

ISO DIS 19901 - 3 Topsides

20 January 2008

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Sorted on status and action party

General task group

ID	Clause	Location	Country	Status
881	0	Introduction	NO	General task group

Comment ISO-FDIS 19902 contains relevant and supporting information on design classification, materials selection and gives requirements for fabrication inspection and tolerance requirements for topsides structures.

As the missing information is essential for a sound design practice references to the relevant parts of ISO 19902 should be precise and complete.

Proposed Add the same paragraph on materials as in the introduction of ISO-FDIS 19902, quote:
Flowchart for design is shown in section 19 of ISO 19902.
Materials, welding and weld inspection requirements can be based either on a "material category- or on a "design class- approach, as discussed in ISO 19902, Clauses 19 and 20.
If the material category approach is used, the corresponding provisions of Annexes C and E in ISO 19902 are applicable; if the design class approach is used, the corresponding provisions of Annexes D and F in ISO 19902 are applicable.
Annex G in ISO 19902 gives requirements on fabrication tolerances.

Reply

ID	Clause	Location	Country	Status
413	01	paras 3 + 4	NL	General task group

Comment Suggest combining paragraphs 3 and 4 into one, plus some adjustments.

Proposed Change to:
"This document is not applicable to those parts of the superstructure topside structure of floating structures that form part of the overall structural system of the floating structure; these parts come under the provisions of ISO 19904. This document It only applies to the structure of modules on a floating structure that do not contribute to the overall integrity of the floating structural system.

Reply

ID	Clause	Location	Country	Status
932	02		IT	General task group

Comment The ISO 2631-1 "Mechanical Vibration and Shock - Evaluation of Human Exposure to Whole-body Vibration — Part 2: Continuous and Shock-induced vibration in Buildings (1 Hz to 80 Hz)" designation and title are incorrect.

ISO 2631-2 is referenced only in the informative Annex A.

Proposed Change to: ISO 2631-2 "Mechanical vibration and shock - Evaluation of human exposure to whole-body vibration - Part 2: Vibration in buildings (1 Hz to 80 Hz)".
Replace this normative reference to Bibliography.

Reply

ID	Clause	Location	Country	Status
933	02		IT	General task group

Comment The ISO 3506 designation and title are incorrect. There is the 4 parts series of this standard.

Proposed Select either one or all of them.

Reply

ID	Clause	Location	Country	Status
419	02	2nd entry	NL	General task group

Comment Correction of error.

Proposed "ISO 2631-1" should be "ISO 2631-2".

Reply

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ID	Clause	Location	Country	Status
128	03.16		UK	General task group

Comment Improve the definition and add an example

Proposed

Reply

ID	Clause	Location	Country	Status
438	03.16		NL	General task group

Comment Adaptation of text.

Proposed Change "review" to "survey".

Reply

ID	Clause	Location	Country	Status
135	05		UK	General task group

Comment Section 5: Overall considerations for Topside design should broadly include following sections.

- Risk assessment
- Layout considerations
- Design Criteria
- Fabrication & Erection methodology
- Load out, Transportation & Installation schemes
- Drilling considerations
- Operation considerations: Material handling, Safety, Inspection, Maintenance, Access
- Platform reuse
- Modification & Refurbishment

Proposed

Reply

ID	Clause	Location	Country	Status
467	05.01		NL	General task group

Comment Adjustment of text to fit title and planning/design process.

Proposed Design criteria situations include all operational requirements, temporary conditions, environmental criteria conditions and accidental and abnormal conditions which could affect the design. Adequate planning shall be undertaken before detailed design is started in order to obtain a workable and economical topsides structure to perform its functions. The initial planning shall include the determination of all design situations and associated criteria upon which the design of the topsides will be based.

Reply

ID	Clause	Location	Country	Status
608	05.01		DK	General task group

Comment ALARP should be addressed early

Proposed affect the structure. Adequate planning shall be undertaken before detailed design is started in order to obtain a workable and economical topsides structure to perform its functions following the ALARP principle.

Reply

ID	Clause	Location	Country	Status
142	05.04.02		UK	General task group

Comment Add a sentence saying that all structure and equipment should clear the abnormal wave crest which is normally the 10-4 event unless explicitly designed for wave impact - also make sure that terms air gap and deck elevation are consistent between 19902 and 19901-3.

Proposed

Reply

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ID	Clause	Location	Country	Status
144	05.04.02		UK	General task group

Comment Add sentence to the effect that on monohull floating structures, in particular, increasing the height of the modules (process deck) above the main deck is a trade-off between reducing the potential blast pressures, increasing accessibility, and reducing stability.

Proposed

Reply

ID	Clause	Location	Country	Status
145	05.04.03		UK	General task group

Comment Deck drain requirements are not normally a structural issue except they may be shown on grating and deck plate layouts. I think this belongs in a guidance on safe layouts.

Proposed

Reply

ID	Clause	Location	Country	Status
145	05.07		UK	General task group

Comment Ensure this is consistent with 19902 (use of latest knowledge and standards)

Proposed

Reply

ID	Clause	Location	Country	Status
611	05.07		DK	General task group

Comment What advanced techniques ??

Proposed

Reply

ID	Clause	Location	Country	Status
612	05.07		DK	General task group

Comment The gap between present and previous (original) codes should be quantified if modification is based on latter code.

Proposed The gap between original code and existing code should be quantified.

Reply

ID	Clause	Location	Country	Status
710	06.04.01	Table 1	FR	General task group

Comment Is the requirement max (2t, b/150) or min (2t, b/150) ?

Proposed

Reply

ID	Clause	Location	Country	Status
485a	06.04.02.02	para 1	NL	General task group

Comment 1) Add relevant normative references.

Proposed 1) Add at the end "... safety; see ISO 2631 and ISO 6897."

Reply

ID	Clause	Location	Country	Status
614	06.04.03		DK	General task group

Comment Deflections large compared to DS412 . Add text. Why not ref to a standard of tolerance instead of giving %.

