Appendix D

APPLICANT-SUPPLIED INFORMATION

APPENDIX A

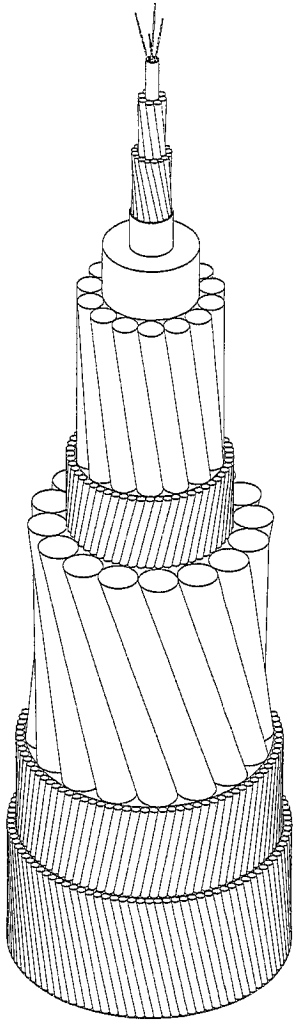
Project Technical Information

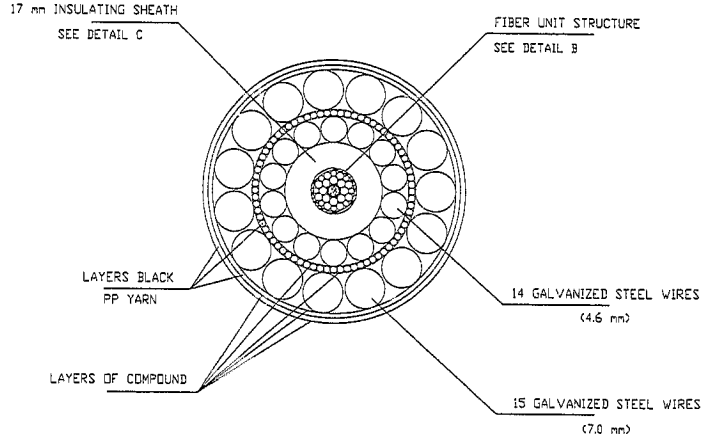
Cable Specifications

CABLE PROPERTIES

CHARACTERISTICS	UNIT	VALUES
CORE CABLE DIAMETER	mm	17
FIRST LAY STEEL WIRE DIAMETER	mm	4.6
NUMBER OF STEEL WIRES IN THE FIRST LAY (LEFT HAND)		14
PITCH	mm	470
SECOND LAY MILD STEEL WIRE DIAMETER	mm	7.0
NUMBER OF STEEL WIRES IN THE SECOND LAY (LEFT HAND)		15
PITCH	mm	560
OUTER DIAMETER	mm	46
WEIGHT IN AIR (1 ohm/km-1.6 ohm/km)	kg/m	7.2/7.1
WEIGHT IN WATER (1 ohm/km-1.6 ohm/km)	kg/m	5.5/5.4
STORAGE FACTOR	m^3/km	2.2

PERFORMANCES	UNIT	VALUES
CABLE BREAKING LOAD (CBL)	kN.	560
PERMANENT TENSION ACCEPTABLE (NPTS)	kN.	200
OPERATING TENSION ACCEPTABLE (NOTS)	kN.	300
SHORT TERM TENSION ACCEPTABLE (NTTS)	kN.	400
MODULUS (1 ohm/km-1.6 ohm/km)	km.	>9/10
CRUSH RESISTANCE	kN.	50
IMPACT RESISTANCE	N.m	>4000
PRESSURE RESISTANCE	MPa.	100
HYDRODYNAMIC CONSTANT (1 ohm/km-1.6 ohm/km)	Deg. Knots	120/120





NOTE:

THE INFORMATION IN THIS DOCUMENT IS INTENDED SOLELY FOR THE MAINTENANCE AND OPERATION OF THE AMERICAS-2 CABLE SYSTEM AND IS NOT AUTHORIZED FOR DISTRIBUTION OUTSIDE OF THE SYSTEM OWNERS OR MAINTENANCE PROVIDERS.

