**Project: Solar Orbiter SWA**

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# Introduction

The primary objective of this document is to describe the in-flight commissioning plan of the SWA flight instrument. The proposed tests will demonstrate that the performance of the instrument meets the operational requirements. The aim is to define activities with an emphasis on performing tests that require real time contact with the spacecraft.

# Reference Documents

The documents listed below form a part of this document, to the extent specified and described herein.

|  |  |  |
| --- | --- | --- |
| Ref. | No | Title |
| NR1 | SOL-EST-IF-0050 | Solar Orbiter Experiment Interface Document Part A |
| NR2 | SOL-EST-RS-1937 | Solar Orbiter Product Assurance Requirements for Instruments |
| NR3 | SO-SWA-MSSL-SP-006 | SWA Instrument Scientific Requirements Report |
| NR4 | SO-SWA-MSSL-PL-006 | SWA Product Assurance Plan |
| NR5 | MSSL-SO-SWA-EID-B | SWA EID-B |
| NR6 | SO-SWA-LPP-LP-039\_MCP Acceptance Test | LPP MCP Acceptance and characterisation Plan |
| NR7 | SO-SWA-LPP-RP-078\_1\_1-MCP\_test\_report\_PartI | MCP detector characterisation test report |
| NR8 | SO-SWA-LPP-RP-092 EAS Det FM1 Test Report rev 1-4.pdf | LPP detector sub-system test report FM1 |
| NR9 | SO-SWA-LPP-RP-093 EAS Det FM2 Test Report rev 1-2.pdf | LPP detector sub-system test report FM2 |
| NR10 | SO-SWA-MSSL-SP-012\_EAS-DPU\_Interface\_Specification\_Issue\_2.pdf | EAS-DPU Interface Specification |
| NR11 | SO-SWA-MSSL-PL-013 | SWA EAS Calibration Plan |
| NR12 | SO-SWA-MSSL-UM-002 | SWA Instrument User manual |

# Acronym and Abbreviation List

|  |  |
| --- | --- |
| **Abbreviation** | **Meaning** |
| PDOR | Payload Direct Operations Request |
| MDOR | Memory Direct Operations Request |
| IA-FCP | Instrument (SWA) – Flight Control Procedure |
| TC | TeleCommand |
| IIC | Inter Instrument Check |
|  |  |
|  |  |

# General requirements

## Spacecraft Location and Plasma Environment

To be included

## Required Configuration of the Spacecraft

There is no particular spacecraft configuration required during SWA commission.

## Spacecraft Pointing

There is no designated pointing required during the SWA commission phase.

## Spacecraft-generated Gases

SWA commissioning, particularly involving high voltages, should not begin until sufficient time has elapsed for spacecraft outgassing to be essentially complete. It has been estimated that at least 20 days are required after launch, following assessment of data from TQCM.

No thruster firing should occur during SWA commissioning, and a sufficient time should be allowed between any thruster firing and the start of commissioning.

## Telemetry

A telemetry requirement of xxx will be required for SWA commissioning

## Required Configuration of other Instruments

It is accepted by SWA that some other instruments are powered on during the SWA commission. However if SWA feel that the other instruments are causing interference to SWA commission, then SWA will request that those instruments be powered down. It is also expected that no other instrument commanding will take place during SWA commission periods.

## Inter-Experiment Links - Service 20

The IEL inputs to SWA are from

* MAG
* RPW

Until completion of commissioning of each sensor, IEL inputs will be disabled at the DPU.

## Verification process during commissioning

### Performance Verification

Following each command in the commissioning sequence the experimenter will either confirm that the command was executed as expected or recommend that a contingency plan is executed.

### Spacecraft EGSE Real-time Housekeeping Parameters

Checking of the housekeeping parameters will be performed using the spacecraft EGSE. Visual checking of the real time housekeeping by a SWA team member viewing the ESOC video display.  **Unless otherwise stated, each command in the commissioning sequences given should be followed by inspection of the housekeeping by an SWA team member before the next command in the sequence is sent.**

### Real-time SWA Housekeeping Parameters

Visual checking of the near-real time housekeeping data by an SWA team member viewing the SWA EGSE display. Data will be acquired via tbd mechanism. The EGSE provides a range of graphical displays for the interpretation of the housekeeping and science data and will have limit checking similar to that used for ground testing. Specific parameters which will be checked in this way are listed in the detailed procedures in this document.

### Real-time SWA Science Data

Real-time assessment of science data from the SWA sensors will be required during commissioning. Interpretation and visualisation of the data will use SWA provided EGSE, both for engineering and science assessments.

## Order of commissioning of the DPU and SWA sensors

The basic order of commissioning of the different SWA units is as follows:

* DPU
* HIS
* PAS
* EAS
* All SWA

The outline plan for SWA commission is provided in the MOC NECP Timeline plan. Currently this is illustrated in Table 4.1

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **NECP Phase** | **NECP number** | **Date** | **Day** | **Start Time** | **End Time** | **Duration** | **One Way Light Time (Seconds)** | **Comments** |
| SWA-5 | IA-5 | 02 Apr | Thurs | 10:27 | 18:27 | 08:00 | 70-77 | EAS |
|   | IA-5 | 06 Apr | Mon | 08:54 | 16:54 | 08:00 | 80-88 | EAS |
|  | IA-5 | 07 Apr | Tues | 11:51 | 19:51 | 08:00 | 80-88 | EAS |
| SWA-4 | IA-4 | 14 Apr | Tues | 10:29 | 18:29 | 08:00 | 90-101 | PAS. PAS left on overnight |
|  | IA-4 | 15 Apr | Wed | 10:56 | 18:56 | 08:00 | 90-101 | PAS |
| SWA-5 | IA-5 | 16 Apr | Thurs | 10:49 | 18:49 | 08:00 | 90-101 | EAS |
| SWA-6 | IA-6 | 22 Apr | Wed | 07:20 | 15:20 | 08:00 | 105-117 | SWA |
|  | IA-6 | 24 Apr | Fri | 07:20 | 15:20 | 08:00 | 105-117 | SWA |

Table 4.1 MOC Timeline for each SWA commission phase (version 5.1). All times are in UTC.

# SWA Commissioning flow

The overall post covid commissioning flow for the SWA instrument is as follows:

* The DPU, HIS (LV) & EAS (LV) have already been commissioned.
* The next step will be to commission PAS
* Then complete the EAS HV commission
* HIS may want to do further HV testing
* Following completion of commissioning of each of the three sensors, the DPU will be commissioned for operation of all three sensors and step through the suite level commissioning process. This process will
	+ Demonstrate Normal Mode operation
	+ Demonstrate Burst and Triggered mode operation. MAG and RPW will require to be commissioned and operational for this step
	+ Perform suite level performance optimisation, particularly carrying out tests where real time contact is required
* Following demonstration of suite level operation, the instrument suite will be operated for a period of time, possibly in parallel with other instruments being commissioned.
* Finally, the Suite will participate in inter-instrument operations and interference campaigns

The rest of the section details the commissioning plan for the DPU and each individual sensor.

# 2nd April. SWA-5 (IA-5) End of day Power Down (MTL)

Before the activity starts, the end of day commanding is loaded onto the MTL. This is shown here as it is unknown at this point where this activity will end. Wherever the end is, the activity will be halted, EAS powered down. Then the following day will power up and continue where this activity ended.

| **Step N°** | **Commanding Flow** | **FCP ID or PDOR title & contents** | **Comments** |
| --- | --- | --- | --- |
|  | Power down EAS1Stop ScienceRamp MCP to zeroTurn heater offSwitch OffStop HK | **PDOR\_SSWA\_EAS1\_HV2SwitchOff\_00001.SOL**ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x0Wait 00:00:01 (1 second)ZIA58784, PIA60218 = 0Wait 00:00:40 (40 second)ZIA58757, PIA60773 = 0 PIA60774 = 0 PIA60775 = 0Wait 00:00:01 (1 second)ZIA58756Wait 00:01:00 (60 second)ZIA58051, PIA58050 = EAS1\_SENS\_HK |  |

|  |  |  |  |
| --- | --- | --- | --- |
|  | Power down EAS2Stop ScienceRamp MCP to zeroTurn heater offSwitch OffStop HK | **PDOR\_SSWA\_EAS2\_HV2SwitchOff\_00001.SOL**ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x0Wait 00:00:01 (1 second)ZIA58832, PIA60218 = 0Wait 00:00:40 (40 second)ZIA58805, PIA60773 = 0 PIA60774 = 0 PIA60775 = 0Wait 00:00:01 (1 second)ZIA58804Wait 00:01:00 (60 second)ZIA58051, PIA58050 = EAS2\_SENS\_HK |  |

|  |  |  |  |
| --- | --- | --- | --- |
|  | Power down DPU | IA-FCP-002 |  |

# 2nd April. SWA-5 (IA-5) Start of day procedure

## DPU Power up (MTL)

| **Step N°** | **Commanding Flow** | **FCP ID or PDOR title & contents** | **Comments** |
| --- | --- | --- | --- |
|  | Power DPU on  | IA-FCP-011 |  |
|  | Configure the DPU | IA-FCP-030 |  |

## Disable EAS FDIR (MTL)

| **Step N°** | **Commanding Flow** | **FCP ID or PDOR title & contents** | **Comments** |
| --- | --- | --- | --- |
|  | Disable EAS1 FDIR | **PDOR\_SSWA\_EAS1\_Disable\_FDIR\_00001.SOL**ZIA58064, PIA60452 = 12 PIA60449 = EAS1SPWHB\_MI PIA60449 = E1\_3V3\_MI PIA60449 = E1\_1V5\_MI PIA60449 = E1OPTEMPMON PIA60449 = E1HVOUTVMON PIA60449 = E1MCPVMON PIA60449 = E1GRIDVMON PIA60449 = E110VAPOSVMON PIA60449 = E128VPOSVMON PIA60449 = E1HVGENTHERMON PIA60449 = E1HVMODTHERMON PIA60449 = EAS1MISSACK\_MI | Time = Instant |

|  |  |  |  |
| --- | --- | --- | --- |
|  | Disable EAS2 FDIR | **PDOR\_SSWA\_EAS2\_Disable\_FDIR\_00001.SOL**ZIA58064, PIA60452 = 12 PIA60449 = EAS2SPWHB\_MI PIA60449 = E2\_3V3\_MI PIA60449 = E2\_1V5\_MI PIA60449 = E2OPTEMPMON PIA60449 = E2HVOUTVMON PIA60449 = E2MCPVMON PIA60449 = E2GRIDVMON PIA60449 = E210VAPOSVMON PIA60449 = E228VPOSVMON PIA60449 = E2HVGENTHERMON PIA60449 = E2HVMODTHERMON PIA60449 = EAS2MISSACK\_MI | Time = Instant |

## EAS Power up

| **Step N°** | **Commanding Flow** | **FCP ID or PDOR title & contents** | **Comments** |
| --- | --- | --- | --- |
|  | Power Up to IDLE EAS1Enable EAS1 HK Power EAS1 onPOST macro on EAS1IDLE macro on EAS1Request EAS1 HK | **PDOR\_SSWA\_EAS1\_PowerUp\_Post2Idle\_00001.SOL**ZIA58050, PIA58050 = EAS1\_SENS\_HKWait 00:00:01 (1 second)ZIA58760Wait 00:00:05 (5 second)ZIA58934, PIA60739 = POSTWait 00:00:05 (5 second)ZIA58753Wait 00:00:30 (30 second)ZIA58782 | Time = 41 seconds |

**SWA Team to check HK before Proceeding**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Go to RUN state EAS1RUN macro on EAS1 | **PDOR\_SSWA\_EAS1\_PowerUp\_Run\_00001.SOL**ZIA58758Wait 00:00:20 (20 second) | Time = 20 seconds |
|  | Power Up to IDLE EAS2Enable EAS2 HK Power EAS2 onPOST macro on EAS2IDLE macro on EAS2Request EAS2 HK | **PDOR\_SSWA\_EAS2\_PowerUp\_Post2Idle\_00001.SOL**ZIA58050, PIA58050 = EAS2\_SENS\_HKWait 00:00:01 (1 second)ZIA58808Wait 00:00:05 (5 second)ZIA58936, PIA60740 = POSTWait 00:00:05 (5 second)ZIA58801Wait 00:30:00 (30 second)ZIA58830 | Time = 41 seconds |

**SWA Team to check HK before Proceeding**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Go to RUN state EAS2RUN macro on EAS2 | **PDOR\_SSWA\_EAS2\_PowerUp\_Run\_00001.SOL**ZIA58806Wait 00:00:20 (20 second) | Time = 20 seconds |

## EAS1 Thresholds

|  |  |  |  |
| --- | --- | --- | --- |
| **Step N°** | **Commanding Flow** | **FCP ID or PDOR title & contents** | **Comments** |
|  | Adjust Thresholds on EAS1Adjust the Thresholds | **PDOR\_SSWA\_EAS1\_Thresh\_496\_00001.SOL**ZIA58797, PIA60174 = 0x4960 PIA60185 = 0x4961 PIA60196 = 0x4962 PIA60200 = 0x4963 PIA60201 = 0x4964 PIA60202 = 0x4965 PIA60203 = 0x4966 PIA60204 = 0x4967 PIA60205 = 0x4968 PIA60175 = 0x4969 PIA60176 = 0x496A PIA60177 = 0x496B PIA60178 = 0x496C PIA60179 = 0x496D PIA60180 = 0x496E PIA60181 = 0x496F PIA60182 = 0x4960 PIA60183 = 0x4961 PIA60184 = 0x4962 PIA60186 = 0x4963 PIA60187 = 0x4964 PIA60188 = 0x4965 PIA60189 = 0x4966 PIA60190 = 0x4967 PIA60191 = 0x4968 PIA60192 = 0x4969 PIA60193 = 0x496A PIA60194 = 0x496B PIA60195 = 0x496C PIA60197 = 0x496D PIA60198 = 0x496E PIA60199 = 0x496F | Time = 2 seconds |

## EAS1 Zero Deflectors

|  |  |  |  |
| --- | --- | --- | --- |
|  | Zero the EAS1 Deflectors | **PDOR\_SSWA\_EAS1\_Deflector\_Zero\_00001.SOL** ZIA58765, PIA60474 = 0x00 PIA60475 = 0x00 **PLUS 96 BYTES** | Time = Instant |

## EAS Configure heater

| **Step N°** | **Commanding Flow** | **FCP ID or PDOR title & contents** | **Comments** |
| --- | --- | --- | --- |
|  | Turn the manual heater on for EAS1Master Control RegisterHeater Control | **PDOR\_SSWA\_EAS1\_Partial\_Heater\_00001.SOL**ZIA58776, PIA60423 = 0x00 PIA60424 = 0x40 PIA60425 = 0x60ZIA58757, PIA60773 = 0x00  PIA60774 = 0x00 PIA60775 = 0xE8 | Time = InstantControl EAS heaters to ¾ max0xE8 |

|  |  |  |  |
| --- | --- | --- | --- |
|  | Turn the manual heater on for EAS2Master control RegisterHeater Control | **PDOR\_SSWA\_EAS2\_Partial\_Heater\_00001.SOL**ZIA58824, PIA60423 = 0x00 PIA60424 = 0x40 PIA60425 = 0x60ZIA58805, PIA60773 = 0x00  PIA60774 = 0x00 PIA60775 = 0xE8 | Time = InstantControl EAS1 heaters to ¾ max0xE8 |

# EAS1 HV Commission

## EAS1 Hemisphere Commission

|  |  |  |  |
| --- | --- | --- | --- |
|  | EAS1 Hemisphere CommissionSet the Hem Ratio to FDB22DSet EAS High CadenceSet hemisphere voltage max to **100V**Conversion = 0.001894467Rebuild Energy TableStart scienceWaitStop ScienceSet hemisphere voltage max to **200V**Conversion = 0.001894467Rebuild Energy TableStart scienceWaitStop ScienceSet hemisphere voltage max to **300V**Conversion = 0.001894467Rebuild Energy TableStart scienceWaitStop ScienceSet hemisphere voltage max to **400V**Conversion = 0.001894467Rebuild Energy TableStart science | **PDOR\_SSWA\_EAS1\_Hem\_pt1\_Comm\_00001.SOL**ZIA58766, PIA60469 = 0xFD PIA60470 = 0xB2 PIA60471 = 0x2DZIA58728, PIA60096 = 0 PIA60097 = 0 PIA60099 = 1 PIA60098 = 1ZIA58767, PIA60441 = 0x0C PIA60442 = 0xE3 PIA60443 = 0x10ZIA58771, PIA60031 = MBOX3 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x1ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2Wait 30 seconds ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58767, PIA60441 = 0x19 PIA60442 = 0xC6 PIA60443 = 0x20ZIA58771, PIA60031 = MBOX3 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x1ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2Wait 30 seconds ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58767, PIA60441 = 0x26 PIA60442 = 0xA9 PIA60443 = 0x30ZIA58771, PIA60031 = MBOX3 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x1ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2Wait 30 seconds ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58767, PIA60441 = 0x33 PIA60442 = 0x8C PIA60443 = 0x50ZIA58771, PIA60031 = MBOX3 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x1ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2 |  |

|  |  |  |  |
| --- | --- | --- | --- |
|  | EAS1 Hemisphere CommissionStop ScienceSet hemisphere voltage max to **500V**Conversion = 0.001894467Rebuild Energy TableStart scienceWaitStop ScienceSet hemisphere voltage max to **600V**Conversion = 0.001894467Rebuild Energy TableStart scienceWaitStop ScienceSet hemisphere voltage max to **700V**Conversion = 0.001894467Rebuild Energy TableStart scienceWaitStop ScienceSet hemisphere voltage max to **800V**Conversion = 0.001894467Rebuild Energy TableStart scienceWaitStop ScienceSet the Hem Ratio to 0xDEB851Rebuild the energy tableStart science | **PDOR\_SSWA\_EAS1\_Hem\_pt2\_Comm\_00001.SOL**ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58767, PIA60441 = 0x40 PIA60442 = 0x6F PIA60443 = 0x60ZIA58771, PIA60031 = MBOX3 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x1ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2Wait 30 seconds ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58767, PIA60441 = 0x4D PIA60442 = 0x52 PIA60443 = 0x70ZIA58771, PIA60031 = MBOX3 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x1ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2Wait 30 seconds ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58767, PIA60441 = 0x5A PIA60442 = 0x35 PIA60443 = 0x90ZIA58771, PIA60031 = MBOX3 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x1ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2Wait 30 seconds ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58767, PIA60441 = 0x67 PIA60442 = 0x18 PIA60443 = 0xA0ZIA58771, PIA60031 = MBOX3 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x1ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2Wait 30 seconds ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58766, PIA60469 = 0xDE PIA60470 = 0xB8 PIA60471 = 0x51ZIA58771, PIA60031 = MBOX3 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x1ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2 |  |