Proposed No ponding in areas where risk of frost and deck fall to be maintained by pre chamfer

Reply

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ID	Clause	Location	Country	Status
487c	06.04.03	last row in Table 1	NL	General task group

Comment 3) Thickness relates to the plate thickness.

Proposed 3) Change to "deck plate thickness".

Reply

ID	Clause	Location	Country	Status
153	06.04.03	Table 1	UK	General task group

Comment Clarify for deck plating, that the maximum deflection is the smaller (or larger ?) of $2t$ or $b/150$.

Proposed

Reply

ID	Clause	Location	Country	Status
154	06.04.03	Under table	UK	General task group

Comment Higher deflections

Proposed Telecommunication mast rotation at top should be limited to $1/100$ th radian - should be referenced to requirements for communications - suggest go to commentary

Reply

ID	Clause	Location	Country	Status
158	06.09	a)	UK	General task group

Comment Corrosion margins should be explicitly stated in as-built drawings as part of the information required to manage integrity

Proposed

Reply

ID	Clause	Location	Country	Status
159	06.09	d)	UK	General task group

Comment Avoidance of galvanic corrosion cells e.g. between aluminium helideck decks and steel trusses or structural steel and stainless steel used in process pipework.

Proposed

Reply

ID	Clause	Location	Country	Status
160	06.09	e)	UK	General task group

Comment 12.2 says very little. The choice of paint system must reflect the practical ability of the painting subcontractor to achieve the specified application controls.

Proposed

Reply

ID	Clause	Location	Country	Status
497	06.09	e)	NL	General task group

Comment Delete "clear" and refer to "corrosion protection" (which is the subject of 12.2) instead of "construction". Furthermore, 12.2 hardly contains any specifications!

Proposed "e) The clear specification of requirements for construction corrosion protection (See 12.2)."

Reply

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ID	Clause	Location	Country	Status
711	06.09	List of items a) to e)	FR	General task group

Comment There is wide experience of corrosion at the interface between piping and piping supports.

Proposed d) The protection of details sensitive to crevice corrosion (e.g. bolted joints, interface between piping and piping supports).

Reply

ID	Clause	Location	Country	Status
712	06.09	List of items a) to e)	FR	General task group

Comment There is a wide experience of corrosion problems on piping supports due to vent holes for welding not being plugged after fabrication.

Proposed f) The requirement to plug vent holes on pipe supports after welding.

Reply

ID	Clause	Location	Country	Status
163	06.10		UK	General task group

Comment Unduly onerous - some things are the responsibility of the fabricator. Designer demonstrating - wording is onerous in terms of obligation on designer - Shell have alternative wording

Proposed

Reply

ID	Clause	Location	Country	Status
842	06.10		US	General task group

Comment Extent of NDE is deined

Proposed Reference ISO 19902, Appendix E, Table E-3

Reply

ID	Clause	Location	Country	Status
883	06.10	Design for Fabrication and inspection	NO	General task group

Comment Add similar reference to ISO 19902 as in ch. 6.2

Proposed Add text after first paragraph:

Flowchart for design is shown in section 20 of ISO 19902.

ISO 19902 gives specific requirements and guidance for fabrication and inspection for carbon steel structures.

Reply

ID	Clause	Location	Country	Status
617	06.11		DK	General task group

Comment Review and monitoring of critical area regularly

Proposed Critical areas shall also be reviewed and monitored on a regular basis.

Reply

ID	Clause	Location	Country	Status
165a	06.12.01		UK	General task group

Comment 2. It may not make economic sense to install removal aids during the fabrication due to maintenance and re-inspection prior to use

Proposed

Reply

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ID	Clause	Location	Country	Status
165b	06.12.01		UK	General task group

Comment 3. Method of removal should be considered in the design so that the structure is known to be strong enough for removal and the method considered should accompany the design documentation. After 25 years service there will undoubtedly be some corrosion.

Proposed

Reply

ID	Clause	Location	Country	Status
167	06.12.04		UK	General task group

Comment Clarify that the text refers to setting a topsides onto a barge following removal.

Proposed

Reply

ID	Clause	Location	Country	Status
884	07.01		NO	General task group

Comment The bullet points mix situations and group of limit states. This is confusing. E.g fatigue may need to be checked for all situations like in-place, transportation,

Proposed State that the structure should be checked for all situations during its life and give reference to ISO 19900.

Reply

ID	Clause	Location	Country	Status
172	07.02		UK	General task group

Comment It is usual in design to apply contingency factors to best available net weight information. The contingency factors are generally reduced through design. Topsides structures are also often weighed at load out, and a weight reconciliation exercise undertaken. However, with "old" existing structures, weight data may be limited or inadequate. The definitions of the Actions take no account of the uncertainty/variability associated with the loads. Furthermore, this is not taken into account in the values of the load factors.

Proposed

Reply

ID	Clause	Location	Country	Status
204	07.10.01 General	Para 2 line 6	UK	General task group

Comment State the governing ("dimensioning") condition for helideck design: a helicopter crash may not be a governing case for design (i.e. it is a very low probability event)

Proposed Delete helicopter crash, replace with helicopter emergency landing

Reply

ID	Clause	Location	Country	Status
634	07.11.05		DK	General task group

Comment If trolley wheel to be mentioned for decks then crane beams to be included too

Proposed Runway beams to be considered normal structure with check of actual wheel configuration loads.

Reply

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ID	Clause	Location	Country	Status
236	08.04		UK	General task group

Comment The standard text has the following:
"Flare towers, booms and other structures can be susceptible to global and local resonant responses due to:
- transmitted wave forces acting on the substructure,
- seismic forces,
- accidental actions,
- Global wind forces or local wind forces."
Our experience shows the vulnerability to different loading is in a completely different order from that in the document:
- Flare tower is most sensitive to global wind forces or local wind forces.
- Seismic forces and accidental actions may be considered if their magnitude is sufficiently high
- Normally, wave action transmitted from substructure has negligible effect.

