DET NORSKE VERITAS

DESIGN REVIEW REPORT

Designer / Client	:	HCS Control Systems Ltd
Manufacturer	:	HCS Control Systems Ltd
User	:	Vetco Gray
Client Project Reference	:	11891
D.N.V. Project Number	:	EP009002
Equipment Item Numbers	:	TA-11891-01
Equipment Description	:	1 No. PMIT Reeler Frame
Design Codes and Standards	:	DNV Standard for Certification No. 2.7-1 "Offshore Containers" April 2006 BS EN12079:2006 "Offshore containers and associated lifting sets", Parts 1, 2 and 3. IMO Circular MSC / Circ. 860 "Guidelines for the Approval of Offshore Containers Handled in Open Seas" 22 May 1998.

Operational Limitations :

Rating(max.)	:	22.0 t
Payload(max.)	:	16.9 t
Tare(max.)	:	5.10 t
Minimum Design temperature	:	-20 Deg C
Lifting Set WLL_{min}	:	24.9 t
Enhancement factor	:	1.13
Number of Sling Legs	:	4
Max. sling angle from vert.	:	45 Deg
Shackle size	:	25 t
Shackle Pin diameter	:	51 mm

Note: Enhancement factor and WLL_{min} are taken from Table 8-1 in DNV 2.7-1 April 2006

Lifting Set Requirements	WLL_s (t)	Fibre Core (mm)	Steel Core (mm)	Chain (mm)
Forerunner(if applicable)	24.86	48	48	28
Sling Legs	11.72	36	32	20

WLL_s=Minimum Working Load Limit for sling leg components and shackles.
Slingsets are to be certified and marked with the container maximum rating (gross mass) for which they have been designed.
Note: Figures quoted above are taken from Table 8-1, Section 8 and Tables E2, E3 and E4, Appendix E in DNV 2.7-1, April 2006 and are based on rope grade 1770.

Minimum required breaking load (Forerunner)	:	1919 kN
Minimum required breaking load (Sling legs)	:	640 kN

Breaking load figures above are valid for all rope grades

If any person suffers loss or damage which is proved to have been caused by any negligent act or omission of Det Norske Veritas, then Det Norske Veritas shall pay compensation to such person for his proved direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question, provided that the maximum compensation shall never exceed USD 2 million. In this provision "Det Norske Veritas" shall mean the Foundation Det Norske Veritas as well as all its subsidiaries, directors, officers, employees, agents and any other acting on behalf of Det Norske Veritas.

Outermost Dimensions	Length:	:	6100 mm (overall)
	Width:	:	3612 mm (overall)
	Height:	:	3849 mm (overall)

Approval Documents

Drawings Title	Drg No.	Rev
Reeler Frame (Sheet 1 of 4)	11891-30	A
Reeler Frame (Sheet 3 of 4)	11891-30	A (with comment)
Reeler Frame (Sheet 4 of 4)	11891-30	A

Supporting Documents

Drawings Title	Drg No.	Rev
Reeler Frame (Sheet 2 of 4)	11891-30	A
General Arrangement (1 of 6)	11891-01	E (with comment)
General Arrangement (2 of 6)	11891-01	E

Other Information

Primary Structure Material Specification (Fully killed as DNV 2.7-1 Section 3.1.1).

Plate - BS EN10025 (1993) & AMD 8616, & Hollow Sections BS EN10210-1 (1994).

Plate – S355 J2G3	Yield Strength	= 355 N/mm2 (min) for t < 16mm
Hollow Sections – S355 J2H		= 345 N/mm2 (min) for 16 < t < 40mm
(or equivalent)	Tensile Strength	= 490 N/mm2 (min)
	Charpy Tests (min)	= Yield/10 J @ -10°C for t < 12mm
		= Yield/10 J @ -20°C for 12 < t < 25mm
		= Yield/10 J @ -40°C for t > 25mm

Padeye material certificate must be an endorsed 3.1C or 3.2 certificate.

Welding

Welding of Primary structure to be (in accordance with the relevant parts of EN ISO 15614-1 and DNV Rules for Classification of Ships Pt. 2 Ch. 3 Sec. 5) performed with approved Welders to approved Weld Procedures in accordance with section 5.2.2 of DNV 2.7-1 April 2006. (Weld Procedure Impact tests should be carried out in WCL and HAZ). Welding of Secondary structure should be according to a recognised standard in accordance with section 5.3 of DNV 2.7-1, April 2006.

N.D.T. (DNV 2.7-1 Table 5.1)

All welds	: 100% Visual
Padeye attachment welds	: 100% MPI and 100% UT (where applicable/possible)
All primary non-redundant structural welds	: 100% MPI and 100% UT (where applicable/possible)
Primary structure Butt welds	: 10% Radiography
Secondary structural welds	: Random examination at Surveyors discretion.

N.D.T. is to be carried out by others and reviewed for compliance with DNV 2.7-1 Sections 4.6 and 5.2.

Load Testing

To be carried out in accordance with DNV 2.7-1 Section 4.6 as follows:

4 point lift	- Hook load of 2.5 x Rating	According to Table 5-4 below
2 point lift	- Hook load of 1.5 x Rating	Prototype only
Vertical Impact Test	- Hook load of 1.0 x Rating	Prototype only

Slings (DNV 2.7-1 Section 8)

In order to take into account the additional dynamic loads that may occur when lifting containers to and from offshore installations, the safety factors for lifting sets include a Dynamic Amplification Factor in addition to the standard safety factor for lifting sets.

The design of this container is approved without lifting set, however for compliance with DNV 2.7-1 the lifting set should be approved and certified by either type approval or case-by-case approval. Certification in accordance with EN10204, type 3.1B for the components must demonstrate the correct relationship between 'Manufacturing proof force' (MPF) and 'Breaking force' (BF). In the event that this is not the case then appropriate mechanical tests shall be carried out, and verified by the Society. The components must meet the requirements of DNV 2.7-1 and the following standards (or equivalent).

Standard	**Sling component**	**MPF / BF relationship**
EN 1677–4 (2000)	Master and intermediate links	MPF $\geq$ 0.625 BF
EN 13889	Shackles	MPF $\geq$ 0.4 BF
EN 818-4	Chain slings	MPF $\geq$ 0.625 BF
EN 13414-1	Wire rope slings	MPF $\geq$ 0.4 BF

Slings should be sized to ensure a horizontal lift and the master link shall be no higher than 1300mm from ground level.

Comments

1. Markings are to be in accordance with Sections 6 & 7 of DNV 2.7-1.
2. This Design Review has not considered the carriage of dangerous goods. It is the Owner's responsibility to ensure that all relevant IMDG requirements for transportation of dangerous goods are fully complied with.
3. All primary structure to be full penetration welded.
4. This approval has not considered the design of any lifting sets. Only lifting sets approved and certified by DNV in accordance with section 8 of DNV 2.7-1, shall be fitted.
5. Design Review is based on an asymmetric sling set as specified by the client. It must be ensured that the slings are attached to the appropriate padeyes to ensure the position of centre of gravity is maintained as per drawing.
6. Slings should be sized to ensure a horizontal lift and the master link shall be no higher than 1300mm from ground level.
7. Padeye hole diameter shall be within 6% of shackle pin diameter.
8. The outer edges of the padeyes should be ground flush with the corner posts to prevent snagging.

9. This frame incorporates top protection. Ensure the top protection is securely fitted in position during all lifting and transportation activities.

10. This approval is limited to a production batch of 1 units with the following decal numbers:

Item No.	Decal No.
TA-11891-01	94919

The design of the above container has been reviewed and is considered to comply with DNV's Codes and Standards referenced above.

