



ANNEX "A" to TimeCharterParty

M/V SANCO ATLANTIC with Bolt Guns

YOUR PARTNER IN MARINE SEISMIC OPERATIONS



SHIP DESIGN	Vik & Sandvik Seismic, Source / 2-D Seismic Survey Vessel		
CLASSIFICATION	BV		
BUILDER	TH. Hellesøy Skipsbyggeri AS, Norway , build no. 114,		
BUILT / REBUILT	Year 1987 / 1993		
PORT OF REGISTRY	Nassau		
FLAG	Bahamas		
IMO NUMBER	8610667		
CALL SIGN	C6TU2		
OWNER:	Sanco Holding AS Moljevegen 32 N-6083 Gjerdsvika NORWAY	MANAGER:	Sanco Shipping AS Moljevegen 32 N-6083 Gjerdsvika NORWAY
MAIN DIMENSIONS	CLASS NOTATIONS		
Length O.A	91,3 m	BV: +HULL, +MACH, +AUT-UMS, HEL. Unrestricted navigation BV ID Number: 34703 X	
Length P.P	81,0 m		
Breadth	17,40 m		
Draft , summer / winter	7.0 m / 6,8 m		
Deadweight, 6,8 m	1876 MT		
Gross / Net Tonnage	4639 / 1392		

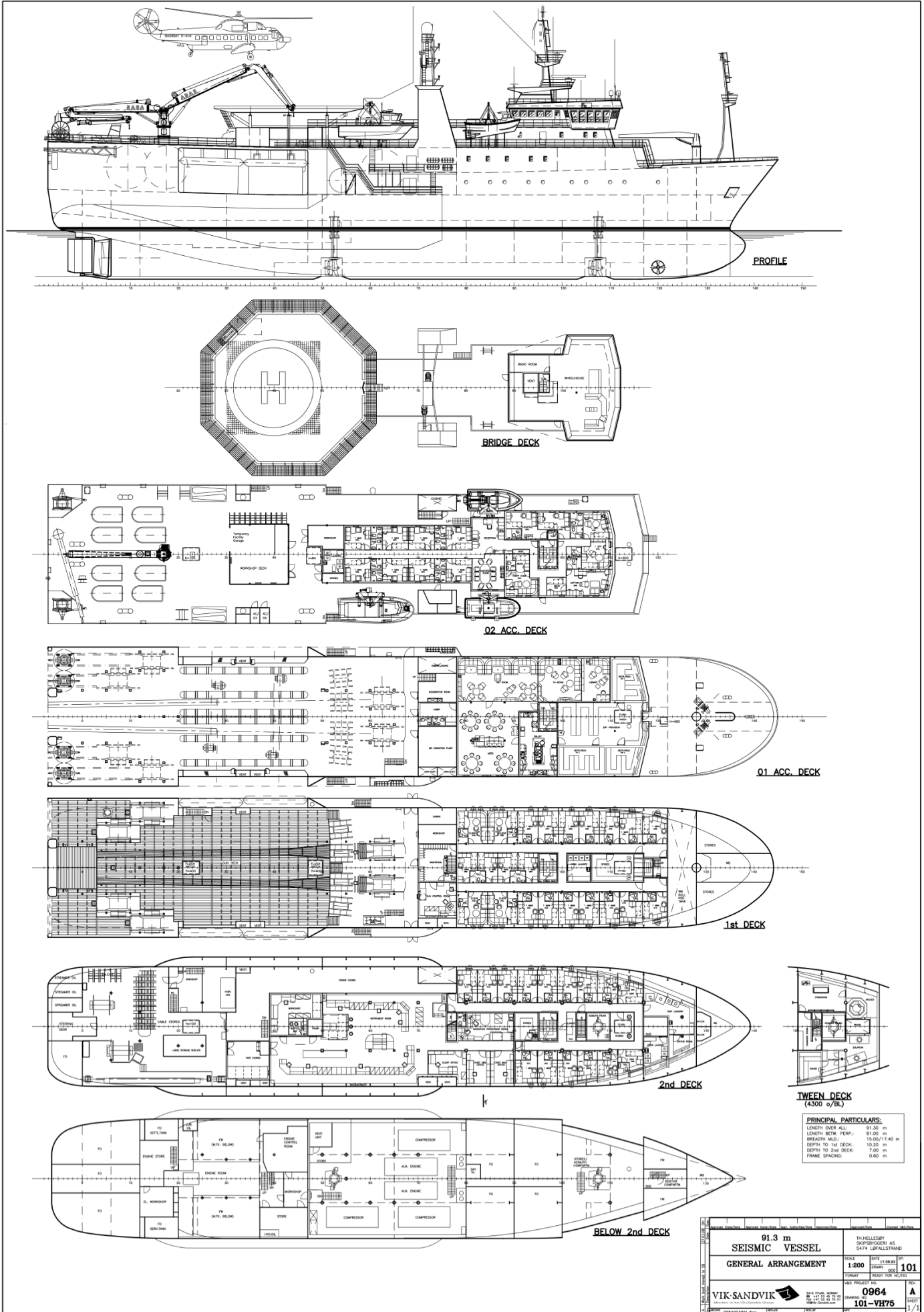
Updated: October 2021
All specification given without guarantee, and subject to changes

