

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 1 of 138

Sorted on clause

ID	Clause	Location	Country	Status
101	0 All	General	UK	

**Comment** There are a large number of very basic typographical errors that distract from the ability to review this document. It appears that this standard has been rushed out for review before it has been internally checked. Several corrections are suggested in the following, but they became too numerous to be listed.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
102	0 All	General	UK	

**Comment** Document could be improved by grouping relevant clauses together (see comments on 5, 7, 8, 12).

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
102a	0 All	General	UK	

**Comment** The document covers all aspect of Topside design but lacks design guideline & parameters to carry out the actual design. Hence it heavily depends on other references.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
103	0 All	Several	UK	

**Comment** There are several errors in the language used - only some more significant items are noted below.

**Proposed** Check grammar, spelling and punctuation throughout text.

**Reply**

ID	Clause	Location	Country	Status
406	0 Contents		NL	

**Comment** Adjust titles and numbering to conform with modifications made to titles/numbers of (sub)clauses, as appropriate.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
104	0 Contents	8.5 and A8.5	UK	

**Comment** Delete or heliports

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
407	0 Foreword		NL	

**Comment** The Foreword needs updating:  
- correct title of ISO/TC 67;  
- Part 6, ISO 19901-6, has progressed/is progressing to the FDIS stage;  
- ISO 19904-2, 19905-1, 19905-2 and 19906 need footnotes saying "under preparation".

**Proposed**

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 2 of 138

Sorted on clause

ID	Clause	Location	Country	Status
105	0 General		UK	

**Comment** My main comment concerns the partial load factors. I realise it was probably political to allow use of a number of design codes rather than to introduce ISO-specific design formulae. However this has created a real mess. Section 9.01 recommends using tube strength formulations from ISO 19902, presumably with ISO19902 load factors. In practice this will mean running two or more sets of topsides analyses with different load factors to assess tubulars and I-beams. I suggest that such an approach is bound to lead to confusion and error.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
401	0 General		NL	

**Comment** This DIS is regrettably considerably less mature than expected, especially with a view to consistency with other standards in the ISO 19900 series and editorially. Also, in some places contents and clarity of technical requirements and guidance raise questions and should be improved.

**Proposed** Detailed comments are given in this table and its attachment

**Reply**

ID	Clause	Location	Country	Status
402	0 General		NL	

**Comment** Proposed amendments to the important Clauses 7 + A.7 and 8 + A.8, together with the reasons why, do not fit the format of this table. They are given in a separate WORD document, using track changes, which is attached as section 2 at the end of the table.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
601	0 General		dk	

**Comment** Some chapters are well developed and defined, but other chapters are clearly lacking relevant information.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
701	0 General		FR	

**Comment** "Galvanic corrosion", "anodic corrosion" and "differential corrosion" seem to be used to describe the same type of corrosion phenomenon in different chapters.

**Proposed** Use only one name, for instance galvanic corrosion, throughout the ISO instead of changing the name or define these 3 terms in chapter 3 "Terms and definitions".

**Reply**

ID	Clause	Location	Country	Status
702	0 General		FR	

**Comment** "Corrosion allowance", "corrosion thickness" and "added steel thickness" are all terminologies used to describe corrosion allowance.

**Proposed** Use one of the names or define these 3 terms in chapter 3.

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 3 of 138

Sorted on clause

ID	Clause	Location	Country	Status
927	0 General		CA	

**Comment** Canada will supply action factors for CAN/CSA-S16-01 in Tables 2, 3 and 4 as soon as we have them ready.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
403	0 General	throughout	NL	

**Comment** Consistency of terminology. The term "substructure" is not commonly used in the 19900 series. It should be changed to the neutral term "support structure", which is equally applicable to fixed and floating structures.

**Proposed** Change "substructure" to "support structure".

**Reply**

ID	Clause	Location	Country	Status
404	0 General	throughout	NL	

**Comment** Consistency of spelling with e.g. ISO 19902.

**Proposed** Change "load-out" and "load out" (two words) to "loadout" (one word, without hyphen).

**Reply**

ID	Clause	Location	Country	Status
405	0 General	throughout	NL	

**Comment** Consistency of usage: both "elasto-plastic" and "elastic-plastic" occur in the document.

**Proposed** Adopt one of the options and change the other.

**Reply**

ID	Clause	Location	Country	Status
881	0 Introduction		NO	

**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
106	0 Introduction	New Para 8	UK	

**Comment** Add This code is Normative (mandatory) and includes an Annex that is Informative (advisory, guidance or commentary).

**Proposed**

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 4 of 138

Sorted on clause

ID	Clause	Location	Country	Status
107	0 Introduction	Para 2 line 2	UK	

**Comment** After elements, add materials and

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
108	0 Introduction	Para 2 line 4	UK	

**Comment** After concept, add of the structural system

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
408	0 Introduction	para 4	NL	

**Comment** Consistency of terminology with other standards in the 19900 series.

**Proposed** line 2: Change "offshore structures which ...." to "offshore platforms, which ....".  
line 2: Change " part of the substructure or hull." to "... part of the structure proper or of the hull."  
line 3: Change "... design aspects of substructures ..." to "... design aspects of support structures ..."  
line 4: typo - change "specialised" to "specialized".

**Reply**

ID	Clause	Location	Country	Status
409	0 Introduction	para 5	NL	

**Comment** Typographical error.

**Proposed** Remove space after "rules".

**Reply**

ID	Clause	Location	Country	Status
410	0 Introduction	para 6	NL	

**Comment** Minor amendments.

**Proposed** line 1: put a hyphen in "safety-related".  
line 2: Change "... life of the structures." to "... life of these structures."

**Reply**

ID	Clause	Location	Country	Status
850	01		US	

**Comment** In line 3 ISO 19904 should read ISO 19904-1

**Proposed** Change ISO 19904 to ISO 19904-1

**Reply**

ID	Clause	Location	Country	Status
911	01	1st para. 3rd sentence	CA	

**Comment** ... modification sand maintenance ...

**Proposed** Change to:... modifications and maintenance ...

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 5 of 138

Sorted on clause

ID	Clause	Location	Country	Status
912	01	2nd para.3rd sentence	CA	

**Comment** ... forms a primary forms a primary structural component of the ...

**Proposed** Change to:... forms a primary structural component of the ...

**Reply**

ID	Clause	Location	Country	Status
913	01	8th para.	CA	

**Comment** The document states that it includes requirements for, and guidance and information on various aspects from design to reuse. However, decommissioning is not included in the list. Section 6.012 discusses decommissioning, removal and disposal. Decommissioning, removal and disposal should be included in the list.

**Proposed** Consider adding the following to the list of requirements for, and guidance and information on:  
- 6.012 design for decommissioning, removal and disposal

**Reply**

ID	Clause	Location	Country	Status
705	01	Beginning of Page 2	FR	

**Comment** The document may also be applied to masts, towers, offloading jetties, trestles.

**Proposed** The document applies to structural components including the following:

...  
masts, towers, offloading jetties, trestles.

**Reply**

ID	Clause	Location	Country	Status
415	01	Existing para 6	NL	

**Comment** Suggest bringing the existing paragraph 6, with the list of 3 entries, forward to after the existing paragraph 2.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
416	01	existing para 8	NL	

**Comment** Suggest some modifications to introductory sentence and 2 of the 5 entries.

**Proposed** intro: change to  
"This document contains requirements for, and gives guidance and information on:  
3rd entry: change to  
"assessment of existing topsides structures;"  
4th entry: change to:  
"re-use of topsides structures;"

**Reply**

ID	Clause	Location	Country	Status
109	01	General	UK	

**Comment** The scope is very confusing and in some cases contradictory. With the exception of fixed structures it is unclear whether specific clauses may or may not be appropriate. This is unacceptable. Only jack-up topsides could be exempted (and possibly arctic structures) as the main document has not been published for this structural type.

**Proposed**

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 6 of 138

Sorted on clause

ID	Clause	Location	Country	Status
109a	01	General	UK	

**Comment** It is strongly recommended that someone with ISO, topside and floating structure expertise review and modify the document to make it applicable to floating structure types within the scope of ISO 19904 (both parts).

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
417	01	last para	NL	

**Comment** Suggest bringing the last paragraph forward to after the existing paragraph 5 (i.e. after "This document is not applicable to the structure of hulls of jackups or of other mobile installations.")

**Proposed** Bring paragraph forward.

**Reply**

ID	Clause	Location	Country	Status
110	01	Para 1	UK	

**Comment** Replace ".. modification sand maintenance .." with "..modifications and maintenance".

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
411	01	para 1	NL	

**Comment** Consistency of terminology with other standards in the 19900 series.  
We presume use of "this document" in ISO 19901-3 is as per ISO usage, but suggest changing to "this part of ISO 19901" in a few instances.

**Proposed** line 1: Suggest changing "document" here to "this part of ISO 19901".  
line 3/4: Change "supporting substructure." to "support structure."  
line 4: typo - change "... modification sand ..." to "... modifications and .... "

**Reply**

ID	Clause	Location	Country	Status
111	01	Para 1, line 4	UK	

**Comment** Change modification to modifications

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
703	01	para 1, line 4	FR	

**Comment** typo

**Proposed** modification sand -> modifications and

**Reply**

ID	Clause	Location	Country	Status
112	01	Para 2	UK	

**Comment** Text does not make sense. "If any part of the topsides structure of a fixed structure (steel or concrete) forms a primary forms a primary structural component of the overall structural system of the whole platform .."

**Proposed**

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 7 of 138

Sorted on clause

ID	Clause	Location	Country	Status
412	01	para 2	NL	

**Comment** Correction and minor amendments.

**Proposed** line 1: suggest changing "this document" here also to "this part of ISO 19901"  
line 2: "ISO 19901 series" is wrong, change to "ISO 19900 series".  
line 4: suggest changing "... topsides structure of a fixed structure ....." to "... topsides structure on a fixed structure ...-"  
line 5: duplicated text - "... forms a primary forms a primary....-

**Reply**

ID	Clause	Location	Country	Status
704	01	para 2, line 4-5	FR	

**Comment** typo

**Proposed** forms a primary forms a primary -> forms a primary

**Reply**

ID	Clause	Location	Country	Status
414	01	para 5	NL	

**Comment** Consistency of spelling with other standards in the 19900 series.

**Proposed** Change "jackups" to "jack-ups", with hyphen.

**Reply**

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

**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
113	01 Scope	Para 1 line 2	UK	

**Comment** Delete for, add of

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
114	01 Scope	Para 2 line 5	UK	

**Comment** Delete forms a primary

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
115	01 Scope	Para 2 line 6	UK	

**Comment** After ISO 19903 add ,ISO 19904, 19905

**Proposed**

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 8 of 138

Sorted on clause

ID	Clause	Location	Country	Status
116	01 Scope	Para 6 line 2	UK	

**Comment** Delete ;, add : (i.e. replace semicolon with colon - common error))

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
117	01 Scope	Para 7 line 1	UK	

**Comment** After the, add cellar decks of fixed offshore structures and the hulls of floating offshore structures

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
118	01 Scope	Para 8 line 1	UK	

**Comment** After parts of add the module support frames and cellar decks of fixed offshore structures and

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
119	01 Scope	Para 8 line 4	UK	

**Comment** After structures add and life extension

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
418	02		NL	

**Comment** The present DIS was apparently prepared before ISO 19901-6 (Marine operations) had sufficiently advanced to be available as a reference. ISO 19901-6 is relevant for lifting, transporting and installing topsides structures. Therefore it should be included in the Normative references, and be ensured that no conflicts / discrepancies / duplications with ISO 19901-6 occur.

**Proposed** Ad ISO 19901-6 to the normative references.

**Reply**

ID	Clause	Location	Country	Status
931	02		IT	

**Comment** ISO 2631-1 is referenced only in the informative Annex A.

**Proposed** Replace this normative reference to Bibliography.

**Reply**

ID	Clause	Location	Country	Status
932	02		IT	

**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**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 9 of 138

Sorted on clause

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ID	Clause	Location	Country	Status
933	02		IT	

**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**

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ID	Clause	Location	Country	Status
934	02		IT	

**Comment** ISO 6897 is referenced only in the informative Annex A.

**Proposed** Replace this normative reference to Bibliography.

**Reply**

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ID	Clause	Location	Country	Status
935	02		IT	

**Comment** The ISO 19901 (Part 1) number is incorrect.

**Proposed** Change to ISO 19901-1.

**Reply**

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ID	Clause	Location	Country	Status
936	02		IT	

**Comment** The ISO 19901 (Part 2) number is incorrect.

**Proposed** Change to ISO 19901-2.

**Reply**

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ID	Clause	Location	Country	Status
937	02		IT	

**Comment** The ISO 19901 (Part 5) number is incorrect.

**Proposed** Change to ISO 19901-5.

**Reply**

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ID	Clause	Location	Country	Status
938	02		IT	

**Comment** The ISO 19904 designation and title are incorrect. There is the 2 parts series of this standard.

**Proposed** Select either one or all of them.

**Reply**

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ID	Clause	Location	Country	Status
939	02		IT	

**Comment** The ISO 19905 designation and title are incorrect. There is the 2 parts series of this standard.

**Proposed** Select either one or all of them.

**Reply**

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ID	Clause	Location	Country	Status
419	02	2nd entry	NL	

**Comment** Correction of error.

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

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 10 of 138

Sorted on clause

ID	Clause	Location	Country	Status
420	02	4th entry	NL	

**Comment** The standard ISO 6897 is only referenced in A.06.4.2.2. Is this a normative standard??

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
421	02	7th entry	NL	

**Comment** Correction of error.

**Proposed** The reference should not be "ISO 19901" but "ISO 19901-1".

**Reply**

ID	Clause	Location	Country	Status
422	02	8th entry	NL	

**Comment** Correction of error.

**Proposed** The reference should not be "ISO 19901" but "ISO 19901-2".

**Reply**

ID	Clause	Location	Country	Status
423	02	9th entry	NL	

**Comment** Elimination of entry, or correction of error.

**Proposed** ISO 19901 Part 5 is not called up in the document and should be deleted.  
If it, after all, appears somewhere the reference should not be "ISO 19901" but "ISO 19901-5".

**Reply**

ID	Clause	Location	Country	Status
424	02	last entry	NL	

**Comment** ISO 19905 is only referenced in Clause 1 (Scope); does this make it a normative reference?

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
602	03		dk	

**Comment** As different words are randomly used in the ISO for the same please add to terms and def. All changes will here after be shown in italic

**Proposed** Action factors

Partial coefficients, Partial action factors, safety factors, load factors or action factors are variables, factors or coefficients used to scale loads or material properties mostly to increase loads or reduce material properties to achieve a needed safety level.

Resistance

Strength or capacity of structure determined using loads/actions and material properties with action factors.

Resistance factor

Air gap

ALARP

**Reply**

ID	Clause	Location	Country	Status
425a	03	general	NL	

**Comment** For clarity of using ISO 19901-3 as a separate standard we propose to add a number of definitions from ISO 19900 and ISO 19902 relating to notions that are also frequently used in 19901-3.

**Proposed** Add definitions of: - platform [copy from 19900, 2.23]

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 11 of 138

Sorted on clause

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ID	Clause	Location	Country	Status
425b	03	general	NL	

**Comment** Add definitions of:

**Proposed** - topsides [copy from 19900, 2.38]

**Reply**

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ID	Clause	Location	Country	Status
425c	03	general	NL	

**Comment** Add definitions of:

**Proposed** - owner [copy from 19902, 3.36]

**Reply**

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ID	Clause	Location	Country	Status
425d	03	general	NL	

**Comment** Add definitions of:

**Proposed** - regulator [already present in 3.010]

**Reply**

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ID	Clause	Location	Country	Status
425e	03	general	NL	

**Comment** Add definitions of:

**Proposed** - exposure level [copy from 19900, 2.015]

**Reply**

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ID	Clause	Location	Country	Status
425f	03	general	NL	

**Comment** Add definitions of:

**Proposed** - consequence category [copy from 19902, 3.011]

**Reply**

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ID	Clause	Location	Country	Status
425g	03	general	NL	

**Comment** Add definitions of:

**Proposed** - life-safety category [copy from 19902, 3.27]

**Reply**

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ID	Clause	Location	Country	Status
425h	03	general	NL	

**Comment** Add definitions of:

**Proposed** - design situation [copy from 19900, 2.013]

**Reply**

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ID	Clause	Location	Country	Status
425i	03	general	NL	

**Comment** Add definitions of:

**Proposed** - design criteria [copy from 19900, 2.011]

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 12 of 138

Sorted on clause

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ID	Clause	Location	Country	Status
425j	03	general	NL	

**Comment** Add definitions of:

**Proposed** - design value [copy from 19900, 2.014]

**Reply**

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ID	Clause	Location	Country	Status
425k	03	general	NL	

**Comment** Add definitions of:

**Proposed** - design service life [copy from 19900, 2.012]

**Reply**

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ID	Clause	Location	Country	Status
425l	03	general	NL	

**Comment** Add definitions of:

**Proposed** - accidental design situation [copy fr. 19902, 3.2]

**Reply**

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ID	Clause	Location	Country	Status
425m	03	general	NL	

**Comment** Add definitions of:

**Proposed** - after damage design situation [ISO 19902, 3.3]

**Reply**

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ID	Clause	Location	Country	Status
425n	03	general	NL	

**Comment** Add definitions of:

**Proposed** - explosion [copy from 19902, 3.017]

**Reply**

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ID	Clause	Location	Country	Status
425o	03	general	NL	

**Comment** Add definitions of:

**Proposed** - basic variable [copy from 19900, 2.5]

**Reply**

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ID	Clause	Location	Country	Status
425p	03	general	NL	

**Comment** Add definitions of:

**Proposed** - nominal value [copy from 19900, 2.22]

**Reply**

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ID	Clause	Location	Country	Status
425q	03	general	NL	

**Comment** Add definitions of:

**Proposed** - representative value[copy from 19900, 2.26]

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 13 of 138

Sorted on clause

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ID	Clause	Location	Country	Status
425r	03	general	NL	

**Comment** Add definitions of:

**Proposed** - characteristic value [copy from 19900, 2.7]

**Reply**

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ID	Clause	Location	Country	Status
425s	03	general	NL	

**Comment** Add definitions of:

**Proposed** - extreme value [copy from 19902, 3.012]

**Reply**

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ID	Clause	Location	Country	Status
425t	03	general	NL	

**Comment** Add definitions of:

**Proposed** - abnormal value [copy from 19902, 3.01]

**Reply**

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ID	Clause	Location	Country	Status
425u	03	general	NL	

**Comment** Add definitions of:

**Proposed** - return period [copy from 19901-1, 3.23]

**Reply**

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ID	Clause	Location	Country	Status
425v	03	general	NL	

**Comment** Add definitions of:

**Proposed** - structural component [copy from 19900, 2.33]

**Reply**

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ID	Clause	Location	Country	Status
425w	03	general	NL	

**Comment** Add definitions of:

**Proposed** - critical component [copy from 19902, 3.012]

**Reply**

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ID	Clause	Location	Country	Status
425x	03	general	NL	

**Comment** Add definitions of:

**Proposed** - robustness [copy from 19902, 3.46]

**Reply**

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ID	Clause	Location	Country	Status
425y	03	general	NL	

**Comment** Add definitions of:

**Proposed** - load arrangement [copy from 19902, 3.28]

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 14 of 138

Sorted on clause

ID	Clause	Location	Country	Status
425z	03	general	NL	

**Comment** Add definitions of:

**Proposed** - load case [copy from 19902, 3.29].

**Reply**

ID	Clause	Location	Country	Status
426a	03.01		NL	

**Comment** 1) Maintain consistency of probability level across ISO 19900 series standards. Abnormal values (including accidental events) are defined in ISO 19901-1 and ISO 19902 as having probabilities between 10-3 and 10-4 per annum.

**Proposed** 1) To be resolved.

**Reply**

ID	Clause	Location	Country	Status
426b	03.01		NL	

**Comment** 2) Suggest generalization of the definition to "accidental event" instead of "accidental action".

**Proposed** 2) Change "action" to "event".

**Reply**

ID	Clause	Location	Country	Status
426c	03.01		NL	

**Comment** 3) Use of capitals, and consistency with 3.5 (see below).

**Proposed** 3) Change the end of the definition to "...to be considered in an accidental design situation"

**Reply**

ID	Clause	Location	Country	Status
427	03.02		NL	

**Comment** Add abbreviation AFP to defined term (as for PFP)

**Proposed** Add AFP.

**Reply**

ID	Clause	Location	Country	Status
603	03.03		dk	

**Comment**

**Proposed** Use def. like 3.4 and move 3.012 next to and include stilling tubes

**Reply**

ID	Clause	Location	Country	Status
120	03.04		UK	

**Comment** Note. There are also cases around the world where conductors are welded off to the platform above water thereby making the conductor an additional pile in resisting environmental forces.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
121	03.04		UK	

**Comment** Clarify the definition to include the existence of the well string within the conductor which is part of the process plant and which experiences effects such as thermal growth

**Proposed**

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 15 of 138

Sorted on clause

ID	Clause	Location	Country	Status
428a	03.04		NL	
<b>Comment</b>	1) Definition differs without apparent reason from that in ISO 19900:2002.			
<b>Proposed</b>	1) Suggest to copy definition from ISO 19900:2002.			
<b>Reply</b>				

ID	Clause	Location	Country	Status
428b	03.04		NL	
<b>Comment</b>	2) The NOTE in 19901-3 can be maintained, but needs some adjustments for consistency of terminology.			
<b>Proposed</b>	2) Change NOTE to "A conductor is continuous from below the seabed to the process plant in the topside topsides and can be laterally supported in both the support substructure and topside topsides structure. The vertical support is at the seabed."			
<b>Reply</b>				

ID	Clause	Location	Country	Status
429	03.05		NL	
<b>Comment</b>	1) Consistency across ISO 19900 series standards. The term "accidental design situation" (not design accidental) is identically defined in ISO 19902, 19903 and 19904-1. Please adopt the same definition in 19901-3.			
<b>Proposed</b>	Adopt the existing definition: "accidental design situation design situation involving exceptional conditions of the structure or its exposure EXAMPLE Impact, fire, explosion, local failure or loss of intended differential pressure (e.g. buoyancy)."			
<b>Reply</b>				

ID	Clause	Location	Country	Status
429	03.05		NL	
<b>Comment</b>	2) See comment on 3.01 above for resolution of the probability level. 3) If there would be a need for an additional definition of an "accidental design event" ('event' instead of 'action') this can be derived from the definition of "accidental design situation".			
<b>Proposed</b>				
<b>Reply</b>				

ID	Clause	Location	Country	Status
122	03.06		UK	
<b>Comment</b>	This definition is not clear and the note does not seem to fit the definition. Ensure that the word "dimensioning" is consistent with the terms in other documents, e.g. API RP2A FB and with ISO 19901-2			
<b>Proposed</b>				
<b>Reply</b>				

ID	Clause	Location	Country	Status
430a	03.06		NL	
<b>Comment</b>	1) The term "dimensioning" seems rather odd for the definition as given.			
<b>Proposed</b>				
<b>Reply</b>				

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 16 of 138

Sorted on clause

ID	Clause	Location	Country	Status
430b	03.06		NL	
<b>Comment</b>	2) Suggest rearranging for enhanced clarity.			
<b>Proposed</b>	"identifying accidental events for each category of hazard with a combined probability of occurrence exceedance for each category of hazard greater than 10 <sup>-4</sup> per year that can entail unacceptable loss or other consequences.			

Reply

ID	Clause	Location	Country	Status
430c	03.06		NL	
<b>Comment</b>	3) See comment on 3.01 above for resolution of the probability level.			

Proposed

Reply

ID	Clause	Location	Country	Status
430d	03.06		NL	
<b>Comment</b>	4) In the NOTE change "may" to "can":			

**Proposed** Line 2: change "may" to "can":

Reply

ID	Clause	Location	Country	Status
604	03.06		dk	

**Comment**

**Proposed** Intolerable / propagating instead of disproportionate

Reply

ID	Clause	Location	Country	Status
706	03.06	title	FR	

**Comment** dimensioning what? Title is incomplete.

Proposed

Reply

ID	Clause	Location	Country	Status
431	03.07		NL	

**Comment** Hazard is a defined term in ISO 19902, copied from ISO 13702. Suggest therefore referring to "hazard" instead of "hazardous event".

