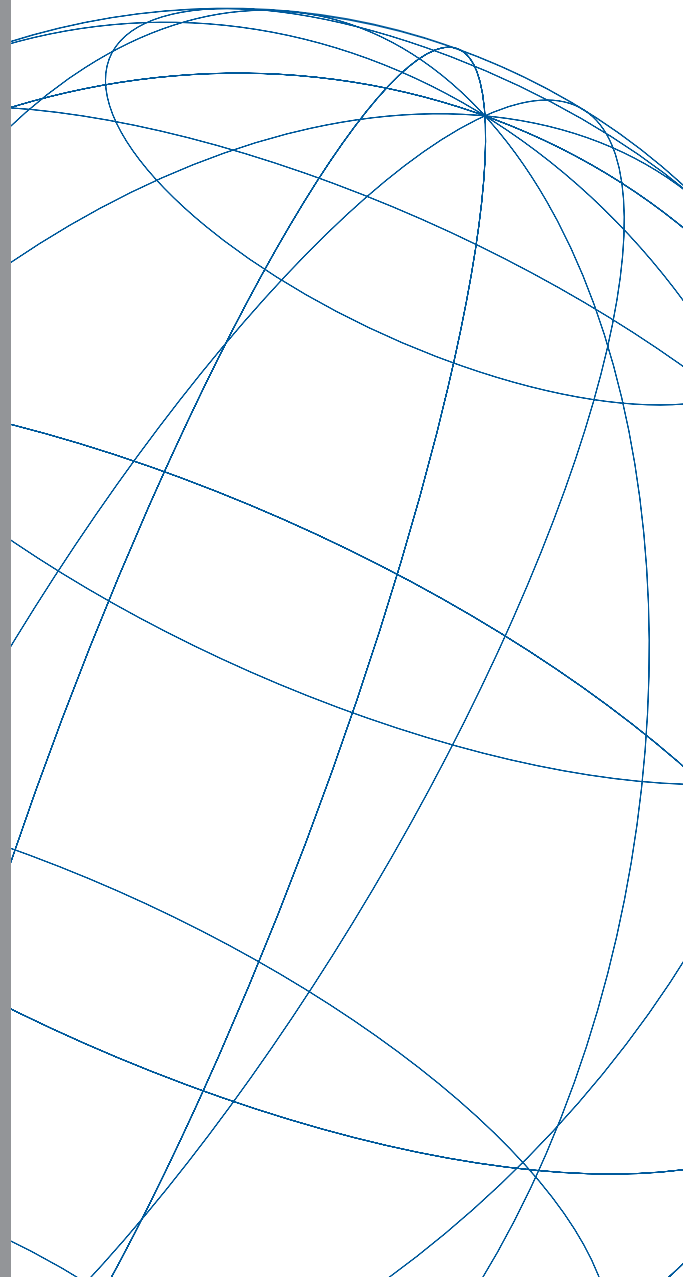


# Offshore Products

The Oil Industry's Source for custom engineered castings designed for the most critical surface and subsurface applications



**Our Innovation. Your Advantage.**



# Superior AOD Refined Materials

## BRADKEN® Proprietary Alloy 804

- Alloy 804 is CTOD Qualified 50 ksi (345MPa)
- Yield Strength Material with a CE < .45 exhibiting excellent strength and toughness properties.
- Typical Base Material Charpy impact properties at -10 C >100 ft lbs.
- Typical Tensile Strength is 82 ksi.
- Field weldable no preheat or post weld heat treat requirements.



CTOD's for **BRADKEN®**

Alloy 804 from 3" thick plates Qualified in Accordance with EN 10225 and similar to API RP2Z requirements with minimum CTOD values of 0.015" (38mm) at -10 C

## CTOD Qualified Materials



**BRADKEN®** Argon Oxygen Decarburization (AOD) refined alloys result in clean material with excellent mechanical properties.

**BRADKEN®** produces over 130 custom engineered alloys in steel, alloy steel, stainless steel, duplex stainless steels and nickel base alloys.

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## BRADKEN® Proprietary Alloy 806

Alloy 806 is a 73 ksi (500 MPa) Yield Strength Material with a CE < .50 and typical PCM of 0.26.

Alloy 806 is designed for superior yield strength and toughness as a field weldable alloy without preheat or post weld heat treat requirements.

- Charpy impact properties at -40 C >80 ft-lbs (>109 joules)
- Typical Tensile properties 96 ksi.

## BRADKEN® Proprietary Alloy 864 and 865s

Alloy 864 and 865s are 80 ksi and 100 ksi Yield Strength Materials respectively which do not require post weld heat treatment.