MACHINERY AND PROPELLER PLANTS	
Main propulsion:	Single screw + Twin azimuths,
Main engines:	1 x 4440 kW, Wartsila Vasa, 12V32D
Main gear:	Scana Volda, Type ACG 850 w/PF 600
Shaft Generator:	LeroySomer, LSA 52,2 L70/4p-1600kW
Propeller:	1 x Wartsila CPP, type 3PRA-1300A
Auxiliary engines:	1 x Caterpillar 3516 B – 1825 kW 2 x caterpillar 3516 DITA – 1448kW
Emergency Aux.	1 x Caterpillar – 198 kW
Bow thruster:	1 x Brunvoll, FU-45-TC-1375 430 KW
Bow retractable Azimuth thr.:	1 x Brunvoll AR-63-LNC 1650 850 kW
Stern retractable Azimuth thr.:	1 x Brunvoll AR-63-LNC 1650 850 kW
Rudder:	1 x Barkemeyer, type BRB 28-40-16
Steering Gear:	1 x Tenfjord, Type 18M 260
Working air Compressors:	1 x Atlas Copco GA 22+FF
ELECTRIC POWER	
440 V, 230 V all 60Hz	
DECK MACHINERY	
Crane, 02-deck:	1 x Abas knuckle boom, SWL 8T@16m 1 x Abas knuckle boom, SWL 4 T@8m
Crane, provision, 01 deck:	1 x TTS knuckle boom, GPK 40-1-12, SWL 1,0 T@2.5-12m
Seismic Streamer Winches:	4 x 9000 m each, 60 mm diameter
Seismic Gun winches:	8 x 330 m each, 67 mm diameter
Auxiliary winches:	11 pcs on gun & streamer deck
Hydraulic Power Pack:	4 x 280 bar
NAVIGATION EQUIPMENT	
Auto Pilot:	Anschutz PilotStar D
GPS:	2 x Furuno GP-150
Radar 1:	1 x 10 cm Furuno FR 2117, Arpa
Radar 2 + 3:	2 x 3 cm Furuno FR 2137, Arpa
Radar 4:	Sea Hawk, Arpa
Gyro 1 & 2:	1 Meridian Survey + 1 Meridian Stand.
EPIRB:	Jotron
Electronic Chart navigation:	2 x Furuno TECDIS , Telco
AIS:	Furuno FA-150 AIS
C-Joy with track steering:	Kongsberg with dedicated software
Seismic steering system:	K-Pos
Echo sounder, dual frequency:	Simrad EA 640, 12, 38 & 200 kHz Max depth working about 10.000 m
Speed log / Current meter:	Skipper EML 224
Voyage Data Recorder:	Kongsberg MBB(S)
SEISMIC	
On-line Nav. system:	ION Gator II
GPS Receivers:	Fugro StarPack
Primary Navigation:	Fugro Starfix. XP2 & Starfix. G2
Gun array tracking:	Fugro StarTrack RGNSS, 2 per subarray
Survey Gyro:	1 x Meridian Surveyor
Nav. Processing:	FGPS SeisPos
ENERGY SOURCE	
Type:	Bolt 1900 LLXT guns, dual source
Configuration:	Single / Dual source, max array separation 10 m, 6 positions - 3 m dist.
Number of sub. arrays:	6 pcs sub. Array in use
Tow width:	Dual source, 50 - 60 m max COS
Firing control:	Gun link 2000
QC:	Gun link
NFH:	All position
PT:	Pressure Transducer front Position
Depth transducer:	2 per sub-array
Tow system:	2 SW rope winch , Odin, Not in use
Deflectors:	3 pcs Barovane type 3 3 x LMF, 42/138 (38/207) – E 60
Seismic Compressor capacity:	3 x 1483 cfm = 4449 cfm in total (3 x (42 / 38) m3/min)
Working pressure:	138 / 207 Bar (2000 Psi)

