Request For Action

Number: **62**

Project:	STP
Spacecraft:	STEREO
Review:	PDR
Date:	December 3-6, 2001

Originator: Scott Glubke **Phone:** 301-286-7044 **Organization:** GSFC
Category: Thermal
Title: Thermal Design Rationales
Date Closed:
Residual Risk:

Action Requested:

The current design for the power subsystem shows the bus voltage as 20-35V for critical loads, 24-35V for non-critical loads. If the heater is sized to these ranges, the peak power is very large. Several reasons exist for reducing these ranges. The final range and reasons/logic should be documented in one place so that everyone uses the same value.

Supporting Rationale:

Project Response:

Heater sizing is specified as follows. These requirements will be flowed down consistently throughout the program via the Observatory Environmental Specification and the Instrument ICDs.

"Spacecraft and instrument operational heaters shall be sized for a 75 % duty cycle at 30.5 V. Instrument and spacecraft survival heaters shall be sized for 100% duty cycle at 25 V."

22V is the minimum bus voltage for the Observatory, assuming no failed cells. Instruments are shut off due to LVS conditions at ~26.5 V and will operate on survival heaters down to 22V. Once the spacecraft returns to sun pointing the bus voltage will rapidly return to at least 30.5V.

The nominal bus voltage for STEREO will be 33.5V or 30.5V [with one cell failed] for most of the mission. Cases where the bus voltage is at the lower end of the operating range (less than 25 - 26.5 V) can be treated as transient cases that exist only when the Observatory is no longer sun pointing.