Continental
The Future in Motion

High Pressure
Product Overview

ContiTech

Szeged Facility

High Pressure Drilling and Production Hose Manufacturing Plant for:

- Drilling Hoses (Mud , Cement and Choke and Kill)
- Production Oil & Gas Hoses
- Hose Design
- Research and Development
- Prototype Testing
- FAT Testing
- Packing and Shipping

Certified for all relevant API Standards

ContiTech

Certificate of Authority to use the Official API Monogram
License Number: 7K-0008 ORIGINAL

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Effective Date: OCTOBER 15, 2016
Expiration Date: OCTOBER 15, 2019

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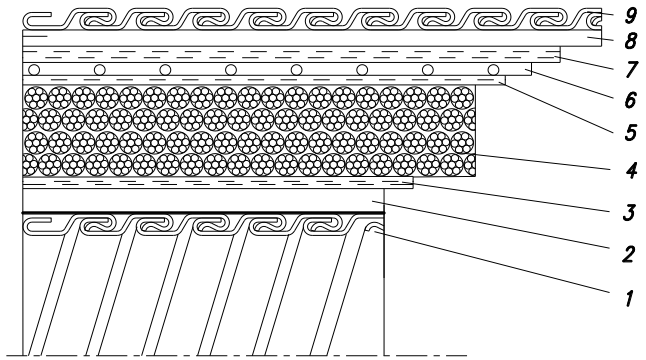
Vice President, API Global Industry Services

