

Status of the Hall B Gas Systems

George Jacobs, Physics DSG Group

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Hall B Gas Systems

1. DC Gas Mixing and Supply System
2. DC Gas Pressure Control and Safety System
3. HTCC CO₂ Purge Supply System
4. MVT Gas Mixing and Supply System
5. N₂ Gas Utility Supply
 1. DC Endplate HV N₂ Purge Supply
 2. FT Cal N₂ Purge Supply
 3. SVT N₂ Purge Supply
 4. PCAL N₂ Purge Supply
 5. ECAL N₂ Purge Supply
 6. RICH N₂ Purge Supply and Air Cooling System
6. He Gas Utility Supply
7. LTCC Gas Supply and Recovery System
8. LTCC Single Sector Test System

Subsystems of DC Gas System

- R1&R2 Ar CO₂ Mixing and Storage
- R3 Ar CO₂ Mixing and Storage

- R1 DC Gas Metering Supply
- R2 DC Gas Metering Supply
- R3 DC Gas Metering Supply

- R1&R2 PID Detector Pressure Control
- R3 PID Detector Pressure Control

- R1&R2 Detector Pressure Protection System
- R3 Detector Pressure Protection System

DC Status

- P&I diagram - **Completed** (B00000-01-25-0001)
- Piping installation and modifications - **Completed**
- Pressure systems analysis - **Completed**
- Pressure testing - **Completed**
- Leak testing - **Completed**

- **R1&R2** Ar CO₂ Mixing and Storage - **Operational**
- **R3** Ar CO₂ Mixing and Storage – **Operational**

- **R1** DC Gas Metering Supply - **Operational**
- **R2** DC Gas Metering Supply - **Operational**
- **R3** Dc Gas Metering Supply – **Operational**

- **R1&R2** PID Detector Pressure Control -**Tested**, currently offline
- **R3** PID Detector Pressure Control - **Tested**, currently offline

- **R1&R2** Detector Pressure Protection System - **Awaiting electrical review**
- **R3** Detector Pressure Protection System - **Awaiting electrical review**

Flowing Gas to CLAS12 DCs

DC Pressure Protection System

- Pressure Protection System Controls designed in 1997 by George Jacobs
- System operational from 1998—2012 at 100% duty cycle.
- Solenoid power distribution modified for CLAS12
 - Due to an undersized jumper wire damage to terminal strip.
 - Jumper wire replaced.
- **However, Hall B decided not to use Pressure safety solenoids.**
- **PID Pressure Control System cannot operate without the Pressure Safety Solenoids.**
- PID Pressure Control System permits higher flow rates of gas than the bubblers.

HTCC

- P&I diagram - **Completed** (B00000-01-25-0100)
- Valve and control panel - **Completed**
- Pressure systems analysis - **In progress**
- Connect piping to CO₂ supply - **Incomplete**
- Final leak checks - **Incomplete**
- Pressure testing - **Incomplete**

System is currently operational using N₂ purge gas.

MVT

- P&I diagram - **Complete** (B00000-01-25-0100)
- Procurement of system components - **In progress**
- Fire protection review - **In progress**
- Pressure systems analysis by DA - **In progress**
- Assembly of piping and controls components - **Incomplete**
- Connect to Hall B piping - **Incomplete**
- Connect to detectors - **Incomplete**
- Run exhaust lines - **Incomplete**
- Final leak checks - **Incomplete**
- Pressure testing - **Incomplete**

N₂ Gas Utility System

- P&I diagram - **Complete** (B00000-01-25-0100)
- Pressure systems analysis - **Complete**
- Relief valve installation - **Incomplete**
- Flex line replacement on Fwd Carriage - **Incomplete**
- Modifications to piping for RICH service - **Incomplete**
- Final leak checks - **Incomplete**
- Pressure testing - **Incomplete**

N₂ Gas Utility System

- N₂ Gas Utility System currently operating under “legacy”.
- Gas supplied to the following detectors:
 - DC Endplate HV N₂ Purge Supply - **Operational**
 - pCAL N₂ Purge Supply - **Operational**
 - eCAL N₂ Purge Supply - **Operational (4 of 6 sectors)**
 - FT Cal N₂ Purge Supply - **Operational**
 - SVT N₂ Purge Supply - **Operational**
 - RICH N₂ Purge Supply - **Not installed** (requires piping modifications)

RICH

- P&I diagram - **Completed** (TGT-202-0000-0000)
- Pressure systems analysis - **Completed**
- Pressure testing - **Completed**
- Leak testing - **Completed**
- Basic operations testing – **Completed**

- Installation on FWD Carriage - **Waiting on detector**

Helium Gas Purge Supply

- Supplies He gas to space frame area and downstream alcove
- “Legacy” He supply for He gas bags is ready, if needed.

- P&I Diagram - **In progress**
- Pressure systems analysis - **Incomplete**
- Pressure system testing - **Incomplete**

LTCC Sector 5

- P&I diagram – **Completed**, ready for DA
- Piping installation and modifications - **Incomplete**
- Pressure systems analysis by DA - **Incomplete**
- Pressure testing - **Incomplete**
- Leak testing - **Incomplete**

Remaining Gas System Tasks

- HTCC CO₂ Purge Supply - **Pressure system requirements**
 - Connection to CO2 supply
- MVT Gas Mixing System - **Pressure system requirements**
 - System assembly and testing
 - System commissioning
- LTCC Single Sector Test - **Pressure system requirements**
 - System modifications and testing
- RICH Air Cooling and N2 Purge - **Hall B installation and commissioning**
- N2 Gas Purge Supply - Flex line replacement on Fwd Carriage
 - Modifications for RICH N2 supply
 - Pressure system work in progress (legacy system)