FULL SCALE

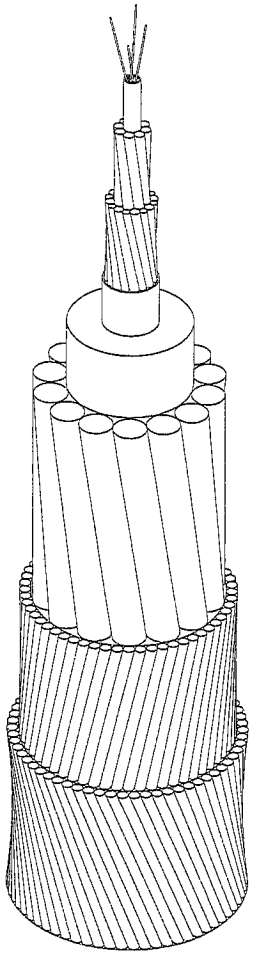
CABLE CROSS SECTION
AND GENERAL CHARACTERISTICS
ALCATEL SUBMARINE NETWORKS
ASN-OALC-4 17mm
Double Armoured Cable (DA)

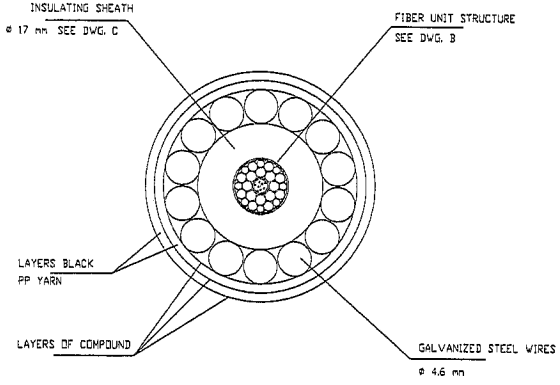
FILENAME:	DRAWN BY:	CHECKED BY:	DATE:
50207	OM	GM	05/24/02

AT&T INTERNATIONAL SYSTEMS MAINTENANCE

SA-50207

SA-50207





CABLE PROPERTIES

CHARACTERISTICS	UNIT	VALUES
CORE CABLE DIAMETER	mm	17
FIRST LAY STEEL WIRE DIAMETER	mm	4.6
NUMBER OF STEEL WIRES IN THE FIRST LAY (LEFT HAND)		14
PITCH	mm	470
SECOND LAY MILD STEEL WIRE DIAMETER	mm	---
NUMBER OF STEEL WIRES IN THE SECOND LAY (LEFT HAND)		---
PITCH	mm	---
OUTER DIAMETER	mm	31
WEIGHT IN AIR (1 ohm/km - 1.6 ohm/km)	kg/m	2.7/2.6
WEIGHT IN WATER (1 ohm/km - 1.6 ohm/km)	kg/m	1.9/1.8
STORAGE FACTOR	m^3/km	0.9

PERFORMANCES	UNIT	VALUES
CABLE BREAKING LOAD (CBL)	kN	370
PERMANENT TENSION ACCEPTABLE (NPTS)	kN	150
OPERATING TENSION ACCEPTABLE (NOTS)	kN	200
SHORT TERM TENSION ACCEPTABLE (in) (NTTS)	kN	250
MODULUS (1 ohm/km - 1.6 ohm/km)	km	>19/20
CRUSH RESISTANCE	kN	40
IMPACT RESISTANCE	Nm	>4000
PRESSURE RESISTANCE	MPa	100
HYDRODYNAMIC CONSTANT (1 ohm/km - 1.6 ohm/km)	Deg. Knots	85/84