## Typical Offshore Oil Industry

BRADKEN® produces single castings up to 45,000 lbs (20,417 kgs) for TLP's, FPSO's, Semi-Sub's, SPAR's, Mooring Systems and SubSea applications.

Typical castings supplied including finish machining and special coatings are:  
Tendon Porches, Roto Latch Receptacles, Load Rings, Lug Shrouds, Nodes, Pile Transitions, Riser Baskets, Trunion Blocks, SubSea Wye Bodies, Diverless Clamps, Chain Stoppers, Latches, and Hot Taps.



BRADKEN® 30,000 lb. WYE Body for SubSea application, is fabricating pipe extensions onto the body prior to shipment.

Actual functional test performed at BRADKEN (Tacoma, WA) of a 48,000 lb roto latch locking mechanism prior to shipment.



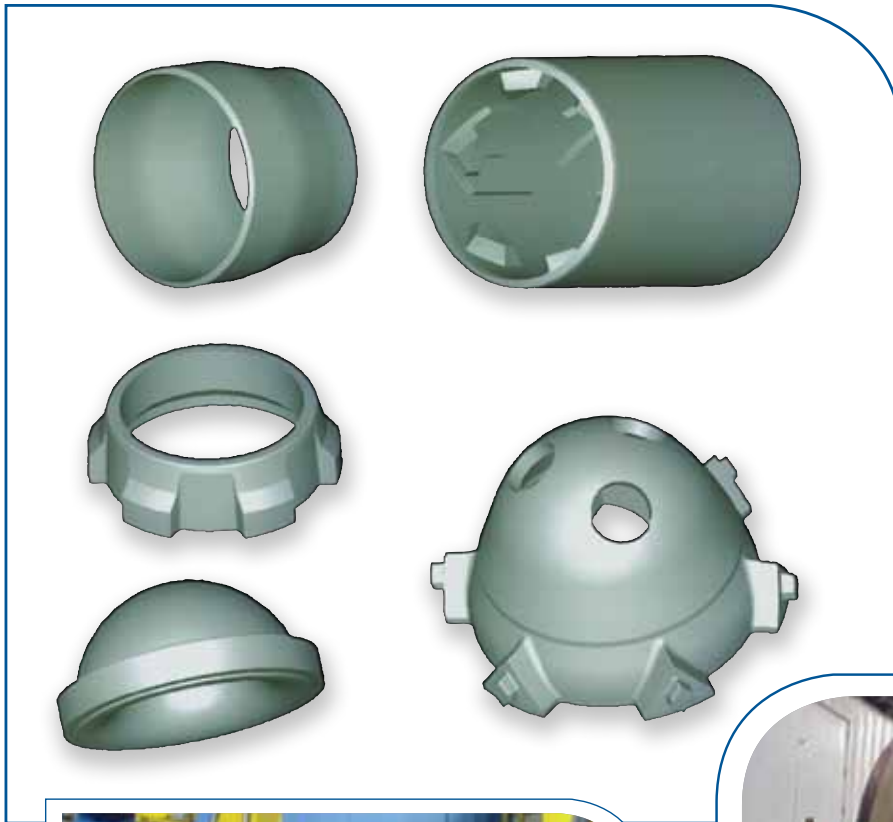
TSA coated, hydro tested, machined SubSea WYE bodies loaded for Shipment from our Tacoma, WA facility.





## BRADKEN® Experience

BRADKEN® has been in continuous operation since 1899



Using Pro-E and Magmasoft solidification software, **BRADKEN®** engineering can assist with the casting design or the conversion of fabrications or forgings for weight savings and cost savings.

With hot isostatic pressing (hip), **BRADKEN®** castings can be used in SubSea applications to 10,000 psi replacing typical forged applications.



Linatron x-ray capabilities for wall thicknesses beyond 6.5". **BRADKEN®** has extensive experience with heavy section, high specification steel castings.



