Kinetics Controls & Innovation Ltd

Case History

The Operations Team for Customer have a requirement to place temporary isolations on an 18” spool piece on K-3110A 1st stage compressor pipe work and a vertical 12” spool on 1 A discharge Header to create a double barrier for construction work. The spool pieces are located on the compressor mezzanine and level 2 mezzanine decks.

1st Stage compressor Suction Scrubber 18” Pipe work showing spool piece

Short Method Overview

1. Close both valves VB31079 and VB31080
2. Connect the deployment manifold to ¾” drain valve VL31083
3. Pressure test with product against closed valve VL31083.
4. Mix and deploy 330 litres of IBS (Extended formula)
5. A PBU will be recorded when IBS hits the leak paths
6. A sample will be taken to gauge curing time and sealant structure
7. Once isolation in place Talisman procedure for integrity test.

Objectives:

To safely inject IBS compound into designated spool pieces to create a temporary Mechanical barrier for future maintenance projects to take place.

1 A Discharge Header Valves and Spool

Short Method Overview:

1. Connect the deployment manifold to the ¾” tap flange double block & Bleed valves
2. Pressure test with product against closed valves.
3. Close lower Valve VB31103
4. Open upper valve 10% VB31104
5. Mix and deploy 120litres of IBS (Standard formula)
6. Close the upper valve VB31104
7. Leave a sample to gauge curing time and seal structure.
8. Allow sealant allotted time to cure
9. Once isolation in place Talisman procedure for integrity test.

Scope of Operations

The task for KCI will be to establish an isolation by pumping IBS into the spool pieces between VB31079 and VB31080 through ¾" drain valve VL31083. The 1 A discharge Header VB31103 and VB31104 through ¾" double isolation valves VL31005 and VL31006.

The IBS will be pumped into the spool piece using KCI barrel pumps. It will be pumped in dry due to the gas pipeline. A balanced pressure will need to be achieved during pumping operations and during IBS curing time (subject to sample taken).

The IBS will be prepared in 60 litre batches due to the potential wastage if operations stop due to unplanned equipment problems and to reduce the likelihood of contamination of the base product. When deployed the IBS will build up and fill the cavity to eventually cure to a solid flexible isolation.

Once 120 and 330 litres respectively of IBS has been deployed and the IBS has started to cure, a balanced pressure has to be maintained throughout the curing process. It would take approximately 3 to 4 hrs and 7 to 8 hrs to deploy the IBS into the separate spool pieces.

Contingency Operations

In the event that the first application has not rectified the leak completely or filled the spool Piece completely an additional amount of IBS can be added and pumped into the spool to boost the initial application. The additional IBS Will bond with the original application to Improve and add to its sealing capabilities.

Breaker Contingency Operations

Further breaker solution can be added at AP3105 if it is deemed necessary to aid the flow from the suction scrubber.

Flushing Operations

The pumps and the hose lines will be flushed with potable water after each application to keep the system in good order. The flushing and discharge must be put through to closed drains or pumped into an environmental receptacle.