Proposed

Reply

ID	Clause	Location	Country	Status
237b	08.04		UK	General task group

Comment Should specifically mention thermal effects (radiation) and thermal cycling

Proposed

Reply

ID	Clause	Location	Country	Status
237c	08.04		UK	General task group

Comment Need close cooperation between flare tip manufacturer and designer of flare boom

Proposed

Reply

ID	Clause	Location	Country	Status
240	08.05		UK	General task group

Comment Need to put more emphasis on understanding of wind flow and turbulence around the helideck wrt helicopter operations. (good text in Annex)

Proposed

Reply

ID	Clause	Location	Country	Status
846	08.05.01		US	General task group

Comment ISO DIS 19901-3 contains the following:
8.5.01 General
The design shall meet the requirements of the regulating authority for aviation in the region in which the installation is to be installed and of the International Civil Aviation Organisation (ICAO) as set out in the ICAO Heliport Manual.
Comment:
Aside from the fact that the ICAO Heliport Manual is badly out of date, conformance with the clause, as written, is problematic because of the possibility that aviation regulators, on a national basis, may adopt requirements that differ from those in the ICAO Heliport Manual.
Editorial Comment:
ICAO, in its own publications, uses the word "Organization", spelled with a 'z' in its name.

Proposed IADC would recommend that this clause be revised to read as follows:

8.5.01 General

The design shall meet the requirements of the regulating authority for aviation in the region in which the installation is to be installed. To the extent that they do not conflict with such regulatory requirements the design and installation should also conform to the standards of the International Civil Aviation Organization (ICAO) as set out in the ICAO Heliport Manual.

Reply

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ID	Clause	Location	Country	Status
241	08.05.01	Note	UK	General task group

Comment If Clause 8.5 does not apply to floaters the note should clearly state this rather than repeating text from the Scope.

Proposed

Reply

ID	Clause	Location	Country	Status
743	08.05.01	page 31, 1st line	FR	General task group

Comment What is disproportionate collapse in this context? Are we considering here a normal emergency landing, or a crash event? The text does not seem consistent with the requirement in 8.5.3.2 for a serviceability limit for permanent deflection following an emergency landing.

Proposed To be clarified

Reply

ID	Clause	Location	Country	Status
744	08.05.02	1st paragraph	FR	General task group

Comment "Galvanic corrosion" seems more appropriate than "differential corrosion".

Proposed Change "Where different materials are used the detailing of the connections shall be such as to avoid differential corrosion" by "Where different materials are used the detailing of the connections shall be such as to avoid galvanic corrosion"

Reply

ID	Clause	Location	Country	Status
243	08.05.02	Para 1 line 2	UK	General task group

Comment Delete are used, add are to be used in contact

Proposed

Reply

ID	Clause	Location	Country	Status
242	08.05.02	Para 2	UK	General task group

Comment Note requirement for watertightness of the deck and safe handling of accidental spillage of aviation fuel.

Proposed

Reply

ID	Clause	Location	Country	Status
244	08.05.03		UK	General task group

Comment There should only be 2 subsections for section 8.5.3
1 for the accidental load scenario
2 for the helicopter at rest scenario
For example all the sections after 8.5.3.8 relate to section 8.5.3.8, this is not logical
Section 8.6 is more logically laid out

Proposed

Reply

ID	Clause	Location	Country	Status
638	08.05.03.01		DK	General task group

Comment

Proposed Helicopters landing shall be treated as imposed actions and to be applied together with other variable, permanent and environmental actions

Reply

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ID	Clause	Location	Country	Status
245	08.05.03.01	Bullet 4	UK	General task group

Comment Delete helicopter tie down...

Proposed

Reply

ID	Clause	Location	Country	Status
747	08.05.03.03		FR	General task group

Comment This is taken to mean that the structural response factor should be considered in respect to the overall dynamic response of the helideck framing, not in the local design of deck plate and stringers.

Proposed Text to be clarified: "The dynamic helicopter landing action determined as above shall be increased by a structural response factor to account for the sympathetic response of the helideck structure. This factor is to be applied for the helideck framing design, not in the local design of deck plate and stringers. It will depend on the natural frequency of the deck structure.-"

Reply

ID	Clause	Location	Country	Status
640	08.05.03.04		DK	General task group

Comment 0.5kN/m2 give more than 20 mT for a normal deck and helicopter can not use deck safely if so much snow or ice so it would have to be removed

Proposed

Reply

ID	Clause	Location	Country	Status
748	08.05.03.04	08.05.03.04 to 8.05.03.14	FR	General task group

Comment 8.5.3.4 to 8.5.3.7 seem to relate to landing, and 8.5.3.8 to 8.5.3.14 seem to relate to helicopter at rest.

Proposed These clauses should be sub-divided with separate sub-headings.

Reply

ID	Clause	Location	Country	Status
641	08.05.03.06		DK	General task group

Comment The self weight of the helideck supported by the member concerned shall be evaluated.
Meaning not clear

Proposed

Reply

ID	Clause	Location	Country	Status
642	08.05.03.06		DK	General task group

Comment The self weight of the helideck supported by the member concerned shall be evaluated.
Why is this stated? Deadweight actions are to be included, ref. chapter 7.

Proposed Delete this sub-section.

Reply

ID	Clause	Location	Country	Status
643	08.05.03.07		DK	General task group

Comment Up and down wind force to be addressed as well as free unrestricted flow below deck to min turbulence. ?

Proposed

Reply

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ID	Clause	Location	Country	Status
749	08.05.03.07	8.05.03.07 8.05.03.13	FR	General task group

Comment There is likely also to be "lift" forces normal to the direction of wind flow.

Proposed

Reply

ID	Clause	Location	Country	Status
250	08.05.03.08		UK	General task group

Comment New section required. Following paras all relate to Helicopter at Rest situations.

Proposed

Reply

ID	Clause	Location	Country	Status
862	08.05.03.08		US	General task group

Comment What is the difference between "imposed static action" and "helicopter static action"?

Proposed Clarify

Reply

ID	Clause	Location	Country	Status
251	08.05.03.09	Line 3	UK	General task group

Comment After different, add positions and

Proposed

Reply

ID	Clause	Location	Country	Status
644	08.05.03.10		DK	General task group

Comment Snow&ice in sec 8534 allready

Proposed

Reply

ID	Clause	Location	Country	Status
253	08.05.03.11		UK	General task group

Comment This is already covered in 8.3.5.6?

