

## Minutes of Meeting

Ref. SOL.EPD.MN.00026



# Solar Orbiter



Date: 19 Sept 2013

Page 1 of 8

**Subject : Solar Orbiter –EPD EPT-HET STM DRB review at Kiel 19 Sept 2013.**

Participants (list those actually present below) ↓			
Name	Institute	Present?	Signature
Kristin Wirth	ESA	Yes	
Giacinto De Paris	ESA	Yes	
Manuel Prieto	EPD	Yes	
Mario Basile	EPD	Yes	
Ali Ravanbakhsh	EPD	Yes	
Sri Kulkarni	EPD	Yes	
Cesar Martin	EPD	Yes	
Robert Wimmer-Schweingruber	EPD	Yes	
Mike Richards	EPD	Yes	
Tony Jorden	Astrium	Yes	



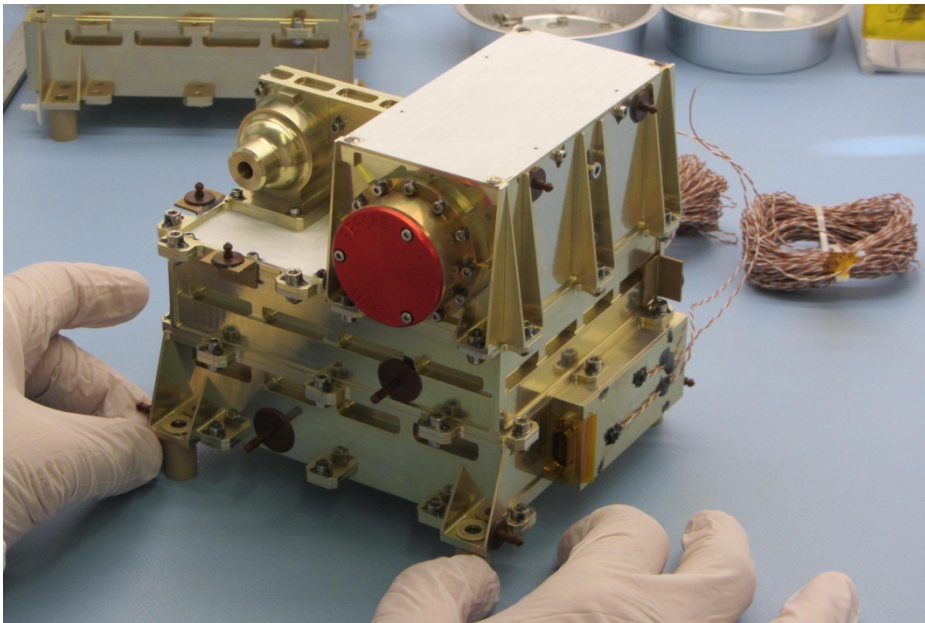
**Distribution :** those present via email lists for EPD, ESA and ASU

**STM DRB for EPT-HET at Kiel 19 Sept 2013**

**Planned Agenda**

Deliverable Items List  
Configuration Status  
RFWs status  
NCR & RFS status  
Verif. Control doc (verif matrix)  
Cleanliness Status  
Test Reports  
Limited Life item status  
Mate/demate log

**Pictures from the DRB**



## Minutes of Meeting

Ref. SOL.EPD.MN.00026

## Solar Orbiter



Date: 19 Sept 2013

Page 3 of 8

## Minutes of Meeting

	Action [ID / actionee / due date]
<b>1. Inspection</b>  The meeting started with an inspection of the STM model in the cleanroom.  The EPT-HET STM model was inspected (CdP, KW, TJ..). The MLI package and shipping container were also seen.  Some photographs were taken.  ESA/Astrium confirmed from the inspection that the STM model was visibly clean.  The Identification label was missing,	
<b>2. Introductions</b>  EPD (RW) introduced the STM model. It was explained that the STM build had been a valuable exercise in preparing for the FM build.	
<b>Fidelity</b>  EPD outlined the fidelity of the STM, explaining that it was an elegant STM model.  No GSE is included, except the model has thermocouples and two heater connector/flying leads (1 will be used)	
EPD outlined other differences re FM <ul style="list-style-type: none"><li>- No detectors</li><li>- The MLI configuration may change on FM- being considered as part of the on-going issue of solar illumination.</li><li>- The model includes PCBs (not identical to FM) but components replaced by mass dummies</li><li>- The white-painted surfaces will probably be changed for second-surface mirrors for FM</li></ul>	
EPD note that the Issue 2 CIDL (18 Sept) has been updated re the NC status (NC-0001 is closed)	