American Petroleum Institute

API 17K-0001

Hose Construction



1: Stripwound tube, SS AISI 316L Interlock

2: Lining

3: Textile plies, Rubberised textile

4: Reinforcing plies (4 layers), Steel cables with high strength steel wire

5: Textile plies, Rubberised textile

6: Binding, Steel cable

7: Cover textile plies, Rubberised textile

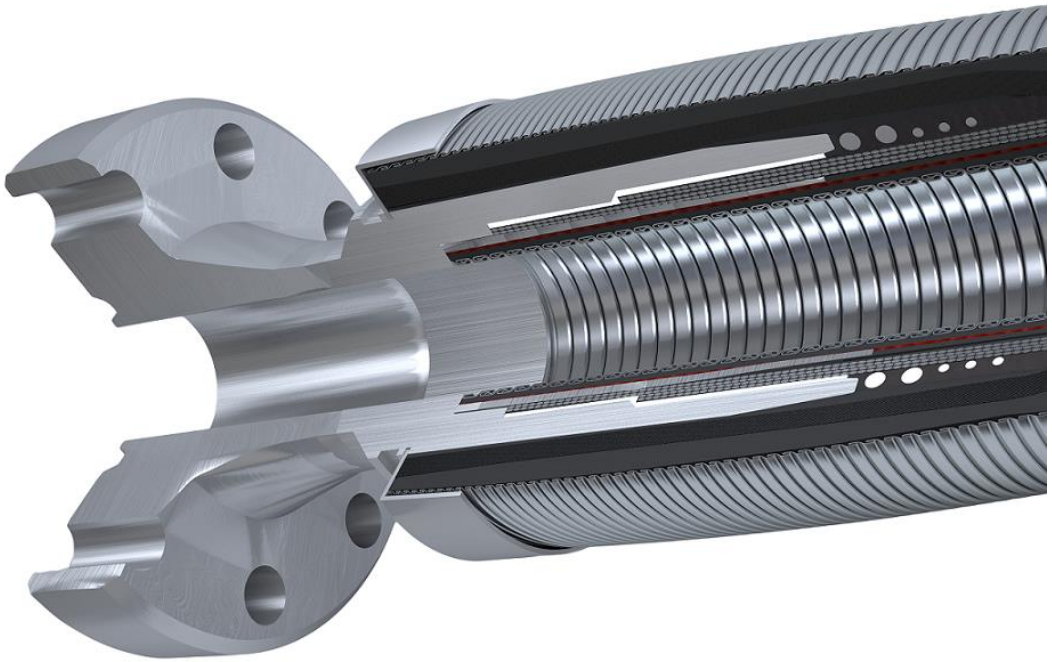
8: Cover, Special elastomer compound

9: Stripwound tube, SS AISI 316L Interlock

ContiTech Bonded in Coupling

ContiTech

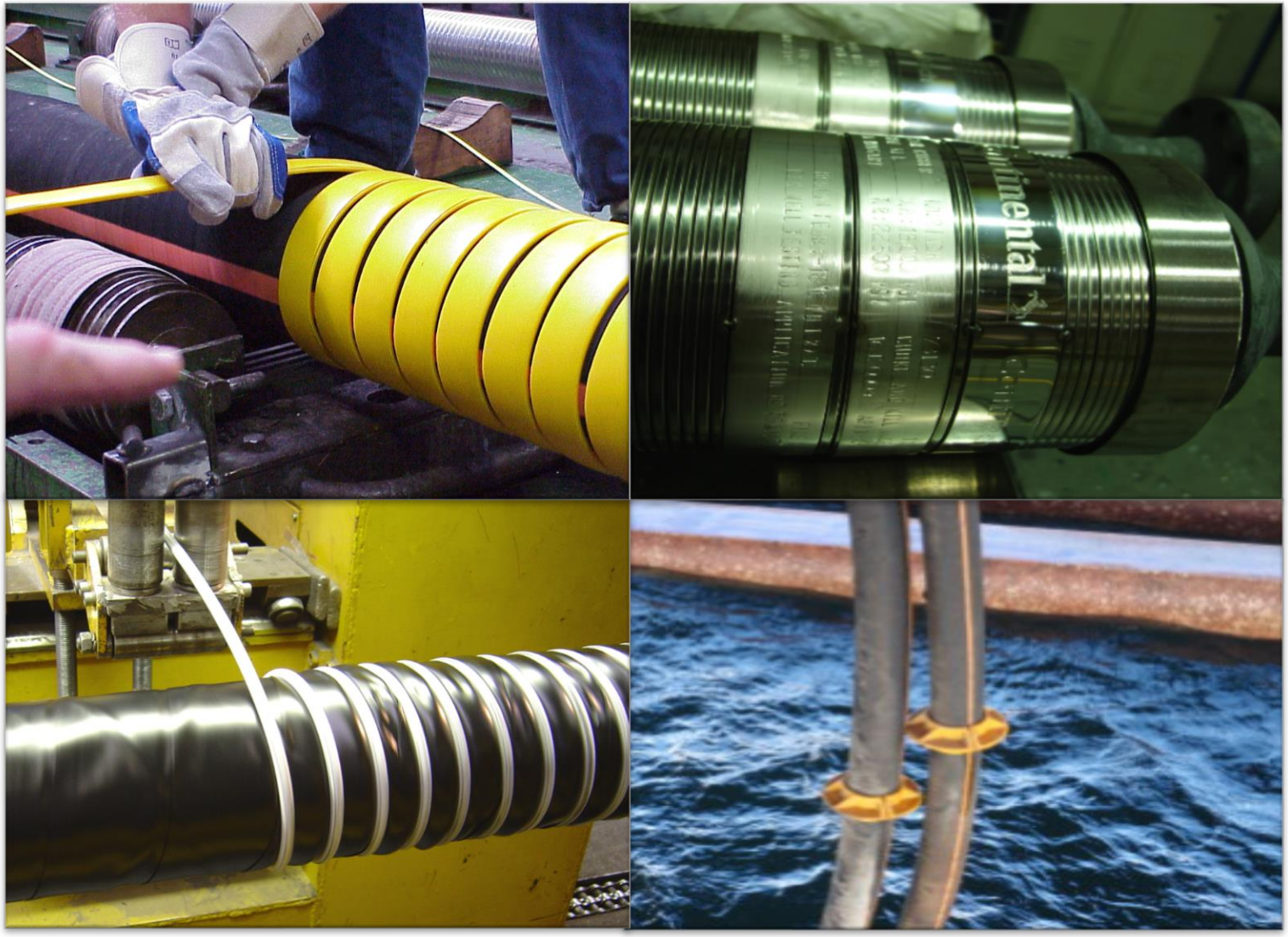
- Integral one-piece coupling
- No leak paths
- No threaded connections
- Short coupling length
- Fully bonded in the hose body for maximum strength
- Full flow capability through the hose