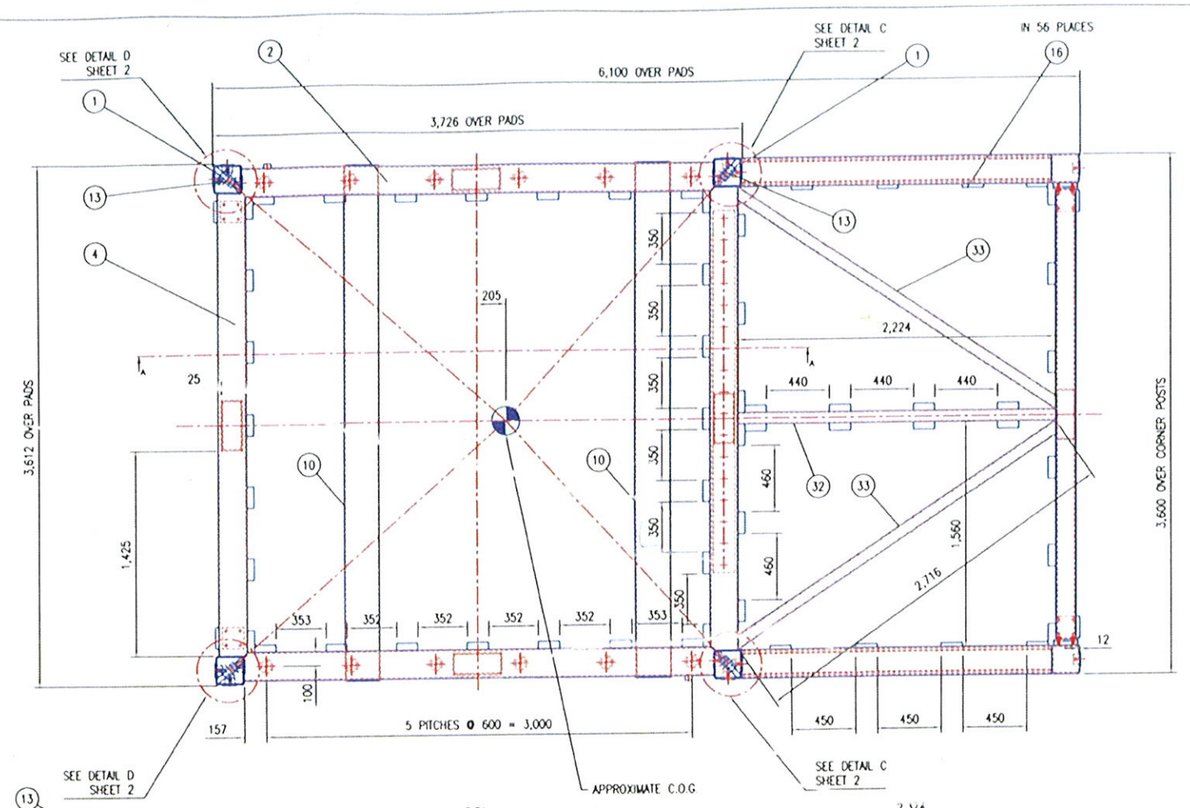
Signed for **Det Norske Veritas B.V.**

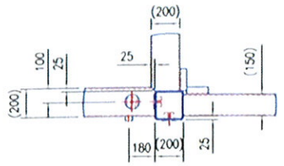
Name:

Alex Doig
Senior Engineer

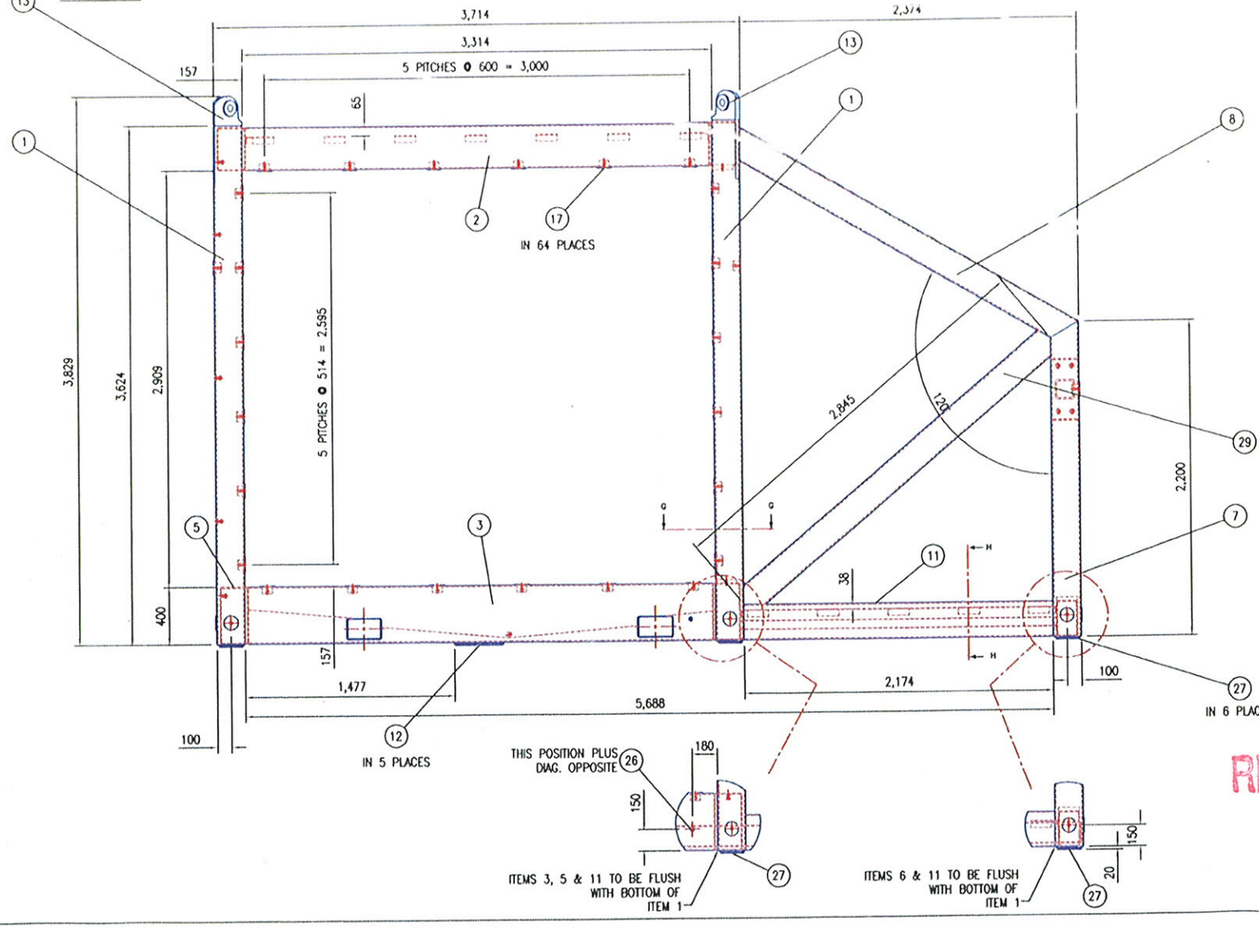
John O'Malley
Engineer

Date : 19th October 2009
Place: Aberdeen



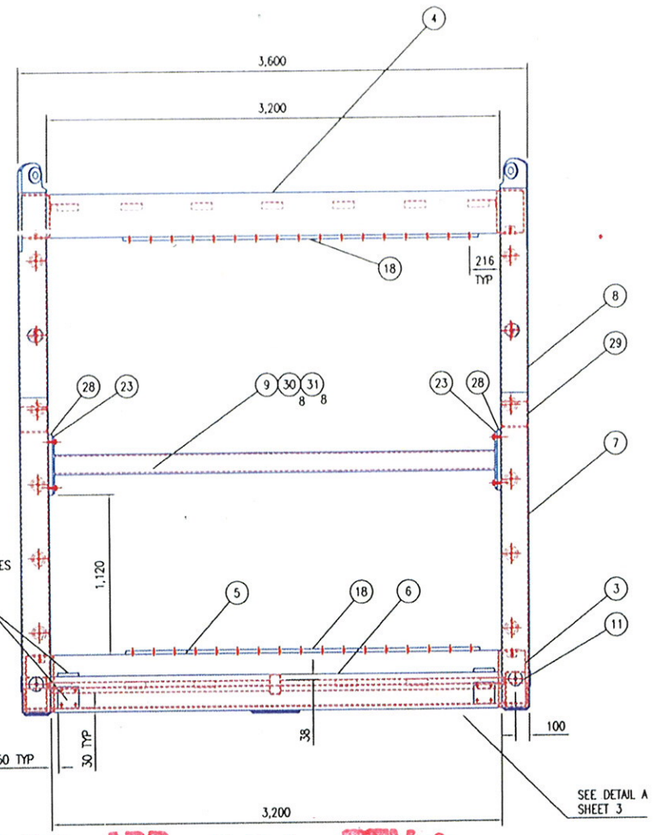


PART SECTION 'G-G'



NOTES:

