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**Datasheet for the decision
of 8 December 2015**

Case Number: T 1030/12 - 3.2.05

Application Number: 04803472.2

Publication Number: 1692424

IPC: F16L15/06

Language of the proceedings: EN

Title of invention:

Improvement of Resistance to Fatigue of a Threaded Tubular
Connection

Patent Proprietor:

Vallourec Oil and Gas France
Nippon Steel & Sumitomo Metal Corporation

Opponent:

Tenaris Connections Limited

Relevant legal provisions:

EPC Art. 123(2)
RPBA Art. 13(1)

Keyword:

Amendments - added subject-matter -
intermediate generalisation (yes)
Late-filed auxiliary request -
justification for late filing (no)



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Chambres de recours**

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Case Number: T 1030/12 - 3.2.05

D E C I S I O N
of Technical Board of Appeal 3.2.05
of 8 December 2015

Appellant: Vallourec Oil and Gas France
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Decision under appeal: **Decision of the Opposition Division of the
European Patent Office posted on 9 March 2012
revoking European patent No. 1692424 pursuant to
Articles 101(2) and 101(3)(b) EPC.**

Composition of the Board:

Chairman M. Poock
Members: S. Bridge
D. Rogers

Summary of Facts and Submissions

I. The appeal was lodged by the patent proprietor against the decision of the opposition division revoking the European patent No. 1 692 424.

II. An opposition was filed against the patent as a whole based on Article 100(a) EPC (lack of novelty and lack of inventive step), Article 100(b) EPC and Article 100(c) EPC.

III. Oral proceedings were held before the board of appeal on 8 December 2015.

IV. The appellant (patent proprietor) requested that the decision under appeal be set aside and that, as a Main Request, the patent be maintained as granted, or alternatively, that the patent be maintained upon the basis of the Auxiliary Request, signed and dated December 8th 2015.

V. The respondent (opponent) requested that the appeal be dismissed.

VI. Claim 1 of the patent as granted (Main Request) reads as follows:

"Use of threadings each having a load flank (10, 5) extending substantially perpendicularly to the axis of the threadings, and a stabbing flank (6, 11) comprising a straight portion, and of radial load transfer zones (8,15;22,26;31,36;8c,45;8;55;8e,65) being at a radial distance from the envelopes (E) of the thread roots of the male and female threadings and forming a angle [*sic*] of less than 40° with the axis of the threadings, so as to improve the fatigue resistance of a threaded

tubular connection subjected to stress variations in a pipe string connecting an offshore platform with the sea bed, under the action of waves, wind, tides and sea currents, which induce variable tensile or bending loads on the string, said connection comprising a male tubular element (1) including a tapered male threading (3), and a female tubular element (2) including a tapered female threading (4) which cooperates with the male threading (3) by makeup to produce a rigid mutual connection of said tubular elements with radial [sic] interference between said radial load transfer zones (8,15;22,26;31,36;8c,45;8;55;8e,65) (15) of said threadings,".

VII. Claim 1 according to the Auxiliary Request reads:

"Use of threadings belonging to a pipe string with an external diameter of 177.8 to 339.73 mm (7" to 13"3/8), each threadings [sic] having a load flank (10, 5) extending substantially perpendicularly to the axis of the threadings, and a stabbing flank (6, 11) constituted by a straight portion, the straight portion of the stabbing flank of the male and female threadings having the same inclination, and of radial load transfer zones (31,36) being at a radial distance from the envelopes (E) of the thread roots of the male and female threadings and forming an angle of less than 40° with the axis of the threadings, so as to improve the fatigue resistance of a threaded tubular connection subjected to stress variations in a pipe string connecting an offshore platform with the sea bed, under the action of waves, wind, tides and sea currents, which induce variable tensile or bending loads on the string, said connection comprising a male tubular element (1) including a tapered male threading (3), and a female tubular element (2) including a tapered female