Proposed

Reply

ID	Clause	Location	Country	Status
646	08.05.03.11		DK	General task group

Comment Same as 8.5.3.6 ??

Proposed

Reply

ID	Clause	Location	Country	Status
863	08.05.03.11		US	General task group

Comment I do not understand what is meant by "The action supporting the member concerned shall be calculated". What does this have to do with the weight of structural members?

Proposed Clarify

Reply

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ID	Clause	Location	Country	Status
647	08.05.03.12		DK	General task group

Comment Should allow for some skew or unequal loading

Proposed

Reply

ID	Clause	Location	Country	Status
648	08.05.03.14		DK	General task group

Comment See and combine with 8.5.3.7

Proposed

Reply

ID	Clause	Location	Country	Status
750	08.05.03.14		FR	General task group

Comment This clause seems to concern helicopters at rest, and tied-down. Why is the environment limited to 10-year conditions?

Proposed

Reply

ID	Clause	Location	Country	Status
865	08.05.03.14		US	General task group

Comment Not sure exactly what the intent of this section. Is it a helideck on a platform or floater that needs to be checked for the 10 year storm (and if so why not the 100 year storm) or is it during installation / transportation of the helideck structure.

Proposed Please clarify...

Reply

ID	Clause	Location	Country	Status
255	08.05.03.15	Para 1	UK	General task group

Comment Are the resistance factors quoted in all applicable standards appropriate? If not what constitutes an appropriate factor? (2 is snatch load - instantaneous load from Biggs)
What about action factors though?

Proposed

Reply

ID	Clause	Location	Country	Status
256	08.05.03.16		UK	General task group

Comment Refer to HSE Safety Alert 07/2005 and CAP437 which increases the test mass to 100kg and a requirement to withstand any accidental personnel loading.

Proposed

Reply

ID	Clause	Location	Country	Status
649	08.05.03.16		DK	General task group

Comment 75 kg to low and to big area 0.5X0.5m

Proposed

Reply

ID	Clause	Location	Country	Status
752	08.05.04		FR	General task group

Comment No mention of the potential for flammable liquid pooling in deformed decking.

Proposed

Reply

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ID	Clause	Location	Country	Status
751	08.05.04	1st para	FR	General task group

Comment

Proposed ... criteria shall be derived ... landing conditions shall be considered ... -> ... criteria could be derived ... landing conditions could be considered ...

Reply

ID	Clause	Location	Country	Status
650	08.06.01		DK	General task group

Comment Pref crane location not possible for most larger modules
d Most crane have overload protection with automatic safety release then ??

Proposed Crane support structures shall where practical be attached at the intersection of two or in one of the topside primary trusses and connected at min. two main deck elevations with minimal eccentricities. The pedestal shall be included in the analytical model of the primary structure as its stiffness can have a significant effect on load distribution. When located in accordance with this guidance their performance will generally be governed by static actions with negligible dynamic amplification. They are however subject to fatigue damage and shall always be checked to ensure that fatigue life is satisfactory for the required service conditions. Special attention to be given to the torque load and designing for it to be taken by beam elements. For new cranes detailed torque loads for combined load and outreach to be achieved from vendor. If this can not be accessed for an existing crane the crane to be clocked during work and the torque loads calculated.
A number of separate situations shall be considered for the design of the crane support structures as follows where the max moment is determined from crane curves or vendor info..

Reply

ID	Clause	Location	Country	Status
753	08.06.01	3rd paragraph	FR	General task group

Comment "The maximum rotation at the top of the pedestal (or in the plane of the effective point of support) shall not exceed the manufacturer's recommended requirements and in no case shall it exceed 1° for the most onerous case of loading. " Is it dynamic or static loading ?

Proposed

Reply

ID	Clause	Location	Country	Status
257	08.06.01	Line 1	UK	General task group

Comment Add In all cases, advice shall be taken from the crane manufacturer as to the actions likely to be imposed on the crane support structure. Further information is given in A.8.6.01.

Proposed

Reply

ID	Clause	Location	Country	Status
264	08.08		UK	General task group

Comment Need to consider vibrations on the bridge

Proposed

Reply

ID	Clause	Location	Country	Status
265	08.09		UK	General task group

Comment Bridge bearing areas are also normally designed to accommodate significant tolerances equivalent to the sum of the platform installation tolerances (3 planar axes and 3 rotational) as well as in service deflections.

Proposed

Reply

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ID	Clause	Location	Country	Status
763	08.11		FR	General task group

Comment In the context of this clause, equipment vendors also make assumptions about the structure that will support their equipment, and these assumptions need to be checked by the designer of the main structure.

Proposed

Reply

ID	Clause	Location	Country	Status
270	08.11	e)	UK	General task group

Comment including the provision of jacking points.

Proposed

Reply

ID	Clause	Location	Country	Status
663	08.12		DK	General task group

Comment

Proposed Fire protection is used to protect personnel and safety-critical structure and equipment from the effects of heat for sufficient time to allow evacuation of personnel from the area. Safety-critical structures shall be identified and are likely to include most, if not all, of the primary structure, that can not be shown to be structural redundant, as well as structures supporting walkways, decks and muster areas, etc., used for evacuation.
Where active fire protection is specified, the effects of possible enhanced corrosion rates on structures subjected to wetting during testing, etc. shall be considered as well as areas that can not be avoided to be wetted for periods to have additional demands on top coating capable of with stand damaging water intrusion. For PFP coating where surface temperatures including radiation can be expected higher than allowed in the coating spec the coating to be protected/shielded.

Reply

ID	Clause	Location	Country	Status
764	08.12	2nd Paragraph	FR	General task group

Comment Passive fire protection can be achieved either by the use of panels, cementitious coatings, or intumescent coatings. The word "sprayed" has no relevance since it relates to an application method, not to the generic type of coating which can be used.

Proposed ... or passive (cementitious or intumescent coatings or fire-resistant panels) ...