SPEED AND FUEL CONSUMPTION	
Max. speed:	14 knots – 22,5 m3
Service speed:	13 knots – 16 m3
Economic speed:	10 knots – 11,5 m3
Seismic source shooting:	4,5 knots – 14.0 m3
Bollard pull:	N/A (Seismic Vessel)
Endurance shooting:	80 days
Endurance economic speed:	82 days
CAPACITIES	
Fuel oil, MDO:	1500 m3
Drinking water:	118 m3
Ballast water:	734 m3
Hydraulic oil:	8,8 m3
Sewage:	39 m3
Dirty oil / Sludge oil:	5 m3 + 6 m3
Fresh water generator:	Alfa Laval, Type JWP-26-C80 – (15 m3/day)
Sewage treatment plant:	Jowa AB, Type Jowa BIO-STP 4
Black water & Grey water:	Jowa AB, Type Jowa BIO-STP 4 and EVAC, type AHM-1122/2,5 m3
Waste compactor:	Delitek, type DT-504s
Incinerator:	Teamtec Golar OG 400
Ballast treatment plant:	MMC Green Technology 100 m3
Helideck, Daylight:	D-value 18,95 meter, 8,6 tonnes
LIFE SAVING EQUIPMENT	
Safety manning level:	9 persons
Rescue / FRC / MOB:	Norsafe 750 M, water jet
Workboat:	SeisWorker 950
Inflatable life rafts:	6 x 20 + 2 x 25 person Viking DK+
Life Jackets:	112 pcs
Life buoy:	12 pcs
Survival suits:	122 pcs
Emergency radios:	3 x Sailor SP 3520
Radar transponders:	2 x Sailor Sart II
Fire detection system:	Autronica DYFI BS100
Fire pumps:	2 x Allweiler 36 m3/h + 1 x 31 m3/h
Co2 system:	Heien Larsen
Lifesaving capacity max.:	54 persons
COMMUNICATION	
VSat number Captain:	
VSat number, Bridge:	
VSat number, Ch. eng:	
M/F & H/F:	Sailor 6301
VHF Stationary:	1 x Sailor 6222 + 1 x Sailor 5022 1 Sailor RT 2048
Handheld VHF radios:	3 x Jotron Tron TR 20
UHF stationary:	5 x Motorola GN 380
UHF portable:	4 x Motorola UHF GP 340
Internal communication:	Vingtor VMP-430
Satellite – Inmarsat Type C:	2 x Sailor 6006
Nav. Tex.:	Furuno NX-700
Satellite com. Equipment:	Sailor 500 FleetBroadband
Vessel E-mail:	bridge.atlantic@sanco.no captain.atlantic@sanco.no
ACCOMMODATION	
Instrument room:	1 pcs sep. aircon. with redundancy
Gun Shack:	1 pcs with air-condition
Work Shop:	2 pcs with air-condition
Seismic store:	2 pcs
Mess room:	Seating for 34 persons
Day rooms:	3 x dayrooms 1 conference room
Gymnasium:	Yes
Cabins:	44 x 1 bed with bathroom 5 x 2 bed with bathroom Hospital with bathroom
Air condition:	Techno Term HVAC system



