



SHAFER SUBSEA ACTUATORS

This is a partial list only. Other references are available upon request.

YEAR	END USER/LOCATION	PROJECT	ENG/CONTRACTOR	VALVE SIZE/MFR.	OPERATOR
1998	ONGC	ESSAR	Mitsubishi Heavy Industries	48" 150 Cameron" (3) 24" 150 Cameron"	16 1/2 x 16 9 x 12
1998	Shell Bukom / Malaysia	SBM Plem Valves	Shell	(1) 24" 300 Cameron	14 1/2 x 14
1998	China Offshore Oil Development Eng. Corp.	Plem Valve	Imodco	(2) 16" 300 PBV	9 x 12
1998	Ital Thai / Thailand	Thai Oil Desulphurization Project	Hasslebury Company LTD.	(3) 24" 300 Cameron	9 x 12
1997	Amoco Trinidad Oil Company / Trinidad	Trinidad LNG Upstream Development Project	Fluor Daniel	(3) 12" 600 Cameron (3) 12" 600 Cameron (3) 24" 600 Cameron (1) 24" 600 Cameron (2) 20" 600 Cameron	9 x 7 9 x 7 12 1/2 x 12 12 1/2 x 12 12 1/2 x 12
1997	Jamnagar Refinery Complex	Reliance Jamnager Complex SPMS Project	Imodco	(2) 48" 300 SDT (4) 24" 300 IVC	20 x 16 G7007.0SR4-CW-S
1997	Amoco Trinidad	"Mahogany "A" & "B"	Fluor Daniel	"24" 600 Cameron" "16" 600 Cameron"	12 1/2 x 12 9 x 12
1997	Daewoo Heavy Industries LTD, Korea	Chevron Platform S. Nemba & Lomba Project	Daewoo Heavy Industries LTD	(27) 8" 150 KF	6 1/2 x 3 1/2
1997	Osaka Gas, Japan	Gas Line ESD Valve	Osaka Gas	(1) 24" 300 KTM	11 x 10
1996	PT Humpuss / Sumatra	Arun Aromatic	Bechtel	(1) 16" 150 Cameron	6 1/2 x 8
1996	Enron Oil & Gas India Ltd.	Taptl & Panna Tie In	Enercon / JPK	(4) 18" 900 Cameron	12 1/2 x 12
1996	ONGC India	Gulf Of Kutch Single Bouy Mooring System	Engineers India LTD	(2) 42" 150 TK	14 1/2 x 14
1996	Ecopetrol, Colombia	SPM Buoy & Plem Cusiana/Cupiagua	Blue Water	(2) 24" 300 Perar	9 x 12
1996	Kukong Ltd., Korea	Yokong Submarine Pipeline	Fluor Daniel, Sunkyong Engineering	(2) 24" 150 Cameron	9 x 12
1995	Aramco, Saudi Arabia	Ras Tanura	Saudi Aramco	(2) 30" 150 Cameron	9 x 12
1995	Indian Oil Corp Ltd., India	Second Oil Terminal Gulf of Kutch	Engineers India LTD	(1) 42" 300 Grove	14 1/2 x 14

