

Enter Pilot's Seat

L6 CSSM Panel
03 SEAT SAFE – ENABLE
09 CABIN FLOOD LIGHT – DISABLE
10 INST LIGHT – ENABLE

Switch Check

- ✔ All Panels Powered Down

L5 RCM Panel
04 TANK SELECT – SYS 1

L4 TMS Panel
05 LOOP SELECT – SYS 1

L3 ECS Panel
01 BUS SELECT – PRI
02 BUS DISTRIBUTION MODE – NORM

L2 FCM Panel
02 CELL SELECT – SYS 1

L1 BMS Panel
02 BATTERY SELECT – SYS 1

R1 MES Panel
01 ENGINE SELECT – SYS 1

R2 MTS Panel
09 THRUST MODE SELECT – RCS ONLY

R3 COMMS Panel
03 TRANSMISSION POWER SELECT – XMIT NORM

Primary Bus Enable

L1 BMS Panel
01 POWER – ON

L3 ECS Panel
03 POWER – ON

F1 CAW Panel
01 fault acknowledge

L3 ECS Panel
04 MAINT CUT-OFF – DISABLE (green)
D6 ECS Display
✔ AVAILABLE is GREEN

✔ F1 CAW SYS BUS 1 lights out

L1 BMS Panel
03 RECHARGE – ENABLE
D1 BMS Display
✔ RECHARGE RATE is RISING

Secondary Bus Enable

L1 BMS Panel
02 BATTERY SELECT – SYS 2
01 POWER – ON
03 RECHARGE – ENABLE
D1 BMS Display
✔ RECHARGE RATE is RISING

If SYS 1 battery is enabled and has charge
SYS 2 battery will not show RECHARGE RATE
This is expected

L3 ECS Panel
01 BUS SELECT – SEC
03 POWER – ON
02 BUS DISTRIBUTION MODE – BAL

✔ F1 CAW SYS BUS 2 lights out

There will be a delay on SYS BUS 2 OVERLOAD
This is expected

Fuel Cell Preheat

L2 FCM Panel
- **01** POWER – ON
- **02** CELL SELECT – SYS 2
- **01** POWER – ON

Standard TMS Enable

L4 TMS Panel
- **01** POWER – ON
- **02** LOOP PRSRZ – CS
- **07** PUMP POWER – ON

CAUTION L4-07 is a three position switch
avoid running pumps in HIGH mode

D8 TMS Display
- ✔ CLNT LEVEL is RISING
- ✔ CLNT PRESS is RISING

L4 TMS Panel
- **02** ✔ LOOP PRSRZ is DISABLED
- **05** LOOP SELECT – SYS 2
- **02** LOOP PRSRZ – CS
- **07** PUMP POWER – ON

CAUTION L4-07 is a three position switch
avoid running pumps in HIGH mode

D8 TMS Display
- ✔ CLNT LEVEL is RISING
- ✔ CLNT PRESS is RISING

L4 TMS Panel
- **02** ✔ LOOP PRSRZ is DISABLED
- **09** ✔ ENABLE ALL is ENABLED

✔ F1 CAW TMS lights out

SYS BUS 2 OVERLOAD will illuminate.
This is expected

Alternate TMS Enable
WARNING! This procedure will automatically enable TMS SYS 1 and SYS 2 Use the **standard procedure** if you are unaware of the spacecrafts condition or are unable to communicate with STC Emergency Crews
L4 TMS Panel **01** POWER – ON **02** LOOP PRSRZ – CS **05** LOOP SELECT – SYS 2 **02** LOOP PRSRZ – CS **09** ENABLE ALL – ENABLE **D8** TMS Display ✔ CLNT LEVEL is RISING ✔ CLNT PRESS is RISING **L4** TMS Panel **02** ✔ LOOP PRSRZ is DISABLED **05** LOOP SELECT – SYS 2 **D8** TMS Display ✔ CLNT LEVEL is RISING ✔ CLNT PRESS is RISING **L4** TMS Panel **02** ✔ LOOP PRSRZ is DISABLED
✔ F1 CAW TMS lights out
SYS BUS 2 OVERLOAD will illuminate. This is expected

COMMS Enable

R3 COMMS Panel
01 POWER – ON
02 XMIT ENABLE – ON

Check in with STC

TAB
5) Space Traffic Control
1) Check In

Control this is 10-3889 (YOU) checking in.

