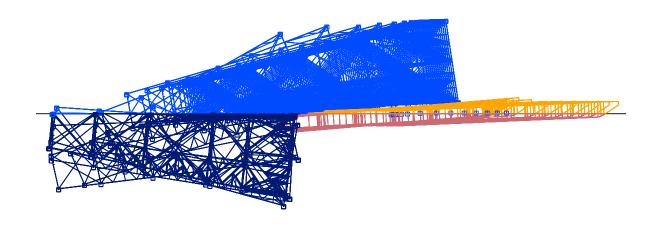
# Statement of Qualifications





#### www.ultramarine.com

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# Transportation

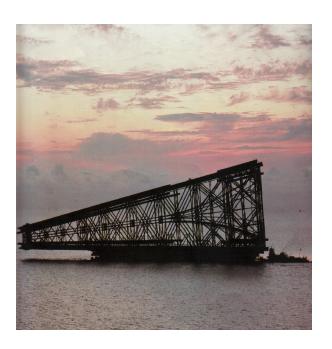


Holstein Spar Wet Tow

- ♦ Motions connection load for tanker moored to the side of an export FPSO. Sofec 1998.
- ♦ Zafiro mooring repair work. Mooring design for worker FPSO. Mobil 199-2000.
- ♦ Corocoro field. Study of FPSO yoke moored to a jacket with an export tanker side by side and in tandem. Conoco Phillips 2003.
- ♦ Belanack, side by side tanker mooring studies. Conoco Phillips 2001.
- ♦ Sable, Exxon Mobil. Strength and Fatigue evaluation.
- $\Diamond$  Lowering of PLEMS for Sofec. Floatover recovery.



- ♦ Transportation analysis for Chevron's Banzala project off West Africa.
- ♦ Transportation fatigue analysis of Chevron's Lomba and Nemba jackets, decks, and flare jacket.
- ♦ Transportation analysis of a 5500 ton deck for a trans-Atlantic tow, including API code checks.
- ♦ Transportation and fatigue analysis for the Zafco jacket and deck.
- Evaluation of static stresses and fatigue ratios for tiedowns and jacket members for the Harvest tow.
- ♦ Nemba jacket, topsides and Lamba flare. Chevron 1997





Salsa Jacket Transportation

- ♦ KWIP water flood injection platform. ChevronTexaco
- North Nemba topsides, Chevron 2001
- ♦ Sanha jacket and topsides. Chevron 2002
- ♦ PEMEX. Atlantia Corporation. Transportation engineering of the SEAPONY for the Bay of Campeche KAB-201.

Spirit Jacket Transportation

# Launch, Offload & Loadout



Spirit Jacket Launch

- ♦ Float-off operation design and analysis of a floating casino vessel from a launch barge for Service Marine Industries.
- Operation design and analysis of launching a jackup drill rig from a set of ways at the shipyard.
- ♦ Offloading engineering and analysis of a truss spar structure from a barge.
- Dynamic launch study of a Roll-on/Rolloff passenger vessel launched from a shipyard for Halter Marine.

- ♦ Pemex.MANIK-A, MALOOB-A, MALOOB-B, Paragon Engineering Services-Swecomex. Installation engineering for 12 jackets and topsides for Loadout, transportation, flotation and jacket upending. The scope includes ballasting plans, mooring design, motion analysis, stability analysis and structural analysis of cargo and barges. Loadout operation execution.
- ♦ Pemex. HAZAAPC and HAKUH. Swecomex. Installation engineering for 16 structures including jackets, topsides, bridges for Loadout, transportation, flotation, jacket upending and on-bottom stability. The scope includes ballasting plans, mooring design, motion analysis, stability analysis and structural analysis of cargo and barges. Seafastening design and padeye design.
- ♦ PEMEX. AKAL-L, CBS Engineering. Transportation engineering of the Pemex 8 Pile Riser Platform. Transportation engineering of the Pemex 8 Pile Deck and jacket. Intact and Damaged Stability analysis of Pemex 8 Pile Riser Platform. Structural Analysis and Intact & Damaged Stability.
- ♦ PEMEX. AKAL-B. CBS Engineering. Transportation, Intact and Damaged Stability of Pemex 8 Pile Riser Platform.
- ♦ PEMEX. EPC-01. COMMISA. Five transportation engineering of 1 Jacket Structure and 4 Deck Modules for CANTARELL



