Auxiliary material for

Quantitative estimate of heat flow from a mid-ocean ridge axial valley, Raven field, Juan de Fuca Ridge.

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Introduction

Thermal blankets are used to determine conductive heat flow in areas where it is physically impossible to insert a traditional 3-meter long heat flow probe into the seafloor. As with any other oceanographic technique, thermal blankets have their own deployment strategies and post-processing routines necessary to obtain the best possible heat flow measurement. While thermal blankets have been used previously, this supplemental material text provides the details of an updated version of the methods including pre-deployment preparations, and data processing including thermal noise removal techniques and comparison to other heat flow instrumentation.

1. Auxiliary\_Material\_text01.docx Detailed description of the thermal blanket methodology, error analysis and comparison to other heat flow instrumentation.

2. Auxiliary\_Material\_fs01.eps (Supp. Figure 1) Examples of difficult blanket deployments. A) The bottom thermistor did not seal properly with the ground. B) Blanket was deployed over an active diffuse vent. C) Temperature variability propagating through the blanket. D) Residual heat absorbed on board the ship stored within the blanket material.

3. Auxiliary\_Material\_fs02.eps (Supp. Figure 2) Determining the thermal conductivity (k) of the blankets. Plotted thermal conductivities are from ideal blankets with a good fit with the half-space heat equation. Error bars are calculated based on how ±0.002°C will affect thermal conductivity estimations. Best fit line (green) is the logarithmic equation Y = 0.0348\*log(x) + 0.7339 used to calculate the final thermal blanket heat flow values.

4. Auxiliary\_Material\_fs03.eps (Supp. Figure 3) Comparison of two heat flow blankets (J0 and N0) to two Middle Valley long heat flow probe (from Stein et al., 1998) in green and black (Top Panel), and heat flow blankets compared to Alvin short probe measurements (blue, Middle Panel). For reference purposes, Alvin heat flow probe is compared to the long probe for Middle Valley (red, Bottom Panel). Error bars are 20% of the heat flow values and the red line is the 1:1 ratio.