

SEAFOM SYSTEM CONFIGURATIONS

1. Down Hole Architecture
Down Hole Feedthrough System (DHFS) generic configuration
2. Subsea Horizontal Tree Architecture
Fiber feedthrough and penetration
3. Subsea Vertical Tree Architecture
Fiber feedthrough and penetration
4. Fiber Sensor Instrumentation on Surface – Fiber sensor downhole
Communication through SCM to topsides via fiber in umbilical
5. Fiber Sensor Instrumentation on Seabed – Fiber sensor downhole
Communications directly to surface from fiber sensor instrumentation on seabed
6. Fiber Sensor Instrumentation on Seabed – Fiber sensor downhole
Communications to surface via SCM/Surveillance module
7. Fiber Sensor Instrumentation on Seabed – Fiber sensor along jumper/pipeline
Communications to surface via SCM/Surveillance module
8. Fiber Sensor Instrumentation on Seabed – Fiber sensor along jumper/pipeline
Communications directly to surface from fiber sensor instrumentation on seabed
9. Seabed Seismic System Architecture
Seabed optical seismic array sensors with wet connects
10. Onshore Dry Tree Architecture
11. Subsea Architecture Document Map

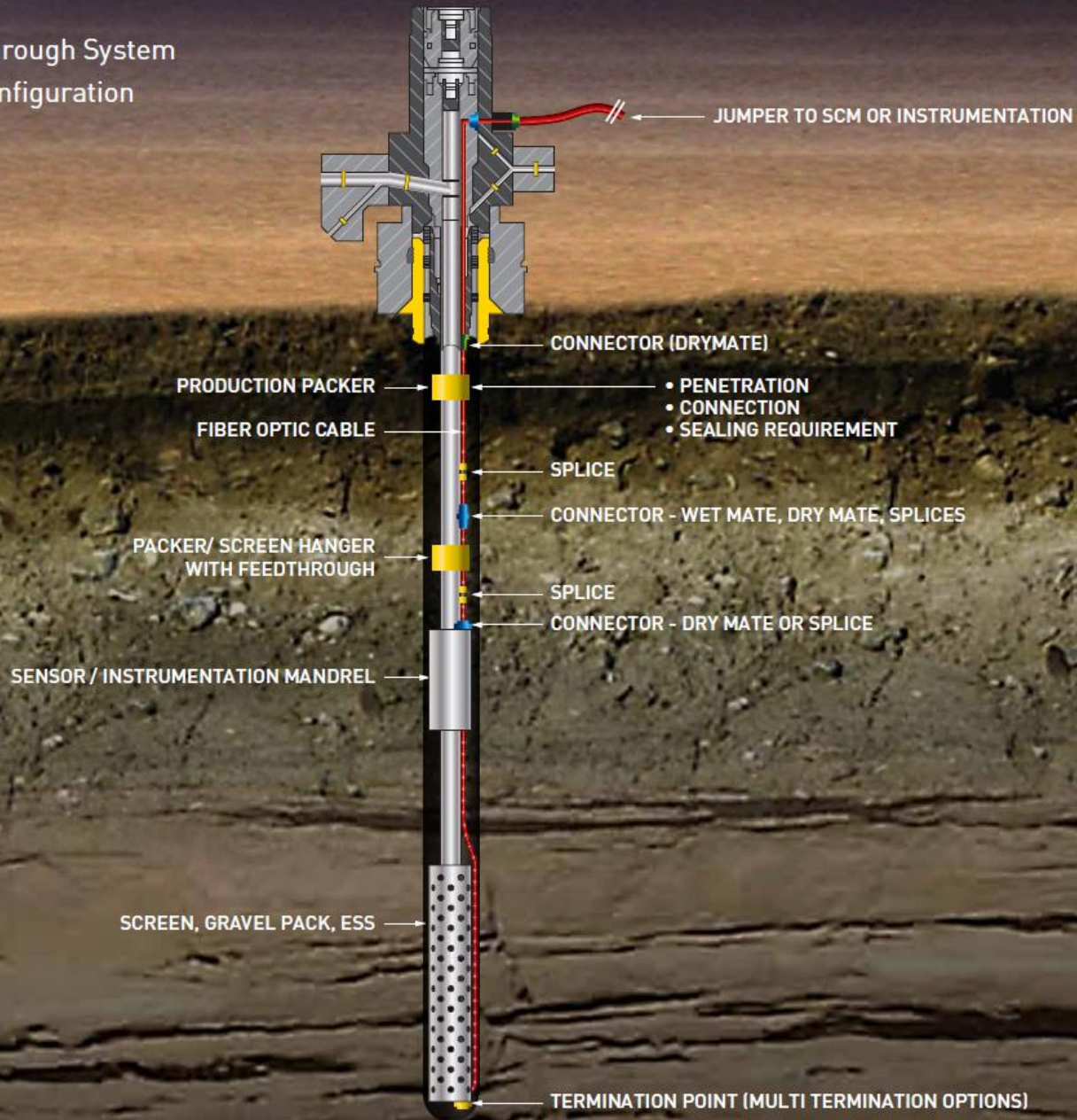


GLOSSARY OF ACRONYMS:

DCS	Distributed Control System	PLET	Pipeline End Termination
DHFS	Down Hole Feedthrough System	ROV	Remotely Operated Vehicle
ESS	Expandable Sand Screen	SCADA	Subsea Control and Data Acquisition
FO	Fiber Optic	SCM	Subsea Control Module
IWIS	Intelligent Well Interface Standardisation	TH	Tubing Hanger
MCS	Master Control System	UTA	Umbilical Termination Assembly
MOD	Module	WHO	Wellhead Outlet
		WM	Wet Mate

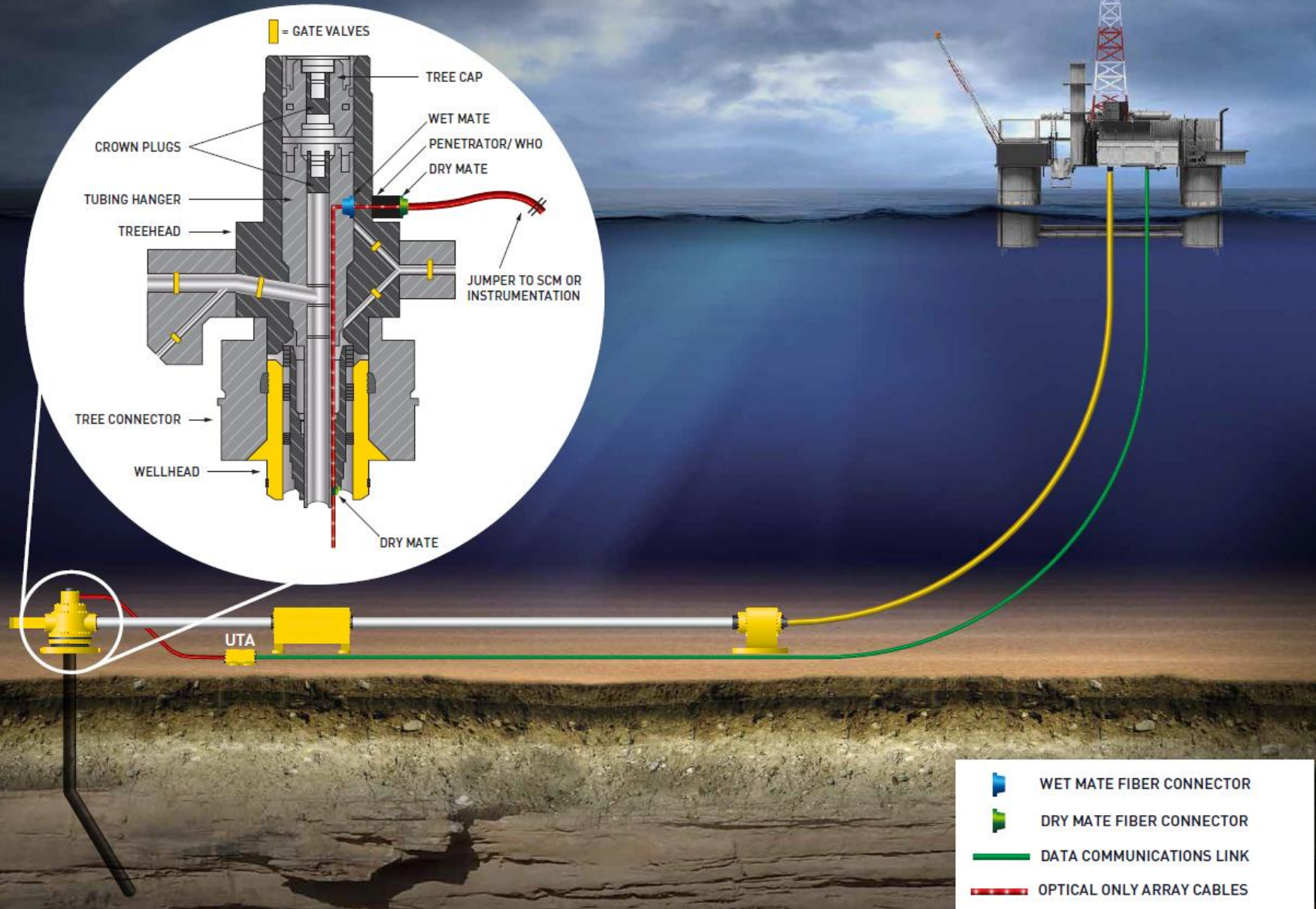
1. DOWN HOLE ARCHITECTURE