**Proposed** Change "hazardous event" to "hazard".

Reply

ID	Clause	Location	Country	Status
432	03.08		NL	

**Comment** Typographical error.

**Proposed** Change to "... improves the members member's resistance to fire"

Reply

ID	Clause	Location	Country	Status
123	03.09		UK	

**Comment** Check the use of "reassignment" within the document

Proposed

Reply

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 17 of 138

Sorted on clause

ID	Clause	Location	Country	Status
433	03.09		NL	
<b>Comment</b>	Typographical error and consistency of terminology with ISO 19902.			
<b>Proposed</b>	"change in the exposure level of an a platform due to a change of the life safety category level or of the consequence category of failure level"			

Reply

ID	Clause	Location	Country	Status
434a	03.11		NL	
<b>Comment</b>	1) Internal consistency of definition.			
<b>Proposed</b>	1) Change "accidental action" to "accidental event".			

Reply

ID	Clause	Location	Country	Status
434b	03.11		NL	
<b>Comment</b>	2) See comment on 3.01 above for resolution of the probability level.			
<b>Proposed</b>				

Reply

ID	Clause	Location	Country	Status
605	03.11		dk	
<b>Comment</b>	.Not part of acceptance criteria			
<b>Proposed</b>	Accident not covered by the design			

Reply

ID	Clause	Location	Country	Status
124	03.12		UK	
<b>Comment</b>	A gas is a fluid!			
<b>Proposed</b>				

Reply

ID	Clause	Location	Country	Status
125	03.12		UK	
<b>Comment</b>	Not always the case e.g. flexible risers from subsea wells to the platform.			
<b>Proposed</b>				

Reply

ID	Clause	Location	Country	Status
126	03.12		UK	
<b>Comment</b>	change "process plant on a platform" to "platform topsides". not all platforms have process plant (e.g. wellhead platform)			
<b>Proposed</b>				

Proposed

Reply

ID	Clause	Location	Country	Status
435	03.12		NL	
<b>Comment</b>	1) The term "riser" is defined in ISO 19900, while an adapted definition is given in ISO 19901-7 and ISO 19904-1. Please use this definition, if necessary with adaptation.			
<b>Proposed</b>	1) Use existing definition of "riser" as far as possible.			

Reply

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 18 of 138

Sorted on clause

ID	Clause	Location	Country	Status
435	03.12		NL	
<b>Comment</b>	2) The NOTE in 19901-3 is useful and can be maintained with some adjustment for consistency.			
<b>Proposed</b>	"NOTE A riser can be supported both laterally and vertically in the topside topsides structure and transmit actions from thermal effects, wave action, gravity and variations in fluid flow to the topsides structure."			

Reply

ID	Clause	Location	Country	Status
127	03.13		UK	
<b>Comment</b>	The definition is stricter in the Safety Case regulations - safety critical elements are required to prevent and mitigate against major accidents. Their function is defined by performance standards. Failure of non-SCE can still lead to unacceptable consequences.			

Proposed

Reply

ID	Clause	Location	Country	Status
127a	03.13		UK	
<b>Comment</b>	Shell have a better definition that can be made available			

Proposed

Reply

ID	Clause	Location	Country	Status
606	03.13		dk	
<b>Comment</b>				
<b>Proposed</b>	item of structure equipment or piping of which the failure will lead to unacceptable safety consequences			

Reply

ID	Clause	Location	Country	Status
707	03.13	line 1	FR	
<b>Comment</b>	typo			
<b>Proposed</b>	of which the failure -> the failure of which			

Reply

ID	Clause	Location	Country	Status
436	03.14		NL	
<b>Comment</b>	Suggest replacing "demonstration" by "resulting situation", and some adaptation.			
<b>Proposed</b>	"demonstration that resulting situation in which escape routes and safe areas are maintained after an accidental event for a sufficient period of time to allow platform evacuation and that large inventories of hazardous material are not released into the environment-			

Reply

ID	Clause	Location	Country	Status
437	03.15		NL	
<b>Comment</b>	"vortex shedding" is common language that does not need to be defined (the notion occurs in many standards of the ISO 19900 series, but is nowhere defined).			
<b>Proposed</b>	Delete the definition. If it is maintained it should be corrected to read as: "... spiral fluid or air flow ....".			

Reply

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 19 of 138

Sorted on clause

ID	Clause	Location	Country	Status
128	03.16		UK	

**Comment** Improve the definition and add an example

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
438	03.16		NL	

**Comment** Adaptation of text.

**Proposed** Change "review" to "survey".

**Reply**

ID	Clause	Location	Country	Status
129	04		UK	

**Comment** A Why use identical symbol?

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
941	04	Definitions of all symbols described under calculative equations	KR	

**Comment** Identical symbols meaning different object shall be indicated with attachment of characteristic foot letter. In addition, all symbols shall be described those dimensions using SI units, except ones illustrated with appended tables or graphs, if possible.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
130	04	MTOW	UK	

**Comment** MTOM in text

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
439	04	title	NL	

**Comment** Adjust in accordance with ISO Directives.

**Proposed** Change to "Symbols and abbreviated text terms".

**Reply**

ID	Clause	Location	Country	Status
131	04	ULS	UK	

**Comment** Out of sequence

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
132	04.01		UK	

**Comment** Modal not maodal

**Proposed**

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 20 of 138

Sorted on clause

ID	Clause	Location	Country	Status
440	04.01	A	NL	

**Comment** acceleration

**Proposed** Suggest to replace by a (as in ISO 19901-2).

**Reply**

ID	Clause	Location	Country	Status
453	04.01	A (accidental action) and Ip	NL	

**Comment** These symbols do not seem to occur in the document.

**Proposed** Delete the symbols from the list.

**Reply**

ID	Clause	Location	Country	Status
441	04.01	De	NL	

**Comment** Amend definition (modelled after ISO 19902).

**Proposed** Change to "equivalent quasi-static action representing dynamic response effects to the extreme environmental action, Ee"

**Reply**

ID	Clause	Location	Country	Status
442	04.01	Do	NL	

**Comment** Amend definition (modelled after ISO 19902).

**Proposed** Change to "equivalent quasi-static action representing dynamic response effects to the operating situation environmental action, Eo"

**Reply**

ID	Clause	Location	Country	Status
443	04.01	E	NL	

**Comment** Amend definition (as per ISO 19902).

**Proposed** Change to "quasi-static environmental action"

**Reply**

ID	Clause	Location	Country	Status
444	04.01	Ee	NL	

**Comment** Amend definition (as per ISO 19902).

**Proposed** Change to "extreme quasi-static extreme environmental action due to wind, waves and current"

**Reply**

ID	Clause	Location	Country	Status
445	04.01	Eo	NL	

**Comment** Add definition (as per ISO 19902).

**Proposed** Add "quasi-static environmental action due to owner defined operating wind, wave and current parameters"

**Reply**

ID	Clause	Location	Country	Status
449	04.01	F	NL	

**Comment** Spelling error.

**Proposed** Change to "modal modal displacement"

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 21 of 138

Sorted on clause

ID	Clause	Location	Country	Status
446	04.01	Fy	NL	

**Comment** Change symbol to fY (if it appears in the document).

**Proposed** Amend definition as per ISO 19902: "characteristic representative yield strength, in stress units"

**Reply**

ID	Clause	Location	Country	Status
450	04.01	g	NL	

**Comment** Replace g by separate gf and gR.

**Proposed** Delete entry.

**Reply**

ID	Clause	Location	Country	Status
451	04.01	gf	NL	

**Comment** Copy definition from ISO 19902.

**Proposed** "partial action factor of which the value reflects the uncertainty or randomness of the action (from ISO 19900)"

**Reply**

ID	Clause	Location	Country	Status
452	04.01	gR	NL	

**Comment** Copy definition from ISO 19902.

**Proposed** "partial resistance factor of which the value reflects the uncertainty or variability of the component resistance including those of material properties (from ISO 19900)"

**Reply**

ID	Clause	Location	Country	Status
454	04.01	missing symbols	NL	

**Comment** Various symbols used in the document are not included in 4.01; examples are I, F(t), Fmax, kE, q, ky, q, P, P(t), Pmax, Ru, Ro, Rq, ecr  
Also add symbols S and N, and copy definitions from ISO 19902

**Proposed** Add missing symbols.

**Reply**

ID	Clause	Location	Country	Status
447	04.01	T	NL	

**Comment** Amend definition, but verify that the symbol is consistently used with this meaning.  
If it is also used for natural period in general, then define it only as "natural period" and add more specific definition where it occurs.

**Proposed** Change to "natural period of the whole platform (structure plus topsides and foundation)"

**Reply**

ID	Clause	Location	Country	Status
448	04.01	td	NL	

**Comment** Amend definition.

**Proposed** Change to "duration of explosion pressure pulse"

**Reply**

ID	Clause	Location	Country	Status
607	04.02		dk	

**Comment** Missing abbreviated terms

**Proposed** SRSS (as used in chapter 7.8.2 b.

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 22 of 138

Sorted on clause

ID	Clause	Location	Country	Status
708	04.02		FR	

**Comment** MTOW maximum take-off weight. In the text this is nearly always written MTOM to mean maximum take-off weight. Include the hyphen.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
455	04.02	ALS	NL	

**Comment** Use plural form in definition

**Proposed** Change to "accidental limit states"

**Reply**

ID	Clause	Location	Country	Status
456	04.02	DLE	NL	

**Comment** Wrong term; should be replaced by ELE and ALE.

**Proposed** Delete.

**Reply**

ID	Clause	Location	Country	Status
457	04.02	FLS	NL	

**Comment** Use plural form in definition

**Proposed** Change to "fatigue limit states"

**Reply**

ID	Clause	Location	Country	Status
133	04.02	Line 12	UK	

**Comment** Add LRFD load and resistance factor design

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
133a	04.02	Line 12	UK	

**Comment** Add SMYS (?)

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
133b	04.02	Line 12	UK	

**Comment** SRSS Structural response spectrum (?)?

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
134	04.02	Line 15	UK	

**Comment** Change MTOW to term used in other standards - MTOM?

**Proposed**

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 23 of 138

Sorted on clause

ID	Clause	Location	Country	Status
464	04.02	missing abbreviations.	NL	

**Comment** Many abbreviations are missing.  
The list in the next column should be added, or some of these abbreviations should be avoided.  
Note that ELE and ALE replace the currently used SLE and DLE.

**Proposed** ALARP  
ALE  
CFD  
ELE  
ESDV  
FEA  
GBS  
HVAC  
LRFD  
MC  
PWHT  
SMYS  
SRSS

**Reply**

ID	Clause	Location	Country	Status
465	04.02	other abbreviations	NL	

**Comment** Consider the need/desirability of also adding:

**Proposed** AISC  
API  
CSA and CISC  
BS  
EC  
FABIG  
ICAO  
NS

**Reply**

ID	Clause	Location	Country	Status
458	04.02	RT	NL	

**Comment** Abbreviation does not occur in the document.

**Proposed** Delete.

**Reply**

ID	Clause	Location	Country	Status
463	04.02	SDOF ULS	NL	

**Comment** Rearrange in alphabetic order.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
459	04.02	SLS	NL	

**Comment** Use plural form in definition

**Proposed** Change to "serviceability limit states"

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 24 of 138

Sorted on clause

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ID	Clause	Location	Country	Status
460	04.02	S-N	NL	

**Comment** S and N are symbols, not abbreviations.

**Proposed** Delete.

**Reply**

---

ID	Clause	Location	Country	Status
461	04.02	ULS	NL	

**Comment** Use plural form in definition.

**Proposed** Change to "serviceability limit states"

**Reply**

---

ID	Clause	Location	Country	Status
462	04.02	UR	NL	

**Comment** Spelling.

**Proposed** Change to "utilisation utilization ratio"

**Reply**

---

ID	Clause	Location	Country	Status
135	05		UK	

**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
882	05	Abbreviated terms	NO	

**Comment** Add missing notations:

**Proposed** DC design class  
MC material category

**Reply**

---

ID	Clause	Location	Country	Status
136	05.01		UK	

**Comment** Change topsides structure to topsides layout & structure

**Proposed**

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 25 of 138

Sorted on clause

ID	Clause	Location	Country	Status
467	05.01		NL	
<b>Comment</b>	Adjustment of text to fit title and planning/design process.			
<b>Proposed</b>	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	
<b>Comment</b>	ALARP should be addressed early			
<b>Proposed</b>	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
466	05.01	title	NL	
<b>Comment</b>	The planning and design process begins with determining "design situations", which is a defined term since ISO 19900.			
<b>Proposed</b>	Change title to "Design criteria situations"			

Reply

ID	Clause	Location	Country	Status
137	05.02		UK	
<b>Comment</b>	The intent of the use of regional or nation standards is that the use of resistance factors therein shall be used unmodified. Make this clear in this clause.			
<b>Proposed</b>				

Reply

ID	Clause	Location	Country	Status
468b	05.02	NOTE	NL	
<b>Comment</b>	2) Reference.			
<b>Proposed</b>	2) Change to "Clause 1 The Scope", or to "Clause 1 The Scope".			

Reply

ID	Clause	Location	Country	Status
468a	05.02	para 1, line 4	NL	
<b>Comment</b>	1) Use "compatible with" rather than "compatible to".			
<b>Proposed</b>	1) Change to "compatible to with".			

Reply

ID	Clause	Location	Country	Status
138	05.02	Para 2 NOTE	UK	
<b>Comment</b>	Reconsider the wording and description of how ISO 19901-3 applies to structures (e.g. floating and jack-ups) that are also, in part, covered by class rules - WG5 and WG7 may be able to provide advice.			
<b>Proposed</b>				

Proposed

Reply

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 26 of 138

Sorted on clause

ID	Clause	Location	Country	Status
468c	05.02	para 2, line 1	NL	

**Comment** 3) Spelling error (s to z).

**Proposed** 3) Change to "realize".

**Reply**

ID	Clause	Location	Country	Status
841	05.03		US	

**Comment** L-0 Classification is not defined.

**Proposed** Define L-2 Classification

**Reply**

ID	Clause	Location	Country	Status
851	05.03		US	

**Comment** The Note states there are three categories of exposure level but only two are mentioned

**Proposed** Mention all three categories

**Reply**

ID	Clause	Location	Country	Status
469a	05.03	line 1	NL	

**Comment** 1) Consistency of terminology.

**Proposed** 1) Change "substructure" to "support structure".

**Reply**

ID	Clause	Location	Country	Status
139	05.03	Note	UK	

**Comment** Remove Note

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
469b	05.03	NOTE	NL	

**Comment** 2) The cross-reference to ISO 19902 is adequate and more comprehensive than the NOTE, which is best deleted..

**Proposed** 2) Delete the NOTE.

If it is kept the descriptions should generally be improved and L2 should be added.

**Reply**

ID	Clause	Location	Country	Status
470	05.04	overall	NL	

**Comment** Deck elevation (5.4.2) is a crucially important design consideration, which merits a separate subclause rather than one of several under 5.4

**Proposed** Change 5.4.2 into a separate subclause 5.4, or even 5.3.  
Adjust subclause numbering as necessary.

**Reply**

ID	Clause	Location	Country	Status
140	05.04.01		UK	

**Comment** Performance standards specify the requirements for SCEs.

**Proposed**

**Reply**

# ISO DIS 19901 - 3 Toppers

07 December 2007

Page 27 of 138

Sorted on clause

ID	Clause	Location	Country	Status
141	05.04.01		UK	

**Comment** Include drilling loads

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
142	05.04.02		UK	

**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**

ID	Clause	Location	Country	Status
143	05.04.02		UK	

**Comment** Add sentence regarding possibility of reassessment being performed following either revised (higher) wave crest or structural subsidence where the wave can impact the deck.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
144	05.04.02		UK	

**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
471a	05.04.02	line 1	NL	

**Comment** 1) Adjust cross-references in 1st sentence.

**Proposed** 1) Change to "... addressed in ISO 19902, ISO 19903, ISO 19904-1, ISO 19905-1, ISO 19906 and in ISO 19901-1."

**Reply**

ID	Clause	Location	Country	Status
471b	05.04.02	lines 3 & 4	NL	

**Comment** 2) Consistency of terminology.

**Proposed** 2) Change "substructure" to "support structure". (2x)

**Reply**

ID	Clause	Location	Country	Status
145	05.04.03		UK	

**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**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 28 of 138

Sorted on clause

---

ID	Clause	Location	Country	Status
472a	05.04.03		NL	

**Comment** 1) Consistency of terminology.

**Proposed** 1) Change "substructure" to "support structure".

**Reply**

---

ID	Clause	Location	Country	Status
472b	05.04.03		NL	

**Comment** 2) Possibility instead of permission.

**Proposed** 2) Change "may" to "can".

**Reply**

---

ID	Clause	Location	Country	Status
472c	05.04.03		NL	

**Comment** 3) Spelling.

**Proposed** 3) Change to "short-term", with hyphen (2x)

**Reply**

---

ID	Clause	Location	Country	Status
609	05.04.03		dk	

**Comment** add

**Proposed** Over flow system

**Reply**

---

ID	Clause	Location	Country	Status
709	05.05	1st paragraph	FR	

**Comment** The environmental design conditions (both metocean and seismic) for the topsides shall be those selected for the Substructure, except for wind : wind speed acting on superstructures is depending on structures overall dimensions...

**Proposed** The environmental design conditions (both metocean and seismic, except wind) for the topsides shall be those selected for the Substructure.

**Reply**

---

ID	Clause	Location	Country	Status
610	05.06		dk	

**Comment** Existing fatigue damage to be considered/determined ?

**Proposed**

**Reply**

---

ID	Clause	Location	Country	Status
473b	05.06	line 2	NL	

**Comment** 2) Consistency of terminology.

**Proposed** 2) Change "substructure" to "support structure".

**Reply**

---

ID	Clause	Location	Country	Status
473c	05.06	line 4	NL	

**Comment** 3) "This inspection" seems out-of-place.

**Proposed** 3) Change to "This The inspection ..."

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 29 of 138

Sorted on clause

ID	Clause	Location	Country	Status
473a	05.06	title	NL	

**Comment** 1) "Platform" is the wrong term; it is defined in ISO 19900 as structure + topsides + foundation (where applicable)..

**Proposed** 1) Change to "Platform Topsides re-use".

**Reply**

ID	Clause	Location	Country	Status
145	05.07		UK	

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

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
611	05.07		dk	

**Comment** What advanced techniques ??

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
612	05.07		dk	

**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
474	05.07	line 4	NL	

**Comment** ISO 19901-3 is only one part of an IS.

**Proposed** Change "this International Standard" to "this part of ISO 19901."

**Reply**

ID	Clause	Location	Country	Status
147	05.07	Para 1	UK	

**Comment** and records kept of the changes for future assessments.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
148	06		UK	

**Comment** Need to include a statement somewhere on alignment and mismatches with the supporting structure (imposed deflections) - mentioned in analysis

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
149	06		UK	

**Comment** Increase requirement to include dynamic analysis and avoidance of resonance - Shell can supply some words

**Proposed**

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 30 of 138

Sorted on clause

ID	Clause	Location	Country	Status
480	06	and A.06	NL	
<b>Comment</b>	Structural design in the DIS is based on a partial factor method (LRFD). While this is indeed the rather common and preferred method for topsides on fixed structures, for topsides on floating structures current practice is still based on WSD. Design of the floating structures themselves in ISO 19904-1 offers a choice between LRFD and WSD methods. The choice between LRFD and WSD should also be allowed for the topsides on floating structures.			
<b>Proposed</b>	Add the option to use LRFD or WSD for the topsides structures design on floating structures. Add a description of how WSD design should be performed.			

Reply

ID	Clause	Location	Country	Status
150	06.03		UK	
<b>Comment</b>	Current and earthquake loadings (and generally wave loadings) are imposed via the substructure motions rather than being direct actions.			

Proposed

Reply

ID	Clause	Location	Country	Status
481a	06.03	1st and 2nd sentences	NL	
<b>Comment</b>	1) Consistency of terminology, and adjustment of punctuation.			

Proposed

1) Change to  
"The topsides shall be designed to resist gravity permanent and variable actions; wind, wave, and current actions; earthquake actions; temperature and deformation effects, temporary conditions and accidental conditions which can occur during its service life. In addition, actions due to the motions of the supporting structure shall be considered,; these are particularly significant for floating structures."

Reply

ID	Clause	Location	Country	Status
481b	06.03	3rd to 5th sentences	NL	
<b>Comment</b>	2) Make these sentences a separate paragraph. Also consistency of terminology. - Change to:			
<b>Proposed</b>	"The nominal values of these actions, or of their derivation, are given in 7.2 to 7.8. Each mode of operation of the platform, such as drilling, production, work-over, or anticipated combinations thereof, shall be explicitly considered. In areas where icing can occur the effects of ice on both gravity permanent and variable actions and on environmental actions shall be included.-			

Reply

ID	Clause	Location	Country	Status
613	06.04		dk	
<b>Comment</b>				
<b>Proposed</b>	Design for serviceability limit state (SLS)			

Reply

ID	Clause	Location	Country	Status
482	06.04	title	NL	
<b>Comment</b>	There are more than one SLS.			
<b>Proposed</b>	Change to plural: "... serviceability limit states (SLS)"			

Reply

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 31 of 138

Sorted on clause

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ID	Clause	Location	Country	Status
483d	06.04.01	1st line under list	NL	

**Comment** 4) Accidental events should be included (as per 7.010), in addition to extreme events.

**Proposed** 4) Change to "... extreme and accidental events are ..."

**Reply**

---

ID	Clause	Location	Country	Status
151	06.04.01	c)	UK	

**Comment** Flare Structures & Telecommunication masts

**Proposed**

**Reply**

---

ID	Clause	Location	Country	Status
483c	06.04.01	c)	NL	

**Comment** 3) Punctuation.

**Proposed** 3) Add a comma between "structures" and "e.g."

**Reply**

---

ID	Clause	Location	Country	Status
483a	06.04.01	general	NL	

**Comment** 1) Put a semi-colon after list items (as per ISO).

**Proposed** 1) Add semi-colons to items a) to d).

**Reply**

---

ID	Clause	Location	Country	Status
483e	06.04.01	last line	NL	

**Comment** 5) Use more specific reference.

**Proposed** 5) Change to ".. the following 6.4.2 and 6.4.3 .."

**Reply**

---

ID	Clause	Location	Country	Status
483b	06.04.01	line 1	NL	

**Comment** 2) Consistency.

**Proposed** 2) Change "topside" to "topsides"

**Reply**

---

ID	Clause	Location	Country	Status
710	06.04.01	Table 1	FR	

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

**Proposed**

**Reply**

---

ID	Clause	Location	Country	Status
484b	06.04.02.0 1	d)	NL	

**Comment** 2) Formulation.

**Proposed** 2) Change "from the effect of" to "due to".

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 32 of 138

Sorted on clause

ID	Clause	Location	Country	Status
484a	06.04.02.0 1	general	NL	

**Comment** 1) Put a semi-colon after list items (as per ISO).

**Proposed** 1) Add semi-colons to items a) to d).

**Reply**

ID	Clause	Location	Country	Status
485a	06.04.02.0 2	para 1	NL	

**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
485b	06.04.02.0 2	para 2, last li	NL	

**Comment** 2) Typo.

**Proposed** 2) Change colon at the end into a full stop.

**Reply**

ID	Clause	Location	Country	Status
152	06.04.02.0 3		UK	

**Comment** Long period vibrations: A note should be added stating the following: "The natural period of large cantilevers can be demonstrated by eigenvalue analysis. Such analysis should include unfactored static and live loads and in the case where heavy rotating machinery is installed (such as variable speed pump skids, compressors etc), three dimensional vibration analysis should be performed. The cantilevered local structure should be designed such that the natural frequencies of the deck section are not between 0,65 and 1,5 times the operating frequency of the equipment to avoid resonance.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
614	06.04.03		dk	

**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**

ID	Clause	Location	Country	Status
852	06.04.03		US	

**Comment** Why is it necessary to distinguish between the various deflection components rather than just limiting the total deflection?

**Proposed** Consider only a maximum deflection

**Reply**

ID	Clause	Location	Country	Status
487a	06.04.03	def. of D1	NL	

**Comment** 1) Suggest change of words.

**Proposed** 1) Change "after loading" to "after applying the actions"

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 33 of 138

Sorted on clause

ID	Clause	Location	Country	Status
487b	06.04.03	def. of D2	NL	

**Comment** 2) Consistency of terminology.

**Proposed** 2) Change "variable loading" to "variable actions".

**Reply**

ID	Clause	Location	Country	Status
487d	06.04.03	last column of Table 1	NL	

**Comment** 4) The smaller of the 2 values in the last column, row 3, should be selected.

**Proposed** 4) Add "whichever is smaller".

**Reply**

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

**Comment** 3) Thickness relates to the plate thickness.

**Proposed** 3) Change to "deck plate thickness".

**Reply**

ID	Clause	Location	Country	Status
486	06.04.03	line 1	NL	

**Comment**

- This sentence refers to Equation (1), which is only applicable to a structural component, not to an overall structure.
- $D_{max}$  is a deflection, not a deflected shape.
- Use terminology consistent with other 19900 standards.

