SolO Project status
SolO Science Operations Working Group

Kristin Wirth and the Project Team

ESAC, 22\textsuperscript{nd} January 2019
Ref.: SOL-EST-PRS-22176
Project team organogram

Solar Orbiter Project

NOVEMBER 2018

Contracts Officer
Helene Bijberg

Administrative Assistant
Pauline de Jong

Solar Orbiter Project Manager
Cesar Garcia

Senior Admin Assistant & Documentalist
Aileen Unwin

Project Scientist
Daniel Mueller

Deputy Project Scientist
Yamna Zaguanala

Project control & Admin Manager
Yes Barrantes

Payload Engineer
Kristen Wirth

Payload Instrument
Art engineer
Marco Cesca

Electrical & functional engineer
Ilesu-Ayache

Mechanical Engineer
Yannick le Dessef

Functional Verification Engineer
Christian Philippe

Payload & CC Systems engineer
Mauro Stelzner

PA Engineer
Jorge Ferreira

PA Engineer
Naimane Brahim

Payload System Engineer
Luigi Di Verde

Quality Assurance Engineer
Alphonse Arts

Quality Assurance Engineer
Alain D’Onofrio

Systems Verification Engineer
Mark Arseni

Software PA Engineer
Naimane Brahim

Project Controller
Cristina Hernandez

Schedule Officer
Raymond Telt

Thermal Engineer
Claudio Damato

Comms Systems Engineer
Marco Mascardi

Structures Engineer
Cliff Adcock

Mechanical Systems Engineer
Florian Leitold

AOCS Engineer
Emanuela Palmieri

Data Systems Engineer
Joseph Bamford
Overall Progress

- Spacecraft was shipped from Airbus UK to IABG, the test house, on 24th September 2018
  - Some work was completed after shipment
- Integration of all internal spacecraft units – done
- All external units – delivered
- Instrument alignment – verified
- Final mate of s/c panels – done
- Environmental test campaign - ongoing
  - All test specs – agreed
  - Applicable software – delivered
  - TVTB – done
  - Sine & acoustics – in prep

24/09/18 Airbus’ farewell to SolO
Overall Progress

19-27/09/18 Into-container, out of STV, arrival with purging, into IABG
AIT progress

- High- and medium-gain antennae – integrated
- Star tracker integration – done
- Installation of contamination baffles – done
- Instrument boom on s/c – done
- SORA panel integration – done
- Heat shield integration – done
  - NCR on particulate contamination
- Solar Array
  - QM wing on +Y plane of the s/c - done
  - FM wing on -Y plane of the s/c – in Jan
- External instrument sensors – integrated
  - EPD-SIS: baffle was damaged - expected in Jan
  - EPD-STEP replacement due to FPGA issue – done
- Pre-environmental alignment measurements – done
- Software v2.2.3 patch 3 (full version) – delivered to ESOC and ready for PFM
  - Schedule risk mitigation for Mission Integrated System Test – in place
  - Version 3 development – delivery to FV team for ETB in Jan
- Platform + instruments SFT, specific performance tests, propulsion end-to-end test – done
- All-payloads-on test – done
- TVTB test – done
Solar Orbiter – SORA (P/L Radiator) and heatshield

5 of 11 panels were integrated, IABG 3/10/18

Reintegration of heatshield – low-T MLI completed, high-T MLI in work, IABG 3/10/18
Solar Orbiter – SORA (P/L Radiator) and heatshield

All 11 panels were integrated, IABG 23/10/18

Heatshield to s/c installation, IABG 24/10/18
Solar Orbiter – heatshield

Heatshield to s/c installation, IABG 24/10/18
Payload AIT for TVTB test

- All instrument units integrated except one of the three RPW antennas: was not part of the TVac test
- MAG sensors, SWA-EAS and RPW-SCM installed on TVac plates
- EPD-SIS replaced by a thermal model

Installation of RPW antennas (2/3), SWA-HIS and SWA-PAS in Stevenage
In and out of the TVac chamber in Dec
Integration RPW ANT #3 onto s/c (Jan)
Integration of I-Boom onto s/c (Jan)

Med-gain antenna on its boom

MAG

RPW
In 2019

- February – sine test
- March – acoustic and shock tests
- March – s/w 3.0 upload
- April – mass properties
- April – mission integrated system test
- May-June – EMC test
- June-July – B test
- July – MIST take 2
- August – SVT-1b
- October – QAR board
- November – Ship to KSC
- Nov-Jan – launch campaing
- 6th Feb 2020 – lift off
Schedule risks

- MIST debug may overrun or may be delayed by late CSW
  - Possibility to run MIST with earlier CSW version
- Activity duration longer than planned – so far so good, but there is strain
- TVac delayed due to contamination protection – retired
- Evolving needs from instrument teams w.r.t. the environmental tests or hardware/software updates
- Instrument spares status unclear (in case of need)
- L/V Adaptor fit-check – postponed to the end of the EVT campaign
- NASA in shut-down
Technical risks

- Thermal equipment not yet qualified
  - Testing the spare SPICE flex-link – NCR after mechanical tests
- Heat-shield particles and system test campaign – mostly retired
- Component alerts, like wheel electronics SMD capacitor – mostly retired
- Cleanliness
  - Mitigated by the CCC supporting the TVTB test and else
  - Working group to discuss Launcher & Launch Site cleanliness between ESA, Airbus, NASA and ULA
Operations and Launch Services

- ESOC conducted the first system validation test (SVT-0)
- MOC and SOC development – as planned
- Back-up launch window in October 2020
  - February 2020 provides a better science case together with Parker Solar Probe
- NASA Flight Planning Board manifested for Feb 2020 slot from KSC
  - For back-up launch window: launch from Vandenberg, due to manifest conflicts
- Spacecraft to launcher vehicle fit-check – rescheduled