## EAS1 Deflector Commission

|  |  |  |  |
| --- | --- | --- | --- |
|  | EAS1 Upper Deflector CommissionStop ScienceSet Deflectors to 0.4 Start science | **PDOR\_SSWA\_EAS1\_U\_Def\_04\_Comm\_00002.SOL**ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58765 PIA60474 = 0x00 PIA60475 = 0x00 PIA60578 = 0x00 PIA60589 = 0x19 PIA60600 = 0x99 PIA60611 = 0x99**PLUS 90 FURTHER BYTES**ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2 |  |

**PAUSE WAIT SWA INTERVENTION**

|  |  |  |  |
| --- | --- | --- | --- |
|  | EAS1 Upper Deflector CommissionStop ScienceSet Deflectors to 0.8Start scienceStop ScienceSet Deflectors to 1.2Start science | **PDOR\_SSWA\_EAS1\_U\_Def\_12\_Comm\_00003.SOL**ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58765 PIA60474 = 0x00 PIA60475 = 0x00 PIA60578 = 0x00 PIA60589 = 0x33 PIA60600 = 0x33 PIA60611 = 0x33**PLUS 90 FURTHER BYTES**ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2Wait 30 seconds ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58765 PIA60474 = 0x00 PIA60475 = 0x00 PIA60578 = 0x00 PIA60589 = 0x4C PIA60600 = 0xCC PIA60611 = 0xCC**PLUS 90 FURTHER BYTES**ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2 |  |

**PAUSE WAIT SWA INTERVENTION**

|  |  |  |  |
| --- | --- | --- | --- |
|  | EAS1 Upper Deflector CommissionStop ScienceSet Deflectors to 1.6 Start scienceWaitStop ScienceSet Deflectors to 2.0 Start science | **PDOR\_SSWA\_EAS1\_U\_Def\_20\_Comm\_00003.SOL**ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58765 PIA60474 = 0x00 PIA60475 = 0x00 PIA60578 = 0x00 PIA60589 = 0x66 PIA60600 = 0x66 PIA60611 = 0x66**PLUS 90 FURTHER BYTES**ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2Wait 30 secondsZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58765 PIA60474 = 0x00 PIA60475 = 0x00 PIA60578 = 0x00 PIA60589 = 0x99 PIA60600 = 0x99 PIA60611 = 0x99**PLUS 90 FURTHER BYTES**ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2 |  |

**PAUSE WAIT SWA INTERVENTION**

|  |  |  |  |
| --- | --- | --- | --- |
|  | EAS1 Upper Deflector CommissionStop ScienceSet Deflectors to 2.4 Start scienceWaitStop ScienceSet Deflectors to 2.8 Start science | **PDOR\_SSWA\_EAS1\_U\_Def\_28\_Comm\_00003.SOL**ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58765 PIA60474 = 0x00 PIA60475 = 0x00 PIA60578 = 0x00 PIA60589 = 0xB3 PIA60600 = 0x33 PIA60611 = 0x33**PLUS 90 FURTHER BYTES**ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2Wait 30 secondsZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58765 PIA60474 = 0x00 PIA60475 = 0x00 PIA60578 = 0x00 PIA60589 = 0xB3 PIA60600 = 0x33 PIA60611 = 0x33**PLUS 90 FURTHER BYTES**ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2 |  |

**PAUSE WAIT SWA INTERVENTION**

|  |  |  |  |
| --- | --- | --- | --- |
|  | EAS1 Lower Deflector CommissionStop ScienceSet Deflectors to 0.4Start science | **PDOR\_SSWA\_EAS1\_L\_Def\_04\_Comm\_00002.SOL**ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58765 PIA60474 = 0x19 PIA60475 = 0x99 PIA60578 = 0x99 PIA60589 = 0x00 PIA60600 = 0x00 PIA60611 = 0x00**PLUS 90 FURTHER BYTES**ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2 |  |

**PAUSE WAIT SWA INTERVENTION**

|  |  |  |  |
| --- | --- | --- | --- |
|  | EAS1 Lower Deflector CommissionStop ScienceSet Deflectors to 0.8 Start scienceWait Stop ScienceSet Deflectors to 1.2 Start science | **PDOR\_SSWA\_EAS1\_L\_Def\_12\_Comm\_00003.SOL**ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58765 PIA60474 = 0x33 PIA60475 = 0x33 PIA60578 = 0x33 PIA60589 = 0x00 PIA60600 = 0x00 PIA60611 = 0x00**PLUS 90 FURTHER BYTES**ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2Wait 30 secondsZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58765 PIA60474 = 0x4C PIA60475 = 0xCC PIA60578 = 0xCC PIA60589 = 0x00 PIA60600 = 0x00 PIA60611 = 0x00**PLUS 90 FURTHER BYTES**ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2 |  |

**PAUSE WAIT SWA INTERVENTION**

|  |  |  |  |
| --- | --- | --- | --- |
|  | EAS1 Lower Deflector CommissionStop ScienceSet Deflectors to 1.6 Start scienceWaitStop ScienceSet Deflectors to 2.0 Start science | **PDOR\_SSWA\_EAS1\_L\_Def\_20\_Comm\_00003.SOL**ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58765 PIA60474 = 0x66 PIA60475 = 0x66 PIA60578 = 0x66 PIA60589 = 0x00 PIA60600 = 0x00 PIA60611 = 0x00**PLUS 90 FURTHER BYTES**ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2Wait 30 secondsZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58765 PIA60474 = 0x80 PIA60475 = 0x00 PIA60578 = 0x00 PIA60589 = 0x00 PIA60600 = 0x00 PIA60611 = 0x00**PLUS 90 FURTHER BYTES**ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2 |  |

**PAUSE WAIT SWA INTERVENTION**

|  |  |  |  |
| --- | --- | --- | --- |
|  | EAS1 Lower Deflector CommissionStop ScienceSet Deflectors to 2.4 Start scienceWaitStop ScienceSet Deflectors to 2.8 Start science | **PDOR\_SSWA\_EAS1\_L\_Def\_28\_Comm\_00003.SOL**ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58765 PIA60474 = 0x99 PIA60475 = 0x99 PIA60578 = 0x99 PIA60589 = 0x00 PIA60600 = 0x00 PIA60611 = 0x00**PLUS 90 FURTHER BYTES**ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2Wait 30 secondsZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58765 PIA60474 = 0xB3 PIA60475 = 0x33 PIA60578 = 0x33 PIA60589 = 0x00 PIA60600 = 0x00 PIA60611 = 0x00**PLUS 90 FURTHER BYTES**ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2 |  |

## EAS Flight Deflectors

|  |  |  |  |
| --- | --- | --- | --- |
| **Step N°** | **Commanding Flow** | **FCP ID or PDOR title & contents** | **Comments** |
|  | Adjust Deflectors on EAS1Stop Normal Mode on EAS1Adjust the Deflector Ratios | **PDOR\_SSWA\_EAS1\_Deflectors\_Flight\_00001.SOL**ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58765, PIA60474 = 0xB0 PIA60475 = 0xC4 PIA60578 = 0x9B PIA60589 = 0x00 PIA60600 = 0x00 PIA60611 = 0x00 PIA60622 = 0x88 PIA60633 = 0xC4 PIA60644 = 0x9B PIA60655 = 0x00 PIA60476 = 0x00 PIA60487 = 0x00 PIA60498 = 0x62 PIA60509 = 0x7E PIA60520 = 0xF9 PIA60531 = 0x00 PIA60542 = 0x00 PIA60553 = 0x00 PIA60564 = 0x3F PIA60575 = 0xAE PIA60579 = 0x14 PIA60580 = 0x00 PIA60581 = 0x00 PIA60582 = 0x00 PIA60583 = 0x20 PIA60584 = 0x20 PIA60585 = 0xC4 PIA60586 = 0x00 PIA60587 = 0x00 PIA60588 = 0x00 PIA60590 = 0x04 PIA60591 = 0x49 PIA60592 = 0xBA PIA60593 = 0x00 PIA60594 = 0x00 PIA60595 = 0x00 PIA60596 = 0x00 PIA60597 = 0x00 PIA60598 = 0x00 PIA60599 = 0x14 PIA60601 = 0x39 PIA60602 = 0x58 PIA60603 = 0x00 PIA60604 = 0x00 PIA60605 = 0x00 PIA60606 = 0x29 PIA60607 = 0x78 PIA60608 = 0xD4 PIA60609 = 0x00 PIA60610 = 0x00 PIA60612 = 0x00 PIA60613 = 0x3B PIA60614 = 0xE7 PIA60615 = 0x6C PIA60616 = 0x00 PIA60617 = 0x00 PIA60618 = 0x00 PIA60619 = 0x4C PIA60620 = 0x8B PIA60621 = 0x43 PIA60623 = 0x00 PIA60624 = 0x00 PIA60625 = 0x00 PIA60626 = 0x5C PIA60627 = 0x39 PIA60628 = 0x58 PIA60629 = 0x00 PIA60630 = 0x00 PIA60631 = 0x00 PIA60632 = 0x6A PIA60634 = 0xF1 PIA60635 = 0xA9 PIA60636 = 0x00 PIA60637 = 0x00 PIA60638 = 0x00 PIA60639 = 0x7A PIA60640 = 0x3D PIA60641 = 0x70 PIA60642 = 0x00 PIA60643 = 0x00 PIA60645 = 0x00 PIA60646 = 0x8B PIA60647 = 0xB6 PIA60648 = 0x45 PIA60649 = 0x00 PIA60650 = 0x00 PIA60651 = 0x00 PIA60652 = 0x9F PIA60653 = 0xEF PIA60654 = 0x9D PIA60656 = 0x00 PIA60657 = 0x00 PIA60658 = 0x00 PIA60659 = 0xB7 PIA60660 = 0xDF PIA60661 = 0x3B |  |

## EAS1 VGF commission

|  |  |  |  |
| --- | --- | --- | --- |
|  | Stop ScienceSet VGF ratioSet VGF Ratio Pointer to 0Start scienceWaitStop ScienceSet VGF Ratio Pointer to 1Start scienceWaitStop ScienceSet VGF Ratio Pointer to 2Start scienceWaitStop ScienceSet VGF ratio to ratioSet VGF Ratio Pointer to 0Start science | **PDOR\_SSWA\_EAS1\_VGF\_Comm\_00002.SOL**ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58768, PIA60460 = 0x09 PIA60461 = 0x99 PIA60462 = 0x99 PIA60463 = 0x16 PIA60464 = 0x66 PIA60465 = 0x66 PIA60466 = 0x13 PIA60467 = 0x33 PIA60468 = 0x33ZIA58770, PIA60460 = 0ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2Wait 00:01:10 (70 second)ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58770, PIA60460 = 1ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2Wait 00:01:10 (70 second)ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58770, PIA60460 = 2ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2Wait 00:01:10 (70 second)ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0Wait 00:01:10 (70 second)ZIA58768, PIA60460 = 0x0 PIA60461 = 0x0 PIA60462 = 0x0 PIA60463 = 0x0 PIA60464 = 0x0 PIA60465 = 0x0 PIA60466 = 0x0 PIA60467 = 0x0 PIA60468 = 0x0ZIA58770, PIA60460 = 0ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2 |  |

## EAS1 MCP commission

|  |  |  |  |
| --- | --- | --- | --- |
| **Step N°** | **Commanding Flow** | **FCP ID or PDOR title & contents** | **Comments** |
|  | Zero the Deflectors | **PDOR\_SSWA\_EAS1\_Deflector\_Zero\_00001.SOL**  |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Commission EAS1 MCPStop normal mode on EAS1 Perform Eng Mode 3[Conversion = 1.022 ]Set the EAS1 MCP back by 25VStart normal mode on EAS1  | **PDOR\_SSWA\_EAS1\_MCP1\_Comm\_00001.SOL**ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x0ZIA58789, PIA60101 = [Start MCP] PIA60100 = [Final MCP] PIA60102 = 0x33 Step MCP PIA60437 = 1 1st ramp time PIA60444 = 1 Inter ramp time PIA60165 = 20 Acq time PIA60760 = 0x20 Hem bin PIA60761 = 0x8 Def number PIA60762 = SWEEP\_MACRO ctrl**TM(5,2) Expected**Wait 00:00:30 (30 seconds)ZIA58784, PIA60218 = [MCP Value]ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2**SEND IN GROUPS OF 8 TCs THEN WAIT BEFORE SENDING THE NEXT 8** | This PDOR has the following sequence of procedures run for 7 times. Each loop has the following inputs.

|  |  |  |  |
| --- | --- | --- | --- |
|   | Start MCP | Final MCP | MCP Value |
|   | PIA60101 | PIA60100 | PIA60218 |
| 1 | 19 | 1A | 0 |
| 2 | 33 | 34 | 19 |
| 3 | 4C | 4D | 33 |
| 4 | 66 | 67 | 4C |
| 5 | 7F | 80 | 66 |
| 6 | 99 | 9A | 7F |
| 7 | B2 | B3 | 99 |
| 8 | CC | CD | B2 |
| 9 | E5 | E6 | CC |
| 10 | FF | 100 | E5 |
| 11 | 119 | 11A | FF |
| 12 | 132 | 133 | 119 |
| 13 | 14C | 14D | 132 |
| 14 | 165 | 166 | 14C |
| 15 | 17F | 180 | 165 |

 |
| **SWA Operator Confirm to Proceed Round the Loop** **SWA Operator to check Counts in 3d packets and EM3 packets** |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Commission EAS1 MCPStop normal mode on EAS1 Perform Eng Mode 3[Conversion = 1.022 ]Set the EAS1 MCP back by 25VStart normal mode on EAS1  | **PDOR\_SSWA\_EAS1\_MCP2\_Comm\_00001.SOL**ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x0ZIA58789, PIA60101 = [Start MCP] PIA60100 = [Final MCP] PIA60102 = 0x33 Step MCP PIA60437 = 1 1st ramp time PIA60444 = 1 Inter ramp time PIA60165 = 20 Acq time PIA60760 = 0x20 Hem bin PIA60761 = 0x8 Def number PIA60762 = SWEEP\_MACRO ctrl**TM(5,2) Expected**Wait 00:00:30 (30 seconds)ZIA58784, PIA60218 = [MCP Value]ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2**SEND IN GROUPS OF 16 TCs THEN WAIT BEFORE SENDING THE NEXT 16** | This PDOR has the following sequence of procedures run for 13 times. Each loop has the following inputs.

