

Title: Decay storage tank vacuum system for obtaining a gas sample		
Document Number	Issue No.:	Revision No.:
Date Issued:		

TRIUMF



Decay storage tank vacuum system for obtaining a gas sample.

Prepared by: Dimo Yosifov

Reviewed by:

	Name	Signature	Date
Approved by:			

✓

Title: Decay storage tank vacuum system for obtaining a gas sample.

Document Number	Issue No.:	Revision No.:
Date Issued:		

History of Changes

Revision Number	Date	Description of Changes

Title: Decay storage tank vacuum system for obtaining a gas sample		
Document Number	Issue No.:	Revision No.:
Date Issued:		

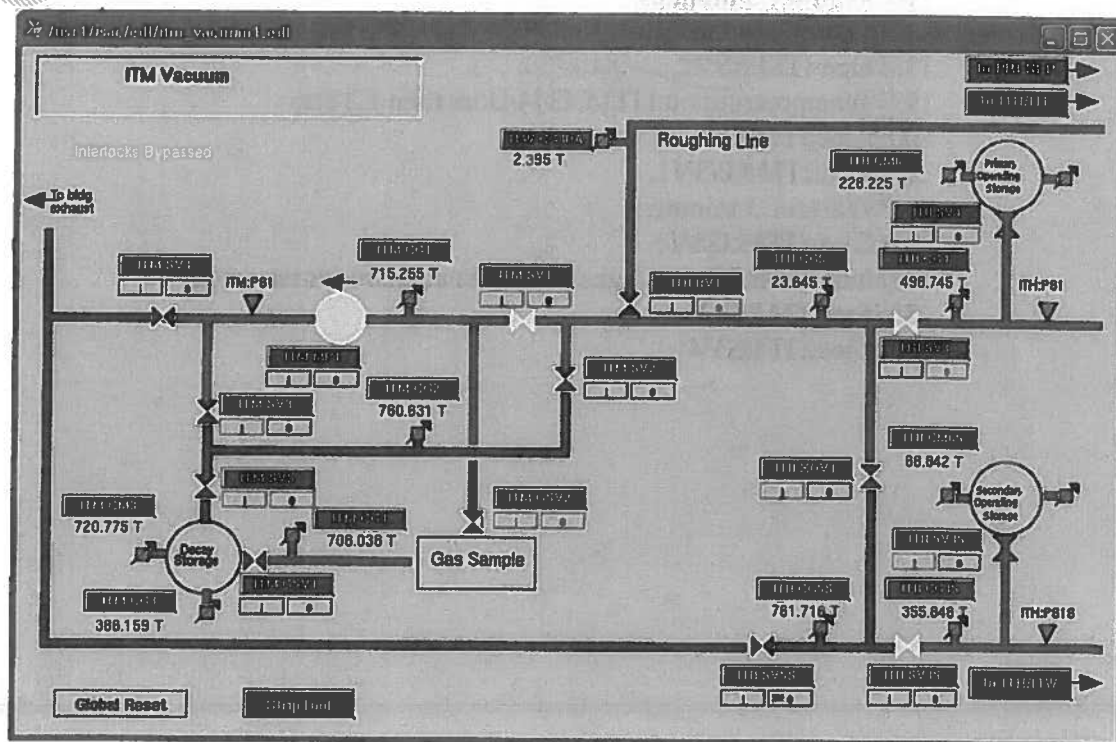
1 PURPOSE AND SCOPE

The purpose of the vacuum system is to allow a gas sample to be taken from the decay storage tank via remotely operated valves. The vacuum system is built from components which are compatible with high vacuum practice. It contains a Marinelli vessel, a Lucas sell, Convector gauge, micro switch and two vacuum valves. The connections between these components are "quick disconnect" type and stainless steel tubing.

The names of the new valves are ITM:GSV1 and ITM:GSV2. The Convector gauge between the valves is ITM:CG4 as displayed on EPICS ITM Vacuum Page.

The micro switch is used to recognize the presence of a Marinelli container. It should be displayed as ITM:GSMS1 on EPICS ITM Vacuum Page

Before the addition of the gas sampling system to the existing decay storage tank vacuum system, the assembly was leak checked and found to be leak tight to 1.0×10^{-9} atm c.c. /s.