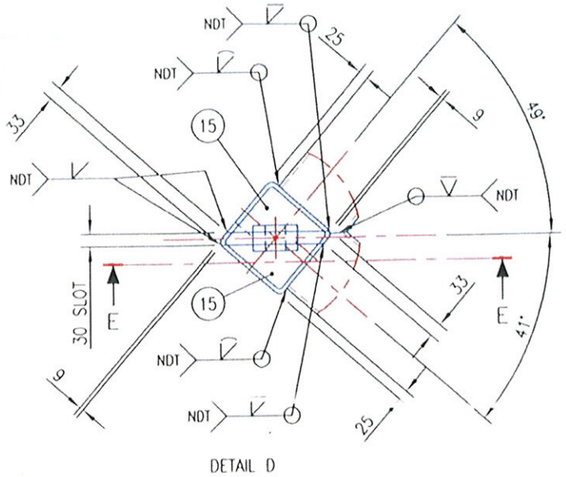
1. MATERIAL CERTIFICATION TO BS EN 10204 3.1 OR DIN 50049 3.1
2. LIFTING LUGS (ITEMS 8 & 9) TO HAVE MATERIAL CERTIFICATION TO BS EN 10204 3.2 OR DIN 50049 3.2
3. MATERIAL LESS THAN 12mm THK TO HAVE MIN. CHARPY VALUES OF 36J AT -10°C.
   MATERIAL MORE THAN OR EQUAL TO 12mm THK, BUT LESS THAN 25mm THK TO HAVE MIN. CHARPY VALUES OF 36J AT -20°C.
   MATERIAL MORE THAN OR EQUAL TO 25mm THK TO HAVE MIN. 36J AT -40°C
4. CAST NUMBERS TO BE HARD STAMPED ON ALL MATERIALS.
5. CUT LENGTHS ARE FOR REFERENCE ONLY, DRAWING DIMENSIONS ARE FINISHED SIZES.
6. ALL WELDS CONTINUOUS FULL PENETRATION U.O.S.
7. ALL WELDS TO BE FINISHED SMOOTH BY GRINDING.
8. FINISH - ALL SURFACES TO BE FREE FROM DEFECTS, BURRS & WELD SPATTER. SHARP EDGES, FILLETS & CORNERS FINISHED SMOOTH TO MIN. RADIUS OF 2mm.
9. WELD PROCEDURES TO BS EN 288 Pt.3 & WELDER QUALIFICATIONS TO BS EN 287 Pt.1/ASME IX.
10. MPI INSPECTION - 100% FOR LIFTING LUGS & ALL MAJOR STRUCTURAL WELDS IN ACCORDANCE WITH EN1290.
    ACCEPTANCE LEVELS AS SPECIFIED IN EN1291 LATEST REVISION.
11. MPI OPERATOR QUALIFICATIONS TO ASNT/CSWIP/PCN LEVEL II.
    ITEMS 1 & 8 TO BE 100% M.P.I. AS ASSEMBLY PRIOR TO WELDMENT INTO FRAME.
12. VISUAL INSPECTION TO EN970, ACCEPTANCE CRITERIA TO EN5817.
13. APPROXIMATE WEIGHT OF FABRICATION = 5100 kg.
14. MINIMUM DESIGN TEMPERATURE = -20°C



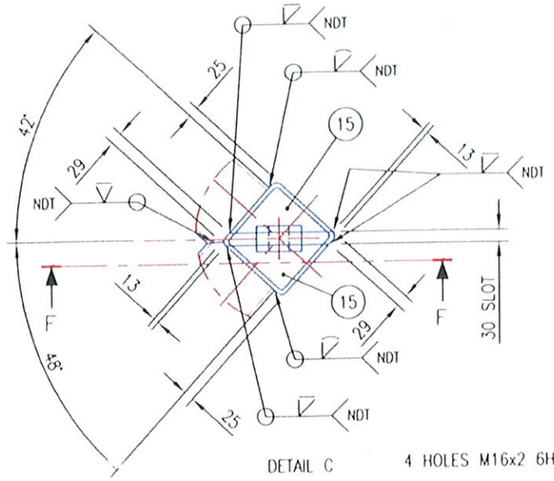
REF DRR 09-ABD-561-REV 0

1. DO NOT SCALE THIS DRAWING. 2. ALL DIMENSIONS ARE IN MILLIMETERS. 3. BREAK SHARP EDGES 0.4 MAXIMUM. 4. INSIDE CORNER RADII 0.79 MAXIMUM. 5. THREADS TO CONFORM TO FED. STD. H-28. 6. TAPERED THREADS TO CONFORM TO API 5A. 7. DRAWING IS THIRD ANGLE PROJECTION. 8. ALL FLANGE BOLT HOLES MUST STRADDLE COMMON CENTRELINE.	UNLESS OTHERWISE SPECIFIED: FAB. ANGULAR DIMS (EXCLUDING BOUNDRIES) UP TO 1000 - ±2.0; 1000 TO 3000 - ±1.0; ABOVE 3000 - ±0.5. FABRICATION LINEAR TOL. UP TO 1000 - ±1.5; 1000 TO 3000 - ±3.0; ABOVE 3000 - ±5.0. FAB. FLATNESS TOL. UP TO 1000 - ±0.5; 1000 TO 3000 - ±1.0; ABOVE 3000 - ±2.0. MACHINE & HOLE DIA. X - ±0.5; X.X - ±0.3; X.XX - ±0.1. ANGLE - ±30'. FINISH - 6.3	REVISIONS: 26629									

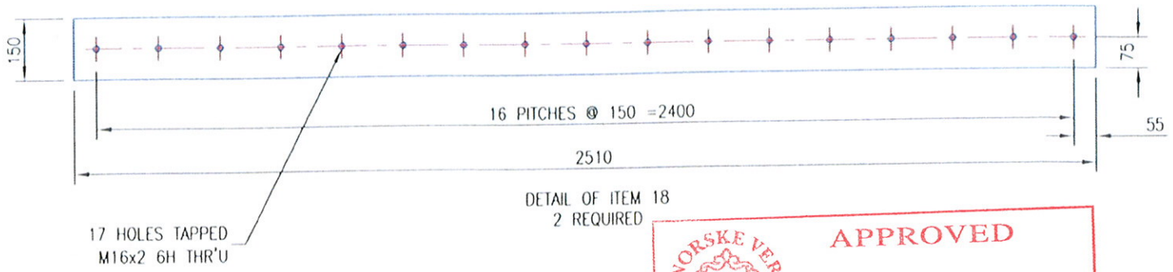
Title: VETCO GRAY BP SKARV POST MANIFOLD TEST SYSTEM REELER FRAME	Scale: 1:20	DATE: 16/09/09	Control Systems Ltd.	UNIT V2, WENFIELD ROAD WENFIELD IND ESTATE, BLDMORES PIPE, KY9 2RR. TEL: 01382 779788 FAX: 01382 777737	
	Drawn By: S.HUTCH				
	Checked By: L.M.	21/9/09			
	Approved By: L.M.	21/9/09			
	Approved By: [illegible]	21/9/09		Drawing Number: 11891-30 SHT 1 OF 4	



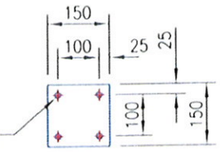
DETAIL D



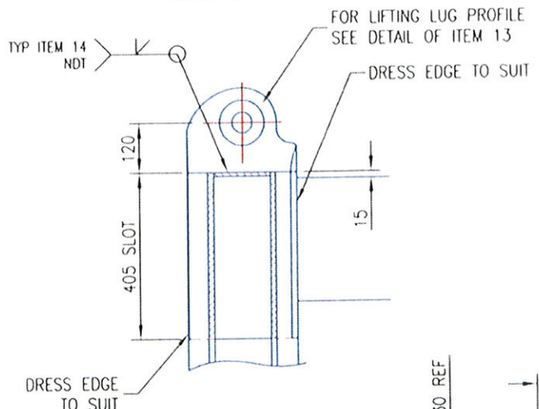
DETAIL C

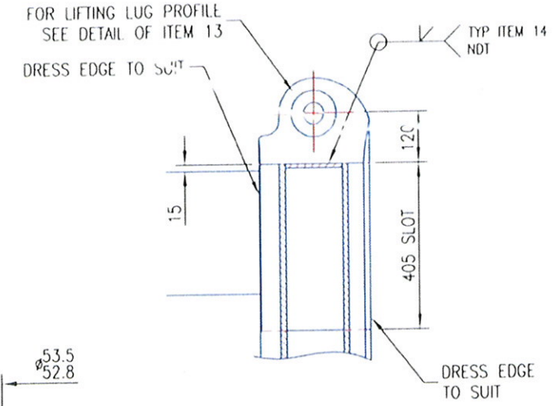


DETAIL OF ITEM 18
2 REQUIRED

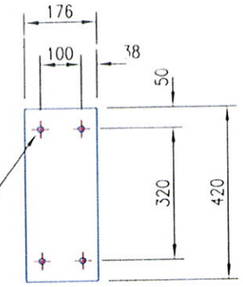


DETAIL OF ITEM 22
8 REQUIRED

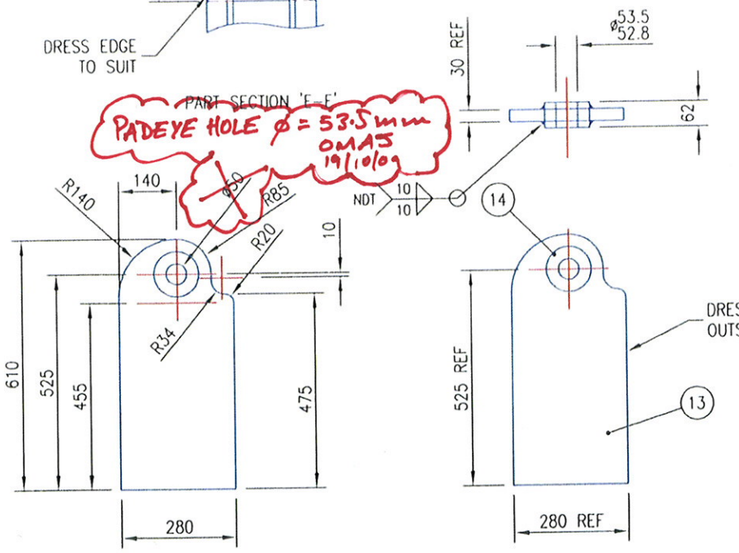




PART SECTION 'F-F'