Reply

ID	Clause	Location	Country	Status
271	08.13		UK	General task group

Comment Penetrations can be allowed for providing the resistance of the element is not compromised - specifically blast walls etc

Proposed

Reply

ID	Clause	Location	Country	Status
272	08.14		UK	General task group

Comment alternatively or additionally consideration to "boxing in" with plate of certain areas to present a surface that is easy to coat, inspect and maintain

Proposed

Reply

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ID	Clause	Location	Country	Status
665	08.15		DK	General task group

Comment

Proposed Areas where ponding can occur shall be minimised and adequately drained. Where there is a potential for such areas to be fouled with oil, adequate provision shall be made for drainage to a suitable system. Arrangements for cleaning to reduce or eliminate any hazards to the environment and to health and safety shall be implemented before any discharge to the sea. In climate with risk of frost no ponding on decks can be allowed due to tripping hazardous.

Reply

ID	Clause	Location	Country	Status
273	08.16		UK	General task group

Comment This refers to "normal" drilling operations maybe change "shock loading" to "impulse loading" - check on use of word shock throughout document

Proposed

Reply

ID	Clause	Location	Country	Status
667	09.03.04		DK	General task group

Comment Sea spray not nec a prob to all bolts.demanded sealing do not exist. Care should be taken in rounding bolt hole edges and secure full coating and use washers both sides to minimize coating damage.

Proposed

Reply

ID	Clause	Location	Country	Status
668	09.03.04		DK	General task group

Comment Bolted connections: The proposed text in the paragraph is very much in favour of bolted connections. As operator in the North Sea it is our experience that much care needs to be taken using bolted connections. We generally try to avoid these, as the risk of "failure" and in-service maintenance costs are higher than for a welded connection.

Problems with bolted connections:

Corrosion. Standard coatings are damaged in contact areas. This results in potential severe corrosion in-service. It is generally not possible to recoat.

Loss of pretension in bolts due to coating or insert creep

Loss of pre-tension occurs very easily if the connection is based on short (in-elastic) bolts

Proposed -□The section should be more objective and contain more focus on the "cons- (and not only the "pros-) and not least set forth requirements to ensure that bolted connections are designed and manufactured correctly. Requirements could be:

All surfaces which are in contact or not possible to access after assembly should be coated by aluminium spraying. If for safety reasons not allowed offshore all new parts should be sprayed but existing offshore parts should be coated with a suitable coating

Bolt length (flexibility) should be designed to allow for creep of coating. Say the design must allow for creep equal to 50% of the accumulated coating thickness on contacting surfaces in the connection without the bolt loses its required pretension. Thermally sprayed aluminium is not to included as coating in this calculation

It is generally good practice to design connections with long bolts.

Regular inspection of bolted connections should be specified.

Reply

ID	Clause	Location	Country	Status
765	09.03.04	4th para	FR	General task group

Comment there may be good technical reasons not to galvanize high strength bolts.

Proposed "Bolts should be galvanized or shall protected by another high protection system."

Reply

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ID	Clause	Location	Country	Status
669	09.03.05		DK	General task group

Comment Material properties/welderability + testing should be addressed

Proposed

Reply

ID	Clause	Location	Country	Status
281	10		UK	General task group

Comment Suggest that in 10.3 onwards the text is guidance rather than requirements and should be in the annex.

Proposed

Reply

ID	Clause	Location	Country	Status
900	10.02	Carbon steel	NO	General task group

Comment For consistency a similar table on DC approach shall be added (or the given table on MC approach moved to ISO 19902 and the attached DC-table added).

Proposed Additional text to address the selection of either the MC or the DC approach in design.
Add the attached:
Table 8 - Design class - Typical minimum selection for topsides.

Reply

ID	Clause	Location	Country	Status
283	10.02	Table 7	UK	General task group

Comment This table is not referenced in any way so it is unclear if it is a requirement or recommendation?

Proposed

Reply

ID	Clause	Location	Country	Status
283a	10.02	Table 7	UK	General task group

Comment This needs to be properly aligned with the current text in ISO 19902 complete with description of the levels groups ductilities etc.

Proposed

Reply

ID	Clause	Location	Country	Status
283b	10.02	Table 7	UK	General task group

Comment Both material category and design class approaches need to be given equal weight as in 19WG3 Panel 6 should be involved in this clause and appropriate references made.

Proposed

Reply

ID	Clause	Location	Country	Status
767	10.03.01	1st paragraph	FR	General task group

Comment Stainless steels offer improved corrosion resistance, but depending on environmental condition, they can still be subject to corrosion. Furthermore, this will depend on the type of stainless steel used. This is actually stated in the next sentence. The statement "outstanding corrosion resistance" is therefore too strong.

Proposed Stainless steels exhibit improved corrosion resistance....

Reply

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ID	Clause	Location	Country	Status
284b	10.03.01	Para 2 lines 1 and 2	UK	General task group

Comment After provide a, add minimum corrosion thickness

Proposed

Reply

ID	Clause	Location	Country	Status
285	10.03.03		UK	General task group

Comment Material properties (for stainless steel)

Proposed

Reply

ID	Clause	Location	Country	Status
286	10.03.03		UK	General task group

Comment One of the major advantages of stainless steel is its high ductility level and hence increased fractures toughness especially under cold temperature. Hence it is highly defect tolerant or fracture tolerant. However, this is not mentioned in the document.

Proposed

Reply

ID	Clause	Location	Country	Status
670	10.04.01		DK	General task group

Comment Isolation not insulation. Use of SS316 for isolation between CS and alu could be addressed

Proposed

Reply

ID	Clause	Location	Country	Status
291	10.05	Para 2	UK	General task group

Comment For offshore applications, ultimate strength is often secondary to compliance with deflection, fire and smoke performance criteria.

Proposed

Reply

ID	Clause	Location	Country	Status
292	10.06		UK	General task group

Comment Add some examples of the use of timbers on offshore structures and a caution on flammable sealants. Add design code reference Eurocode

Proposed

Reply

ID	Clause	Location	Country	Status
293	11		UK	General task group

Comment Specify what would be expected in addition to 19902 requirements - e.g. topsides load plan.