|  |  |  |  |
| --- | --- | --- | --- |
|   | Start MCP | Final MCP | MCP Value |
|   | PIA60101 | PIA60100 | PIA60218 |
| 1 | 198 | 199 | 17F |
| 2 | 1B2 | 1B3 | 198 |
| 3 | 1CB | 1CC | 1B2 |
| 4 | 1E5 | 1E6 | 1CB |
| 5 | 1FF | 200 | 1E5 |
| 6 | 218 | 219 | 1FE |
| 7 | 232 | 233 | 218 |
| 8 | 24B | 24C | 232 |
| 9 | 265 | 266 | 24B |
| 10 | 27E | 27F | 265 |
| 11 | 298 | 299 | 27E |
| 12 | 2B1 | 2B2 | 298 |
| 13 | 2CB | 2CC | 2B1 |
| 14 | 2E4 | 2E5 | 2CB |
| 15 | 2FE | 2FF | 2E4 |
| 16 | 318 | 319 | 2FE |
| 17 | 331 | 332 | 318 |
| 18 | 34B | 34C | 331 |
| 19 | 364 | 365 | 34B |
| 20 | 37E | 37F | 364 |
| 21 | 397 | 398 | 37E |
| 22 | 3B1 | 3B2 | 397 |
| 23 | 3CA | 3CB | 3B1 |
| 24 | 3E4 | 3E5 | 3CA |
| 25 | 3FE | 3FF | 3E4 |
| 26 | 417 | 418 | 3FE |
| 27 | 431 | 432 | 417 |
| 28 | 44A | 44B | 431 |
| 29 | 464 | 465 | 44A |
| 30 | 47D | 47E | 464 |
| 31 | 497 | 498 | 47D |
| 32 | 4B0 | 4B1 | 497 |
| 33 | 4CA | 4CB | 4B0 |
| 34 | 4E3 | 4E4 | 4CA |
| 35 | 4FD | 4FE | 4E3 |
| 36 | 517 | 518 | 4FD |
| 37 | 530 | 531 | 517 |
| 38 | 54A | 54B | 530 |
| 39 | 563 | 564 | 54A |
| 40 | 57D | 57E | 563 |
| 41 | 596 | 597 | 57D |
| 42 | 5B0 | 5B1 | 596 |
| 43 | 5C9 | 5CA | 5B0 |
| 44 | 5E3 | 5E4 | 5C9 |
| 45 | 5FD | 5FE | 5E3 |
| 46 | 616 | 617 | 5FD |
| 47 | 630 | 631 | 616 |
| 48 | 649 | 64A | 630 |
| 49 | 663 | 664 | 649 |
| 50 | 67C | 67D | 663 |
| 51 | 696 | 697 | 67C |
| 52 | 6AF | 6B0 | 696 |
| 53 | 6C9 | 6CA | 6AF |
| 54 | 6E2 | 6E3 | 6C9 |
| 55 | 6FC | 6FD | 6E2 |

 |
| **SWA Operator Confirm to Proceed Round the Loop****SWA Operator to check Counts in 3d packets and EM3 packets** |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Commission EAS1 MCPStop normal mode on EAS1 Perform Eng Mode 3[Conversion = 1.022 ]Set the EAS1 MCP back by 25VStart normal mode on EAS1  | **PDOR\_SSWA\_EAS1\_MCP3\_Comm\_00001.SOL**ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x0ZIA58789, PIA60101 = [Start MCP] PIA60100 = [Final MCP] PIA60102 = 0x33 Step MCP PIA60437 = 1 1st ramp time PIA60444 = 1 Inter ramp time PIA60165 = 20 Acq time PIA60760 = 0x20 Hem bin PIA60761 = 0x8 Def number PIA60762 = SWEEP\_MACRO ctrl**TM(5,2) Expected**Wait 00:00:30 (30 seconds)ZIA58784, PIA60218 = [MCP Value]ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2**SEND IN GROUPS OF 8 TCs THEN WAIT BEFORE SENDING THE NEXT 8.** | This PDOR has the following sequence of procedures run for 44 times. Each loop has the following inputs.

|  |  |  |  |
| --- | --- | --- | --- |
|   | Start MCP | Final MCP | MCP Value |
|   | PIA60101 | PIA60100 | PIA60218 |
| 1 | 716 | 717 | 6FC |
| 2 | 72F | 730 | 716 |
| 3 | 749 | 74A | 72F |
| 4 | 762 | 763 | 749 |
| 5 | 77C | 77D | 762 |
| 6 | 795 | 796 | 77C |
| 7 | 7AF | 7B0 | 795 |
| 8 | 7C8 | 7C9 | 7AF |
| 9 | 7E2 | 7E3 | 7C8 |
| 10 | 7FC | 7FD | 7E2 |
| 11 | 815 | 816 | 7FC |
| 12 | 82F | 830 | 815 |
| 13 | 848 | 849 | 82F |
| 14 | 862 | 863 | 848 |
| 15 | 87B | 87C | 862 |
| 16 | 895 | 896 | 87B |
| 17 | 8AE | 8AF | 895 |
| 18 | 8C8 | 8C9 | 8AE |
| 19 | 8E1 | 8E2 | 8C8 |
| 20 | 8FB | 8FC | 8E1 |
| 21 | 915 | 916 | 8FB |
| 22 | 92E | 92F | 915 |
| 23 | 948 | 949 | 92E |
| 24 | 961 | 962 | 948 |
| 25 | 97B | 97C | 961 |
| 26 | 994 | 995 | 97B |
| 27 | 9AE | 9AF | 994 |
| 28 | 9C7 | 9C8 | 9AE |
| 29 | 9E1 | 9E2 | 9C7 |
| 30 | 9FB | 9FC | 9E1 |
| 31 | A0A | A0B | 9F0 |
| 32 | A19 | A1A | A00 |
| 33 | A28 | A29 | A0F |
| 34 | A38 | A39 | A1E |
| 35 | A47 | A48 | A2E |
| 36 | A56 | A57 | A3D |
| 37 | A66 | A67 | A4C |
| 38 | A75 | A76 | A5C |
| 39 | A84 | A85 | A6B |
| 40 | A94 | A95 | A7A |
| 41 | AA3 | AA4 | A8A |
| 42 | AB2 | AB3 | A99 |
| 43 | AC2 | AC3 | AA8 |
| 44 | AD1 | AD2 | AB8 |

 |
| **SWA Operator Confirm to Proceed Round the Loop****SWA Operator to check Counts in 3d packets and EM3 packets** |

## EAS1 POST MCP commission

|  |  |  |  |
| --- | --- | --- | --- |
|  | Post EAS1 MCP CommissionStop normal mode on EAS1 Set the EAS1 MCP to 2695V = 0xAC2Start normal mode on EAS1  | **PDOR\_SSWA\_EAS1\_Post\_MCP\_Comm\_00002.SOL**ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x0ZIA58784, PIA60218 = 0xAC2ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2 |  |

## EAS1 Eng Mode 7

|  |  |  |  |
| --- | --- | --- | --- |
|  | Eng mode 7 (HV Sweep TEST)Stop ScienceStart Eng Mode 7 | **PDOR\_SSWA\_EAS1\_EngMode\_7\_00001.SOL**ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58793Wait 00:02:00 (120 second) |  |

## EAS1 Start Normal Mode

|  |  |  |  |
| --- | --- | --- | --- |
|  | Start normal mode on EAS1  | **PDOR\_SSWA\_EAS1\_NormalMode\_00001.SOL**ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2 |  |

# 2nd April. SWA-5 (IA-5) End of day Power Down (MTL)

See details above.

# 6th April. SWA-5 (IA-5) End of day Power Down (MTL)

Before the activity starts, the end of day commanding is loaded onto the MTL. This is shown here as it is unknown at this point where this activity will end. Wherever the end is, the activity will be halted, EAS powered down. Then the following day will power up and continue where this activity ended.

| **Step N°** | **Commanding Flow** | **FCP ID or PDOR title & contents** | **Comments** |
| --- | --- | --- | --- |
|  | Power down EAS1Stop ScienceRamp MCP to zeroTurn heater offSwitch OffStop HK | **PDOR\_SSWA\_EAS1\_HV2SwitchOff\_00001.SOL**ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x0Wait 00:00:01 (1 second)ZIA58784, PIA60218 = 0Wait 00:00:40 (40 second)ZIA58757, PIA60773 = 0 PIA60774 = 0 PIA60775 = 0Wait 00:00:01 (1 second)ZIA58756Wait 00:01:00 (60 second)ZIA58051, PIA58050 = EAS1\_SENS\_HK |  |

|  |  |  |  |
| --- | --- | --- | --- |
|  | Power down EAS2Stop ScienceRamp MCP to zeroTurn heater offSwitch OffStop HK | **PDOR\_SSWA\_EAS2\_HV2SwitchOff\_00001.SOL**ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x0Wait 00:00:01 (1 second)ZIA58832, PIA60218 = 0Wait 00:00:40 (40 second)ZIA58805, PIA60773 = 0 PIA60774 = 0 PIA60775 = 0Wait 00:00:01 (1 second)ZIA58804Wait 00:01:00 (60 second)ZIA58051, PIA58050 = EAS2\_SENS\_HK |  |

|  |  |  |  |
| --- | --- | --- | --- |
|  | Power down DPU | IA-FCP-002 |  |

# 6th April. SWA-5 (IA-5) Start of day procedure

## DPU Power up (MTL)

| **Step N°** | **Commanding Flow** | **FCP ID or PDOR title & contents** | **Comments** |
| --- | --- | --- | --- |
|  | Power DPU on  | IA-FCP-011 |  |
|  | Configure the DPU | IA-FCP-030 |  |

## Disable EAS FDIR (MTL)

| **Step N°** | **Commanding Flow** | **FCP ID or PDOR title & contents** | **Comments** |
| --- | --- | --- | --- |
|  | Disable EAS1 FDIR | **PDOR\_SSWA\_EAS1\_Disable\_FDIR\_00001.SOL**ZIA58064, PIA60452 = 12 PIA60449 = EAS1SPWHB\_MI PIA60449 = E1\_3V3\_MI PIA60449 = E1\_1V5\_MI PIA60449 = E1OPTEMPMON PIA60449 = E1HVOUTVMON PIA60449 = E1MCPVMON PIA60449 = E1GRIDVMON PIA60449 = E110VAPOSVMON PIA60449 = E128VPOSVMON PIA60449 = E1HVGENTHERMON PIA60449 = E1HVMODTHERMON PIA60449 = EAS1MISSACK\_MI | Time = Instant |

|  |  |  |  |
| --- | --- | --- | --- |
|  | Disable EAS2 FDIR | **PDOR\_SSWA\_EAS2\_Disable\_FDIR\_00001.SOL**ZIA58064, PIA60452 = 12 PIA60449 = EAS2SPWHB\_MI PIA60449 = E2\_3V3\_MI PIA60449 = E2\_1V5\_MI PIA60449 = E2OPTEMPMON PIA60449 = E2HVOUTVMON PIA60449 = E2MCPVMON PIA60449 = E2GRIDVMON PIA60449 = E210VAPOSVMON PIA60449 = E228VPOSVMON PIA60449 = E2HVGENTHERMON PIA60449 = E2HVMODTHERMON PIA60449 = EAS2MISSACK\_MI | Time = Instant |

## EAS Power up

| **Step N°** | **Commanding Flow** | **FCP ID or PDOR title & contents** | **Comments** |
| --- | --- | --- | --- |
|  | Power Up to IDLE EAS1Enable EAS1 HK Power EAS1 onPOST macro on EAS1IDLE macro on EAS1Request EAS1 HK | **PDOR\_SSWA\_EAS1\_PowerUp\_Post2Idle\_00001.SOL**ZIA58050, PIA58050 = EAS1\_SENS\_HKWait 00:00:01 (1 second)ZIA58760Wait 00:00:05 (5 second)ZIA58934, PIA60739 = POSTWait 00:00:05 (5 second)ZIA58753Wait 00:00:30 (30 second)ZIA58782 | Time = 41 seconds |

**SWA Team to check HK before Proceeding**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Go to RUN state EAS1RUN macro on EAS1 | **PDOR\_SSWA\_EAS1\_PowerUp\_Run\_00001.SOL**ZIA58758Wait 00:00:20 (20 second) | Time = 20 seconds |
|  | Power Up to IDLE EAS2Enable EAS2 HK Power EAS2 onPOST macro on EAS2IDLE macro on EAS2Request EAS2 HK | **PDOR\_SSWA\_EAS2\_PowerUp\_Post2Idle\_00001.SOL**ZIA58050, PIA58050 = EAS2\_SENS\_HKWait 00:00:01 (1 second)ZIA58808Wait 00:00:05 (5 second)ZIA58936, PIA60740 = POSTWait 00:00:05 (5 second)ZIA58801Wait 00:30:00 (30 second)ZIA58830 | Time = 41 seconds |

**SWA Team to check HK before Proceeding**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Go to RUN state EAS2RUN macro on EAS2 | **PDOR\_SSWA\_EAS2\_PowerUp\_Run\_00001.SOL**ZIA58806Wait 00:00:20 (20 second) | Time = 20 seconds |

## EAS2 Thresholds

|  |  |  |  |
| --- | --- | --- | --- |
| **Step N°** | **Commanding Flow** | **FCP ID or PDOR title & contents** | **Comments** |
|  | Set the EAS2 threshold values to 0x496 | **PDOR\_SSWA\_EAS2\_Thresh\_496\_00001.SOL**ZIA58845, PIA60174 = 0x4960 PIA60185 = 0x4961 PIA60196 = 0x4962 PIA60200 = 0x4963 PIA60201 = 0x4964 PIA60202 = 0x4965 PIA60203 = 0x4966 PIA60204 = 0x4967 PIA60205 = 0x4968 PIA60175 = 0x4969 PIA60176 = 0x496A PIA60177 = 0x496B PIA60178 = 0x496C PIA60179 = 0x496D PIA60180 = 0x496E PIA60181 = 0x496F PIA60182 = 0x4960 PIA60183 = 0x4961 PIA60184 = 0x4962 PIA60186 = 0x4963 PIA60187 = 0x4964 PIA60188 = 0x4965 PIA60189 = 0x4966 PIA60190 = 0x4967 PIA60191 = 0x4968 PIA60192 = 0x4969 PIA60193 = 0x496A PIA60194 = 0x496B PIA60195 = 0x496C PIA60197 = 0x496D PIA60198 = 0x496E PIA60199 = 0x496F |  |

## EAS2 Zero Deflectors

|  |  |  |  |
| --- | --- | --- | --- |
|  | Zero the EAS2 Deflectors | **PDOR\_SSWA\_EAS2\_Deflector\_Zero\_00001.SOL** ZIA58813, PIA60474 = 0x00 PIA60475 = 0x00 **PLUS 96 BYTES** | Time = Instant |

## EAS Configure heater

| **Step N°** | **Commanding Flow** | **FCP ID or PDOR title & contents** | **Comments** |
| --- | --- | --- | --- |
|  | Turn the manual heater on for EAS1Master Control RegisterHeater Control | **PDOR\_SSWA\_EAS1\_Partial\_Heater\_00001.SOL**ZIA58776, PIA60423 = 0x00 PIA60424 = 0x40 PIA60425 = 0x60ZIA58757, PIA60773 = 0x00  PIA60774 = 0x00 PIA60775 = 0xE8 | Time = InstantControl EAS heaters to ¾ max0xE8 |

|  |  |  |  |
| --- | --- | --- | --- |
|  | Turn the manual heater on for EAS2Master control RegisterHeater Control | **PDOR\_SSWA\_EAS2\_Partial\_Heater\_00001.SOL**ZIA58824, PIA60423 = 0x00 PIA60424 = 0x40 PIA60425 = 0x60ZIA58805, PIA60773 = 0x00  PIA60774 = 0x00 PIA60775 = 0xE8 | Time = InstantControl EAS1 heaters to ¾ max0xE8 |

# EAS2 HV Commission

## EAS2 Hemisphere commission

|  |  |  |  |
| --- | --- | --- | --- |
| **Step N°** | **Commanding Flow** | **FCP ID or PDOR title & contents** | **Comments** |
|  | EAS2 Hemisphere CommissionSet the Hem Ratio to FDB22DSet EAS High CadenceSet hemisphere voltage max to **100V**Conversion = 0.001894467Rebuild Energy TableStart scienceWaitStop ScienceSet hemisphere voltage max to **200V**Conversion = 0.001894467Rebuild Energy TableStart scienceWaitStop ScienceSet hemisphere voltage max to **300V**Conversion = 0.001894467Rebuild Energy TableStart scienceWaitStop ScienceSet hemisphere voltage max to **400V**Conversion = 0.001894467Rebuild Energy TableStart science | **PDOR\_SSWA\_EAS2\_Hem\_pt1\_Comm\_00001.SOL**ZIA58814, PIA60469 = 0xFD PIA60470 = 0xB2 PIA60471 = 0x2DZIA58728, PIA60096 = 0 PIA60097 = 0 PIA60099 = 1 PIA60098 = 1ZIA58815, PIA60441 = 0x0C PIA60442 = 0xE3 PIA60443 = 0x10ZIA58819, PIA60031 = MBOX3 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x1ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2Wait 30 seconds ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58815, PIA60441 = 0x19 PIA60442 = 0xC6 PIA60443 = 0x20ZIA58819, PIA60031 = MBOX3 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x1ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2Wait 30 seconds ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58815, PIA60441 = 0x26 PIA60442 = 0xA9 PIA60443 = 0x30ZIA58819, PIA60031 = MBOX3 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x1ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2Wait 30 seconds ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58815, PIA60441 = 0x33 PIA60442 = 0x8C PIA60443 = 0x50ZIA58819, PIA60031 = MBOX3 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x1ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2 |  |

|  |  |  |  |
| --- | --- | --- | --- |
|  | EAS2 Hemisphere CommissionStop ScienceSet hemisphere voltage max to **500V**Conversion = 0.001894467Rebuild Energy TableStart scienceWaitStop ScienceSet hemisphere voltage max to **600V**Conversion = 0.001894467Rebuild Energy TableStart scienceWaitStop ScienceSet hemisphere voltage max to **700V**Conversion = 0.001894467Rebuild Energy TableStart scienceWaitStop ScienceSet hemisphere voltage max to **800V**Conversion = 0.001894467Rebuild Energy TableStart scienceWaitStop ScienceSet the Hem Ratio to 0xDEB851Rebuild the energy tableStart science | **PDOR\_SSWA\_EAS2\_Hem\_pt2\_Comm\_00001.SOL**ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58815, PIA60441 = 0x40 PIA60442 = 0x6F PIA60443 = 0x60ZIA58819, PIA60031 = MBOX3 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x1ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2Wait 30 seconds ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58815, PIA60441 = 0x4D PIA60442 = 0x52 PIA60443 = 0x70ZIA58819, PIA60031 = MBOX3 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x1ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2Wait 30 seconds ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58815, PIA60441 = 0x5A PIA60442 = 0x35 PIA60443 = 0x90ZIA58819, PIA60031 = MBOX3 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x1ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2Wait 30 seconds ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58815, PIA60441 = 0x67 PIA60442 = 0x18 PIA60443 = 0xA0ZIA58819, PIA60031 = MBOX3 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x1ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2Wait 30 seconds ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58766, PIA60469 = 0xDE PIA60470 = 0xB8 PIA60471 = 0x51ZIA58771, PIA60031 = MBOX3 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x1ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2 |  |