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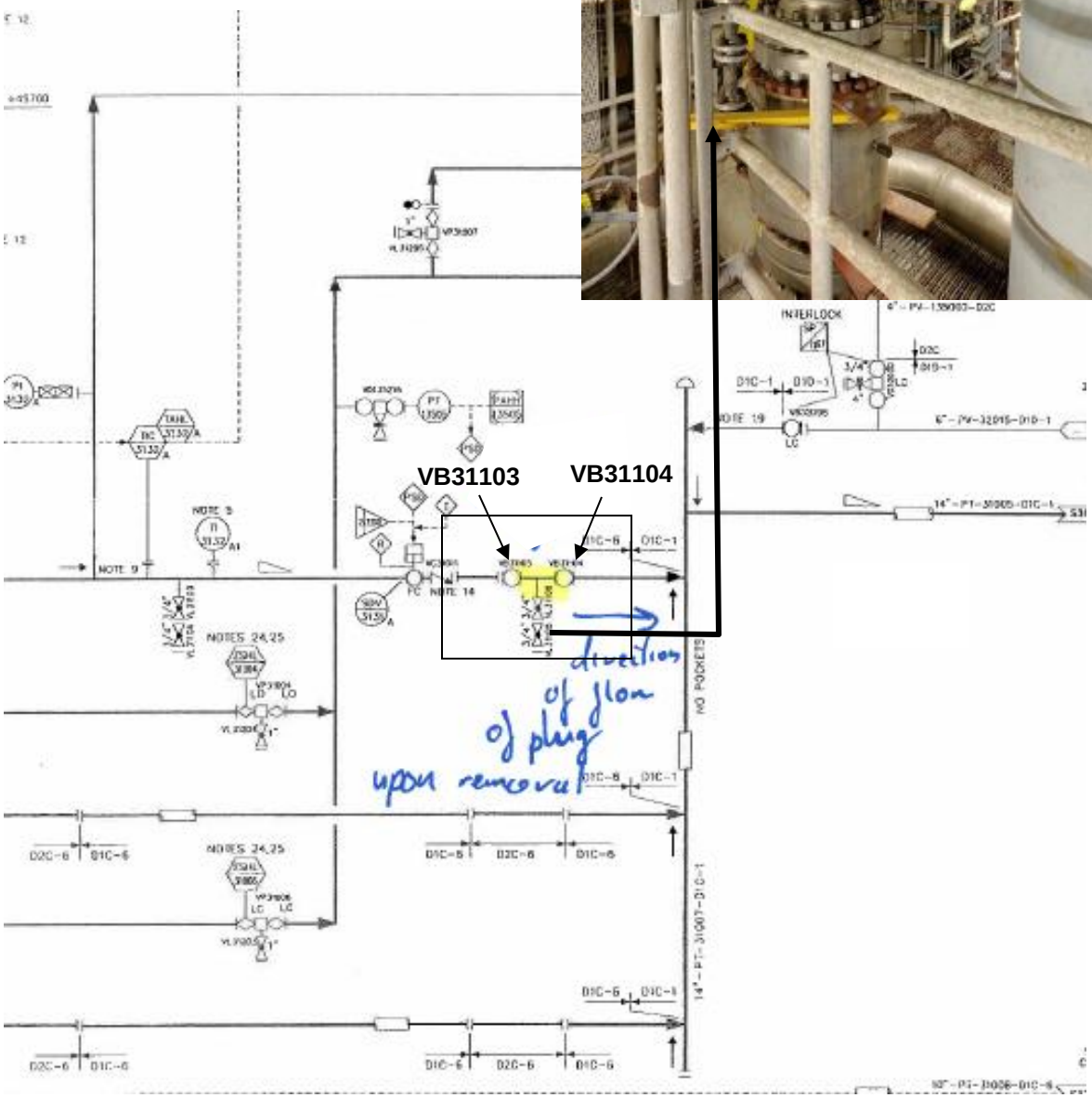
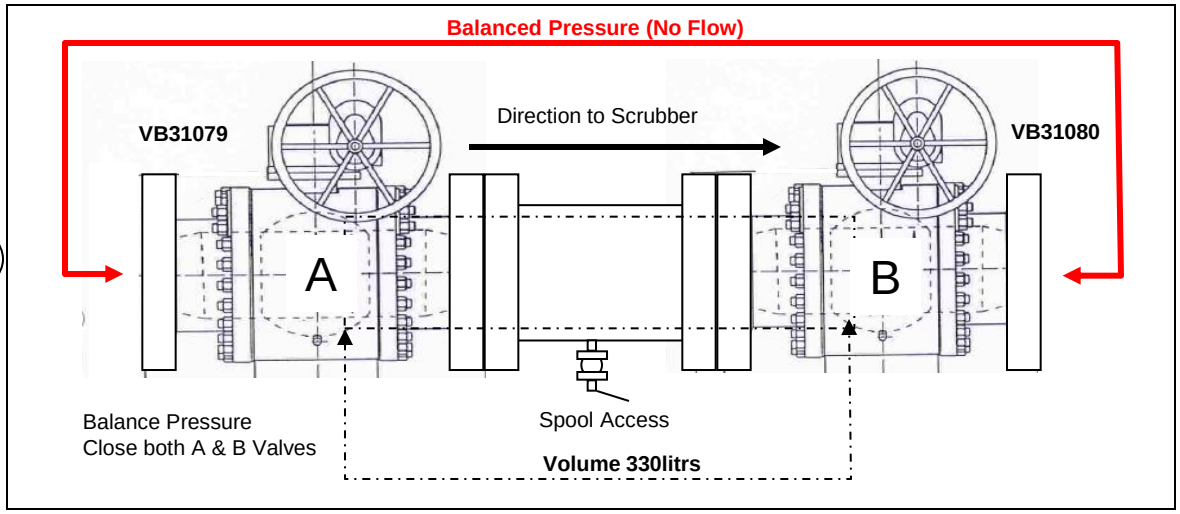
VB31079 VB31080