- ♦ PEMEX. AKAL-C . FLUOR DANIEL. Loadout ballasting for jacket on ATLAS DEL MAR. Deck transportation with structural analysis.
- ♦ PEMEX. EPC-22. Kellogg Brown & Root. Transportation of the Pemex Cantarell, 8 pile jacket.
- ♦ PEMEX. AKAL-C. Paragon Engineering Services, Installation engineering for Tripod and Bridge for the Contingency Platform Project.
- ♦ Pemex. HAZAAPC, HAKUH Living Quarters. Paragon Engineering Services-Bay-Inelectra. Installation engineering for Loadout, transportation. The scope includes ballasting plans, mooring design, motion analysis, stability analysis and structural analysis of cargo and barges. Loadout operation execution.





Ha-Zaap-C Living Quarters Loadout

- ♦ China Offshore Oil Marine Engineering Co . Analyze the float-off of a 39 meter average diameter by 15 meter long caisson from a submersible barge. This study used gap elements to connect the two bodies, and included a complete ballasting procedure and stability check for each stage of the float-off.
- ♦ BP. Holstein Truss. Launching planification and analysis of launching a 600 ft. spar structure from a fabrication bulkhead.

Holstein Truss Offload

# Installation Engineering



Versabar Bottom Feeder

- ♦ Versabar Inc. Custom Salvage System (bottom feeder). Performance and strength evaluation of the lifting system for transportation, standby and lifting. Mooring analysis. Model basin supervision in Escondido, CA. Redesign of bargegantry connector configuration. Coast Guard approval process, 2007.
- ♦ Study the feasibility of the Versatruss concept for lifting.
- ♦ Installation analysis of Mobil's Flare Buoy in Equatorial Guinea.

- ♦ Performed inplace, inplace fatigue, loadout, launch, and transportation of a 496 ft. water depth jacket for the South China Sea, Lufeng 13-1.
- ♦ Analysis to identify and suppress vortex shedding sensitive elements in the Texaco Harvest jacket for a trans-Pacific tow.
- ♦ The planning and evaluation of the loadout, tow, and launch sequences of the Shell Eureka jacket.



- ♦ Installation engineering on Shell Offshore's Spirit jacket in a water depth of 722 feet. Installed in Viosca Knoll 780 during July, 1998, this 9700 short ton structure was analyzed for structural loadout, transportation and launch (simulation and structural), and upend. Also performed was a launch analysis in an environment, including wind, wave and current.
- ♦ Installation engineering of Shell Offshore's Salsa jacket in a water depth of 693 feet. This 10,200 short ton structure was installed in Garden Banks 171 during December 1997. Analyses included loadout, transportation, launch and upend, complete with structural analysis and associated API code checks for everything except upend. Also included was an onsite forensic study to determine which flood valves failed during launch.
- ♦ Installation engineering for Shell Offshore's Enchilada Platform. This involved a transportation analysis and several unusual considerations. In particular, the docking of the base section over pre-drilled wells, and the top section with the base section were analyzed. Also, a two crane uprighting procedure was designed.
- ♦ Transportation strength and fatigue. Upending analysis for the British Gas Tunisia project.

- ♦ Installation engineering of two jackets, a flare tripod and several deck sections for Chevron's Kokongo Development project located offshore Cabinda, Africa in water depths ranging from 343 to 387 feet. With fabrication in Brazil, the transportation analyses for the jackets included structural code checks and spectral fatigue. These structures were successfully installed by Saipem.
- ♦ ChevronTexaco, Bengeula Belize. Performed launch and transportation analysis of a compliant tower.
- ♦ Analysis of the static and dynamic stability of the Texaco Harvest jacket on KSC-700.
- Analysis of the jacket and barge hydrodynamics and structural stresses during the salvage tow of the Eugene Island 361 platform.