10-3889 (YOU), this is Control. We have you checked in. Over.

TAB
5) Space Traffic Control
2) Request Departure Clearance

Control, this is 10-3889 (YOU). Requesting departure clearance.

10-3889 (YOU), this is Control. Departure approved. Notify Control before LENR initiation. Over.

Standard RCM Enable

L5 RCM Panel
01 POWER – ON
03 TANK SELECT cycle SYS 1 to SYS 4
03 PUMP POWER – ON
06 SHUT-OFF VALVE – SOV OPEN
✔ **02** ENABLE ALL is ENABLED

✔ F3 CAW RCM lights out

Alternate RCM Enable

WARNING!
This procedure will automatically enable RCM SYS 1 to SYS 4
Use the **standard procedure** if you are unaware
of the spacecrafts condition or are unable to communicate
with STC Emergency Crews

L5 RCM Panel
01 POWER – ON
02 ENABLE ALL – ENABLE
03 TANK SELECT cycle SYS 1 to SYS 4
D9 RCM display
✔ TANK LEVEL
L5 RCM Panel
03 ✔ PUMP POWER is ON
06 ✔ SHUT-OFF VALVE is SOV OPEN

✔ F3 CAW RCM lights out

MES Preliminary Enable

R1 MES Panel
07 POWER – ON
08 LENR ENABLE – ENABLE
D4 LEN REACTOR Display
✔ EM SHIELD LEVEL is GREEN
R1 MES Panel
09 PRE HEAT – ENABLE
D4 LEN REACTOR Display
✔ CORE TEMP is ORANGE
R1 MES Panel
16 FUEL SOURCE – SET

HMD Enable

F2 HMD
HMD DISPLAYS
VMS
SYSTEM POWER
wait for screen to power on
EXTERNAL DOCK MODE

LENR Pre Enable Check

R1 MTS Panel
- **09** ✔ PRE HEAT is GREEN

Request LENR activation from STC

TAB
5) Space Traffic Control
1) Ready for LENR Initiation

Control, this is XX-XXXX (YOU). Requesting LENR reaction.

XX-XXXX (YOU) Control. Copy. You are cleared to initiate LENR. Notify Control when ready for departure. Over.

Enable LENR and Main System Bus

R1 MES Panel
- **11** FUEL CUT-OFF – ENABLE
- **12** FUSE ENABLE – ENABLE

D4 LEN REACTOR Display
- ✔ CORE TEMP is GREEN

L3 ECS Panel
- **01** BUS SELECT – MAIN
- **03** POWER – ON

D6 ECS Display
- ✔ AVAILABLE is RISING

L3 ECS Panel
- **01** BUS SELECT cycle PRI, SEC, MAIN

D6 ECS Display
- ✔ AVAILABLE
- ✔ LOAD

- ✔ F1 CAW Main Bus lights out
- ✔ F1 CAW SYS 2 OVERLOAD light out

Enable NAS

R4 NAS Panel
01 POWER – ON

MTS Enable

R2 MTS
01 POWER toggle SAFETY
01 POWER – ON
02 FUEL SOURCE – ENABLE
03 FUEL CUT-OFF – ENABLE
04 INJECTR ENABLE – ENABLE
11 NOZZLES ALL ENABLE – ALL ON

FCM Enable

CAUTION you can damage the fuel cells by allowing flow when the core temp is low.

L2 FCM Panel
02 CELL SELECT cycle SYS 1 – SYS 2
D2 FCM display
✔ CORE is GREEN
L2 FCM Panel
03 ✔ SHUT-OFF VALVE is YELLOW
05 FUEL SOURCE – SET
04 REACT SOURCE – SET

✔ F1 CAW FCM (FSC) lights out

Undock Check List

L6 CSSM Panel
01 FLIGHT MODE SELECT – NORM FLIGHT

F2 HMD
HMD COMMS

L3 ECS Panel
04 MAINT CUT-OFF – ENABLE (yellow)

Request to Undock from STC

TAB
5) Space Traffic Control
2) Ready for departure

Control, this is XX-XXXX (YOU). Ready to depart.