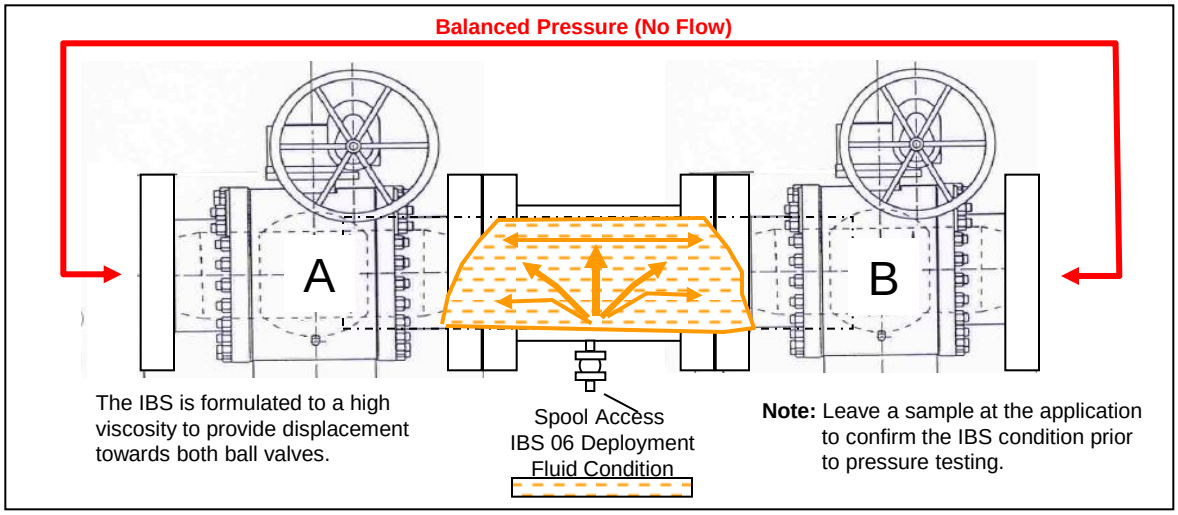

1A


VB31103
VB31104
direction of flow of plug upon removal

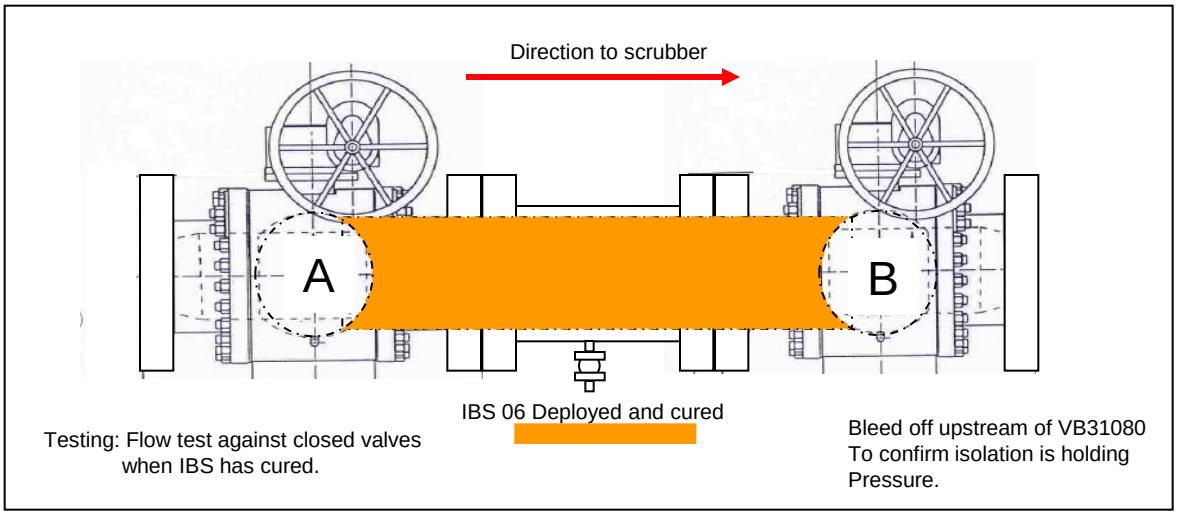
1


Balanced Pressure (No Flow)
VB31079
Direction to Scrubber
VB31080
A
B
Balance Pressure
Close both A & B Valves
Spool Access
Volume 330litrs

2


Balanced Pressure (No Flow)
A
B
The IBS is formulated to a high viscosity to provide displacement towards both ball valves.
Spool Access
IBS 06 Deployment
Fluid Condition
Note: Leave a sample at the application to confirm the IBS condition prior to pressure testing.

3


Direction to scrubber
