



Oil and Gas Design Appraisal Document

Lloyd's Register EMEA
Denburn House
25 Union Terrace
Aberdeen, ABN10 INN
44 1224 267400: Fax: 44 1224 267751

Date
30 June 2009

Quote this reference on all future communications
CESD/0890462/MST/O-13801

CLIENT: HYDRAMEC OFFSHORE HYDRAULICS SYSTEMS LTD
SUBJECT: HH51 A FRAME

1. The plans, as listed below, have been examined where appropriate for compliance with:
- LR's Code for Lifting Appliances in a Marine Environment, Chapter 3 Section 3
 - BS EN 12079 Offshore Containers – Design, Construction, Testing and Marking for testing requirements only

and are approved as submitted or noted for information, subject to the following comments:

Document No.	Rev.	Title	Stat.	Date
-	1	DESIGN CALCULATIONS	RI	30 June 2009
HH51-001	1	COMMANCHE SIDE ELEVATION GA	A	30 June 2009
HH51-002	0	COMMANCHE 6.5 METRE MAIN BASE	A	30 June 2009
HH51-003	0	MAIN BASE DECK FASTENINGS AND WINCH BEARERS	A	30 June 2009
HH51-004	0	DECK FASTENINGS	A	30 June 2009
HH51-005	1	LIFTING FRAME	A	30 June 2009
HH51-006	2	LIFTING FRAME DETAILS	A	30 June 2009
HH51-007	1	REAR PAD EYES (LIFT FRAME)	A	30 June 2009
HH51-008	0	SEAWARD (FRONT) PADEYE	A	30 June 2009
HH51-009	2	BOOM MAIN SWIVEL BEARING HOUSING	A	30 June 2009
HH51-010	0	VERTCAL BOOM MEMBER PROFILE DETAIL	A	30 June 2009
HH51-011	1	VERTCAL BOOM MEMBER	A	30 June 2009
HH51-012	1	MAIN BOOM GOAL POST	A	30 June 2009
HH51-013	0	COMMANCHE BOOM CYL ROD PADEYE DETAIL	A	30 June 2009
HH51-014	1	REAR CYL PADEYE DETAIL AND INSTALLATION	A	30 June 2009
HH51-016	0	MAIN HYDRAULIC CYLINDER	AC	30 June 2009

is a member of the Lloyd's Register Group

Lloyd's Register, its affiliates and subsidiaries and their respective officers, employees or agents are, individually and collectively, referred to in this clause as the 'Lloyd's Register Group'. The Lloyd's Register Group assumes no responsibility and shall not be liable to any person for any loss, damage or expense caused by reliance on the information or advice in this document or howsoever provided, unless that person has signed a contract with the relevant Lloyd's Register Group entity for the provision of this information or advice and in that case any responsibility or liability is exclusively on the terms and conditions set out in that contract.

Document No.	Rev.	Title	Stat.	Date
HH51-018	1	BOOM PINS	A	30 June 2009
HH51-021	1	MAIN LIFT PADEYE	A	30 June 2009
HH51-022	0	STABILISING CYLINDER PADEYES	A	30 June 2009
HH51-024	0	SIDE ELEVATION GA WITH ROV	RI	30 June 2009
HH51-030	0	CAN – AFRAME ROD END EYE	A	30 June 2009
HH51-031	0	COMANCHE MAIN CYLINDER PADEYES	A	30 June 2009
HH57 SNUBBER GA	0	COMMANCHE SNUBBER GA (DRAFT)	RI	30 June 2009

1. Condition of Acceptance

2. Design Criteria

The A-frame and skid structure has been examined for unmanned launch/recovery operations in open sea conditions up to and including sea state 7, for the following design criteria;

SWL Operating Condition	SWL (Tonnes)	Fd	Fh	Heel/Trim	Off/Side Lead
Submerged	5.6	1.2	2.72	12°/6° *	12°/12°
Air/Water Interface	3.8	1.2	2.72	12°/6° *	12°/12°
Outboard in air - unlatched	3.8	1.2	2.50	12°/6°	-
Outboard in air - latched	3.8	1.2	2.00	12°/6°	-
Inboard latched	3.8	1.05	1.70	12°/6°	-

* Heel and trim applied in these instances to self weight components only.

Minimum design temperature: -20 °C
Maximum shipping gross weight: 22 tonnes

3. Drawing No. HH51-016 Rev 0

For a design temperature of -20° C the end cap and the eye to which it is welded are required to have a Charpy toughness of 34 Joules when tested at -20°C. Welding is to be to the satisfaction of the attending Surveyor.

4. Our calculations indicate a cylinder pulling capacity of 440 kN. The dynamic loads imposed on the cylinders from the A-frame in the outboard latched condition are in excess of the cylinder capacity even with the duty factor omitted. Hydraulic system sizing and relief vale settings are to be sufficient to ensure that pressures beyond the design pressure cannot be realized in the cylinders during operation.
5. The approval is based on the frame being welded to the deck when deployed on board a ship.
6. When used as a free standing unit on a fixed rig the sea-state is limited to sea-state 6 and a maximum deployed umbilical length of 300m. Total spooled umbilical length to be a minimum of 3300m.
7. The attachment to, and the adequacy of the supporting structure in way of the lifting frame is to be to the Surveyor's satisfaction.

8. The installation is to be tested in accordance with Chapter 9 of the Lloyd's Register Code for Lifting Appliances in a Marine Environment to the Surveyors satisfaction.

In preparing this report, the undersigned surveyor is acting as an independent person in accordance with the applicable policy on conflict of interest



Tom Corrigan
Lead Specialist
Oil & Gas, London
Lloyd's Register EMEA

Appraisal Status Key

A	Approved/Accepted
AC	Approved/Accepted with conditions
RI	Retained as supporting documentation for information only