**Proposed** Reformulate the first sentence to:  
"The final deflected shape deflection,  $\Delta_{max}$ , of any element structural component or structure comprises three components contributions as follows:-".

**Reply**

ID	Clause	Location	Country	Status
153	06.04.03	Table 1	UK	

**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	

**Comment** Higher deflections ....

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

**Reply**

ID	Clause	Location	Country	Status
489	06.05		NL	

**Comment** Consistency of terminology across ISO 19900 series standards; the terms "nominal values", "representative values" and design values" are defined terms.

**Proposed** Change "nominal actions" to "representative actions" (3x) and "nominal strength" to "representative strength" (2x).

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 34 of 138

Sorted on clause

ID	Clause	Location	Country	Status
490	06.05	para 1, line 1	NL	
<b>Comment</b>	Reformulation of 1st sentence for consistent terminology.			
<b>Proposed</b>	Change to "To obtain design actions an An action factor shall be applied to each of the nominal external representative applied actions in the combinations given in Clause 7.			

Reply

ID	Clause	Location	Country	Status
491	06.05	para 3, line 1	NL	
<b>Comment</b>	Consistency of terminology.			
<b>Proposed</b>	Replace "factored strength" by "design strength".			

Reply

ID	Clause	Location	Country	Status
488	06.05	title	NL	
<b>Comment</b>	Change to plural form of limit states.			
<b>Proposed</b>	Change to "... ultimate limit states (ULS)"			

Reply

ID	Clause	Location	Country	Status
493	06.06		NL	
<b>Comment</b>	Consistency of terminology. For the FLS as a rule unfactored actions are used.			
<b>Proposed</b>	Change 1st sentence to "The design actions to be used in the FLS are addressed in the International Standard of the ISO 19900 series applicable to the substructure support structure."			

Reply

ID	Clause	Location	Country	Status
615	06.06		Dk	
<b>Comment</b>	Fatigue limit state: The ISO does not contain much guidance on fatigue caused by the sea transportation. Considering the long transports sometimes being performed (e.g. up to 30-40 days from the far east to the North Sea) and the fact that it is not common to do fatigue friendly details in topsides design, this may potentially be a critical limit state for the topsides and the seafastening			
<b>Proposed</b>	Include some general guidance in the ISO to cover sea transportation fatigue.			

Reply

ID	Clause	Location	Country	Status
492	06.06	title	NL	
<b>Comment</b>	Change to plural from of limit states.			
<b>Proposed</b>	Change to "... fatigue limit states (FLS)"			

Reply

ID	Clause	Location	Country	Status
155	06.07		UK	
<b>Comment</b>	Accidental actions are addressed in 7.010 not 7.9, but does not include factors			
<b>Proposed</b>				
<b>Reply</b>				

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 35 of 138

Sorted on clause

ID	Clause	Location	Country	Status
495	06.07		NL	

**Comment** Correction.

**Proposed** Change "in 7.9" to "7.010".

**Reply**

ID	Clause	Location	Country	Status
494	06.07	title	NL	

**Comment** Change to plural from of limit states.

**Proposed** Change to "... accidental limit states (ALS)"

**Reply**

ID	Clause	Location	Country	Status
616	06.08		Dk	

**Comment** Why not incorporate in 7.010 and use the risk matrix(attached next column) and the ALARP principle in def of robustness

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
156	06.08	Line 1	UK	

**Comment** After incorporate add suitable

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
157	06.09		UK	

**Comment** Include mention of corrosion allowance for say tanks, which can also be parts of crane pedestals.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
158	06.09	a)	UK	

**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	

**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	

**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**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 36 of 138

Sorted on clause

ID	Clause	Location	Country	Status
497	06.09	e)	NL	

**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**

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

**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	

**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
161	06.09	Para 1	UK	

**Comment** In this case, just liquids!

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
162	06.09	Para 2 line 3	UK	

**Comment** Be more precise

**Proposed** Replace considered with specified

**Reply**

ID	Clause	Location	Country	Status
496	06.09	para 2, line 1	NL	

**Comment** Intent is unclear: is compatibility with the design assumptions for the topsides structure or for the support structure meant? We presume the former.

**Proposed** Change to "... for the topsides structure."

**Reply**

ID	Clause	Location	Country	Status
163	06.10		UK	

**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**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 37 of 138

Sorted on clause

ID	Clause	Location	Country	Status
842	06.10		US	

**Comment** Extent of NDE is deined

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

**Reply**

ID	Clause	Location	Country	Status
853	06.10		US	

**Comment** 1st para, 2nd sentence "his"

**Proposed** Suggest replacing "his" with "the" or "their"

**Reply**

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

**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
164	06.10	Para 1	UK	

**Comment** Delete 'his' before 'design'

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
498	06.10	para 1, line 2	NL	

**Comment** Use different word for "might".

**Proposed** Change "might" to "can" or "could".

**Reply**

ID	Clause	Location	Country	Status
713	06.10	para 1, line 2	FR	

**Comment** typo

**Proposed** his -> their

**Reply**

ID	Clause	Location	Country	Status
499	06.10	para 2	NL	

**Comment** Spelling; "platform" is the wrong word; more specific formulation.

**Proposed** Change to  
- "in-service inspection" (with hyphen)  
- "platform topsides' life";  
- "... of the topsides structure during .."

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 38 of 138

Sorted on clause

ID	Clause	Location	Country	Status
617	06.11		dk	

**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
500	06.11	para 1	NL	

**Comment** "platform" is the wrong word, and missing words.

**Proposed** Change to  
- "possible platform topsides modifications, etc."  
- "... this information shall be used in ..."

**Reply**

ID	Clause	Location	Country	Status
618	06.12		dk	

**Comment** Access for inspection should also be included

**Proposed** .... for future inspection and disconnection

**Reply**

ID	Clause	Location	Country	Status
165	06.12.01		UK	

**Comment** 1. Not all topsides will be removed by lifting (change to removal)

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
165a	06.12.01		UK	

**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**

ID	Clause	Location	Country	Status
165b	06.12.01		UK	

**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
501	06.12.01		NL	

**Comment** Consistency.

**Proposed** Change "topside" to "topsides" (line 2).  
Delete "then" (line 3).  
Change to ".. inclusion in the topsides structure ..." (line 3)

**Reply**

# ISO DIS 19901 - 3 Toppers

07 December 2007

Page 39 of 138

Sorted on clause

ID	Clause	Location	Country	Status
854	06.12.03		US	
<b>Comment</b>	States that lifting attachments shall be retained for future use where possible. The "shall" makes this mandatory but the "where possible" is vague. The appendix appears to express the intent in a better way.			
<b>Proposed</b>	Suggest replacing "shall" with "should"			

Reply

ID	Clause	Location	Country	Status
166	06.12.03	Para 1	UK	
<b>Comment</b>	following adequate inspections and tests.			

Proposed

Reply

ID	Clause	Location	Country	Status
167	06.12.04		UK	
<b>Comment</b>	Clarify that the text refers to setting a topsides onto a barge following removal.			

Proposed

Reply

ID	Clause	Location	Country	Status
502	06.12.04		NL	
<b>Comment</b>	Use different word for "might".			

Proposed Change "might" to "can" or "could".

Reply

ID	Clause	Location	Country	Status
168	07		UK	
<b>Comment</b>	Section 7: Actions should include followings -Wind actions -Fatigue - Resistance factors & Allowable stresses			

Proposed

Reply

ID	Clause	Location	Country	Status
169	07		UK	
<b>Comment</b>	The UK believes that it is important that some checks are made on the use of the document in its final draft form to ensure that the use of the various partial safety factors results in credible results.			

Proposed

Reply

ID	Clause	Location	Country	Status
619	07		dk	
<b>Comment</b>	Variable actions. Deck loads are not addressed, apart from on heli-deck, ref. 8.5.3.010. It is proposed to include some topics relating to: Deck-load magnitude, area-reduction factors, which loads to consider for local- and global-design This item is addressed in chapter 7.3 of ISO 19904-1, but there primarily for global design.			

Proposed Include a section on deck-loads.

Reply

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 40 of 138

Sorted on clause

ID	Clause	Location	Country	Status
716	07		FR	

**Comment** There is a paragraph on waves, but surprisingly not one on wind.

**Proposed** Make clear what gust factors (3sec, 1min, etc) apply in different situations.

**Reply**

ID	Clause	Location	Country	Status
717	07		FR	

**Comment** It seems to be an omission not to include brief discussion on loading combinations for equipment testing.

**Proposed** Add text on equipment testing

**Reply**

ID	Clause	Location	Country	Status
519	07	07 and A.07	NL	

**Comment** Certain data / information is still missing and need to be supplied.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
518	07	07 and A.07throughout	NL	

**Comment** Clauses 7 and A.7 are very important, but at places lack clarity, beg technical questions and leave editorially a lot to be desired.

Proposed amendments together with the reasons why do not fit the format of this table. They are given in a separate WORD document, using track changes.

**Proposed** See separate WORD document in section 2 at the end.

**Reply**

ID	Clause	Location	Country	Status
884	07.01		NO	

**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
170	07.01	Below bullets	UK	

**Comment** comprises

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
171	07.01	Bullet 7 (accidental)	UK	

**Comment** impact

**Proposed**

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 41 of 138

Sorted on clause

ID	Clause	Location	Country	Status
172	07.02		UK	

**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
843	07.02		US	

**Comment** Defintion of G2

**Proposed** For the defination of G2 add"including contained fluids after by "self wieght of equipment"

**Reply**

ID	Clause	Location	Country	Status
885	07.02		NO	

**Comment** The equivalent quasi static action should be deleted as a separate action and should not require a specific action factor. Instead the dynamic effects need to be included in the determination of the load effects. The safety format with a 1.25 additional factor on the dynamic action stems from calibration of jacket structures and is not relevant for the different types of dynamic loads on topside structures. E.g. lifting, blast pressure, rotating machinery.

**Proposed** Delete the term De

**Reply**

ID	Clause	Location	Country	Status
173	07.02	Line 2	UK	

**Comment** Grammar

**Proposed** Add (see ISO 19902) after actions

**Reply**

ID	Clause	Location	Country	Status
174	07.03		UK	

**Comment** My understanding of partial load factors is that they are supposed to reflect the uncertainty in the loading. However, the values of the factors seem to take no account of the actual uncertainty in the types of load. The load factor on an accurately weighed structure should be less than on an estimate for an existing old structure.

**Proposed**

**Reply**

# ISO DIS 19901 - 3 Toppersides

07 December 2007

Page 42 of 138

Sorted on clause

ID	Clause	Location	Country	Status
714	07.03		FR	

**Comment** 1) It is not clear what load factors are being recommended here. This code should recommend a set of governing partial action factors to use in design, rather than listing some of the factors used by some other codes.  
Furthermore, there are several difficulties.  
Is the user allowed to choose from the list of standards with their different factors?  
What is one to make of tables A.01 and A.2 which have changed some of these factors compared to Table 2 and Table 3?  
Even if one is allowed to select from the list of codes, NS3472 does not actually give load factors: it refers to NS3490. AISC does not actually give load factors: it refers to SEI/ASCE 7, and that has a list of 9 different combinations to think about. EN1990 seems to offer a choice in its Table A1.2(B) of combination format.  
The text discusses (7.3.2) checks on gravity loading alone, and (7.3.3) checks on gravity plus environment actions. There should be another paragraph for accident conditions, at least.

**Proposed** Revisit text

**Reply**

ID	Clause	Location	Country	Status
887	07.03		NO	

**Comment** Action factors for topside structures for fixed platforms are given for application of different onshore codes. This is confusing as the material factors to be applied are not defined. In the case of Eurocode the material factors are so called National Determined Parameters and will differ from country to country. An alternative can be to state material factors in the National Annexes, but in that case it should be possible to have one set of action factors that are applicable to all codes.  
It is argued in the Commentary that this is done as the material factor is embedded in the software. It is disputed that this is a general problem and even for software that is made this way it can easily be overcome by modification of the yield stress.

**Proposed** Make one set of action factors for all codes.

**Reply**

ID	Clause	Location	Country	Status
521	07.03	07.03 and A.07.03	NL	

**Comment** Note that AISC-LRFD 1999 (Reference [1]) has been superseded by ANSI/AISC 360-05 as of March 2005, and that this latter document does not specify action factors but refers to "the applicable building code", or in the absence of a building code to ASCE/SEI 7-05.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
886	07.03	7.3.2	NO	

**Comment** The sentence in 2nd paragraph is confusing: "The partial factors shall be the same as those used for the substructure design of assessment, taking account of any eccentricities where any components of the actions are due to motion".

**Proposed** State that partial factors shall be the same as for the substructure. Use building codes using substructure factors.

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 43 of 138

Sorted on clause

ID	Clause	Location	Country	Status
888	07.03	Table 2, Table 3, Table 4	NO	

**Comment** National Codes like BS 5400 and NS 3472 are due to be withdrawn as Eurocode 3 now is in force. Direct reference to these standards should be avoided.

**Proposed** Delete reference to European national codes

**Reply**

ID	Clause	Location	Country	Status
175	07.03.01		UK	

**Comment** AISC-LRFD has a 3rd Edition dated 2001. Are the action factors still valid?

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
176	07.03.01		UK	

**Comment** The partial load factors are supposed to reflect the uncertainty in the loading. However, the values of the factors seem to take no account of the actual uncertainty in the types of load. Why should the dead weight of an accurately weighed structure attract a load factor of 1.25 to 1.45 (depending on resistance code), which would be the same if the weight (say of an existing old structure) was just estimated? Why should the weight of water in a tank of known volume attract a factor of 1.4 to 1.65, which is the same as for blanket live load allowance. There seems to be no recognition of uncertainty/variability in the loads

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
177	07.03.01		UK	

**Comment** There is no guidance for local and global blanket live load design values. Could some be added?

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
178	07.03.01		UK	

**Comment** It is good practice to allow for a lack-of-fit or out-of-level between the top-of-jacket legs and the underside of the topsides, and to consider uncertainty in the position of the CoG (as in 7.9.2.2). What load factors should be applied to these cases?

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
179a	07.03.01		UK	

**Comment** AISC-LRFD has a 3rd Edition dated 2001. Are the action factors still valid?

**Proposed**

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 44 of 138

Sorted on clause

ID	Clause	Location	Country	Status
179b	07.03.01		UK	

**Comment** The partial load factors are supposed to reflect the uncertainty in the loading. However, the values of the factors seem to take no account of the actual uncertainty in the types of load. Why should the dead weight of an accurately weighed structure attract a load factor of 1.25 to 1.45, which would be the same if the weight (say of an existing old structure) was just estimated? Why should the weight of water in a tank of known volume attract a factor of 1.4 to 1.65, which is the same as for blanket live load allowance? There seems to be no recognition of uncertainty/variability in the loads.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
179c	07.03.01		UK	

**Comment** There is no guidance for local and global blanket live load design values. Could some be added?

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
179d	07.03.01		UK	

**Comment** It is good practice to allow for a lack-of-fit or out-of-level between the top-of-jacket legs and the underside of the topsides, and to consider uncertainty in the position of the CoG (as in 7.9.2.2). What load factors should be applied to these cases?

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
180	07.03.01		UK	

**Comment** Reference number missing for CSA

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
620	07.03.01		Dk	

**Comment** Why DS449 not in list or table 2

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
914	07.03.01	1st para.	CA	

**Comment** Revise CISC/CSA-S16[?] reference.

**Proposed** Replace CISC/CSA-S16[?] with CAN/CSA-S16-01 [5]

**Reply**

ID	Clause	Location	Country	Status
915	07.03.01	1st para.	CA	

**Comment** Revise BS 5400 Part 3 [5] reference

**Proposed** Replace BS 5400 Part 3 [5] with BS 5400 Part 3 [6]

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 45 of 138

Sorted on clause

ID	Clause	Location	Country	Status
622	07.03.02		dk	
<b>Comment</b>	Gravity loads. It is not clear whether initial uncertainties with regards to centre-of-gravity is addressed and/or included in the partial action factors or otherwise addressed in referenced documents. Normal design procedure is to account for a COG-shift factor during engineering. This factor is calculated based on a COG-envelope and the distances to support-points. The support-points varies during the project-stages: Transport: distance to grillage/sea fastening Lifting: distance to lift-points In-place: distance to module support-points For large structures with short distances between support-points (for instance living-quarters) the COG-shift factor may be significant (up to 1.3).			
<b>Proposed</b>	Uncertainties with regards to location of centre-of-gravity shall be addressed and accounted for. This item should be discussed with the weight-control-department during project start-up phase. Monitoring throughout the project-execution shall ensure that the defined limits/boundaries are maintained			

Reply

ID	Clause	Location	Country	Status
621	07.03.02	7.03.02,7.03.03 & 7.03.04 Table 2, 3 & 4	dk	
<b>Comment</b>	The table defines load-factors from NS3472. This is not correct. NS3472 does not apply to design loads, only design rules for steel member capacity. The corresponding load-factors (primarily to be used for land-based buildings) are defined in appendix J (normative) of NS3490 - "Design of structures - Requirements to reliability". It is not clear why the above mentioned sections and tables are included. The same items are addressed in a clear and consistent manner in the corresponding ISO-standards for global design, ref. table 4 in ISO-19904-1 as an example.			
<b>Proposed</b>	Replace tables 2, 3 & 4 by reference to the relevant chapters in the equivalent ISO-standards for global design. Alternatively copy the tables from these standards.			

Reply

ID	Clause	Location	Country	Status
916	07.03.02	Table 2	CA	
<b>Comment</b>	Revise CISC/CSA-S16 reference			
<b>Proposed</b>	Replace CISC/CSA-S16 with CAN/CSA-S16-01			

Reply

ID	Clause	Location	Country	Status
181	07.03.02	Tables 2, 3, 4, A.01, A.2	UK	
<b>Comment</b>	Factors missing for CSA			
<b>Proposed</b>				
<b>Reply</b>				

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 46 of 138

Sorted on clause

ID	Clause	Location	Country	Status
183	07.03.03	Equation 4	UK	

**Comment** When the internal forces due to gravity forces oppose those due to wind, wave and current forces, the internal force,  $S$ , resulting from the design action,  $F_d$ , shall be calculated using reduced partial action factors as Equation  
The reduction in safety factor for G1 and G2 is  $1/gG$ . If this is based on an adverse Normal distribution then should the factor be  $(2-gG)$ ? The reduction in safety factor for Q1 is  $1/gQ2$ , what is this based on?

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
917	07.03.03	Table 3	CA	

**Comment** Is the designation YEL,s under each referenced code correct?

**Proposed** Consider replace 'YEL,s' with 'Environmental YE,s'

**Reply**

ID	Clause	Location	Country	Status
918	07.03.03	Table 3	CA	

**Comment** Revise CISC/CSA-S16 reference

**Proposed** Replace CISC/CSA-S16 with CAN/CSA-S16-01

**Reply**

ID	Clause	Location	Country	Status
859	07.03.04		US	

**Comment** Table 4 - Top line: Load Condition: Extreme environmental

**Proposed** Should be changed to "Operating" environmental

**Reply**

ID	Clause	Location	Country	Status
921	07.03.04		CA	

**Comment** Revise CISC/CSA-S16 reference

**Proposed** Replace CISC/CSA-S16 with CAN/CSA-S16-01

**Reply**

ID	Clause	Location	Country	Status
715a	07.03.04	eqn (5)	FR	

**Comment** 1) For this particular combination of loads, why are the action factors from Table 4 inverted in equation (5)?

**Proposed** Check equation (5)

**Reply**

ID	Clause	Location	Country	Status
715b	07.03.04	eqn (5)	FR	

**Comment** 2) The text refers to particular operations that might be limited by particular weather conditions. An example might be that we do not apply "stuck caisson" loads in 100-year conditions, but limit this work to 10-year conditions. In that case, the action factors should be those of Table 2 and Table 3 (with 10-year environment for example) and not those of Table 4. For 1-year return environment, Table 4 look reasonable.

**Proposed** Consider suggestion of use of Table 2 and 3 (instead of 4) when environmental conditions are "higher" than 1-year return.

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 47 of 138

Sorted on clause

ID	Clause	Location	Country	Status
715c	07.03.04	eqn (5)	FR	

**Comment** 3) Why does the text limit consideration to fixed platforms? There should be complementary text for floaters.

**Proposed** Add text for floaters

Reply

ID	Clause	Location	Country	Status
919	07.03.04	Equation [5]	CA	

**Comment** Equation [5] as presented is in the form required when the internal forces due to gravity forces oppose those due to wind, wave and current forces. For operating environmental situations, the required equation format should be for when these internal forces do not oppose each other.

**Proposed** Replace Equation [5] with the following:  $F_d = YG (G_1 + G_2) + YQ (Q_1 + Q_2) + YE (E_o + 1.25D_o)$

Reply

ID	Clause	Location	Country	Status
185	07.03.04	Heading	UK	

**Comment** Unnecessary restriction. This code was written to apply to topsides structures placed on all types of substructure: fixed, mobiles (including FPSOs and TLPs), but not to their global structural design.

**Proposed** Remove fixed platforms.

Add This code applies to topside structures supported by any type of substructure, fixed or mobile (including FPSOs and TLPs), but not to the global design of the complete structural system. Any significant structural interaction between the topsides and the substructure shall be modelled explicitly

Reply

ID	Clause	Location	Country	Status
184	07.03.04	Line 9	UK	

**Comment** Provide another example

**Proposed** Add - helicopters landing

Reply

ID	Clause	Location	Country	Status
920	07.03.04	Table 4	CA	

**Comment** Is the 1st line reference which reads 'Load Condition: Extreme environmental' correct. Table 4 is intended for Fixed Platforms Operating environmental situations.

**Proposed** Consider revising the 1st line reference to read 'Load Condition: Operating environmental'

Reply

ID	Clause	Location	Country	Status
922	07.04		CA	

**Comment** Why is extreme and operating Partial Action Factors calibration provided for fixed platforms but not for mobile and floating platforms? More guidance is required for mobile or floating structures. Regarding deletion of the 1,25 dynamic factor for mobile and floating platforms, the dynamic response can be computed accurately for hulls, therefore, you do not require the additional factor.

**Proposed** Consider providing Tables of the extreme, abnormal and operating Partial Action Factors for mobile and floating platforms similar to those for fixed platforms. Essentially, the same equations can apply as for fixed structures, however, the 1,25 factor used in equations 3, 4 and 5 quasi-static action representing dynamic response needs to be dropped as this effect does not need to be enhanced on a floating structure as the hull will move with the environmental action where a fixed platform cannot. It should be stated that for mobile platforms this dynamic factor can only be dropped for design cases when the mobile platform is floating.

Reply

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 48 of 138

Sorted on clause

ID	Clause	Location	Country	Status
522	07.04	07.04 and A.07.04	NL	

**Comment** It would appear more logical to see 7.4 as a continuation of subclauses under 7.3 (then becoming 7.3.5), and to renumber 7.5 to 7.011

**Proposed** Rearrange and renumber.

**Reply**

ID	Clause	Location	Country	Status
718	07.06		FR	

**Comment** Deformation on concrete platforms is discussed, but the subject of deformation imposed by substructures is particularly of importance for modules on ship-shaped floating structures, which is not mentioned. Note that para 1 specifically includes discrete structural units placed on the hull structures of floating offshore structures.

**Proposed** Mention the importance of deformation imposed by substructures for modules on ship-shaped floating structures.

**Reply**

ID	Clause	Location	Country	Status
923	07.06	1st para.	CA	

**Comment** There is one other deformation action that is worthwhile adding to the discussion. In general, the hull of a monohull is much stiffer than the topside structure and as it sags and hogs, considerable deformations are introduced at the topside structure level. Unless the design incorporates this, the topside structure may be subject to excessive stresses and fatigue.

**Proposed** Consider adding the following sentence to Clause 7.6. "The hull of a monohull is much stiffer than the topside structure and as it sags and hogs, considerable deformations can be introduced at the topside structure level."

**Reply**

ID	Clause	Location	Country	Status
186	07.06	Line 2	UK	

**Comment** Replace effects with support conditions associated with

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
623	07.07		dk	

**Comment** Wave actions.

Only wave-slamming are addressed. Wave actions are also transmitted through the global structure in the form of accelerations and imposed deformations. Even if a module is not part of the main load-carrying system it must be able to withstand the above mentioned loads. This is briefly mentioned in chapter 9.4.01 of ISO 19904-1, but there primarily for accuracy of global analysis models.