XX-XXXX (YOU) this is Control. Clearance granted. Over.

XX-XXXX (YOU), Control. Maintenance power disabled. Stand by for departure frequencies.

XX-XXXX (YOU), Control. Tune ST Departure on 45.2.3

XX-XXXX YOU), Control. Tune localizer for exterior collar 3 using 45.2.202

XX-XXXX (YOU), Control. Umbilicals disconnected. Stand by for release.

All previous transmissions can be viewed using 'XMISSION LOG' from the COMMS sub-menu.

Configure COMMS Channels before release

F2 HMD
HMD COMMS
CHNL 3
select Left Channel Box
45
select Center Channel Box
2
select Right Channel Box
3
SET
CHNL 4
select Left Channel Box
45 (if unset)
select Center Channel Box
2 (if unset)
select Right Channel Box
202
SET
SET LOC

After Station Release

F2 HMD
HMD NAVIGATION

Maneuver away from station.
The tutorial suggests Aft Translation (Down Arrow)

When Clear of the Station Deploy Radiators

✔ *F2 exterior free camera or cycle F4 exterior fixed cameras to verify the spacecraft is clear of the station*

L4 TMS Panel
05 LOOP SELECT cycle SYS 1 – SYS 2
06 RADIATOR DEPLOY – DEPLOY
06 ✔ DEPLOY INDICATOR is GREEN
D8 TMS Display
✔ *CLNT TEMP is FALLING*

When beyond STC Limiter range – 200 meters

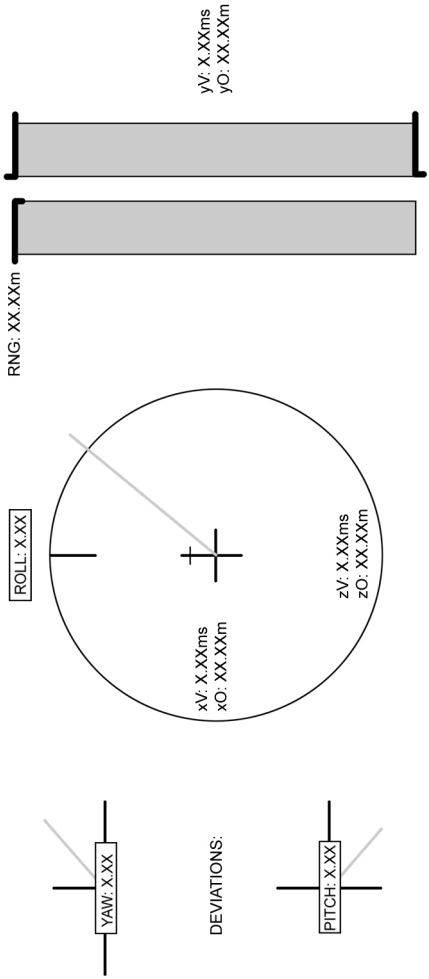
R2 MTS Panel
07 SUPER-CNDCTR toggle SAFETY
05 HELICON COUPLER toggle SAFETY
07 SUPER-CNDCTR – ENABLE
D7 MTS Display
✔ EM SHIELD LEVEL is GREEN
R2 MTS Panel
05 ✔ HELICON COUPLER is WHITE
05 HELICON COUPLER – ENABLE
12 IGNITE/PROVIDE hold until BURN INDICATOR is GREEN

CAUTION!
If the BURN INDICATOR does illuminate after five (5) seconds something has gone very wrong
with your procedure or the spacecraft.

06 ICH COUPLER – ENABLE

✔ F3 CAW MTS lights

4.2 Tutorial 4 External Docking



Docking HUD

Note: About Tutorial 3

Because this tutorial involves flying to the test platform and docking, most of this section will be generalities and my own bad habits. I will include as many facts as possible but ultimately your personal flying style will determine how useful this section of the manual becomes. At the end of the day, all that matters is a safe and successful dock.

Sherpa

Entering Cockpit

MDR1
CSM: cockpit hatch Open **MDR1-01**

The first thing I do after entering the cockpit is listen for clicks from the proximity sensor. I have had the tutorial start me between 200m and 5km. The proximity sensor has a range of 500m so if you hear clicking it is important to get the spacecraft under control ASAP.