Proposed

Reply

ID	Clause	Location	Country	Status
671	12.01.04		DK	General task group

Comment Cold sawing, water cutting etc could be addressed

Proposed

Reply

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ID	Clause	Location	Country	Status
776	12.02.01	1st paragraph	FR	General task group
Comment	The standard for coating application can be specified by the designer or the owner. Furthermore, there is an ISO standard on the subject which should be quoted (ISO 12944).			
Proposed	The application of coatings shall conform to a suitable standard specified by the owner or the designer and is covered in ISO 12944.			

Reply

ID	Clause	Location	Country	Status
298	14.01		UK	General task group
Comment	The whole of the loadout operation needs to be considered including the stability of the quay and of the barge throughout and after the load-out operation			

Proposed

Reply

ID	Clause	Location	Country	Status
866	14.02.02.01		US	General task group
Comment	First sentence states "Skidding can be the only effective option available." I don't agree and if retained, this sentence should say that it may be the only option available.			

Proposed Remove this sentence

Reply

ID	Clause	Location	Country	Status
303	14.04		UK	General task group
Comment	It would be useful to say something about installation aids - bumpers and guides. (new subclause)			

Proposed

Reply

ID	Clause	Location	Country	Status
781	14.04.01		FR	General task group
Comment	No mention of float-over installation			

Proposed Add text on float-over installation

Reply

ID	Clause	Location	Country	Status
672a	14.04.02		DK	General task group
Comment	Demand on mandatory weighing for modules above XX ton and generally demand to weight monitoring in total life span of module some where in ISO is needed			

Proposed

Reply

ID	Clause	Location	Country	Status
304	14.04.02	Para 3 line 3	UK	General task group
Comment	After cover, add uncertainties such as			

Proposed

Reply

ID	Clause	Location	Country	Status
305	14.04.03		UK	General task group
Comment	it is not unusual to design lift points to allow for the late fixing of padeye orientation (after yard weighing has occurred)			

Proposed

Reply

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ID	Clause	Location	Country	Status
307	15	Clause	UK	General task group

Comment Normative - QC & fabrication inspection shall follow ISO 19902.
Informative - 19902 does not cover all topside situations...in particular safety critical equipment. Designers should ensure appropriate methods are used.
This is not very helpful. At best the text should be reversed so that the normative requirement is on the designer (or owner?) to specify appropriate criteria with an informative reference to 19902 as one source that covers some of the components/situations on the topside structure.

Proposed

Reply

ID	Clause	Location	Country	Status
308	16		UK	General task group

Comment We need to bring in the 19902 approach of pushing the operator into understanding the structure and coming up with a rational inspection approach and fabric maintenance strategy.

Proposed

Reply

ID	Clause	Location	Country	Status
309	16.01	Para 1 line3	UK	General task group

Comment Simplify - remove unnecessary text, Remove to the extent that these relate to their impact on structural integrity issues

Proposed

Reply

ID	Clause	Location	Country	Status
672b	16.02		DK	General task group

Comment Demand on mandatory weighing for modules above XX ton and generally demand to weight monitoring in total life span of module some where in ISO is needed

Proposed

Reply

ID	Clause	Location	Country	Status
310	16.02	Para 1	UK	General task group

Comment SCE's are clearly defined in the UK regulations as related to Major Accident Hazards, so this paragraph is potentially confusing.
Better to refer to a RBI programme review both likelihood and consequence of failure - could split the list below to reflect this.

Proposed

Reply

ID	Clause	Location	Country	Status
312	16.04		UK	General task group

Comment I am always concerned when structural inspections require regular cleaning to bare steel. The reason for this is that I have witnessed events as follows:
Certification required that certain welded connections be inspected annually (due to poor judgement on the part of the certifier and no challenge from the operator). The operator became so passé about this that he decided it was simpler not to re-coat between inspections thereby accelerating the processes leading to loss of integrity.
Be very careful how you word the requirements of this section, this document will become global and you need to be very concise with requirements and suggestions.

Proposed

Reply

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ID	Clause	Location	Country	Status
673	16.04		DK	General task group
Comment	Coating removal can be discussed to be non destructive or not why not address Ult. Sonic and eddy current that can be done outside coating. If coating removed dye pen/MPI should always be performed			

Proposed

Reply

ID	Clause	Location	Country	Status
868	16.04		US	General task group
Comment	"Topsides inspections usually rely on general visual inspection and close visual inspection techniques involving surface cleaning to bare structure in the first instance." It is rare that we remove the coating to do inspection on a weld based on visual inspection. If there is a visual indication the first choice is to use eddy current and if an indication is found, it is verified with magnetic particle inspection which does need to have the coating removed.			

Proposed Eliminate the last part of the sentence so it would read as follows:

"Topsides inspections usually rely on general visual inspection and close visual inspection techniques."

Reply

ID	Clause	Location	Country	Status
313	16.05		UK	General task group
Comment	Include current 19902 wording about the environmental event requiring the special inspection being the design event.			

Proposed

Reply

ID	Clause	Location	Country	Status
674	16.05.01		DK	General task group
Comment	Need for registration of inspection results (both positive finding and negative findings - quite often negative findings are registered only)			

Proposed All inspection results, positive (no finding) and negative findings shall be registered and maintained in a systematic manner for evaluation and later use.

Reply

ID	Clause	Location	Country	Status
675	16.05.02		DK	General task group
Comment	Not clear and wrong use of the buzz word benchmark			

Proposed

Reply

ID	Clause	Location	Country	Status
783	16.05.02		FR	General task group
Comment	Such a baseline inspection should ensure there is no excessive vibration from equipment, and no excessive vibration due to local vortex shedding.			

Proposed Add these verifications in the baseline inspection

Reply

ID	Clause	Location	Country	Status
316	16.05.03		UK	General task group
Comment	The basic requirements specified in ISO 19902 are not consistent with North Sea practice.			

Proposed

Reply

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ID	Clause	Location	Country	Status
676	16.05.03		DK	General task group

Comment If damage indication always 100% non destruct testing required.