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SA-50206

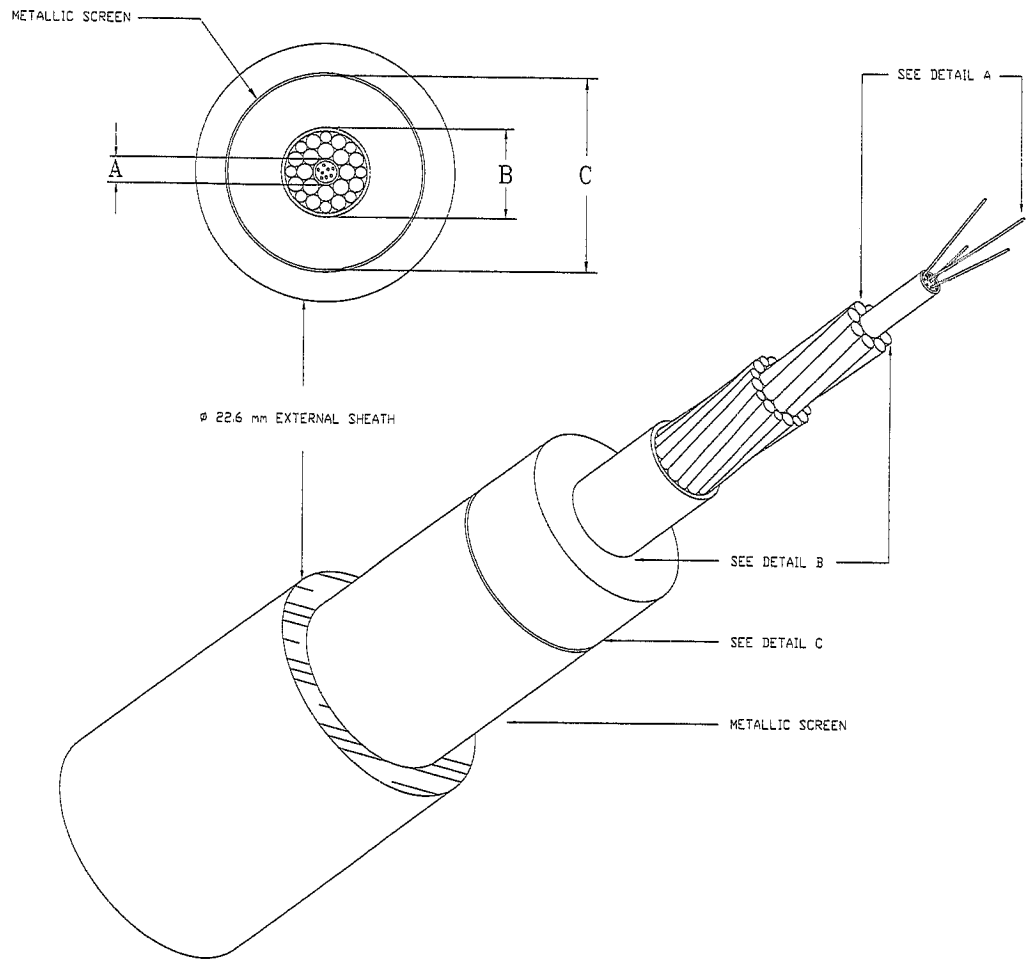
FULL SCALE

CABLE CROSS SECTION
AND GENERAL CHARACTERISTICS
ALCATEL SUBMARINE NETWORKS
ASN-OALC-4 17mm
Single Armoured Cable (SA)

FILENAME:	DRAWN BY:	CHECKED BY:	DATE:
50206	DM	GM	05/24/02

AT&T INTERNATIONAL SYSTEMS MAINTENANCE

SA-50206



CABLE PROPERTIES

CHARACTERISTICS	UNIT	VALUES
CORE CABLE DIAMETER	mm	17
STEEL VAULT DIAMETER	mm	7.2
NUMBER OF STEEL WIRES IN THE FIRST LAY (LEFT HAND)		8
DIAMETER OF THE WIRE	mm	1.4
NUMBER OF STEEL WIRES IN .THE SECOND LAY (LEFT HAND)		16
DIAMETER OF THE WIRE	mm	1.0/1.3
OUTER DIAMETER ON INSULATION	mm	17.0
EXTERNAL OUTER DIAMETER	mm	22.6
WEIGHT IN AIR (1 ohm/km - 1.6 ohm/km)	kg/m	0.79/0.73
WEIGHT IN WATER (1 ohm/km - 1.6 ohm/km)	kg/m	0.38/0.32
STORAGE FACTOR	m3/km	0.45