A1 Panel
SECURE SEAT – UNSECURE **A1-02**

Enter Pilot's Seat

L6 CSSM
SEAT SAFE – ENABLE **L6-03**
INST LIGHT – ENABLE **L6-10**
CABIN FLOOD LIGHT – DISABLE **L6-09**

HMD Enable

F2 HMD
HMD DISPLAYS
VMS
SYSTEM POWER
EXTERNAL DOCK MODE

While waiting for the VMS to power on, use the external cameras (F2) and try and locate the station. This is especially important if you are within 500m. You will not have accurate positional data until you have comms set up with the station but you can use the translational controls (The arrow keys and [ ]) to slow your approach or departure. F1 will return you to the cockpit view.

Contact the Local STC

TAB
1) Open Chanel
3) Local STC
1) Announce

Control, this is XX-XXXX (YOU). Come in. Over.
XX-XXXX (YOU) this is control. We copy you, Over.

TAB
1)Open Chanel
3)Local STC
2) On Approach

Control, this is XX-XXXX (YOU). On approach. Over.
XX-XXXX (YOU), Control. Copy. Continue inbound and contact ST Approach on 45.2.2

NOTE:
You can review all communications by checking the COMMS recorder

F2 HMD
HMD COMMS
XMISSION LOG

Configure ST Approach Channel

F2 HMD
HMD COMMS
CHNL 3
select Left channel box
45
select Center channel box
2
select Right channel box
2
SET

Check In With ST Approach and Request Docking

TAB
2) Private Channel
2) 45.2.2
1) STC
1) Check In: ST Approach

ST Approach, this is XX-XXXX (YOU). Checking in.
XX-XXXX (YOU), this is ST Approach. We have you checked in. Over.

Note:
Docking requests should be made within 100km of the station

TAB
2) Private Channel
2) 45.2.2
1) STC
1) Request Docking

ST Approach, this is XX-XXXX (YOU). Request docking with you. Over
XX-XXXX (YOU), this is Control, Clearance granted. Over.
XX-XXXX (YOU), Control. Tune localizer for exterior collar 1 using 45.2.200

Configure STC Docking Channel

F2 HMD
HMD COMMS (if unset)
CHNL 4
select Left channel box
45 (if unset)
select Center channel box
2 (if unset)
select Right channel box
200
SET
SET LOC

Configure HUD for Docking

F2 HMD
HMD EA/D PORTS
PORT 2 (Amidships Dorsal)
SET AS DOCKING TARGET

- ✔ HUD *VALID*

Enable NAS

R4 NAS
- ✔ POWER – ON **R4-01**

A/P ALLOW – ENABLE **R4-02**
YAW HOLD – ENABLE **R4-06**
PITCH HOLD – ENABLE **R4-07**
ROLL HOLD – ENABLE **R4-08**

Maneuvering in Space

There are four systems on the spacecraft for maneuvering.
FLUX Drive
MTS Booster
Hot Plasma Maneuvering Jets
Cold Plasma Maneuvering Jets

Note:
This tutorial will not be covering FLUX Drive operation

The MTS Booster system will provide ~.8m/s per throttle “click” Forward (normal operation) or Aft (Thrust Deflection Enabled **R2-08**) of acceleration.

The Hot Plasma Maneuvering Jets can provide ~ 1.3m/s of translational or rotational velocity.

The Cold Plasma Maneuvering Jets can provide ~ .1m/s of translational or rotational velocity.

Which of these systems you use will depend on the distances involved and your ability to ensure the safety of your spacecraft and any other vessels in the area.

Rule of thumb: No faster than .04m/s per 100m from the target

Translational Velocity moves the spacecraft in any of the six cardinal directions (Up, Down, Left, Right, Forward, Aft) regardless of the current orientation. You can think of this in terms of the WASD keys used in most first or third person video games.

Rotational Velocity changes the orientation of the spacecraft with out affecting its current Translational Velocity (Roll, Pitch, Yaw). You can think of this in terms of mouse-look as used in most first or third person video games.

Note:

Auto Pilot (NAS) will only help you control your rotational velocity at this time. You will have to manually correct your flight to control your translational velocities.