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1995	Indian Oil Corp Ltd., India	Second Oil Terminal Gulf of Kutch	Engineers India LTD	(1) 42" 150 TK (1) 24" 150 TK	12 1/2 x 12 S375-6H-SR
1994	Korean Petroleum Development Corp.	PEDCO-TI Calm	IMODCO	"(2) 24"" 300 Grove "	12 1.2 x 12
1994	BP Exploration, Colombia	Plem & TLV Upgrades	Blue Water	"(2) 24"" 300 TK Valve"	9 x 12
1994	O.N.G.C., Offshore Bombay, India	Second Bassein - Hazira SBHT	Hyundai Heavy Industries	"(1) 30"" 900 Grove"	16 1/2 x 16
1994	O.N.G.C., Offshore Bombay, India	Hazira SBHT	Engineer's India Ltd. Hyundai Heavy Ind.	""(3) 30"""" 900 Grove"" ""(8) 24"""" 900 Grove"" ""(1) 16"""" 900 Grove""	14 1/2 x 14 12 1/2 x 12 9 x 7
1993	O.N.G.C., Offshore Bombay, India	Hazira SBHT	Engineer's India Ltd. Hyundai Heavy Ind.	(4) 24" 900 Cameron	14 1/2 x 14
1993	Aramco-Ras Tanura Refinery Saudi Arabia	Sea Islands Loading Valves	Lummus Alireza Ltd.	(1) 20" 150 Cameron (1) 30" 150 Cameron	6 1/2 x 8 9 x 12
1993	Canadian / Oxy Offshore Riyan, Yemen	Yemen Masila Export Project	Gulf Interstate	(1) 36" 300 Cameron	14 1/2 x 14
1993	O.N.G.C., India	Neelam Process Platform & N.Q.P Complex (PLEM)	Engineer's India Ltd. Hyundai/John Brown Offshore Eng., Co., Ltd.	(1) 4" 900 Cameron (1) 6" 900 Cameron (1) 18" 900 Cameron (1) 10" 900 Cameron	6 1/2 x 3 1/2 6 1/2 x 8 12 1/2 x 12 9 x 7
1992	Corpoven, Venezuela	Orimulsion Pipeline to Puerto Lacruz	Blue Water	(2) 24" 600 PBVS (1) 36" 600 PBVS	11 x 10 14 1/2 x 14
1990	ONGC, India	ONGC "Hut"	ETPM / EIL	(4) 26" 900 Cameron (4) 24" 900 Cameron (1) 18" 900 Cameron	14 1/2 x 14 11 x 10
1990	Shell Offshore - Gulf Mexico	Riser Valves		(1) 8" - 600	S-275-6H-SR
1989	Arco-Indonesia	Ardjuna Sakti SBS - SBM 5 Plem	Floatech	(2) 8" - 600	6 1/2 x 3 1/2
1989	Kushikino Subsea, P.L.-Japan	Crude Oil Storage		(2) 20" Cameron	9 x 7
1989	ONGC-India	Hazira Export Terminal	Sofec	(1) 24" (2) 20"	9 x 12 9 x 12
1989	Shell-New Zealand	Maui Platform Riser		(1) 10" 600 Cameron (1) 24" 600 Cameron	S-275-6H-SR S-475-14H-SR
1989	Shell UK - North Sea	Fulmar/Aux/FSU		(5) 16" 300 Nelles	11 x 10
1988	Exxon-California	Hondo Platform Riser	Pacific Offshore	(1) 10" 600	6 1/2 x 3 1/2
1988	ONGC-India	BPB Project	Snam Progetti	(2) 12" 600 Grove Italia (3) 24" 600 Grove Italia (2) 30" 600 Grove Italia	9 x 7 14 1/2 x 14 16 1/2 x 16
1987	Shell UK-North Sea			(1) 10" 600	6 1/2 x 3 1/2

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1987	ONGC-India	ICP/ICW Project	Blue Water Eng.	(3) 16" Cameron + Central H.P.U.	6 1/2 x 8
1987	ONGC-India	WIPPM	Essar	(1) 12" 900 Cameron (1) 24" 900 Cameron	9 x 12 11 x 10
1987	ONGC-India	WIPPM	Essar	(1) 12" 900 Cameron (1) 24" 900 Cameron	9 x 12 11 x 10
1987	Thai Oil Refining (Shell)	Sriracha Refinery	Italthai	(1) 16" 150 Cameron	RPS-52
1986	Ceylon Petroleum SRI Lanka	Imodco Project #1191	Williams Bros.	(2) 24" 150 TK (1) 36" 150 TK	11 x 10 14 1/2 x 14
1986	Yemen E&P- North Yemen	Export Facility	Gulf Interstate	(2) 12" - 600 Cameron (1) 24" - 600 Cameron	6 1/2 x 8 12 1/2 x 12
1985	ONGC-India	South Bassein/ Bombay High BPA" Proj.	Hyundai	(1) 20" Cameron (1) 36" Cameron (1) 12" Cameron (1) 12 x 10 x 12 Cameron (1) 30 x 28 x 30 Cameron	12 1/2 x 12 20 x 16 9 x 7 6 1/2 x 8 12 1/2 x 12
1985	OPD-Oman (Shell)			(1) 20"	9 x 12
1984	ONGC-India	South Bassein Hazira	Brown & Root Snam Progetti	(4) 32" 900 Cameron (2) 36" 900 Cameron (3) 10" 900 Cameron (6) 12" 900 Cameron (2) 8" 900 Cameron (5) 16" 900 Cameron (17) 20" 900 Cameron (2) Central H.P.U.	6 1/2 x 16 20 x 16 6 1/2 x 8 6 1/2 x 8 6 1/2 x 3 1/2 11 x 10 12 1/2 x 12
1984	ONGC-India	SH" Project India	McDermott / Hyundai	20" -900 IKS 20"x 18"-900 IKS 18"-900 IKS 18" x 16"-900 IKS	12 1/2 x 12 12 1/2 x 12 12 1/2 x 12 11 x 10
1984	PDO-Oman (Shell)			(1) 36"	20 x 16
1984	SCOP-Iraq		SBM	24"-600 Grove 30"-600 Grove 36"-600 Grove	14 1/2 x 14 16 1/2 x 16 20 x 16
1884	SCOP-Iraq		SBM	(2) 20"	12 1/2 x 12
1984	ONGC-India	SBH Pipeline	Brown & Root	(1) 20" (1) 36"	12 1/2 x 12 20 x 16
1984	PDO-Oman (Shell)			(1) 20" (1) Central H.P.U.	11 x 10

