With regards to the 9 points mentioned in your email attached below:

Regarding **points 1, 2, and 4,** the off-line programming for this major upgrade is complete.
For system level installation, hardware configuration, debugging, and testing, the *SVT Hardware Interlock System* has to be taken off-line for a period of one to two weeks; during this time the SVT will not be protected by the *SVT Hardware Interlock System.*
As the *SVT Hardware Interlock System* has been in continuous operation since it's commissioning in August of 2015, DSG has been unable to do major system level upgrade/installation (see above).

DSG believes that the best time to do this major upgrade is after the present running period, when the SVT can be powered off and DSG has uninterrupted access to the hardware.

Regarding **points 3, 5, and 7,** access to the detector hardware and to the detector itself is necessary to determine and fix the source of the problem.

Regarding **point 6**, a drip pan for possible condensation was not installed by the engineering group; therefore the sensor which DSG has cannot be installed.

Regarding **point 8**, the nitrogen temperature sensor was ordered by DSG and is expected to arrive on 2/13/18. DSG will install the temperature sensor once it arrives.

Regarding **point 9**, DSG has completed this request. The relay box for 208V is in the hall and ready for use.

1. Implementing the SVT hardware safety interlocks control interface in CSS, the chosen CLAS environment for slow controls and monitoring. The current LabVIEW version of the interface requires a dedicated MS Windows pc to check the status, monitoring the system state, and resetting the latched interlocks. This pc is not on the CUE management system and requires manual installation of security patches and system updates.
2. Implementing the hardware interlock alarm logging. Lack of logging features limits debugging options of the primary reasons for interlock actions and delays resolving the alarm incidents.
3. Broken hardware interlock on ambient temperature T2. This interlock had to be disabled, a detector safety issue.
4. Failing reading of the inlet coolant temperature in the hardware interlock. This problem requires correct conversion of the raw sensor data at negative temperatures to be implemented. This interlock had to be disabled, a detector safety issue.
5. Failing reading of the outlet coolant flow meter. An attempt to fix it was made, the reading is still incorrect. This reading provides data to the SVT software and hardware interlocks, a detector safety issue.
6. Installing the leak detection system. The leak sensor is connected to the hardware interlock but is not yet monitoring the tube connected to the drain pan, a detector safety issue.
7. Fixing bad connection of the hybrid temperature reading for R3S11B. Several attempts to fix unreliable contact have been made, the reading is still bad. The corresponding module PS interlock had to be disabled, a module safety issue.
8. Installing the nitrogen cooling line temperature monitoring. The temperature sensor has been ordered.
9. A new request. Anova A40 chiller has issues related to operating at negative temperatures and was removed from the hall this week. This chiller is being tested by the engineering group. The SVT is using one of the Lauda chillers connected to the cold plate. This chiller has a history of blowing the fuses when it was operated in the EEL building. The spare Lauda chiller has 208 V plug. In order to minimize the down time of the detector in case of failure of the main chiller, it is required to assemble a second relay box connected to the hardware interlock. The relay box currently in use was designed for 110 V outlet compatible with A40 and one of the Lauda chillers.