One of sixteen 32,340 lb (14,673 kg) **BRADKEN®** TLP Node castings for BP Thunder Horse

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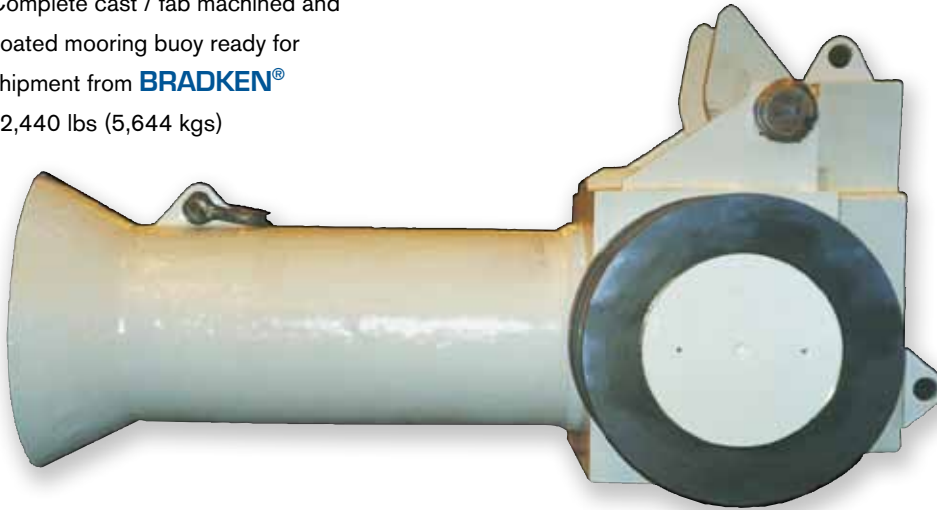
**BRADKEN®** has over 500,000 square feet of manufacturing facilities.

## Other Services Include

Specialized Coating	Weld Overlays
Heat Treatment	Ultrasonics
Final Machining	Liquid Penetrant
Magnetic Particle Radiography (20")	Hydrostatic Testing



Complete cast / fab machined and coated mooring buoy ready for shipment from **BRADKEN®**  
12,440 lbs (5,644 kgs)



Class 24 Receptacle in **BRADKEN®**  
Alloy 804 19,080 lbs  
(8,657 kgs)



27,960 lb (12,686 kg)  
**BRADKEN®**  
pile transition casting for  
TLP Magnolia



# Offshore Systems Experience List

Project Name	Owner(s)	Project Type	Area	Contractor Fabricator	Atlas Alloy	Casting Description	Qty	Shipping Weight kgs Each Piece	Year Shipped
St. Jack Malo	Chevron	Semi	Gulf of Mexico	Oil States	804	Riser Baskets	18	7,577	2011
Mars B	Shell	TLP	Gulf of Mexico	Samsung	804	Tendon Porch	16	16,107	2011
Mars B	Shell	TLP	Gulf of Mexico	Samsung	806	Riser Porch	14	8,117	2011
Sakhalin 1	Exxon Mobil	Semi	Sakhalin Island	EPS	804	Concave Plate	5	18,624	2011
Sakhalin 1	Exxon Mobil	Semi	Sakhalin Island	EPS	804	Housing Plate	5	14,120	2011
Sakhalin 1	Exxon Mobil	Semi	Sakhalin Island	EPS	804	Slider	5	6,629	2011
P55	Petrobas	Semi	South America	Continental Engineering	804	Riser Baskets Type 1	7	15,060	2009
P55	Petrobas	Semi	South America	Continental Engineering	804	Riser Baskets	13	8,845	2009
Grupo H3027	Pemex	Semi	Gulf Mexico	DSME	806	Pontoon Nodes	40	4800	2009
Grupo H3026	Pemex	Semi	Gulf Mexico	DSME	806	Pontoon Nodes	40	4800	2009
GUMU-SUT	Petronas / Shell	Semi	GOM	MMHE	806	Riser Baskets	27	8450	2008 - 4th quarter
Odfjell H3025	Odfjell	Semi	North Sea	DSME	804, 806	Pontoon Nodes	40	4800	2008 - 4th quarter
Petroserv	Petroserve	Semi	North Sea	DSME	804/806	Pontoon Nodes	40	4800	2007
Atlantia Thunder Hawk	SPM	Semi	Gulf Mexico	Oil States	804	Riser Baskets	6	6152	2007
BC10	Shell	Semi	South Africa	SPM	804	Clamps	10	5669	to ship 2007
Shenzi	BHP	TLP	Gulf Mexico	Modec	804	Tendon Porch	8	14739	2006
Shenzi	BHP	TLP	Gulf Mexico	Oil States	804	Riser Baskets	9	5924	2006
H3019	SeaDrill(1)	Semi	North Sea	DSME	804	Pontoon Nodes	40	4800	2006
H3020	SeaDrill(2)	Semi	North Sea	DSME	804	Pontoon Nodes	40	4800	2006
H3023	Odfjell	Semi	North Sea	DSME	804/806	Pontoon Nodes	40	4800	2007
Neptune	Enbridge	Semi	Gulf Mexico	Oil States	804	Riser Baskets	2	6180	2006
Neptune	BHP	TLP	Gulf Mexico	Oil States	804	Receptacles	6	8,910	2006
Shenzi	BHP	TLP	Gulf Mexico	Oil States	804	Receptacles	1	10,460	2006
Okume	Amerada Hess	TLP	Africa	Modec	804	Tendon Porches	8	7,423	2005
Oveng	Amerada Hess	TLP	Africa	Modec	804	Tendon Porches	8	7,423	2005
Ram/Powell	Shell Oil	TLP	Gulf Mexico	Shell	864	Tension Load Ring	1	486	2005