STC Requirements by Distance
Greater than 1500m (1.5km) Distance Meter will read FAR APPROACH and be GREEN No special considerations
1500m (1.5km) Distance Meter will read FAR APPROACH and be GREEN STC will ask you to reduce velocity to under 40m/s
1000m (1km) Distance Meter will read FAR APPROACH and be GREEN At 100m the Distance Meter will begin to decrease
800m Distnace Meter will read FAR APPROACH and be GREEN STC will ask you to reduce velocity to under 20m/s
500m Distance Meter will read NEAR APPROACH and be GREEN At 500m the proximity sensor will begin to click. The faster the clicking to closer you are to the target

300m

XX-XXXX (YOU), this is Control. You're under 300 meters. Cease closure and shut-down your MTS CORE. Over.

R2 MTS
ICH COUPLER – DISABLE **R2-06**
✔ D7 PLASMA TEMP – COLD PLASMA LEVEL
TOGGLE HELICON COUPLER SAFETY **R2-05 SAFETY**
HELICON COUPLER – DISABLE **R2-05**

200m
Distance Meter will read COURSE ALIGN and be ORANGE

100m
STC will ask you to stow any radiators that may be damaged while docking

XX-XXX (YOU), this is Control. You're within 100 meters. Stow all obstructions immediately. Over.

50m
Distance Meter will read FINE ALIGN and be ORANGE

5m
Distance Meter will read PRECISE ALIGN and be RED
Height Meter will Reset

2.5m
Distance Meter will read FOR CAPTURE and be RED
Height Meter will Reset

0.0m
CONNECTED

In order to successfully dock your spacecraft must:
Be within +/- 4 degrees in Roll, Pitch and Yaw
Be within +/- .05m in the Z and X axis and .03 in the Y axis
Be moving no faster than .08m/s

XX-XXXX (YOU), Control. Reading solid contact. Stand by one... Over.
XX-XXXX (YOU) Control. Connection locked and stable. Engaging umbilical. Over
There is more but I can't scroll down :(

That's Great But How Do I Do That?

Some of this will depend on your distance from the target. Once you have channel 4 localized to the docking port (which you can do at any time during the tutorial however you need to talk to STC before you can dock) you can see how far from the station you are and what directions you are moving in. Typically when I start I'm within 500m of the station so I don't have to worry about firing up the engines but your kilometerage(?) may vary.

What to do if you are far from the target

The first thing I do is zero out my velocities in the Z, Y and Z axis

The orientation of your spacecraft probably doesn't line up with the test platform so I wouldn't worry about the O half of the three O V combinations (xO, yO and zO).

xV (Left / Right)
  if X is positive translate Right (Right Arrow) to bring it to 0.0
  if X is negative translate Left (Left Arrow) to bring it to 0.0
zV (Forward / Aft)
  if Z is positive translate Aft (Down Arrow) to bring it to 0.0
  if Z is negative translate Forward (Up Arrow) to bring it to 0.0
yV (Up / Down)
  if Y is positive translate Down ([) to bring it to 0.0
  if Y is negative translate Up (]) to bring it to 0.0

If you are having a difficult time zeroing out your velocities enabling Cold Gas Override (**R2-10**) should help.

Note:
If you need to use the main engines to close distance remember to disable Cold Gas Override (**R2-10**) and switch Thrust Mode Select (**R2-09**) to BSTR ENBL

Point the spacecraft towards to test platform using the rotational controls

Yaw Left (Insert) Yaw Right (PgUp)
Pitch Up (End) Pitch Down (Home)

Note:
The x, y and z V indicators will bounce around as you add rotational forces to the spacecraft. This is expected behavior.

The Pitch, Roll and Yaw indicators will be corrected when closer to the station.

Accelerate towards the test platform with a few clicks of the throttle (=) until vZ is ~ 40m/s then throttle back down to zero (-).

Note:
If you cross the 1Km boundary throttle back to zero regardless of speed.

Enable Boost Defl Enable (yuck **R2-08**)
and slow the spacecraft down as STC calls out your speed at distance.
1500m 40m/s or less
800m 20m/s or less
300m STC will call for you to stop
300-200m disable ICH and Helicon Couplers
R2 MTS
ICH COUPLER – DISABLE **R2-06**
✔ D7 PLASMA TEMP – COLD PLASMA LEVEL
TOGGLE HELICON COUPLER SAFETY **R2-05 SAFETY**
HELICON COUPLER – DISABLE **R2-05**

Note:
This will put the spacecraft into Cold Gas Override mode. You should be moving slower than 3 m/s in all three axis before you disable hot plasma production.