OUTLINE SPECIFICATION M/V SANCO ATLANTIC




PRINCIPAL PARTICULARS:
 LENGTH OVER ALL: 91.30 m
 LENGTH BETW. PERP.: 81.00 m
 BREADTH MAX.: 15.00/17.40 m
 DEPTH TO 1st DECK: 10.20 m
 DEPTH TO 2nd DECK: 7.00 m
 FRAME SPACING: 0.80 m

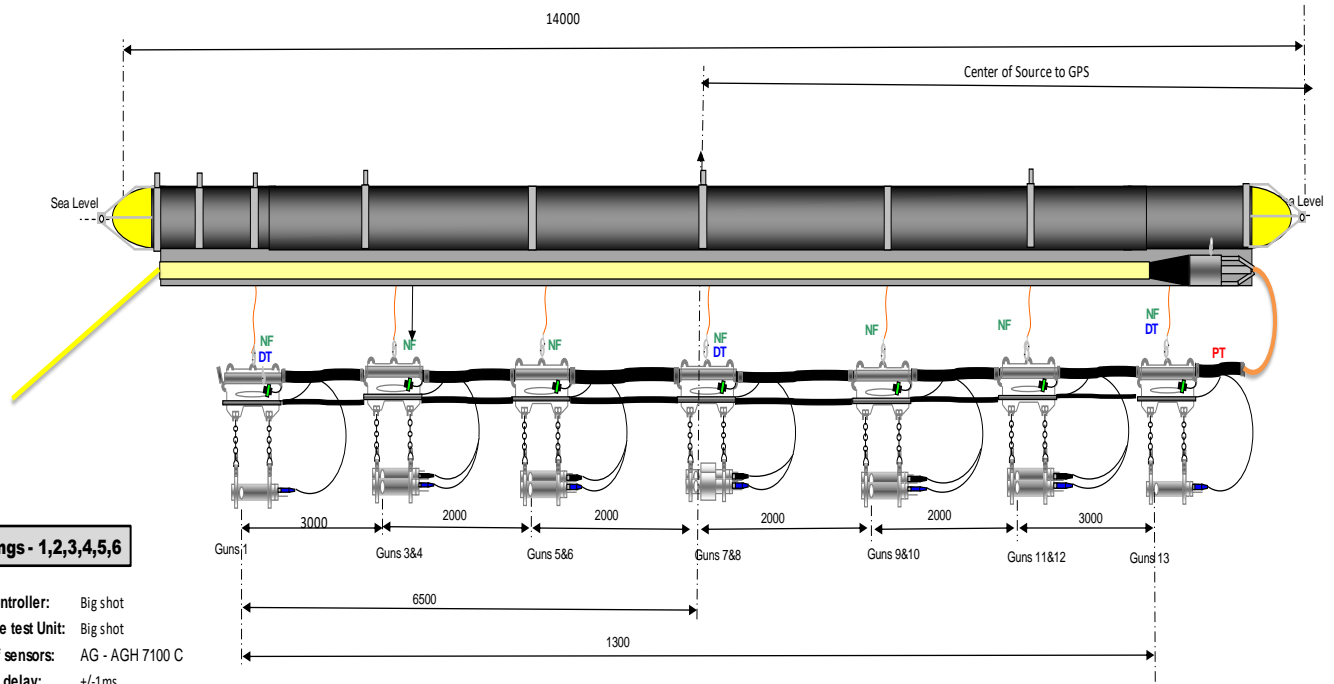
91.3 m SEISMIC VESSEL		TH. MELLEBY SKIFFERTSGEN AS SATA LIFELIFTSTAND	
GENERAL ARRANGEMENT		SCALE: 1:200	DATE: 17.08.09
		FORMAT: A3	SHEET: 101
		DRAWING NO: 0964	REV: A
		DATE: 10.11.07	SHEET: 1/1