threading (4) which cooperates with the male threading (3) by makeup to produce a rigid mutual connection of said tubular elements with radial interference between said radial load transfer zones (31, 36) of said threadings, said radial load transfer zones being ramps (31, 36) constituting the stabbing flanks of the male and female threadings (3b, 4b) over the major portion of the radial height thereof, characterized in that a groove defining the female thread root extends axially from a first wall constituted by the load flank (5) to a second wall (37) which is connected to the ramp (36) of the female threading, the profile of said groove comprising a central female concave rounded portion (39) framed by first and second female rounded concave portions (40, 38) respectively tangential to said first and second walls (5, 37) and with a smaller radius of curvature than the central rounded portion, the profile of the male threading comprising a first male concave rounded portion (32) defining the thread root and a second male concave rounded portion (33) with a smaller radius of curvature than the first male rounded portion (32) and tangential thereto and to the load flank, wherein opposite to the male load flank (10) perpendicular to the axis of the threaded connection, a rectilinear axial profile of a male thread crest (12) connects via male convex rounded portion (30) to the stabbing flank which forms an angle of 27 deg. with the axis and which moves away from the load flank (5) in the direction of the axis, and wherein at the opposite end to the crest (12), the straight portion of the male stabbing flank (31) is tangential to the first male concave rounded portion (32) with a large radius of curvature, more than 1 mm, which defines the male thread root, the second male

concave rounded portion with a radius of curvature of 0.3 mm, wherein opposite to the female load flank (5), a [sic] axial rectilinear profile of a female thread crest (8) connecting via a large radius of curvature convex rounded portion (35) to the stabbing flank wherein opposite to the large radius of curvature convex rounded portion (35), the straight portion of the female stabbing flank (36) is tangential to a female convex rounded portion (37) with a low radius of curvature which is itself tangential to the second female concave rounded portion (38), also with a low radius of curvature, a common tangent of the female convex rounded portion (37) and the second female concave rounded portion (38) forming a zone of inflexion being inclined in the same direction as the straight portion of the male and female stabbing flanks and forming an angle of 70 deg. with the axis, wherein the radii of curvature of the female first rounded concave portion (40) and central concave rounded portion (39) being more than and less than 1mm respectively, a common tangent to the second rounded portions (38) and the central concave rounded portion (39) being orientated axially and defining the female thread root".

VIII. The following document is referred to in the present decision:

D8: "*Specification for threading, gauging, and thread inspection of casing, tubing, and line pipe threads (U.S. customary units)*"; "*API specification standard 5B*", 14th edition, August 1996, pages 9 and 10.

IX. The arguments of the appellant in the written and oral proceedings can be summarised as follows:

The feature "*a stabbing flank comprising a straight portion*" is disclosed directly and unambiguously to the skilled person in figures 1 to 6 of the application as filed. In the context of the embodiment of figure 3, the feature is mentioned explicitly in the description of the application as published (page 9, lines 4 to 10).

Furthermore, the skilled person is familiar with buttress threads (for example, see specification D8) and knows that the stabbing flanks are straight lines.

The feature "*a stabbing flank comprising a straight portion*" does not constitute an intermediate generalisation and instead constitutes a further limitation of the subject-matter of claim 1.

Alternatively the contested feature does not provide a technical contribution to the subject-matter of the claimed invention, but merely limits the protection conferred by the patent as granted by excluding protection for part of the subject-matter of the claimed invention as covered by the application as filed and is thus not to be considered as subject-matter which extends beyond the content of the application as filed in the sense of Article 123(2) EPC in accordance with G 1/93 (published in OJ 1994, 541, point 2 of the order).

Therefore, the subject-matter of claim 1 as granted (Main Request) meets the requirements of Article 123(2) EPC.

The argument concerning the radial clearance above the straight crests was not presented in the proceedings so far. The Auxiliary request is thus merely a response to a new argument and should therefore be admitted into the proceedings for reasons of fairness towards the appellant.

- X. The arguments of the respondent in the written and oral proceedings can be summarised as follows:

The feature "*a stabbing flank comprising a straight portion*" is only disclosed in the embodiments where it occurs in combination with the rounded portions connecting the stabbing flanks to the adjoining thread profile, the straight top of the thread crests and the radial and axial clearances (figures 1 to 6).