## EAS2 Deflectors commission

|  |  |  |  |
| --- | --- | --- | --- |
|  | EAS2 Upper Deflector CommissionStop ScienceSet Deflectors to 0.4 Start scienceWait | **PDOR\_SSWA\_EAS2\_U\_Def\_04\_Comm\_00002.SOL**ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58813 PIA60474 = 0x00 PIA60475 = 0x00 PIA60578 = 0x00 PIA60589 = 0x19 PIA60600 = 0x99 PIA60611 = 0x99**PLUS 90 FURTHER BYTES**ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2 |  |

**PAUSE WAIT SWA INTERVENTION**

|  |  |  |  |
| --- | --- | --- | --- |
|  | EAS2 Upper Deflector CommissionStop ScienceSet Deflectors to 0.8 Start scienceWaitStop ScienceSet Deflectors to 1.2Start science | **PDOR\_SSWA\_EAS2\_U\_Def\_12\_Comm\_00003.SOL**ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58813 PIA60474 = 0x00 PIA60475 = 0x00 PIA60578 = 0x00 PIA60589 = 0x33 PIA60600 = 0x33 PIA60611 = 0x33**PLUS 90 FURTHER BYTES**ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2Wait 30 secondsZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58813 PIA60474 = 0x00 PIA60475 = 0x00 PIA60578 = 0x00 PIA60589 = 0x4C PIA60600 = 0xCC**PLUS 90 FURTHER BYTES**ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2 |  |

**PAUSE WAIT SWA INTERVENTION**

|  |  |  |  |
| --- | --- | --- | --- |
|  | EAS2 Upper Deflector CommissionStop ScienceSet Deflectors to 1.6Start scienceWaitStop ScienceSet Deflectors to 2.0Start science | **PDOR\_SSWA\_EAS2\_U\_Def\_20\_Comm\_00003.SOL**ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58813 PIA60474 = 0x00 PIA60475 = 0x00 PIA60578 = 0x00 PIA60589 = 0x66 PIA60600 = 0x66 PIA60611 = 0x66**PLUS 90 FURTHER BYTES**ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2Wait 30 secondsZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58813 PIA60474 = 0x00 PIA60475 = 0x00 PIA60578 = 0x00 PIA60589 = 0x80 PIA60600 = 0x00 PIA60611 = 0x00**PLUS 90 FURTHER BYTES**ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2 |  |

**PAUSE WAIT SWA INTERVENTION**

|  |  |  |  |
| --- | --- | --- | --- |
|  | EAS2 Upper Deflector CommissionStop ScienceSet Deflectors to 2.4 Start scienceWaitStop ScienceSet Deflectors to 2.8 Start science | **PDOR\_SSWA\_EAS2\_U\_Def\_28\_Comm\_00003.SOL**ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58813 PIA60474 = 0x00 PIA60475 = 0x00 PIA60578 = 0x00 PIA60589 = 0x99 PIA60600 = 0x99 PIA60611 = 0x99**PLUS 90 FURTHER BYTES**ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2Wait 30 secondsZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58813 PIA60474 = 0x00 PIA60475 = 0x00 PIA60578 = 0x00 PIA60589 = 0xB3 PIA60600 = 0x33 PIA60611 = 0x33**PLUS 90 FURTHER BYTES**ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2 |  |

**PAUSE WAIT SWA INTERVENTION**

|  |  |  |  |
| --- | --- | --- | --- |
|  | EAS2 Lower Deflector CommissionStop ScienceSet Deflectors to 0.4 Start science | **PDOR\_SSWA\_EAS2\_L\_Def\_04\_Comm\_00002.SOL**ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58813 PIA60474 = 0x19 PIA60475 = 0x99 PIA60578 = 0x99 PIA60589 = 0x00 PIA60600 = 0x00 PIA60611 = 0x00**PLUS 90 FURTHER BYTES**ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2 |  |

**PAUSE WAIT SWA INTERVENTION**

|  |  |  |  |
| --- | --- | --- | --- |
|  | EAS2 Lower Deflector CommissionStop ScienceSet Deflectors to 0.8 WaitStart scienceStop ScienceSet Deflectors to 1.2 Start science | **PDOR\_SSWA\_EAS2\_L\_Def\_12\_Comm\_00003.SOL**ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58813 PIA60474 = 0x33 PIA60475 = 0x33 PIA60578 = 0x33 PIA60589 = 0x00 PIA60600 = 0x00 PIA60611 = 0x00**PLUS 90 FURTHER BYTES**Wait 30 secondsZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58813 PIA60474 = 0x4C PIA60475 = 0xCC PIA60578 = 0xCC PIA60589 = 0x00 PIA60600 = 0x00 PIA60611 = 0x00**PLUS 90 FURTHER BYTES**ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2 |  |

**PAUSE WAIT SWA INTERVENTION**

|  |  |  |  |
| --- | --- | --- | --- |
|  | EAS2 Lower Deflector CommissionStop ScienceSet Deflectors to 1.6 Start scienceWaitStop ScienceSet Deflectors to 2.0 Start science | **PDOR\_SSWA\_EAS2\_L\_Def\_20\_Comm\_00003.SOL**ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58813 PIA60474 = 0x66 PIA60475 = 0x66 PIA60578 = 0x66 PIA60589 = 0x00 PIA60600 = 0x00 PIA60611 = 0x00**PLUS 90 FURTHER BYTES**ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2Wait 30 secondsZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58813 PIA60474 = 0x80 PIA60475 = 0x00 PIA60578 = 0x00 PIA60589 = 0x00 PIA60600 = 0x00 PIA60611 = 0x00**PLUS 90 FURTHER BYTES**ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2 |  |

**PAUSE WAIT SWA INTERVENTION**

|  |  |  |  |
| --- | --- | --- | --- |
|  | EAS2 Lower Deflector CommissionStop ScienceSet Deflectors to 2.4 Start scienceWaitStop ScienceSet Deflectors to 2.8 Start science | **PDOR\_SSWA\_EAS2\_L\_Def\_28\_Comm\_00003.SOL**ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58813 PIA60474 = 0x99 PIA60475 = 0x99 PIA60578 = 0x99 PIA60589 = 0x00 PIA60600 = 0x00 PIA60611 = 0x00**PLUS 90 FURTHER BYTES**ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2Wait 30 secondsZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58813 PIA60474 = 0xB3 PIA60475 = 0x33 PIA60578 = 0x33 PIA60589 = 0x00 PIA60600 = 0x00 PIA60611 = 0x00ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2 |  |

## EAS2 VGF commission

|  |  |  |  |
| --- | --- | --- | --- |
|  | Stop ScienceSet VGF ratioSet VGF Ratio Pointer to 0Start scienceWaitStop ScienceSet VGF Ratio Pointer to 1Start scienceWaitStop ScienceSet VGF Ratio Pointer to 2Start scienceWaitStop ScienceSet VGF ratio to zeroSet VGF Ratio Pointer to 0Start Science | **PDOR\_SSWA\_EAS2\_VGF\_Comm\_00002.SOL**ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58816, PIA60460 = 0x09 PIA60461 = 0x99 PIA60462 = 0x99 PIA60463 = 0x16 PIA60464 = 0x66 PIA60465 = 0x66 PIA60466 = 0x13 PIA60467 = 0x33 PIA60468 = 0x33ZIA58818, PIA60460 = 0ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2Wait 00:01:10 (70 second)ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58818, PIA60460 = 1ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2Wait 00:01:10 (70 second)ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58818, PIA60460 = 2ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2Wait 00:01:10 (70 second)ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0Wait 00:01:10 (70 second)ZIA58816, PIA60460 = 0x0 PIA60461 = 0x0 PIA60462 = 0x0 PIA60463 = 0x0 PIA60464 = 0x0 PIA60465 = 0x0 PIA60466 = 0x0 PIA60467 = 0x0 PIA60468 = 0x0ZIA58818, PIA60460 = 0ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2 |  |

## EAS2 MCP commission

|  |  |  |  |
| --- | --- | --- | --- |
| **Step N°** | **Commanding Flow** | **FCP ID or PDOR title & contents** | **Comments** |
|  | Zero the Deflectors | **PDOR\_SSWA\_EAS2\_Deflector\_Zero\_00001.SOL**  |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Commission EAS2 MCPStop normal mode on EAS2Perform Eng Mode 3[Conversion = 1.022 ]Set the EAS2 MCP back by 25VStart normal mode on EAS2  | **PDOR\_SSWA\_EAS2\_MCP1\_Comm\_00001.SOL**ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x0ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58837, PIA60101 = [Start MCP] PIA60100 = [Final MCP] PIA60102 = 0x33 Step MCP PIA60437 = 1 1st ramp time PIA60444 = 1 Inter ramp time PIA60165 = 20 Acq time PIA60760 = 0x20 Hem bin PIA60761 = 0x8 Def number PIA60762 = SWEEP\_MACRO ctrl**TM(5,2) Expected**Wait 00:00:30 (30 seconds)ZIA58832, PIA60218 = [MCP Value]ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2**SEND IN GROUPS OF 8 TCs THEN WAIT BEFORE SENDING THE NEXT 8** | This PDOR has the following sequence of procedures run for 7 times. Each loop has the following inputs.

|  |  |  |  |
| --- | --- | --- | --- |
|   | Start MCP | Final MCP | MCP Value |
|   | PIA60101 | PIA60100 | PIA60218 |
| 1 | 19 | 1A | 0 |
| 2 | 33 | 34 | 19 |
| 3 | 4C | 4D | 33 |
| 4 | 66 | 67 | 4C |
| 5 | 7F | 80 | 66 |
| 6 | 99 | 9A | 7F |
| 7 | B2 | B3 | 99 |
| 8 | CC | CD | B2 |
| 9 | E5 | E6 | CC |
| 10 | FF | 100 | E5 |
| 11 | 119 | 11A | FF |
| 12 | 132 | 133 | 119 |
| 13 | 14C | 14D | 132 |
| 14 | 165 | 166 | 14C |
| 15 | 17F | 180 | 165 |

 |
| **SWA Operator Confirm to Proceed Round the Loop** **SWA Operator to check Counts in 3d packets and EM3 packets** |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Commission EAS2 MCPStop normal mode on EAS2Perform Eng Mode 3[Conversion = 1.022 ]Set the EAS2 MCP back by 25VStart normal mode on EAS2  | **PDOR\_SSWA\_EAS2\_MCP2\_Comm\_00001.SOL**ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x0ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58837, PIA60101 = [Start MCP] PIA60100 = [Final MCP] PIA60102 = 0x33 Step MCP PIA60437 = 1 1st ramp time PIA60444 = 1 Inter ramp time PIA60165 = 20 Acq time PIA60760 = 0x20 Hem bin PIA60761 = 0x8 Def number PIA60762 = SWEEP\_MACRO ctrl**TM(5,2) Expected**Wait 00:00:30 (30 seconds)ZIA58832, PIA60218 = [MCP Value]ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2**SEND IN GROUPS OF 16 TCs THEN WAIT BEFORE SENDING THE NEXT 16** | This PDOR has the following sequence of procedures run for 114 times. Each loop has the following inputs.

|  |  |  |  |
| --- | --- | --- | --- |
|   | Start MCP | Final MCP | MCP Value |
|   | PIA60101 | PIA60100 | PIA60218 |
| 1 | 198 | 199 | 17F |
| 2 | 1B2 | 1B3 | 198 |
| 3 | 1CB | 1CC | 1B2 |
| 4 | 1E5 | 1E6 | 1CB |
| 5 | 1FF | 200 | 1E5 |
| 6 | 218 | 219 | 1FE |
| 7 | 232 | 233 | 218 |
| 8 | 24B | 24C | 232 |
| 9 | 265 | 266 | 24B |
| 10 | 27E | 27F | 265 |
| 11 | 298 | 299 | 27E |
| 12 | 2B1 | 2B2 | 298 |
| 13 | 2CB | 2CC | 2B1 |
| 14 | 2E4 | 2E5 | 2CB |
| 15 | 2FE | 2FF | 2E4 |
| 16 | 318 | 319 | 2FE |
| 17 | 331 | 332 | 318 |
| 18 | 34B | 34C | 331 |
| 19 | 364 | 365 | 34B |
| 20 | 37E | 37F | 364 |
| 21 | 397 | 398 | 37E |
| 22 | 3B1 | 3B2 | 397 |
| 23 | 3CA | 3CB | 3B1 |
| 24 | 3E4 | 3E5 | 3CA |
| 25 | 3FE | 3FF | 3E4 |
| 26 | 417 | 418 | 3FE |
| 27 | 431 | 432 | 417 |
| 28 | 44A | 44B | 431 |
| 29 | 464 | 465 | 44A |
| 30 | 47D | 47E | 464 |
| 31 | 497 | 498 | 47D |
| 32 | 4B0 | 4B1 | 497 |
| 33 | 4CA | 4CB | 4B0 |
| 34 | 4E3 | 4E4 | 4CA |
| 35 | 4FD | 4FE | 4E3 |
| 36 | 517 | 518 | 4FD |
| 37 | 530 | 531 | 517 |
| 38 | 54A | 54B | 530 |
| 39 | 563 | 564 | 54A |
| 40 | 57D | 57E | 563 |
| 41 | 596 | 597 | 57D |
| 42 | 5B0 | 5B1 | 596 |
| 43 | 5C9 | 5CA | 5B0 |
| 44 | 5E3 | 5E4 | 5C9 |
| 45 | 5FD | 5FE | 5E3 |
| 46 | 616 | 617 | 5FD |
| 47 | 630 | 631 | 616 |
| 48 | 649 | 64A | 630 |
| 49 | 663 | 664 | 649 |
| 50 | 67C | 67D | 663 |
| 51 | 696 | 697 | 67C |
| 52 | 6AF | 6B0 | 696 |
| 53 | 6C9 | 6CA | 6AF |
| 54 | 6E2 | 6E3 | 6C9 |
| 55 | 6FC | 6FD | 6E2 |

 |
| **SWA Operator Confirm to Proceed Round the Loop** **SWA Operator to check Counts in 3d packets and EM3 packets** |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Commission EAS2 MCPStop normal mode on EAS2Perform Eng Mode 3[Conversion = 1.022 ]Set the EAS2 MCP back by 25VStart normal mode on EAS2  | **PDOR\_SSWA\_EAS2\_MCP3\_Comm\_00001.SOL**ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x0ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58837, PIA60101 = [Start MCP] PIA60100 = [Final MCP] PIA60102 = 0x33 Step MCP PIA60437 = 1 1st ramp time PIA60444 = 1 Inter ramp time PIA60165 = 20 Acq time PIA60760 = 0x20 Hem bin PIA60761 = 0x8 Def number PIA60762 = SWEEP\_MACRO ctrl**TM(5,2) Expected**Wait 00:00:30 (30 seconds)ZIA58832, PIA60218 = [MCP Value]ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2**SEND IN GROUPS OF 8 TCs THEN WAIT BEFORE SENDING THE NEXT 8** | This PDOR has the following sequence of procedures run for 114 times. Each loop has the following inputs.

|  |  |  |  |
| --- | --- | --- | --- |
|   | Start MCP | Final MCP | MCP Value |
|   | PIA60101 | PIA60100 | PIA60218 |
| 1 | 716 | 717 | 6FC |
| 2 | 72F | 730 | 716 |
| 3 | 749 | 74A | 72F |
| 4 | 762 | 763 | 749 |
| 5 | 77C | 77D | 762 |
| 6 | 795 | 796 | 77C |
| 7 | 7AF | 7B0 | 795 |
| 8 | 7C8 | 7C9 | 7AF |
| 9 | 7E2 | 7E3 | 7C8 |
| 10 | 7FC | 7FD | 7E2 |
| 11 | 815 | 816 | 7FC |
| 12 | 82F | 830 | 815 |
| 13 | 848 | 849 | 82F |
| 14 | 862 | 863 | 848 |
| 15 | 87B | 87C | 862 |
| 16 | 895 | 896 | 87B |
| 17 | 8AE | 8AF | 895 |
| 18 | 8C8 | 8C9 | 8AE |
| 19 | 8E1 | 8E2 | 8C8 |
| 20 | 8FB | 8FC | 8E1 |
| 21 | 915 | 916 | 8FB |
| 22 | 92E | 92F | 915 |
| 23 | 948 | 949 | 92E |
| 24 | 961 | 962 | 948 |
| 25 | 97B | 97C | 961 |
| 26 | 994 | 995 | 97B |
| 27 | 9AE | 9AF | 994 |
| 28 | 9C7 | 9C8 | 9AE |
| 29 | 9E1 | 9E2 | 9C7 |
| 30 | 9FB | 9FC | 9E1 |
| 31 | A0A | A0B | 9F0 |
| 32 | A19 | A1A | A00 |
| 33 | A28 | A29 | A0F |
| 34 | A38 | A39 | A1E |
| 35 | A47 | A48 | A2E |
| 36 | A56 | A57 | A3D |
| 37 | A66 | A67 | A4C |
| 38 | A75 | A76 | A5C |
| 39 | A84 | A85 | A6B |
| 40 | A94 | A95 | A7A |
| 41 | AA3 | AA4 | A8A |
| 42 | AB2 | AB3 | A99 |
| 43 | AC2 | AC3 | AA8 |
| 44 | AD1 | AD2 | AB8 |

 |
| **SWA Operator Confirm to Proceed Round the Loop** **SWA Operator to check Counts in 3d packets and EM3 packets** |

## EAS2 POST MCP commission

|  |  |  |  |
| --- | --- | --- | --- |
|  | Post EAS2 MCP CommissionStop normal mode on EAS2 Set the EAS2 MCP to 2695V = 0xAC2Start normal mode on EAS2  | **PDOR\_SSWA\_EAS2\_Post\_MCP\_Comm\_00002.SOL**ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58832, PIA60218 = 0xAC2ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 2 |  |

## EAS2 Eng Mode 7

|  |  |  |  |
| --- | --- | --- | --- |
|  | Eng mode 7 (HV Sweep TEST)Stop ScienceStart Eng Mode 7 | **PDOR\_SSWA\_EAS2\_EngMode\_7\_00001.SOL**ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58841Wait 00:02:00 (120 second) |  |

## EAS2 Start Normal Mode

|  |  |  |  |
| --- | --- | --- | --- |
|  | Start normal mode on EAS1  | **PDOR\_SSWA\_EAS2\_NormalMode\_00001.SOL**ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2 |  |

# 6th April. SWA-5 (IA-5) End of day Power Down (MTL)

See details above.