What to do if you are near the target

Now that the spacecraft is in a stable position it is time to align the Pitch, Yaw and Roll indicators for docking

The spacecraft needs to be within +/- 4 degrees to successfully dock. The indicators will shift from Red to Orange to Green as your alignment improves.

Pitch
  If Pitch is positive pitch down (Home)
  if Pitch is negative pitch up (End)
Yaw
  if Yaw is positive yaw left (Insert)
  if Yaw is negative yaw right (PgUp)
Roll
  if Roll is < 180 roll left (Delete)
  if Roll is <180 roll right (PgDn)

Alignment Tones:

As you change your alignment you will hear two tones. Tone one is position relative to the two intended docking ports. Tone two is relative to rotational orientation. As you improve alignment both tones will rise. When you are aligned they will harmonize

Now that you are aligned with the docking port check the Height indicator (Z Axis) to insure you are arriving below the target. The indicator should be Green and read a positive number of meters. +10m will insure you do not collide with the training platform regardless of radiator deployment.

yO (Up / Down)
  if Y is positive translate Up (])
  if Y is negative translate Down ([)
xO (Left / Right)
  If X is positive translate Left (Left Arrow)
  if X is negative translate Right (Right Arrow)
zO (Forward / Aft)
  if Z is positive translate Forward (Up Arrow)
  if Z is negative translate Aft (Down Arrow)

Note:

I prefer to set my Y (Up/ Down) height, correct my X (Left/Right) axis, correct my Z (Forward/Aft) axis and finally reduce Y height until docked

Once you are below the station correct the X and Z axis with the translation controls to within +/- .05m. Check for traffic and docking orientation using the external cameras (F2) to insure you close safely with the station.

Note:
The distance indicators are relative to the docking port and not the edges of the spacecraft!

The FireArc is 30m long and 16m wide with the dorsal docking port centered left to right (8m from each side) and 16m from the front of the spacecraft(14m aft).

You should now be sitting 10m below the docking port with xV, yV and zV reading 0.00m/s and yO and xO reading 0.00m
If you have not already stowed the radiator on cooling loop one do so now.

L4 TMS
- ✔ LOOP SELECT – SYS 1 **L4-05**

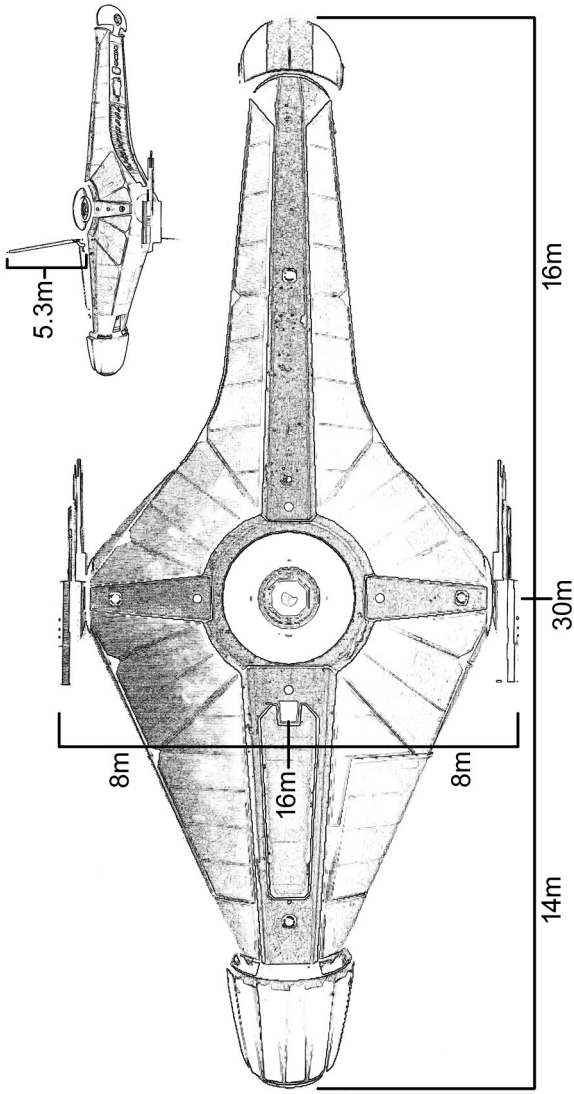
RADIATOR DEPLOY – STOW **L4-06**

Translate upward to complete the docking maneuver (]) while checking that the spacecraft does not drift in the X and Z axis.