Vessel: Sanco Atlantic
Company: Sanco Shipping
Client:
Survey:
Survey Number:

Source: single
Gun Depth: 9 meters
Total Volume: 1 x 4880 Cu.Inch
Gun array volume: 1220 Cu.Inch
Offset NF/Gun: 1m

NF Nearfield Hydrophone ALL Hangers
DT Depth transducers on clusters 1, and 7
PT Pressure transducer cluster 6
 Depth Ropes adjusted after depth



Strings - 1,2,3,4,5,6

Gun Controller: Big shot
Gun line test Unit: Big shot
Type of sensors: AG - AGH 7100 C
Air gun delay: +/-1ms
Type of Guns: Bolt 1900 LLXT

All measurements in millimeters

Guns Volume in Cuin

Gun 1	60	Gun 3	60	Gun 5	70	Gun 7	250	Gun 9	40	Gun 11	150	Gun 13	90
Gun 2	60	Gun 4	60	Gun 6		Gun 8	250	Gun 10		Gun 12	150	Gun 14	90

INDICATES SPARE GUN ON CLUSTER

Guns Offset/Bars Length in millimeters

Cluster 1	800	Cluster 2	800	Cluster 3	800	Cluster 4	1000	Cluster 5	800	Cluster 6	800	Cluster 7	800
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Depth Rope Lengths (mm)

Cluster 1	6200	Cluster 2	6200	Cluster 3	6200	Cluster 4	6200	Cluster 5	6200	Cluster 6	6200	Cluster 7	6200
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Sanco Atlantic has the following Bolt guns & chambers onboard:

1900 LLXT Bolt guns – 76 pcs which can be configured as clusters / singles as required

1200 – 529-1P-LT Solenoid – 71 pcs

1900 LLXT chambers as per below table:

Volumes / Quantity on board

Cuin	20	40	60	70	90	95	100	120	150	220	250			
LLXT	9	13	35	15	18	0	17	0	21	0	16			
Needed			26			26		14		26				