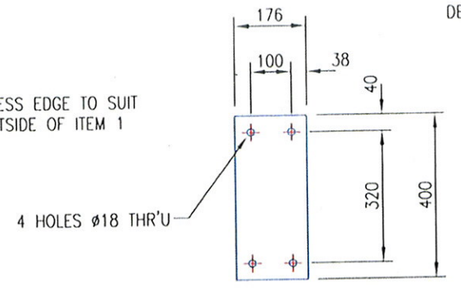


DETAIL OF ITEM 28
2 REQUIRED



DETAIL OF ITEM 13
4 REQUIRED

LIFTING LUG FAB DETAIL



DETAIL OF ITEM 23
2 REQUIRED

ITEM	QTY	DESCRIPTION	MATERIAL	WEIGHT
1	4	CORNER POST - SHS 200 x 200 x 10 THK x 3624 LG	STEEL: GRADE EN10210 S355J2H (50D)	853
2	2	SIDE RAIL TOP - RHS 300 x 200 x 8 THK x 3314 LG	STEEL: GRADE EN10210 S355J2H (50D)	401
3	2	SIDE RAIL BOTTOM - RHS 400 x 200 x 8 THK x 3314 LG	STEEL: GRADE EN10210 S355J2H (50D)	318
4	2	TOP RAIL - RHS 300 x 200 x 8 THK x 3200 LG	STEEL: GRADE EN10210 S355J2H (50D)	388
5	2	BOTTOM RAIL - RHS 400 x 200 x 8 THK x 3200 LG	STEEL: GRADE EN10210 S355J2H (50D)	468
6	1	FRONT BOTTOM RAIL - RHS 250 x 150 x 8 THK x 3200 LG	STEEL: GRADE EN10210 S355J2H (50D)	194
7	2	FRONT POST - SHS 200 x 200 x 10 THK x 2200 LG	STEEL: GRADE EN10210 S355J2H (50D)	259
8	2	ANGLE POST - SHS 200 x 200 x 10 THK x 2741 LG - SEE DETAIL	STEEL: GRADE EN10210 S355J2H (50D)	323
9	1	TIE BEAM - SHS 140 x 140 x 12 THK x 3120 LG	STEEL: GRADE EN10210 S355J2H (50D)	126
10	2	FORKLIFT POCKET - SHS 250 x 150 x 8 THK x 3570 LG	STEEL: GRADE EN10210 S355J2H (50D)	341
11	2	FRONT SIDE RAIL - RHS 250 X 150 x8 THK x 2174 LG	STEEL: GRADE EN10210 S355J2H (50D)	208
12	5	CENTRE BASE PLATE - PLATE, 20 THK, 350 x 150 LG - SEE DETAIL	STEEL: GRADE EN10025 S355J2G3 (50D)	42
13	4	LIFTING LUG - PLATE, 30 THK, 280 x 610 LG - SEE DETAIL	STEEL: GRADE EN10225 S355G8+N	148
14	8	LIFTING LUG CHEEK PLATE - PLATE, 16 THK, Ø110 - SEE DETAIL	STEEL: GRADE EN10225 S355G8+N	12
15	4	END CAP - PLATE, 15 THK, 180 x 180 LG - SEE DETAIL	STEEL: GRADE EN10025 S355J2G3 (50D)	20
16	56	ROOF / FLOOR ANGLE - RSA 50 x 50 x 6 THK x 150 LG	STEEL: GRADE EN10056 S275 (43A)	46
17	64	M24 BOSS - BAR, ROUND, Ø100 x 56 LG - SEE DETAIL	STEEL GRADE EN10083-1 C22E (070M20)	108
18	2	PAD - PLATE, 25 THK, x150 x 2510 LG - SEE DETAIL	STEEL GRADE EN10083-1 C22E (070M20)	148
19	1	DRIP TRAY - PLATE, 3 THK, 3150 x 1807 LG - SEE SECTION A-A	STEEL: GRADE EN10025 S275 (43A)	134
20	1	FLOOR PLATE - PLATE, 3 THK, 3150 x 730 LG	STEEL: GRADE EN10025 S275 (43A)	54
21	1	FLOOR PLATE - PLATE, 3 THK, 3150 x 318 LG	STEEL: GRADE EN10025 S275 (43A)	24
22	8	PAD - PLATE 25 THK, 150 x 150	STEEL: GRADE EN10025 S275 (43A)	36
23	2	PLATE - PLATE 15 THK, 400 x 176	STEEL: GRADE EN10025 S275 (43A)	19
24	2	DRAIN - PIPE, 1" NB SCH 40 x 176 LG	STEEL: GRADE ASTM A333 GRADE 6	-
25	2	DRAIN - COUPLING, HALF, 1" NPT	STEEL: GRADE ASTM A420 WPL6	-
26	2	EARTH BOSS - BAR, ROUND, Ø30 x 15 LG, TAPPED M12 x 1.75p	STEEL: STAINLESS GRADE 316L	-
27	6	BASE PLATE - PLATE, 20 THK, 180 x 180 LG - SEE DETAIL	STEEL: GRADE EN10025 S355J2G3 (50D)	30
28	2	PAD - PLATE 25 THK, 420 x 176	STEEL: GRADE EN10025 S355J2G3 (50D)	33
29	2	BRACE - SHS 200 x 200 x 10 THK x 2845 LG - SEE DETAIL	STEEL: GRADE EN10210 S355J2H (50D)	164
30	8	SCREW HEX HEAD - M16 x 2 x 40 LG	STEEL: GRADE 10.9 BZP	-
31	8	LOCK WASHER - M16	STEEL: GRADE 10.9 BZP	-
32	1	FLOOR SUPPORT - RHS 140 x 80 x 6 THK x 2224 LG	STEEL: GRADE EN10210 S355J2H (50D)	43
33	2	FLOOR BRACE - SHS 80 x 80 x 6 THK x 2716 LG - SEE DETAIL	STEEL: GRADE EN10210 S355J2H (50D)	74
34	9	M16 BOSS - BAR, ROUND, Ø30 x 40 LG - SEE DETAIL	STEEL GRADE EN10083-1 C22E (070M20)	2

APPROVED
DET NORSKE VERITAS 1864
2009 -10- 19
SIGN. OMAS
DET NORSKE VERITAS AS
Aberdeen

REF DRR 09-ABD-561-REV 0

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UNLESS OTHERWISE SPECIFIED

1. DO NOT SCALE THIS DRAWING.
2. ALL DIMENSIONS ARE IN MILLIMETERS.
3. BREAK SHARP EDGES 0.4 MAXIMUM.
4. INSIDE CORNER RADII 0.75 MAXIMUM.
5. THREADS TO CONFORM TO FED. STD. H-28.
6. TAPERED THREADS TO CONFORM TO API 6A.
7. DRAWINGS IN THIRD ANGLE PROJECTIONS.
8. ALL FLANGE BOLT HOLES MUST STRADDLE COMMON CENTERLINE.

FAB. ANGULAR DIMS (DIAGONAL SQUARENESS)	
UP TO 1000	±2.0
1000 TO 5000	±3.0
ABOVE 5000	±5.0

FABRICATION LINEAR TOL.	
UP TO 1000	±1.5
1000 TO 5000	±3.0
ABOVE 5000	±5.0

FAB. FLATNESS TOL.	
UP TO 1000	±0.8
1000 TO 5000	±1.5
ABOVE 5000	±5.0

MACHINE & HOLE CRS	
X	±0.5
X.X	±0.3
X.XX	±0.1
ANGLE	±30'
FINISH	6.3

REVISIONS

A	26629	H	
B		J	
C		K	
D		L	
E		M	
F		N	
G		P	

Title

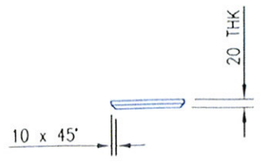
VETCO GRAY
BP SKARV
POST MANIFOLD TEST SYSTEM

REELER FRAME

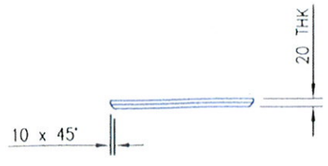
Scale	1:15	DATE
Drawn By	S.HUTCH	16/09/09
Drafting Review	LM	21/9/9
Design Review	LM	21/9/9
Approved By	M.M	21/9/9

Control Systems Ltd.
UNIT V2, VIEWFIELD ROAD
VIEWFIELD IND ESTATE, GLENROTHES
FIFE KY6 2RG.
TEL: 01592 770786 FAX: 01592 775737