# 7th April. SWA-5 (IA-5) End of day Power Down (MTL)

Before the activity starts, the end of day commanding is loaded onto the MTL. This is shown here as it is unknown at this point where this activity will end. Wherever the end is, the activity will be halted, EAS powered down. Then the following day will power up and continue where this activity ended.

| **Step N°** | **Commanding Flow** | **FCP ID or PDOR title & contents** | **Comments** |
| --- | --- | --- | --- |
|  | Power down EAS1Stop ScienceRamp MCP to zeroTurn heater offSwitch OffStop HK | **PDOR\_SSWA\_EAS1\_HV2SwitchOff\_00001.SOL**ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x0Wait 00:00:01 (1 second)ZIA58784, PIA60218 = 0Wait 00:00:40 (40 second)ZIA58757, PIA60773 = 0 PIA60774 = 0 PIA60775 = 0Wait 00:00:01 (1 second)ZIA58756Wait 00:01:00 (60 second)ZIA58051, PIA58050 = EAS1\_SENS\_HK |  |

|  |  |  |  |
| --- | --- | --- | --- |
|  | Power down EAS2Stop ScienceRamp MCP to zeroTurn heater offSwitch OffStop HK | **PDOR\_SSWA\_EAS2\_HV2SwitchOff\_00001.SOL**ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x0Wait 00:00:01 (1 second)ZIA58832, PIA60218 = 0Wait 00:00:40 (40 second)ZIA58805, PIA60773 = 0 PIA60774 = 0 PIA60775 = 0Wait 00:00:01 (1 second)ZIA58804Wait 00:01:00 (60 second)ZIA58051, PIA58050 = EAS2\_SENS\_HK |  |

|  |  |  |  |
| --- | --- | --- | --- |
|  | Power down DPU | IA-FCP-002 |  |

# 7th April. SWA-5 (IA-5) Start of day procedure

## DPU Power up (MTL)

| **Step N°** | **Commanding Flow** | **FCP ID or PDOR title & contents** | **Comments** |
| --- | --- | --- | --- |
|  | Power DPU on  | IA-FCP-011 |  |
|  | Configure the DPU | IA-FCP-030 |  |

## Disable EAS FDIR (MTL)

| **Step N°** | **Commanding Flow** | **FCP ID or PDOR title & contents** | **Comments** |
| --- | --- | --- | --- |
|  | Disable EAS1 FDIR | **PDOR\_SSWA\_EAS1\_Disable\_FDIR\_00001.SOL**ZIA58064, PIA60452 = 12 PIA60449 = EAS1SPWHB\_MI PIA60449 = E1\_3V3\_MI PIA60449 = E1\_1V5\_MI PIA60449 = E1OPTEMPMON PIA60449 = E1HVOUTVMON PIA60449 = E1MCPVMON PIA60449 = E1GRIDVMON PIA60449 = E110VAPOSVMON PIA60449 = E128VPOSVMON PIA60449 = E1HVGENTHERMON PIA60449 = E1HVMODTHERMON PIA60449 = EAS1MISSACK\_MI | Time = Instant |

|  |  |  |  |
| --- | --- | --- | --- |
|  | Disable EAS2 FDIR | **PDOR\_SSWA\_EAS2\_Disable\_FDIR\_00001.SOL**ZIA58064, PIA60452 = 12 PIA60449 = EAS2SPWHB\_MI PIA60449 = E2\_3V3\_MI PIA60449 = E2\_1V5\_MI PIA60449 = E2OPTEMPMON PIA60449 = E2HVOUTVMON PIA60449 = E2MCPVMON PIA60449 = E2GRIDVMON PIA60449 = E210VAPOSVMON PIA60449 = E228VPOSVMON PIA60449 = E2HVGENTHERMON PIA60449 = E2HVMODTHERMON PIA60449 = EAS2MISSACK\_MI | Time = Instant |

## EAS Power up

| **Step N°** | **Commanding Flow** | **FCP ID or PDOR title & contents** | **Comments** |
| --- | --- | --- | --- |
|  | Power Up to IDLE EAS1Enable EAS1 HK Power EAS1 onPOST macro on EAS1IDLE macro on EAS1Request EAS1 HK | **PDOR\_SSWA\_EAS1\_PowerUp\_Post2Idle\_00001.SOL**ZIA58050, PIA58050 = EAS1\_SENS\_HKWait 00:00:01 (1 second)ZIA58760Wait 00:00:05 (5 second)ZIA58934, PIA60739 = POSTWait 00:00:05 (5 second)ZIA58753Wait 00:00:30 (30 second)ZIA58782 | Time = 41 seconds |

**SWA Team to check HK before Proceeding**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Go to RUN state EAS1RUN macro on EAS1 | **PDOR\_SSWA\_EAS1\_PowerUp\_Run\_00001.SOL**ZIA58758Wait 00:00:20 (20 second) | Time = 20 seconds |
|  | Power Up to IDLE EAS2Enable EAS2 HK Power EAS2 onPOST macro on EAS2IDLE macro on EAS2Request EAS2 HK | **PDOR\_SSWA\_EAS2\_PowerUp\_Post2Idle\_00001.SOL**ZIA58050, PIA58050 = EAS2\_SENS\_HKWait 00:00:01 (1 second)ZIA58808Wait 00:00:05 (5 second)ZIA58936, PIA60740 = POSTWait 00:00:05 (5 second)ZIA58801Wait 00:30:00 (30 second)ZIA58830 | Time = 41 seconds |

**SWA Team to check HK before Proceeding**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Go to RUN state EAS2RUN macro on EAS2 | **PDOR\_SSWA\_EAS2\_PowerUp\_Run\_00001.SOL**ZIA58806Wait 00:00:20 (20 second) | Time = 20 seconds |

## EAS Thresholds

|  |  |  |  |
| --- | --- | --- | --- |
| **Step N°** | **Commanding Flow** | **FCP ID or PDOR title & contents** | **Comments** |
|  | Adjust Thresholds on EAS1Adjust the Thresholds | **PDOR\_SSWA\_EAS1\_Thresh\_496\_00001.SOL**ZIA58797, PIA60174 = 0x4960 PIA60185 = 0x4961 PIA60196 = 0x4962 PIA60200 = 0x4963 PIA60201 = 0x4964 PIA60202 = 0x4965 PIA60203 = 0x4966 PIA60204 = 0x4967 PIA60205 = 0x4968 PIA60175 = 0x4969 PIA60176 = 0x496A PIA60177 = 0x496B PIA60178 = 0x496C PIA60179 = 0x496D PIA60180 = 0x496E PIA60181 = 0x496F PIA60182 = 0x4960 PIA60183 = 0x4961 PIA60184 = 0x4962 PIA60186 = 0x4963 PIA60187 = 0x4964 PIA60188 = 0x4965 PIA60189 = 0x4966 PIA60190 = 0x4967 PIA60191 = 0x4968 PIA60192 = 0x4969 PIA60193 = 0x496A PIA60194 = 0x496B PIA60195 = 0x496C PIA60197 = 0x496D PIA60198 = 0x496E PIA60199 = 0x496F | **Time = 2 seconds** |

|  |  |  |  |
| --- | --- | --- | --- |
|  | Set the EAS2 threshold values to 0x496 | **PDOR\_SSWA\_EAS2\_Thresh\_496\_00001.SOL**ZIA58845, PIA60174 = 0x4960 PIA60185 = 0x4961 PIA60196 = 0x4962 PIA60200 = 0x4963 PIA60201 = 0x4964 PIA60202 = 0x4965 PIA60203 = 0x4966 PIA60204 = 0x4967 PIA60205 = 0x4968 PIA60175 = 0x4969 PIA60176 = 0x496A PIA60177 = 0x496B PIA60178 = 0x496C PIA60179 = 0x496D PIA60180 = 0x496E PIA60181 = 0x496F PIA60182 = 0x4960 PIA60183 = 0x4961 PIA60184 = 0x4962 PIA60186 = 0x4963 PIA60187 = 0x4964 PIA60188 = 0x4965 PIA60189 = 0x4966 PIA60190 = 0x4967 PIA60191 = 0x4968 PIA60192 = 0x4969 PIA60193 = 0x496A PIA60194 = 0x496B PIA60195 = 0x496C PIA60197 = 0x496D PIA60198 = 0x496E PIA60199 = 0x496F |  |

## EAS Flight Deflectors

|  |  |  |  |
| --- | --- | --- | --- |
| **Step N°** | **Commanding Flow** | **FCP ID or PDOR title & contents** | **Comments** |
|  | Adjust Deflectors on EAS1Stop Normal Mode on EAS1Adjust the Deflector Ratios | **PDOR\_SSWA\_EAS1\_Deflectors\_Flight\_00001.SOL**ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58765, PIA60474 = 0xB0 PIA60475 = 0xC4 PIA60578 = 0x9B PIA60589 = 0x00 PIA60600 = 0x00 PIA60611 = 0x00 PIA60622 = 0x88 PIA60633 = 0xC4 PIA60644 = 0x9B PIA60655 = 0x00 PIA60476 = 0x00 PIA60487 = 0x00 PIA60498 = 0x62 PIA60509 = 0x7E PIA60520 = 0xF9 PIA60531 = 0x00 PIA60542 = 0x00 PIA60553 = 0x00 PIA60564 = 0x3F PIA60575 = 0xAE PIA60579 = 0x14 PIA60580 = 0x00 PIA60581 = 0x00 PIA60582 = 0x00 PIA60583 = 0x20 PIA60584 = 0x20 PIA60585 = 0xC4 PIA60586 = 0x00 PIA60587 = 0x00 PIA60588 = 0x00 PIA60590 = 0x04 PIA60591 = 0x49 PIA60592 = 0xBA PIA60593 = 0x00 PIA60594 = 0x00 PIA60595 = 0x00 PIA60596 = 0x00 PIA60597 = 0x00 PIA60598 = 0x00 PIA60599 = 0x14 PIA60601 = 0x39 PIA60602 = 0x58 PIA60603 = 0x00 PIA60604 = 0x00 PIA60605 = 0x00 PIA60606 = 0x29 PIA60607 = 0x78 PIA60608 = 0xD4 PIA60609 = 0x00 PIA60610 = 0x00 PIA60612 = 0x00 PIA60613 = 0x3B PIA60614 = 0xE7 PIA60615 = 0x6C PIA60616 = 0x00 PIA60617 = 0x00 PIA60618 = 0x00 PIA60619 = 0x4C PIA60620 = 0x8B PIA60621 = 0x43 PIA60623 = 0x00 PIA60624 = 0x00 PIA60625 = 0x00 PIA60626 = 0x5C PIA60627 = 0x39 PIA60628 = 0x58 PIA60629 = 0x00 PIA60630 = 0x00 PIA60631 = 0x00 PIA60632 = 0x6A PIA60634 = 0xF1 PIA60635 = 0xA9 PIA60636 = 0x00 PIA60637 = 0x00 PIA60638 = 0x00 PIA60639 = 0x7A PIA60640 = 0x3D PIA60641 = 0x70 PIA60642 = 0x00 PIA60643 = 0x00 PIA60645 = 0x00 PIA60646 = 0x8B PIA60647 = 0xB6 PIA60648 = 0x45 PIA60649 = 0x00 PIA60650 = 0x00 PIA60651 = 0x00 PIA60652 = 0x9F PIA60653 = 0xEF PIA60654 = 0x9D PIA60656 = 0x00 PIA60657 = 0x00 PIA60658 = 0x00 PIA60659 = 0xB7 PIA60660 = 0xDF PIA60661 = 0x3B |  |

|  |  |  |  |
| --- | --- | --- | --- |
|  | Adjust Deflectors on EAS2Stop Normal Mode on EAS2Adjust the Deflector Ratios | **PDOR\_SSWA\_EAS2\_Deflectors\_Flight\_00001.SOL**ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58813, PIA60474 = 0xAD PIA60475 = 0x0E PIA60578 = 0x56 PIA60589 = 0x00 PIA60600 = 0x00 PIA60611 = 0x00 PIA60622 = 0x83 PIA60633 = 0x64 PIA60644 = 0x5A PIA60655 = 0x00 PIA60476 = 0x00 PIA60487 = 0x00 PIA60498 = 0x5D PIA60509 = 0x4F PIA60520 = 0xDF PIA60531 = 0x00 PIA60542 = 0x00 PIA60553 = 0x00 PIA60564 = 0x39 PIA60575 = 0xEB PIA60579 = 0x85 PIA60580 = 0x00 PIA60581 = 0x00 PIA60582 = 0x00 PIA60583 = 0x1A PIA60584 = 0xD0 PIA60585 = 0xE5 PIA60586 = 0x00 PIA60587 = 0x00 PIA60588 = 0x00 PIA60590 = 0x00 PIA60591 = 0xC4 PIA60592 = 0x9B PIA60593 = 0x00 PIA60594 = 0x00 PIA60595 = 0x00 PIA60596 = 0x00 PIA60597 = 0x00 PIA60598 = 0x00 PIA60599 = 0x15 PIA60601 = 0x4F PIA60602 = 0xDF PIA60603 = 0x00 PIA60604 = 0x00 PIA60605 = 0x00 PIA60606 = 0x28 PIA60607 = 0x20 PIA60608 = 0xC4 PIA60609 = 0x00 PIA60610 = 0x00 PIA60612 = 0x00 PIA60613 = 0x38 PIA60614 = 0x83 PIA60615 = 0x12 PIA60616 = 0x00 PIA60617 = 0x00 PIA60618 = 0x00 PIA60619 = 0x47 PIA60620 = 0x5C PIA60621 = 0x28 PIA60623 = 0x00 PIA60624 = 0x00 PIA60625 = 0x00 PIA60626 = 0x54 PIA60627 = 0xED PIA60628 = 0x91 PIA60629 = 0x00 PIA60630 = 0x00 PIA60631 = 0x00 PIA60632 = 0x62 PIA60634 = 0x5E PIA60635 = 0x35 PIA60636 = 0x00 PIA60637 = 0x00 PIA60638 = 0x00 PIA60639 = 0x71 PIA60640 = 0x99 PIA60641 = 0x99 PIA60642 = 0x00 PIA60643 = 0x00 PIA60645 = 0x00 PIA60646 = 0x83 PIA60647 = 0x33 PIA60648 = 0x33 PIA60649 = 0x00 PIA60650 = 0x00 PIA60651 = 0x00 PIA60652 = 0x98 PIA60653 = 0xC4 PIA60654 = 0x9B PIA60656 = 0x00 PIA60657 = 0x00 PIA60658 = 0x00 PIA60659 = 0xB2 PIA60660 = 0x0C PIA60661 = 0x49 |  |

## EAS Configure heater

| **Step N°** | **Commanding Flow** | **FCP ID or PDOR title & contents** | **Comments** |
| --- | --- | --- | --- |
|  | Turn the manual heater on for EAS1Master Control RegisterHeater Control | **PDOR\_SSWA\_EAS1\_Partial\_Heater\_00001.SOL**ZIA58776, PIA60423 = 0x00 PIA60424 = 0x40 PIA60425 = 0x60ZIA58757, PIA60773 = 0x00  PIA60774 = 0x00 PIA60775 = 0xE8 | Time = InstantControl EAS heaters to ¾ max0xE8 |

|  |  |  |  |
| --- | --- | --- | --- |
|  | Turn the manual heater on for EAS2Master control RegisterHeater Control | **PDOR\_SSWA\_EAS2\_Partial\_Heater\_00001.SOL**ZIA58824, PIA60423 = 0x00 PIA60424 = 0x40 PIA60425 = 0x60ZIA58805, PIA60773 = 0x00  PIA60774 = 0x00 PIA60775 = 0xE8 | Time = InstantControl EAS1 heaters to ¾ max0xE8 |

If the activities on the 2nd and the 6th are completed then this day will include some engineering mode test and further heater tests. If the 2nd and 6th activities have not completed they will continue into this day and the activities detailed below will be done at a later date.