Sanco need to order in total: 66 pcs gun chamber

Sanco need to order in total: 10 pcs 1900 LLXT Bolt guns + pigtail

Sanco need to order in total: 48 pcs 1000 mm Spreaderbars

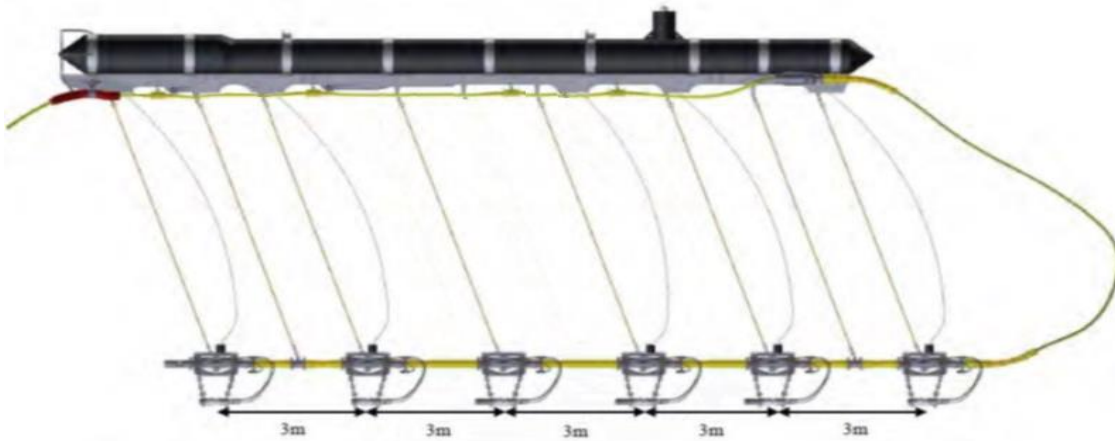
Spreader bars for Bolt Guns

800 mm bar upper = 68 pcs

800 mm bar lower = 99 pcs



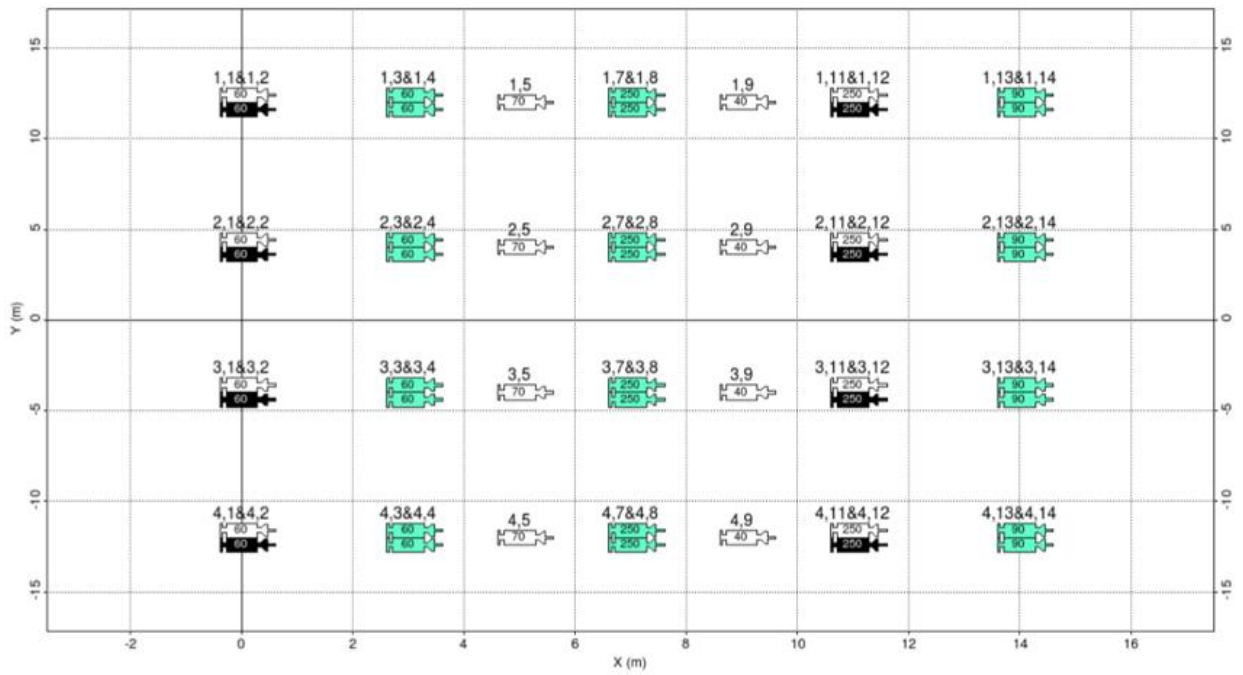
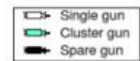
Gun string layout