Title: Decay storage tank vacuum system for obtaining a gas sample		
Document Number	Issue No.:	Revision No.:
Date Issued:		

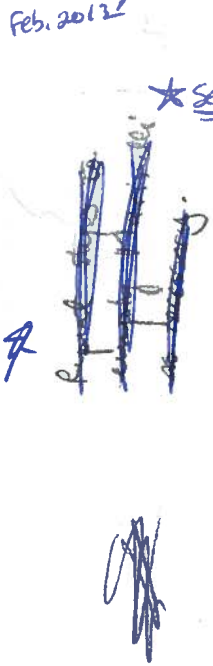
* First: RPG will assay an empty Marinelli container

0. Set ITM:MODE to "Decay Storage Mode → sampling".
1. Confirm that Marinelli container is installed.
2. Close ITM:SV1/SV2/SV4/SV5/GSV1/GSV2.
3. Open ITM:SV4, then turn on ITM:MP1.
4. When ITM:CG1 < 50mTorr, open ITM:GSV2.
5. When ITM:CG4 < 2Torr, close ITM:GSV2. RPG will disconnect the container and assay its cont.

* Second:

The steps for obtaining a gas sample from the Decay storage tank are as follows:

0. Set ITM:MODE to "Decay Storage Mode → sampling". The Gas Sample box will turn green and the outline will be solid.
1. Check if "Marinelli" container is installed - OK from TRSG personnel.
2. Close valves ITM:SV1, ITM:SV2, ITM:SV4, ITM:SV5, ITM:GSV1, ITM:GSV2.
3. Open valve ITM:SV4.
4. Turn on ITM:MP1.
5. When pressure on ITM:CG1 is less than 50mTorr:
6. Open ITM:GSV2.
7. When pressure on ITM:CG4 is less than 2 Torr:
8. Close ITM:GSV2.
9. Open ITM:GSV1.
10. Wait for 3 minutes.
11. Close ITM:GSV1.
12. Open ITM:GSV2.
13. When pressure on ITM:CG4 is less than 2 Torr:
14. Close ITM:GSV2.
15. Open ITM:GSV1.
16. Wait for 3 minutes.
17. Close ITM:GSV1.
18. Open ITM:GSV2.
19. When pressure on ITM:CG4 is less than 2 Torr:
20. Close ITM:GSV2.
21. Open ITM:GSV1.
22. Wait for 3 minutes.
23. Close ITM:GSV1.
24. Notify TRSG that a gas sample is available for assaying.
25. Stop ITM:MP1
26. Close ITM:SV4



Title: Decay storage tank vacuum system for obtaining a gas sample.		
Document Number	Issue No.:	Revision No.:
Date Issued:		

The interlocks associated with the newly installed valves are as follow:

Device: ITM:GSV1

Ok to OPEN IF:
LIMIT SWITCH OK - MARINELY CONTAINER PRESENT
ITM:SV5 CLOSED
AND ITM:GSV2 CLOSED
AND ITM:CG4 < 2 TORR

TRIP:
ITM:SV5 OPEN AND OR ITM:GSV2 OPEN

OK TO TURN OFF IF:
NONE

Device: ITM:GSV2

Ok to OPEN IF:
LIMIT SWITCH OK - MARINELY CONTAINER PRESENT
ITM:MP1 ON
AND ITM:SV1 CLOSED
AND ITM:SV2 CLOSED
AND ITM:SV3 CLOSED
AND ITM:SV4 OPEN
AND ITM:GSV1 CLOSED

TRIP:
COMPLEMENT

OK TO TURN OFF IF:
NONE

Title: Decay storage tank vacuum system for obtaining a gas sample.		
Document Number	Issue No.:	Revision No.:
Date Issued:		

2 REFERENCED DOCUMENTS

- DRW. NO. ISK5029 – Rev B, Nov 02, 2007, ISAC Site
- Revision #524 ISAC Vacuum – Dimo Yosifov
- Revision #560 ISAC Vacuum – Joe Miltenberger

3 RESPONSIBILITIES

3.1 Overall Responsibility: TRSG

3.2 Specific Responsibility:

TRPG - initiating the taking of gas sample, collecting and accessing the gas sample.

ISAC Operators – providing support during the collection of the gas sample

Vacuum – providing necessary assistance

Controls Group – providing necessary assistance

4 PROCESSES

The processes associated with this procedure are:

- 1. Preparation for new radioactive target run.**
- 2. Obtaining a gas sample from the decay storage tank.**
- 3. Radioactive assessment of the gas sample.**
- 4. Release of Decay storage tank content.**