PERFORMANCES	UNIT	VALUES
CABLE BREAKING LOAD (CBL)	kN	70
PERMANENT TENSION ACCEPTABLE (NPTS)	kN	12
OPERATING TENSION ACCEPTABLE (NOTS)	kN	30
SHORT TERM TENSION ACCEPTABLE (NTTS)	kN	50
MODULUS (1 ohm/km - 1.6 ohm/km)	kN	>18/>21
CRUSH RESISTANCE	kN	30
IMPACT RESISTANCE	N.m	>150
PRESSURE RESISTANCE	MPa	100
HYDRODYNAMIC CONSTANT (1 ohm/km - 1.6 ohm/km)	Deg. Knots	48/43

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SA-50204

CABLE CROSS SECTION
AND GENERAL CHARACTERISTICS
ALCATEL SUBMARINE NETWORKS
ASN-OALC-4 17 mm
Lightweight Protected Cable (LWP)

FILENAME:	DRAWN BY:	CHECKED BY:	DATE:
50204	DM	GM	05/24/02

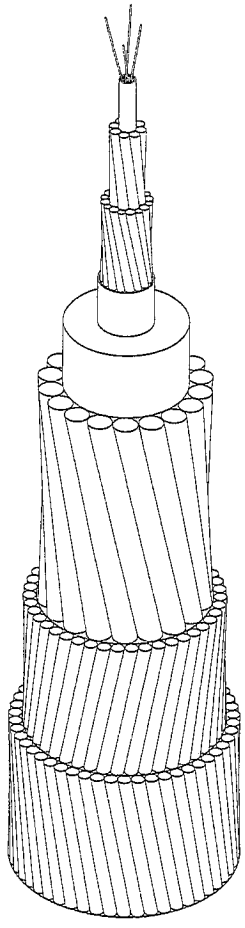
AT&T INTERNATIONAL SYSTEMS MAINTENANCE

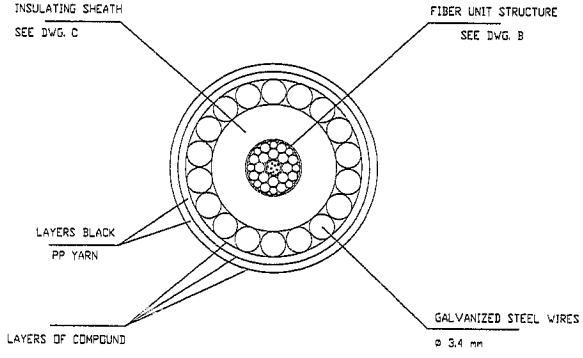
SA-50204

CABLE PROPERTIES

CHARACTERISTICS	UNIT	VALUES
CORE CABLE DIAMETER	mm	17
FIRST LAY STEEL WIRE DIAMETER	mm	3.4
NUMBER OF STEEL WIRES IN THE FIRST LAY (LEFT HAND)		18
PITCH	mm	470
SECOND LAYER MILD STEEL WIRE DIAMETER	mm	---
NUMBER OF STEEL WIRES IN THE SECOND LAY (LEFT HAND)		---
PITCH	mm	---
OUTER DIAMETER	mm	28
WEIGHT IN AIR (1 ohm/km - 1.6 ohm/km)	kg/m	2.1/2.0
WEIGHT IN WATER (1 ohm/km - 1.6 ohm/km)	kg/m	1.5/1.4
STORAGE FACTOR	m^3/km	0.75

PERFORMANCES	UNIT	VALUES
CABLE BREAKING LOAD (CBL)	kN	280
PERMANENT TENSION ACCEPTABLE (NPTS)	kN	100
OPERATING TENSION ACCEPTABLE (NOTS)	kN	150
SHORT TERM TENSION ACCEPTABLE (1h) (NTTS)	kN	200
MODULUS (1 ohm/km - 1.6 ohm/km)	kN	>19/20
CRUSH RESISTANCE	kN	40
IMPACT RESISTANCE	N.m	>4000
PRESSURE RESISTANCE	MPa	100
HYDRODYNAMIC CONSTANT (1 ohm/km - 1.6 ohm/km)	Deg. Knots	79/76