**Proposed** Include: Wave actions on hull/substructure may impose accelerations and deformations that must be included for the structural analysis and design of topside facilities (modules).

**Reply**

ID	Clause	Location	Country	Status
719	07.07		FR	

**Comment** There is mention of wave ingress on topsides due to insufficient air gap, but there could also be mention of wave run-up against any large substructure, and green water inundation on floaters.

**Proposed** Add text on wave run-up against any large substructure, and green water inundation on floaters.

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 49 of 138

Sorted on clause

ID	Clause	Location	Country	Status
187	07.08	Table 5	UK	

**Comment** Table missing. Overall Clauses 7.8 and A.7.8 need to be worked on as there are gaps in the text/tables.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
188	07.08.01	Line 1	UK	

**Comment** After total structure, add including the topsides acting along

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
844	07.08.02		US	

**Comment** Five (5) Items on Page 17 need Clarifications

**Proposed**

- 1.3rd Paragraph / last sentence - Due to the platform's dynamic responsethese deck design accelerations are typically much greater than those associated with ground motions.
2. Item A - From prior modal analysis of the overall strucutre, extract the acclerations ( $A_m$ ) at the equipment support location for each significant mode of structural response.
3. Item B - Obtain the corresponding equipment modal acceleration  $A_e$  by multiplying  $A_m$  by the well known single degree of freedom amplification factor. Each significant modal response of the overall structure along with the single degree of freedom characteristics of the equipment needs to be considered.
4. Item C - Combine structural modal values of  $A_e$  by the SRSS method to obtain the reulting acceleration value  $A_e$ .
5. Equation 6 - Replace AS with AE, Replace  $A_s$  with  $A_e$  for to distinguish visually. Consider replacing Equation 6 with "A more rigorous method is required if the equipment mass to toal mass ratio is greater then 5%.

The next sentence would read "Forces on deck equipment with greater mass or equipment with multi-mode represnetation shall be derived by dynamic analysis using either..."

**Reply**

ID	Clause	Location	Country	Status
845	07.08.02		US	

**Comment** Page 18 - Table 5 is missing

**Proposed** Include Table 5

**Reply**

ID	Clause	Location	Country	Status
189	07.08.02	Below 2)	UK	

**Comment** vent and communications towers

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
190	07.08.02	c)	UK	

**Comment** Add SRSS to abbreviations list

**Proposed**

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 50 of 138

Sorted on clause

ID	Clause	Location	Country	Status
720	07.08.02	eqn (6)	FR	

**Comment** It is clear how to use this equation, and all the terms are not defined properly.

**Proposed** Clarify text

**Reply**

ID	Clause	Location	Country	Status
191	07.08.02	Equation 6	UK	

**Comment** bridges and cranes.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
192	07.08.02	Last para page 17	UK	

**Comment** everything past "(see annex A)" does not belong in a structural design guideline

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
721	07.08.02	page 17, last line	FR	

**Comment** typo

**Proposed** platforms -> platform

**Reply**

ID	Clause	Location	Country	Status
722	07.08.02	page 18, first para	FR	

**Comment** The wording More conservative safety factors... is not clear English, and needs modification.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
723	07.08.02	page 18, last para	FR	

**Comment** The last paragraph is important, and may be missed without a separate header.

**Proposed** A separate sub-section heading should be inserted above this last paragraph, and below Table 5 (when that is inserted). Suggest 7.8.3 minimum lateral loading

**Reply**

ID	Clause	Location	Country	Status
724	07.08.02	page 18, last para	FR	

**Comment** Is this proposed default lateral acceleration to be applied as a strength-level earthquake, or a rare-event "accident" level earthquake? In other words, what set of action combinations is it to be included in?

**Proposed**

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 51 of 138

Sorted on clause

ID	Clause	Location	Country	Status
193	07.08.02	Para 11	UK	

**Comment** Make assessment of design for earthquakes a requirement, Replace should with shall

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
194	07.08.02	Para 6 c)	UK	

**Comment** Define SRSS in 4.2 Abbreviated terms

**Proposed** SRSS Structural response spectrum (?)

**Reply**

ID	Clause	Location	Country	Status
523	07.09	07.09 and A.07.09	NL	

**Comment** Make reference to ISO 19901-6 (Marine operations) and ensure that there are no discrepancies / conflicts with this standard.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
855	07.09.02.0 2		US	

**Comment** States that "allowances shall be made for uncertainties and potential changes in the center of gravity position during design." However, there is not guidance provided as to how to do this.

**Proposed** Add guidance in A7.9.2.2. Suggest a COG envelope.

**Reply**

ID	Clause	Location	Country	Status
624	07.09.02.0 3		dk	

**Comment** Lifting forces.

During the final stages of lifting the module will typically be guided by a system of bumpers and guides. The configuration and design of the structures, as well as any required reinforcements should be addressed at an early stage, in cooperation with the heavy-lift contractor. It is also customary to ensure that the guides will deform at a lower load than the guides structure, thus ensuring plastic deformations in the sacrificial structures.

**Proposed** Include a section that covers overall requirements to final guiding and positioning. A guiding system will typically be utilised during the final phases of lifting to ensure that the object is positioned in accordance with the design premises. Overall philosophy, structural configuration and design loads shall be addressed at an early stage. It is recommended to include the heavy-lift contractor in this process.

**Reply**

ID	Clause	Location	Country	Status
725	07.09.02.0 3		FR	

**Comment** Are the action factors to be used on lift forces always to be the same as in other conditions? Are we not requiring consequence factors?

**Proposed**

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 52 of 138

Sorted on clause

ID	Clause	Location	Country	Status
195	07.09.02.0 3	Bullet 4	UK	

**Comment** Conditions is too vague. Change to "environmental conditions" (or otherwise)?

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
196	07.09.02.0 4	Heading	UK	

**Comment** Replace forces with actions

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
856	07.09.02.0 5		US	

**Comment** It's not always practical to model stiffness of the quay wall, skid-way foundations for rigid structures.

To simulate the uneven ground during load-out, 2 conditions will be considered in design

- Loss of one or more supports with 1/3 increase in allowable stress
- Partial loss of one or more supports deflect 2" (max)

**Proposed** Replace the second sentence with the following:

"Twisting of the structure due to uneven supports shall be considered. The uneven supports could be due to loss of support(s) or partial loss of support(s). For structures sensitive to twisting failure due to differential horizontal jacking forces or winching, stiffness of the quay wall, skid way foundation and barge should be modeled.-"

**Reply**

ID	Clause	Location	Country	Status
625	07.09.02.0 7		dk	

**Comment** What is small give max dim + weight. Cannot find typical criteria for small modules in A7

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
726	07.09.02.0 7	1st para	FR	

**Comment** typo

**Proposed** established in taking -> established taking

**Reply**

ID	Clause	Location	Country	Status
197	07.09.02.0 7	Para 2	UK	

**Comment** Reference to A.7 is too vague.

**Proposed**

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 53 of 138

Sorted on clause

ID	Clause	Location	Country	Status
198	07.09.03		UK	

**Comment** Repeat 7.9.2.4 with respect to mating and whatever

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
199	07.10		UK	

**Comment** We believe this section has become out-of-date, particularly wrt fires and explosions. BP have offered to redraft the F&B section (and Annex) on behalf of SC7.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
199	07.10		UK	

**Comment** Other accidental events should perhaps be in a separate section.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
727	07.10.01		FR	

**Comment** There should be specific mention of accidental inclination of floating structures. and discussion in the following narrative on this subject.

There should also be specific mention of the requirement to consider rebound effects from broken wires, be they moorings or pull-in lines.

Are we not to include rare event environmental actions - the 10-4/year wave load?

**Proposed** Add text accordingly

**Reply**

ID	Clause	Location	Country	Status
857	07.10.01		US	

**Comment** Next to last paragraph requires ALS verification to reduce risk to ALARP. Who determines what is ALARP? Not everyone accepts the ALARP standard. Suggest to eliminate reference to ALARP.

**Proposed** Combine sentence with the next sentence to set the risk level at no more than 10-4 per year.

**Reply**

ID	Clause	Location	Country	Status
200	07.10.01	After para 4 on page 20	UK	

**Comment** suggest reference to new document FABIG Technical Note 8 "Protection of Piping Systems subject to fires and explosions" 2005 as it covers SCE's in detail

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
626	07.10.01	P 20 sec 6	dk	

**Comment** Gives opposite and thus wrong meaning so change as shown

**Proposed** The frequency of exceeding this representative accidental action shall be no greater than 10-4 per year. This probability level can be taken as indicative of the order of magnitude as the data basis for accurate determination of this small exceedance probability is limited and include considerable uncertainties.

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 54 of 138

Sorted on clause

ID	Clause	Location	Country	Status
728	07.10.01	page 20, 4th para	FR	
<b>Comment</b>	Surely not any accidental event? It seems there are ambiguities in the whole of this section about the accident levels - ie the basis for the characteristic actions - to be considered. The opening section should make clear that there are two basic requirements: That the main load-bearing primary structure which is fundamental to the support of the temporary refuge, the life-boats, and other components essential to the safety of the personnel must retain sufficient integrity and continue to provide the required protection to personnel for a duration sufficient to effect their evacuation. Similar criteria will apply in respect to safeguarding the environment (this might govern in some cases), and the operator's assets if so defined. That after the accidental event has passed, the damaged structure still has sufficient residual strength to resist a combination of gravity and environmental actions. It seems there are ambiguities in the main text and in the explanatory annexes over the meanings of strength level accidents (for which the design requirement may be for all the structure to remain elastic), and the extreme design events for which we may accept collapse of some components, and significant deformation in others.			

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
201	07.10.01	Page 20, Para 2	UK	
<b>Comment</b>	Add ALARP to list of abbreviations			

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
202	07.10.01	Para 4	UK	
<b>Comment</b>	I believe that risk to assets is not necessarily appropriate here. It is up to the operator to determine what level of risk to the asset he can tolerate especially for an unmanned platform. ALARP for asset protection may not be appropriate.			

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
203	07.10.01	Top of page 20	UK	
<b>Comment</b>	The text says "guidance .. is given below" but the following paragraphs are each written as requirements.			

**Proposed**

**Reply**

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

**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
205	07.10.02		UK	

**Comment** Clause 7.010.2 should not be part of this section and should be dealt separately

**Proposed**

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 55 of 138

Sorted on clause

ID	Clause	Location	Country	Status
206a	07.10.02	Figure 1	UK	

**Comment** Presume in Tasks 1 and 5 "exposure category" is exposure level.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
206b	07.10.02	Figure 1	UK	

**Comment** Also suggest requirements for exposure level are repeated from 19902 / 19903 etc at least until they are moved into 19900.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
206c	07.10.02	Figure 1	UK	

**Comment** It is possible to get trapped in the loop - there needs to be an inclusion of a mitigation step and possibly even a full stop with an unacceptable structure.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
206d	07.10.02	Figure 1	UK	

**Comment** This figure is no longer the same as the API RP2 FB version which has the bottom line different (API Fig 18.2.01)

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
207	07.10.02	Figure 2	UK	

**Comment** Survival = no loss in serviceability of SCE for event with  $P < 10^{-4}$  and  $P(\text{loss})$  to be ALARP?

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
208	07.10.02	Figure 2	UK	

**Comment** Survival = no loss in serviceability of SCE for event with  $P < 10^{-4}$  and  $P(\text{loss})$  to be ALARP?

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
209	07.10.02	Figure 2	UK	

**Comment** Yes

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
729	07.10.02.0 1		FR	

**Comment** The language in much of section 7.010.2 seems rather imprecise. There is discussion of those platforms at low risk; any platform considered to be at high risk; an installation at significant risk. Then there is Risk Level 1, etc.

**Proposed** Clarify text

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 56 of 138

Sorted on clause

ID	Clause	Location	Country	Status
210	07.10.02.0 1	and Risk matrix Table 6	UK	

**Comment** Is this task 5 what is the difference between "exposure level" and "exposure category" is it defined in ISO 19902 or is it defined in 7.010.2.4.01 as Risk level 1 level 2 or level 3 in which case 7.010.2.4.01 should say this. Alternatively is task 5 supposed to read "Reassign platform exposure level" instead of "category".

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
211	07.10.02.0 1	and Risk matrix Table 6	UK	

**Comment** If the exposure category is set at "risk level 1" at task 1 and the risk is found not to be acceptable in the diamond gate after task 4 then there is no way out of the loop- unless mitigation is also mentioned at task 5.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
212	07.10.02.0 1	and Risk matrix Table 6	UK	

**Comment** Should it be stated somewhere that Figure 1 describes a risk screening and evaluation, whereas Figure 2 focuses on risk verification? After all one moves into task 6 only after determining that risk is acceptable from the screening study. Can it be foreseen that one may move into task 6 after deciding risk is not acceptable after performing task 4?

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
213	07.10.02.0 1	bullet point 1) on p. 21	UK	

**Comment** exposure level is defined in 7.010.2.2, not 7.010.2.3

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
214	07.10.02.0 1	bullet point 2) on p. 21:	UK	

**Comment** probability of exceedance is defined in 7.010.2.3, not 7.010.2.4. Maybe "risk level" in this item should be replaced by "value".

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
215	07.10.02.0 1	bullet point 5) on p. 21 and task 5 in table 6 "Risk Matrix":	UK	

**Comment** measures to reduce risk should be included in figure 1 before reassigning platform exposure level. These measures must of course address the parameters that are used to define exposure level - maybe these should be listed in 7.010.2.2 rather than given by a reference to ISO 19902?.

**Proposed**

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 57 of 138

Sorted on clause

ID	Clause	Location	Country	Status
730	07.10.02.0 1	page 21, 2nd line	FR	

**Comment** typo (punctuation)

**Proposed** assessment.. -> assessment.

**Reply**

ID	Clause	Location	Country	Status
216	07.10.02.0 1	Para 3 on p 20	UK	

**Comment** lacks right parenthesis ")"

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
627	07.10.02.0 3		dk	

**Comment** Define L,M or H and ref table 6 . QRA fire + explosion study ? Should be available in the exceedance curve why not use it why repeat the probability assessment.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
731	07.10.02.0 3	2nd para	FR	

**Comment** typo

**Proposed** ... an accidental event shall be considered to include -> ... an accidental event shall include

**Reply**

ID	Clause	Location	Country	Status
217	07.10.02.0 3	Bullet point: Boundary Type:	UK	

**Comment** Last sentence is not to do with boundaries as it deals with congestion which affects both confined and unconfined explosions: suggest giving this sentence its own heading "Equipment congestion" and perhaps modify the wording to "Turbulence generated by equipment, structure, piping and cable trays etc can also cause high overpressures in the event of an explosion with or without the presence of confining boundaries".

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
732	07.10.02.0 4.01	1st line	FR	

**Comment** typo

**Proposed** installation by based -> installation based

**Reply**

ID	Clause	Location	Country	Status
218	07.10.02.0 4.01	Para 1 line 1,"?	UK	

**Comment** grammar: remove the word "by

**Proposed**

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 58 of 138

Sorted on clause

ID	Clause	Location	Country	Status
628	07.10.02.0 4.02		dk	

**Comment** A risk matrix is already commonly used in the industry for ALARP and QRA see attached in 6.8 Why not use something operational but if the new matrix is kept then use exceedance instead of risk.

**Proposed** Exceedance matrix instead of risk. Change in text, table 6 and figures 1 too

**Reply**

ID	Clause	Location	Country	Status
219	07.10.02.0 4.02	Figure 2	UK	

**Comment** Add 'Yes' to 'Survive fire' decision outcome. Generally confusing with multiple Yes and No paths in some instances.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
733	07.10.02.0 4.02	Figure 2	FR	

**Comment** The title indicates that it is for fires and explosions, but this flow chart is an extension of Figure 1, which considers all accidents.  
The first action is headed Structural assessment, but most of the chart is devoted to this. However, the determination of the blast pressures depends on a safety assessment of the gas inventories, from which safety and structural engineers must simulate the explosions to determine to overpressures. Similar remarks apply to the definition of the fire scenarios, and would also apply to the definition of dropped object and ship impact scenarios.  
I think logically and practically one considers explosions followed by fires, and rarely fires followed by explosions.  
From these points, it could be suggested that the text in 7.010.2.4.2 (or the Annex) should emphasize the involvement of structural engineers in running explosion simulations to give themselves the data they require, rather than waiting for data to be supplied from a purely safety study.

**Proposed** Figure 1 has to be completed with consideration of other events.

Delete this box.  
The chart could be made more logical in this respect.

**Reply**

ID	Clause	Location	Country	Status
220	07.10.03		UK	

**Comment** Last bullet point should be "dimensioning" rather than "credible", which is too severe or else causes people to deny credibility of events.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
629	07.10.03		dk	

**Comment** What does "Define global systems and component performance standards for the topside safety critical systems" mean in practise.

**Proposed**

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 59 of 138

Sorted on clause

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ID	Clause	Location	Country	Status
734	07.10.03		FR	
<b>Comment</b>	The text says: "Demonstrate by suitable and sufficient fire and explosion assessments that safe areas exist and have escape routes available to satisfy the performance criteria to survive any credible event."			
<b>Proposed</b>	Make clear that all escape routes do not have to be designed against collapse, but that sufficient redundancy will be provided to ensure that other routes will remain available if some routes are destroyed by individual design events.			

Reply

---

ID	Clause	Location	Country	Status
221	07.10.03	Para 2	UK	
<b>Comment</b>	Preventive should be "preventative"			

Proposed

Reply

---

ID	Clause	Location	Country	Status
222	07.10.04		UK	
<b>Comment</b>	p. 25: paragraph starting with: "As part of the detailed ....": replace "gas-air clouds used" with "gas-air clouds shall be used".			

Proposed

Reply

Sorted on clause

ID	Clause	Location	Country	Status
630	07.10.04		dk	

**Comment** After some in-house discussion an alternative wording of the first paragraph is proposed to make it more logical and the meaning more clear. Please see before going further here.

This should now be fairly clear. However:

the design blast overpressure is used as a "starting point" for the "probability of exceedance" argument in the ISO standard - It can be a bit confusing! As it is already known that the frequency of exceeding the value is 10<sup>-5</sup> yr<sup>-1</sup> The methodology in the ISO std suggest it is to be forgotten about the info in this bit of the exceedance curve, and then guessing "probability of exceedance" by qualitative assessment of all the relevant factors(?)

the standard doesn't say whether the design blast overpressure should be used as a strength level blast or a ductility level blast - is this something that structural designers to sort out themselves or is the ISO state?

Further to include comments for 7.010.5 too. For the fire load, would normally be used a design fire load value based on a specific heat flux, say 25 kWm<sup>-2</sup>? The probability of exceedance methodology would be based on a qualitative estimate of the relevant factors affecting the likelihood of this value being exceeded.

We would have thought, ISO would be better off specifying what the outputs of explosion and fire analyses should be for input into structural design, rather than invent a methodology for "probability of exceedance" of design fire and explosion overpressure loads.

Further all the 5 major parameter influence explosion should be stated and it should be added in 2.last paragraph that if stoichiometric mix gives structural agreeable loads then ok else an assessment with a probabilistic approach as for "distribution" in last paragraph can be used for hydrocarbon concentration too.

**Proposed** Explosion scenarios shall be developed as part of the process hazard analysis. Assessment of explosions shall be performed on accordance with ISO 13702. For each topside area an exceedance curve should be drawn, showing the frequency of a blast overpressure exceeding a particular value. The blast overpressure at the limit of significant probability, i.e. occurrence frequency of 10<sup>-4</sup> yr<sup>-1</sup>, should be the minimum value used for design blast overpressure. The dimensioning load for the structure should be no less than the force due to this design blast overpressure.

Five major, controllable parameters influence the generation of explosion overpressure. Those are

- confinement by walls, decks and larger equipment,
- congestion due to equipment, piping, structure and cable trays
- size of combustible gas-air cloud formed by the hydrocarbon release
- Concentration of the gas-air cloud formed by the hydrocarbon release,
- location of ignition,

**Reply**

ID	Clause	Location	Country	Status
735	07.10.04	1st para	FR	

**Comment** What is the dimensioning load in this context is not clear.

**Proposed** Should not the meaning be that if there is a potential for a 10<sup>-4</sup> explosion event to govern the dimensions, then the structure should be assessed for this particular loading?

**Reply**

ID	Clause	Location	Country	Status
223	07.10.04	Para 3	UK	

**Comment** This is very interesting but an explosion assessment is normally carried out by a specialist and it is the structural engineer who applies the results to the design. I don't believe any thing past the 3rd bullet adds anything to the structural design process.

**Proposed**

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 61 of 138

Sorted on clause

ID	Clause	Location	Country	Status
631	07.10.05		dk	

**Comment** In "identifies that a significant probability of fire exists" please define significant.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
736	07.10.05	2nd line	FR	

**Comment** typo

**Proposed** fire exists and -> fire. Assessment

**Reply**

ID	Clause	Location	Country	Status
632	07.10.07	07.10.07 and .08	dk	

**Comment** Unacceptable risk and frequency vessel collision and dropped object should be treated like 7.4.010 Explosion

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
224	07.10.09.0 1		UK	

**Comment** Pipework and risers are hydrocarbon containing and hence are Safety Critical - ensure the there is no implication that they are not safety critical. Ref A.7.010.9.01 Para 4?.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
737	07.10.09.0 1	1st para	FR	

**Comment** The text indicates: "The causes of strong vibration can include accidental shock actions from gas explosions, ship collision, extreme weather and seismic events." Strong vibration can also occur as a result of sudden failure of a loaded cable, and by helicopter crash.

**Proposed** The causes of strong vibration can include accidental shock actions from gas explosions, ship collision, helicopter crash, sudden failure of loaded cable, extreme weather and seismic events."

**Reply**

ID	Clause	Location	Country	Status
225	07.10.09.0 2		UK	

**Comment** The problem with section 7.010.9.2 is that at the stage that this is being suggested as appropriate, it is normally too late to effect proper change without knock-on effects. The designs need to be performed in the first place by properly experienced engineers who have knowledge outside of a design office.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
226	07.10.09.0 2		UK	

**Comment** This type of activity would be best performed by the Client or in association with the Client who is in control of the budget and not necessarily by the design engineer.

**Proposed**

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 62 of 138

Sorted on clause

ID	Clause	Location	Country	Status
738	07.10.09.0 2		FR	

**Comment** Walkdown evaluations are often a good idea, but the wording in a code like this should need more consideration. Aspects of personnel qualification, opinion, timing, and practicability of implementation seem important.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
227	07.10.09.0 3		UK	

**Comment** Once the structure is in the fabrication yard it is not normal for the engineer to perform re-analysis on the scale suggested here. In fact there is often only limited structural capability on site with fabrication and transportation expertise.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
228	07.10.09.0 3		UK	

**Comment** Substructure issue - delete last 2 sentences.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
858	07.10.09.0 3		US	

**Comment** States that detailed structural analysis following a walkdown shall be carried out..... The walkdown occurs in the fabrication yard. The analyses mentioned here should all be done in the design stage.

**Proposed** Remove the words "following a walkdown"

**Reply**

ID	Clause	Location	Country	Status
633	07.11		dk	

**Comment** Minimise clearance in conductor support guides.

**Proposed** Clearance (radial) in support guides shall be minimised to avoid excessive dynamic load transfer into support guide itself and supporting structure.

**Reply**

ID	Clause	Location	Country	Status
229	07.11	Probably elsewhere	UK	

**Comment** The design loads for muster points and around lifeboats should be considerable higher than normal walkway loading

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
230a	07.11.02		UK	

**Comment** Clarify that it is the well string that primarily results in thermal growth and tree movement.

**Proposed**

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 63 of 138

Sorted on clause

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ID	Clause	Location	Country	Status
230b	07.11.02		UK	

**Comment** Note also there can be flow-induced vibrations

**Proposed**

**Reply**

---

ID	Clause	Location	Country	Status
231a	07.11.02		UK	

**Comment** Conductors, riser and caisson design should consider all environmental actions not just waves

**Proposed**

**Reply**

---

ID	Clause	Location	Country	Status
231b	07.11.03		UK	

**Comment** Conductors, riser and caisson design should consider all environmental actions not just waves

**Proposed**

**Reply**

---

ID	Clause	Location	Country	Status
634	07.11.05		Dk	

**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**

---

ID	Clause	Location	Country	Status
739	07.11.05		FR	

**Comment** There should be mention of loading from pressure testing.

**Proposed**

**Reply**

---

ID	Clause	Location	Country	Status
232	07.11.05	Para 1 line 2	UK	

**Comment** Delete principle routes, add principal routes

**Proposed**

**Reply**

---

ID	Clause	Location	Country	Status
233	07.11.06	d)	UK	

**Comment** Consider foreseeable temporary loads imposed during bearing maintenance e.g. jacking.

**Proposed**

**Reply**

---

ID	Clause	Location	Country	Status
635	07.12		dk	

**Comment** Minimise clearance in caisson support guides

**Proposed** Similar statement as in chapter 7.011

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 64 of 138

Sorted on clause

ID	Clause	Location	Country	Status
234	08		UK	

**Comment** Section 8.012 to 8.017 need not to be part of this section. These clauses should be moved to other relevant sections.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
740	08		FR	

**Comment** It seems to be an omission not to mention lifeboat support structure where there are special loads to be considered.

