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		April 2011
KLM Technology Group #03-12 Block Aronia, Jalan Sri Perkasa 2 Taman Tampoi Utama 81200 Johor Bahru Malaysia	OFF SHORE MECHANICAL, SAFETY AND LIFE SAVING EQUIPMENT (PROJECT STANDARDS AND SPECIFICATIONS)	

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SCOPE

This Project Standard and Specification defines the design criteria for Mechanical, Safety & Life Saving Equipment applicable for well head platforms. This document describes design requirement of equipment generally installed in well head platforms..

The purpose of this document is to describe the design considerations to be followed during detail design of the well platform.

REFERENCES

Throughout this Standard the following dated and undated standards/codes are referred to. These referenced documents shall, to the extent specified herein, form a part of this standard. For dated references, the edition cited applies. The applicability of changes in dated references that occur after the cited date shall be mutually agreed upon by the Company and the Vendor. For undated references, the latest edition of the referenced documents (including any supplements and amendments) applies.

- | | |
|-----------------------------|---|
| 1. ASME Section-II, Div-I | Boilers and Pressure Vessel Code- Materials |
| 2. ASME Section-VIII, Div-I | Boilers and Pressure Vessel Code |
| 3. ASME Section-IX | Boilers and Pressure Vessel Code- welding and Brazing qualification |
| 4. ANSI B 31.3 | Process piping |
| 5. API Spec. 2C | Offshore Crane |
| 6. API RP 2D | Operation and Maintenance of Offshore crane |
| 7. API RP 2G | Production Facilities of Offshore Structure |
| 8. API RP 14C | Analysis, Design, Installation, Testing of Basic Surface Safety Systems for Offshore Production Platforms |
| 9. API-RP-14 E | Recommended practice for Design and installation of offshore production platform piping system |
| 10. API RP 14F/14FZ | Design & Installation of Electrical system for offshore production system |
| 11. API RP 14G | Fire prevention and control on open type offshore production platforms |

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12. API RP 14J	Recommended Practice for Design and Hazards analysis for Offshore Production Facilities
13. API RP 75	Recommended Practice for Development of a Safety and Environmental Management Program for Offshore Operations and Facilities
14. API RP 500	Electrical Hazardous Area Classification
15. API RP 520	Design and Installation of relieving system in Refineries
16. API RP521	Guide for pressure relief and depressurizing system
17. API RP 550	Installation of Refinery instruments and control system
18. API 610	Centrifugal Pumps for General Refinery Service
19. API 613	Special purpose gear units for Refinery Services
20. API 614	Lubrication shaft sealing and control oil system of special purpose application
21. API 615	Sound controls of mechanical equipment for refinery service.
22. API 618	Reciprocating compressors for general Refinery Service
23. API 619	Rotary Type Positive Displacement Compressor (Screw Compressor)
24. API 650	Welded Steel tank for oil storage
25. API 660	Shell and Tube Heat Exchangers for General refinery services
26. API 661	Air Cooled Heat Exchangers for General Refinery Services.
27. API 671	Special purpose coupling for Refinery Services
28. API 674	Positive Displacement Pumps Reciprocating
29. API 675	Positive Displacement Pumps Controlled volume
30. API 676	Positive Displacement Pumps – Rotary
31. API 677	General Purpose Gear Units for Refinery Services
32. API 682	Pumps-Shaft Sealing Systems
33. API Publication 2030	Application of Fixed Water Spray System for Fire Protection in the Petroleum Industry

