

DEEP OCEAN PRESSURE SIMULATION TESTING

KEYWORDS

API-17D Tests

Performance
Verification

Hydrostatic Pressure

Stress Analysis

Design Verification

Subsea Actuators

Subsea Housings

Subsea Pressure
Vessels

Subsea Valves

Umbilical Tests

Cable Tests

Underwater Cameras

XHP-HT Tests

With more than 48 years of experience in offshore and marine technologies, Southwest Research Institute® (SwRI®) offers a wide variety of services to meet the need for deep ocean pressure simulation testing. These services provide a final check of quality and operational integrity for clients including oil producers, manufacturers of subsea components, pipeline manufacturers, and the U.S. Navy.

The SwRI Ocean Engineering and Structural Testing Laboratory has more than 10,500 square feet of climate-controlled laboratory space, with additional outdoor test facilities. Deep ocean pressure simulation test chambers range from 90 inches inside diameter, 20 feet deep to 10 inches inside diameter, 20,000 psig.

Services

- Engineering design verification
- Product evaluation
- Prototype construction
- Design and fabrication of special test fixtures for client-specified requirements
- High-speed and still underwater photography

Testing

- Internal and external hydrostatic pressure tests
- Stress analysis and acceptance tests
- Operational tests requiring electrical and hydraulic penetrations
- Collapse and burst tests on API steel pipe casing, fiberglass pipe, titanium, and stainless steel pipe
- Testing of prototype equipment, pressure housings, subsea instrumentation, cables, connectors, oil field production and safety equipment



In April 2001 the Institute installed a new vertical chamber rated at 6,000 psig, 13,480 feet, 32°F. The chamber has hydraulic and electrical penetrations, and underwater cameras are available.

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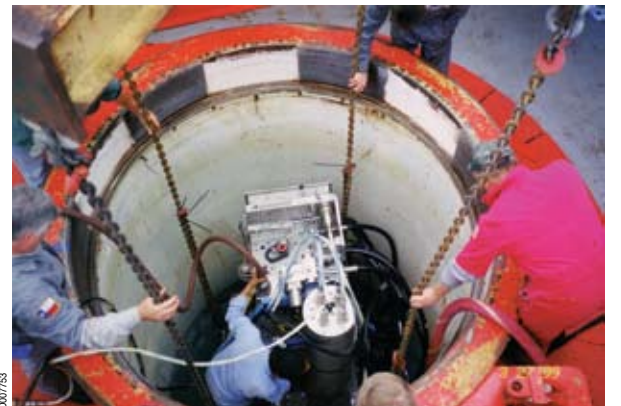
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Test chamber 20 feet deep with 90-inch inside diameter



D007752

The main pressure laboratory houses more than 10 deep ocean pressure simulation chambers which are used for static, cyclic, and destruct testing.



D007753

Subsea production assembly being prepared for test

DEEP OCEAN PRESSURE SIMULATION TEST CHAMBERS						
Maximum Pressure (psi)	Simulated Ocean Depth (feet)	Maximum I.D. (inches)	Inside Length (inches)	Minimum Temperature (°F)	Maximum Temperature (°F)	Number of Penetrations
3,300	7,415	48	178	32	200	12
4,000	8,988	90	230	32	100	30
6,000	13,483	50	288	32	100	8
10,000	22,471	6	41	32	500	2
10,000	22,471	30	114	32	200	10
10,000	22,471	9	46	32	600	4
11,000	24,719	8	90	32	600	2
20,000	44,943	10	34	32	600	6
20,000	44,943	12	120	32	400	2
20,000	44,943	15	120	32	100	4



Subsea valve being placed in test chamber

000051



Large-diameter pipe casing after collapse test

000754



Southwest Research Institute® is an independent, nonprofit, applied engineering and physical sciences research and development organization using multidisciplinary approaches to problem solving. The Institute occupies 1,200 acres in San Antonio, Texas, and provides nearly two million square feet of laboratories, test facilities, workshops, and offices for more than 3,000 employees who perform contract work for industry and government clients.

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