- Down Hole Feedthrough System (DHFS) generic configuration



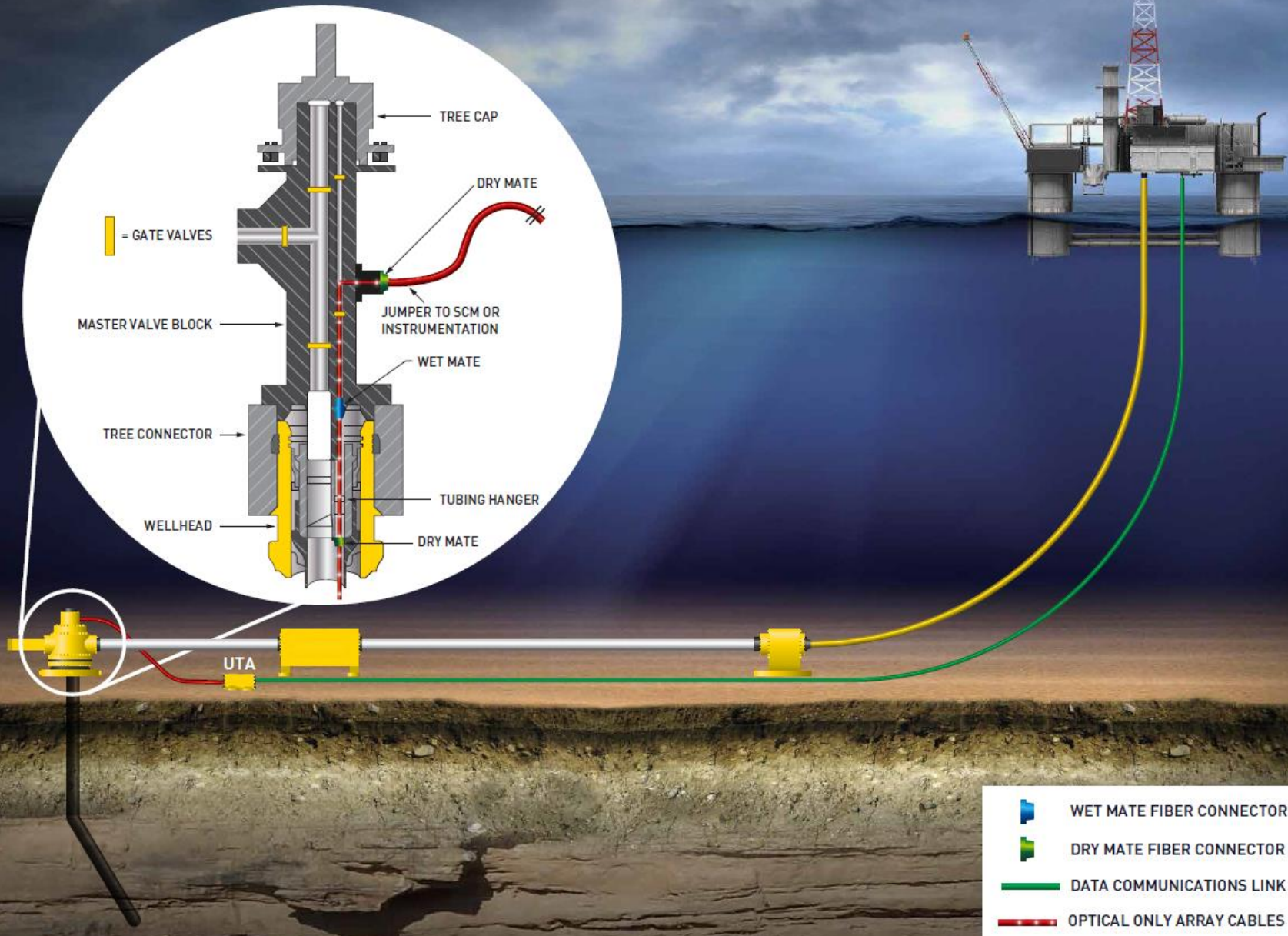
2. SUBSEA HORIZONTAL TREE ARCHITECTURE

- Fiber feedthrough and penetration



3. SUBSEA VERTICAL TREE ARCHITECTURE

- Fiber feedthrough and penetration



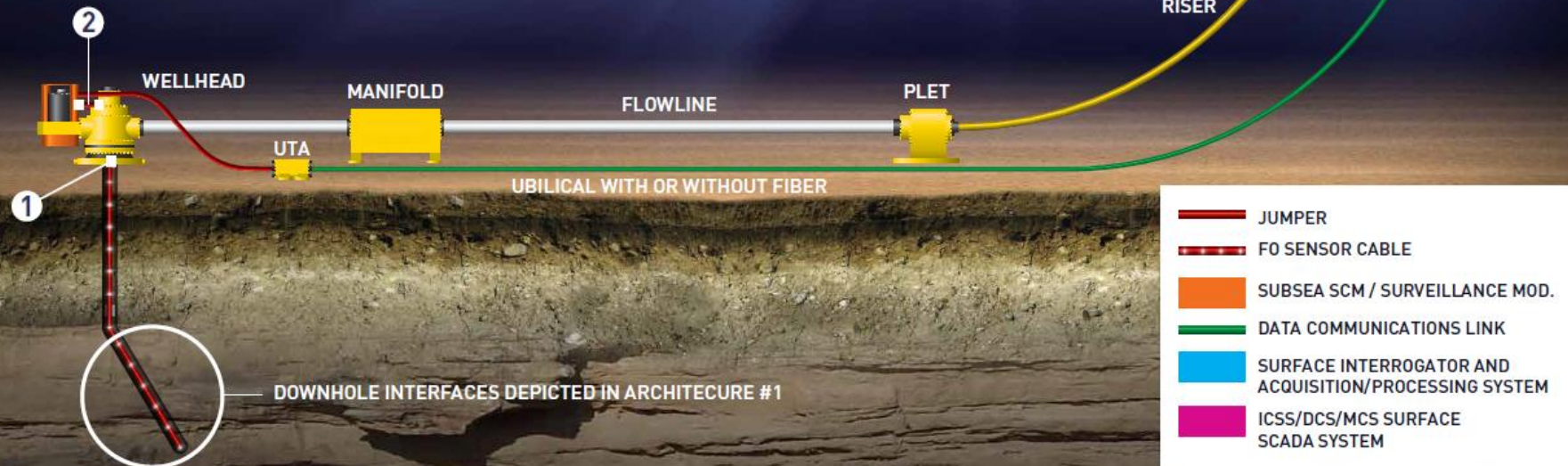
4. FIBER SENSOR INSTRUMENTATION ON SURFACE

- Fiber sensor downhole
- Communication through SCM to topsides via fiber in umbilical

Interfaces:

1. TH feedthrough (fiber)