YEAR	END USER/LOCATION	PROJECT	ENG/CONTRACTOR	VALVE SIZE/MFR.	OPERATOR
1983	BOW Valley- Nova Scotia	Oiltool Riser		(2) 7" Cameron	RPS-100
1983	ESSO-Singapore	Plem	IMODCO	(2) 24"	12 1/2 x 12
1983	Mobil Netherlands	North Sea	Protech	(1) 20 x 18 900 Cameron	16 1/6 x 16
1983	Petronas Malaysia		Sofec	(1) 10"-150 Grove	11 x 10
1982	ADNOC-Abu Dhabi	Zadco	Hydril	(1) 24"-400 Grove	14 1/2 x 14
1982	Offshore-Japan		U.K.	(1) 16" x 14"	11 x 10
1981	Pennzoil-Netherlands	North Sea		(2) 20" 900 Cameron (1) 10"-1500 Cameron	14 1/2 x 14 11 x 10
1981	Oasis Oil Libya		SBM	(1) 16"-300 Cameron	9 x 7
1981	Phillipines	Offshore	McDermot	(2) 10" Cameron	11 x 10
1981	INOC Iraq		Brown & Root	(1) 48"-400 Cameron (1) 36"-400 Cameron	20 x 16 16 1/2 x 16
1980	Shell-Gabon - West Africa			(1) 16" Cameron	11 x 10
1980	Unknown	Gulf of Mexico		(6) 6" -Cameron	RPS-52
1980	Woodside Petroleum-Australia		Eagleton	(1) 40"-900 J.S.W. (1) 30"-900 J.S.W.	14 1/2 x 14 12 1/2 x 12
1979	Loop Project	Gulf of Mexico	Hydril/Fluor	Various	Various
1979	Petronas-Malaysia		Sofec	(5) 24"-Grove	RPS-175
1979	ELF Serapca Cameron West Africa		Bluewater	(1) 24" Cameron (5) 20" Cameron	RPS-175 RPS-175
1978	Shell-North Sea	Brent		(2) 6"	RPS-100
1977	Unknown-Greenland		Global Inter Marine	(2) 6"	RPS-23
1976	Unknown-Greenland		Global Inter Marine	(2) 8"	RPS-23