Project Name	Owner(s)	Project Type	Area	Contractor Fabricator	Atlas Alloy	Casting Description	Qty	Shipping Weight kgs Each Piece	Year Shipped
Auger	Shell Oil	TLP	Gulf Mexico	Shell	804	Riser Basket	1	7,768	2005
Sakhalin II	SEIC	TLP	Sakhalin Coast	EPS	804	Slider	10	6,629	2005
Sakhalin II	SEIC	TLP	Sakhalin Coast	EPS	804	Housing Plate	10	14,120	2005
Sakhalin II	SEIC	TLP	Sakhalin Coast	EPS	804	Concave Plate	10	18,624	2005
P52	Petrobras	FPSO	Brazil	Oil States	804	Recepticle	2	7,591	2004 2005
Mars	Shell Oil	TLP	Gulf Mexico	Bardex	864	LH Plate	2	604	2004
Mars	Shell Oil	TLP	Gulf Mexico	Bardex	864	RH Plate	2	604	2004
Ram/ Powell	Shell Oil	TLP	Gulf Mexico	Shell	864	Tension Load Ring	1	486	2004
Llano Flowlines	Shell Oil	TLP	Gulf Mexico	Shell	804	Riser Porch	2	2,679	2003
Oregano	Shell Oil	TLP	Gulf Mexico	Shell	804	Riser Basket	2	2,661	2003
Atlantis	BP	Semi	Gulf Mexico	Oil States	804	Receptacles	14	6,545	2003
Magnolia	Conoco	TLP	Gulf Mexico	ABB Lumas	804	Pile Transition	8	11,285	2003
Marco Polo	Delos Off-shore	TLP	Gulf Mexico	Modtec	804	Tendon Porch	8	6,124	2002
Thunder Horse	BP	Semi	Gulf Mexico	Daewoo	804,806	Nodes	86	304,730 Total	2002
Thunder Horse	BP	Semi	Gulf Mexico	Oil States	804	Receptacles	15	94,000 Total	2002
Diana	Exxon / BP	TLP	Gulf Mexico	ABB	864	Tension Load Ring	6	526	2000
Prince	Kerr McGee	TLP	Gulf Mexico	Modtec	804	Tendon Porch	8	7,663	2000
Brutus	Shell Exxon	TLP	Gulf Mexico	Daewoo	804	Receptacles	6	4,482	1999
Ursa	Shell / BP	TLP	Gulf Mexico	Bellei Acker-Gulf Marine	804	Tendon Porches	12	14,618	1998
Ursa	Shell /BP	TLP	Gulf Mexico	Bellei	804	Tendon Porches	16	15,775	1996
				Acker-Gulf		Load Rings	16	2,563	1997
				Marine		Centering ball	16	345	1997
						Recepticle	16	10,140	1997
						Recepticle	16	15,444	1997
						Housings	16	2,899	1997
				ABB Vetco	864	Tension Load ring	13	930	1997
Mars	Shell / Exxon	TLP	Gulf Mexico	Bellei	804	Tendon Porches	24	14,065	1994-1995
				Acker-Gulf	864	Load Rings	27	571	1995
				Marine					
Auger	Shell Oil	TLP	Gulf Mexico	Bellei	804	Load Rings	11	1,996	1992
					804	Shrouds	11	3,520	1992
					804	Load Rings	11	7,940	1992

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# North American Facilities

## Energy

### Tacoma

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Tacoma, WA 98409  
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F +1 253 473 8710

### Chehalis

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Chehalis, WA 98532  
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F +1 253 473 8710

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F +1 519 685 6448

### Tacoma (Fabrication and Machining)

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Tacoma, WA 98409  
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T +1 253 475 3464  
F +1 253 475 3466

### London (Foundry)

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F +1 519 455 0621

## Industrial Products

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Atchison, KS 66002  
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F +1 913 367 2130

### Amite

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### St. Joseph (Machine Shop)

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