

## DSG-NPS R&D Meeting Minutes

**Date:** August 03, 2021

**Time:** 11:00AM – 12:30 PM

*Attendees: Mary Ann Antonioli, Peter Bonneau, Aaron Brown, Pablo Campero, Brian Eng, George Jacobs, Mindy Leffel, Tyler Lemon, Marc McMullen, and Amrit Yegneswaran*

### 1. Reviewed minutes from 07/27/2021 DSG-NPS R&D meeting

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1. [07/27/2021 DSG-NPS R&D Meeting Minutes](#)

### 2. Reviewed minutes from 07/29/2021 NPS Collaboration meeting

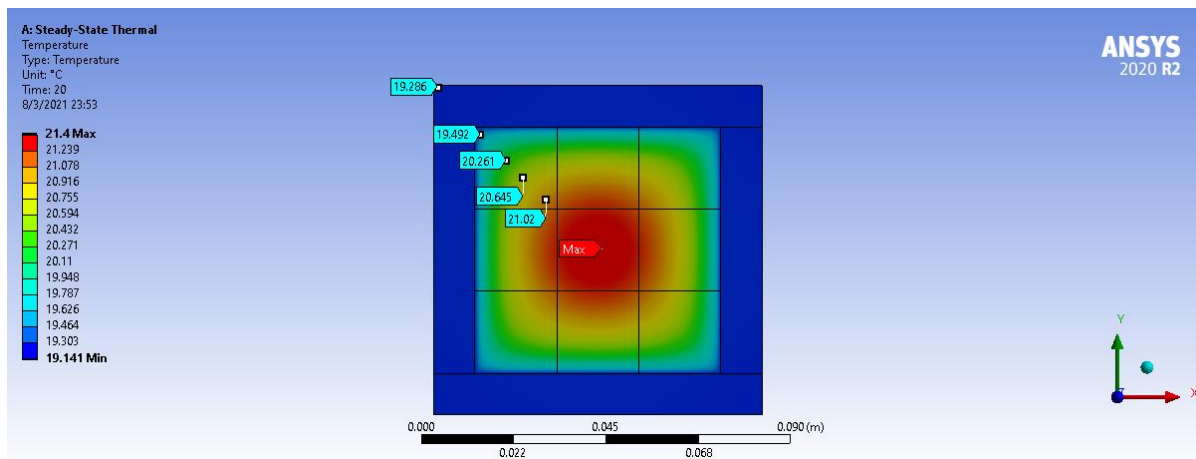
DSG

1. [07/29/2021 NPS Collaborators' Meeting Minutes](#)
2. Aaron Brown will request step files or CAD files from Carlos Munoz, to get a better picture of the PMT divider base and how a crystal is attached to a PMT
3. To prevent someone from accidentally flipping the CAEN crate interlock switch, it could be disabled, though it is hard to accidentally flip; administrative controls would be a better option
4. Discussion about interlocking new low voltage power supply

### 3. Thermal analysis and Ansys simulation

Aaron Brown

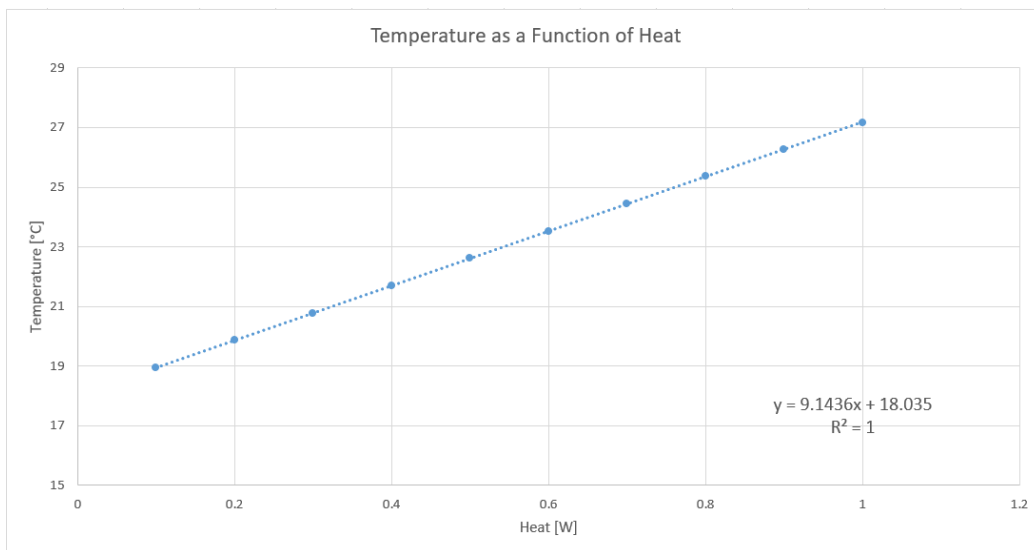
1. Reviewed Ansys steady state thermal simulation of a 3x3 block of PbWO<sub>4</sub> crystal surrounded by a 1-cm Cu shell



Screenshot of 3x3 block of PbWO<sub>4</sub> crystal with a 1-cm copper shell

- A heat load of 0.5 W was applied to the face of each crystal, resulting in a maximum temperature of 21.4°C on the central crystal
- A lower film coefficient for convection ( $< 5 \text{ W/m}^2 \text{ }^\circ\text{C}$ ) will be used in subsequent simulations
- The initial temperature of the copper (18°C) will be changed to ~7°C from (to simulate the temperature of the low conductivity water that will be flowing through the copper)

2. Reviewed plot of heat vs temperature for a 3x3 block of PbWO<sub>4</sub> crystals; relationship appears to be linear



Plot of maximum temperature (central crystal) for the 3x3 block of PbWO<sub>4</sub> crystal

#### 4. HV supply cable testing

*Peter Bonneau, Aaron Brown, Brian Eng, George Jacobs, Mindy Leffel, and Marc McMullen*

1. Testing of cable #40 with Radial connector on one end and flying leads on the other
  - Marc McMullen will submit the DSG List; testing can begin once safety document is approved