## Minutes of Meeting

Ref. SOL.EPD.MN.00026

# Solar Orbiter



Date: 19 Sept 2013

Page 4 of 8

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<b>Verification Matrix</b> It was noted that no significant issues are outstanding.	
<b>Log book</b>	
EPD advised that the STM has no <b>limited life items</b>	
<b>Mate-demate</b> was performed on the connectors for the TBT.	
<b>Delivery</b> EPD advised that the STM delivery consists of two packages- the main STM item and the MLI. EPD advise that no CE-certificate will be provided; the STM model is considered a sophisticated piece of metal. EPD advise that they have no knowledge of any specific UK rules that may affect import.	
ASU advised that an export licences is required for ITAR items (MLI). <b>EPD have provided this to ASU (19 Sept email).</b> ASU advised that the delivery paperwork should record the part number T0080046-01 (for ASU internal purposes)	
EPD explained that they plan to hand-carry the STM model to Astrium. Thus, <b>it will be desirable to plan a delivery time such that an inspection can be done on arrival</b> , with EPD on site. The delivery time will be agreed between ASU and EPD. ASU will advise ESA of the inspection date for ESA telecom participation.	

## Minutes of Meeting

Ref. SOL.EPD.MN.00026

## Solar Orbiter



Date: 19 Sept 2013

Page 5 of 8

	<b>Action</b> [ID / actionee /due date]
<p><b>Review of Astrium/ESA comments on EIDP</b></p> <p>EPD summarised their responses as recorded in the "EPD_EIDP_Review_ASU_to_EPD_v1_FINAL.xlsx" sheet</p> <p><b>Key points:</b></p> <p><b>(a) Inspection report</b> (mounting interface)– see 18 Sept EIDP</p> <p>See the new document: "2013sept18_Is_meas-report_epthet-STM.pdf"</p> <p>Measurements have been made of the mounting interface – hole sizes and locations. These are all consistent with the MICD.</p>	
<p><b>(b) MLI handling</b> is now included in "SO-EPD-KIE-PR-0002-iss1_rev2-EPT-HET_STM_Packing-storing-transport-handling_procedure.pdf".</p> <p>ASU advised that they accept the responses.</p> <p>If there are any further clarifications needed (e.g. re the MLI assembly procedure) these will be treated as normal work.</p> <p>EPD advised that the assembly procedure detailed the MLI assembly (on the spacecraft); this is expected to take ~ 45 minutes.</p> <p>ESA noted that the only outstanding issue was the NCR NC-002. .... See later below...</p>	
<p><b>(c) Risk assessment</b></p> <p>Astrium advises that a risk assessment is needed before delivery. It seems that risks (to personnel) are non-existent for this small STM model. However, a statement is required to state that a risk assessment has been made and no risks exist.</p> <p>ASU proposes that 'SO-EPD-KIE-PR-0002-iss1_rev2-EPT-HET_STM_Packing-storing-transport-handling_procedure' is amended to include a section on this. Suggested wording "EPD have assessed the risks (mechanical, electrical, materials) to personnel for the EPT-HET STM unit and advise that no risks exist in handling the unit."</p>	