**Proposed** Add mention on lifeboat

**Reply**

ID	Clause	Location	Country	Status
924	08		CA	

**Comment** Particular attention shall be paid in analysis to the interaction between topsides and hull structures for mobile and floating installations.

**Proposed** A new section for "Topsides to floating structures- is to be added under section 8.01 detailing the hull deformations and requirement for sliding supports. The following statement should be adequate. "Particular attention shall be paid in analysis to the interaction between topsides and hull structures for mobile and floating installations. Deformations of the hull under environmental actions and ballast conditions can be significant and are to be considered in the design of supports. The use of sliding or elastomeric bearings at the topsides/hull interface may be required.-

**Reply**

ID	Clause	Location	Country	Status
525	08	08 and A.08 throughout	NL	

**Comment** Same observations as for Clause 7 and A.7 apply.  
Edited text using "track changes" is combined with that for Clause 7 and A.7 into one WORD document at the end of the table.

**Proposed** See separate WORD document at the end of the table.

**Reply**

ID	Clause	Location	Country	Status
741	08.01.01		FR	

**Comment** We have particular mention of topsides on concrete substructures, but no mention of particular issues for floating structures.

**Proposed** Add text for floating structures

**Reply**

ID	Clause	Location	Country	Status
268	08.01.02		UK	

**Comment** Maybe need some strengthening on issues between concrete and topsides? Differential movements, portal frame action etc?

**Proposed**

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 65 of 138

Sorted on clause

ID	Clause	Location	Country	Status
235	08.02.03		UK	

**Comment** Include the following:  
Appropriate boundary conditions shall be modeled for the analysis of topside during pre-service condition

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
636	08.03.01		dk	

**Comment** Substructure interface  
The items relating to interface assumptions are also relevant for other topside-interfaces. Typically both Living Quarters and drilling-rigs are engineered by special sub-contractors. The coordination of these interfaces is important and should be addressed.

**Proposed** Include in chapter 8.011  
All interfaces to other parties should be closely coordinated throughout the project. This typically relates to Living Quarter and Drilling -facilities, but may relate to other topside-facilities as well. Of particular importance is any assumptions made by one party relating to the work done by the other party.

**Reply**

ID	Clause	Location	Country	Status
637	08.03.03		dk	

**Comment** Fatigue Analysis.  
It may be sufficient to base the need for fatigue analysis on experience and engineering judgement. However, a better basis is the results from the global analysis covered by the relating ISO-standards. These analyses will at an early stage reveal the need for fatigue analysis of topside-facilities.

**Proposed** "The need for fatigue analysis of topside facilities shall be based on experience, engineering judgement and results from global structural analysis.

**Reply**

ID	Clause	Location	Country	Status
742	08.03.03		FR	

**Comment** Fatigue: There is no mention of floating installations, where fatigue on topside might be important.

**Proposed** Add text for floating structures

**Reply**

ID	Clause	Location	Country	Status
236	08.04		UK	

**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**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 66 of 138

Sorted on clause

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ID	Clause	Location	Country	Status
237a	08.04		UK	

**Comment** Seems lightweight compared with e.g. 8.5

**Proposed**

**Reply**

---

ID	Clause	Location	Country	Status
237b	08.04		UK	

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

**Proposed**

**Reply**

---

ID	Clause	Location	Country	Status
237c	08.04		UK	

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

**Proposed**

**Reply**

---

ID	Clause	Location	Country	Status
238	08.04	Para 4	UK	

**Comment** Reference to appropriate methods for vibration in A.4 is incorrect.

**Proposed**

**Reply**

---

ID	Clause	Location	Country	Status
239	08.04	Title	UK	

**Comment** and vent

**Proposed**

**Reply**

---

ID	Clause	Location	Country	Status
240	08.05		UK	

**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**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 67 of 138

Sorted on clause

ID	Clause	Location	Country	Status
846	08.05.01		US	

**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

ID	Clause	Location	Country	Status
241	08.05.01	Note	UK	

**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	

**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	

**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	

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

Proposed

Reply

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 68 of 138

Sorted on clause

ID	Clause	Location	Country	Status
242	08.05.02	Para 2	UK	

**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	

**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
526	08.05.03		NL	

**Comment** Subclause 8.5.3 would also benefit from rearrangement; proposals for this are included in the separate WORD document.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
638	08.05.03.0 1		Dk	

**Comment**

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

**Reply**

ID	Clause	Location	Country	Status
245	08.05.03.0 1	Bullet 4	UK	

**Comment** Delete helicopter tie down...

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
246	08.05.03.0 1	Para 1 bullets	UK	

**Comment** Are 'from wind' and 'from motion of the installation' subcategories of environmental actions?

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
247	08.05.03.0 1	Para 3	UK	

**Comment** These actions shall be shall be

**Proposed**

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 69 of 138

Sorted on clause

ID	Clause	Location	Country	Status
639	08.05.03.0 2		Dk	

## Comment

**Proposed** being considered. These actions shall be shall be analysed to determine their effects on and within the helideck structure

## Reply

ID	Clause	Location	Country	Status
860	08.05.03.0 2		US	

**Comment** 3rd paragraph - These actions shall be shall be analysed to determine their on....being considered. Duplicate words "shall be". Context of "their on" not clear.

**Proposed** Correct and clarify.

## Reply

ID	Clause	Location	Country	Status
745	08.05.03.0 2	3rd para	FR	

**Comment** to determine their on and within is not English.

## Proposed

## Reply

ID	Clause	Location	Country	Status
746	08.05.03.0 2	5th para	FR	

**Comment** typo

**Proposed** ... to accommodate a permanent deflection ... loads not exceeding 2,5% ... -> ... to limit permanent deflection ... loads to 2,5% ...

## Reply

ID	Clause	Location	Country	Status
248	08.05.03.0 2	Para 3 line1	UK	

**Comment** After their add effect

## Proposed

## Reply

ID	Clause	Location	Country	Status
747	08.05.03.0 3		FR	

**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

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 70 of 138

Sorted on clause

ID	Clause	Location	Country	Status
249a	08.05.03.0 3	-	UK	

**Comment** Use of decimal point incorrect, superscript required.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
640	08.05.03.0 4		dk	

**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
249b	08.05.03.0 4	-	UK	

**Comment** Use of decimal point incorrect, superscript required.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
748	08.05.03.0 4	08.05.03.04 to 8.05.03.14	FR	

**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
861	08.05.03.0 5		US	

**Comment** MTOM should be MTOW (this subclause and others in the document)

**Proposed** Correct

**Reply**

ID	Clause	Location	Country	Status
641	08.05.03.0 6		Dk	

**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	08.05.03.0 6		dk	

**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**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 71 of 138

Sorted on clause

ID	Clause	Location	Country	Status
643	08.05.03.0 7		dk	

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

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
749	08.05.03.0 7	8.05.03.07 8.05.03.13	FR	

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

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
250	08.05.03.0 8		UK	

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

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
862	08.05.03.0 8		US	

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

**Proposed** Clarify

**Reply**

ID	Clause	Location	Country	Status
251	08.05.03.0 9	Line 3	UK	

**Comment** After different, add positions and

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
252	08.05.03.1 0		UK	

**Comment** kN assumed

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
644	08.05.03.1 0		Dk	

**Comment** Snow&ice in sec 8534 allready

**Proposed**

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 72 of 138

Sorted on clause

ID	Clause	Location	Country	Status
645	08.05.03.1 0		dk	

**Comment** "A general action of 2 N/m<sup>2</sup> shall be included"  
Comment: probably a typographical error.

**Proposed** A general action of 2 kN/m<sup>2</sup> shall be included

**Reply**

ID	Clause	Location	Country	Status
249c	08.05.03.1 0	-	UK	

**Comment** Use of decimal point incorrect, superscript required.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
253	08.05.03.1 1		UK	

**Comment** This is already covered in 8.3.5.6?

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
646	08.05.03.1 1		Dk	

**Comment** Same as 8.5.3.6 ??

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
863	08.05.03.1 1		US	

**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**

ID	Clause	Location	Country	Status
647	08.05.03.1 2		Dk	

**Comment** Should allow for some skew or unequal loading

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
864	08.05.03.1 3		US	

**Comment** Typo last sentence..."form" should be "from"

**Proposed** Correct

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 73 of 138

Sorted on clause

ID	Clause	Location	Country	Status
254	08.05.03.1 3	Line 3	UK	

**Comment** Delete form, add from

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
648	08.05.03.1 4		dk	

**Comment** See and combine with 8.5.3.7

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
750	08.05.03.1 4		FR	

**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	08.05.03.1 4		US	

**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	08.05.03.1 5	Para 1	UK	

**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	08.05.03.1 6		UK	

**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	08.05.03.1 6		dk	

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

**Proposed**

**Reply**

# ISO DIS 19901 - 3 Toppers

07 December 2007

Page 74 of 138

Sorted on clause

ID	Clause	Location	Country	Status
752	08.05.04		FR	

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

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
751	08.05.04	1st para	FR	

**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	

**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	

**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	

**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**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 75 of 138

Sorted on clause

ID	Clause	Location	Country	Status
258	08.06.02		UK	

**Comment** We question the values of the dynamic coefficients quoted - are they appropriate and should they not vary with e.g. sea state - also what about cranes on floating installations - do they have different factors?

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
259	08.06.02		UK	

**Comment** What should be used for seismic conditions for crane design?

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
527	08.06.02		NL	

**Comment** The coefficient for dynamic effects for crane lifting operations is not in accordance with the rules for lifting appliances of recognized classification societies.  
It may also differ from ISO 19901-6 for Marine operations (not checked at this point in time).

**Proposed** Review and make sure that there are no conflicts or discrepancies.

**Reply**

ID	Clause	Location	Country	Status
651	08.06.02		dk	

**Comment** Ø daf should only be on payload  
Min or max radius seldom gives max overturning moment for real cranes

**Proposed** For cases a) and b), FL shall be selected to check the lifted load applicable to both maximum and minimum crane radius, for sea and platform lifts as well as radius giving max slewing moment.

**Reply**

ID	Clause	Location	Country	Status
755	08.06.02		FR	

**Comment** Language seems imprecise: suggest clarifying definition of terms (load, actions, failure load,...).

**Proposed** vertical action -> vertical design action

**Reply**

ID	Clause	Location	Country	Status
848	08.06.02		US	

**Comment** Additional load case should be considered.

**Proposed** Define Load case to also be investigated to include Maximum Moment with corresponding Thrust and Maximum Thrust with corresponding Moment and include boom side loading

**Reply**

# ISO DIS 19901 - 3 Toppers

07 December 2007

Page 76 of 138

Sorted on clause

ID	Clause	Location	Country	Status
652	08.06.02	a) and b)	dk	

**Comment** "Φ shall be taken as 2,0 for sea-lifts and 1.3 for platform lifts."

Comments:

Generally it is advisable to obtain specific dynamic coefficients from the crane-supplier.

A dynamic coefficient of 2.0 for sea-lifts may prove too conservative for design of the support-structure for certain cranes. See proposal.

**Proposed** The dynamic coefficients are strongly dependant on crane-specific characteristics. The preferred method is to obtain dynamic coefficients from the crane-supplier. Alternatively the dynamic coefficients may be obtained by approved methods or design-codes. For initial design the values in table xxx may be used:

Reply

ID	Clause	Location	Country	Status
754	08.06.02	a) and b)	FR	

**Comment** "φ shall be taken as 2,0 for sea lifts and 1,3 for platform lifts" : These criteria are lower than those of API 2C 6th edition

**Proposed** Criteria to be confirmed

Reply

ID	Clause	Location	Country	Status
653	08.06.02	c)	dk	

**Comment** "For cases a) and b), FL shall be selected to check the lifted load applicable to both maximum and minimum crane radius, for sea and platform lifts."

It is not certain that the maximum overturning moment from the crane is obtained from maximum/minimum crane radius. The dead-weight contribution from the crane will increase monotonic with regards to crane-radius, and the corresponding lifting-capacity generally has a monotonic decrease. As part of crane-pedestal analysis we have encountered cases where the maximum overall pedestal-actions are imposed for lift-radius between maximum and minimum reach. The relevant crane-capacity and crane-weight-data should form the basis for analysis/design.

**Proposed** For cases a) and b) care shall be taken to identify a conservative basis that takes into account the maximum combined actions from both dead-weight and the suspended load. These data are normally provided by the crane-supplier in the form of crane-capacity diagrams and/or a crane pedestal reaction forces specification.

Reply

ID	Clause	Location	Country	Status
757	08.06.02	last para	FR	

**Comment** It should be stated that gm factors should be taken as 1.0 for this condition.

Proposed

Reply

ID	Clause	Location	Country	Status
756	08.06.02	page 35, last para	FR	

**Comment** use of English

**Proposed** to safely resist -> to resist safely

Reply

# ISO DIS 19901 - 3 Toppersides

07 December 2007

Page 77 of 138

Sorted on clause

ID	Clause	Location	Country	Status
260	08.06.03		UK	

**Comment** Can be an issue with a retrofit of a larger crane onto an older platform - add exclusion for these circumstances.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
758	08.06.03		FR	

**Comment** It seems to be an omission not to mention cranes on floating installation in the context of this clause.

**Proposed** Add text on cranes on floating installations

**Reply**

ID	Clause	Location	Country	Status
654	08.06.04		Dk	

**Comment** The design fatigue life of the crane supports shall be twice the planned topsides life. Uninspected ??  
Avoid is impossible

**Proposed** All joints in the pedestal shall be designed to minimize stress concentration factors that are likely to result in an excessive reduction of the fatigue strength of the pedestal

**Reply**

ID	Clause	Location	Country	Status
655a	08.06.04		dk	

**Comment** "The design fatigue life shall be twice the planned topsides life."

**Proposed** The design fatigue life for the crane support structure shall be defined for all essential load-carrying elements based on the criticality as well as the possibility for in-service inspection.

**Reply**

ID	Clause	Location	Country	Status
656	08.06.04		dk	

**Comment** "All joints in the pedestal shall be design to avoid stress concentration factors that are likely to result in an excessive reduction of the fatigue strength of the pedestal."  
It is generally difficult to avoid local geometric discontinuities in the connections between supporting structure and the pedestal. The emphasis should be:  
Proper design that reduces such effects  
Design-solutions that ensures early detection of any defects.  
Method of analysis that accurately simulates the local structural response.  
An in-service inspection program that ensures a satisfactory level of safety during the service-life.

**Proposed** The pedestal and supporting structures shall be designed in a manner that accounts for the fatigue loading. Special attention shall be given to any geometric discontinuities that may lead to local hot-spots, i.e. localized high stresses that cause reduction of fatigue life. Details and connections shall as far as possible be designed in a manner that:  
Reduces local hot-spot stresses  
Ensures that any defects and crack-propagation is easily discovery in the inspection-program.  
Example: design welded connections so that crack-propagation is initiated from the weld-toe.  
Local hot-spot regions shall be subjected to detailed analysis to ensure a proper basis for fatigue damage calculations. Detailed FE-analysis is recommended to predict such local phenomena.  
The design-documentation should be prepared in a manner that enables the operator to define an in-service inspection-program that covers the critical areas. This is further defined in chapter 16.

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 78 of 138

Sorted on clause

ID	Clause	Location	Country	Status
657	08.06.04		dk	

**Comment** "Off-lead and side-lead loading, wind and other environmental loads shall be ignored for the fatigue analysis"  
Ignoring environmental loads on a general basis may prove non-conservative. Topsides are frequently installed on floating installations. Such installations are subjected to environmental loads that may cause significant fatigue damage to topside structures. A typical example is wave-actions that impose accelerations as well as forces and moments into the topside structure. Wave-imposed accelerations acting on deck-cranes may cause significant fatigue damage to the supporting pedestal.

**Proposed** Off-lead and side-lead loading and wind are normally insignificant with regards to the fatigue analysis, but shall be assessed on a case-to-case basis.  
Special attention shall be given to any environmental loads acting on floating structures that may cause fatigue damage to the crane-supporting structures (wave-imposed accelerations causing inertia-loading).

Reply

ID	Clause	Location	Country	Status
658	08.06.04		dk	

**Comment** "The dynamic coefficient applied to the suspended load shall be taken as stated in 8.6.2 for sea and platform lifts as applicable, (i.e. 2,0 for sea lift or 1,3 for platform lift)."

Comment: Avoid reiterations

**Proposed** The dynamic coefficient applied to the suspended load shall be taken as stated in 8.6.2.

Reply

ID	Clause	Location	Country	Status
659	08.06.04		dk	

**Comment** "The fatigue analysis shall be based on the expected crane usage and S-N curves for the particular member or connection."

Comments:

Avoid reiterations (the use of expected crane-usage already stated).

Elaborate on fatigue-data

**Proposed** Calculation of fatigue damages shall be based on:  
Fatigue design basis (loads etc.)  
Appropriate fatigue data such as: S-N curves and Stress Concentration Factors (SCF) due to fabrication tolerances, thickness-transitions as well as local hot-spot stresses.

Reply

ID	Clause	Location	Country	Status
660	08.06.04		dk	

**Comment** "The fatigue calculations shall utilise S-N curves....."  
May be omitted provided earlier comment/proposal is implemented.

Proposed

Reply

ID	Clause	Location	Country	Status
849	08.06.04		US	

**Comment** The number of minimum cycles is not shown.

**Proposed** Add - A minimum number of 25,000 cycles should be used for 1) A load of 1.33 times the static rated load at the boom position and crane orientation that produces the maximum stress in each component of the supporting structure and 2) Stress range to be the difference of the stresses caused by 1) and stress with the boom in the same position but unloaded.

Reply

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 79 of 138

Sorted on clause

ID	Clause	Location	Country	Status
759	08.06.04	2nd para	FR	
<b>Comment</b>	Recommendations on fatigue safety factors should be included in Section 7, which does not even mention fatigue limit states.			

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
760	08.06.04	last line	FR	
<b>Comment</b>	typo			
<b>Proposed</b>	discontinuity e.g. -> discontinuity, e.g.			

**Reply**

ID	Clause	Location	Country	Status
261	08.06.04	Para 2	UK	
<b>Comment</b>	Substantiation for this?			

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
262	08.07		UK	
<b>Comment</b>	Interface issues - ensure reactions and tie downs for extreme conditions are addressed - could require site-specific assessment			

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
263	08.07	Para 1 line 1	UK	
<b>Comment</b>	After temporary conditions, add ,including jarring,			

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
264	08.08		UK	
<b>Comment</b>	Need to consider vibrations on the bridge			

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
265	08.09		UK	
<b>Comment</b>	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**

ID	Clause	Location	Country	Status
266	08.09	2nd bullet	UK	
<b>Comment</b>	Displacements may be assessed using unfactored actions (plus a margin to ensure you don't run out of bearing surface?)			

**Proposed**

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 80 of 138

Sorted on clause

ID	Clause	Location	Country	Status
267	08.09	Para below list	UK	

**Comment** including the provision of jacking points.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
761	08.10	last line	FR	

**Comment** typo

**Proposed** in-service. -> in service.

**Reply**

ID	Clause	Location	Country	Status
269	08.11		UK	

**Comment** Mention effects of spillage of e.g. liquid nitrogen spillages.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
661	08.11		dk	

**Comment** "e) The design process....."

Comment:

Para e) is not an example such as a) to d), but the concluding requirement.

**Proposed** "The design process....."

**Reply**

ID	Clause	Location	Country	Status
662	08.11		Dk	

**Comment** Most disciplines involved no

**Proposed** The design of the topside structure involves complex interfaces/liaison with most other technical disciplines.

**Reply**

ID	Clause	Location	Country	Status
763	08.11		FR	

**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
762	08.11	2nd line	FR	

**Comment** typo

**Proposed** compromise design -> compromise structural design

**Reply**

ID	Clause	Location	Country	Status
270	08.11	e)	UK	

**Comment** including the provision of jacking points.

**Proposed**

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 81 of 138

Sorted on clause

ID	Clause	Location	Country	Status
663	08.12		Dk	

## 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	

**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	

**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	

**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

ID	Clause	Location	Country	Status
665	08.15		Dk	

## 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	

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

## Proposed

## Reply

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 82 of 138

Sorted on clause

ID	Clause	Location	Country	Status
274	09.01		UK	

**Comment** If using tube strength formulations from ISO 19902 what load factors should be applied. Does this mean running 2 or more analyses with different load factors to assess tubulars and I-beams? If so, it is bound to lead to confusion and error.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
528a	09.01	Titles and text	NL	

**Comment** Does "cylindrical" intend to refer specifically to "tubular" shapes, or are also RHS sections included?

**Proposed** Change to "tubular" if tubular is meant.  
Stay with "cylindrical" if both CHS and RHS are referred to.

**Reply**

ID	Clause	Location	Country	Status
528b	09.02	Titles and text	NL	

**Comment** Does "cylindrical" intend to refer specifically to "tubular" shapes, or are also RHS sections included?

**Proposed** Change to "tubular" if tubular is meant.  
Stay with "cylindrical" if both CHS and RHS are referred to.

**Reply**

ID	Clause	Location	Country	Status
275	09.02.02		UK	

**Comment** There is already a lot of guidance in this area - Shell will provide details

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
529a	09.02.02		NL	

**Comment** 1) Add a sentence at the beginning, as for 9.2.3.

**Proposed** 1) Add: "Plate girders shall be designed in accordance with a suitable code of practice, see A.9.2.2."

**Reply**

ID	Clause	Location	Country	Status
529b	09.02.02		NL	

**Comment** 2) line 3: subordinate clause between commas.

**Proposed** 2) Put a comma after "stress concentrations,..."

**Reply**

ID	Clause	Location	Country	Status
529c	09.02.02		NL	

**Comment** 3) line 5: spelling.

**Proposed** 3) Change "un-stiffened" to "unstiffened".

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 83 of 138

Sorted on clause

ID	Clause	Location	Country	Status
529d	09.02.02		NL	

**Comment** 4) line 6: plural form.

**Proposed** 4) Change "thickness" to "thicknesses".

**Reply**

ID	Clause	Location	Country	Status
276	09.02.02	Last sentence	UK	

**Comment** How does web slenderness affect fatigue?

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
277	09.02.03		UK	

**Comment** The applicable standards need to be checked and updated.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
530	09.02.03	1st sentence	NL	

**Comment** Wording.

**Proposed** Change "with reference to" to "in accordance with", and add at the end "...., see A.9.2.3."

**Reply**

ID	Clause	Location	Country	Status
278	09.02.04		UK	

**Comment** Delete clause check Annex references etc

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
531	09.02.05		NL	

**Comment** Wording and cross-reference.

**Proposed** Change to

"Stressed skin structures may be designed on the basis of that the plating resisting resists shear force forces only and that all axial forces are carried by the framing, see A.9.2.5. If the stressed skin structure is exposed to cyclic loadingactions the possible detrimental effects from repeated buckling shall be considered.-

**Reply**

ID	Clause	Location	Country	Status
666	09.02.06		Dk	

**Comment** Include in 8.013

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
532	09.03.01	line 2	NL	

**Comment** Terminology.

**Proposed** Change "tubular cylinders" to "tubular members".

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 84 of 138

Sorted on clause

ID	Clause	Location	Country	Status
533	09.03.02		NL	
<b>Comment</b>	Spelling.			
<b>Proposed</b>	Change "minimise" to "minimize" (2 X). Add "See A.9.3.2." at the end of the 2nd paragraph.			

Reply

ID	Clause	Location	Country	Status
279	09.03.03		UK	
<b>Comment</b>	Not true - e.g. gusset joints that are only intended to transfer axial and certain moments - emphasis is too restrictive			

Proposed

Reply

ID	Clause	Location	Country	Status
534	09.03.03	09.03.03 and A.09.03.03 title	NL	
<b>Comment</b>	As for 9.01/9.2: Does "cylindrical" intend to refer specifically to "tubular" shapes, or are also RHS sections included?			