Versatruss System

# Installation Engineering (cont)

## Fixed Platforms

		Year
Company	Platform	In- stalled
Shell	Cognes	1978
	Cognac	1978
Unocal	Cerveza	1981
76 Unocal	Ligera	1982
Shell	Boxer	1985
3 <sup>111</sup> / <sub>2</sub>		
bp	Snapper	1985
Shell	Bullwinkle	1991
bp	Amberjack	1991
ExonMobil ExxonMobil	Heritage	1992
ExonMobil ExxonMobil	Harmony	1992
bp bp	Pompano	1994
TOTAL FINAELF		
Total Fina Elf	N'Kossa	1995
ChevronTexaco ChevronTexaco	Nemba	1998



		Year
		1 1
		In-
Company	Platform	stalled
ChevronTexaco		
ChevronTexaco	Lomba	1998
The second secon		
TOTAL		
FINAELF		
Total Fina Elf	Virgo	1999
	1 8 -	
n		
<b>Ne</b> Samedan	Mari-B	2003
Samedan	Wait-D	2003
- MARIE		
2 3		
7	C1-:-	2004
bp	Clair	2004
ChevronTexaco		
ChevronTexaco	Sanha	2004



# Topsides

Company	Platform	Year In- stalled
Chevronilexaco		
ChevronTexaco	Nemba	1997
ChevronTexaco		
ChevronTexaco	Lomba	1997
TOTAL FINAELF		
Total Fina Elf	Virgo	1999
ChevronTexaco		
ChevronTexaco	North Nemba	1999
ChevronTexaco		
ChevronTexaco	KWIP	2000
no		
Samedan	Mari-B	2003
ChevronTexaco		
ChevronTexaco	Sanha	2004
ExonMobil		
ExxonMobil	Sable	2006
JAME.		
bp	Holstein	2004





# **Compliant Towers**

		Year
		In-
Company	Platform	stalled
ExonMobil		
ExxonMobil	Lena Guyed Tower	1983
HESS		
Hess	Baldpate	1998
ChevronTexaco		
ChevronTexaco	Petronius	1998
ChevronTexaco		
ChevronTexaco	Bengeula Belize	2005

# Installation Engineering (cont)

## Wind Turbines

Company	Platform	Year In- stalled
Mayflows	Tiationiii	staned
Mayflower Energy	North Hoyle	2004



#### Lift Boats



		Year
	DI (C	In-
Company	Platform	stalled
CUDD .		
CUDD	Arapho	2000
CUDD -		
CUDD	Choctaw	2000

## **Gravity Based Structures**

Company	Platform	Year In- stalled
Shell	Sakhalin Island	2006





## Semi FPS

Company	Platform	Year In- stalled
Shell	Nakika	2003
Shell	Gumusut	20XX





# Jackups

Company	Platform	Year In- stalled
TransOcean	Prissa	1999
elpaso		
elpaso	Piata	2008

# Deepwater Custom Solutions, TLPs, SPARs, SEMIs, FPSOs

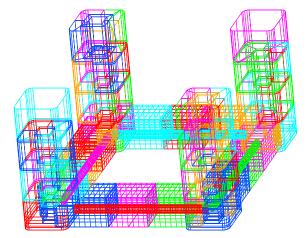


**Hutton TLP** 

- ♦ Globalmaritime, Norway. GMlift, Semisubmersible lift vessel. Performance and strength evaluation Hydraulic lift system study. Model test.
- ♦ Motions analysis for TotalFinaElf, Girasol FPSO, global stress analysis (1998, 2000) including module installation and stability Fatigue
- $\Diamond$  Transportation and dynamic upending analysis of a truss spar.
- ♦ Tow motion study of Chevron's Genesis spar.
- ♦ Stability analysis of MARS and Ram-Powell tension leg platforms.



- ♦ Assess the structural integrity and fatigue life for the flares on three FPSO's.
- ♦ BP Holstein. Wet transportation, truss loadout and floatoff operations, truss and hard tank mating. Fatigue analysis during wet tow. Modeling and fatigue analysis of hull strakes during wet tow
- ♦ Saipem SA. Erha FPSO. Hull Hydro-Structural model prepared with Builder3D, an Ultramarine software product
- ♦ Shell. Gumust Semisubmersible platform. Stability and KG studies
- $\Diamond$  Shell. Perdido spar. Loadout sequence for the topside.



