The Emergency Disconnect Sequence (EDS) can be activated from either the Toolpusher’s or Driller’s Control Panels (TCP or DCP). The sequence is designed to close either the High Pressure Blind Shear Ram or the High Pressure Casing Shear Ram (depending on sequence selection), CLOSE the Choke and Kill Valves and UNLATCH the LMRP Connector (along with Choke/Kill Connectors). The EDS sequences are listed at the end of this document.

The hydraulic power to perform the sequence will be primarily from the conduit; however, H/P Close (either Blind or Casing) will get their hydraulic power from the stack mounted accumulators. The conduit will in turn get its supply from the HPU (Hydraulic Power Unit) from the surface. The HPU has at least two triplex pumps to supply the pressure to the pod via the conduit.

The electrical power and communication to the pods will be from mux umbilicals. The electrical power originates from the Power and Communication Cabinet (A & B) from the surface. Each cabinet has a dedicated UPS that will supply electrical power to sub-sea for a minimum of two hours should main power from the rig be interrupted or removed. The EDS commands to the sub-sea equipment originate at the DCP or TCP. The commands are then routed to the Power and Communication Cabinets (A & B) via the surface network. The commands are then sent to the SEM (Sub-sea Electronics Module) on the pod via the mux umbilical.
## EDS, Blind Shear Ram (Regular) Close Sequence for TSF Horizon

| T=0 (seconds) | Start EDS  
Command to Pods: Unlock all functions that were locked by BOP Workstation (CCU). |
|--------------|-------------------------------------------------------------------------------------------------|
| T=1          | Command to Pods:  
HP Shear Close(Blind Ram)  
Retract Wellbore P/T Connector  
Lock ST Locks  
Stack Accumulator Charge OPEN  
Close Blind Shear Rams (for panel indication only)  
Close Upper Inner Choke  
Close Upper Outer Choke  
Close Lower Inner Choke  
Close Lower Outer Choke  
Close Upper Inner Kill  
Close Upper Outer Kill  
Close Lower Inner Kill  
Close Lower Outer Kill |
| T= 2         | Commands to Pods:  
Vent Blind Shear Rams (for panel indication only) |
| T=5          | Commands to Pods:  
Unlatch Choke/Kill Connector Primary  
Unlatch Choke/Kill Connector Secondary |
| T=18         | Commands to Pods:  
Vent Upper Annular Preventer  
Vent Lower Annular Preventer  
Isolate - Stack Accumulator Charge  
Isolate - Stack Accumulator Dump  
Vent Blind Shear Rams  
Vent H/P Shear Close (Casing/Shear Ram)  
Vent Casing Shear Rams  
Vent Upper Inner Kill  
Vent Upper Outer Kill  
Vent Upper Outer Choke  
Vent Upper Inner Choke  
Vent Upper Pipe Ram Preventer  
Vent Lower Outer Choke  
Vent Lower Inner Choke  
Vent Middle Pipe Ram Preventer  
Vent Lower Pipe Ram Preventer  
Vent Lower Inner Kill  
Vent Lower Outer Kill  
Vent Wellhead Connector Gasket Release  
Vent Wellhead Connector Secondary |
<table>
<thead>
<tr>
<th>Time (T)</th>
<th>Commands to Pods</th>
</tr>
</thead>
</table>
| T=22    | Vent Wellhead Connector Primary  
Vent AutoShear |
| T=23    | Commands to Pods:  
Vent High Pressure Shear Close (Blind/Shear Ram)  
Vent ST Locks |
| T=25    | Commands to Pods:  
Output signal to HydraLift System (Dry Contact *)  
De-energize Stack Stinger Seals (Blue & Yellow) |
| T=26    | Commands to Pods:  
Retract Stack Stingers  
Unlatch LMRP Connector Primary  
Unlatch LMRP connector Secondary |
| T=46    | EDS is complete  
Reset internal variables  
Commands to Pods  
Vent LMRP Connector Regulator Quick Increase |
### EDS, Casing Shear Ram (Casing) Close Sequence for TSF Horizon