Proposed

Reply

ID	Clause	Location	Country	Status
869	16.05.03		US	General task group

Comment In a topsides structure, damage is generally not caused by fatigue. It's more likely to be from corrosion, dropped objects, local overload, etc.
For this reason, consider the following: Level I inspection requirements are OK
Level II - Find damage, overload, etc in a level I the do a CVI of the appropriate members/welds, NOT all. Local damage should not require a global inspection.
Level III - Based on Level II results then do NDE of the appropriate areas as required. Again, it's very unlikely that all safety critical components would need to be inspected.

Proposed Level I as is
Level II
- first item OK
- a CVI of all suspect safety-critical components
- eliminate NDE
Level III
- first 2 items the same as Level II
- third item: detailed NDE of all suspect safety critical components
Note that the level IV could be used if there are connections or members that should receive NDE or other special inspection on a regular basis.

Reply

ID	Clause	Location	Country	Status
317	16.05.03	b) bullet 2	UK	General task group

Comment This is an onerous requirement - Level II inspections are specified for L1 category platforms - i.e. all manned platforms - every three years. Safety critical components currently include virtually all primary structures.

Proposed

Reply

ID	Clause	Location	Country	Status
318	16.05.03	c) bullet 2	UK	General task group

Comment As above, a LIII inspection is specified every 5 years for L1 platforms - all manned platforms. - Exceeds current practice.

Proposed

Reply

ID	Clause	Location	Country	Status
678	16.05.05		DK	General task group

Comment How damage initial found if not visual

Proposed Where signs of any damage to the structure or coatings are found, a close visual inspection shall then be performed. Where indicated by this inspection, any detailed non-destructive examination necessary shall be performed.

Reply

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ID	Clause	Location	Country	Status
321	16.06		UK	General task group

Comment The code specifies requirements for inspection in detail but nothing about follow up actions i.e. assessment, monitoring and repair.

Proposed

Reply

ID	Clause	Location	Country	Status
322	16.06		UK	General task group

Comment Cost and availability is an operational issue and do not belong in this document.

Proposed

Reply

ID	Clause	Location	Country	Status
232	17		UK	General task group

Comment For a platform reuse there are likely to be significant changes to process plant - changes to inventory, changes to risk profile etc.

Proposed

Reply

ID	Clause	Location	Country	Status
664	8.14		DK	General task group

Comment

Proposed Consideration shall be given at the design stage to the accessibility of all parts of the structure for inspection, cleaning and coating by the positioning and detailing of members and components in relation to the adjacent structure and facilities, unless these are specifically designed not to be inspected in service. Then need for coating can be avoided by airtight welded sealing of the area/volume.

Reply

ID	Clause	Location	Country	Status
785	A.06.04.02.01	page 56, 1st para	FR	General task group

Comment A factor of $\pm 2,5$ on frequency seems a very high range.

Proposed To be checked

Reply

ID	Clause	Location	Country	Status
786	A.06.04.02.02		FR	General task group

Comment Vibration contributes also to noise

Proposed Vibration can contribute to:
1) motion sickness;
2) discomfort and perception of vibration;
3) noise;
4) health disorders; and
5) fatigue.

Reply

ID	Clause	Location	Country	Status
508	A.06.04.02.02	3)	NL	General task group

Comment "Perception of vibration" is included in the introductory sentence to the list.

Proposed Delete "and perception of vibration".

Reply

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ID	Clause	Location	Country	Status
787	A.06.08	4th para	FR	General task group
Comment	Is it possible to design a structure in such a way that all primary load elements that can be exposed to hazards are non-critical components? What does this mean?			
Proposed	To be clarified			
Reply				

ID	Clause	Location	Country	Status
513	A.06.09		NL	General task group
Comment	Delete superseded text Does ISO 19902 really contain guidance on corrosion control for topsides??			
Proposed	Delete "No guidance is offered here, but"			
Reply				

ID	Clause	Location	Country	Status
788	A.06.12.01	1st paragraph	FR	General task group
Comment	It is not acceptable that no design or analysis is required in detail for platform decommissioning and removal.			
Proposed	Design or analysis is required in detail for platform decommissioning and removal. Analysis is to be conducted original design dossier and thorough inspection.			
Reply				

ID	Clause	Location	Country	Status
789	A.06.12.02		FR	General task group
Comment	The idea expressed might be a good one, but is it appropriate here?			
Proposed	Check if location is appropriate			
Reply				

ID	Clause	Location	Country	Status
378	A.08.05.01		UK	General task group
Comment	Delete: Aviation standards refer also to other matters that affect the design of the helideck, such as the size of the Obstacle Free Sector, and should be checked for compliance.			
Proposed				
Reply				

ID	Clause	Location	Country	Status
380	A.08.05.01	" para 8 and Table A.8	UK	General task group
Comment	Delete are given in Table A.8 Add may be obtained from the helicopter manufacturer or operator. Delete Table A.8 Helicopter weights and dimensions.			
Proposed				
Reply				

ID	Clause	Location	Country	Status
824	A.08.05.01	Table A.8	FR	General task group
Comment	Some additional information would be useful here - the tyre pressures, the number of wheels on a single undercarriage, the maximum reaction as a function of weight for the different types of undercarriage, and the design collapse load for the undercarriage.			
Proposed	Add additional information			
Reply				