Gumusut Semisubmersible Hull



Holstein SPAR

# Deepwater Custom Solutions, TLPs, SPARs, SEMIs, FPSOs (cont)

## **Spars**

			Year In-
Company	Platform	Type	stalled
(m)			
Kerr-McGee	Neptune	Classic	1996
ChevronTexaco		GI :	1000
ChevronTexaco	Genesis	Classic	1998
E≰onMobil			
ExxonMobil	Hoover Diana	Classic	2000
(III)			
		TD.	2001
Kerr-McGee	Nansen	Truss	2001
MÜRPHY			
Murphy	Medusa	Truss	2002
S M(SEE)			
Kerr-McGee	Boomvang	Truss	2002
****			
bp	Horn Mountain	Truss	2002
op op	Trom mountain	11400	2002
bp	Holstein	Truss	2003
(m)			
Kerr-McGee	Gunnison	Truss	2004
ARMIN .			
The state of the s			
bp	Mad Dog	Truss	2005



Nansen Spar

#### **FPSOs**

Company	Platform	Year Installed
TOTAL FINAELF		
Total Fina Elf	Girassol	2001
ConocoPhillips		
ConocoPhilips	Belanak	2003
Shell	Bonga	2004
ExonMobil		2007
ExxonMobil	Erha	2005
Total	Pazflor	20xx





Brutus TLP



TLPs

Company	Platform	Year Installed
ConocoPhillips		
ConocoPhilips	Hutton	1984
ConocoPhillips		
ConocoPhilips	Joliet	1989
Shell	Auger	1994
Shell	Mars	1996
Shell	Brutus	2001
Unocal	West Seno	2003
Shell	Ram Powell	1997
bp	Marlin	1999
Shell	Ursa	1999
elpaso	Marco Polo	2003
elpaso	Iviaico Poio	2003

Girassol FPSO

# Mooring & Mating. Floatover



#### Representative projects:

- ♦ BP, Holstein, Spar upending and mooring. Topside mating. Ballast plan during load transfer.
- ♦ Tanker berthing studies for the Cabo Negro tanker terminal in the Straits of Magellan, Chile, for Proceanic Ingenieria Ltd.
- ♦ Analysis of lowering a float-over deck using water jacks.

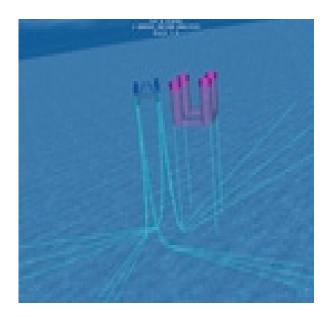
#### Holstein Spar

- Mating engineering installation of the jacket to a template for Chevron's Lomba and Nemba jackets.
- ♦ Study the relative motion of two tankers moored side by side with a turret moor.
- ♦ Two body tanker motions analysis involving sizing the hawser between a production tanker and a shuttle tanker for a floating production and off-loading system.

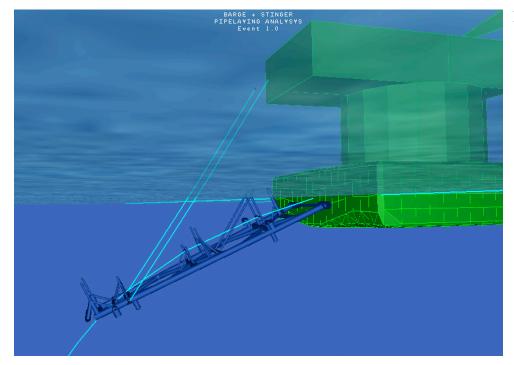


- ♦ Analysis of motions at an offshore terminal to facilitate the design of the mooring equipment.
- Analysis to determine the dynamic impact loads when positioning a platform onto template stabbing guides.
- ♦ Screening and down time analyses for several deep and shallow water mooring systems.
- ♦ Analysis of the motions of a D.P. drillship during thruster failure.
- ♦ Analysis of the dynamic responses of a jacket and a derrick barge during upending.
- ♦ Analysis of the dynamic response of a moored, continuous span floating bridge excited by a random sea.
- ♦ Analysis of the applicability of synthetic fiber ropes for mooring systems. Bohai Bay 2000, Worley.
- FPSO + FLOTEL SIDE BY SIDE
  MOTION ANALYSIS
  EVENT-1-0

- ♦ Benguela Belice, Piece mating for compliant tower. ChevronTexaco 2004.
- ♦ Floatover, North Rankin B. Woodside, 23000 ton. To be installed.
- ♦ Floatover, Arthit Process Platform. PTTEP,
   J. Ray McDermott, 17,500 ton. December 2007,
   Gulf of Thailand.
- ♦ Floatover, PA-B and LUN-A. Sakhalin II Topsides, July 2007. Designed by AMEC, construction by Samsung Heavy Industries, Transported and Installed by SAIPEM by floatover method. At 28,000 tonnes, PA-B is one of the largest floatover installations ever.
- ♦ TECHNIP, Kuala Lumpur, Malaysia. Use of Ultramarine technology for several floatovers.