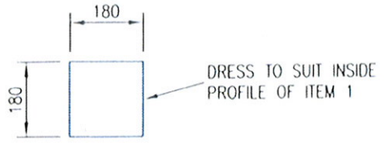
Drawing Number
11891-30 SHT 3 OF 4



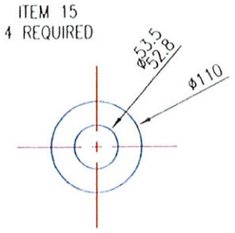
ITEM 27
6 REQUIRED



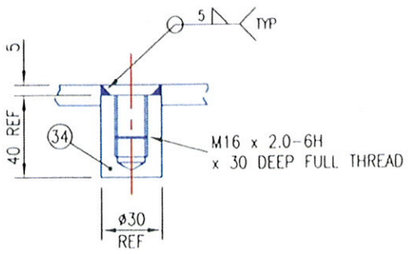
ITEM 12
5 REQUIRED



ITEM 15
4 REQUIRED

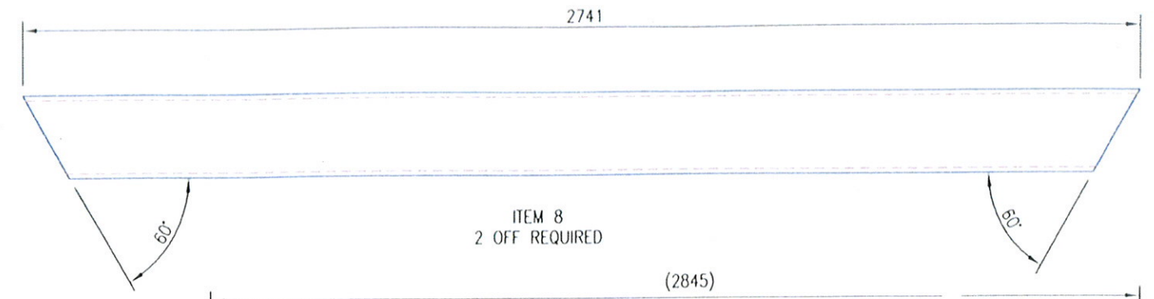


ITEM 14
8 REQUIRED
(SCALE x2)

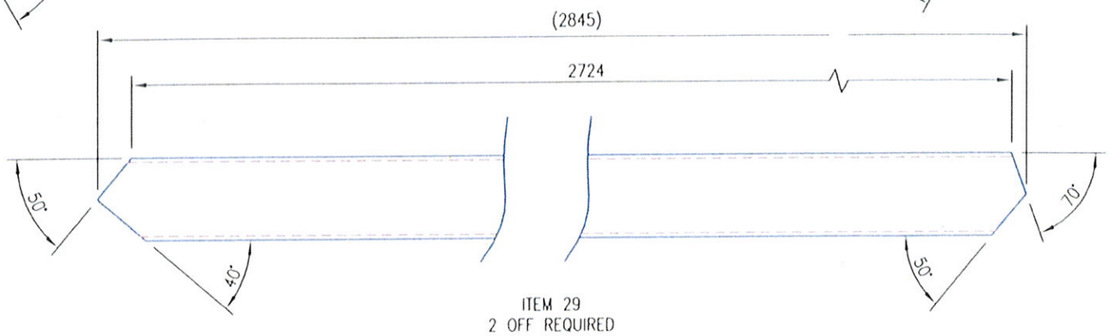


WELD DETAIL OF M16 BOSS
9 REQUIRED (SCALE x5)

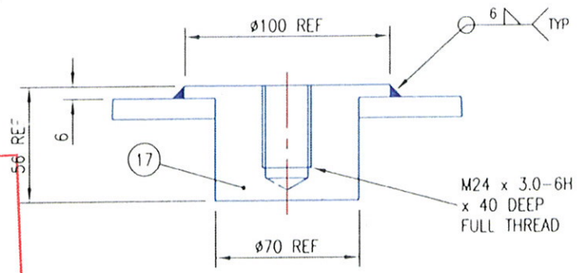
NOTE: WELD ITEM 34 IN POSITION
PRIOR TO WELDING BOX
SECTION IN POSITION



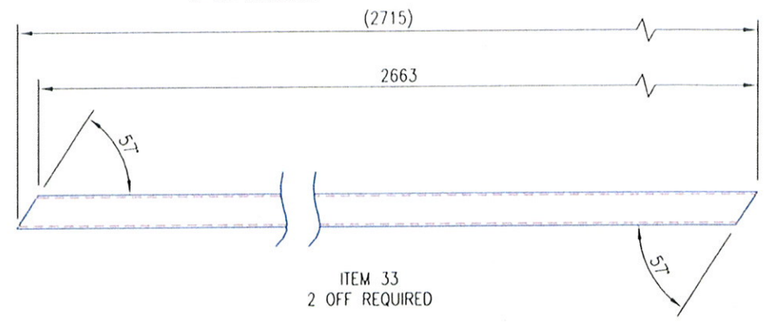
ITEM 8
2 OFF REQUIRED



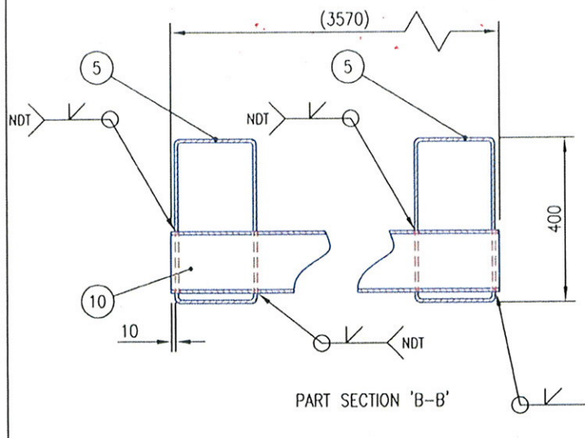
ITEM 29
2 OFF REQUIRED



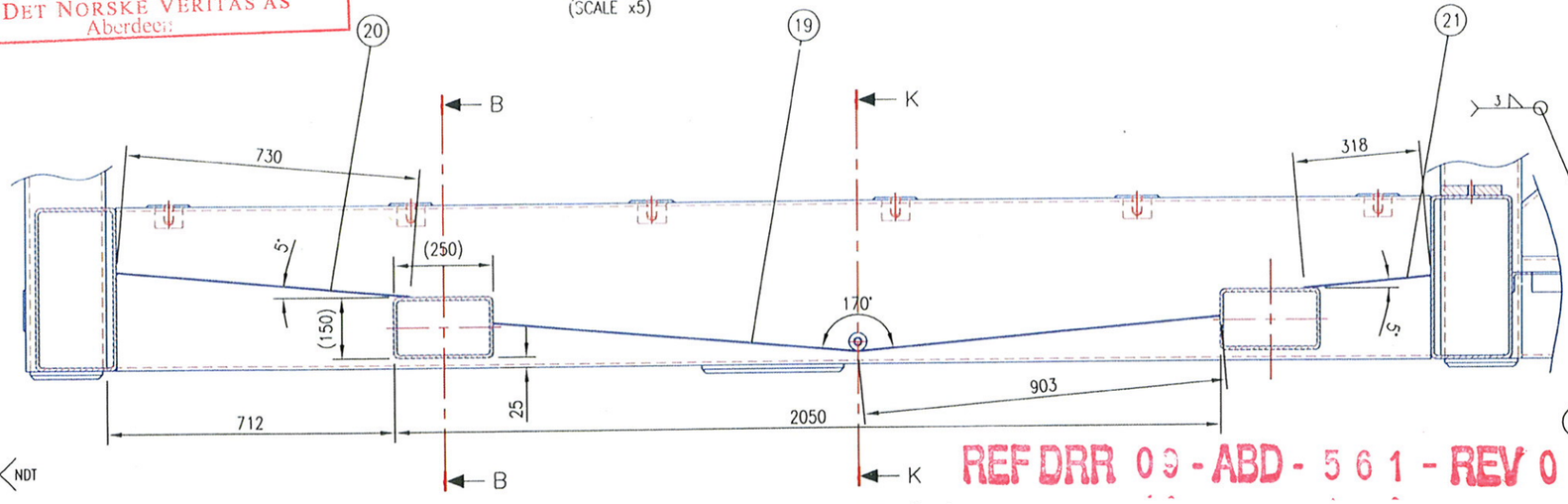
WELD DETAIL OF ITEM 17
68 REQUIRED
(SCALE x5)



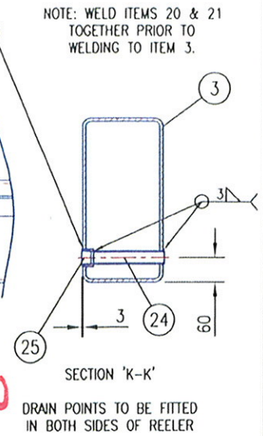
ITEM 33
2 OFF REQUIRED



PART SECTION 'B-B'



PART SECTION 'A-A'



SECTION 'K-K'

DRAIN POINTS TO BE FITTED
IN BOTH SIDES OF REELER

APPROVED
DET NORSKE VERITAS
2009-10-19
SIGN: OMAJ
DET NORSKE VERITAS AS
Aberdeen

REF DRR 09-ABD-561-REV 0

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2. ALL DIMENSIONS ARE IN MILLIMETERS.
3. BREAK SHARP EDGES 0.4 MAXIMUM.
4. INSIDE CORNER RADII 0.75 MAXIMUM.
5. THREADS TO CONFORM TO FED. STD. H-28.
6. TAPERED THREADS TO CONFORM TO API 6A.
7. DRAWINGS IN THIRD ANGLE PROJECTIONS.
8. ALL FLANGE BOLT HOLES MUST STRADDLE COMMON CENTERLINE.