## EAS Start Normal Mode

|  |  |  |  |
| --- | --- | --- | --- |
|  | Start normal mode on EAS1  | **PDOR\_SSWA\_EAS1\_NormalMode\_00001.SOL**ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2 |  |

|  |  |  |  |
| --- | --- | --- | --- |
|  | Start normal mode on EAS1  | **PDOR\_SSWA\_EAS2\_NormalMode\_00001.SOL**ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x2 |  |

## EAS 1 Engineering modes

|  |  |  |  |
| --- | --- | --- | --- |
| **Step N°** | **Commanding Flow** | **FCP ID or PDOR title & contents** | **Comments** |
|  | Perform Eng mode 4 on EAS1Stop normal mode on EAS1Eng mode 4 (Threshold Sweep)Run post-eng mode macro on EAS1  | **PDOR\_SSWA\_EAS1\_EngMode4\_00001.SOL**ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58790, PIA60104 = 0x724 Start Thresh PIA60103 = 0x477 End Thresh PIA60105 = 0x200 Thresh step PIA60106 = 0x0 MCP Value PIA60165 = 0xA MCP wait PIA60851 = 2 Acq time PIA60760 = 0x20 Hem bin PIA60761 = 0x8 Def numberZIA58934,PIA60739, EQUAL,POST\_ENG |  |

|  |  |  |  |
| --- | --- | --- | --- |
|  | Perform Eng mode 5 on EAS1 | **PDOR\_SSWA\_EAS1\_EngMode5\_00001.SOL** |  |

|  |  |  |  |
| --- | --- | --- | --- |
|  | Perform Eng mode 3 on EAS1Stop normal mode on EAS1Eng mode 3 (Gain Test)Run post-eng mode macro on EAS1  | **PDOR\_SSWA\_EAS1\_EngMode3\_00001.SOL**ZIA58771, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0x0ZIA58789, PIA60101 = [Start MCP] PIA60100 = [Final MCP] PIA60102 = 0x33 Step MCP PIA60437 = 1 1st ramp time PIA60444 = 1 Inter ramp time PIA60165 = 20 Acq time PIA60760 = 0x20 Hem bin PIA60761 = 0x8 Def number PIA60762 = SWEEP\_MACRO ctrlZIA58934, PIA60739 = POST\_ENG |  |

## EAS 2 Engineering modes

|  |  |  |  |
| --- | --- | --- | --- |
| **Step N°** | **Commanding Flow** | **FCP ID or PDOR title & contents** | **Comments** |
|  | Perform Eng mode 4 on EAS2Stop normal mode on EAS2Eng mode 4 (Threshold Sweep)Run post-eng mode macro on EAS2  | **PDOR\_SSWA\_EAS2\_EngMode4\_00001.SOL**ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58838, PIA60104 = 0x724 Start Thresh PIA60103 = 0x477 End Thresh PIA60105 = 0x200 Thresh step PIA60106 = 0x0 MCP Value PIA60165 = 0xA MCP wait PIA60851 = 2 Acq time PIA60760 = 0x20 Hem bin PIA60761 = 0x8 Def numberZIA58936,PIA60740, EQUAL,POST\_ENG |  |

|  |  |  |  |
| --- | --- | --- | --- |
|  | Perform Eng mode 5 on EAS2 | **PDOR\_SSWA\_EAS2\_EngMode5\_00001.SOL** |  |

|  |  |  |  |
| --- | --- | --- | --- |
|  | Perform Eng mode 3 on EAS2Stop normal mode on EAS2Eng mode 3 (Gain Test)Run post-eng mode macro on EAS2 | **PDOR\_SSWA\_EAS2\_EngMode3\_00001.SOL**ZIA58819, PIA60031 = MBOX1 PIA60446 = 0 PIA60447 = 0 PIA60448 = 0ZIA58837, PIA60101 = [Start MCP] PIA60100 = [Final MCP] PIA60102 = 0x33 Step MCP PIA60437 = 1 1st ramp time PIA60444 = 1 Inter ramp time PIA60165 = 20 Acq time PIA60760 = 0x20 Hem bin PIA60761 = 0x8 Def number PIA60762 = SWEEP\_MACRO ctrlZIA58936, PIA60740 = POST\_ENG |  |

## EAS Configure heater

| **Step N°** | **Commanding Flow** | **FCP ID or PDOR title & contents** | **Comments** |
| --- | --- | --- | --- |
|  | Turn the manual heater on for EAS1Master Control RegisterHeater Control | **PDOR\_SSWA\_EAS1\_Full\_Heater\_00001.SOL**ZIA58776, PIA60423 = 0x00 PIA60424 = 0x40 PIA60425 = 0x60ZIA58757, PIA60773 = 0x00 PIA60774 = 0x01 PIA60775 = 0x60 | Control EAS heaters to max0x160 |
|  | Turn the manual heater on for EAS2Master control RegisterHeater Control | **PDOR\_SSWA\_EAS2\_Full\_Heater\_00001.SOL**ZIA58824, PIA60423 = 0x00 PIA60424 = 0x40 PIA60425 = 0x60ZIA58805, PIA60773 = 0x00  PIA60774 = 0x01 PIA60775 = 0x60 | Control EAS1 heaters to max0x160 |

At this point, EAS 1&2 are now initially commissioned for use.

# 7th April. SWA-5 (IA-5) End of day Power Down (MTL)

See details above.

# 14th April. SWA-4 (IA-4) Day 1

During this sectionthe following is done:

DPU powered on

PAS powered on

PAS commission

PAS powered off

Be sure that the “commissioning” patch of PAS has been installed to DPU. If this patch has not been installed, send the patch commands HERE.

Unblock all dangerous TCs

## 14th April. SWA-4 (IA-4) End of day Power Down (MTL)

Before the activity starts, the end of day commanding is loaded onto the MTL. This is shown here as it is unknown at this point where this activity will end. Wherever the end is, the activity will be halted and PAS HV ramped down. Then the following day PAS will continue where this activity ended.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Abort Sequencer activitySet HV to 1000VEnable the Monitoring parametersTurn PAS Preamps Off | **PDOR\_SSWA\_PAS\_Comm\_Post\_Det1\_00004.SOL**ZIA58873, PIA60347 = 0x000000FF Wait 00:08:20 (500 second)ZIA58868, PIA60344 = 0x00000333 Wait 00:08:20 (500 second)ZIA58063, PIA60452 = 27 PIA60449 = V\_MON\_C\_MI  PIA60449 = V\_MON\_L\_MI PIA60449 = I\_MON\_C\_MI PIA60449 = I\_MON\_L\_MI PIA60449 = T\_MON\_C\_MI PIA60449 = T\_MON\_L\_MI PIA60449 = P24\_VCEMOUT\_MI PIA60449 = P5\_VCEMOUT\_MI PIA60449 = P12\_VHTOUT\_MI PIA60449 = M12\_VHTOUT\_MI PIA60449 = P3V\_3\_FPGA\_OMI PIA60449 = P1V\_5\_FPGA\_OMI PIA60449 = TEMP\_DCDC\_MI PIA60449 = TEMP\_FPGA\_MI PIA60449 = HK\_IP24V\_CEMMI PIA60449 = HK\_IP5V\_CEMMI PIA60449 = HK\_IP12V\_HTMI PIA60449 = HK\_IM12V\_HTMI PIA60449 = HK\_I3V3\_FPGAMI PIA60449 = HK\_IP28V\_PRIMI PIA60449 = HK\_IP28V\_PRIMI PIA60449 = HK\_MHV\_POSMI PIA60449 = HK\_MHV\_NEGMI PIA60449 = TEMP\_HVPS\_MI PIA60449 = HK\_IP28V\_PRSCI PIA60449 = PASSPWHB\_MI PIA60449 = PASMISSACK\_MIZIA58862, PIA58062 = OFF PIA58063 = OFF | Get at least one HK packet to be sure that HV stepping is finishedWait for the HK with the corresponding CEMs HV |

## Start of day procedure. DPU Power up (MTL)

| **Step N°** | **Commanding Flow** | **FCP ID or PDOR title & contents** | **Comments** |
| --- | --- | --- | --- |
|  | Power DPU on  | IA-FCP-011 |  |
|  | Configure the DPU | IA-FCP-030 |  |

## PAS Power

|  |  |  |  |
| --- | --- | --- | --- |
| **Step N°** | **Commanding Flow** | **FCP ID or PDOR title & contents** | **Comments** |
|  | Power Up PASEnable PAS HKDisable Monitor Parameters ( 29 parameters )Power on PAS | **PDOR\_SSWA\_PAS\_Comm\_PowerOn\_00004.SOL**ZIA58050, PIA58050 = PAS\_SENS\_HKZIA58064, PIA60452 = 28 NUM\_OF\_MON\_ID PIA60449 = V\_MON\_C\_MI  PIA60449 = V\_MON\_L\_MI PIA60449 = I\_MON\_C\_MI PIA60449 = I\_MON\_L\_MI PIA60449 = T\_MON\_C\_MI PIA60449 = T\_MON\_L\_MI PIA60449 = P24\_VCEMOUT\_MI PIA60449 = P5\_VCEMOUT\_MI PIA60449 = P12\_VHTOUT\_MI PIA60449 = M12\_VHTOUT\_MI PIA60449 = P3V\_3\_FPGA\_OMI PIA60449 = P1V\_5\_FPGA\_OMI PIA60449 = TEMP\_DCDC\_MI PIA60449 = TEMP\_FPGA\_MI PIA60449 = HK\_IP24V\_CEMMI PIA60449 = HK\_IP5V\_CEMMI PIA60449 = HK\_IP12V\_HTMI PIA60449 = HK\_IM12V\_HTMI PIA60449 = HK\_I3V3\_FPGAMI PIA60449 = HK\_IP28V\_PRIMI PIA60449 = HK\_IP28V\_PRIMI PIA60449 = HK\_MHV\_POSMI PIA60449 = HK\_MHV\_NEGMI PIA60449 = TEMP\_HVPS\_MI PIA60449 = HK\_IP28V\_PRSCI PIA60449 = PASampOverCurr PIA60449 = PASSPWHB\_MI} PIA60449 = PASMISSACK\_MIZIA58858 |  |

WAIT AT LEAST 9 mins. Receive at least 3 HK packets and check contents.

## PAS Ramp up main HV

|  |  |  |  |
| --- | --- | --- | --- |
| **Step N°** | **Commanding Flow** | **FCP ID or PDOR title & contents** | **Comments** |
|  | Configure PASSet the Master control register to Standby Set the heater offEnable MHV Set the main HV to 650 V Set the main HV to 1300 VSet the main HV to 1950 VSet the main HV to 2600 VSet the main HV to 3250 VSet the main HV to 3900 VSet the main HV to 4550 VSet the main HV to 5200 VSet the main HV to 5850 VSet the main HV to 6500 V | **PDOR\_SSWA\_PAS\_Comm\_HV\_00003.SOL**ZIA58863, PIA60343 = 0x0000001A ZIA58947, PIA60848 = OFF HEATHER  PIA60849 = 0x000 DUTY\_CYCLEZIA58863, PIA60343 = 0x0000001E ZIA58869, PIA60344 = 0x00000199Wait 00:10:00 (600 second)ZIA58869, PIA60344 = 0x00000333Wait 00:10:00 (600 second)ZIA58869, PIA60344 = 0x000004CCWait 00:10:00 (600 second)ZIA58869, PIA60344 = 0x00000666Wait 00:10:00 (600 second)ZIA58869, PIA60344 = 0x000007FFWait 00:10:00 (600 second)ZIA58869, PIA60344 = 0x00000999Wait 00:10:00 (600 second)ZIA58869, PIA60344 = 0x00000B33Wait 00:10:00 (600 second)ZIA58869, PIA60344 = 0x00000CCCWait 00:10:00 (600 second)ZIA58869, PIA60344 = 0x00000E66Wait 00:10:00 (600 second)ZIA58869, PIA60344 = 0x00000FFF | Check HV value and stability before proceedingCheck HV value and stability before proceeding.Check HV value and stability before proceeding.Check HV value and stability before proceeding.Check HV value and stability before proceeding.Check HV value and stability before proceeding.Check HV value and stability before proceeding.Check HV value and stability before proceeding.Check HV value and stability before proceeding.Check HV value and stability before proceeding. |

WAIT 10 mins and ground intervention

## PAS Engineering stepping

|  |  |  |  |
| --- | --- | --- | --- |
| **Step N°** | **Commanding Flow** | **FCP ID or PDOR title & contents** | **Comments** |
|  | Load the engineering tableStart Engineering schemeQuery Stop Engineering schemeAbort Sequencer activityDump parameter | **PDOR\_SSWA\_PAS\_Eng\_Stepping\_00004.SOL**ZIA58875, PIA60709 = 0x06004E8 PIA60711 = 0x416448 PIA60708 = 0x126FBD PIA60706 = 0x1251B9 PIA60707 = 0x125F76 PIA60710 = 0x00003CZIA58873, PIA60347 = 0x00000003Wait 00:08:20 (500 second)ZIA58873, PIA60347 = 0x00000000Wait 00:13:20 (800 second)ZIA58873, PIA60347 = 0x000000FF Wait 00:00:10 (10 second)ZIA58942, PIA60776 = SequencerState | Wait at least 500s. And ground intervention.Wait at least 800s. And ground intervention.Wait at least 10s. And ground intervention. |

WAIT AT LEAST 9 mins and ground intervention

## PAS Detector commission

|  |  |  |  |
| --- | --- | --- | --- |
| **Step N°** | **Commanding Flow** | **FCP ID or PDOR title & contents** | **Comments** |
|  | Load the conf tableDump ParameterMaster Control Register: Enable CEMsMaster Control Register: CEMs OnTurn Pre Amps onLoad Static tableStart Static schemeSet HV to 250VSet HV to 500VSet HV to 750VSet HV to 1000VSet HV to 1250VSet HV to 1500VSet HV to 1550VSet HV to 1600VSet HV to 1650VSet HV to 1700VSet HV to 1750VSet HV to 1800VSet HV to 1850VSet HV to 1900V | **PDOR\_SSWA\_PAS\_Comm\_Det\_1\_00004.SOL**ZIA58874, PIA60800 = 0x28F5C21A  PIA60801 = 0x3D700B85  PIA60802 = 0x1E063D70  PIA60803 = 0x1FD70A3C PIA60804 = 0xF5C25614  PIA60805 = 0x7A6A3D70 PIA60806 = 0x7E147A8F PIA60807 = 0x0A3D870A PIA60808 = 0x3D6147AE PIA60809 = 0x38F5C220  PIA60810 = 0xA3D7328F PIA60811 = 0x5C570A3D PIA60812 = 0x3147AE08  PIA60813 = 0xF5C20B85  PIA60814 = 0x1E228F5C  PIA60815 = 0x6B1E0DF1  PIA60816 = 0x6872F8A0  PIA60817 = 0x62937DEA  PIA60818 = 0x94932892 PIA60819 = 0x8DCF94B7  PIA60820 = 0xA892FBB7  PIA60821 = 0x96EFCF00  PIA60822 = 0x001585CD  PIA60823 = 0x800EB851  PIA60824 = 0x0EB85111 PIA60825 = 0xC28F1999  PIA60826 = 0x991D1EB8 PIA60827 = 0x191EB814  PIA60828 = 0x28F513D7  PIA60829 = 0x0A10F5C2  PIA60830 = 0x12E14714  PIA60831 = 0x28F50C28  PIA60832 = 0xF508F5C2  PIA60833 = 0x123D7012  PIA60834 = 0xE1471428  PIA60835 = 0xF50147AE PIA60836 = 0x0B851E63 PIA60837 = 0x610070BF PIA60838 = 0x8000003E PIA60839 = 0x9C28F580 PIA60840 = 0x08008008  PIA60841 = 0x00800800  PIA60842 = 0x80080080  PIA60843 = 0x08008008  PIA60844 = 0x00000400 ZIA58942 PIA60776 = ConfTableWait 00:08:20 (500 second)ZIA58863 PIA60343 = 0x0000001FWait 00:00:05 (5 second)ZIA58863 PIA60343 = 0x00000007Wait 00:00:05 (5 second)ZIA58862, PIA58062 = ON PIA58063 = ON ZIA58876, PIA60700 = 0x000000 PIA60713 = 0x000008 PIA60705 = 0x000040 PIA60712 = 0x000000 PIA60704 = 0x000009 PIA60720 = 0x000001 (K) PIA60721 = 0x000001Wait 00:00:05 (5 second)ZIA58873, PIA60347 = 0x00000001Wait 00:08:20 (500 second)ZIA58868, PIA60344 = 0x000000CDWait 00:05:00 (300 second)ZIA58868, PIA60344 = 0x0000019AWait 00:05:00 (300 second)ZIA58868, PIA60344 = 0x00000266Wait 00:05:00 (300 second)ZIA58868, PIA60344 = 0x00000333Wait 00:05:00 (300 second)ZIA58868, PIA60344 = 0x00000400Wait 00:05:00 (300 second)ZIA58868, PIA60344 = 0x000004CDWait 00:05:00 (300 second)ZIA58868, PIA60344 = 0x000004F5Wait 00:05:00 (300 second)ZIA58868, PIA60344 = 0x0000051EWait 00:05:00 (300 second)ZIA58868, PIA60344 = 0x00000547Wait 00:05:00 (300 second)ZIA58868, PIA60344 = 0x00000570 Wait 00:05:00 (300 second)ZIA58868, PIA60344 = 0x00000599 Wait 00:05:00 (300 second)ZIA58868, PIA60344 = 0x000005C2 Wait 00:05:00 (300 second)ZIA58868, PIA60344 = 0x000005EB Wait 00:05:00 (300 second)ZIA58868, PIA60344 = 0x00000614 | Wait at least 500s. And ground intervention.Wait 5s. Wait 5s. Such configuration is possible if the Sequencer is patched to the “Commissioning” version ONLY. If NOT, K = 13500 (0x003F48)Wait at least 500s. And ground intervention.Wait for the HK with the corresponding CEMs HV.Continue in all these steps ONLY if there is no problem with Science data and HK data**IF CEM COUNT IS SATURATED STOP** **THE PDOR.** And proceed to the next PDOR |

WAIT AT LEAST 30 mins and ground intervention

# 14th April. SWA-4 (IA-4) End of day Power Down (MTL)

See details above.