Note:
Docking ports are rated to handle closing speeds up to .08m/s however the nominal closing speed is.03m/s

At .03m in the Y axis, assuming nominal deviation in translation and rotation the spacecraft should dock with the station.

Yay?


5.3m
16m
30m
8m
16m
8m
14m

4.3 Tutorial 5 System Shutdown

If you are doing the tutorial, you need to do this part first

	MDR1 COCKPIT HATCH – OPEN **MDR1-01**
■	**A1** SECURE SEAT – UNSECURE **A1-02**
	enter the seat
■	**L6** SEAT SAFE – ENABLE **L6-03** SWITCH – NORM FLIGHT **L6-01** CABIN FLOOD LIGHT – DISABLE **L6-09** INST LIGHT – ENABLE **L6-10**

If you are in the seat start from HERE

	R2 ICH COUPLER – DISABLE **R2-06** ✔ D7 PLASMA TEMP – COLD PLASMA LEVEL TOGGLE HELICON COUPLER SAFETY **R2-05 SAFETY** HELICON COUPLER – DISABLE **R2-05** ✔ D7 PLASMA TEMP – ZERO TOGGLE SUPER-CNDCTR SAFETY **R2-07 SAFETY** SUPER-CNDCTR – DISABLE **R2-07**
■	**F3** FAULT ACK **F3-01**
	R2 INJCTR ENABLE – DISABLE **R2-04** FUEL CUT-OFF – DISABLE **R2-03** TOGGLE POWER SAFETY **R2-01 SAFETY** POWER OFF **R2-01**
■	**R4** POWER – OFF **R4-01**
	L3 MAINT CUT-OFF – DISABLE (GREEN) **L3-04**
■	**R1** FUSE ENABLE – DISABLE **R1-12**
	L2 CYCLE ALL **L2-02** ✔ SHUT-OFF VALVE – DISABLE **L2-03** SHUT-OFF VALVE – DISABLE **L2-03** POWER – OFF **L2-01**
■	**R1** FUEL CUT-OFF – OFF **R1-11**
	L5 CYCLE ALL **L5-04** SHUT-OFF VALVE – DISABLE **L5-06** PUMP POWER – OFF **L5-03**
■	**F1** FAULT ACK **F1-01**

R1 PRE-HEAT – DISABLE **R1-09**	
L3 SELECT MAIN **L3-01** POWER – OFF **L3-03**	
F2 HMD DISPLAY VMS SYSTEM POWER – DISABLED	
L1 SELECT – SYS 2 **L1-02** RECHARGE – DISABLE **L1-03** POWER – OFF **L1-01**	
R1 ✔ D4 CORE TEMP – ZERO LENR ENABLE – DISABLE **R1-08** a D4 EM SHIELD – FALLING POWER – OFF **R1-07**	
R3 XMIT ENABLE – OFF **R3-02** POWER – OFF **R3-01**	
L4 CYCLE ALL **L4-05** LOOP DEPR – ENABLE **L4-03** ✔ D8 CLNT PRESS – FALLING ✔ PUMP POWER – OFF **L4-07**	
L3 SELECT – SEC **L3-01** POWER – OFF **L3-03**	
L1 SELECT – SYS 1 **L1-02** RECHARGE – DISABLE **L1-03** POWER – OFF **L1-01**	
L3 SELECT – PRI **L3-01** POWER – OFF **L3-03** MAINT CUT-OFF – ENABLE (YELLOW) **L3-04**	
L6 INST LIGHT – DISABLE **L6-10** CABIN FLOOD LIGHT – ENABLE **L6-09** SEAT SAFE – DISABLE **L6-03** SELECT TO/LAND **L6-01**	
A1 SECURE SEAT – SECURE **A1-02**	
MDR1 COCKPIT HATCH – SEAL **MDR1-01**	