FAB. ANGULAR DIMS (DIAGONAL SQUARENESS)	
UP TO 1000	±2.0
1000 TO 5000	±3.0
ABOVE 5000	±5.0

FABRICATION LINEAR TOL.	
UP TO 1000	±1.5
1000 TO 5000	±3.0
ABOVE 5000	±5.0

FAB. FLATNESS TOL.	
UP TO 1000	±0.8
1000 TO 5000	±1.5
ABOVE 5000	±5.0

MACHINE & HOLE CRS	
X	±0.5
X.X	±0.3
X.XX	±0.1
ANGLE	±30'
FINISH	6.3

REVISIONS			
A	26629	H	
B		J	
C		K	
D		L	
E		M	
F		N	
G		P	

Title

VETCO GRAY
BP SKARV
POST MANIFOLD TEST SYSTEM

REELER FRAME

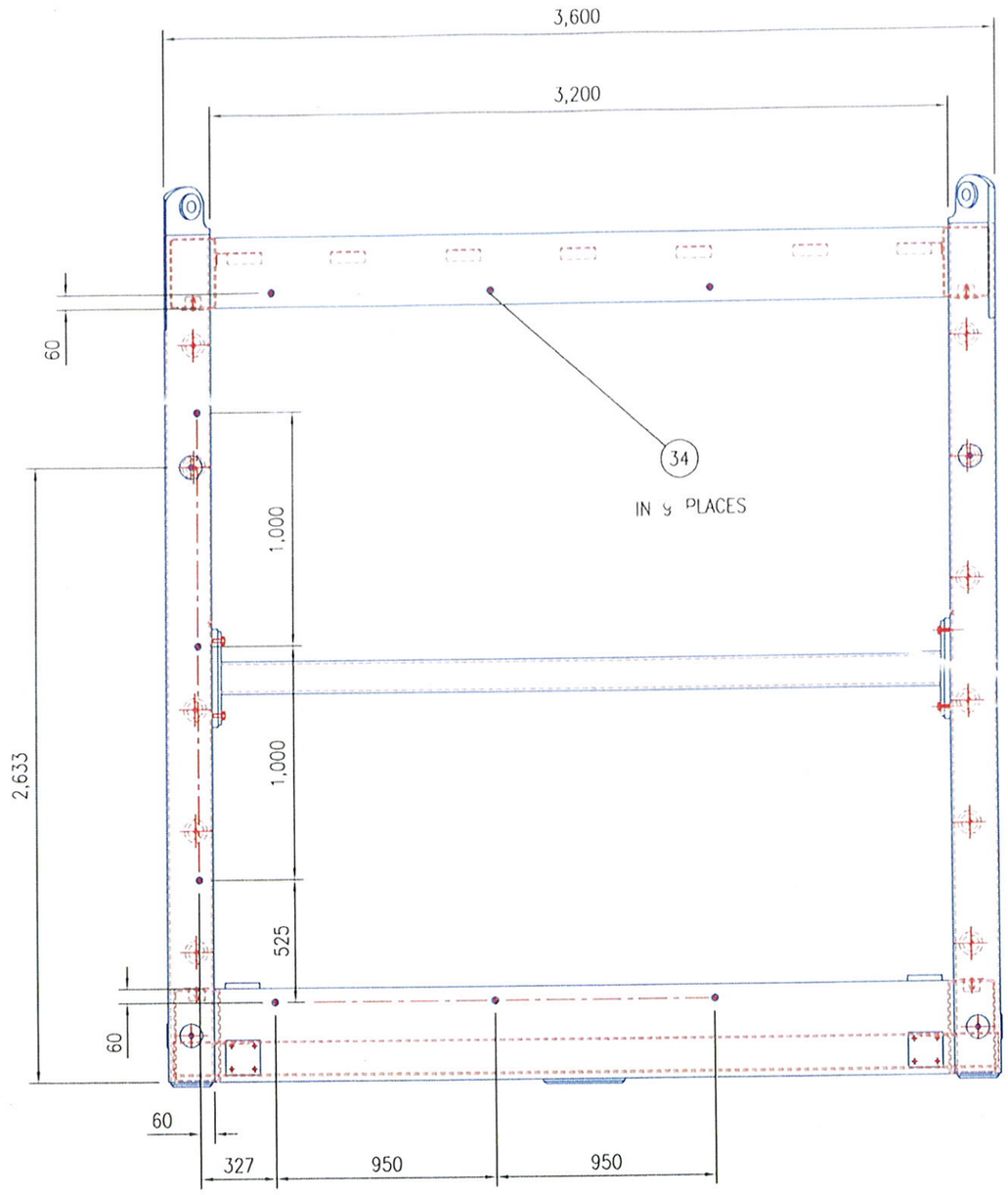
Scale	1:15
Drawn By	S.HUTCH
Drafting Review	16/09/09
Design Review	21/9/09
Approved By	21/9/09

DATE

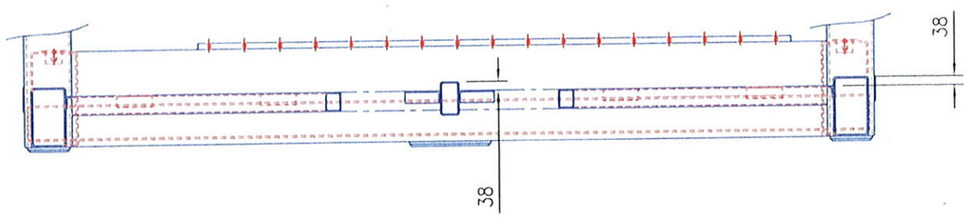
Control Systems Ltd.
UNIT V2, VIEWFIELD ROAD
VIEWFIELD IND ESTATE, GLENROTHES
FIFE KY6 2RG.
TEL: 01592 770786 FAX: 01592 775737

Drawing Number

11891-30 SHT 4 OF 4



VIEW ON ARROW 'J'



PART SECTION 'H-H'

DET NORSKE VERITAS 1864
USED FOR INFORMATION
NOT SUBJECT TO APPROVAL
2009 -10- 19
SIGN: OMAS
DET NORSKE VERITAS AS
Aberdeen

REF DRR 09 - ABD - 561 - REV 0

UNLESS OTHERWISE SPECIFIED

1. DO NOT SCALE THIS DRAWING.
2. ALL DIMENSIONS ARE IN MILLIMETRES.
3. BREAK SHARP EDGES 0.4 MINIMUM.
4. RADII CORNER RADII 0.70 MAXIMUM.
5. THREADS TO CONFORM TO FED. STD. H-28.
6. TAPERED THREADS TO CONFORM TO API 6A.
7. DRAWINGS IN THIRD ANGLE PROJECTIONS.
8. ALL FLANGE BOLT HOLES MUST STRADDLE COMMON CENTERLINE.