After execution of this PAS stays ON until the next day commissioning activity.

# 15th April. SWA-4 (IA-4) Day 2

## 15th April. SWA-4 (IA-4) End of day Power Down (MTL)

Before the activity starts, the end of day commanding is loaded onto the MTL. This is shown here as it is unknown at this point where this activity will end. Wherever the end is, the activity will be halted and PAS will be powered off.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Stop ScienceSwitch off the preampsDisable the monitoring parametersRamp down the PAS HV Final value = 0VInitial value = **0x0NOMINAL**Step size = 200VWait time = 6s Power OFF PAS | **PDOR\_SSWA\_PAS\_NM2OFF\_0001.SOL**ZIA58944Wait 00:05:00 (300 second)ZIA58862, PIA58062 = OFF  PIA58063 = OFFZIA58064, PIA60452 = 28  PIA60449 = V\_MON\_C\_MI  PIA60449 = V\_MON\_L\_MI PIA60449 = I\_MON\_C\_MI PIA60449 = I\_MON\_L\_MI PIA60449 = T\_MON\_C\_MI PIA60449 = T\_MON\_L\_MI PIA60449 = P24\_VCEMOUT\_MI PIA60449 = P5\_VCEMOUT\_MI PIA60449 = P12\_VHTOUT\_MI PIA60449 = M12\_VHTOUT\_MI PIA60449 = P3V\_3\_FPGA\_OMI PIA60449 = P1V\_5\_FPGA\_OMI PIA60449 = TEMP\_DCDC\_MI PIA60449 = TEMP\_FPGA\_MI PIA60449 = HK\_IP24V\_CEMMI PIA60449 = HK\_IP5V\_CEMMI PIA60449 = HK\_IP12V\_HTMI PIA60449 = HK\_IM12V\_HTMI PIA60449 = HK\_I3V3\_FPGAMI PIA60449 = HK\_IP28V\_PRIMI PIA60449 = HK\_IP28V\_PRIMI PIA60449 = HK\_MHV\_POSMI PIA60449 = HK\_MHV\_NEGMI PIA60449 = TEMP\_HVPS\_MI PIA60449 = HK\_IP28V\_PRSCI PIA60449 = PASampOverCurr PIA60449 = PASSPWHB\_MI PIA60449 = PASMISSACK\_MIZIA58857, PIA60790 = 0x0000  PIA60791= **0x0NOMINAL** PIA60792 = 0x00B2 PIA60793 = 0x0006 Wait 00:05:00 (300 second)ZIA58859 | Ensure all science packets have stoppedWait the HK with the CEM V less than 200 V.Ensure PAS is OFF |

## PAS Resume detector

Obtain the PAS HK packets from the previous night and analyse before proceeding.

|  |  |  |  |
| --- | --- | --- | --- |
| **Step N°** | **Commanding Flow** | **FCP ID or PDOR title & contents** | **Comments** |
|  | Power on pre ampsStart the static schemeSet CEM HV to 1250VSet CEM HV to 1500VSet CEM HV to 1550VSet CEM HV to 1600VSet CEM HV to 1650VSet CEM HV to 1700VSet CEM HV to 1750VSet CEM HV to 1800VSet CEM HV to 1850VSet CEM HV to 1900V | **PDOR\_SSWA\_PAS\_Comm\_Det\_2\_00005.SOL**ZIA58862, PIA58062 = ON  PIA58063 = ONWait 00:00:05 (5 second)ZIA58873, PIA60347 = 0x00000001Wait 00:06:40 (400 second)ZIA58868, PIA60344 = 0x00000400Wait 00:08:20 (500 second)ZIA58868, PIA60344 = 0x000004CDWait 00:58:20 (3500 second)ZIA58868, PIA60344 = 0x000004F5Wait 00:08:20 (500 second)ZIA58868, PIA60344 = 0x0000051EWait 00:08:20 (500 second)ZIA58868, PIA60344 = 0x00000547Wait 00:08:20 (500 second)ZIA58868, PIA60344 = 0x00000570 Wait 00:08:20 (500 second)ZIA58868, PIA60344 = 0x00000599Wait 00:08:20 (500 second)ZIA58868, PIA60344 = 0x000005C2Wait 00:08:20 (500 second)ZIA58868, PIA60344 = 0x000005EBWait 00:08:20 (500 second)ZIA58868, PIA60344 = 0x00000614 | Wait for the HK with the corresponding CEMs HV, Continue if there is no problem with Science data and HK dataFrom this point the step is 50 V Continue in all these steps ONLY if there is no problem with Science data and HK data**IF CEM COUNT IS SATURATED STOP THE** **PDOR.** And proceed to the next PDOR |

WAIT AT LEAST 30 mins and ground intervention

|  |  |  |  |
| --- | --- | --- | --- |
|  | Abort the sequencer activityDisable Monitoring parametersRamp the CEM HV to 0V in 500V stepsRamp the CEM HV back to 1250VRamp the CEM HV back to 1000VRamp the CEM HV back to 500VRamp the CEM HV back to 0VRamp the Main HV to 0V in 1000V stepsRamp the Main HV to 5000VRamp the Main HV to 4000VRamp the Main HV to 3000VRamp the Main HV to 2000VRamp the Main HV to 1000VRamp the Main HV to 0V | **PDOR\_SSWA\_PAS\_Post\_Det\_2\_00004.SOL**ZIA58873, PIA60347 = 0x000000FFWait 00:05:00 (300 second)ZIA58064, PIA60452 = 28  PIA60449 = V\_MON\_C\_MI  PIA60449 = V\_MON\_L\_MI PIA60449 = I\_MON\_C\_MI PIA60449 = I\_MON\_L\_MI PIA60449 = T\_MON\_C\_MI PIA60449 = T\_MON\_L\_MI PIA60449 = P24\_VCEMOUT\_MI PIA60449 = P5\_VCEMOUT\_MI PIA60449 = P12\_VHTOUT\_MI PIA60449 = M12\_VHTOUT\_MI PIA60449 = P3V\_3\_FPGA\_OMI PIA60449 = P1V\_5\_FPGA\_OMI PIA60449 = TEMP\_DCDC\_MI PIA60449 = TEMP\_FPGA\_MI PIA60449 = HK\_IP24V\_CEMMI PIA60449 = HK\_IP5V\_CEMMI PIA60449 = HK\_IP12V\_HTMI PIA60449 = HK\_IM12V\_HTMI PIA60449 = HK\_I3V3\_FPGAMI PIA60449 = HK\_IP28V\_PRIMI PIA60449 = HK\_IP28V\_PRIMI PIA60449 = HK\_MHV\_POSMI PIA60449 = HK\_MHV\_NEGMI PIA60449 = TEMP\_HVPS\_MI PIA60449 = HK\_IP28V\_PRSCI PIA60449 = PASampOverCurr PIA60449 = PASSPWHB\_MI PIA60449 = PASMISSACK\_MIZIA58868, PIA60344 = 0x00000400 Wait 00:05:00 (300 second)ZIA58868, PIA60344 = 0x00000333 Wait 00:05:00 (300 second)ZIA58868, PIA60344 = 0x0000019A Wait 00:05:00 (300 second)ZIA58868, PIA60344 = 0x00000000Wait 00:05:00 (300 second)ZIA58869, PIA60344 = 0x00000C4E Wait 00:00:40 (40 second)ZIA58869, PIA60344 = 0x000009D8Wait 00:00:40 (40 second)ZIA58869, PIA60344 = 0x00000762Wait 00:00:40 (40 second)ZIA58869, PIA60344 = 0x000004ECWait 00:00:40 (40 second)ZIA58869, PIA60344 = 0x00000276Wait 00:00:40 (40 second)ZIA58869, PIA60344 = 0x00000000 | At this stage we should know what the NOMINAL CEM HV is = **0x0NOMINAL**Wait for the HK to show MHV < 200V. |

WAIT AT LEAST 5 mins and ground intervention

## PAS Normal science check

|  |  |  |  |
| --- | --- | --- | --- |
| **Step N°** | **Commanding Flow** | **FCP ID or PDOR title & contents** | **Comments** |
|  | Set the PAS configRamp the PAS HV Initial value = 0VNominal Value = **0x0NOMINAL**Step size = 100VWait time = 50sEnable monitoring parametersStart science cyclogram | **PDOR\_SSWA\_PAS\_Comm\_NM\_00005.SOL**ZIA58853Wait 00:18:20 (1100 second)ZIA58856, PIA60791 = 0x0000  PIA60790= **0x0NOMINAL** PIA60792 = 0x0052 PIA60793 = 0x0032 Wait 00:20:00 (1200 second)ZIA58063, PIA60452 = 28  PIA60449 = V\_MON\_C\_MI  PIA60449 = V\_MON\_L\_MI PIA60449 = I\_MON\_C\_MI PIA60449 = I\_MON\_L\_MI PIA60449 = T\_MON\_C\_MI PIA60449 = T\_MON\_L\_MI PIA60449 = P24\_VCEMOUT\_MI PIA60449 = P5\_VCEMOUT\_MI PIA60449 = P12\_VHTOUT\_MI PIA60449 = M12\_VHTOUT\_MI PIA60449 = P3V\_3\_FPGA\_OMI PIA60449 = P1V\_5\_FPGA\_OMI PIA60449 = TEMP\_DCDC\_MI PIA60449 = TEMP\_FPGA\_MI PIA60449 = HK\_IP24V\_CEMMI PIA60449 = HK\_IP5V\_CEMMI PIA60449 = HK\_IP12V\_HTMI PIA60449 = HK\_IM12V\_HTMI PIA60449 = HK\_I3V3\_FPGAMI PIA60449 = HK\_IP28V\_PRIMI PIA60449 = HK\_IP28V\_PRIMI PIA60449 = HK\_MHV\_POSMI PIA60449 = HK\_MHV\_NEGMI PIA60449 = TEMP\_HVPS\_MI PIA60449 = HK\_IP28V\_PRSCI PIA60449 = PASampOverCurr PIA60449 = PASSPWHB\_MI PIA60449 = PASMISSACK\_MIWait 00:00:40 (40 second)ZIA58943, PIA60777 = PASNc1 | Wait for the HK to show MHV = 6500V.About 12 minsINPUT from GroundWait about 20 mins to confirm CEM is nominal |

# 15th April. SWA-4 (IA-4) End of day Power Down (MTL)

See details above.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Stop ScienceSwitch off the preampsDisable the monitoring parametersRamp down the PAS HV Final value = 0VInitial value = **0x0NOMINAL**Step size = 200VWait time = 6s Power OFF PAS | **PDOR\_SSWA\_PAS\_NM2OFF\_0001.SOL**ZIA58944Wait 00:05:00 (300 second)ZIA58862, PIA58062 = OFF  PIA58063 = OFFZIA58064, PIA60452 = 28  PIA60449 = V\_MON\_C\_MI  PIA60449 = V\_MON\_L\_MI PIA60449 = I\_MON\_C\_MI PIA60449 = I\_MON\_L\_MI PIA60449 = T\_MON\_C\_MI PIA60449 = T\_MON\_L\_MI PIA60449 = P24\_VCEMOUT\_MI PIA60449 = P5\_VCEMOUT\_MI PIA60449 = P12\_VHTOUT\_MI PIA60449 = M12\_VHTOUT\_MI PIA60449 = P3V\_3\_FPGA\_OMI PIA60449 = P1V\_5\_FPGA\_OMI PIA60449 = TEMP\_DCDC\_MI PIA60449 = TEMP\_FPGA\_MI PIA60449 = HK\_IP24V\_CEMMI PIA60449 = HK\_IP5V\_CEMMI PIA60449 = HK\_IP12V\_HTMI PIA60449 = HK\_IM12V\_HTMI PIA60449 = HK\_I3V3\_FPGAMI PIA60449 = HK\_IP28V\_PRIMI PIA60449 = HK\_IP28V\_PRIMI PIA60449 = HK\_MHV\_POSMI PIA60449 = HK\_MHV\_NEGMI PIA60449 = TEMP\_HVPS\_MI PIA60449 = HK\_IP28V\_PRSCI PIA60449 = PASampOverCurr PIA60449 = PASSPWHB\_MI PIA60449 = PASMISSACK\_MIZIA58857, PIA60790 = 0x0000  PIA60791= **0x0NOMINAL** PIA60792 = 0x00B2 PIA60793 = 0x0006 Wait 00:05:00 (300 second)ZIA58859 | Ensure all science packets have stoppedWait the HK with the CEM V less than 200 V.Ensure PAS is OFF |

# SWA-6 (IA-6) SWA commissioning procedure

This section will test the SWA suite in Normal mode. It will then test the SWA Burst mode. The various cadences of the SWA sensors are also tested.

It is assumed at this point that the DPU is powered on and configured in OPS mode. And EAS is also powered on and configured in NO\_SCIENCE mode

## SWA Normal mode

|  |  |  |  |
| --- | --- | --- | --- |
| **Step N°** | **Commanding Flow** | **FCP ID or PDOR title & contents** | **Comments** |
|  | Power up & configure HIS with ramped-up High Voltage ready to sweep. | **PDOR\_SSWA\_HIS\_PowerUpConfig\_00001.SOL**IA-FCP-017ZIA58913, PIA60001 = 9 |  |
|  | Wait 1 hour 22 mins | Wait 01:22:00 (4920 seconds) |  |
|  | Power up & configure PAS in No scienceEnable HKDisable FDIRPower OnMaster Control RegisterEnable Monitor parameterEnable Monitor parameterEnable Monitor parameterDisable Monitor parameterEnable Monitor parameterMaster Control RegisterPAS ConfigEnable Moniter parameterMaster Control RegisterMaster Control RegisterPAS HV Ramp upReport Config parametersModify Config parametersAcceptReport Config parametersEnable FDIR monitoringTurn Preamps onEnable FDIR monitoring | **PDOR\_SSWA\_PAS\_PowerUpConfig\_00002.SOL**ZIA58050, PIA58050 = PAS\_SENS\_HKZIA58064, PIA60452 = 28  PIA60449 = V\_MON\_C\_MI PIA60449 = V\_MON\_L\_MI PIA60449= I\_MON\_C\_MI  PIA60449 = I\_MON\_L\_MI PIA60449 = T\_MON\_C\_MI  PIA60449 = T\_MON\_L\_MI  PIA60449 = P24\_VCEMOUT\_MI  PIA60449 = P5\_VCEMOUT\_MI  PIA60449 = P12\_VHTOUT\_MI PIA60449 = M12\_VHTOUT\_MI  PIA60449 = P3V\_3\_FPGA\_OMI  PIA60449 = P1V\_5\_FPGA\_OMI  PIA60449 = TEMP\_DCDC\_MI PIA60449 = TEMP\_FPGA\_MI  PIA60449 = HK\_IP24V\_CEMMI  PIA60449 = HK\_IP5V\_CEMMI  PIA60449 = HK\_IP12V\_HTMI  PIA60449 = HK\_IM12V\_HTMI  PIA60449 = HK\_I3V3\_FPGAMI  PIA60449 = HK\_IP28V\_PRIMI  PIA60449 = HK\_I1V5\_FPGAMI  PIA60449 = HK\_MHV\_POSMI  PIA60449 = HK\_MHV\_NEGMI  PIA60449 = TEMP\_HVPS\_MI  PIA60449 = HK\_IP28V\_PRSCI  PIA60449 = PASampOverCurr  PIA60449 = PASSPWHB\_MI  PIA60449 = PASMISSACK\_MI ZIA58858ZIA58863, PIA60343 = 0x0000001A ZIA58063, PIA60452 = 1 PIA60449 = PASSPWHB\_MI ZIA58063, PIA60452 = 1 PIA60449 = PASMISSACK\_MI= ZIA58063, PIA60452 = 1 PIA60449 = HK\_IP28V\_PRIMIZIA58064, PIA60452 = 1  PIA60449 = HK\_IP28V\_PRIMIZIA58063, PIA60452 = 1 PIA60449 = HK\_IP28V\_PRSCIZIA58863, PIA60343 = 0x0000001EZIA58853ZIA58063, PIA60452 = 6  PIA60449 = HK\_MHV\_POSMI  PIA60449 = HK\_MHV\_NEGMI  PIA60449 = P12\_VHTOUT\_MI PIA60449 = M12\_VHTOUT\_MI  PIA60449 = HK\_IP12V\_HTMI  PIA60449 = HK\_IM12V\_HTMI ZIA58863, PIA60343 = 0x0000001FZIA58863, PIA60343 = 0x00000007ZIA58856, PIA60791 = 0  PIA60790 = **0x0NOM**  PIA60792 = 0x29  PIA60793 = 0x0014 Wait 00:20:00 (1200 seconds)ZIA58707, PIA60137 = 1 PIA60138 = 3004ZIA58706, PIA60133 = 1 PIA60136 = 3004 PIA60135 = 4 PIA60134 = **MSB of 0x0NOM** PIA60134 = **LSB of 0x0NOM** PIA60134 = 0 PIA60134 = 0x29ZIA58708ZIA58707, PIA60137 = 1 PIA60138 = 3004ZIA58063, PIA60452 = 4  PIA60449 = V\_MON\_C\_MI PIA60449 = V\_MON\_L\_MI  PIA60449 = I\_MON\_C\_MI PIA60449 = I\_MON\_L\_MIZIA58862, PIA58062 = ON PIA58063 = ONZIA58063, PIA60452 =13 PIA60449 = T\_MON\_C\_MI PIA60449 = T\_MON\_L\_MI  PIA60449 = P24\_VCEMOUT\_MI  PIA60449 = P5\_VCEMOUT\_MI  PIA60449 = P3V\_3\_FPGA\_OMI  PIA60449 = P1V\_5\_FPGA\_OMI  PIA60449 = TEMP\_DCDC\_MI  PIA60449 = TEMP\_FPGA\_MI  PIA60449 = HK\_IP24V\_CEMMI  PIA60449 = HK\_IP5V\_CEMMI  PIA60449 = HK\_I3V3\_FPGAMI  PIA60449 = HK\_I1V5\_FPGAMI  PIA60449 = TEMP\_HVPS\_MIWait 00:30:00 (1800 seconds) |  |
|  | Puts HIS into NM | **PDOR\_SSWA\_HIS\_NORMSCI\_00001.SOL**ZIA58913, PIA60001 = 15 |  |
|  | Test the Suite in Normal ModePAS into NMHIS to HVSTBYEAS 1&2 into NM | **PDOR\_SSWA\_Suite\_Comm\_NM\_00001.SOL**IA-FCP-061, XF061A01 = 22Wait 00:10:00 (600 seconds)ZIA58917, PIA59011 = HVSTDBYIA-FCP-041IA-FCP-051Wait 00:10:00 (600 seconds) |  |
|  | Puts HIS into NM | **PDOR\_SSWA\_HIS\_NORMSCI\_00001.SOL**ZIA58913, PIA60001 = 15 |  |
|  | Wait 00:10:00 (600 seconds) |  |  |
|  | Enable Compression | IA-FCP-101 |  |

