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Minutes From Telecon With IMPACT Instrument Providers Concerning Details Of Fixed Mast for SWEA, STE & MAG Sensors
(Dated June 13, 2000)

Participants: Haydee Maldonado (GSFC)
Randy Pensabene (OSC)
Dave Curtis (UCal. Berkeley)
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Topics of Discussion:

1. **Astromast-type boom to be used to deploy IMPACT fixed mast into position.**
   a.) **APL will specify and procure Astromast-type boom based on inputs from instrument providers. Requirements for Astromast-type boom must be specified in Instrument Interface Control Documents (ICD). Potential vendors for boom are A.E.C. Able and Astro Areospace. A.E.C. Able has provided a candidate boom configuration and ROM price for the STEREO observatory layout. APL will set up meeting(s) with potential boom vendors to discuss requirements for surface conductivity, boom rotation during deployment, materials available for plate used to attach fixed mast, stiffness of deployed boom, routing of sensor cables along deployed boom, wrapping (shielding) of cables to reduce noise, etc.**
   b.) **Robert Ullrich's experience (and lessons learned) with Astromast-type booms on the Lunar Prospector spacecraft, will be crucial in specifying the boom requirements and implementing the fixed mast portion of the caging mechanism required to secure the mast assembly for launch.**
   c.) **Current cabling plans call for SWEA and STE to share one cable along the length of the deployed boom. MAG will require one cable, however its length will need to be calibrated. The cables are normally routed along the boom longerons leaving the longeron next to the MAG free of cabling. Stiffness and coiling of cables in boom canister is a major concern.**
   d.) **Haydee would like IMPACT to fabricate their own cables and recommend to the boom vendor the best way to secure them to the boom. Tentative plan is to fabricate 2 cables for flight and 1 cable for testing.**

2. IMPACT fixed mast assembly is the responsibility of UCal. Berkeley.

a.) Discussed the details of the fixed mast configuration presented at Systems Requirements Review (as shown in 7 sheet handout provided by Haydee). The mast is 1.5 meters in length from the end of SWEA to the plate that attaches it to the Astromast-type boom. The mast is a carbon fiber hollow tube with integral attachments for mounting the SWEA, STE and MAG sensors. Shading of the STE sensor from the Sun is provided by the offset mount for the MAG. Robert Ullrich will provide additional dimensions so that the fixed mast in the STEREO observatory layout can modified to reflect the SRR configuration. Separate fixed mast designs may be required for the leading and the lagging observatories to satisfy STE field-of-view requirements.

b.) Because of the spiraling motion of the mast during boom deployment, concern was voiced by IMPACT and APL to the substantial offset of the MAG sensor mount. APL will determine if sufficent room is available for the mast to rotate without striking the spacecraft structure or the deployed high gain dish antenna.

c.) SRR mast configuration includes a SWAVES search coil and pre-amp attached to the mast structure near the MAG sensor mount. Currently the SWAVES coil and pre-amp are not Program approved.

d.) APL recommended a caging technique that would secure the fixed mast for launch at the bottom edge of the spacecraft structure. This location allows the release mechanism to be tucked out of the way of the fixed mast as it moves past the spacecraft structure and would not impact instrument fields-of-view. This approach would require the addition of a hinged arm to the mast structure that would spring out of the way once the release mechanism has been actuated. IMPACT would like to use a shape memory alloy actuator for the caging mechanism. Robert Ullrich will provide APL data on the vendor for this actuator and a sketch of a release mechanism used for a similar application.

e.) Binding of the caging mechanism is a concern if the IMPACT boom is not deployed shortly after launch. The longer it takes to deploy the boom, the colder the spacecraft structure becomes and the resulting shrinkage can affect the caging mechanism. Proper selection of materials for the mechanism can minimize the problem.