Hose Production

ContiTech

External Protection



Current Hose Range

Hose Type	Hose ID	Pressure Range (psi)	Maximum Available Length	Applicable Certification
Rotary Hose	2" - 6“ 5”	5,000 –7,500 10,000	60m	API 7K, FSL 1 / FSL 2 Taurus Design
Cement Hose	2" - 4“ 3”	5,000 –15,000 20,000	60m	API 7K, FSL 0 Taurus Design
Choke & Kill Hose	2" - 4"	5,000 –15,000	60m	API 16C
Production Oil / Gas Hose	2" - 14"	218 (15 Bar) – 7,500	60m (2” to 8”) 30m (10” to 14”)	API 17K

Typical Hose Marking

ContiTech

API 7K 6th Edition
Specification Levels and Temperature Ranges

ContiTech

- FSL 0 Cement hoses
- FSL 1 Rotary/Vibrator Mud Hoses – NON directional drilling systems
- FSL 2 Rotary/Vibrator Mud Hoses – FOR directional drilling systems

- Temperature range I: -20 to +82°C
- Temperature range II: -20 to +100°C (-25 to +100°C)
- Temperature range III: -20 to +121°C (-30 to +121°C)

- TauroCool™ - New Product (-40 to + 82°C)

API 16C 2nd Edition
Specification Levels and Temperature Ranges

ContiTech

- FSL 0 Includes all design, material and design validation test requirements
- FSL 1 Compulsory tests plus Fire rating
- FSL 2 Compulsory tests plus high temperature exposure test
- FSL 3 Compulsory test plus fire rating and high temperature exposure test

- Temperature range B: -20 to +100°C
- Temperature range U: -20 to +121°C (-20 to +130°C)

- Compulsory testing consists of Mechanical and Gas exposure testing

Choke & Kill and Well Service Hoses With TauroFlon™ Liner (130°C)

Standard:

API 16C up to FSL 3

Construction:

Bore Type:	Full flow, rough bore
Liner Material:	H2S resistant TauroFlon™
Operating Temperature:	-20°C to +130°C (0°F to 266°F)
Survival Temperature:	177°C (350°F) for at least 1 hour
Max. available Length:	60m (200ft)

Features and Comments

- Outstanding chemical compatibility and temperature resistance
- Suitable for chemical injection
- Coupling materials meet NACE MR 01-75 / ISO 15156 latest edition
- See Flexible TauroFit Choke & Kill Lines for subsea BOPs and for Flexible Choke & Kill lines with extremely small MBRs

API 17K 2nd Edition Flexibles

Applications

- Managed Pressure Drilling (MPD)
- Riser Tensioner
- Flare Boom
- Water Injection
- Topside Jumper / Gas Injection
- Subsea Production Jumper
- Natural Gas transfer hose (Ship to Shore)
- Crude and Gas transfer

Comparison of Bonded and Unbonded Flexible Hoses

ContiTech

Bonded hoses
API 17K

Unbonded hoses
API 17J

- Max single length is 60m (200 ft)
- Reinforcing cables are embedded in rubber
- Integral bend stiffeners
- One piece coupling

- Single length, flowlines
- Armour not embedded
- Requires additional equipment for annulus venting
- More complex and expensive coupling