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34. ASHRAE Standards	American Society of Heating, Refrigeration and Air Conditioning Engineers
35. ASTM	(American Society for Testing and Material)
36. ANSI	(American National Standards Institute)
37. ANSI B 1.1	Screw threads
38. ANSI B 16.5	Steel pipe flanges and flange fittings
39. AGMA	(American Gear Manufacturer's Association)
40. AWS	Welding hand book
41. BS 3243	Specifications for hand operated chain blocks
42. BS 4465	Electrical Hoists
43. BS 5514 (Part 1 to 7)	Reciprocating internal combustion engines performances.
44. EEMUA (Publication No 107)	Recommendation for the protection of Diesel engines operating in hazardous area
45. IS- 3938	Spec. for Elect. wire rope hoist
46. IS-3832	Chain Pulley Blocks
47. IS-2171	Portable Fire Extinguisher dry powder (Cartridge type)
48. IS 2190	Selection, Installation and Maintenance of First-Aid Fire Extinguishers- Code of practice
49. IS 2878	Specification for Fire Extinguishers, Carbon di oxide type (Portable and Trolley mounted)
50. IS 4947	Specification for gas cartridges for use in Fire Extinguishers.
51. ISO-9000 Series	Quality Assurance
52. NFPA10	Portable Fire Extinguisher
53. NFPA11	Standard for low expansion Foam
54. NFPA12	Standard on Carbon Di oxide Extinguishing Systems
55. NFPA13	Installation of sprinkler system
56. NFPA14	Standard for the installation of Standpipe, private Hydrant and Hose system
57. NFPA15	Water Spray Fixed systems for fire protection
58. NFPA16	Standard for the Installation of Foam-Water Sprinkler and Foam-Water Spray Systems
59. NFPA 17	Dry Chemical Extinguishing System

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60. NFPA 20	Centrifugal Fire Pump
61. NFPA 25	Inspection, Testing and Maintenance of Water Based Fire Protection System
62. NACE-MR-01-75	Sulfide Stress Cracking Resistant Metallic Materials for Oil Field Equipment
63. NEC	(National Electrical Code)
64. NEMA	(National Electrical Manufacturers Association)
65. OSHA	(Occupational Safety and Health Act)
66. OTR	UK HSE offshore technology report 2001/068
67. SOLAS	International Convention of Safety of Life at Sea
68. SMACNA Standards	Sheet Metal and Air Conditioning Contractors National association
69. TEMA	(Tubular Exchanger manufacturer's Association.)
70. Offshore Installation Guidance on Design & Construction, Department of Energy, UK (Part - II) - Section 5.9 : Noise & Vibration.	

* Any supplementary codes specified within above codes, along with company's Functional Specifications and their attachments shall also be complied with.

*For equipment and packages not covered by above codes/standard, the best industrial practice prevalent in offshore oil production industry shall apply.

GENERAL ENGINEERING REQUIREMENTS

1. Contractor / vendor shall have ISO 9000 certification for related activities / equipment. Contractor/ vendor shall submit quality plan for related activity / equipment.
2. Production of documents for information and data for engineering shall be submitted by contractor in accordance with the Vendor data requirements/ Contract Data/Specifications.
3. Estimated and final weights for mechanical equipment / and packages shall be submitted.
4. Equipment shall be designed and selected for continuous duty, unless specified otherwise.
5. Equipment shall be designed and selected to suit marine environment. All equipment shall be designed to suit the area classification defined in the Area Classification Drawings (to be developed in Detailed Engineering).

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6. Unless otherwise stated, all equipment shall be designed for location on out door area and suit area classification.
7. The equipment prone to spillage leakage/moisture condensation shall be provided with drip pans so as to avoid spillage of any liquid on the decks.
8. Maintenance and operational access requirements on all four sides and also on over head/underneath shall be examined for all equipment while engineering the platform facilities.
9. Equipment supplied by vendor shall meet painting specification given in Spec 2005. However, vendor's painting standard is also acceptable provided it is suitable for offshore application. In such cases vendor's standard painting procedure shall be submitted for review by the company.
10. Necessary lifting hooks shall be provided for maintenance / repair / replacement.
11. Filled in Data-Sheets as stated in specifications for each item along with the drawings and documents asked for in the specifications will be furnished with the proposal presented for review and approval of the Company.
12. Precedence of specifications:
In event of any difference of requirement in the specifications, the precedence of specifications shall be as follows:
 - Description of work
 - Design criteria
 - Equipment Specification
 - P&ID
 - Codes and standards.
However, the differences shall be brought to the notice of the company and decision of the company in this regard shall be final and shall govern the design.
13. Storage space shall be provided for chemicals and lubricants.