**Proposed** Change to "Non-tubular joints" if tubular is meant; otherwise stay with 'Non-cylindrical'.

Reply

ID	Clause	Location	Country	Status
535	09.03.03	line 1	NL	
<b>Comment</b>	Terminology and a comma.			
<b>Proposed</b>	Change to "... full capacity strength of the adjoining members, unless ...."			

Reply

ID	Clause	Location	Country	Status
667	09.03.04		dk	
<b>Comment</b>	Sea spray not nec a prob to all bolts.demanded sealing do not excist. Care should be taken in rounding bolt hole edges and secure full coating and use washers both sides to minimize coating damage.			

Proposed

Reply

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 85 of 138

Sorted on clause

ID	Clause	Location	Country	Status
668	09.03.04		dk	
<b>Comment</b>	<p>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.</p> <p>Problems with bolted connections:</p> <p>Corrosion. Standard coatings are damaged in contact areas. This results in potential severe corrosion in-service. It is generally not possible to recoat.</p> <p>Loss of pretension in bolts due to coating or insert creep</p> <p>Loss of pre-tension occurs very easily if the connection is based on short (in-elastic) bolts</p>			
<b>Proposed</b>	<p>-□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:</p> <p>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</p> <p>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</p> <p>It is generally good practice to design connections with long bolts.</p> <p>Regular inspection of bolted connections should be specified.</p>			

Reply

ID	Clause	Location	Country	Status
765	09.03.04	4th para	FR	
<b>Comment</b>	there may be good technical reasons not to galvanize high strength bolts.			
<b>Proposed</b>	"Bolts should be galvanized or shall protected by another high protection system."			

Reply

ID	Clause	Location	Country	Status
280	09.03.04	Line 3	UK	
<b>Comment</b>	After undesirable, add comma, delete completely			

Proposed

Reply

ID	Clause	Location	Country	Status
536a	09.03.04	para 1	NL	
<b>Comment</b>	1) title: consistency of terminology with most of the text.			
<b>Proposed</b>	1) Change "joints" to "connections".			

Reply

ID	Clause	Location	Country	Status
536b	09.03.04	para 1	NL	
<b>Comment</b>	2) line 1: consistency.			
<b>Proposed</b>	2) Change "joints" to "connections" and "topside structures" to "topsides structures".			

Reply

ID	Clause	Location	Country	Status
536c	09.03.04	para 1	NL	
<b>Comment</b>	3) line 3: adding of a comma.			
<b>Proposed</b>	3) Add comma "... welding is undesirable, bolted connections can ...".			

Reply

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 86 of 138

Sorted on clause

ID	Clause	Location	Country	Status
537	09.03.04	para 2, line 2	NL	

**Comment** Consistency of terminology.

**Proposed** Change "platforms" to "topsides".

**Reply**

ID	Clause	Location	Country	Status
538	09.03.04	para 3, 1st sentence	NL	

**Comment**

**Proposed** Change to  
"In general, connections designed in accordance with any normal building code will be satisfactorily satisfactory, see also A.9.3.4."

**Reply**

ID	Clause	Location	Country	Status
669	09.03.05		dk	

**Comment** Material properties/welderability + testing should be addressed

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
539	09.03.05	09.03.05 and A.09.03.05 numbering	NL	

**Comment** Castings are not part of 9.3 - Connections.

**Proposed** Change 9.3.5 into 9.4, and A.9.3.5 into A.9.4.

**Reply**

ID	Clause	Location	Country	Status
540	09.03.05	line 5	NL	

**Comment** Wording.

**Proposed** Change to "In complex castings subjected to ...."

**Reply**

ID	Clause	Location	Country	Status
281	10		UK	

**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
544a	10.01		NL	

**Comment** 1) para 1, line 1: terminology.

**Proposed** 1) Change "installations" to "platforms".

**Reply**

ID	Clause	Location	Country	Status
544b	10.01		NL	

**Comment** 2) para 2, line 1: closing off subordinate clause.

**Proposed** 2) Put a comma after "... particular function,".

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 87 of 138

Sorted on clause

ID	Clause	Location	Country	Status
544c	10.01		NL	

**Comment** 3) list, item 8: phrasing.

**Proposed** 3) Change to "Weight and whole life cycle costs."

**Reply**

ID	Clause	Location	Country	Status
544d	10.01		NL	

**Comment** 4) list, item 9: spelling.

**Proposed** 4) Change "recognised" to "recognized".

**Reply**

ID	Clause	Location	Country	Status
282	10.01	Bullet 8	UK	

**Comment** Whole life cost does not belong in an ISO document

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
889	10.01	Materials, General	NO	

**Comment** Add reference to ISO 19902 where all required information on steel materials is found.

**Proposed** Add after first sentence: See Chapter 19 in ISO 19902 for alternative systematics and approach.

**Reply**

ID	Clause	Location	Country	Status
900	10.02	Carbon steel	NO	

**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
545	10.02	line 2	NL	

**Comment** Reference to IS.

**Proposed** Change "this International Standard" to "this document", or to "this part of ISO 19901".

**Reply**

ID	Clause	Location	Country	Status
283	10.02	Table 7	UK	

**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	

**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**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 88 of 138

Sorted on clause

ID	Clause	Location	Country	Status
283b	10.02	Table 7	UK	

**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
546a	10.02	Table 7	NL	

**Comment** 1) Table 7 should be tied in to subclause 10.2 by text and reference.

**Proposed** 1) Provide necessary text.

**Reply**

ID	Clause	Location	Country	Status
546b	10.02	Table 7	NL	

**Comment** 2) Title does not reflect intent of table.

**Proposed** 2) Suggest change to "Carbon steel material selection for topsides".

**Reply**

ID	Clause	Location	Country	Status
546c	10.02	Table 7	NL	

**Comment** 3) Consistency with ISO 19902.

**Proposed** 3) Replace "SMYS Group" with "Strength group".

**Reply**

ID	Clause	Location	Country	Status
546d	10.02	Table 7	NL	

**Comment** 4) Use of capital in heading.

**Proposed** 4) Change to "Toughness Class class"

**Reply**

ID	Clause	Location	Country	Status
766	10.02	Table 7	FR	

**Comment** A key to terminology should be supplied.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
547a	10.03.01		NL	

**Comment** 1) para 1, line 2: spelling.

**Proposed** 1) Change "minimised" to "minimized".

**Reply**

ID	Clause	Location	Country	Status
547b	10.03.01		NL	

**Comment** 2) para 2, line 1: grammar.

**Proposed** 2) Change "general" to "generally".

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 89 of 138

Sorted on clause

ID	Clause	Location	Country	Status
767	10.03.01	1st paragraph	FR	
<b>Comment</b>	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.			
<b>Proposed</b>	Stainless steels exhibit improved corrosion resistance....			

Reply

ID	Clause	Location	Country	Status
768	10.03.01	1st paragraph	FR	
<b>Comment</b>	Corrosion can be minimised by paying attention to the grade selection and the use of appropriate details, but more generally by paying attention to design. Global design can be as important as details design.			
<b>Proposed</b>	Change "...by paying attention to the grade selection and the use of appropriate details." by "...by paying attention to the grade selection and design"			

Reply

ID	Clause	Location	Country	Status
770	10.03.01	2nd para, 1st line	FR	
<b>Comment</b>	typo			
<b>Proposed</b>	... general retain ... structural steel ... -> ...generally retain ... structural carbon steel ...			

Reply

ID	Clause	Location	Country	Status
769	10.03.01	2nd paragraph	FR	
<b>Comment</b>	typo			
<b>Proposed</b>	Change "The stainless steels used offshore general retain higher strengths..." by "The stainless steels used offshore generally retain higher strengths..."			

Reply

ID	Clause	Location	Country	Status
284a	10.03.01	Para 2 lines 1 and 2	UK	
<b>Comment</b>	Delete general, add generally			

Proposed

Reply

ID	Clause	Location	Country	Status
284b	10.03.01	Para 2 lines 1 and 2	UK	
<b>Comment</b>	After provide a, add minimum corrosion thickness			

Proposed

Reply

ID	Clause	Location	Country	Status
771	10.03.02	1st para, last line	FR	
<b>Comment</b>	typo			
<b>Proposed</b>	... carbon variance 316L ... -> carbon variant 316L ...			

Reply

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 90 of 138

Sorted on clause

ID	Clause	Location	Country	Status
548	10.03.02	para 1, line 4	NL	

**Comment** Wording.

**Proposed** Change to "... are the more useful groups group for ...."

**Reply**

ID	Clause	Location	Country	Status
285	10.03.03		UK	

**Comment** Material properties (for stainless steel)

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
286	10.03.03		UK	

**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	

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

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
772	10.04.01	last para	FR	

**Comment** punctuation

**Proposed** ... stiffness to steel aluminium ... -> stiffness to steel, aluminium ...

**Reply**

ID	Clause	Location	Country	Status
549	10.04.01	para 2, line 1	NL	

**Comment** Inappropriate use of word "must".

**Proposed** Change "must" to "shall".

**Reply**

ID	Clause	Location	Country	Status
550	10.04.02	para 1, line 2	NL	

**Comment** Spelling and commas around subordinate clauses.

**Proposed** Change to "specifically 6082, and the non-heat treatable 5XXX series, specifically 5083, which obtains its increased strength"

**Reply**

ID	Clause	Location	Country	Status
551	10.04.03		NL	

**Comment** Use of capitals.

**Proposed** Change "Weight" to "weight", "Modulus" to "modulus" and "Of its strength" to "of its strength".

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 91 of 138

Sorted on clause

ID	Clause	Location	Country	Status
552a	10.04.04		NL	
<b>Comment</b>	1) Title: wrong spelling.			
<b>Proposed</b>	1) Change to "The Thermite sparking"			
<b>Reply</b>				

ID	Clause	Location	Country	Status
552b	10.04.04		NL	
<b>Comment</b>	2) penultimate line: spelling.			
<b>Proposed</b>	2) Change "advise" to "advice".			
<b>Reply</b>				

ID	Clause	Location	Country	Status
773	10.04.04		FR	
<b>Comment</b>	typos			
<b>Proposed</b>	10.4.4 The sparkingThermite can occur when iron oxide(rusty ... -> 10.4.4 Thermite sparking Thermite sparking can occur when iron oxide (rusty ...			
<b>Reply</b>				

ID	Clause	Location	Country	Status
287	10.04.04	Line 1	UK	
<b>Comment</b>	After Thermite, add sparking can occur			
<b>Proposed</b>				
<b>Reply</b>				

ID	Clause	Location	Country	Status
288	10.04.04	Title	UK	
<b>Comment</b>	Delete The, add Thermite sparking			
<b>Proposed</b>				
<b>Reply</b>				

ID	Clause	Location	Country	Status
289	10.05		UK	
<b>Comment</b>	Conductive or metallic objects attached to composites need to be independently earthed.			
<b>Proposed</b>				
<b>Reply</b>				

ID	Clause	Location	Country	Status
290	10.05		UK	
<b>Comment</b>	Need to add caution that in fire conditions composites can give off toxic fumes - but very good in the right areas.			
<b>Proposed</b>				
<b>Reply</b>				

ID	Clause	Location	Country	Status
925	10.05		CA	
<b>Comment</b>	Reference to flammability is included for timber in 10.6.			
<b>Proposed</b>	Consider adding a note on required performance of fibre reinforced composites in fire.			
<b>Reply</b>				

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 92 of 138

Sorted on clause

ID	Clause	Location	Country	Status
553	10.05	para 1, line 1	NL	

**Comment** Closing off subordinate clause with a comma.

**Proposed** Put a comma after "... , including high strength, ..."

**Reply**

ID	Clause	Location	Country	Status
291	10.05	Para 2	UK	

**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	

**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
554	10.06	para 1, line 1	NL	

**Comment** Consistency of terminology.

**Proposed** Change "topside structures" to "topsides structures".

**Reply**

ID	Clause	Location	Country	Status
293	11		UK	

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

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
557a	11	para 2	NL	

**Comment** 1) line 1: clarity of which structure are meant.

**Proposed** 1) Change to ".. use of the topsides structures .."

**Reply**

ID	Clause	Location	Country	Status
557b	11	para 2	NL	

**Comment** 2) line 2: clarification of the word 'capacity'.

**Proposed** 2) Change to ".. maximum carrying capacity of areas .."

**Reply**

ID	Clause	Location	Country	Status
557c	11	para 2	NL	

**Comment** 3) line 3: the meaning of "maximum capacity of the global structure" is unclear. It could mean:  
- "total maximum topsides weight", or  
- "the strength of the support structure".

**Proposed** 3) Clarify intent, for example by changing to one of the two suggested phrases.

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 93 of 138

Sorted on clause

ID	Clause	Location	Country	Status
294	11	Para 3 line 2	UK	

**Comment** After those add personnel

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
774	11	second para	FR	

**Comment**

**Proposed** ... construction methods, inspection ... -> construction methods, special tolerances, inspection ...

**Reply**

ID	Clause	Location	Country	Status
295	12		UK	

**Comment** Clause 12.2 should not be part of this section.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
559	12	12/A.012 to 17/A.017	NL	

**Comment** For these last 6 clauses not all (suggested) editorial amendments are included in this table of comments. The other ones will be advised to the project leader / editing panel.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
560a	12	12/A.012 to 17/A.017	NL	

**Comment** Consistency of formulation across the ISO 19900 series of standards.

**Proposed** - Change all "topside" to "topsides".

**Reply**

ID	Clause	Location	Country	Status
560b	12	12/A.012 to 17/A.017	NL	

**Comment** Consistency of formulation across the ISO 19900 series of standards.

**Proposed** - Change all "substructure(s)" to "support structure(s)"; in some cases just "structure(s)" suffices.

**Reply**

ID	Clause	Location	Country	Status
560c	12	12/A.012 to 17/A.017	NL	

**Comment** Consistency of formulation across the ISO 19900 series of standards.

**Proposed** - Specify "topsides structure" where there is potential doubt if "structure" refers to the "topsides" or to the "support structure".

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 94 of 138

Sorted on clause

ID	Clause	Location	Country	Status
560d	12	12/A.012 to 17/A.017	NL	

**Comment** Consistency of formulation across the ISO 19900 series of standards.

**Proposed** - Replace "load" / "loading" with "action(s)" where appropriate. Terms such as "load path", "load case" are common and accepted terms.

**Reply**

ID	Clause	Location	Country	Status
560e	12	12/A.012 to 17/A.017	NL	

**Comment** Consistency of formulation across the ISO 19900 series of standards.

**Proposed** - Be careful with the word "capacity"; in certain cases it should be changed to "strength", or to "ability", "capability", as appropriate

**Reply**

ID	Clause	Location	Country	Status
561a	12	12/A.012 to 17/A.017	NL	

**Comment** Consistency of spelling.

**Proposed** - Change "dependant" to "dependent".

**Reply**

ID	Clause	Location	Country	Status
561b	12	12/A.012 to 17/A.017	NL	

**Comment** Consistency of spelling.

**Proposed** - Change "minimised" to "minimized".

**Reply**

ID	Clause	Location	Country	Status
561c	12	12/A.012 to 17/A.017	NL	

**Comment** Consistency of spelling.

**Proposed** - Change "summarised" to "summarized".

**Reply**

ID	Clause	Location	Country	Status
901	12.01.01	Fabrication/ Assembly/General	NO	

**Comment** Add specific chapter in the reference

**Proposed** i.e: General requirements are given in chapter 20 in ISO 19902, additional - - - - -

**Reply**

ID	Clause	Location	Country	Status
775	12.01.03		FR	

**Comment** Wording is unclear

**Proposed** horizontally -> in plan

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 95 of 138

Sorted on clause

ID	Clause	Location	Country	Status
671	12.01.04		dk	

**Comment** Cold sawing, water cutting etc could be addressed

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
296a	12.01.04	Bullet 1	UK	

**Comment** Emphasise that an attachment is a local stress raiser and they are not also properly removed.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
296b	12.01.04	Bullet 1	UK	

**Comment** It is normal practice to perform MPI following removal of temporary attachments

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
776	12.02.01	1st paragraph	FR	

**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
902	13	Welding	NO	

**Comment** Add specific chapter in the reference

**Proposed** i.e: Welding shall comply with the requirements of chapter 20 of ISO 19902.

**Reply**

ID	Clause	Location	Country	Status
563	14	Clause 14/A.14	NL	

**Comment** Reference should be made to ISO 19901-6 (Marine operations), and it should be ensured that there are no discrepancies between this document and ISO 19901-6.

**Proposed** Make cross-reference and check existing text against ISO 19901-6.

**Reply**

ID	Clause	Location	Country	Status
298	14.01		UK	

**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
299	14.02.01		UK	

**Comment** draught (for consistency)

**Proposed**

**Reply**

# ISO DIS 19901 - 3 Toppers

07 December 2007

Page 96 of 138

Sorted on clause

ID	Clause	Location	Country	Status
778	14.02.01		FR	
<b>Comment</b>	Reinspection of lift points after loadout is recommended where these are to be re-used either for load-off or offshore installation.			
<b>Proposed</b>	Recommend reinspection of lift points after loadout			
<b>Reply</b>				

ID	Clause	Location	Country	Status
300	14.02.02	Para 1, sentence 1	UK	
<b>Comment</b>	This sentence adds nothing. The first part is unqualified and the second part states the obvious!			
<b>Proposed</b>				
<b>Reply</b>				

ID	Clause	Location	Country	Status
779	14.02.02	sub-para a)	FR	
<b>Comment</b>	typos			
<b>Proposed</b>	imits of thedesign -> limits of the design			
<b>Reply</b>				

ID	Clause	Location	Country	Status
780	14.02.02	sub-para e)	FR	
<b>Comment</b>	punctuation			
<b>Proposed</b>	14.2..2 e) -> 14.2.2 e)			
<b>Reply</b>				

ID	Clause	Location	Country	Status
866	14.02.02.0 1		US	
<b>Comment</b>	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.			
<b>Proposed</b>	Remove this sentence			
<b>Reply</b>				

ID	Clause	Location	Country	Status
301a	14.02.02.0 1	Titles	UK	
<b>Comment</b>	Replace with 14.2.3 Skidded loadout and 14.2.4 Compatibility of operations			
<b>Proposed</b>				
<b>Reply</b>				

ID	Clause	Location	Country	Status
301c	14.02.02.0 1	Titles	UK	
<b>Comment</b>	a) Delete The number of, add Support points shall be so arranged as to			
<b>Proposed</b>				
<b>Reply</b>				

ID	Clause	Location	Country	Status
301b	14.02.03	Titles	UK	
<b>Comment</b>	Replace with 14.2.3 Skidded loadout and 14.2.4 Compatibility of operations			
<b>Proposed</b>				
<b>Reply</b>				

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 97 of 138

Sorted on clause

ID	Clause	Location	Country	Status
301d	14.02.03	Titles	UK	

**Comment** a) Delete The number of, add Support points shall be so arranged as to

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
302	14.03.02	Line 2	UK	

**Comment** Replace loading with the actions

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
303	14.04		UK	

**Comment** It would be useful to say something about installation aids - bumpers and guides. (new subclause)

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
867	14.04		US	

**Comment** Weighing is not mandatory.

**Proposed** Add that all decks that are lifted shall be weighed

**Reply**

ID	Clause	Location	Country	Status
781	14.04.01		FR	

**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	

**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	

**Comment** After cover, add uncertainties such as

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
305	14.04.03		UK	

**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**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 98 of 138

Sorted on clause

ID	Clause	Location	Country	Status
306	15	Clause	UK	

**Comment** Shouldn't this be a subsection within Clause 12?

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
307	15	Clause	UK	

**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	

**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
565a	16.01	1) para 1, line 2: "on substructures of all types".	NL	

**Comment** The word "installation" is used to indicate "(sub)structure", "platform" or "topsides", as fits in with the context. This is confusing. The term is not commonly used with this meaning in the ISO 19900 series of standards.

**Proposed** 1) Change to "on structures of all types".

**Reply**

ID	Clause	Location	Country	Status
565b	16.01	2) para 1, line 2: "steel jackets".	NL	

**Comment** The word "installation" is used to indicate "(sub)structure", "platform" or "topsides", as fits in with the context. This is confusing. The term is not commonly used with this meaning in the ISO 19900 series of standards.

**Proposed** 2) Change to "steel structures".

**Reply**

ID	Clause	Location	Country	Status
565c	16.01	3) para 1, line 3: "floating installations".	NL	

**Comment** The word "installation" is used to indicate "(sub)structure", "platform" or "topsides", as fits in with the context. This is confusing. The term is not commonly used with this meaning in the ISO 19900 series of standards.

**Proposed** 3) Change to "floating structures".

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 99 of 138

Sorted on clause

ID	Clause	Location	Country	Status
565d	16.01	4) para 1, line 4: "applicable to installations".	NL	

**Comment** The word "installation" is used to indicate "(sub)structure", "platform" or "topsides", as fits in with the context. This is confusing. The term is not commonly used with this meaning in the ISO 19900 series of standards.

**Proposed** 4) Change to: "applicable to platforms".

**Reply**

ID	Clause	Location	Country	Status
565e	16.01	5) para 2: "lifetime of the installation".	NL	

**Comment** The word "installation" is used to indicate "(sub)structure", "platform" or "topsides", as fits in with the context. This is confusing. The term is not commonly used with this meaning in the ISO 19900 series of standards.

**Proposed** 5) Change to "lifetime of the topsides structure".

**Reply**

ID	Clause	Location	Country	Status
782	16.01	5th para	FR	

**Comment** use of English

**Proposed** ... for the installation to include: -> ... for the installation. This shall include:

**Reply**

ID	Clause	Location	Country	Status
565f	16.01	6) para 4: "the installation" (2x) .	NL	

**Comment** The word "installation" is used to indicate "(sub)structure", "platform" or "topsides", as fits in with the context. This is confusing. The term is not commonly used with this meaning in the ISO 19900 series of standards.

**Proposed** 6) Change to "the platform" (2x).

**Reply**

ID	Clause	Location	Country	Status
565g	16.01	7) para 5, line 2: "the installation".	NL	

**Comment** The word "installation" is used to indicate "(sub)structure", "platform" or "topsides", as fits in with the context. This is confusing. The term is not commonly used with this meaning in the ISO 19900 series of standards.

**Proposed** 7) Change to "the platform".

**Reply**

ID	Clause	Location	Country	Status
565h	16.01	8) last para, line 2: "the installation".	NL	

**Comment** The word "installation" is used to indicate "(sub)structure", "platform" or "topsides", as fits in with the context. This is confusing. The term is not commonly used with this meaning in the ISO 19900 series of standards.

**Proposed** 8) Change to "the topsides".

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 100 of 138

Sorted on clause

ID	Clause	Location	Country	Status
309	16.01	Para 1 line3	UK	
<b>Comment</b>	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	
<b>Comment</b>	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
566a	16.02	1) para 1, line 1: "for the installation".	NL	

**Comment** As for 16.01.

**Proposed** 1) Change to "for the topsides".

**Reply**

ID	Clause	Location	Country	Status
566b	16.02	2) para 1, line 3: "evacuation of the installation".	NL	

**Comment** As for 16.01.

**Proposed** 2) Change to "evacuation of the platform".

**Reply**

ID	Clause	Location	Country	Status
310	16.02	Para 1	UK	
<b>Comment</b>	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
311	16.03.01		UK	
<b>Comment</b>	After topsides structures, add commas before and after the subclause, rather than fatigue or accidental damage,			

**Proposed** Delete i.e., add is

**Reply**

ID	Clause	Location	Country	Status
567	16.03.05	Line 1: "for the installation to inspect".	NL	

**Comment** As for 16.01.

**Proposed** Change to "for the topsides to inspect".

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 101 of 138

Sorted on clause

ID	Clause	Location	Country	Status
312	16.04		UK	

**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**

ID	Clause	Location	Country	Status
673	16.04		dk	

**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	

**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	

**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	

**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	

**Comment** Not clear and wrong use of the buzz word benchmark

**Proposed**

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 102 of 138

Sorted on clause

ID	Clause	Location	Country	Status
783	16.05.02		FR	

**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
568a	16.05.02	1) para 1, line 2: "topsides facilities".	NL	

**Comment** As for 16.01 and 16.2, but now also concerning the term "facilities".

**Proposed** 1) Change to "topsides" only.

**Reply**

ID	Clause	Location	Country	Status
568b	16.05.02	2) bullet 1): "including facilities structures".	NL	

**Comment** As for 16.01 and 16.2, but now also concerning the term "facilities".

**Proposed** 2) Suggest changing to "including equipment related structures".

**Reply**

ID	Clause	Location	Country	Status
568c	16.05.02	3) last para of a), line 2: "of the installation".	NL	

**Comment** As for 16.01 and 16.2, but now also concerning the term "facilities".

**Proposed** 3) Change to "of the topsides".

**Reply**

ID	Clause	Location	Country	Status
568d	16.05.02	4) 1st bullet of b), line 1: "including facilities structures".	NL	

**Comment** As for 16.01 and 16.2, but now also concerning the term "facilities".

**Proposed** 4) Suggest changing to "including equipment related structures".

**Reply**

ID	Clause	Location	Country	Status
568e	16.05.02	5) 2nd and 3rd bullets of b): "components" (2x).	NL	

**Comment** As for 16.01 and 16.2, but now also concerning the term "facilities".

**Proposed** 5) Change to "structural component" (2x).

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 103 of 138

Sorted on clause

ID	Clause	Location	Country	Status
568f	16.05.02	6) 1st bullet of c): "including facilities structures".	NL	

**Comment** As for 16.01 and 16.2, but now also concerning the term "facilities".

**Proposed** 6) Suggest changing to "including equipment related structures".

**Reply**

ID	Clause	Location	Country	Status
568g	16.05.02	7) 2nd and 3rd bullets of c): "components" (2x).	NL	

**Comment** As for 16.01 and 16.2, but now also concerning the term "facilities".

**Proposed** 7) Change to "structural component" (2x).

**Reply**

ID	Clause	Location	Country	Status
314	16.05.02	Item 2)	UK	

**Comment** change 7.010.6.3 to 7.010.9.2

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
315	16.05.02	para 3 2) line 3	UK	

**Comment** Delete reference to 7.010.6.3, add 7.010.9.2 Walk down studies

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
316	16.05.03		UK	

**Comment** The basic requirements specified in ISO 19902 are not consistent with North Sea practice.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
676	16.05.03		Dk	

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

**Proposed**

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 104 of 138

Sorted on clause

ID	Clause	Location	Country	Status
869	16.05.03		US	
<b>Comment</b>	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.			
<b>Proposed</b>	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	
<b>Comment</b>	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	
<b>Comment</b>	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
677	16.05.04		dk	
<b>Comment</b>	Why marine growth in topside struc.			