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SA-50205

FULL SCALE

CABLE CROSS SECTION
AND GENERAL CHARACTERISTICS
ALCATEL SUBMARINE NETWORKS
ASN-OALC-4 17mm
Single Armoured Light Cable (SAL)

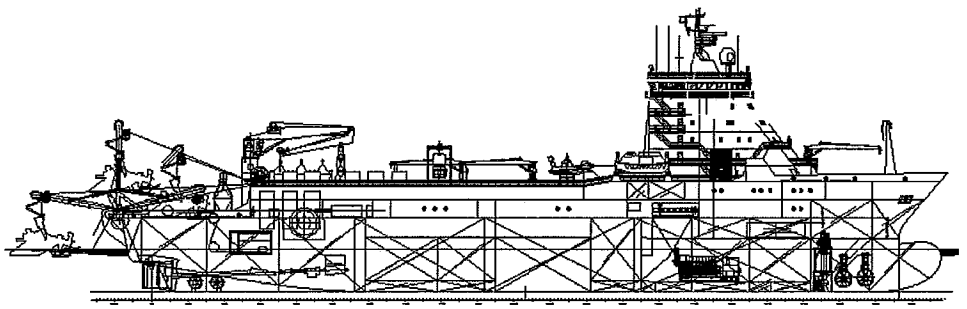
FILENAME:	DRAWN BY:	CHECKED BY:	DATE:
50205	DM	GM	05/24/02

AT&T INTERNATIONAL SYSTEMS MAINTENANCE

SA-50205

Vessel Specifications

ILE DE SEIN, ILE DE BATZ, ILE DE BREHAT



MAIN DESCRIPTION

Type	:	cable laying vessel
Class	:	BV+ I 3/3 cable laying vessel Ship E MACH-DEEP SEA AUT -F-PDY.MA.TA.R-PTR
Flag	:	French
POR	:	Port aux Français
Registred N°	:	FK 924 332 J
IMO N°	:	924 7039
Vessel built	:	HMD Hyundai Mipo Dockyard, Ulsan South Korea. 2001

MAIN DIMENSION

L.O.A excl whiskers	: 136.40 m
L.O.A	: 139.70 m
L.P.P	:123.90 m
Breadth moulded	:23.40 m
Summer draught	:8.00 m
Depth to 1st deck	:12.00m

DEADWEIGHT

Deadweight at draught 08.00m:	10,000 dwt
Deadweight at design draught 07,30m:	8,200 dwt

TANK CAPACITY

Diesel oil :	1,600 tonnes
Fresh water:	300 tonnes
Anti-rolling tks:	500 tonnes.
Main cable tk:	2x 2500 ton each cable tk. (max cap. each tank 3500 t) 2 x 1 500 m3 each tank
Spare cable tk:	2x 250 ton each tank 2 x 150 m3 each tank

SPEED

Service speed : 15.4 knots

ACCOMODATIONS

High class cabins : 8
Petty officer's cabins : 10
Double cabins (ordinary) : 5
Officer's cabins : 22
Single cabins (ordinary) : 20

ENGINE AND PROPULSION

2 x fixed pitch propellers:

output:	4000 kw
propeller diameter:	4000 mm
propeller speed:	133 to 146 rpm
direction of propellers:	inboard direction

REDUCTION GEARBOXES

Power:	4000 kw
Input revolutions:	900 rpm
Output revolution:	133 rpm.

THRUSTERS

Bow thruster:	2 x Lips 1500 kw,.
Aft thruster:	2 x Lips 1500 kw
Retractable thruster:	1 x Lips 720 rpm- 1500 kw

AUXILIARIES

Main diesel generator x 3:	4-stroke non reversing diesel engines.
D/G engineType:	9M32 MAK
Rating:	4320 kw
Voltage:	3 x 6600 v, 60 hz
Speed:	600 rpm
Fuel/consumption:	MDO/ 178 g/kw.h at 100% load.
Harbour generator x 1:	4-stroke non reversing diesel engines.
D/G engineType:	8M20 MAK
Rating:	1360 kw
Voltage:	3 x 450 v, 60 hz
Speed:	900 rpm
Fuel:	MDO