## Minutes of Meeting

Ref. SOL.EPD.MN.00026

## Solar Orbiter



Date: 19 Sept 2013

Page 6 of 8

	<b>Action</b> [ID / actionee /due date]
<b>Configuration Control</b> ESA noted that "SO-EPD-KIE-LI-0002-iss1_rev3-STM-CIDL-ABCL" shows no issue numbers for internal drawings. ESA advised EPD that they should use configuration control for their internal drawings. EPD advises that these are all issue 0 at present, and they will up-issue them as they change.	
<b>Product Identification</b> Subsystem: EPD – EPTHET Model: STM Part number: EPD/EPTHET-2/NS-STM	
<b>TRR Minute of Meeting Ref.:</b> SO-EPD-PO-MN-0083 Issue 1 Rev. 0 <b>TRR Action Status:</b> all actions have been closed successfully	
<b>As built configuration:</b> See "SO-EPD-KIE-LI-0002 Issue 1 Rev. 3"	
<b>NCR and RFD Status List:</b> <ul style="list-style-type: none"><li>• <b>NCR 'NC-0001'</b> (HET diode) is minor and is <b>closed</b></li><li>• <b>NCR 'NC-0002'</b> (anomalous frequency and amplitude shift during vibration test) is major and it is <b>still open.</b></li></ul> EPD explained that the crystal-holder clamps had to be redesigned. The crystal is a significant mass, but with edges that are somewhat ill-defined (Teflon edging). EPD advised that the re-test was successful. ESA advised that this NC is still open to be assessed further, because some anomalous shifts in frequency and amplitude are also present in the results of the vibration re-test.	



## Minutes of Meeting

Ref. SOL.EPD.MN.00026

## Solar Orbiter



Date: 19 Sept 2013

Page 7 of 8

	Action [ID / actionee /due date]
<p>Cliff Ashcroft (ESA) participated to the meeting by telecall.</p> <p>A detailed discussion ensued – mainly between EPD (Ali) and ESA (Cliff).</p>	
<p>The root cause of the above anomalies is not fully understood. <b>However it is agreed by all parties that these issues do not block the STM shipment, even if the NCR is not closed yet.</b></p> <p>EPD advise that in fact the anomalous behaviour is seen in the frequencies above 800 Hz and it is related more to the local structural behaviour rather than global structural stiffness and integrity. The first natural frequency in all axes shows acceptable behaviour.</p> <p>EPD to provide more technical explanation.</p>	
<p><b>ACTION 1: EPD will provide ESA the summary of these technical discussions to help clarify the test results and report EPD's interpretation that the tests were fully successful.</b></p>	<p><b>MN26-AI01 EPD 25 Oct 2013</b></p>
<p><b>RFDs</b></p> <ul style="list-style-type: none"> <li><b>RD-001</b> (re no measurement of CoG &amp; Mol);</li> </ul> <p>ESA note that this has been rejected by Astrium, who require more justification/clarification for EPD's proposal that this will not be measured. Further details have been passed to EPD...</p> <p>This RFD applies to FM and STM.</p>	
<p>ESA &amp; ASU agree that the STM model may be shipped with this RFD open.</p> <p>The closure of the RFD for FM will be discussed further,</p> <p>EPD proposed to estimate the uncertainties in their approach – as a supplement to the RFD; change to issue 2. The EID-A 'tolerances' are interpreted as uncertainties in the calculation for this analysis approach.</p>	
<p><b>ACTION 2: EPD justify RD-001 in more detail</b></p>	<p><b>MN26-AI-02 EPD 25 Oct 2013</b></p>

## Minutes of Meeting

Ref. SOL.EPD.MN.00026

## Solar Orbiter



Date: 19 Sept 2013

Page 8 of 8

	Action [ID / actionee /due date]
<ul style="list-style-type: none"><li>• <b>RD-002:</b> was not applied to the STM (full vibration levels were used).</li></ul>	
<b>Pending activities before delivery:</b> <ul style="list-style-type: none"><li>- Attachment of the identification label</li><li>- Packaging activities</li></ul>	
<b>List of deliverables:</b> <ul style="list-style-type: none"><li>- See SO-EPD-KIE-LI-0004 Issue 1 Rev. 1</li></ul>	
<b>Delivery Schedule:</b> <ul style="list-style-type: none"><li>- To be agreed between Astrium and EPD EPT-HET team</li></ul>	
<b>Conclusion of meeting</b> <p>Trevor Hunt, Astrium's PA manager for Solar Orbiter, joined the meeting via teleconf for the concluding part.</p> <p>Tony Jordan summarised the meeting's key points - in particular that the EPT-HET STM model was acceptable for shipment to ASU, and noting that the NC-002 (vibration testing) was nevertheless outstanding but not blocking the shipment. After questioning the status of a few issues, Trevor agreed with the decision that the STM model should be delivered.</p> <p><b>The DRB for EPD EPT-HET STM is considered successful.</b></p> <p>All the remaining open actions are considered not blocking for the DRB conclusion.</p> <p>Authorization to shipment is granted.</p>	

... the meeting concluded at 15.00.