A
B
IBS 06 Deployed and cured
Testing: Flow test against closed valves when IBS has cured.
Bleed off upstream of VB31080
To confirm isolation is holding
Pressure.

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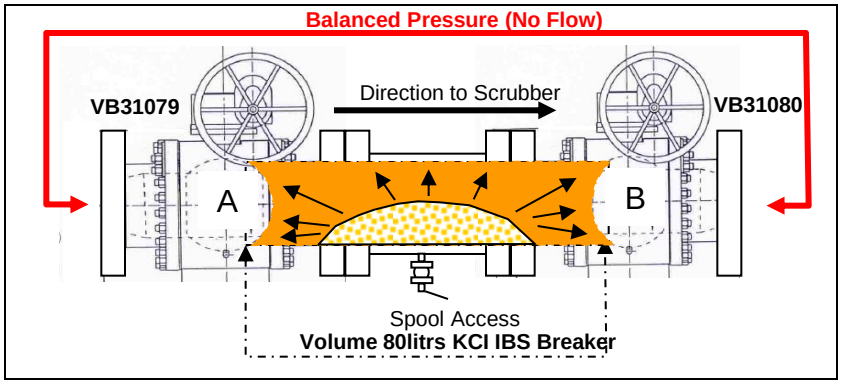
First Stage Suction Scrubber
18” Horizontal Isolation Between Ball Valves
Method Review- IBS Removal (Breaker)

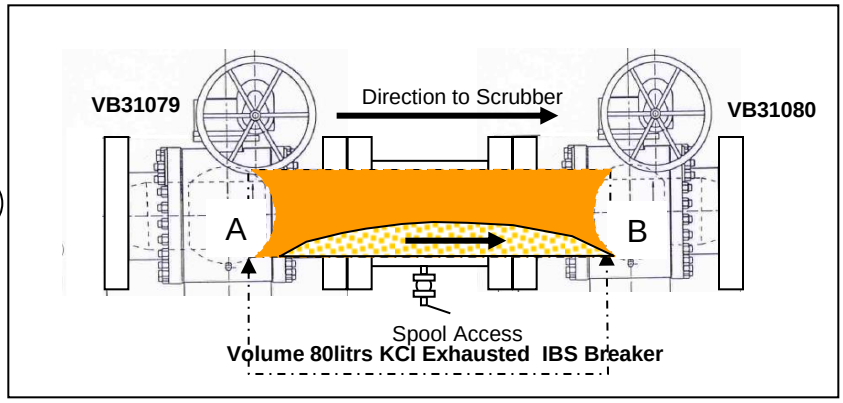
1



The IBS will compress internally allowing the IBS Breaker to establish and maintain a small PBU (pressure Build Up) within the spool and gel pig structure.