# Subsea, Risers & Pipelines



Barge,pipe,stinger simulation

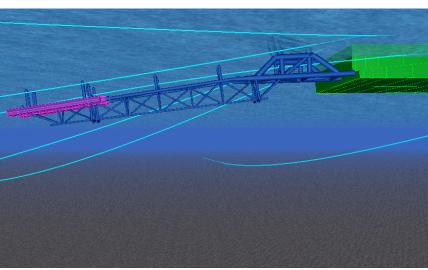
- Shenzi Gas Export Project. Technical and design oversight. Support for the design, fabrication and installation as well as design verification for 12-inch Gas export SCR and Pipeline. The SCRs will be connected to a Moses TLP located in GC 653 in 4400 ft water depth. The length of the gas export pipeline is approximately 11 miles.
- ♦ Valentine Maritime, Abudhabi, 16 inch pipeline repair project. Mooring arrangement of OM1 barge. 16" pipeline with the Ocean Maintainer I Barge.
- Neptune Export Laterals Project. Technical and design support for the design, fabrication and installation as well as design verification for the two 20" Oil and 12" Gas export lateral SCRs and Pipelines. The SCRs will be connected to the Neptune SeaStar TLP located in GC 613 in 4400 ft water depth. The length of the pipelines is approximately 23 miles.
- ♦ Stolt Offshore, NSP Project, New Stinger Polaris, Motion Analysis during a pipe lying operation. Load induced by the motions to the cable system connecting the stringer to the barge.



- ♦ BG Exploration & Production India Limited NRPOD Platform And Pipeline Project. Mooring pattern during laying of the 20" Export Gas Pipeline and the 20" Infield Gas Pipeline with the Global's Derrick Lay Barge.
- Shenzi Field Development Project. Technical and design oversight. Fabrication and installation support for the Shenzi field development in general and the 2x8inch and 2x10-inch production and 2x6-inchgas lift SCRs and their flowlines segments in particular. The SCRs will be connected to Moses TLP located in GC 653 in 4400 ft water depth.
- ♦ Genghis Khan Project. Technical and design oversight, procurement and installation support and execution of all elements of the Genghis Khan subsea tie back dual 6.625" flowlines and SCRs with wet insulation to the Marco Polo TLP in GC 608 in 4300 ft water depth.
- ♦ BP Shah Deniz field High Pressure (HP)
- gas condensate development. Motion analysis of the PLBG vessel, the truss and stinger structures and the pipeline
- Marathon Oil. Alba Field Development. Pipelay analysis. Stationkeeping analysis on the Midnight Brave. Damage and Intact cases. PLEM installation engineering

Barge,pipe,stinger simulation

- ♦ Stolt Offshore. Pipelay Angostura Project. Two body structural analysis of the 46m stinger. Pipelay engineering for 18 in and 30 in pipe.
- ♦ Independence Hub Project. Leading a team to oversee the detailed design and verification, procurement, fabrication and installation of the 1 x 20 inch export, 2 x 10 inch and 5 x 8 inch initial production SCRs connected to the Independence Hub Deep Draft Semi Submersible located in MC920 in record 8,000 ft water depth. In addition, provide technical support to the pipeline and flowline designs as well as to the motions and model testing activities of the Semi.
- ♦ Bouygues Offshore, Caspian Pipeline Conglomerat, Cpc-R / Crude Oil Pipeline System, Dynamic Pipelying Simulation on the BOS355 vessel equiped with an articulated stinger. The pipe is 42" diameter with 3" concrete coating.



# Bridges and Marine Engineering



- ♦ ICA. Chiapas bridge project in Chiapas, Mexico. Innovative installation design of 8 jackets using offshore technology. Launch, transportation, upending and positioning. Execution of installation operations
- ♦ Performed loadout, transport, mooring and mating studies for mating 5000 metric ton bridge sections of the Kwang Ahn Bridge in Pusan, South Korea.