<table>
<thead>
<tr>
<th>Time (Seconds)</th>
<th>Commands to Pods</th>
</tr>
</thead>
</table>
| **T=0** (seconds) | Start EDS  
Command to Pods: Unlock all functions that were locked by BOP Workstation (CCU). |
| **T=1** | Command to Pods:  
Energize HP Shear Close(Casing Ram)  
Retract Wellbore Pressure/Temperature Connector  
Stack Accumulator Charge OPEN  
Close Casing Shear Rams (for panel indication only) |
| **T=2** | Commands to Pods:  
Close Upper Inner Choke  
Close Upper Outer Choke  
Close Lower Inner Choke  
Close Lower Outer Choke  
Close Upper Inner Kill  
Close Upper Outer Kill  
Close Lower Inner Kill  
Close Lower Outer Kill  
Vent Casing Shear Rams (for panel indication only) |
| **T=5** | Commands to Pods:  
Unlatch Choke/Kill Connector Primary  
Unlatch Choke/Kill Connector Secondary |
| **T=25** | Commands to Pods:  
Energize HP Shear Close(Blind Ram)  
Close Blind Shear Rams (for panel indication only)  
Lock ST Locks |
| **T=43** | Commands to Pods:  
Vent Upper Annular Preventer  
Vent Lower Annular Preventer  
Isolate - Stack Accumulator Charge  
Isolate - Stack Accumulator Dump  
Vent Blind Shear Rams  
Vent H/P Shear Close (Casing/Shear Ram)  
Vent Casing Shear Rams  
Vent Upper Inner Kill  
Vent Upper Outer Kill  
Vent Upper Outer Choke  
Vent Upper Inner Choke  
Vent Upper Pipe Ram Preventer  
Vent Lower Outer Choke |
<table>
<thead>
<tr>
<th>Time (T)</th>
<th>Commands to Pods</th>
</tr>
</thead>
</table>
| 51 | Vent High Pressure Shear Close (Blind/Shear Ram)  
|      | Vent ST Locks |
| 52 | Output signal to HydraLift System (Dry Contact *)  
|      | De-energize Stack Stinger Seals (Blue & Yellow) |
| 54 | Retract Stack Stingers  
|      | Unlatch LMRP Connector Primary  
|      | Unlatch LMRP connector Secondary |
| 55 | Energize LMRP Connector Regulator Quick Increase |
| 75 | EDS is complete  
|      | Reset internal variables  
|      | Commands to Pods  
|      | Vent LMRP Connector Regulator Quick Increase |
The AMF (Automatic Mode Function) or deadman can be armed from either the Toolpusher’s or Driller’s Control Panels (TCP or DCP). Once armed, must be via the TCP or DCP, the AMF cards in the SEM look for three conditions. When and only if ALL conditions are satisfied then the AMF card will route power to the SEM (via the batteries inside the SEM) and execute the AMF sequence listed at the end of the document.

The three conditions are:

1. Loss of electrical power and communication from the mux umbilical.
2. Loss of communication from the other pod (or SEM).
3. Loss of conduit pressure.

The hydraulic power to perform the sequence will be from the stack mounted accumulators.
**AMF Sequence for TSF Horizon**

| T=0 (seconds) | Commands to Pod:  
|              | LMRP Stinger Extend  
|              | Stack Stinger Extend |

| T=5          | Commands to Pod:  
|              | LMRP Stinger Seals Energize  
|              | Stack Stinger Seals Energize |

| T=7          | Commands to Pod:  
|              | Vent LMRP Stinger Extend  
|              | Vent Stack Stinger Extend  
|              | H/P Blind Shear Ram Close |

| T=37         | Vent H/P Blind Shear Ram Close |

|             | End of Sequence |
Auto Shear

A trigger valve between the LMRP and Stack plates will activate the Blind Shear Ram and Blind Shear ST Lock functions. The Auto Shear function must be “Armed” via the function on the DCP or TCP (Auto Shear, ARM).

The hydraulic power to close the Blind Shear Ram will be primarily from the stack mounted accumulators.