Emergency generator

Voltage:	3 x 450 v, 60 hz
Rating:	175 kvA

MANEUVRING

Dynamic position:	DP2 BV PDY MA.TA.R Alstom
Measurement position:	2 x DGPS Sonardyne HPR
Sensor:	2 x gyrocompasses 2 x VRU 2 x anemometers

DECK EQUIPMENT (KOCKS Bremerhaven)

Mooring Winches with Tension automatic : 1x 28 kw Port side (410-1400/2800 rpm)
Mooring warping Capstan : 1x 28 kw Stbd side (850 rpm)
Combined anchor wind lass & mooring winch : 2x fwd
Steering gear : 2x off according the Rules

CRANES

Overhead crane aft:	1x 5 ton. x span 25m
Cranes (P+S):	2x 2 ton x 12 m.
Monorail jointing room:	1x 1,5 ton.
Monorail E/R spare part:	1x 2 tons
Swing davit:	1x 1 ton.
Buoy handling:	2x off each side of vessel. Capacity 5 tons each

NAVIGATION EQUIPMENT (Kongsberg)

Radar: 1x radar 10 cm S-band ARPA 30 kw 16"
1x radar 3 cm X-band 9 GHz ARPA 25 kw 16".
1x Sea map 10 ECDIS

others:
2 x DGPS
2x gyrocompasses
1x Autopilot.
1x Magnet compass.
1x Echo sounder, full ocean depth.
1x Dual axis Doppler speed log.

COMMUNICATION EQUIPMENT

Radio plant: GMDSS operation A1, A2, A3 areas, occasionally A4.
2x Inmarsat C.
2x Inmarsat B.
1x MF/HF transceiver unit minimum 400w, and watch receiver 2187,5 Hz.
Portables VHF, UHF
Mobile phones: 2x duplex VHF/DSC with watch receiver(channel 70).
4x simplex VHF without DSC.
1x Radio direction finder (VHF).
1x GSM mobile phone unit.
1x integrated telephone, PA and intercom system.
Communication network : 1x ethernet network Owner communication

RESCUE AND LIFE SAVING EQUIPMENT

MOB boat: 1 x 10 persons water jet engine abt 130 kw, 02 dk
Life boat: 2 x totally enclosed 70 persons each (02acc deck).
Life rafts: capacity according the Rules.
Life raft: 1 x for 6 persons aft cable deck.
Survival suits+life jacket: for each person.
Work boat: 1x aluminium work boat 7m long, 10 persons.
Davit for handling life boats.

CABLE ENGINE SPECIFICATION

Sheaves: 1x cable repair sheave
1x plough towing sheave
1x cable laying sheave
1x umbilical sheave