## PAS Calibration mode

|  |  |  |  |
| --- | --- | --- | --- |
| **Step N°** | **Commanding Flow** | **FCP ID or PDOR title & contents** | **Comments** |
|  | Run calibration test on PASStop Science on PASStart Calibration ModeAdjust the ThresholdsStart Science on PAS | **PDOR\_SSWA\_PAS\_Calibration\_00003.SOL**ZIA58944Wait 00:05:00 (300 seconds)ZIA58850, PIA60780 = 0x0SRT PIA60781 = 0x0029 PIA60782 = 0x0STP PIA60783 = 0x0FFB PIA60784 = 0x0FF7 PIA60785 = 0x0FEF PIA60786 = 0x0FDF PIA60787 = 0x0FBF PIA60788 = 0x0NOM PIA60789 = 0x0000Wait 00:05:00 (300 seconds)ZIA58943, PIA60777 = PASNc1 | Calculate SRT and STP as:**SRT** = HEX( 0x0NOM - 200.0) / 1.221)**STP** = HEX( 0x0NOM +200.0) / 1.221) |

## SWA Burst mode

|  |  |  |  |
| --- | --- | --- | --- |
| **Step N°** | **Commanding Flow** | **FCP ID or PDOR title & contents** | **Comments** |
|  | Test Burst ModeAll sensors into BM for 5 mins5m = 300s / 8 = 2400PAS only into BM for 5 mins5m = 300s / 8 = 2400 | **PDOR\_SSWA\_Suite\_Comm\_BM\_00001.SOL**Wait 00:10:00 (600 seconds)ZIA58726, PIA60157 = 2400 PIA60158 = 0 PIA60159 = 2400 PIA60160 = 0 PIA60163 = 2400 PIA60164 = 0 PIA60170 = DYNAMIC PIA60161 = 2400 PIA60162 = 0Wait 00:20:00 (1200 seconds)ZIA58726, PIA60157 = 0 PIA60158 = 0 PIA60159 = 0 PIA60160 = 0 PIA60163 = 2400 PIA60164 = 0 PIA60170 = DYNAMIC PIA60161 = 0 PIA60162 = 0Wait 00:20:00 (1200 seconds) |  |

## SWA Cadence test

|  |  |  |  |
| --- | --- | --- | --- |
| **Step N°** | **Commanding Flow** | **FCP ID or PDOR title & contents** | **Comments** |
|  | Test SWA CadencesDecrease All SWA cadenceIncrease EAS cadence All SWA at nominal cadence | **PDOR\_SSWA\_Suite\_Comm\_Cadence\_00002.SOL**ZIA58728, PIA60096 = 2 PIA60097 = 2 PIA60099 = 2 PIA60098 = 2Wait 00:10:00 (600 seconds)ZIA58728, PIA60096 = 0 PIA60097 = 0 PIA60099 = 1 PIA60098 = 1Wait 00:10:00 (600 seconds)ZIA58728, PIA60096 = 1 PIA60097 = 1 PIA60099 = 1 PIA60098 = 1Wait 00:10:00 (600 seconds) |  |
|  | Enter Low Cadence ModeSelect Product Configuration Table 3 for Max Res VDFSelect "SWA\_HIS\_LOW\_1TENTH" PHASelect "SWA\_HIS\_LOW\_1TENTH" VDFSelect "SWA\_HIS\_LOW\_QUARTER" PHASelect "SWA\_HIS\_LOW\_QUARTER" VDFSelect "SWA\_HIS\_LOW\_HALF" PHASelect "SWA\_HIS\_LOW\_HALF" VDFSelect "SWA\_HIS\_LOW\_2THIRDS" PHASelect "SWA\_HIS\_LOW\_2THIRDS" VDFEnter Normal Cadence ModeSelect "SWA\_HIS\_NORMAL\_5X" PHASelect "SWA\_HIS\_NORMAL\_5X" VDFSelect "SWA\_HIS\_NORMAL\_3X" PHASelect "SWA\_HIS\_NORMAL\_3X" VDFSelect "SWA\_HIS\_NORMAL\_2X" PHASelect "SWA\_HIS\_NORMAL\_2X" VDFSelect Product Configuration Table 0 for Half Res VDFSelect "SWA\_HIS\_NORMAL" PHASelect "SWA\_HIS\_NORMAL" VDFSelect Burst PHASelect Burst PHASelect Burst VDFSelect Burst VDFSetup DPU for 5-minute HIS core burstSetup DPU for 5-minute HIS optional burstCommand NOP to hold wait time | **PDOR\_SSWA\_HIS\_DATA\_RATE\_CADENCES\_00002.SOL**Wait 0:00:01 (1 seconds)ZIA58913, PIA60001 = 8Wait 0:01:00 (60 seconds)ZIA58919, PIA60356 = PR\_CONF\_TAB\_NO  PIA60352 = 3Wait 0:00:01 (1 seconds)ZIA58919, PIA60356 = PHA\_MAX\_NORMAL PIA60352 = 5654Wait 0:00:01 (1 seconds)ZIA58919, PIA60356 = VDF\_EN\_NORM PIA60352 = 0Wait 0:22:00 (1320 seconds)ZIA58919, PIA60356 = PHA\_MAX\_NORMAL PIA60352 = 8928Wait 0:00:01 (1 seconds)ZIA58919, PIA60356 = VDF\_EN\_NORM PIA60352 = 1Wait 0:22:00 (1320 seconds)ZIA58919, PIA60356 = PHA\_MAX\_NORMAL PIA60352 = 11904Wait 0:00:01 (1 seconds)ZIA58919, PIA60356 = VDF\_EN\_NORM PIA60352 = 1Wait 0:22:00 (1320 seconds)ZIA58919, PIA60356 = PHA\_MAX\_NORMAL PIA60352 = 23808Wait 0:00:01 (1 seconds)ZIA58919, PIA60356 = VDF\_EN\_NORM PIA60352 = 7Wait 0:22:00 (1320 seconds)ZIA58913, PIA60001 = 15Wait 0:00:10 (10 seconds)ZIA58919, PIA60356 = PHA\_MAX\_NORMAL PIA60352 = 11904Wait 0:00:01 (1 seconds)ZIA58919, PIA60356 = VDF\_EN\_NORM PIA60352 = 7Wait 0:17:00 (1020 seconds)ZIA58919, PIA60356 = PHA\_MAX\_NORMAL PIA60352 = 13094Wait 0:00:01 (1 seconds)ZIA58919, PIA60356 = VDF\_EN\_NORM PIA60352 = 1Wait 0:12:00 (720 seconds)ZIA58919, PIA60356 = PHA\_MAX\_NORMAL PIA60352 = 5654Wait 0:00:01 (1 seconds)ZIA58919, PIA60356 = VDF\_EN\_NORM PIA60352 = 1Wait 0:12:00 (720 seconds)ZIA58919, PIA60356 = PR\_CONF\_TAB\_NO  PIA60352 = 0Wait 0:00:01 (1 seconds)ZIA58919, PIA60356 = PHA\_MAX\_NORMAL PIA60352 = 5357Wait 0:00:01 (1 seconds)ZIA58919, PIA60356 = VDF\_EN\_NORM PIA60352 = 1Wait 0:12:00 (720 seconds)ZIA58919, PIA60356 = PHA\_MAX\_BURST\_1 PIA60352 = 4000Wait 0:00:01 (1 seconds)ZIA58919, PIA60356 = PHA\_TLM\_MAX\_B2 PIA60352 = 4000Wait 0:00:01 (1 seconds)ZIA58919, PIA60356 = VDF\_EN\_BURST\_1 PIA60352 = 0x3FWait 0:00:01 (1 seconds)ZIA58919, PIA60356 = VDF\_EN\_B2 PIA60352 = 0x3FWait 0:00:01 (1 seconds)ZIA58726, PIA60157 = 0 PIA60158 = 0 PIA60159 = 0 PIA60160 = 0 PIA60163 = 0 PIA60164 = 0 PIA60170 = DYNAMIC PIA60161 = 2400 PIA60162 = 0Wait 0:10:00 (600 seconds)ZIA58726, PIA60157 = 0 PIA60158 = 0 PIA60159 = 0 PIA60160 = 0 PIA60163 = 0 PIA60164 = 0 PIA60170 = DYNAMIC PIA60161 = 0 PIA60162 = 2400Wait 0:10:00 (600 seconds)ZIA58915 |  |

# SWA Commission conclusion

At this point, SWA is fully commissioned. It is expected to leave SWA operating in Normal Mode until any wheel offloads force SWA sensors into the safe state.

# SWA-7 (IA-7) Inter-instrument campaign

This test campaign is under control of SOC. The following PDORs and FCPs will be used during this campaign.

# IW-6.3 Interference campaign

The interference campaign is being managed by the SOC. The following PDORs and FCPs will be used during this campaign.

# Appendices

## Emergency Contingency Plans

The following procedure are to be used in the event of any un-expected or dangerous issues.

|  |  |  |  |
| --- | --- | --- | --- |
| **Step N°** | **Non Expected Outcome** | **FCP ID or PDOR title & contents** | **Action** |
|  | **EAS1 Temperature too high / too cold**TM, YIA58201,NIA00907, LIMIT,280, 310 EAS1\_EOPTEMPTM, YIA58201,NIA00915, LIMIT,280, 310 EAS1\_EHVGENTHERTM, YIA58201,NIA00916, LIMIT,280, 310 EAS1\_EHVMODTHER | **PDOR\_SSWA\_EAS1\_Heater\_00001.SOL**ZIA58757, PIA60773 = 0x00  PIA60774 = 0xnn PIA60775 = 0xnn | Reduce the EAS1 Heater. Default = 0x00 0x01 0x60 |
|  | **EAS2 Temperature too high / too cold**TM, YIA58202,NIA10907, LIMIT,280, 310 EAS2\_EOPTEMPTM, YIA58201,NIA10915, LIMIT,280, 310 EAS2\_EHVGENTHERTM, YIA58201,NIA10916, LIMIT,280, 310 EAS2\_EHVMODTHER | **PDOR\_SSWA\_EAS2\_Heater\_00001.SOL**ZIA58805, PIA60773 = 0x00  PIA60774 = 0xnn PIA60775 = 0xnn | Reduce the EAS2 Heater. Default = 0x00 0x01 0x60 |
|  | **EAS1 Electron Counts are too high**TM, YIA58921 TM(21,3) SSID=18 SWA\_TM\_SCI\_EAS1\_ENG\_3-4\_RAW\_FIRST | **PDOR\_SSWA\_EAS1 MCP\_00001.SOL**ZIA58784, PIA60218 = 0xnnn | Reduce EAS1 MCP level |
|  | **EAS2 Electron Counts are too high**TM, YIA58921 TM(21,3) SSID=18 SWA\_TM\_SCI\_EAS1\_ENG\_3-4\_RAW\_FIRST | **PDOR\_SSWA\_EAS2 MCP\_00001.SOL**ZIA58832, PIA60218 = 0xnnn | Reduce EAS2 MCP level |
|  | **Emergency EAS1 POWER OFF** | IA-FCP-004 | Slow MCP Ramp Down |
|  | **Emergency EAS2 POWER OFF** | IA-FCP-005 | Slow MCP Ramp Down |
|  | **Emergency EAS1 SWITCH OFF** | **PDOR\_SSWA\_EAS1\_SwitchOff\_00002.SOL** | Fast switch off |
|  | **Emergency EAS2 SWITCH OFF** | **PDOR\_SSWA\_EAS2\_SwitchOff\_00002.SOL** | Fast switch off |
|  | **Emergency PAS POWER OFF** |  |  |
|  | **Emergency HIS POWER OFF** |  |  |
|  | **Emergency DPU POWER OFF** | IA-FCP-002 |  |
|  |  | **PDOR\_SSWA\_DPU\_DIAG\_00001.SOL** |  |
|  |  | **PDOR\_SSWA\_DPU\_DIS\_EN\_TFF\_00001.SOL** |  |
|  |  | **PDOR\_SSWA\_DPU\_STANDBY\_00001.SOL** |  |
|  |  | **PDOR\_SSWA\_EAS1\_PreampsOff\_00001.SOL** |  |
|  |  | **PDOR\_SSWA\_EAS1\_PreampsOn\_00001.SOL** |  |
|  |  | **PDOR\_SSWA\_DPU\_DIS\_EN\_TM5\_00001** |  |
|  |  | **PDOR\_SSWA\_EAS1\_REP\_VALS\_00001.SOL** |  |
|  |  | **PDOR\_SSWA\_EAS2\_PreampsOff\_00001.SOL** |  |
|  |  | **PDOR\_SSWA\_EAS2\_PreampsOn\_00001.SOL** |  |
|  |  | **PDOR\_SSWA\_EAS2\_REP\_VALS\_00001.SOL** |  |
|  |  | **PDOR\_SSWA\_HIS\_DIS\_EN\_TFF\_00001.SOL** |  |
|  |  | **PDOR\_SSWA\_ResetErrorEventHandler\_00001.SOL** |  |
|  |  | **PDOR\_SSWA\_SET\_FDIR\_LIM\_00001.SOL** |  |
|  |  | **PDOR\_SSWA\_SensorCtrl\_00001.SOL** |  |
|  |  | **PDOR\_SSWA\_HIS\_HV\_EAIS\_MAIN\_STEP\_DOWN\_00001.SOL** |  |
|  |  | **PDOR\_SSWA\_HIS\_HV\_EAIS\_MAIN\_STEP\_UP\_00001.SOL** |  |
|  |  | **PDOR\_SSWA\_HIS\_HV\_OFFSET\_STEP\_DOWN\_00001.SOL** |  |
|  |  | **PDOR\_SSWA\_HIS\_HV\_OFFSET\_STEP\_UP\_00001.SOL** |  |
|  |  | **PDOR\_SSWA\_HIS\_HV\_PA\_STEP\_DOWN\_00001.SOL** |  |
|  |  | **PDOR\_SSWA\_HIS\_HV\_PA\_STEP\_UP\_00001.SOL** |  |
|  |  | **PDOR\_SSWA\_HIS\_HV\_SSD\_STEP\_DOWN\_00001.SOL** |  |
|  |  | **PDOR\_SSWA\_HIS\_HV\_SSD\_STEP\_UP\_00001.SOL** |  |
|  |  | **PDOR\_SSWA\_HIS\_HV\_START\_STOP\_STEP\_DOWN\_00001.SOL** |  |
|  |  | **PDOR\_SSWA\_HIS\_HV\_START\_STOP\_STEP\_UP\_00001.SOL** |  |