DC HV TEST WITH FLAMMABLE GAS IN THE PEH

PHENIX Procedure No. PP-2.5.2.4-02

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Approvals

Michael Lively 11/22/00
PHENIX S E & I Date

Michael Lively 11/20/00
Cognizant Scientist/Engineer Date
/Activity Manager

William E. Kelly 11/20/00
PHENIX Safety Date

M. Madera 11/21/00
C-AD ~~SAFETY~~ (ESRC) Date

REVISION CONTROL SHEET

LETTER	DESCRIPTION	DATE	AUTHOR	APPROVED BY	CURRENT OVERSIGHT
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1.0 Purpose and Scope

The scope of this procedure is to document the operation of the West Drift Chamber Gas System during the High Voltage tests planned for November 23 through 26, 2000.

2.0 Responsibilities

It is the responsibility of the Flammable Gas Operators (listed in Attachment 1) to prepare the West Drift Chamber (DC-W) for operation with flammable gas. This can be accomplished with the help of the DC-W Flammable Gas Checklist (Attachment 2). Once they have assured themselves that DC-W is ready to receive flammable gas, it is their duty to initiate the flow of flammable gas in a manner that is safe to personnel and equipment.

It is also the responsibility of the Flammable Gas Operators to monitor the gas usage, making sure that DC-W has uninterrupted access to gas supplies. When gas cylinders are emptied, it is the duty of the Flammable Gas Operators to change the supply cylinders.

3.0 Prerequisites

In order to operate the DC-W Flammable Gas System, the following requirements must be met:

3.1 BNL Compressed Gas Training (OSH-026)
3.2 DC-W Flammable Gas System Authorization. (See Attachment 1)

4.0 Precautions

Before initiating flow of flammable gas the following precautions must be taken:

4.1 There must be at least two people on shift at all times when there is flammable gas flowing.
4.2 The High Sensitivity Smoke Detector System (HSSD) in the Interaction Region (IR) must be tested and operational.
4.3 The Mixing House Smoke Detection System must be tested and operational
4.4 The IR Flammable Gas Detection System must be tested and operational.
4.5 The Mixing House Flammable Gas Detection System must be tested and operational.
4.6 The Safety Monitoring and Control System (SMCS) must be tested and operational.
4.7 The flammable gas supply and return piping and racks must be inspected visually and with a handheld gas detector to verify that they do not leak.
4.8 The DC-W must be purged with inert gas for at least four volume exchanges prior to the introduction of flammable gas.
4.9 The DC-W must be purged with inert gas for at least six volume exchanges prior to work beginning in the IR after the test.
4.10 The total volume of Ethane in the Assembly Hall must never exceed one cylinder's volume. This can be accomplished in practice by allowing in the AH either two cylinders of pre-mixed Argon/Ethane, or a single cylinder of pure Ethane, but not both.

4.11 If the six-pack of Ethane on the Gas Pad is used to deliver gas to the IR, only one cylinder of Ethane shall have its valve open at any time.

4.12 During the period of testing when gas is being mixed in the SUSB flowmeter, the people on shift shall check the flowmeter each hour to ensure that the Argon flow does not stop in a way that would allow pure Ethane to flow into the DC-W.

4.13 The crane in the IR must be Locked Out/Tagged Out while there is flammable gas in the IR.

4.14 The PHENIX Shutdown Coordinator Pete Kroon and Liaison Physicist Yousef Makdisi must verify and sign the Attachment 2 Checklist to give approval to the Flammable Gas Operator before flowing any flammable gas.

5.0 Procedure

Wednesday, 11/22/00

The PHENIX Shutdown Coordinator (Pete Kroon or designate) and Liaison Physicist (Yousef Makdisi or designate) must verify and sign the DC-W Flammable Gas System Checklist (Attachment 2) to give approval to the Flammable Gas Operator before flowing any flammable gas.

Wednesday, 11/22/00, 14:00

Approved Operator will begin flowing Argon/Ethane from pre-mixed cylinders at a rate of 11.5 LPM in order to have 4.5 exchanges of gas in the DC by Thursday morning.

Thursday, 11/23/00, 08:00

OK to turn on HV in DC West.
Approved Operator will switch from Pre-mix to Hand-mix.
Approved Operator will reduce flow rate from 11.5 LPM to 1.7 LPM.

Thursday, 11/23/00

SUSB will conduct HV studies.

Friday, 11/24/00, 16:00

Assuming all HV studies are complete,
Approved Operator will convert to gas flow from 6-packs of Argon and 6-packs of Ethane on the Gas Pad.
Approved Operator will verify that only one cylinder of Ethane is open in the 6-pack.
Approved Operator will set the Flow Rate of the mixture to 7 CFH (3.3 LPM) the same as normal running.

Saturday, 11/25/00

SUSB will continue HV studies.

Sunday, 11/26/00, 08:00

Approved Operator will switch over to Nitrogen in all systems at 11.5 LPM in order to have 6 gas exchanges by 08:00 Monday.

Monday, 11/27/00, 08:00

DC-W Shift Crew no longer required.

IR and AH cleared for unrestricted access.

6.0 Documentation

None.

7.0 References

None.

8.0 Attachments

8.1 List of Approved Operators of the DC-W Flammable Gas System.

8.2 DC-W Flammable Gas System Checklist.

Attachment 1: Approved DC-W Flammable Gas System Operators

The following people have been approved to operate the DC-W Flammable Gas System:

Tom Hemmick
Carter Biggs
Michael Sivertz
Vlad Pantuev

Attachment 2: DC-W Flammable Gas System Checklist

Is the HSSD tested and operational?	RS
Is the IR Flammable Gas System tested and operational?	RS
Is the Mixing House smoke detector system tested and operational?	RS
Is the Mixing House flammable gas system tested and operational?	RS
Is the SMCS tested, operational and approved?	RS
Have the pipes been inspected and leak checked?	MC
Has The DC-W been purged with inert gas for at least 4 exchanges?	MC
Has the IR Crane been locked out and tagged out?	
Has the PC-W gas flowmeter been closed?	MC
2023 — Has MCR been notified that Flammable Gas will be flowing? CAS watch	MC
Have all personnel been cleared of the IR?	RS
Is there only a single cylinder of Ethane open in the 6-pack on the Gas Pad?	MC
Have all personnel in the AH been notified that flammable gas will be flowing?	MC
Has the area been posted for flammable gas?	MC
Is cooling water flowing to the DC-W?	YES
Is the DC-W Shift Crew ready to monitor the gas flow?	MC

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