INSTALLATION OF HDSCIT Tool Hydrodynamic Isolation

Definition:

Hydrodynamic Self Centring Isolation and Test Tool (HDSCIT Tool)

PWHT: Post Weld Heat Treatment

Selecting Proper Tool and Seals

- *Determine the proper Schedule of Pipe. The best way to do this is by physical measurement of the pipe wall thickness (WT) and refer to pipe tables to determine the actual schedule.*
- *Once the Schedule of pipe has been Determined you must refer to Vital Tool Size Chart and Seal Selection Chart to determine the series of tool required to install. (Appendix A)*
- *Now that you have determined the actual tool size that needs to be installed in the pipe you now must refer to the same chart to determine which seal to use.*
- *For example, if you are installing the tool into an 8" Schedule 80/XS pipe you will need *8A-XS Seal kit. If the pipe schedule is 40/STD, you will need 8A-STD Seal Kit. If you Pipe wall Schedule 100 you will need 8B-100 Seal kit.*

***8 = Pipe Size / A = Tool Series / XS = Pipe Schedule**

NOTE: If testing is required across a welded area that has two different diameters (schedules), you must use two different seal sizes in order to match the difference in the pipe diameters and still achieve suitable pressures and a successful test.

Guidelines:

- Request a gas test (each time) prior to working in the area of the piping assembly. Certain situations will require continuous monitoring of the area and may require for each technician to wear personal monitoring devices.
- Disassemble HDSCIT Tool and have it ready to accept the VITAL Seals.
- Install one seal on the spigot of the front plate and one seal on the spigot of the back plate.
- Reassemble tool with the seals installed, hand tight.
- "De-burr" piping edges using metal file or wire brush, where applicable.
- Insert HDSCIT Tool into the pipe. The tool will centre Itself during the tightening process.
- When performing a test, the tool should be installed so that the weld being tested is centred between the two Seals, if possible.

- The fill and vent fittings must be positioned at 12 and 6 o'clock (when possible) to allow medium to properly fill the tool cavity and allow air to bleed off.

- For multi-bolt tool systems, a torque wrench may be used to tighten the compression nuts to the specified pattern and values.

- To introduce medium into the cavity of the Isolation Tool, connect a hose from the pump to the lower fitting and fill until medium begins to seep out of the upper fitting

A Hydrodynamic Isolation requires the supply of a continuous flow (water) through the tool to dissipate the heat from welding or stress relieving. The following shall identify the basic steps required to accomplish a hydrodynamic application of the HDSCIT Tool:

- Once the seal has been proven hydrostatically, connect a supply hose to the inlet (lower) fitting on the HDSCIT Tool and open the inlet valve.

NOTE: For multi-bolt Hydrodynamic Isolations the front of the HDSCIT Tool must be packed with insulation to protect from radiant heat for the PWHT process. If this is done properly the tool will remain safe and intact. If it is not done properly the tool will be exposed to the extreme heat and may melt as a result.

- Open the discharge valve sufficiently to establish a flow through the Isolation Tool while maintaining a pressure within the Tool cavity (monitored at the inlet).

- The flow through the HDSCIT Tool will need to be enough to prevent overheating of the Seal. Discharge flow from the HDSCIT Tool should be no more than warm to the touch.

- Both inlet and outlet pressures must be monitored. A decrease in the outlet pressure and flow without a corresponding decrease in the inlet pressure can indicate a problem with the seals.

- **<u>At no time should the customer or other plant contractors perform hot work without a gas test and without authorization from the installer.</u>**

- When no leaks have been found and pressure gauge holds steady, Isolation Tool seal is proven.

- Grounding: For practical purposes the tool is essentially grounded to the pipe via water. If pure water is used, you may consider using an external ground to prevent arcing from the pipe to the tool during the welding process.

- Loosen compression nut(s) until VITAL HDSCIT Tool is movable within the piping assembly.
- Remove HDSCIT Tool from piping assembly area (pull out and dissemble).
- Be careful to stand beside the tool and pipe opening at this point, in the event fluid or gases have built up behind the tool and is released when the tool is loosened.
- Isolation completed once all inspection forms and sign-off sheets have been completed and the tools and the area have been cleaned up.