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ID	Clause	Location	Country	Status
381	A.08.06		UK	General task group
Comment	<p>Add: When designing crane support pedestals there are two common types of connection interface, where:</p> <ol style="list-style-type: none"> 1) the crane incorporates a slewing ring, or 2) the crane revolves around a king post, the base of which is bolted to the pedestal flange. <p>In both cases, the pedestal flange will be required to be machined to a flatness and surface finish compatible with the type of slewing ring or king post base being used. Suitable values should be obtained from the crane manufacturer along with the values of stiffness values that are necessary to ensure a rigid base to support the crane slewing ring or king post flange. The information given by the manufacturer should enable a suitable diameter of pedestal and thickness of top flange to be calculated and thus an outer diameter for the pedestal tube, determined after making clearance allowances for a mounting bolt tensioner or torque spanner to be used.</p> <p>Any crane pedestal which has an unsupported height above the top deck attachment area of more than ten tube outside diameters should be checked for its vibration characteristics. Where significant vibration values are found, these should be factored into the fatigue life calculations for the pedestal structure.</p> <p>It is preferred that the pedestal top flange should be hot rolled and drop forged then machined to profile. The shaped flange should be attached to the pedestal wall by means of a full penetration butt weld. Weld procedures, acceptance criteria and inspection requirements should comply with recognised standards. The flange should be aligned in the angular mode and concentric with the pedestal axis to suitable fabrication standards. The flange material should be compatible with that of the pedestal and a material certificate with the necessary technical details should be obtained from the flange supplier.</p> <p>After fabrication of the pedestal, the top flange surface should be machine skimmed to the tolerances and values specified by the crane supplier. Clearance holes for bolts should be drilled from a template supplied by the crane manufacturer. No further welding should be carried out around the flange area after machining, as any heavy welding work could jeopardise the integrity and flatness of the machined surface. When machining the top flanges of pedestals, the machined face of the flange should be kept as near as possible at 90 degrees to the central axis of the pedestal tube. Values of angular tolerance should be determined for the diameter of pedestal being used and for the type of machine being used for the skimming process.</p> <p>It is necessary to know the values of the actions imparted by the crane before the dimensions of the pedestal can be determined. Three conditions are required to be considered in order to ensure pedestal integrity:</p> <ol style="list-style-type: none"> (a) Steady state or static condition <p>This consists of the overturning moment and action derived from static values only, with no dynamic or wind loading factors being taken into consideration. This action condition should be used to calculation the fatigue life of the overhang of the pedestal flange. Finite element analysis may be used to calculate stress concentration levels at any changes of section of the flange profile and in the flange/weld interface region. Full rotation of 360 degrees around the pedestal flange should be considered, with a complete reversal of action occurring on the flange upper and lower faces during each rotation. The crane manufacturer should provide the spectrum factor for actions. This will be dependent on the specification for the design of the crane. The number of expected crane rotations per unit of time should be determined from the expected operational frequency of the crane. A minimum fatigue life of one million cycles under steady state conditions should be allowed, with an appropriate action spectrum factor applied.</p> (b) Dynamic condition <p>This consists of determining static values of overturning moment and axial action from the crane hook, multiplied by a dynamic factor which is determined from the crane stiffness, prevailing sea state, lifting speed and gravitational constant. The values of action determined should indicate whether the crane is subject to de-rating while lifting at sea. This condition should include the effect of wind loading acting in the most unfavourable orientation on the crane structure during crane operations. The effects of any mitigation device fitted to the crane should not be included as this could fail in service and thus have no effect on the dynamic actions imparted to the pedestal.</p> (c) Survival condition <p>Two cases should be considered.</p> <p>Crane failure collapse</p> <p>In this case the major structural components of the crane fail from gross actions applied, with none of the overload mitigation devices being activated. The crane design should be such that the</p> 			

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last component to fail should be the lower machinery house with its attached bearing or kingpost. The pedestal should not fail or exhibit any local sidewall or flange damage or deformation under this extreme condition. Pedestal designs should allow for out of alignment deformation of the pedestal axis. Any permanent set that takes place should not prevent normal crane operations, such as rotation, to take place in future.

Storm loading

The crane and consequently the pedestal are subject to extreme weather conditions, i.e.. wind loading such as that associated with hurricanes, typhoons or cyclones.

In these environmental conditions, the crane will usually be shut down with the boom secured in the rest. This will result in a wind overturning moment which will be maximum at the top gust category of storm and a steady state moment which will be proportional to the category rating of storm. Although cyclonic in nature, this storm loading will not substantially effect the fatigue life of the pedestal as this load condition will only occur infrequently and therefore only the ability of the crane pedestal to withstand the max gust moment without permanent deformation or damage needs be checked out.

This standard does not cover cranes which incorporate a pintle or house/hook roller type support structure: special design and loading conditions apply to these types of crane mountings.

Cranes which incorporate heavy counterweights may actually produce the maximum static pedestal moment in the unloaded condition. In such cases, the actions should be calculated only by the crane manufacturer or supplier.

Proposed

Reply

ID	Clause	Location	Country	Status
382	A.08.06		UK	General task group
Comment	Correct references			

Proposed

Reply

ID	Clause	Location	Country	Status
683	A.08.06		DK	General task group
Comment	"Design guidance is given in Reference (33), (34), (6), (28) and (35)....." This section covers crane support structures. It is advised to re-check the references: Ref. (6) applies to bridges Ref. (28) applies to explosion mitigation Ref. (33) applies to heliports			

Proposed "Design guidance is given in Reference (33), (34) and (35)....."

Reply

ID	Clause	Location	Country	Status
826	A.08.14		FR	General task group
Comment	If areas are difficult to inspect, then there should be a requirement for improved fatigue and/or corrosion resistance, and no bolts.			

Proposed For areas difficult to inspect, add a requirement for improved fatigue and/or corrosion resistance, and no bolts.

Reply

ID	Clause	Location	Country	Status
684	A.16.03.02		DK	General task group
Comment	It is customary to define main and secondary escape-routes and subject these areas to a more detailed inspection. This is normally done in close cooperation with the safety discipline.			
Proposed	Main- and secondary escape-routes are often defined on specific drawings. These areas should be closely inspected to avoid any impairment with regards to evacuation.			

Reply

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ID	Clause	Location	Country	Status
875	A.16.05.02		US	General task group
Comment	I don't think of a walk-down as being part of the baseline structural inspection. I don't see why that is the only thing covered under this section. Note that the reference should be A.7.010.9.2.			
Proposed	Replace this section with the following: A walk-down is a systematic baseline inspection of the topsides equipment and supports and is performed in addition to a structural baseline inspection. The objective of the walk-down is to determine if the equipment and supports are robust enough to resist strong vibration. See A.7.010.9.2.			

Reply