Hose Construction Customized Solutions

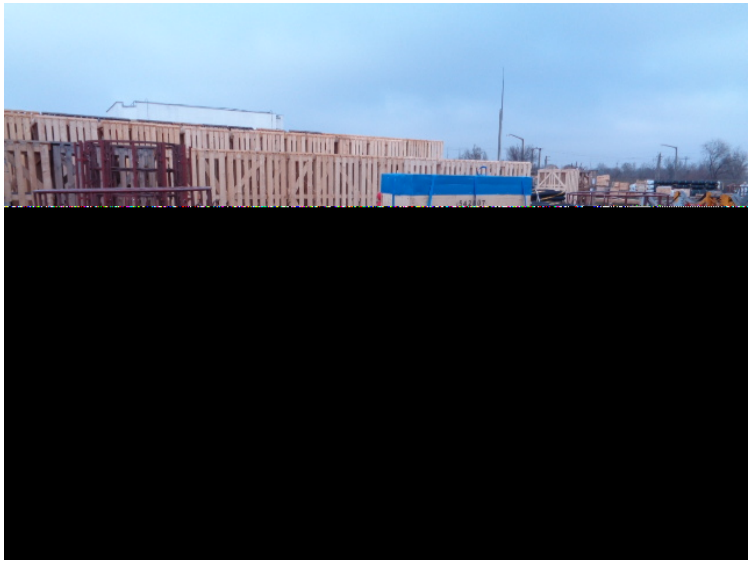
ContiTech

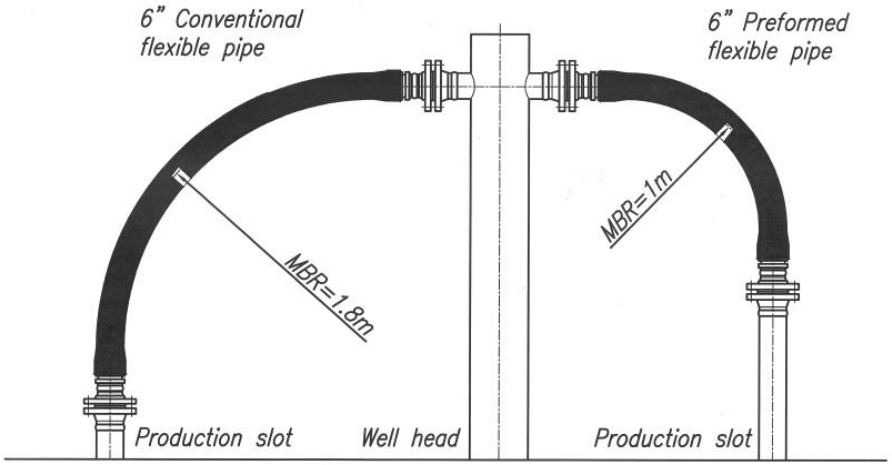
- Liners designed to suit application
- Extra neck reinforcement
- Location collars for buoyancy
- Fire resistance: 700ºC for 30min (Lloyds OD 1000/499)
- Sour service: hoses and couplings meet NACE MR 01-75 requirements
- Heat traced hoses for extreme cold conditions

Pre-Formed Hose Solutions

ContiTech

- ContiTech preformed production lines are used in tight spaces where a normal flexible hose will not reach the required small radius of curvature
- Can be used for hard pipe replacements: no hot work needed; no painting required; removable pigging loops; etc
- Typical reduction of MBR by about 50%
- Can be made to suit an array of different configurations





West Brae Field

Operator: Marathon Oil

Connects: Manifold to Wellhead

Water Depth: 107 m

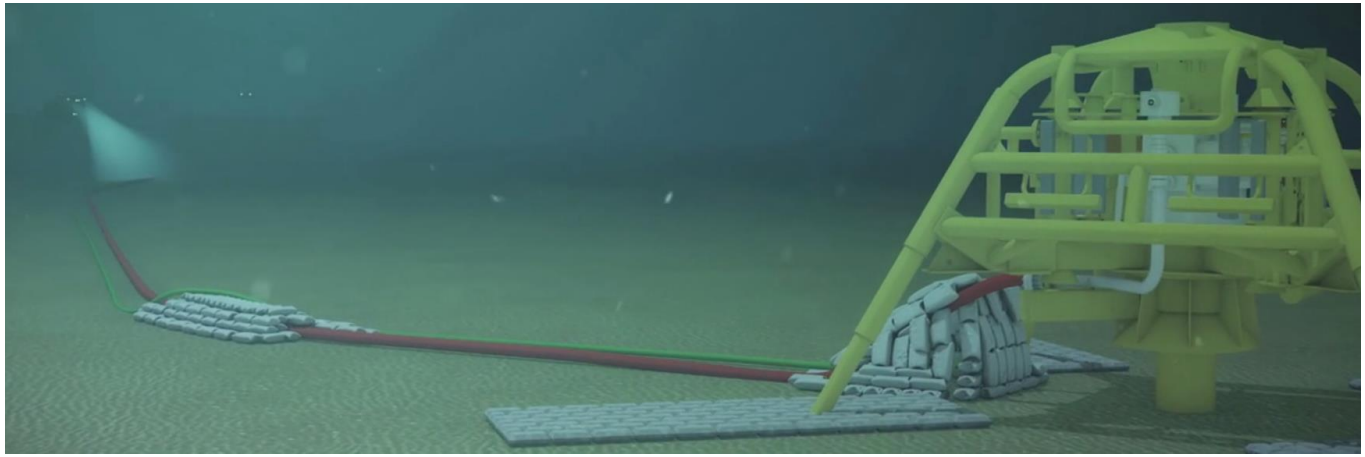
Jumper ID Service and Length:

- 5” (production) – 162 m
- 4” (production) – 97 m
- 2” (gas lift) – 268 m

Design Pressure: 2000 psi

Year Supplied: 1996 and 2014

The West Brae field was originally developed in 1996 to form part of the existing Brae area infrastructure in the UK sector of the North Sea. The drill centre ties back to Brae Alpha platform approximately 8.5 km away. The complex subsea architecture consists of 2” and 4” gas lift jumpers. In 2014 a new well was planned for completion and the lack of available slots on the existing manifold required a new subsea manifold extension to be installed. For the new phase of the development 4” and 5” production and 2” gas lift flowlines were necessary



Scapa Field

ContiTech

Operator: Talisman Energy(60%)

Connects:

- Wellhead to template
- Template to riser base

Water Depth: 118 m

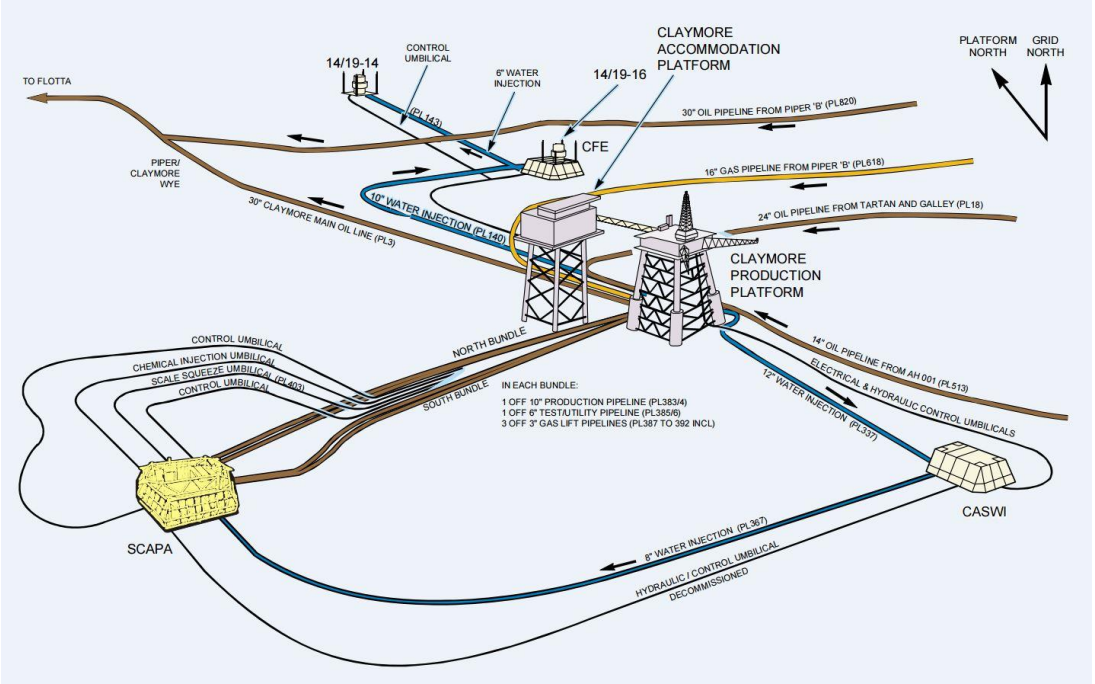
Jumper ID Service and Length:

- 10” (production) – 170m
- 6” (test/utility) – 170m
- 4” (production) – 102 m
- 3” (gas lift) – 303 m
- 2” (gas lift) – 70m

Design Pressure: 2300 psi

Year Supplied: 1984 – initial
2011 – full replacement

Scapa is a subsea field development tied back to Claymore fixed platform offshore UK. The field was discovered in 1975 with the first oil being produced in 1984. The complex seabed layout consists of 36 flexible jumpers, which were replaced in 2011.



Third Party Certification

ABS-CDS 2017

(American Bureau of Shipping – Certified Drilling Systems)

- Witness Pressure Test
- Review Hose Data Book
- Release Note
- Design Review (Additional IRC for Choke & Kill / Mud Hoses)

DNVGL-OS-E101 2015 Cat 1

(Det Norsk Veritas)

- Witness End Fitting Attachment and Pressure Test
- Review Hose Data Book
- Release Note
- Design Review (followed by Product Certificate)