FAB. ANGULAR (SAE DRGOVRL BOXHOLES)	
UP TO 1000	±2.0
1000 TO 2000	±3.0
ABOVE 2000	±5.0

FABRICATION LINEAR TOL.	
UP TO 1000	±1.5
1000 TO 2000	±3.0
ABOVE 2000	±5.0

MACHINE & HOLE CRS	
X	±0.5
.XX	±0.3
.XXX	±0.1

FAB. FLATNESS TOL.	
ANGLE	±30'
FINISH	63

FAB. FLATNESS TOL.	
UP TO 1000	±0.8
1000 TO 2000	±1.5
ABOVE 2000	±5.0

REVISIONS

26629			

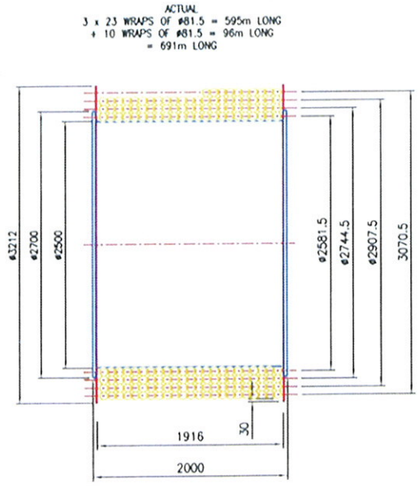
Title: VETCO GRAY
BP SKARV
POST MANIFOLD TEST SYSTEM
REELER FRAME

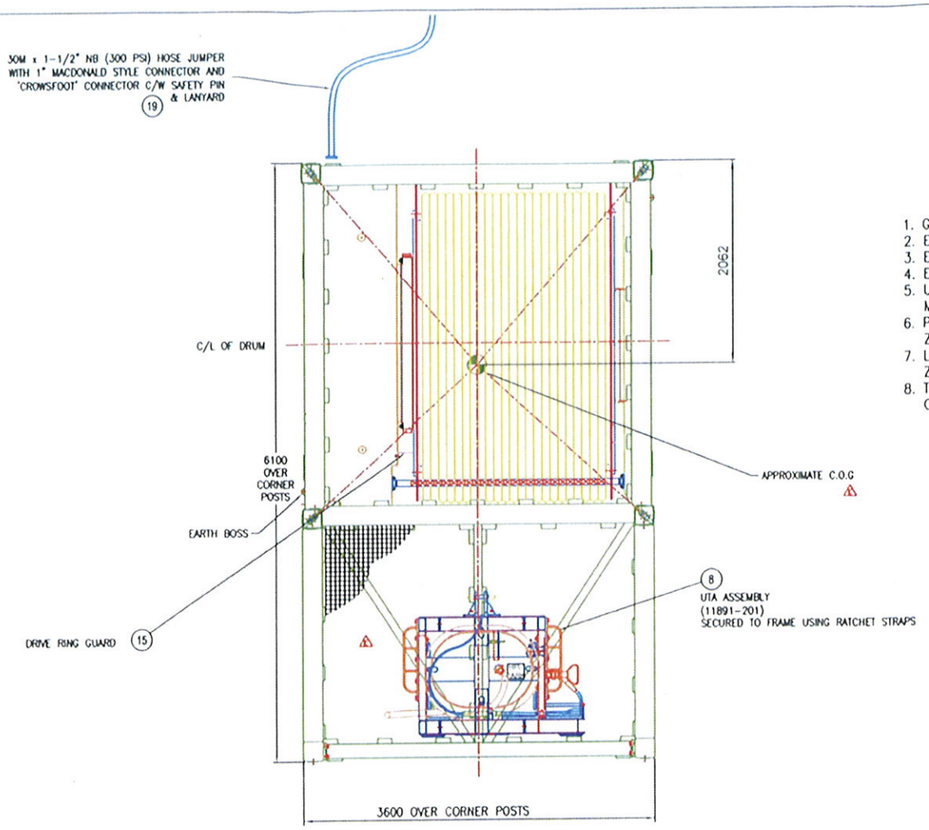
Scale	1:20
Drawn By	S.HUTCH
Checked By	
Design Review	
Approved By	
DATE	16/09/09

Control Systems Ltd.
UNIT 12, WENFIELD ROAD
WENFIELD IND ESTATE, GLENROTHES
FIFE, KY6 2RB.
TEL: 01592 770798 FAX: 01592 775737

Drawing Number: 11891-30 SHT 2 OF 4

SEE DRR Ref. No. 09-ABD-561 Rev 0 OMAJ 19/10/09





1. GUARDS REMOVED FOR CLARITY.
2. ESTIMATED TARE WEIGHT OF REELER ASSY: 17.8 TONNES.
3. ESTIMATED PAYLOAD OF UMBILICAL: 1.0 TONNES.
4. ESTIMATED GROSS WEIGHT : 18.8 TONNES.
5. UMBILICAL Ø81.5mm x 685m LG + 20% = 822m LG.
   MINIMUM DYNAMIC BEND RADIUS = 1222.5mm.
6. PAINTED IN ACCORDANCE WITH VGCL PAINT SPECIFICATION ZAEG-S0000-201. WHITE RAL 9002.
7. LIFTING LUGS PAINTED IN ACCORDANCE WITH VGCL PAINT SPECIFICATION ZAEG-S0000-201. YELLOW RAL 1021.
8. THE FOLLOWING INFORMATION TO BE MARKED ON FRAME IN 120mm HIGH CHARACTERS WERE SHOWN;

BP PART NUMBER	"19-UQ-741"
MAX GROSS WEIGHT	"M G W 22 Te" ⚠
SERIAL NUMBER	"S/N 11891-01".

DET NORSKE VERITAS * 1864 *
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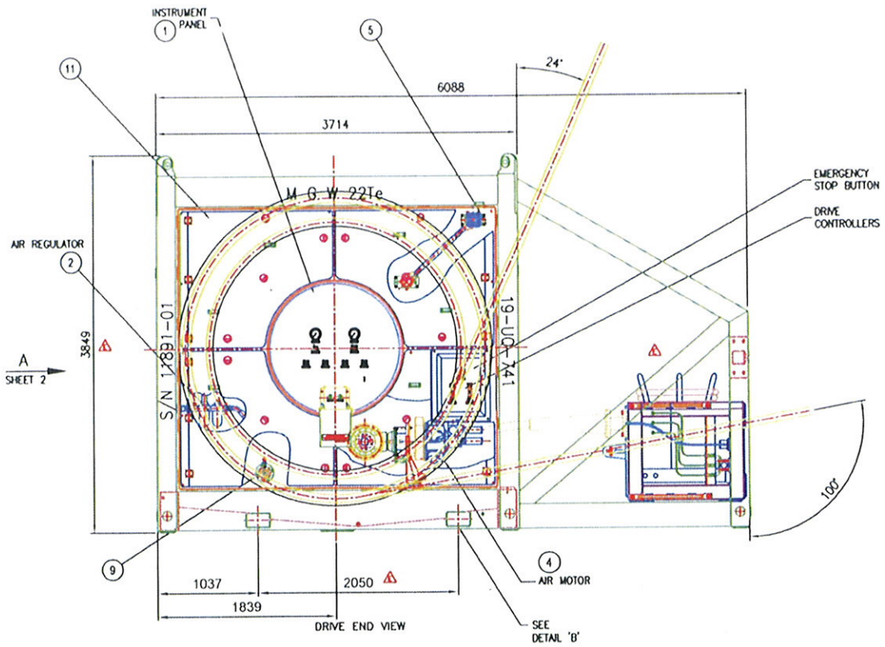
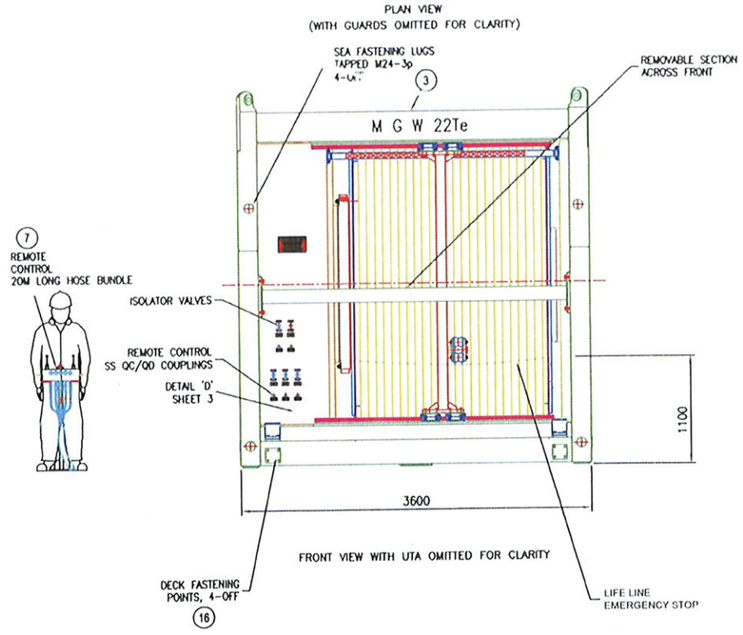
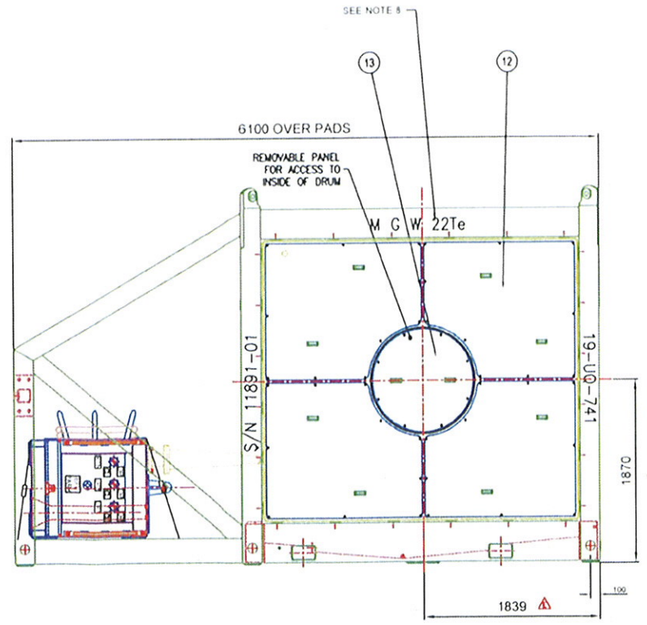
2009 -10- 19
SIGN. OMAJ
DET NORSKE VERITAS AS
Aberdeen







REF DRR 09-ABD-561-REV 0

VG DOC-AHL-87001-01-060

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2. ALL DIMENSIONS ARE IN MILLIMETERS.
3. BREAK SHARP EDGES 0.4 MAXIMUM.
4. HOSE CORNER RADII 0.75 MAXIMUM.
5. THREADS TO CONFORM TO FED. STD. H-28.
6. TAPERED THREADS TO CONFORM TO API 5A.
7. DRAWINGS IN THIRD ANGLE PROJECTIONS.
8. ALL FLANGE BOLT HOLES MUST STRADDLE COMMON CENTERLINE.