2. WHO to subsea SCM / Surveillance module **NOTE 1**
3. Interface from surface interrogator and acquisition / processing system to umbilical termination (fiber)
4. Interface from surface interrogator and acquisition / processing system to DCS/ICSS

Note 1: See IWIS options



5. FIBER SENSOR INSTRUMENTATION ON SEABED

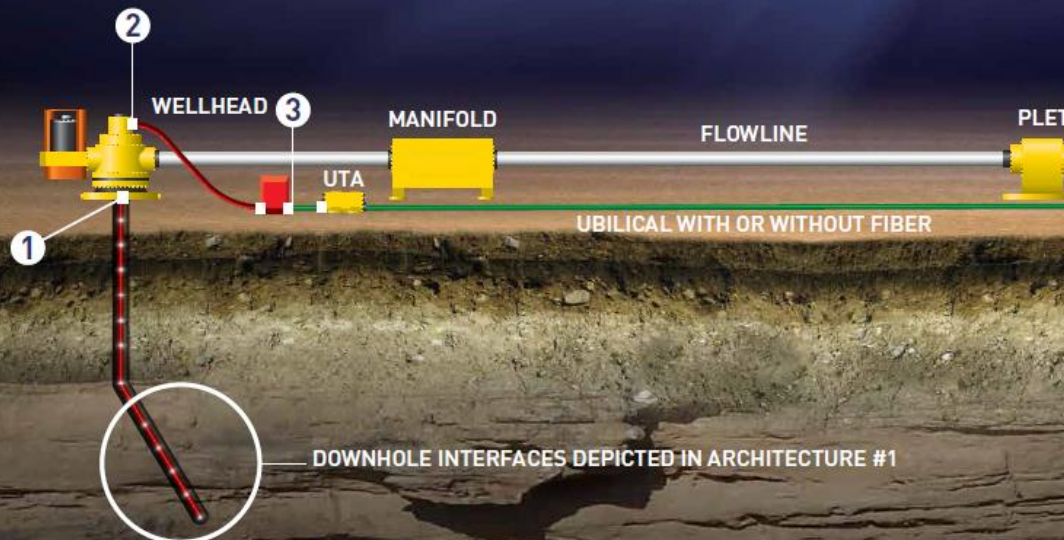
- Fiber sensor downhole
- Communications directly to surface from fiber sensor instrumentation on seabed
- IWIS Option 3

