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| Form Number<br>LLCF-044 | Issue Date 03/17/16                           | Revision Date 06/15/23 | Form Number<br>LLCF-044 |
|                         | <b>IHE Single Valve Isolation Requirement</b> |                        |                         |

**Single valve isolation method shall be defined based on:**

1. Operating pressure, fluid type, and Valve type as the main criteria. Table 1: Minimum valve isolation method requirements shall be used as the decision tool for designing an isolation.
2. Volumes and temperature of the fluid to be isolated.
3. Non-Hazardous fluid and utilities.
4. Isolation Flowchart (Page 3).

**Table 1: Minimum valve isolation method requirements:**

| Fluid Type                             |                        | Design Pressure<br>(Maximum Allowable Working Operating Pressure) |                     |                                 |
|--|------------------------|---|---------------------|---------------------------------|
|  |                        | 0 psig to 145 psi   | 146 psig to 725 psi | 726 psi and above               |
| Process fluids and hazardous utilities |                        | V = SVI   | V = SVI             | V = DBB<br>MOC Required for SVI |
| Non-hazardous fluids and utilities     |                        | V = SVI   | V = SVI             | V = SVI                         |
| DBB                                    | Double Block and Bleed |   | Psi                 | Pounds per square inch          |
| V                                      | Valving required       |   | SVI                 | Single Valve Isolation          |

| Process fluids and hazardous fluid   | Non-hazardous utilities/fluids are:  |
|--|--|
| Flash point less than 100.4 degrees F<br>Corrosive, and toxic or irritant chemicals<br>Toxic to humans and/or the environment<br>Lube oil, steam, or hot water<br>NORM<br>Crude oil and condensate/ Natural gas liquids<br>Single valve isolation where the valve has a history of leakage<br>Nitrogen<br>Drill mud<br>Diesel oil, aviation turbine kerosene<br>Gas (e.g., methane, H2S, etc.)<br>Fluid containing hydrocarbon gas/ Process fluids<br>Non processed heated water | Air<br>Potable water<br>Untreated seawater<br>Cold Water<br>Fresh Water<br>Cooling Water |

**Note:** An isolation method that cannot meet the isolation requirements in Table 1 is classed as **non-conformant**, and an MOC must be obtained to work behind single isolation.

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### **Single valve isolation requirements**

1. Any valve used for SVI shall provide a reliable seal and have proven integrity. If the valve used for SVI fails the integrity test or the valve integrity cannot be verified, the valve shall not be used as an isolation point.
2. Verify valve is rated as per (P&IDs), operating pressure, and or temperature and application.
3. Non return valves and valves used for flow control valves shall not be used.
4. Preferred Valve types for single isolation is gate or ball type.

### **Valves not to be used**

1. Check valves shall not be used for isolations.
2. Globe valves shall not be used for isolations.
3. PSV valves shall not be used for isolations.
4. Fail open or fail closed valves shall not be used for isolations.

### **The following hazards shall be considered**

1. Type of fluid (e.g. hazardous, non-hazardous) and operating conditions (pressure, temperatures).
2. Fluid toxicity.
3. Potential for escalation if the valve integrity fails.
4. Simultaneous operations.

### **General isolation requirements**

1. All relevant drawings including Piping and Instrumentation Diagrams (P&IDs), electrical single-line drawings, electrical schematics and instrument drawings shall be verified for accuracy.
2. Drawings shall be marked up to show each isolation point and a unique identification number.
3. The isolation points on the drawings should be color coded to denote the isolation type.
4. All drawings used for isolations shall be current and prepared to provide sufficient detail to accuracy and clearly indicate how the system is going to be isolated.

### **Isolations Safeguards**

1. Gas test at intervals on hazardous utilities.
2. Pressure build-up test (i.e., checking for a leaky valve prior to starting work).
3. Regular monitoring of isolation.
4. Announce breaking containment to notify every one of potential hazards (Radio, PA, etc.).
5. Development of contingency plan against leakage.
6. Identification of back-up isolation valves, shutdown system, etc.
7. Portable firefighting kit available/ Firewatch /standby.

**Note:** Follow IHE Policy for additional information on isolation safeguards.

# Isolation Flow Chart

THE HIGHEST STANDARD OF ISOLATION WILL BE APPLIED IN EVERY CASE. POSITIVE ISOLATION MUST ALWAYS BE CONSIDERED WHEN PLANNING MAINTENANCE WORK. CONFINED SPACE AND HOTWORK CONNECTED TO A HYDROCARBON CONTAINING VESSEL OR EQUIPMENT – MUST HAVE POSITIVE ISOLATION IN PLACE. REFER TO THE GIS IHE POLICY FOR ADDITIONAL INFORMATION ON ISOLATION OF HAZARDOUS ENERGY.

This Isolation Flow Chart Defines Valve Isolation Needed to let You Perform Intrusive Maintenance & Operations, Spool Piece Removal and Valve Removal & installation.