FAB. ANGULAR DIMS (DIAGONAL SQUARENESS)	
UP TO 1000	±2.0
1000 TO 5000	±3.0
ABOVE 5000	±5.0

FABRICATION LINEAR TOL.	
UP TO 1000	±1.5
1000 TO 5000	±3.0
ABOVE 5000	±5.0

FAB. FLATNESS TOL.	
UP TO 1000	±0.8
1000 TO 5000	±1.5
ABOVE 5000	±5.0

MACHINE & HOLE CRS	
X	±0.5
X.X	±0.3
X.XX	±0.1
ANGLE	±30'
FINISH	6.3√

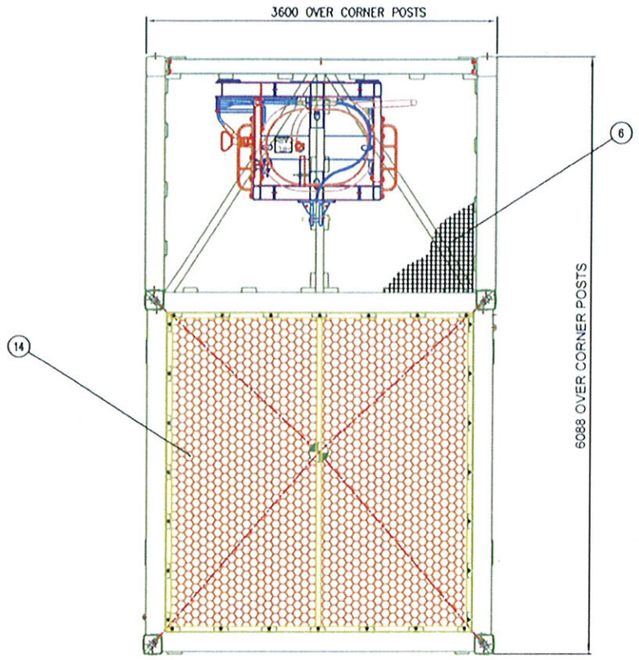
REVISIONS			
A	26129	H	
B	26404	J	
C	26600	K	
D	26628	L	
E	26738	M	
F		N	
G		P	

Title
VETCO GRAY
BP SKARV
POST MANIFOLD TEST SYSTEM
REELER
GENERAL ARRANGEMENT

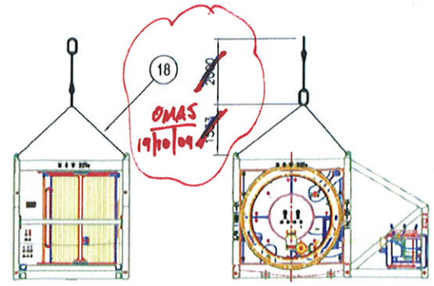
Scale	1:35
DATE	
Drawn By	S.HUTCHISON 22/09/09
Drafting Review	LM 22/9/09
Design Review	LM 22/9/09
Approved By	MM 22/9/09

Control Systems Ltd.
UNIT V2, VIEWFIELD INDUSTRIAL ESTATE
GLENROTHES
FIFE, KY6 2RG.
TEL: 01592 770786 FAX: 01592 775737

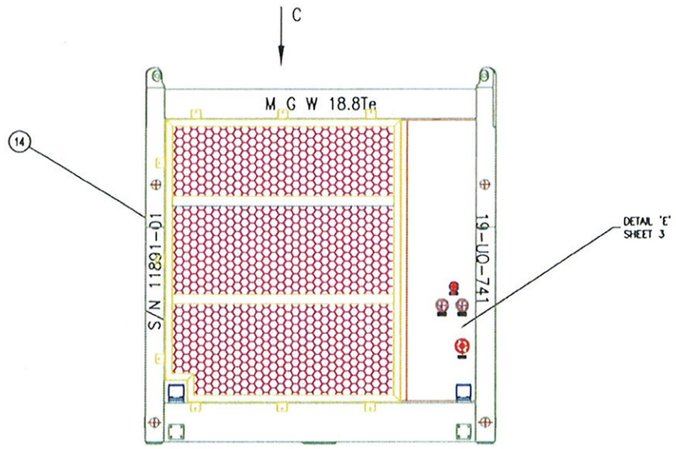
Drawing Number
11891-01 SHT 1 OF 6



VIEW ON 'C'



SLINGING ARRANGEMENT
(DEDICATED SLING SET PROVIDED WITH UNIT - PART No. LE-X)



VIEW ON 'A'

ITEM	QTY	DESCRIPTION	DWG No.	
1	1	HYDRAULIC SCHEMATIC.	11891-02	
2	1	PNEUMATIC SCHEMATIC.	11891-03	
3	1	FRAME/DRUM ASSEMBLY.	11891-40	
4	1	MAIN DRIVE ASSEMBLY.	11891-81	
5	1	LEVEL WIND DRIVE ASSEMBLY.	11891-22	
6	1	G.R.P. FLOOR GRATING.	11891-06	
7	1	CONTROL CONSOLE ASSEMBLY.	11891-84	
8	1	UTA ASSEMBLY	11891-201	
9	1	TRANSIT BOLT ASSEMBLY.	11891-32	⚠
10	1	STAB PLATE COVER ASSEMBLY.	11891-56	
11	1-SET	DRIVE-END CARTRIDGE COVERS.	11891-45	⚠
12	1-SET	IDLE-END CARTRIDGE COVERS.	11891-46	⚠
13	1	IDLE-END DRUM COVER.	11891-47	⚠
14	1-SET	PROTECTIVE GUARDS.	11891-60	
15	1-SET	DRIVE RING GUARDS.	11891-85	
16	4	DECK FASTENING ASSEMBLY.	11891-92	
17	1-SET	OPERATIONAL LABELS.	11891-72	
18	1-SET	SLING SET -	LE-XXX	
19	1	30 M AIR HOSE	PH-XXX	
20	1	CLUTCH TOOL		

DET NORSKE VERITAS
1864
USED FOR INFORMATION
NOT SUBJECT TO APPROVAL
2009 -10- 19
SIGN: OMAS
DET NORSKE VERITAS AS
Aberdeen

REF DRR 09-ABD-561-REV 0

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3. BREAK SHARP EDGES 0.4 MAXIMUM.
4. INSIDE CORNER RADII 0.79 MAXIMUM.
5. THREADS TO CONFORM TO FED. STD. H-28.
6. TAPERED THREADS TO CONFORM TO API 6A.
7. DRAWINGS IN THIRD ANGLE PROJECTIONS.
8. ALL FLANGE BOLT HOLES MUST STRADDLE COMMON CENTERLINE.

FAB. ANGULAR DIMS (DIAGONAL SQUARENESS)	
UP TO 1000	±2.0
1000 TO 5000	±3.0
ABOVE 5000	±5.0

FABRICATION LINEAR TOL.	
UP TO 1000	±1.5
1000 TO 5000	±3.0
ABOVE 5000	±5.0

FAB. FLATNESS TOL.	
UP TO 1000	±0.8
1000 TO 5000	±1.5
ABOVE 5000	±5.0

MACHINE & HOLE CRS	
X	±0.5
X.X	±0.3
X.XX	±0.1
ANGLE	±30'
FINISH	6.3√

REVISIONS			
A	26129	H	
B	26404	J	
C	26600	K	
D	26628	L	
E	26738	M	
F		N	
G		P	

Title
VETCO GRAY
BP SKARV
POST MANIFOLD TEST SYSTEM
REELER
GENERAL ARRANGEMENT

Scale	1:35	DATE
Drawn By	S.HUTCHISON	22/09/09
Drafting Review	LM	8/10/09
Design Review	LM	8/10/09
Approved By	MM	8/10/09

Control Systems Ltd.
UNIT V2, VIEWFIELD INDUSTRIAL ESTATE
GLENROTHES
FIFE, KY6 2RG.
TEL: 01592 770786 FAX: 01592 775737

Drawing Number
11891-01 SHT 2 OF 6