Allow 6 hours for the breaker to dilute a portion of the solid IBS under fluid compression.

2

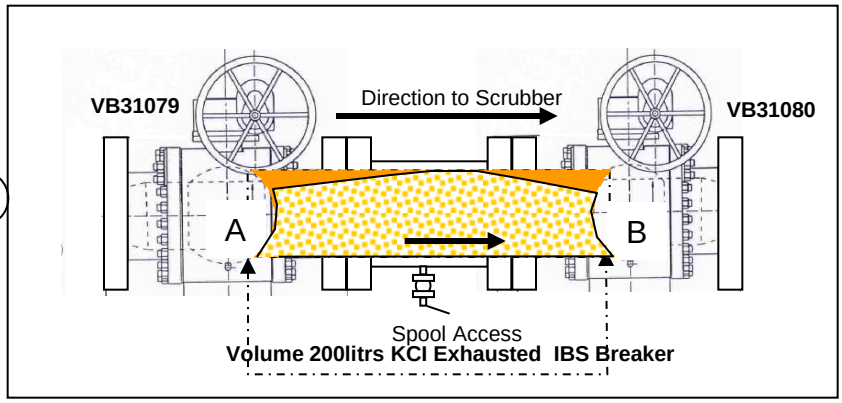


Open Valve B (VB31080) 10% to allow the exhausted breaker to flow through towards the scrubber. The valve will retain the remaining solid IBS.

Closed valve B (VB31080) and maintain the balanced pressure if possible.

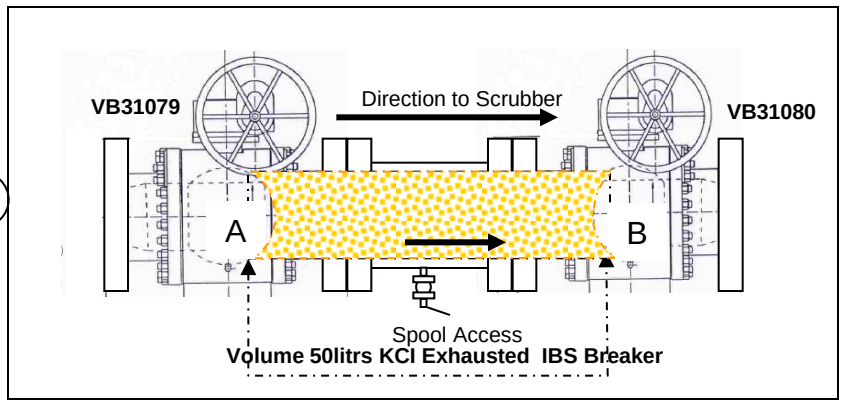
This operation will be required to be completed a number of times to reduce the solid IBS with an increased volume of breaker on each application.