Proposed

Reply

ID	Clause	Location	Country	Status
870	16.05.04		US	
<b>Comment</b>	If the intent is to have this section apply to topsides then the reference to jackets needs to be removed.			
<b>Proposed</b>	Remove "(with marine growth cleaning as necessary)" Check the second item to see if the reference to risers and J-tubes, conductors should be in this section.			

Reply

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 105 of 138

Sorted on clause

ID	Clause	Location	Country	Status
569a	16.05.04	1) 1st bullet, line 1: "of the platform".	NL	

**Comment** As for 16.01 for the term "platform".

**Proposed** 1) Change to "of the topsides".

**Reply**

ID	Clause	Location	Country	Status
569b	16.05.04	2) 2nd bullet, line 2: "of the structure,".	NL	

**Comment** As for 16.01 for the term "platform".

**Proposed** 2) Change to "of the topsides structure,".

**Reply**

ID	Clause	Location	Country	Status
319	16.05.04	line 2	UK	

**Comment** After ensure the, add continuing

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
570a	16.05.05		NL	

**Comment** 1) para 1, line 2: "for which the structure".

**Proposed** 1) Change to "for which the platform".

**Reply**

ID	Clause	Location	Country	Status
570b	16.05.05		NL	

**Comment** 2) para 1, line 4: ".. structure and substructures".

**Proposed** 2) Change to ".. structure and supporting structures".

**Reply**

ID	Clause	Location	Country	Status
570c	16.05.05		NL	

**Comment** 3) last para, line 1: "damage to the structure".

**Proposed** 3) Change to "damage to the topsides structure".

**Reply**

ID	Clause	Location	Country	Status
678	16.05.05		dk	

**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**

ID	Clause	Location	Country	Status
320	16.05.05	para 2 line 2	UK	

**Comment** Delete any, add an appropriate

**Proposed**

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 106 of 138

Sorted on clause

ID	Clause	Location	Country	Status
321	16.06		UK	

**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	

**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	

**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
577	17	17 and A.17 titles	NL	

**Comment** This is about "topsides" reuse, as opposed to whole platform reuse.

**Proposed** Change titles to "Topsides reuse"

**Reply**

ID	Clause	Location	Country	Status
578a	17	para 1	NL	

**Comment** 1) Consistency of spelling with ISO 19902.

**Proposed** 1) Change "re-use" to "reuse" (one word).

**Reply**

ID	Clause	Location	Country	Status
578b	17	para 1	NL	

**Comment** 2) line 3: "modifications to the structure".

**Proposed** 2) Change to "modifications to the topsides structure".

**Reply**

ID	Clause	Location	Country	Status
297	43070	Clauses	UK	

**Comment** There is a benefit to making the text in this document more "stand-alone" with less reliance on reading ISO 19901. Would be useful to bring out the multi-disciplinary aspects of topsides design - particularly layout

**Proposed**

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 107 of 138

Sorted on clause

ID	Clause	Location	Country	Status
664	8.14		Dk	

## 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
784	A	general	FR	

**Comment** There are a great many typographical and punctuation errors in the text; there are very many incorrect numbers identifying reference documents; and many of the reference documents seem inappropriate or have been superseded by new revisions or other documents. There are too many to mention individually. Other documents referred to are not listed in the bibliography. Some of the text is very good, but there are instances of contradiction and quite a lot of repetition, particularly in the sections on fire and blast.

**Proposed** Text to be revisited

## Reply

ID	Clause	Location	Country	Status
580	A	NOTE	NL	

**Comment** Replace the NOTE by the standardized text that was approved by ISO CS.

## Proposed

## Reply

ID	Clause	Location	Country	Status
511	A..06.05	A.06.05 to A.06.07	NL	

**Comment** Make titles the same as those in the main text.

## Proposed

## Reply

ID	Clause	Location	Country	Status
475	A.05.01	title	NL	

**Comment** Change title to correspond with title in main text.

**Proposed** Change to "Design criteria situations"

## Reply

ID	Clause	Location	Country	Status
324	A.05.02	Para 1	UK	

**Comment** It is very difficult to follow the discussion where all documents are referred to as Reference [x]. It is recommended that in accordance with other ISO 19900 Standards the commonly referred title is used with the reference number quoted as a superscript, e.g. BS 5950<sup>[x]</sup>.

## Proposed

## Reply

ID	Clause	Location	Country	Status
476a	A.05.02	para 1	NL	

**Comment** 1) Generalize term in 1st sentence".

**Proposed** 1) Change "jacket" to "fixed structures".

## Reply

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 108 of 138

Sorted on clause

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ID	Clause	Location	Country	Status
476b	A.05.02	para 1	NL	

**Comment** 2) Reference [6] should presumably be [7].

**Proposed** 2) Correct Reference, if necessary.

**Reply**

---

ID	Clause	Location	Country	Status
476c	A.05.02	para 1	NL	

**Comment** 3) Reference [7] should presumably be [8].

**Proposed** 3) Correct Reference, if necessary.

**Reply**

---

ID	Clause	Location	Country	Status
476d	A.05.02	para 1	NL	

**Comment** 4) Specify Reference [?].

**Proposed** 4) Add Reference.

**Reply**

---

ID	Clause	Location	Country	Status
476e	A.05.02	para 1	NL	

**Comment** 5) Is Reference [8] really [8], or should it be [7]?

**Proposed** 5) Correct Reference, if necessary.

**Reply**

---

ID	Clause	Location	Country	Status
476f	A.05.02	para 1	NL	

**Comment** 6) Add a comma in line 5.

**Proposed** 6) Change to "These choices were natural, .."

**Reply**

---

ID	Clause	Location	Country	Status
476g	A.05.02	para 1	NL	

**Comment** 7) Add a word in last line.

**Proposed** 7) Change to ".. factors were determined for ..".

**Reply**

---

ID	Clause	Location	Country	Status
477	A.05.02	para 2	NL	

**Comment** Add Reference numbers.

**Proposed** Line 3: "BS 5950 [4]" and "BS 5400: Part 3 [6]".  
Line 5: "EC 3 [2]".

**Reply**

---

ID	Clause	Location	Country	Status
325	A.05.02	para 2 line 4	UK	

**Comment** Remove: With the emergence of other European countries as active participants in the oil and gas industry, EC3 is an obvious choice to complement the list of codes used for topsides structures.

**Proposed** Add: Eurocodes such as EC1 Basis of design and actions on structures and EC3 Design of steel structures: general rules and rules for buildings [2] give further information.

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 109 of 138

Sorted on clause

ID	Clause	Location	Country	Status
478	A.05.03	A.05.03 to A.05.07	NL	

**Comment** Adjust numbering where necessary, in line with modifications to the main text.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
479	A.05.06	title	NL	

**Comment** Change title to correspond with title in main text.

**Proposed** Change to "Platform Topsides reuse".

**Reply**

ID	Clause	Location	Country	Status
503	A.06.01	title	NL	

**Comment** Title should be the same as in the main text.

**Proposed** Change to "Scope General"

**Reply**

ID	Clause	Location	Country	Status
504	A.06.02	title	NL	

**Comment** Title should be the same as in the main text.

**Proposed** Change to "Materials Material selection"

**Reply**

ID	Clause	Location	Country	Status
505	A.06.04	title	NL	

**Comment** Title should be the same as in the main text.

**Proposed** Change to "... serviceability conditions limit states (SLS)"

**Reply**

ID	Clause	Location	Country	Status
785	A.06.04.02. 01	page 56, 1st para	FR	

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

**Proposed** To be checked

**Reply**

ID	Clause	Location	Country	Status
506	A.06.04.02. 01	para 1	NL	

**Comment** Spelling; recommendation; being specific.

**Proposed** Change to

- "minimise minimize" (line 1);
- "shall should" (line 2);
- "...equipment and topsides structure ..." (line 4).

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 110 of 138

Sorted on clause

ID	Clause	Location	Country	Status
326	A.06.04.02.01	para 1 line 2	UK	

**Comment** Replace shall with should

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
507	A.06.04.02.01	para 2	NL	

**Comment** Recommendation; rewording.

**Proposed** Change to  
- "shall should" (line 3);  
- "...greater higher or less lower ..." (line 4).

**Reply**

ID	Clause	Location	Country	Status
786	A.06.04.02.02		FR	

**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	

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

**Proposed** Delete "and perception of vibration".

**Reply**

ID	Clause	Location	Country	Status
327	A.06.04.02.02	line 2	UK	

**Comment** After are not, add likely to be

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
509	A.06.04.02.03	line 4	NL	

**Comment** Clarity.

**Proposed** Change to "... lower natural period limits would apply, but analysis ..."

**Reply**

ID	Clause	Location	Country	Status
510	A.06.04.03	line 1	NL	

**Comment** Correction of cross-reference.

**Proposed** Change to "in 6.4.2 6.4.3".

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 111 of 138

Sorted on clause

ID	Clause	Location	Country	Status
328	A.06.04.03	Para 1	UK	

**Comment** Reference to 6.4.2 should probably be 6.4.3. It is recommended that this reference be removed as this commentary clause is directly associated with 6.4.3 in the normative text.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
787	A.06.08	4th para	FR	

**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
329	A.06.08	para 1	UK	

**Comment** Line 1 After related to add resisting and mitigating the effects of

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
330	A.06.08	para 1	UK	

**Comment** Line 3 After fatigue, add and environmental damage

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
331	A.06.08	Para 4 line 2	UK	

**Comment** Delete loosening, add losing

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
512	A.06.08	paras 3, 4 and 5	NL	

**Comment** Recommendations; spelling; consistency of terminology.

**Proposed**

- 1) Change "shall" to "should" (3x).
- 2) Change "minimising" to "minimizing". (2x)
- 3) Change "element" to "component" (para 4, line 2 [2x], para 5, line 2).
- 4) Change "load elements" to "structural components" (para 4, line 4).
- 5) Change "emphasised-" to "emphasized-".

**Reply**

ID	Clause	Location	Country	Status
513	A.06.09		NL	

**Comment** Delete superseded text  
Does ISO 19902 really contain guidance on corrosion control for topsides??

**Proposed** Delete "No guidance is offered here, but"

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 112 of 138

Sorted on clause

ID	Clause	Location	Country	Status
788	A.06.12.01	1st paragraph	FR	

**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
514	A.06.12.01	line 3	NL	

**Comment** Consistency.

**Proposed** Change to "topside topsides structures".

**Reply**

ID	Clause	Location	Country	Status
515	A.06.12.02		NL	

**Comment** Missing word.

**Proposed** Chnge to ".. as not to depend on ..."

**Reply**

ID	Clause	Location	Country	Status
789	A.06.12.02		FR	

**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
517	A.06.12.04		NL	

**Comment** Typo and spelling.

**Proposed** Change "that" to "than", and "on to" to "onto" (one word).

**Reply**

ID	Clause	Location	Country	Status
333	A.06.12.04	line 2	UK	

**Comment** Delete The dynamic factors associated with placing a module on a transportation barge in open seas are greater that those associated with their placement onto a fixed platform or on to the deck of the crane vessel.

**Proposed** Add The dynamic actions associated with placing a module on a transportation barge in open seas may be greater that those associated with its placement onto an installation offshore or on to the deck of the crane vessel and should be checked..

**Reply**

ID	Clause	Location	Country	Status
332	A.06.12.04	Para 1	UK	

**Comment** "greater that" should be changed to "greater than"

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
516	A.06.12.04	title	NL	

**Comment** Spelling.

**Proposed** Change to "set-down" (with hyphen).

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 113 of 138

Sorted on clause

ID	Clause	Location	Country	Status
520	A.07		NL	

**Comment** Several subclauses appear to contain requirements using "shall", in quite a few cases even using "must". If these occasions are really intended as requirements, then they "shall" be transferred to Clause 7. If not, "shall" and "must" should be replaced by "should", where necessary with amended formulations.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
679	A.07.03		dk	

**Comment** LRFD not in sec 4.2

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
790	A.07.03		FR	

**Comment** see comment on Section 7

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
334	A.07.03	Table A.01	UK	

**Comment** Unclear what the +- represents against EC3

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
335	A.07.03	Table A.3?	UK	

**Comment** No table is presented for operating condition - has this been missed by mistake?

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
791	A.07.06		FR	

**Comment** "In general, the ultimate strength of ductile structural systems are not sensitive to deformation actions." Is it still true for discrete structural units placed on the hull structures of floating offshore structures?

**Proposed** To be checked

**Reply**

ID	Clause	Location	Country	Status
336	A.07.08	Table A.4	UK	

**Comment** Table is referenced as A.4 in text but A.3 in table title. It should probably be A.4 as previously noted in Clause A.7.3.

**Proposed**

**Reply**

# ISO DIS 19901 - 3 Toppersides

07 December 2007

Page 114 of 138

Sorted on clause

ID	Clause	Location	Country	Status
337	A.07.08.01		UK	

**Comment** Earthquake actions: the following 2 paragraphs could be added in relation to SLE and DLE requirements:  
The strength level earthquake (SLE) requirements are intended to provide a topsides that is adequately sized for strength and stiffness. This is to ensure that no significant structural damage is sustained during a strength level earthquake, i.e. an event that has a reasonable probability of not being exceeded during the life of the platform (annual probability not exceeding 10<sup>-3</sup>). The traditional AISC WSD approach for SLE requirements permits an increase of 70 % on the basic allowable stresses. These provisions permit minor yielding but no significant damage to occur. The resulting allowable stresses are nearly the same as those proposed for the earthquake response of steel in buildings. Some yielding of the members can occur in bending since the 1,7 stress factor is within the range of the AISC factors of safety for members subjected to axial and bending loads (1,52 to 1,92). Also when multiplied by 1,7, the AISC allowable shear stress (0,4F<sub>y</sub>) becomes 0,68 F<sub>y</sub> which is 18% greater than the von Mises yield criterion (1/root 3=0,577). However the overstress in shear can be supported by strain hardening.  
When addressing the above a, reasonable comparisons should also be made of the level of horizontal and vertical impact forces encountered during installation of a topsides (usually 5% of lift weight), as well as the level of accelerations encountered during offshore transportation. Further consideration should be given to the appropriate selection of section properties of primary members with regard to their ability in resisting premature buckling and tearing resistance at end connections.  
The ductility level requirements (DLE) are intended to ensure that the topsides has sufficient reserve capacity to prevent its collapse during rare, intense earthquake motions with an annual probability of exceedance of 10<sup>-4</sup>. These rare earthquake motions can involve inelastic action and structural damage as long as there is no progressive collapse."

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
793	A.07.08.01	last para	FR	

**Comment** ISO 13626 is not listed in Section 2, nor in the Bibliography.

**Proposed** Correct Section 2 and/or Bibliography

**Reply**

ID	Clause	Location	Country	Status
792	A.07.08.01	penultimate para	FR	

**Comment** HOLD noted

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
338	A.07.08.02	Table	UK	

**Comment** Cells in table should not be left empty. This table needs to be tidied as its intent is unclear.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
794	A.07.09.02. 07		FR	

**Comment** The potential for slamming is not mentioned.

**Proposed** Mention slamming

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 115 of 138

Sorted on clause

ID	Clause	Location	Country	Status
795	A.07.10		FR	

**Comment** There might be some benefit in discussion of particular reasons for designing against accidents, but which are not safety critical in terms of overall integrity. Such things could be particular aspects of asset protection, such as methanol services for sub-sea flow assurance, access to deck areas for fire crew after a non-major event, protection of blow-down systems, pipe supports for firewater mains, etc. There might also be some benefit from discussion on what criteria are applicable to the design of pipe-support systems equipment-support systems in general.

**Proposed** Add text on these subjects

**Reply**

ID	Clause	Location	Country	Status
524	A.07.10 .04		NL	

**Comment** A.7.010.4 - Explosion would benefit from some rearrangement. We propose the following:  
A.7.010.4.01 - no change  
A.7.010.4.2 - no change, but merge A.7.010.4.2.013 with A.7.010.4.2.3  
new  
A.7.010.4.3 - Methods of analysis  
A.7.010.4.3.01 General [ex A.7.010.4.2.5]  
A.7.010.4.3.2 Static analysis [ex A.7.010.4.2.06]  
A.7.010.4.3.3 Dynamic analysis [ex A.7.010.4.2.7]  
A.7.010.4.3.4 Non-linear FEA [ex A.7.010.4.2.014]  
new  
A.7.010.4.4 - Structural design  
A.7.010.4.4.01 General [ex A.7.010.4.2.9]  
A.7.010.4.4.2 Ductile deflection ... etc [ex A.7.010.4.2.010]  
A.7.010.4.4.3 Support reactions, ... etc [ex A.7.010.4.2.011]  
A.7.010.4.4.4 Material properties [ex A.7.010.4.2.012]  
A.7.010.4.4.5 Explosion design of FPSO hulls [ex A.7.010.4.5]  
new  
A.7.010.4.5 Explosion mitigation [ex A.7.010.4.3]  
A.7.010.4.06 SCE [ex A.7.010.4.4]

**Proposed** Rearrange and renumber.

**Reply**

ID	Clause	Location	Country	Status
680	A.07.10.01		dk	

**Comment** These should not be considered as an alternative to open boundaries unless calculation shows that blow-out panels do not increase the overall risk. This is impossible as confinement goes up. The design accidental events are low probability events, requiring that the installation will normally be classified as risk level 1 or 2 depending upon exposure level (Table 6). It is however to be noted that platforms for which the value of the action is very high in these low probability events will be subject to significant action values with an intermediate level of probability. This will place the L1 consequence installations in Risk level 3 for these events and L2 consequence installations in Risk level 2. Is not corresponding to section 7.010 and is not clear

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
339	A.07.10.01	page 64 para 4	UK	

**Comment** (starts "Accidental...."). Where are the (5) categories listed in this standard. Also 10-4 to be 10-4

**Proposed**

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 116 of 138

Sorted on clause

ID	Clause	Location	Country	Status
340	A.07.10.01	page 64 Para 5	UK	

**Comment** starts "When it...: line 5: after risk add, "e.g. by increasing probable cloud size. In cold climates their use can however be necessary"

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
341	A.07.10.01	Para 1 line 1	UK	

**Comment** Grammar: delete "cause"

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
342	A.07.10.01	para 6	UK	

**Comment** start with "Accidents.... " what is clause 16?:

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
681	A.07.10.04. 01.01		dk	

**Comment** Explosion loading can be reduced by active mitigation systems such as water spray and inert gas. Not conclusively proven.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
343	A.07.10.04. 01.01	Para 2 line 2	UK	

**Comment** should this reference be API RP22FB and should this be added to list. Alternatively delete reference to default pressures.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
344	A.07.10.04. 01.02	Last para	UK	

**Comment** ref 19 is 20 and 20 is No 21

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
796	A.07.10.04. 01.04	1st para	FR	

**Comment** There should be a reference to a source of drag coefficients which have the appropriate account taken for Reynolds number.

**Proposed** Add some reference

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 117 of 138

Sorted on clause

ID	Clause	Location	Country	Status
797	A.07.10.04. 01.04	3rd para	FR	

**Comment** Some owners might think it appropriate to include a level of environmental action when considering explosion, particularly on floating installations.

**Proposed** Include the possibility of a level of environmental action when considering explosion, particularly on floating installations.

**Reply**

ID	Clause	Location	Country	Status
345	A.07.10.04. 01.04	P68	UK	

**Comment** Ref 21 should be ref 22 which should be "Offshore Technology Report OTO 1999-048 Explosion pressures evaluation in Early Project Phase" Health and Safety Executive.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
346	A.07.10.04. 01.04	Para 2	UK	

**Comment** I think ref 47 should be 49

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
347	A.07.10.04. 01.04	Para 2 z	UK	

**Comment** Add at end of paragraph add "Ref Nos 25 & XX give further guidance".

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
348	A.07.10.04. 01.04	Ref XX	UK	

**Comment** Ref XX is "FABIG Technical Note 8 "protection of piping systems Subject to Fires and Explosions, The steel construction Institute, Silwood Park Ascot, Berks England.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
349	A.07.10.04. 01.04	Refs	UK	

**Comment** 5) Ref 49 to be 50

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
358	A.07.10.04. 02.04	Last para	UK	

**Comment** Refs 22,23,24 to be 23, 24, 25

**Proposed**

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 118 of 138

Sorted on clause

ID	Clause	Location	Country	Status
359	A.07.10.04. 02.05		UK	

**Comment** Delete all of section after second para which ends in"... problem being studied". This is repeated in A7.010.4.2.8.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
798	A.07.10.04. 02.05	3rd para	FR	

**Comment** It is clear what a ductility-level blast is; what is the basis for determining actions in a strength-level blast?

**Proposed** Clarify strength-level blast

**Reply**

ID	Clause	Location	Country	Status
799	A.07.10.04. 02.05	5th par, sub clause 3)	FR	

**Comment** Damage is either prejudicial or not.

**Proposed** ... that significantly prejudices ... -> ... that prejudices ...

**Reply**

ID	Clause	Location	Country	Status
800	A.07.10.04. 02.06		FR	

**Comment** Section 7.9.2 does not give an assessment process that is relevant to this clause.

**Proposed** Text to be checked

**Reply**

ID	Clause	Location	Country	Status
360	A.07.10.04. 02.07	P71	UK	

**Comment** at end refs22, 23 to be 23, 24 and 24, 25 to be25, 26

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
361	A.07.10.04. 02.07	Para 1	UK	

**Comment** 7.9.2 to be 7.010.2

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
362	A.07.10.04. 02.07	Para 2	UK	

**Comment** 6th word "in" not "In".

**Proposed**

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 119 of 138

Sorted on clause

ID	Clause	Location	Country	Status
363	A.07.10.04. 02.07	Para 3	UK	

**Comment** Reference 951 should probably read Reference [51]

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
364	A.07.10.04. 02.07	Para 3	UK	

**Comment** ref 19 to be 20 and I think ref 951 is a lost reference "Introduction to structural Dynamics" by J Briggs. McGraw Hill.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
365	A.07.10.04. 02.07	Para 3 z	UK	

**Comment** add at end of "for charts for rebound response see ref 23"

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
801	A.07.10.04. 02.08	4th para	FR	

**Comment** References are missing. On this subject, DNV RP-C204 is probably more recent than NORSOK N004.

**Proposed** Add reference

**Reply**

ID	Clause	Location	Country	Status
366	A.07.10.04. 02.08	Para 2	UK	

**Comment** should "e.g. EC3, AISC etc until end" be deleted or should the standards be defined in the ref list

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
367	A.07.10.04. 02.09	para 1	UK	

**Comment** Beam or girder: ref 19 is 20 (and add 23) and 54 is I think Norsok standard N004 "Design of steel structures"

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
368	A.07.10.04. 02.09	Para 4 & 5	UK	

**Comment** What are refs 53 and 55

**Proposed**

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 120 of 138

Sorted on clause

ID	Clause	Location	Country	Status
369	A.07.10.04. 02.09	Para z	UK	

**Comment** 3) ref 22 is 23 and 18 is 19 I think

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
350	A.07.10.04. 02.10	Para 1	UK	

**Comment** Ref 2 is 23, 24. Ref 56 is "Rotation Capacity of Steel Members subject to Local buckling, B Kato Proc 9th world conference on earthquake engineering Japan 1989 Vol 4", ref 22 is ref 23.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
351	A.07.10.04. 02.10	para 2	UK	

**Comment** Ref 19 is 20, 54 is Norsok N004, and again at end of para

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
352	A.07.10.04. 02.12	Para 1	UK	

**Comment** : full title of TN6 reference is "FABIG Technical Note 6 "Design Guide for steel at elevated temperatures and high strain rates 2001" The steel construction Institute, Silwood Park Ascot, Berks England

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
802	A.07.10.04. 02.13	eqn (A.6)	FR	

**Comment** l and t need to be defined.

**Proposed** l and t to be defined.

**Reply**

ID	Clause	Location	Country	Status
353	A.07.10.04. 02.13	Para 1	UK	

**Comment** top of page 74, add caveat "In general", before "weldments"

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
354	A.07.10.04. 02.13	Strain limits	UK	

**Comment** What is the definition of "strain " in strain limit?, Plastic strain, principal tensile strain, equivalent plastic strain? Principle tensile strain is commonly used for this limit in our projects. But this needs to be clearly stated in the standard.

