

# DSG-R&D Phoebus Meeting Minutes

**Date:** May 12, 2023

**Time:** 2:00 PM – 2:30 PM

*Attendees: Mary Ann Antonioli, Peter Bonneau, Pablo Campero, Tyler Lemon, and Marc McMullen*

## 1. Phoebus Screen development for Alarm System

*Mary Ann Antonioli, Peter Bonneau, Aaron Brown*

1. Converted the seven array-based screens to screens with individual PVs
  - Front crystal zone thermocouple temperatures
  - Back crystal zone thermocouple temperatures
  - Detector frame
  - Crystal zone cooling circuit
  - Electronics zone
  - Hall environment
  - Chiller coolant

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### Chiller Coolant Alarm Testing Crystal Zone

Sensor	read	HIHI set	HIHI read	HIGH set	HIGH read	LOW set	LOW read	LOLO set	LOLO read	Alarm status	Alarm severity	Scan rate	range [°C]	Min T [°C]	Max T [°C]
supply temperature [°C]	<hcnp <i>s_i</i>	<hcnp <i>s_ir</i>	<hcnp <i>s_j</i>	<hcnp <i>s_ik</i>	<hcnp <i>s_il</i>	<hcnp <i>s_im</i>	<hcnp <i>s_in</i>	<hcnp <i>s_io</i>	<hcnp <i>s_ip</i>	<hcnp <i>s_intk_cz</i>	<hcnp <i>s_intlk_cz</i>	<null>	<hcnp <i>s_ir</i>	<hcnp <i>s_ik</i>	<hcnp <i>s_il</i>
supply pressure [psi]	<hcnp <i>s_i</i>	<hcnp <i>s_ir</i>	<hcnp <i>s_j</i>	<hcnp <i>s_ik</i>	<hcnp <i>s_il</i>	<hcnp <i>s_im</i>	<hcnp <i>s_in</i>	<hcnp <i>s_io</i>	<hcnp <i>s_ip</i>	<hcnp <i>s_intk_cz</i>	<hcnp <i>s_intlk_cz</i>	<null>	<hcnp <i>s_ir</i>	<hcnp <i>s_ik</i>	<hcnp <i>s_il</i>
supply flow [l/min]	<hcnp <i>s_i</i>	<hcnp <i>s_ir</i>	<hcnp <i>s_j</i>	<hcnp <i>s_ik</i>	<hcnp <i>s_il</i>	<hcnp <i>s_im</i>	<hcnp <i>s_in</i>	<hcnp <i>s_io</i>	<hcnp <i>s_ip</i>	<hcnp <i>s_intk_cz</i>	<hcnp <i>s_intlk_cz</i>	<null>	<hcnp <i>s_ir</i>	<hcnp <i>s_ik</i>	<hcnp <i>s_il</i>

### Electronics Zone

supply temperature [°C]	<hcnp <i>s_i</i>	<hcnp <i>s_ir</i>	<hcnp <i>s_j</i>	<hcnp <i>s_ik</i>	<hcnp <i>s_il</i>	<hcnp <i>s_im</i>	<hcnp <i>s_in</i>	<hcnp <i>s_io</i>	<hcnp <i>s_ip</i>	<hcnp <i>s_intk_ez</i>	<hcnp <i>s_intlk_ez</i>	<null>	<hcnp <i>s_ir</i>	<hcnp <i>s_ik</i>	<hcnp <i>s_il</i>
supply pressure [psi]	<hcnp <i>s_i</i>	<hcnp <i>s_ir</i>	<hcnp <i>s_j</i>	<hcnp <i>s_ik</i>	<hcnp <i>s_il</i>	<hcnp <i>s_im</i>	<hcnp <i>s_in</i>	<hcnp <i>s_io</i>	<hcnp <i>s_ip</i>	<hcnp <i>s_intk_ez</i>	<hcnp <i>s_intlk_ez</i>	<null>	<hcnp <i>s_ir</i>	<hcnp <i>s_ik</i>	<hcnp <i>s_il</i>
supply flow [l/min]	<hcnp <i>s_i</i>	<hcnp <i>s_ir</i>	<hcnp <i>s_j</i>	<hcnp <i>s_ik</i>	<hcnp <i>s_il</i>	<hcnp <i>s_im</i>	<hcnp <i>s_in</i>	<hcnp <i>s_io</i>	<hcnp <i>s_ip</i>	<hcnp <i>s_intk_ez</i>	<hcnp <i>s_intlk_ez</i>	<null>	<hcnp <i>s_ir</i>	<hcnp <i>s_ik</i>	<hcnp <i>s_il</i>

## 2. Development of NPS and alarm test system signal and PV list

*Mary Ann Antonioli and Aaron Brown*

1. Discussed status of adapting array-based PVs to individual PVs for alarm system
  - Completed alarm test system PVs for NPS analog signals

## 3. Development of Phoebus test system message monitoring program

*Peter Bonneau*

1. Phoebus does not have an application that can directly monitor message streams
2. Completed program to directly monitor alarm system Kafka message streams
3. Program was used to debug the Phoebus alarm annunciator Talk stream
  - [DSG Note 2023-18](#)

```
CreateTime:1681925271746: talk:/Hall-C-NPS/Crystal Temps/bonneau:NPS-CZ-TEMP-2: {"severity":"MAJOR","talk":"MAJOR Alarm: Crystal Zone Temp 2"}
CreateTime:1681925277747: talk:/Hall-C-NPS/Cooling System/bonneau:NPS-CZ-CHILLER-TEMP-2: {"severity":"MAJOR","talk":"MAJOR Alarm: Crystal Zone Chiller Temp 2"}
CreateTime:1681925278746: talk:/Hall-C-NPS/Cooling System/bonneau:NPS-CZ-CHILLER-TEMP-1: {"severity":"MAJOR","talk":"MAJOR Alarm: NPS-CZ-CHILLER-TEMP-1"}
```

*Monitoring the Alarm System's Apache Kafka Talk message Stream*

#### **4. Investigating implementation of Phoebus (V4.6.10) save and restore application**

*Peter Bonneau*

1. Save and restore is used to restore PV settings upon reboot of IOCs
2. Phoebus alarm test system softIOC has ~6000 settings to restore
3. Requires configuring and building Phoebus from source code
4. Requires a relational database (RDB) server
  - MySQL V8.0 is recommended
5. Does not use Apache Kafka streams
6. Missing features
  - Security in authentication and authorization
  - Search capabilities for configurations or snapshots

#### **5. Alarm System SoftIOC Development**

*Peter Bonneau and Aaron Brown*

1. Implemented NPS softIOC signal simulator for alarm system development
2. Integrating new alarm test thermocouple screens into the alarm test system
3. Developing VisualDCT thermocouple template for alarm test system softIOC
  - Upon softIOC startup, the template is used to generate the simulated NPS thermocouple signals within the EPICS database