Interfaces:

1. TH feedthrough (fiber)
2. WHO to Subsea FO interrogator module
3. Interface from FO interrogator module to subsea umbilical term. (power/comms)
4. Interface from surface umbilical termination to surface interrogator and acquisition/ processing system
5. Interface from surface interrogator and acquisition / processing system to DCS/ICSS

PRODUCTION PLATFORM

RISER



DOWNHOLE INTERFACES DEPICTED IN ARCHITECTURE #1

- JUMPER
- FO SENSOR CABLE
- SUBSEA FO INTERROGATOR MODULE
- SUBSEA SCM / SURVEILLANCE MOD.
- DATA COMMUNICATIONS LINK
- SURFACE INTERROGATOR AND ACQUISITION/PROCESSING SYSTEM
- ICSS/DCS/MCS SURFACE SCADA SYSTEM

6. FIBER SENSOR INSTRUMENTATION ON SEABED

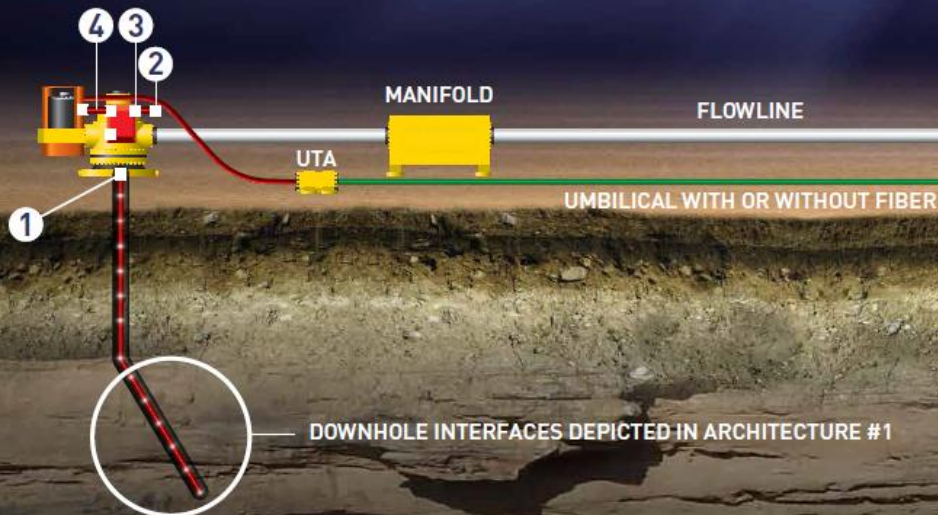
- Fiber sensor downhole
- Communications to surface via SCM/Surveillance module
- IWIS Option 2

Interfaces:

1. TH Feedthrough (fiber)
2. Wellhead Outlet (WHO) (fiber)
3. WHO to FO interrogator module (fiber)
4. Interface from FO interrogator module to SCM / Surveillance module
5. Interface from surface MCS to surface interrogator and acquisition / processing system