**Proposed**

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 121 of 138

Sorted on clause

ID	Clause	Location	Country	Status
355	A.07.10.04. 02.13	z	UK	

**Comment** Ref at end is Norsok N004, I think

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
357	A.07.10.04. 02.14		UK	

**Comment** at end on page 75 ref 57? I do not know what this is, 54 is N004

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
803	A.07.10.04. 02.14		FR	

**Comment** There should perhaps be some words of warning concerning the use of beam elements which may not represent torsional buckling response.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
356	A.07.10.04. 02.14	Para 2	UK	

**Comment** ", can not" change to " cannot"

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
370	A.07.10.04. 03	Para 2	UK	

**Comment** at end, change 0.02 to 0.05 bar (0.72 psi)

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
371	A.07.10.04. 03	Para 5	UK	

**Comment** ref 18 is 19

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
372	A.07.10.04. 03	Para 6	UK	

**Comment** ref 26 is 27

**Proposed**

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 122 of 138

Sorted on clause

ID	Clause	Location	Country	Status
373	A.07.10.04.03	Para 7	UK	

**Comment** to read "Further guidance on design explosion mitigation systems including explosion relief panels can be found in reference 28"

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
804	A.07.10.04.04		FR	

**Comment** Mostly, the sections in Annex A are aligned with corresponding sections in the normative section. This one seems not fully consistent in subject matter.

**Proposed** Section numbering to be checked

**Reply**

ID	Clause	Location	Country	Status
374	A.07.10.04.04	z	UK	

**Comment** At end say "More guidance on protecting and designing SCEs can be found in new Ref. ZZ "FABIG Technical Note 8 "Protection of piping systems subject to fires and explosions" The steel construction Institute, Silwood Park Ascot, Berks England. The document includes worked examples".

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
805	A.07.10.04.05		FR	

**Comment** Worthy as it is, should a section on FPSO hulls be here?

**Proposed** To be checked

**Reply**

ID	Clause	Location	Country	Status
806	A.07.10.05.01	4th para	FR	

**Comment** Fire duration is also an important parameter.

**Proposed** Fire as a Load Condition. The treatment of fire as a load condition requires that the following be defined:

- fire scenario,
- fire duration,
- heat flow ...

**Reply**

ID	Clause	Location	Country	Status
375	A.07.10.05.02	z	UK	

**Comment** Include at end reference to TN6 (full title is above)

**Proposed**

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 123 of 138

Sorted on clause

ID	Clause	Location	Country	Status
807	A.07.10.05.03	1st sentence, 2nd para	FR	

**Comment** Figure A.2 does not present an application of these three methods.

**Proposed** Check reference to Table A.2

**Reply**

ID	Clause	Location	Country	Status
808	A.07.10.05.03	3rd and 4th para	FR	

**Comment** These paragraphs before Table A.5 seem not clearly written. The text implies that pfp is applied to all members, and that only pfp thickness is to be determined. Aspects of structural redundancy are not addresses. Also, one needs to know the thermal loading that is applied in the given scenario.

**Proposed** Test to be rewritten

**Reply**

ID	Clause	Location	Country	Status
809	A.07.10.05.03	page 81, 4th para	FR	

**Comment** Actually, an example is not presented here in full. The description should be clarified.

**Proposed** Description example to be clarified.

**Reply**

ID	Clause	Location	Country	Status
811	A.07.10.05.04	last para	FR	

**Comment** NLFEM is not defined.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
810	A.07.10.05.04	page 82, 1st para	FR	

**Comment** There is some repetition here from earlier sections, and the last sentence is in particular need to be clarified.

**Proposed** Text to be simplified and clarified

**Reply**

ID	Clause	Location	Country	Status
812	A.07.10.05.05	last section	FR	

**Comment** Punctuation errors and wording incomplete.

**Proposed** Text to be completed

**Reply**

ID	Clause	Location	Country	Status
813	A.07.10.05.06.02	2nd para	FR	

**Comment** Text is incomplete

**Proposed** Text to be completed

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 124 of 138

Sorted on clause

ID	Clause	Location	Country	Status
814	A.07.10.05. 06.06	1st para	FR	

**Comment** Does this contributor's opinion that functional loads should be increased in a fire analysis meet with general acceptance for offshore structures? This point of view is not highlighted in the normative sections concerned with action factors.

**Proposed** To be checked

**Reply**

ID	Clause	Location	Country	Status
815	A.07.10.05. 06.06	last para	FR	

**Comment** Is it the goal that after a fire the structure will still meet the serviceability criteria?

**Proposed** To be checked

**Reply**

ID	Clause	Location	Country	Status
816	A.07.10.05. 06.07		FR	

**Comment** There might be some words of guidance on pfp detailing, such as coat-back, on beams supporting grating, and particular uses on supports for critical piping or equipment.

**Proposed** Add guidance on pfp detailing, such as coat-back, on beams supporting grating, and particular uses on supports for critical piping or equipment.

**Reply**

ID	Clause	Location	Country	Status
817	A.07.10.05. 06.07	Table A.7	FR	

**Comment** Some definitions should be supplied.

**Proposed** Definitions to be supplied

**Reply**

ID	Clause	Location	Country	Status
818	A.07.10.06. 05	last para	FR	

**Comment** This is a bit inconsistent with some of the wording on explosion.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
819	A.07.10.06. 07	1st para	FR	

**Comment** Text is incomplete.

**Proposed** Text to be completed

**Reply**

ID	Clause	Location	Country	Status
820	A.07.10.06. 07	2nd para	FR	

**Comment** It does not seem long enough for vessel supports to last only as long as blowdown is in operation.

**Proposed** Check the required time

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 125 of 138

Sorted on clause

ID	Clause	Location	Country	Status
821	A.07.10.08	2nd para	FR	

**Comment** The first required action is to establish the scenarios: ie the dimensions of the objects dropped, and their impact energies.

**Proposed** In general, design will involve the following stages:  
- Establish the scenarios: ie the dimensions of the objects dropped, and their impact energies;  
- Detect the most likely progressive collapse mechanisms that might be caused by a swinging or falling object (e.g. global structural collapse, local impact on high pressure pipework etc.);  
- ...

**Reply**

ID	Clause	Location	Country	Status
376	A.07.10.08	title	UK	

**Comment** After swinging add masses

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
822	A.07.10.09.01		FR	

**Comment** This section deserves editorial attention.

**Proposed** Check text

**Reply**

ID	Clause	Location	Country	Status
823	A.08.04	eqn (A.8)	FR	

**Comment** If one puts  $l = 4m$  into this expression, the required  $D$  is  $> 48m$  !!

**Proposed** Equation to be corrected

**Reply**

ID	Clause	Location	Country	Status
377	A.08.04	Para 3	UK	

**Comment** It is suggested that, provided individual element stiffness meets certain criteria then a rigorous analysis is not required. It isn't clear what the basis for this is for these parameters - presumably individual member VIV. However, this ignores the global dynamics. Since local and global dynamics vary due to a wide range of parameters, it is preferred that this section be deleted.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
378	A.08.05.01		UK	

**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
379	A.08.05.01	"	UK	

**Comment** Delete affects, add effects

**Proposed**

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 126 of 138

Sorted on clause

ID	Clause	Location	Country	Status
380	A.08.05.01	" para 8 and Table A.8	UK	

**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	

**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**

Sorted on clause

ID	Clause	Location	Country	Status
381	A.08.06		UK	
<b>Comment</b>	<p>Add: When designing crane support pedestals there are two common types of connection interface, where:</p> <ol style="list-style-type: none"> <li>1) the crane incorporates a slewing ring, or</li> <li>2) the crane revolves around a king post, the base of which is bolted to the pedestal flange.</li> </ol> <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"> <li>(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> </li> <li>(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> </li> <li>(c) Survival condition           <p>Two cases should be considered. Crane failure collapse</p> </li> </ol>			

## Sorted on clause

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 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	

**Comment** Correct references

### Proposed

#### Reply

ID	Clause	Location	Country	Status
683	A.08.06		dk	

**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
655b	A.08.06.04		dk	

**Comment** The design-fatigue-factor (DFF) (i.e. the ratio between design fatigue life and planned service life) depends both on the criticality of the structural components (redundancy, failure-consequences) as well as the access for in-service inspection. The proposed DFF of 2.0 may prove non-conservative for structural solutions without in-service access

**Proposed** Definition of design fatigue-life shall be done in accordance with accepted design codes (for example table 3 Norsok N-001, rev. 4, 2004, ref. [http://www.standard.no/pronorm-3/data/f/0/03/92/8\\_10704\\_0/N-001.pdf](http://www.standard.no/pronorm-3/data/f/0/03/92/8_10704_0/N-001.pdf))

#### Reply

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 129 of 138

Sorted on clause

ID	Clause	Location	Country	Status
383	A.08.07		UK	

**Comment** Correct references

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
384	A.08.07		UK	

**Comment** Ref 36 should be 38?

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
825	A.08.12		FR	

**Comment** The two types of pfp application are probably not the only options.

**Proposed** Check other pfp application options

**Reply**

ID	Clause	Location	Country	Status
826	A.08.14		FR	

**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
528c	A.09.01	Titles and text	NL	

**Comment** Does "cylindrical" intend to refer specifically to "tubular" shapes, or are also RHS sections included?

**Proposed** Change to "tubular" if tubular is meant.  
Stay with "cylindrical" if both CHS and RHS are referred to.

**Reply**

ID	Clause	Location	Country	Status
528d	A.09.02	Titles and text	NL	

**Comment** Does "cylindrical" intend to refer specifically to "tubular" shapes, or are also RHS sections included?

**Proposed** Change to "tubular" if tubular is meant.  
Stay with "cylindrical" if both CHS and RHS are referred to.

**Reply**

ID	Clause	Location	Country	Status
541	A.09.02.02		NL	

**Comment** Plural forms.

**Proposed** Change to "... for offshore topsides structures include References ..."

**Reply**

ID	Clause	Location	Country	Status
542	A.09.02.03		NL	

**Comment** Remove dash at the beginning, and comma after [38].

**Proposed**

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 130 of 138

Sorted on clause

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ID	Clause	Location	Country	Status
543	A.09.02.05		NL	

**Comment** Consistency of terminology across ISO 19900 series of standards re the term "capacity".

**Proposed** Change "shear capacity" to "shear strength".

**Reply**

---

ID	Clause	Location	Country	Status
555a	A.10.02	para 1	NL	

**Comment** 1) line 1: consistency of terminology.

**Proposed** 1) Change "topside structures" to "topsides structures".

**Reply**

---

ID	Clause	Location	Country	Status
555b	A.10.02	para 1	NL	

**Comment** 2) line 2: grammar.

**Proposed** 2) Put a comma after "Conversely, ..."

**Reply**

---

ID	Clause	Location	Country	Status
555c	A.10.02	para 1	NL	

**Comment** 3) line 3: change of text.

**Proposed** 3) Change "subject to" to "subjected to".

**Reply**

---

ID	Clause	Location	Country	Status
556a	A.10.05		NL	

**Comment** 1) para 3, line 2: consistency of spelling.

**Proposed** 1) Change "long term" to "long-term".

**Reply**

---

ID	Clause	Location	Country	Status
556b	A.10.05		NL	

**Comment** 2) para 5, line 2: spelling, use a hyphen.

**Proposed** 2) Change "non conductive" to "non-conductive".

**Reply**

---

ID	Clause	Location	Country	Status
827	A.10.05	1st paragraph	FR	

**Comment** Composites are insulating, except carbon composites

**Proposed** Change "Composites are strong, insulating, and durable..." by "Composites are strong, insulating (except carbon composites), durable..."

**Reply**

---

ID	Clause	Location	Country	Status
558a	A.11		NL	

**Comment** 1) line 1: consistency of terminology.

**Proposed** 1) Change "topside structures" to "topsides structures".

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 131 of 138

Sorted on clause

ID	Clause	Location	Country	Status
558b	A.11		NL	

**Comment** 2) line 2: consistency of terminology.

**Proposed** 2) Change "substructures" to "support structures".

**Reply**

ID	Clause	Location	Country	Status
558c	A.11		NL	

**Comment** 3) item iii): "shear capacity".

**Proposed** 3) Change to "shear strength".

**Reply**

ID	Clause	Location	Country	Status
558d	A.11		NL	

**Comment** 4) item vi: last sentence.

**Proposed** 4) Remove brackets around the sentence and close off with a full stop.

**Reply**

ID	Clause	Location	Country	Status
562	A.12	line 3	NL	

**Comment** The word "facility" is an ill-defined term; avoid using it.

**Proposed** Change to "... the facility topsides to be fabricated."

**Reply**

ID	Clause	Location	Country	Status
564a	A.14	1) item 5): "the platform plant"	NL	

**Comment** Replacement of the words "installation" (see also next item) and "element".

**Proposed** 1) Change to "the topsides plant".

**Reply**

ID	Clause	Location	Country	Status
564b	A.14	2) item 6) ii): "structural elements"	NL	

**Comment** Replacement of the words "installation" (see also next item) and "element".

**Proposed** 2) Change to "structural components".

**Reply**

ID	Clause	Location	Country	Status
564c	A.14	3) item 6) iv): "presence of such components" is unclear	NL	

**Comment** Replacement of the words "installation" (see also next item) and "element".

**Proposed** 3) Fine an alternative to "components", perhaps "parts", "cases" or "operations".

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 132 of 138

Sorted on clause

ID	Clause	Location	Country	Status
571a	A.16.01	1) para 3, line 1: "for a particular installation".	NL	

**Comment** As for 16.01.

**Proposed** 1) Change to "for a particular topsides".

**Reply**

ID	Clause	Location	Country	Status
571b	A.16.01	2) para 5, line 1: "design and construction of an installation".	NL	

**Comment** As for 16.01.

**Proposed** 2) Change to "design and construction of a topsides".

**Reply**

ID	Clause	Location	Country	Status
571c	A.16.01	3) para 5, line 3: "for the installation".	NL	

**Comment** As for 16.01.

**Proposed** 3) Change to "for the topsides structure".

**Reply**

ID	Clause	Location	Country	Status
828	A.16.02		FR	

**Comment** Floating installations are forgotten in respect to fatigue and imposed deflection.

**Proposed** Add text on floating installations

**Reply**

ID	Clause	Location	Country	Status
572a	A.16.02	1) line 1: "on fixed platforms".	NL	

**Comment** As for 16.01 and 16.2 and A.016.01.

**Proposed** 1) Change to "on fixed structures".

**Reply**

ID	Clause	Location	Country	Status
572b	A.16.02	2) line 2: "on floating installations".	NL	

**Comment** As for 16.01 and 16.2 and A.016.01.

**Proposed** 2) Change to "on floating structures".

**Reply**

ID	Clause	Location	Country	Status
572c	A.16.02	3) last line: "particular installation".	NL	

**Comment** As for 16.01 and 16.2 and A.016.01.

**Proposed** 3) Change to "particular structure".

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 133 of 138

Sorted on clause

ID	Clause	Location	Country	Status
573	A.16.03	title	NL	

**Comment** Make it the same as 16.3.

**Proposed** Change to "... topsides facilities structures".

**Reply**

ID	Clause	Location	Country	Status
684	A.16.03.02		dk	

**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**

ID	Clause	Location	Country	Status
574a	A.16.03.05	1) line 1: "for the installation".	NL	

**Comment** As before.

**Proposed** 1) Change to "for the topsides structure".

**Reply**

ID	Clause	Location	Country	Status
574b	A.16.03.05	2) line 3: "integrity of the installation".	NL	

**Comment** As before.

**Proposed** 2) Change to "integrity of the topsides".

**Reply**

ID	Clause	Location	Country	Status
871	A.16.04		US	

**Comment** Why introduce DVI in the annex?

**Proposed** Eliminate reference to DVI.

**Reply**

ID	Clause	Location	Country	Status
872	A.16.04		US	

**Comment** GVI and CVI is not overall inspection

**Proposed** Change overall inspection to visual inspection

**Reply**

ID	Clause	Location	Country	Status
873	A.16.04		US	

**Comment** The sentence before the list of NDE techniques could be improved...

**Proposed** Suggest: Non-destructive examination is used to investigate defects found during the inspection program. The most commonly used techniques include:

**Reply**

ID	Clause	Location	Country	Status
874	A.16.04		US	

**Comment** Standardize the inspection nomenclature

**Proposed** MT (magnetic particle), UT (ultrasonic) and ET (eddy current)

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 134 of 138

Sorted on clause

ID	Clause	Location	Country	Status
575a	A.16.05.01	1) line 2: "requires to be"	NL	

**Comment** As before.

**Proposed** 1) Change to "should be".

**Reply**

ID	Clause	Location	Country	Status
575b	A.16.05.01	2) line 5: particular installation".	NL	

**Comment** As before.

**Proposed** 2) Change to "particular topsides".

**Reply**

ID	Clause	Location	Country	Status
575c	A.16.05.01	3) line 5: similar installations".	NL	

**Comment** As before.

**Proposed** 3) Change to "similar topsides".

**Reply**

ID	Clause	Location	Country	Status
875	A.16.05.02		US	

**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**

ID	Clause	Location	Country	Status
576	A.16.05.04	line 3	NL	

**Comment** As before: "for installation reuse"

**Proposed** Change to "for topsides reuse".

**Reply**

ID	Clause	Location	Country	Status
579a	A.17	1) Consistency of spelling.	NL	

**Comment** As before.

**Proposed** 1) Change "re-use" to "reuse" (one word) 2x).

**Reply**

ID	Clause	Location	Country	Status
579b	A.17	2) para 4, line 4/5: "adequate capacity".	NL	

**Comment** As before.

**Proposed** 2) Change to "adequate strength".

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 135 of 138

Sorted on clause

ID	Clause	Location	Country	Status
579c	A.17	3) para 4, line 5: "re-used platform".	NL	

**Comment** As before.

**Proposed** 3) Change to "reused topsides".

**Reply**

ID	Clause	Location	Country	Status
847	A7.08		US	

**Comment** Review Table A.3

**Proposed** Fe is not defined in this document or in 19901-2:2004(E)  
Section 7.7.2.6 and Section 7.7.2.9 are not in this document or in 19901-2:2004 )E)

**Reply**

ID	Clause	Location	Country	Status
682	A7.10.04.0 2.11		Dk	

**Comment** FABIG publication should not be ref to but info included in ISO as appendix

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
385	Z Bibliograph y		UK	

**Comment** Given importance of SCEs suggest adding reference to new document FABIG Technical Note 8  
"Protection of Piping Systems subject to fires and explosions" 2005 as it covers SCE's in detail.

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
581	Z Bibliograph y		NL	

**Comment**

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
685	Z Bibliograph y		dk	

**Comment** NORSOK are frequently listed throughout the document but not included in the list of references.

**Proposed** Include references to relevant NORSOK-codes.

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 136 of 138

Sorted on clause

ID	Clause	Location	Country	Status
686	Z Bibliograph y		dk	

**Comment** Comment. It is proposed to split the references into two parts:  
Regulations & Guidelines  
Literature and Papers  
The reason for this is that references regulations and guidelines are revised and restructured on a regular basis.

**Proposed** Include two sections in chapter Bibliography:  
Regulations & Guidelines  
Literature and Papers

Reply

ID	Clause	Location	Country	Status
687	Z Bibliograph y		dk	

**Comment** Comment: Update references regulations:  
Ref. (11): DNV Class Note 30.5. Superseded by DNV-RP-C205 (issued April 2007).

**Proposed** (11): DNV-RP-C205 Environmental Conditions and Environmental Loads, 2007

Reply

ID	Clause	Location	Country	Status
829	Z Bibliograph y		FR	

**Comment** There are a significant number of superseded documents, and a lot of referenced documents are not listed.

Proposed

Reply

ID	Clause	Location	Country	Status
584	Z Bibliograph y	[1]	NL	

**Comment** Reference has been superseded and replaced by (an) other one(s)

Proposed

Reply

ID	Clause	Location	Country	Status
586	Z Bibliograph y	[13]	NL	

**Comment** Duplicate entry; already referenced in [9].

**Proposed** Remove and adjust numbering.

Reply

ID	Clause	Location	Country	Status
587	Z Bibliograph y	[17], [32], [48] and [50]	NL	

**Comment** These numbers are not referenced in the text.

**Proposed** Add appropriate cross-references in the text, or delete the numbers from the Bibliography.

Reply

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 137 of 138

Sorted on clause

ID	Clause	Location	Country	Status
386	Z Bibliograph y	[47] & [48]	UK	

**Comment** Are these publicly available?

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
926	Z Bibliograph y	[5]	CA	

**Comment** Revise and complete CISC/CSA-S16 reference.

**Proposed** Replace CISC/CSA-S16. TBA with 'CAN/CSA-S16-01 (R2007), Limit States Design of Steel Structures

**Reply**

ID	Clause	Location	Country	Status
588	Z Bibliograph y	[52]	NL	

**Comment** Number does not occur at all.

**Proposed** Adjust numbering as required.

**Reply**

ID	Clause	Location	Country	Status
589	Z Bibliograph y	[53] to [57]	NL	

**Comment** Cross-references to these numbers are made in the text, but the associated References are not listed in the Bibliography.

**Proposed** Provide References for [53] to [57].

**Reply**

ID	Clause	Location	Country	Status
387	Z Bibliograph y	[7]	UK	

**Comment** There is a new Edition of RP2A-WSD with new addenda

**Proposed**

**Reply**

ID	Clause	Location	Country	Status
585	Z Bibliograph y	[7]	NL	

**Comment** API RP2A - WSD 20th edition has been superseded by the 21st edition (2000) with supplements S1 (2002) and S2 (2005).

**Proposed**

**Reply**

# ISO DIS 19901 - 3 Topsides

07 December 2007

Page 138 of 138

Sorted on clause

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ID	Clause	Location	Country	Status
388	Z Bibliograph y	[8]	UK	

**Comment** Is this still valid?

**Proposed**

**Reply**

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ID	Clause	Location	Country	Status
389	Z Bibliograph y	29	UK	

**Comment** Bring up to date - note latest editions

**Proposed** Delete [29] UKDepartment of Energy (HSE): Offshore Installations: Guidance on Design and Construction

**Reply**

---

ID	Clause	Location	Country	Status
390	Z Bibliograph y	34	UK	

**Comment** Delete [34] BS 2573: 1983 - rules for the design of cranes etc

**Proposed** Add EN13852 -1 2004 General Purpose Offshore Cranes

**Reply**

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ID	Clause	Location	Country	Status
582	Z Bibliograph y	throughout	NL	

**Comment** Certain entries are "TBA".

**Proposed** Provide details for items marked "TBA".

**Reply**

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ID	Clause	Location	Country	Status
583	Z Bibliograph y	throughout	NL	

**Comment** Format.

**Proposed** Put all items in the ISO format for references.

**Reply**

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ID	Clause	Location	Country	Status
391	Z Bibliograph y	Title	UK	

**Comment** After Bibliography, add and references

**Proposed**

**Reply**