3



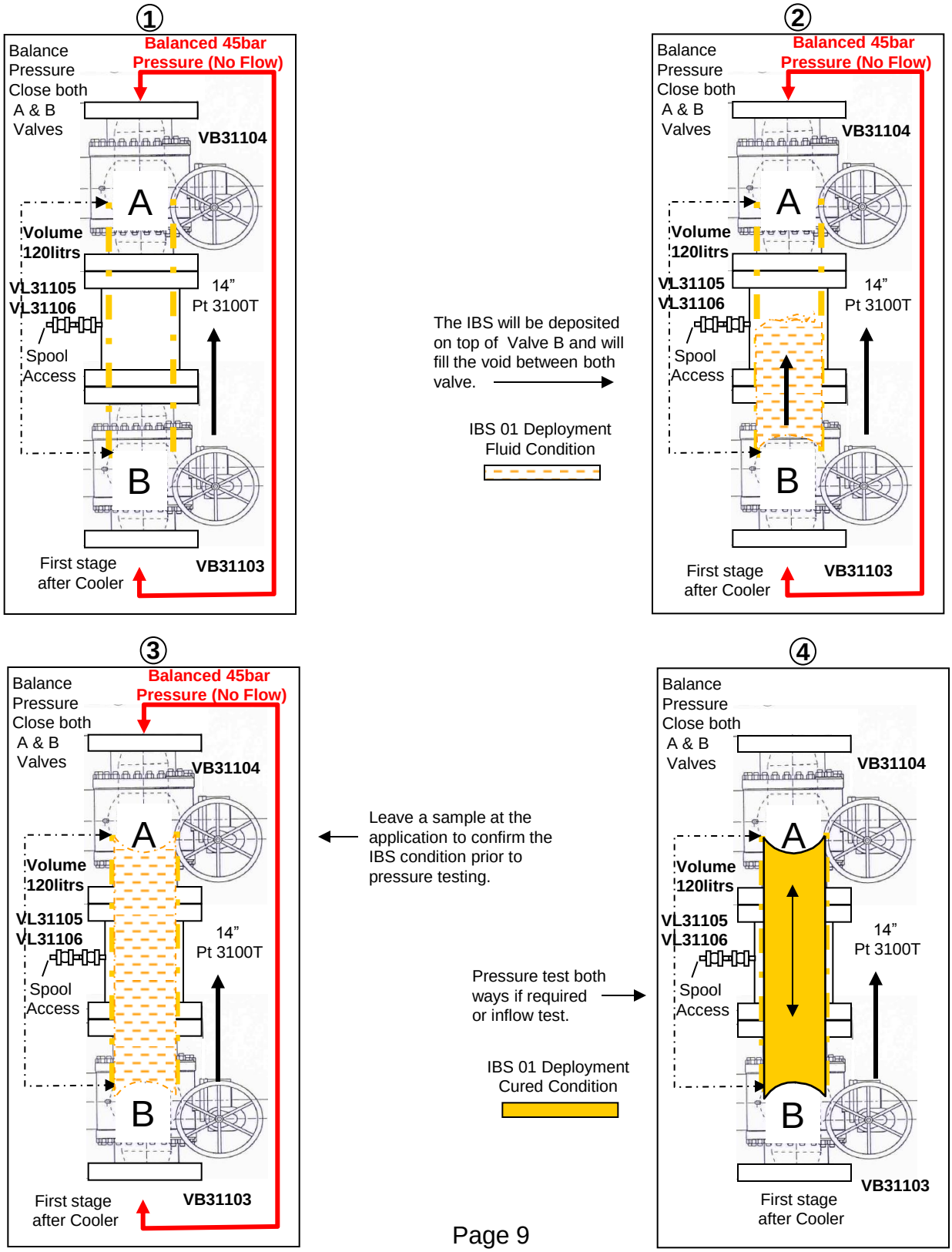
As above.

4



Open both Ball Valve, i.e. A-VB31079 and B-VB 31080 and flush / drain to the suction scrubber.

Total volume of IBS Breaker 330Litres


①
Balance Pressure Close both A & B Valves
Balanced 45bar Pressure (No Flow)
VB31104
A
Volume 120litrs
VL31105
VL31106
Spool Access
14" Pt 3100T
B
First stage after Cooler
VB31103
②
Balance Pressure Close both A & B Valves
Balanced 45bar Pressure (No Flow)
VB31104
A
Volume 120litrs
VL31105
VL31106
Spool Access
14" Pt 3100T
B
First stage after Cooler
VB31103
The IBS will be deposited on top of Valve B and will fill the void between both valve.
IBS 01 Deployment Fluid Condition
③
Balance Pressure Close both A & B Valves
Balanced 45bar Pressure (No Flow)
VB31104
A
Volume 120litrs
VL31105
VL31106
Spool Access
14" Pt 3100T
B
First stage after Cooler
VB31103
Leave a sample at the application to confirm the IBS condition prior to pressure testing.
④
Balance Pressure Close both A & B Valves
VB31104
A
Volume 120litrs
VL31105
VL31106
Spool Access
14" Pt 3100T
B
VB31103
First stage after Cooler
Pressure test both ways if required or inflow test.
IBS 01 Deployment Cured Condition