PRODUCTION PLATFORM

RISER



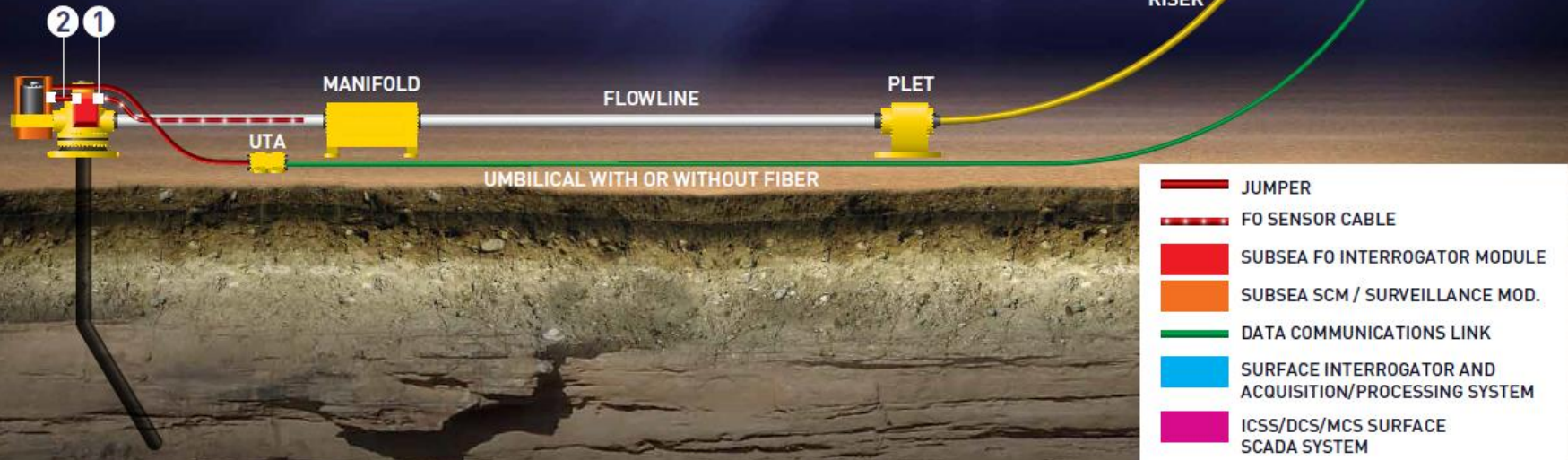
- JUMPER
- FO SENSOR CABLE
- SUBSEA FO INTERROGATOR MODULE
- SUBSEA SCM / SURVEILLANCE MOD.
- DATA COMMUNICATIONS LINK
- SURFACE INTERROGATOR AND ACQUISITION/PROCESSING SYSTEM
- ICSS/DCS/MCS SURFACE SCADA SYSTEM

7. FIBER SENSOR INSTRUMENTATION ON SEABED

- Fiber sensor along jumper/pipeline
- Communications to surface via SCM/Surveillance module

Interfaces:

1. FO interrogator module to seabed fiber – wet connect
2. Interface from FO instrumentation module on seabed to SCM module
3. Interface from surface Umbilical Termination to surface FO acquisition system
4. Interface from surface FO acquisition system to DCS/ICSS