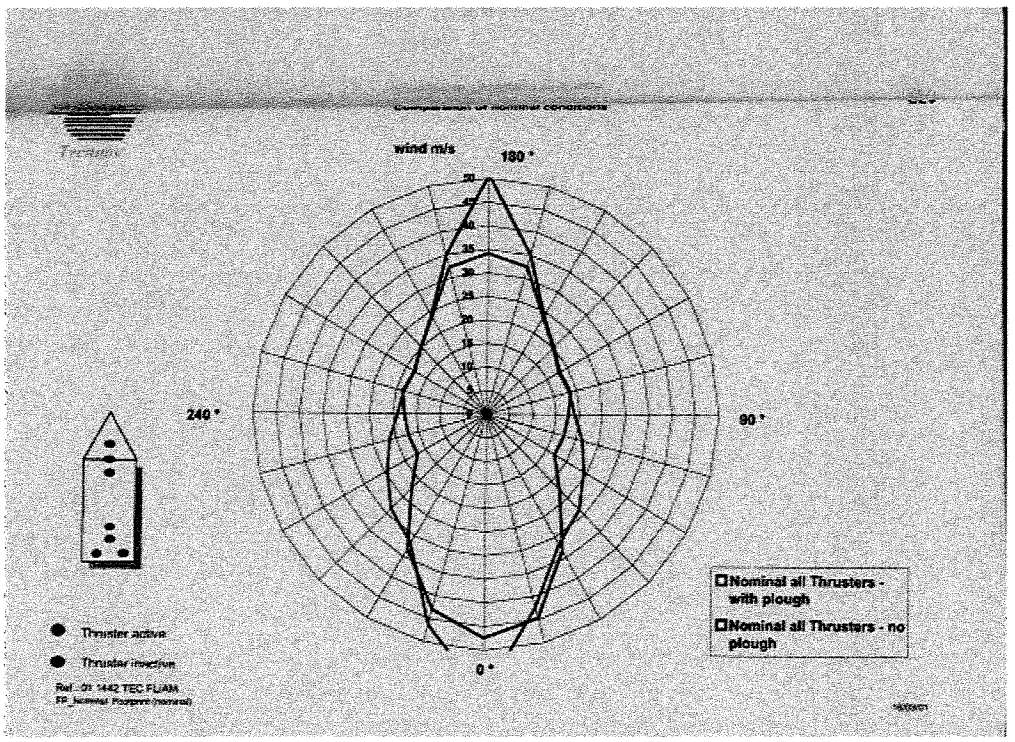
Tugger winch: 2x 7.5 ton.
Drum cable engine: 1x 25 t 1 knot, 5 t 8 kts.
Max tension static 40 t

DO/HB cable engine: 1x off 6 wheel pair LCE.
LCE linear cable engine: 1x 21 wheel pair
And Cable brake.
Cable diverter: 2 off
Emergency brake stonker: 1x braking force 25t
A-Frame 50 t SWL, 35 knt winds, 2 knt current sea state 7 conditions
Tow winch: 1x 130 tons breaking load

PLOUGH

1 plough SMD 3m burial capacity

DP CAPABILITY PLOT



Oil Spill Management

The vessel complies with the OPA 90 requirement Qualified individual (QI)

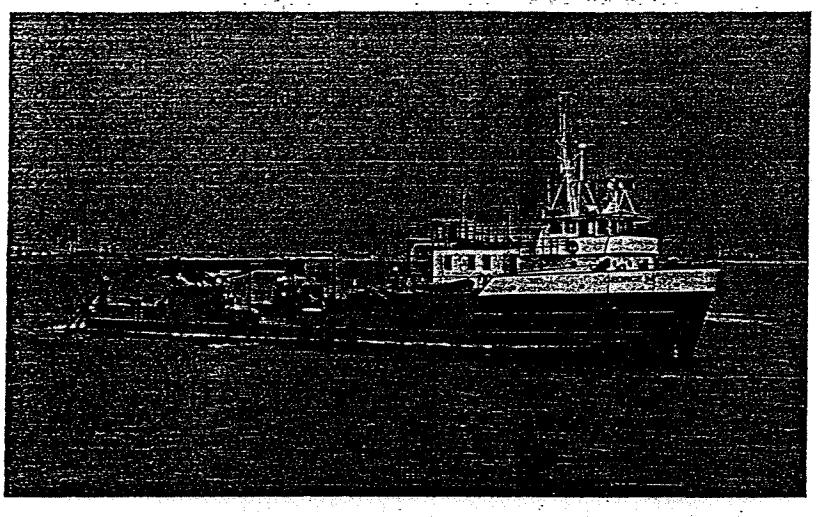
HUDSON MARINE MANAGEMENT SERVICES
800 Cooper Street
Camdem, NJ 08 102
USA