The skilled person understands that the radial clearances above the straight thread crests are essential to the invention, because the fatigue resistance of the connection may be compromised by micro-cracks which appear in contact zones at the thread root (application as published page 1, penultimate paragraph): such contact zones are avoided by means of the clearances.

There is no basis for extracting only the feature "*a stabbing flank comprising a straight portion*" from the embodiments while omitting other essential features. The subject-matter of claim 1 as granted (Main Request) thus constitutes an intermediate generalisation which was not originally disclosed.

The subject-matter of claim 1 is not limited to buttress threads.

Therefore, the subject-matter of claim 1 as granted (Main Request) does not satisfy the requirements of Article 123(2) EPC.

That the feature "*a stabbing flank comprising a straight portion*" has been selectively extracted from the embodiment of figure 3 contrary to Article 123(2) EPC was already set out in the grounds for opposition dated 11 December 2009 (page 5, paragraph 3.1.4). This point was also raised in the response to the grounds of appeal (letter dated 14 December 2012, section 1, pages 2 to 5) and taken up in the provisional opinion of the board annexed to the summons to oral proceedings (points 6 and 10.4). This objection thus cannot come as a surprise to the appellant. The appellant did not provide a persuasive explanation for the late filing of this Auxiliary Request.

The amendments made in claim 1 according to the Auxiliary Request give rise both to new clarity objections due to the unqualified use of relative terms such as "*low radius of curvature*" and to the need for investigating whether the "*pipe strings*" were originally disclosed in combination with the other features.

Thus the Auxiliary Request should not be admitted into the proceedings.

Reasons for the Decision

1. *Main request- Article 100(c) EPC*
- 1.1 The contested amendment concerns the introduction of the feature "*a stabbing flank (6, 11) comprising a straight portion*" into claim 1 as granted.
- 1.2 Claim 1 concerns a "*use of threadings*" wherein the "*threadings*" are essentially characterised in terms of the relative configuration of the thread profiles. The contested feature also characterises at least one of the thread profiles in that the "*stabbing flank (6, 11) compris[es] a straight portion*". In the embodiment of figure 3, the radial interference between the straight segments constituting the stabbing flanks is explicitly disclosed as providing technical advantages (application as published (WO 2005/059422 A1), page 10, lines 6 to 36). The appellant's argument that in the other embodiments of figures 1, 2 and 4 to 6 the configuration of the stabbing flank cannot contribute to solving the fatigue problem set out in the patent in suit cannot overcome this. Thus, the amended feature provides a technical contribution to the subject-matter of the claimed invention. The subject-matter of claim 1, including the contested feature, therefore has to be examined with respect to the requirements of Article 123(2) EPC.
- 1.3 The contested feature is consistently disclosed in the embodiments of figures 1, 2 and 4 to 6 in association with other structural features such as rounded portions connected to the straight crests (application as published, page 6, lines 16 to 18, figure 1; page 8, lines 2 to 8, figure 2; page 8, line 36 to page 9, line

7, figure 3; figures 4 to 6), a radial clearance above the crests (figures 1 to 6) and an axial clearance next to the stabbing flanks (page 7, lines 21 to 25; page 8, lines 24 to 30; figures 1, 2 and 4 to 6).

According to the statement of the problem underlying the present invention (application as published page 1, penultimate paragraph), the fatigue resistance of the connection may be compromised by micro-cracks which would appear in contact zones at the thread root. Thus, the skilled reader considers that the radial clearances above the thread crests form an essential part of the invention, because they avoid the micro-cracks inducing contact zones. In consequence, the board cannot see in the application as filed any basis on which the skilled person would isolate "*a stabbing flank (6, 11) comprising a straight portion*" from other features (especially the radial clearances above the crests) consistently disclosed in combination therewith and no basis was provided by the appellant.