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1976	ONGC / India	BHN" Project		(1) 30"-600 Cameron	20 x 16
1975	Texas Eastern, Louisiana	Lake Charles		(2) 30"-600 Grove (6) 24"-600 Grove (1) 4" Rockwell	18 x 8 12 1/2 x 12 6 1/2 x 3 1/2
1975	Shell-Asiatic Petroleum	Indonesia	Cameron	(2) 30"-900 Cameron (2) 24"-300 Cameron	18 x 8
1974	N.A.M. (Shell) Holland			(2) 20"-150 I.H.C.	11 x 7
1974	Shell Asiatic Petroleum	Indonesia		(2) 24"-300 Cameron	12 1/2 x 12
1974	Texas Eastern, Louisiana	Lake Charles		(2) 16"-600 Grove (2) 10"-600 Rockwell (1) 16"-600 Grove	12 1/2 x 12 12 1/2 x 12 12 1/2 x 12
1973	Asiatic Petroleum (Shell Spain)	Port Gentil		(4) 16"-150 Cameron (2) Central H.P.U. (2) 8"-150 Cameron	9 x 7 6 1/2 x 3 1/2
1973	Crescent Pet-Sharjah	Persian Gulf	Crest Eng.	(2) 20"-150 Grove (2) 10"-150 Grove (1) 4"-150 Grove (2) Central H.P.U.	9 x 7 6 1/2 x 3 1/2 6 1/2 x 3 1/2
1972	Texas Eastern, Louisiana	Lake Charles		(1) 30"-600 Grove (1) 24"-600 Grove (1) 20"-600 Grove	18 x 8 12 1/2 x 12 12 1/2 x 12
1972	IMODCO-Singapore			(2) 24"-300 Grove (1) 12"-300 Grove	12 1/2 x 12 9 x 7
1971	Texas Eastern-Louisiana	Lake Charles		(3) 24"-600 Grove	12 1/2 x 12
1971	Dabai Petroleum	Arabian Gulf		(2) 36"-150 Cameron	12 1/2 x 12
1971	Texas Eastern, Louisiana	Lake Charles		(1) 30"-600 Grove (1) 20"-600 Grove (1) 24"-600 Grove (1) 8" -600 Grove (1) 4" -600 Rockwell	18 x 8 12 1/2 x 12 12 1/2 x 12 9 x 7 6 1/2 x 3 1/2
1971	Cities Service Oil Co.			(1) 6"-600 Cameron (1) 8"-600# Cameron	9 x 7 9 x 7

Shafer has been utilized for many subsea projects where major engineering companies, contractors and oil companies have specified the equipment. A few of the companies who have used our subsea equipment are as follows:

Company	Location	Company	Location
McDermott	ONGC BHN & SH Projects in India	Shell Oil Co.	"Fulmar" Projects - No. Sea
Brown & Root	ONGC So. Bassien to Hazira Project - India	Shell Oil Co.	"Sarawak Shell" Offshore Projects - Malaysia
Hyundai	ONGC "BPA" Project - India ONGC "SH" Project - India	Exxon Oil Co.	"Hondo" Platform Complex - Santa Ana, California
ESSAR/OTP	ONGC "WIPPM" Project - India	Chevron Oil Co.	"Casablanca" Field - Offshore Denmark
Hydril/Fluor	Louisiana Offshore Oil Project (L.O.O.P.) - Louisiana, USA	Chevron Oil Co.	"Danbor" Project - Offshore Denmark
Brown & Root	"SCOP" Offshore Export Terminal - Iraq	Wms. Bros. Eng. Co.	Ceylon Petroleum - Sri Lanka
Conoco Oil Co.	Offshore Project - Holland	Hunt Oil Co.	Yemen E & P - No. Yemen
Shell Oil Co.	N.A.M. Projects - Holland	Petronas	Offshore Malaysia
		Exxon Oil Co.	Esso Productin Malaysia - Offshore Malaysia
		Phillips Petroleum	Ekofisk Field - Norway

In several cases Shafer has supplied such equipment as actuators, limit switches, accumulators, boat and platform mounted hydraulic power systems, controls, etc. A few such cases are:

L.O.O.P. Project	Remote Control Actuators powered from platform 8200 feet away.
Phillips Pet. - Norway	Actuators, Accumulators, Controls, Etc.
Exxon Oil Co. - (Maylasia/Calif.)	Actuators, Accumulators, Hydraulic Systems, Controls, Etc.
Conoco Oil Co.	Actuators, Accumulators, Controls, Limit Switches, Etc.
Brown & Root (Iraq)	Actuators, Hudraulic Units, Controls, Etc.
Chevron Oil Co. (Spain/Denmark)	Actuators, Accumulators, Hydraulic Power Units, Controls, Etc.