

Memo

Name: Mark Mills, Principal RF Engineer

Organization: Orbital Sciences Corporation

Date: 27 February 2014

Subject: Transmitter information related to application for STA 0136-EX-ST-2014

1. The locations of the 3 transmitters, and the associated on/off times are provided in the following table. The location of the designated Motor Cone transmitter is listed as the Motor Cone. This is considered to be part of the launch vehicle Interstage located between Stages 1 and 2. For the Antares Orb-2 mission, the sequence of events is that of the Stage 1 separating at $T = L + 241$ sec, Interstage separating at $T = L + 337$ sec, and the Stage 2 separating from the payload at $T = L + 598$ sec.

Xmitter Designation	Telemetry Designation	Operational Frequency Band	Xmitter Location	Xmitter On Time	Xmitter Off Time	Method Used for Determining Off Times
AV	Link 41	2239.76-2243.24 MHz	Stage 2	$T = L - 3$ hrs 33 min	$T = L + 60$ min	battery life estimate
MC	Link 69	2267.76-2271.24 MHz	Motor Cone	$T = L - 3$ hrs 33 min	$T = L + 14$ min	earth impact estimate
S1	Link 88	2286.76-2290.24 MHz	Stage 1	$T = L - 3$ hrs 33 min	$T = L + 15$ min	earth impact estimate

2. Xmitter On Time – A sequence of checks involving the transmitters begins on the launch pad approximately 3 hrs 33 minutes before launch. While on the pad, power is switched between external and internal (battery) as these various checks are performed.

3. Xmitter Off Time – After all checks have been performed on the pad prior to launch, transmitters remain powered on by internal batteries until their mission is completed. However, the 3 transmitters are not turned off by command. Rather, they cease to transmit when their battery supply is depleted, or as a result of operational failure during re-entry after a separation event or earth impact. Transmitter off times are estimated using battery life or earth impact calculations, based on worst case (longest duration of transmission).