1.4 With respect to the embodiment of figure 3, the application as filed discloses that "*the stabbing flank [is] constituted by a straight line 31 which forms an angle of 27° with the axis*" (page 9, lines 4 to 10 and 19 to 23 - emphasis added by the board). Thus, in addition, there is no direct and unambiguous basis for the generalisation to the feature of claim 1 as granted according to which the "*stabbing flank (6, 11) compris[es] a straight portion*" (and potentially further portions of undefined profile or angle).

1.5 Apart from the embodiment of figure 3, the concept of a "*straight line*" is not disclosed anywhere else in the application as filed.

1.6 Contrary to the appellant's position, the subject-matter of claim 1 is not limited to buttress threads and the description as filed further discloses that "[o]ther threadings, in particular derived from the "buttress" threading type, can be used" (page 6, lines 28 and 29). It is therefore not implicit in the subject-matter of claim 1 that the stabbing flank necessarily comprises a straight portion.

1.7 In consequence, the introduction of the contested feature in generalised form from embodiment 3, respectively isolated from the other embodiments, into the subject-matter of claim 1 results in a claimed combination of features which constitutes an intermediate generalisation which is not directly and unambiguously derivable by the skilled person from the application as filed. Therefore, the subject-matter of claim 1 does not meet the requirements of Article 123(2) EPC and Article 100(c) EPC 1973.

2. *Auxiliary request*

2.1 This request was filed at a late stage, namely during the oral proceedings before the board.

2.2 Claim 1 according to the Auxiliary Request is intended to limit the claimed subject-matter to the embodiment of figure 3 essentially by including - in suitably adapted form - all of the text corresponding to page 9 of the description from the application as published. As a result the amendment is complex, because of the numerous features which have thus been added. In addition, some of the amendments such as the use of relative terms such as "*low radius of curvature*" raise additional issues which require investigation with respect to clarity (Article 84 EPC).

2.3 The notice of opposition raised the objection that the feature "*a stabbing flank comprising a straight portion*" has been selectively extracted from the embodiment of figure 3 contrary to Article 123(2) EPC (grounds for opposition dated 11 December 2009, page 5, paragraph 3.1.4). The contested decision upheld this objection (point 15.1.2). The same objection was raised again in the response to the grounds for appeal (letter dated 14 December 2012, section 1, pages 2 to 5) and taken up in the provisional opinion of the board annexed to the summons to oral proceedings (point 6).

In consequence, the argument of point 1.7 above cannot come as a surprise to the appellant. The appellant failed to avail itself of any of the corresponding several opportunities to prepare for the possibility that this objection would be upheld on appeal.

2.4 It was advanced on behalf of the appellant that the argument concerning the radial clearances above the straight thread crests had not been presented in the proceedings so far. However, this argument only concerns a detail in the reasoning underpinning an objection which was raised from the outset of the opposition proceedings as pointed out above. Therefore, the board cannot accept that the Auxiliary request is a fair and legitimate response to a new argument.

On the contrary, the board considers that it would have been reasonable for the patent proprietor to have introduced appropriate fall back positions much earlier instead of waiting until the oral proceedings before the board.

Furthermore, the amendments made in claim 1 are considerably more complex than the introduction of a feature concerning the radial clearances above the straight thread crests. Such a complex amendment at this late stage of the proceedings is unfair to the respondent who will not have sufficient time to properly analyse the numerous added features or prepare its response.

2.5 The board thus exercises its discretion under article 13(1) of the Rules of Procedure of the Boards of Appeal RPBA not to admit the Auxiliary Request into the proceedings.

3. Additional arguments

In the oral proceedings before the board, the appellant declared that the arguments from the written procedure were maintained, both in the context of the discussions of the Main Request and of the Auxiliary Request. Without specifying in detail which arguments were being referred to, the appellant effectively attempts to shift the burden of determining which arguments presented in the context of which request may be deemed to apply to the Main Request or to the late filed Auxiliary Request. This amounts to the board and the respondent having to assist the appellant to make out its case to the detriment of the opposing party, contrary to the principle that each party should make out its own case. In *inter partes* proceedings, this is additionally not possible because it would be contrary to the principle of impartiality of the board.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:



L. Malécot-Grob

M. Poock

Decision electronically authenticated