Chiapas Bridge

- Performed side launch, towing, upending and setdown studies for 7 separate bridge support structures in 12 to 90 meters of water in Chiapas, Mexico.
- Mooring and Hydrodynamic Motions Analysis for multiple pontoon sections of the Hood Canal Floating Bridge for the State of Washington, including structural dynamic effects.



- ♦ Analysis of a submersible superstructure during a three point lift.
- ♦ Engineering consulting services performed in DORIS Development Canada Engineering's office for the loadout, tow and mating analysis of the topsides for the gravity based HI-BERNIA structure.
- ♦ Analysis of the vibrations induced in a platform piping sub-assembly with recommendations to minimize these vibrations.



Chiapas Bridge Pile



Kwang Ahn Bridge Span

## **Permanent Clients**

ABB Offshore Systems A.S. Aker Offshore Partner A.S. Amec Offshore Limited Amec Process & Energy Ltd. Aquarius Internatl Consultants Pty Ltd. Argonautics Marine Engineering Asian Lift Pte Ltd Atlas Engineering, Inc. Berger/Abam Engineers Inc. BT Offshore Pte Ltd Burness Corlett - Three Quays Casbarian Engineering Associates ChevronTexaco Clough Offshore **CNOOC** Research Center COOEC Daewoo Shipbuilding & Marine Engr Diamond Offshore Drilling, Inc. Doris Engineering Eagle Maritime Consultants, Inc. Econofreight Heavy Transport Ltd. ExxonMobil Development Co. Falconer, Bryan & Associates Friede & Goldman Ltd. Global Industries Ltd. Global Maritime A.S. Global Maritime Ltd. Global Maritime U.S.A. GustoMSC-Ocean Design Inc. Heerema Marine Contractors Nederland Hogskolen I Bergen Hyundai Construction Co. Ltd. Hyundai Engineering Co. Ltd. Hyundai Heavy Industries Co. Ltd. Inha University Inocean A/S J. Ray Mcdermott Kellogg Brown & Root, Inc. Korea Maritime University LeTourneau, Inc. Marine Projects International

Maritime Sector Specialists M&H Energy Services

Mustang Engineering, L.P. National University Of Singapore Navalprogetti srl Ngee Ann Polytechnic Ocean Dynamics, LLC Opticonsult A.S. Overdick GmBH & Co. Petrobras, Cenpes Proeight Offshore Engineering Pt Komaritim Ranhill Worley Sdn Bhd Saipem Energy International Saipem Mediterranean Services Saipem S.A. Saipem UK Limited Samsung Heavy Ind. Co. Ltd. Sargent & Herkes, Inc. Scivita, Inc. Sea Quest Technology Pte Ltd Semco Salvage & Marine Pte Ltd Shell International E & P Inc. Six Tee Marine & Offshore Engr. Henry Sliwinski, P.E. Smit Engineering B.V. Stolt Offshore M.S. Ltd. Stress Engineering Services A.K. Suda, Inc. Technip Geoproduction Technip Offshore, Inc. Tecon Srl Templeton & Associates Tero Marine (S) Pte Ltd. Texas A&M University T.L. Offshore Sdn Bhd Ultratec University of Newcastle U.S. Coast Guard Academy U.S. Coast Guard R&D Center VietsovPetro Joint Venture Waller Marine WorleyParsons Services Pty Ltd

# Proprietary Software & Custom Adapted Technology

- ♦ Customize MOSES to allow for dynamic flooding of compartments so that dynamic upending could be analyzed.
- ♦ Customize MOSES to include the inertia and deformation during static, time domain, and frequency domain analyses for the Mobil Offshore Base assembling 6 semisubmersibles with a combined length of 4000 feet.
- ♦ The development of a computer program which computes inertial, hydrostatic and hydrodynamic loads on a vessel and its cargo, and then performs stress and fatigue structural analysis on the composite structure (OTTO).
- ♦ The development of a computer program to simulate the jacket launching procedure from an articulated barge.
- ♦ The development of a computer program to plan and evaluate the hydrostatics and loadout sequence of a large structure onto a floating vessel (ISAAC).
- ♦ The development of a computer program to simulate the dynamics of launching a jacket from a barge, and the statics of upending the jacket (OSCAR Launch and Upend).
- ♦ The development of an onboard computer program to control the positioning of a subsea payload being lowered by moored barges.
- ♦ The development of a finite element computer program to analyze piping systems.