First Stage Suction Scrubber
12” Vertical Isolation Between Ball Valves
Method Review- IBS Deployment

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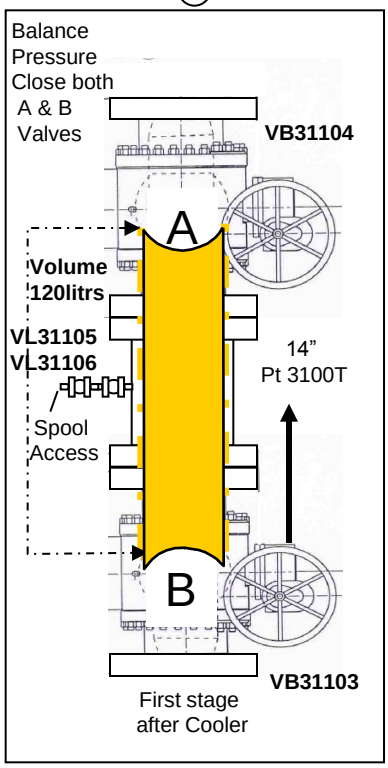
①



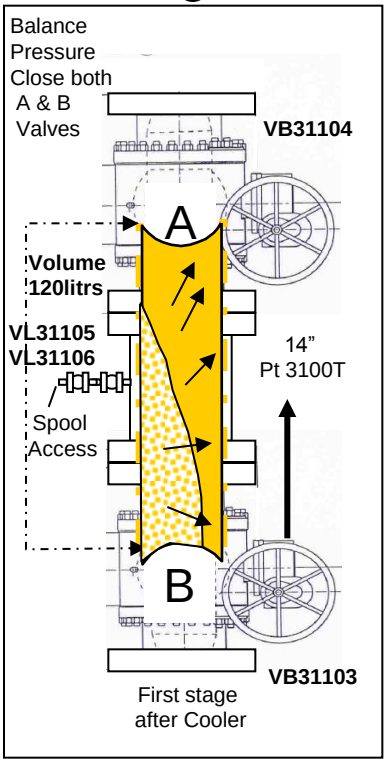
The IBS will compress internally allowing the IBS Breaker to establish and maintain a small PBU (pressure Build Up) within the balanced structure.

Allow 6 hour for the breaker to dilute a portion of the solid IBS.

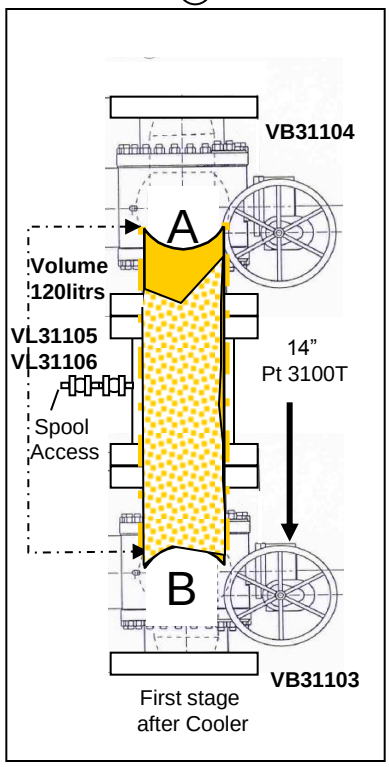
IBS Breaker Deployment

IBS 01 Deployment Cured Condition

②



③



Open Valve B (VB31103) 10% to allow the exhausted breaker to drain through to words the Header. The valve will retain the remaining solid IBS.

Closed valve B (VB31103) and maintain the balanced pressure if possible.

This operation will be required to be completed a number of times to reduce the solid IBS with an increased volume of breaker on each application.

Talisman Operations to start compressor. On successful start of compressor open VB31103 and then slowly open VB31104 to flow towards the header.

Both valves open VB31104 & VB 31103 To flush & drain.

Total volume of IBS Breaker 120Litres

④