DOCUMENTATION REQUIRED FOR INFORMATION, REVIEW AND APPROVAL

1. Mechanical handling philosophy / studies for review
2. Material handling routing drawings for review / approval
3. All purchase specification along with list of deviation, calculation sheets, offer of the Vendors for Company's review / approval.

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4. All drawings / documents prepared by the Contractor for Company's review.
5. Operating Procedures, Operating and Maintenance Procedures for information.

VENDOR PRE-QUALIFICATION REQUIREMENT

All equipment offered shall be of proven design and shall have been in continuous satisfactory service on off-shore installation for a minimum period of two years and should be under manufacture for the last four years, unless otherwise specified.

The contractor shall have designed, manufactured, tested and supplied two units of similar type, design and of equal or higher rating at the proposed manufacturing plant.

Contractor shall provide evidence of satisfactory operation of at least 8,000 hours (for continuous duty equipment) or two years (for intermittently operating equipment) for one of such unit designed for continuous operation when operating in similar service conditions in offshore areas.

Contractor shall provide past track records with details of client, type of equipment, make, size, class, service, years of installation, materials details and copies of any feed back information received from clients regarding functioning of equipment already supplied during previous period for similar service in offshore applications. Details of manufacturing plant from where the proposed equipment will be manufactured /assembled shall also be provided.

Leaf lets / catalogues/ drawings/ sketches for supply of particular product and all other relevant technical details regarding equipment design and manufacture.

Contractor shall provide Quality Assurance certificate issued by credible certification agency.

BASIC REQUIREMENTS ON EQUIPMENT LAYOUT

1. Contractor shall furnish equipment layout drawing for all equipments for Company's review and approval. Contractor shall ensure that all equipment are appropriately located, logically in sequence of operation, maintenance and other engineering consideration.

Development of Layout primarily shall consider the following aspects:

- Safety
- Accessibility
- Operational convenience and Maintenance.

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- Future Maintenance
- Technical & Engineering Requirements

Equipment layout on deck and within skid shall provide for adequate access for convenient operation, maintenance and replacement of components in every direction. There should be enough space available, for the movement of material handling devices and provision of hooks for area/equipments where permanently installed material handling facilities, or deck crane do not have access.

Maintenance , operational and removal of major assemblies / subassemblies of an equipment shall be considered while engineering the platform facilities. Space requirement on sides, overhead and underneath shall be considered for such purpose. Minimum space requirement for such purpose is given elsewhere in this document.

2. Life rafts shall be installed in self-launching mode. Life raft cradle shall be inclined at an angle 30 degree downward.
3. Handrails of height as indicated in Structural Design Criteria shall be provided around all accessible area, stairs etc. to ensure complete safety.
4. Access platforms shall be provided for the equipment/valves manholes etc, which are not approachable from the deck floor.
5. Safety route shall be clearly indicated and painted with luminescent green color paint with yellow luminescent paint arrow
6. All equipments are to be protected from drop object.
7. Minimum one Life Ring Buoy may be provided on each edge of the platform.
8. Along with life raft, scramble net shall be provided.
9. Clear head clearance of 2.2 meters, shall be available through out the platform and walkways.
10. Removable hatch shall be provided on the deck so as to lift / remove the single largest assembly / component for repair / replacement etc through the hatch.
11. During detailed engineering, the successful bidder shall furnish all the design details, calculations, drawings for approval by the Company.
12. Mustering area shall be identified on the layout. Adequate space (minimum 0.5 m2 clear space per person) to accommodate credible nos. of personnel (10 no) in the mustering area shall be provided so as to ensure safe access to the egress route.