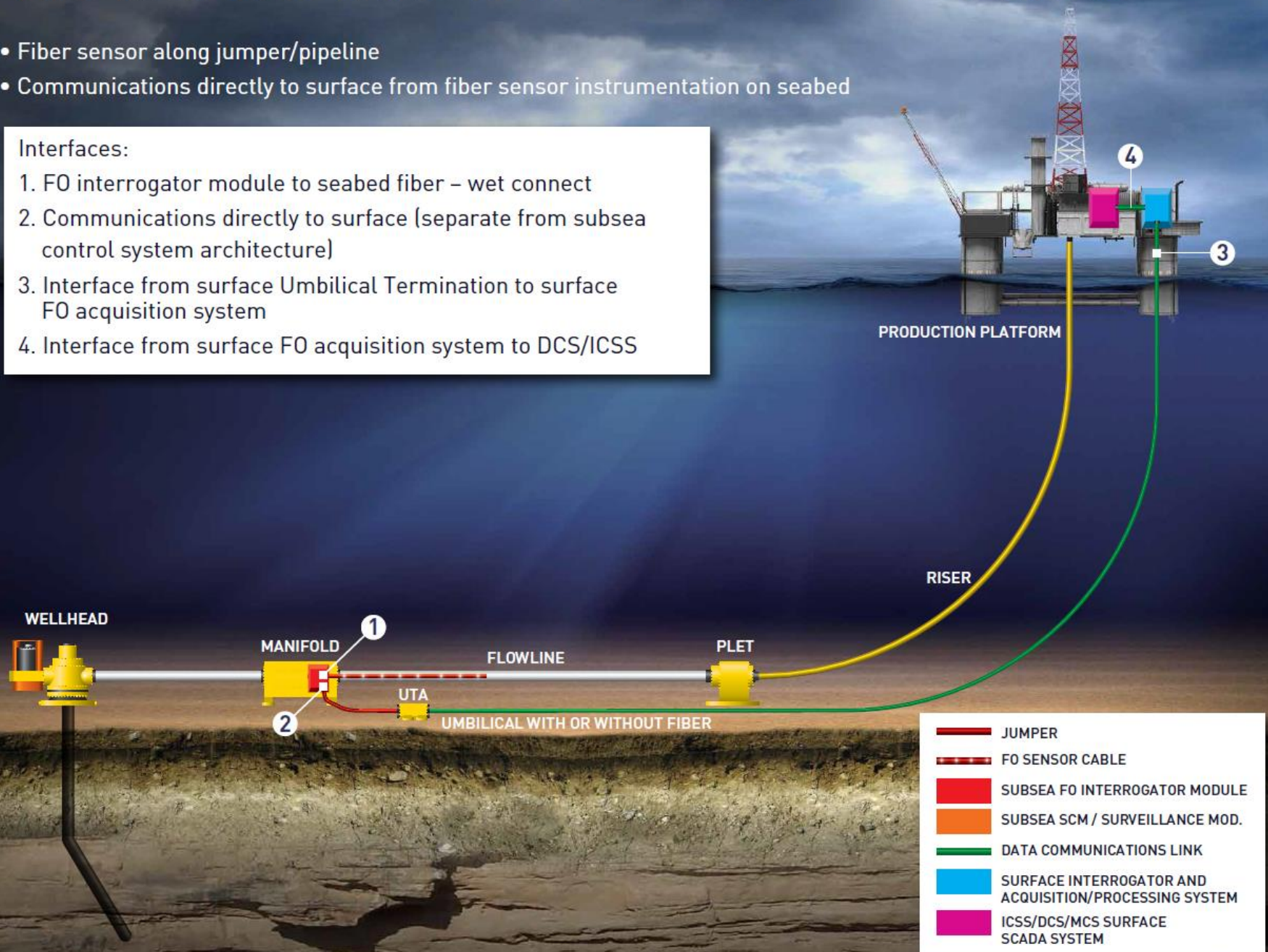


8. FIBER SENSOR INSTRUMENTATION ON SEABED

- Fiber sensor along jumper/pipeline
- Communications directly to surface from fiber sensor instrumentation on seabed

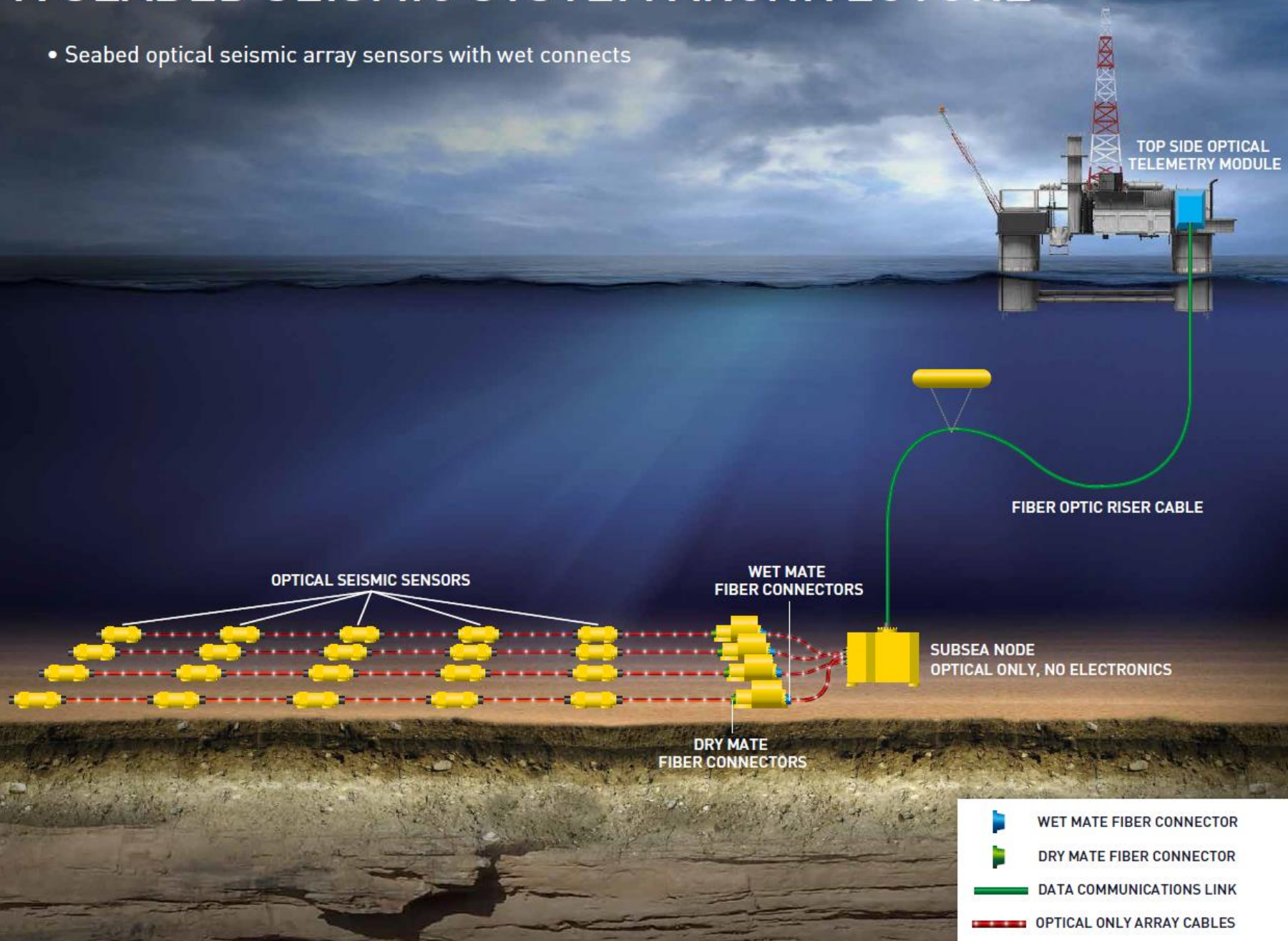
Interfaces:

1. FO interrogator module to seabed fiber – wet connect
2. Communications directly to surface (separate from subsea control system architecture)
3. Interface from surface Umbilical Termination to surface FO acquisition system
4. Interface from surface FO acquisition system to DCS/ICSS

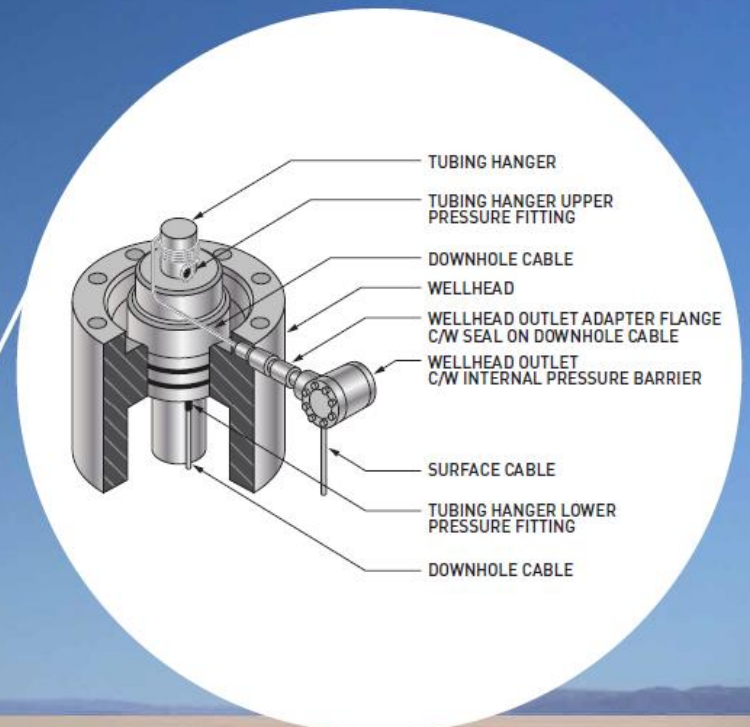
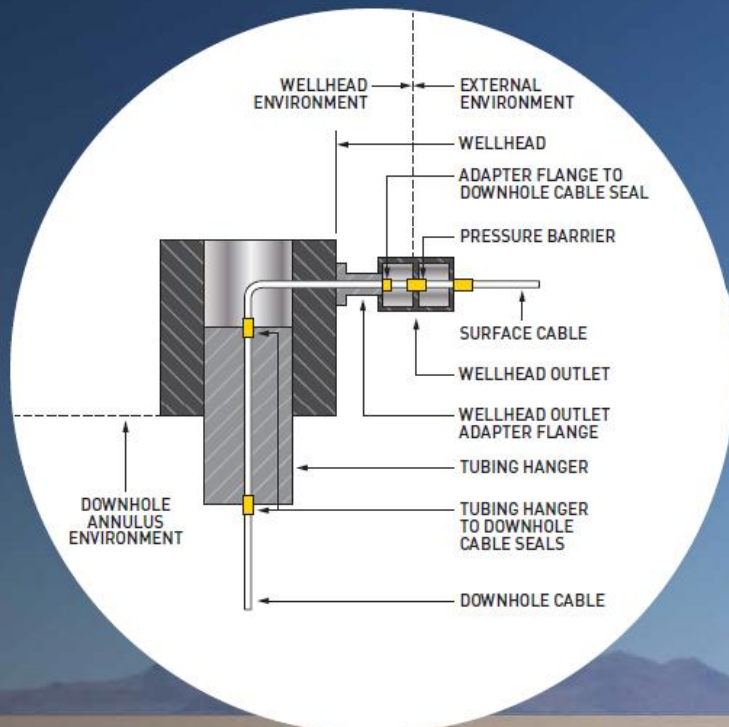


9. SEABED SEISMIC SYSTEM ARCHITECTURE

- Seabed optical seismic array sensors with wet connects



10. ONSHORE / DRY TREE ARCHITECTURE



11. SUBSEA ARCHITECTURE - DOCUMENT MAP