Array: 4880T_090_2000_080

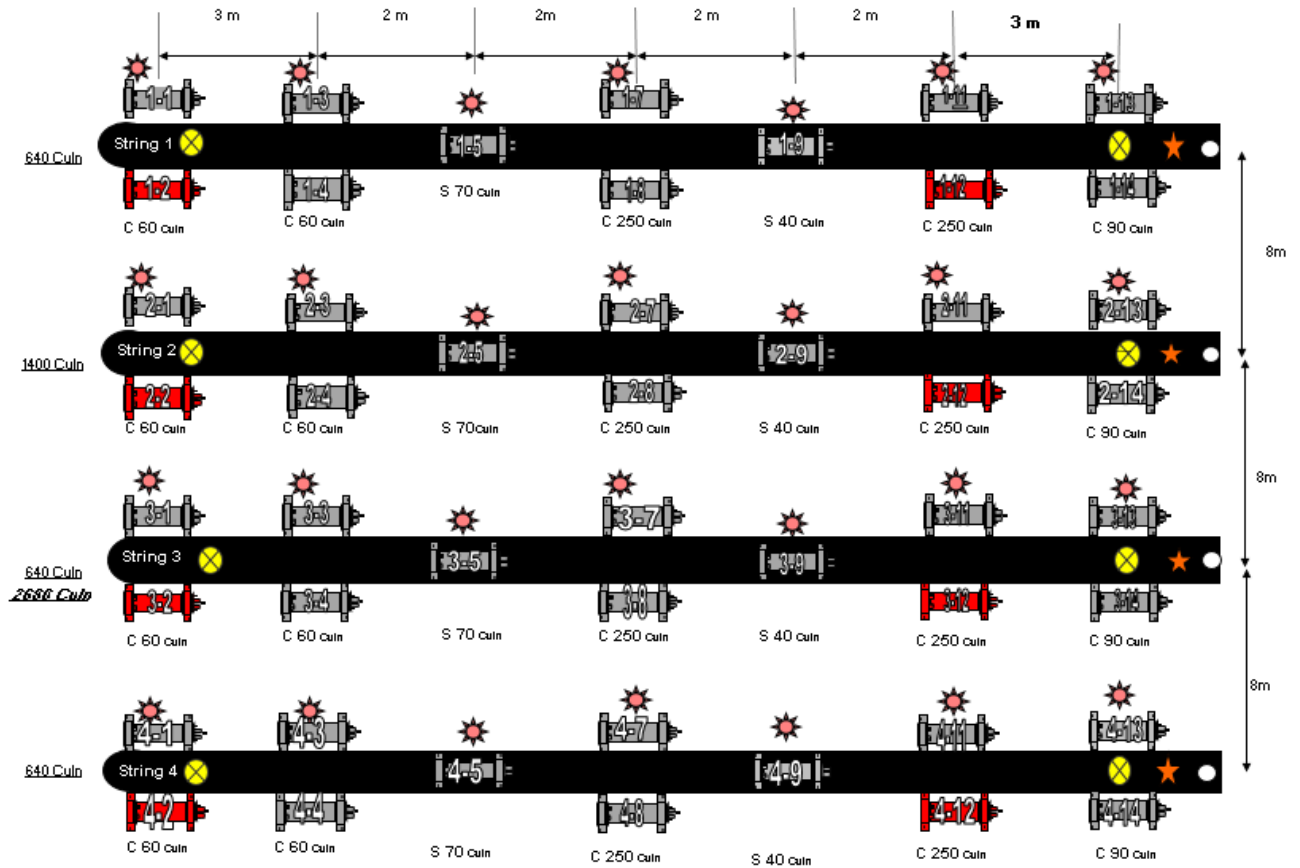
Volume: 4880 cubic inches

Depth: 9.0 m



Sanco Atlantic Gun Offset

OVERHEAD VIEW OF ELEMENTS / Single SOURCE



Bolt 1900 LLXT

Company / Cubic Inch Array

GPS
 Near Field
 Depth Transducer
 Pressure Transducer

NOTES: All RED GUN'S are not in use.
 All Cluster Separation 0,80 meter
 GUN Depth - 9 Meter