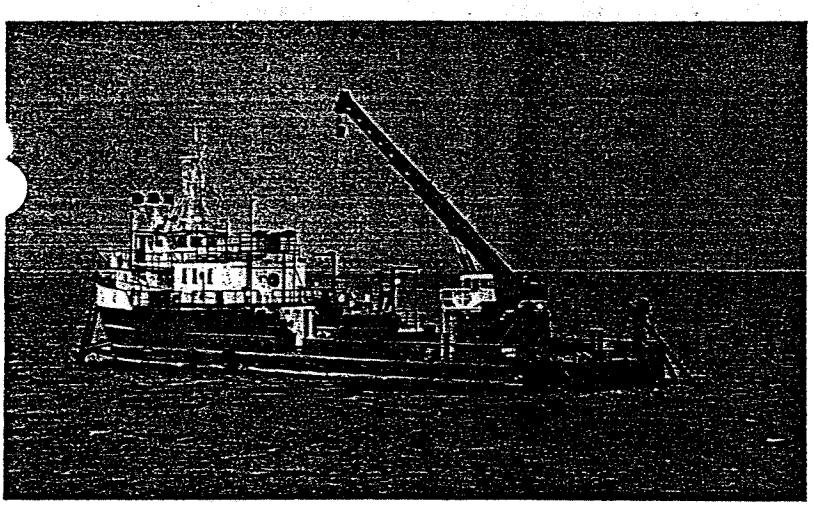
American Pacific Marine
Engineered Solutions on Land and Sea

M/V AMERICAN PATRIOT

165' Construction Support Boat

(Formerly M/V George M)

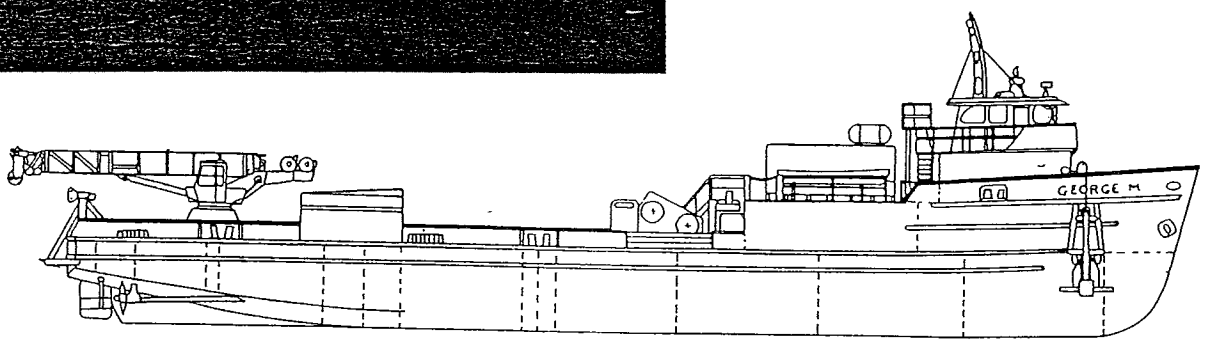


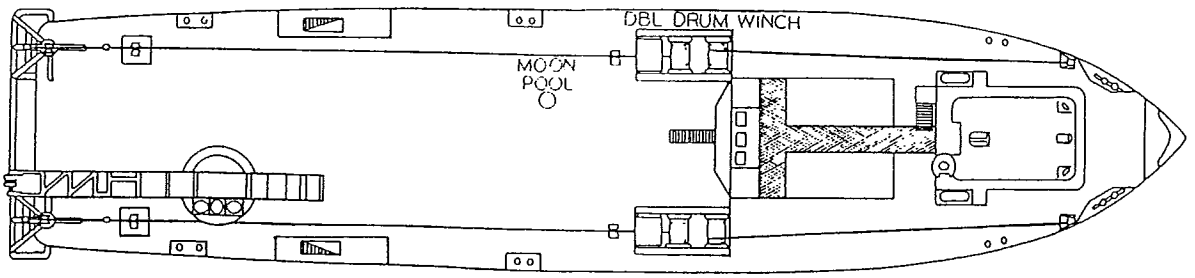


Specially equipped and rigged to perform . . .

MARINE CONSTRUCTION
DIVING AND ROV OPERATIONS
CORING OPERATIONS
SURVEYS - BATHYMETRY & SIDE SCAN SONAR
SUBSEA COMPLETION WIRELINE OPERATIONS

This versatile work boat has a 4-point mooring system, large open deck space and 40-ton crane. With 4200' of wire to each anchor, the American Patriot covers a large area from the same anchor set in 30' to 1200' of water. The comfortable berths, full galley with cook and laundering facilities allow the boat to accommodate 29 people for 45 days at sea.





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