

Surveillance Report

Package / Item:	Bascule span to the Railway bridge "Jernbanebroen over Limfjorden"
Supplier:	MT Højgaard
Purpose of visit:	Production & Quality Surveillance – Steel structure Visit No. 2
Location / Address:	Tarcon Tarnobrzeg Poland

Date of Visit / Review: 2012-08-14

Inspector: SISJ/ID
Checked: ID
Approved: SDU

Date issued: 2012-08-21

Distribution: SISJ/ID Rambøll

Copy to:

Torben Ulrik Jaller	Banedanmark
Bent Jensen	Banedanmark
Kenneth Sørensen	Banedanmark
Knud V Christensen	Banedanmark
Finn Juel Hansen	MT Højgaard
Per Gehlert	MT Højgaard
Jesper Lawaetz	MT Højgaard
Mogens Højen Olsen	Rambøll
Simon Sterndorff Jessen	Rambøll
Søren Duus	Rambøll
Inge Damsgaard	Rambøll

Introduction

This report is the result from the second visit of the client's supervision and control (performed by Rambøll) at Tarcon in Poland in the 14 July of August 2012. The purpose of the visit was to follow up on the first visit and quality documentation and quality plan for steel structure that is required in connection with execution of the new bascule span to the Railway bridge "Jernbanebroen over Limfjorden". For further details concerning the subject and content please refer to the document LF00011-1-ID dated 2012-06-21 concerning QA-STEEL MANUFACTURING and Surveillance Report No_02_B-Ram-S018 - 12518016G-LF00013-1-ID dated 2012-07-23 concerning the first visit at Tarcon.

Summary

Overall impression is that the execution of the steel work is at a high quality. Though, a concern is that several parts of the procedures and the quality control are missing or are not yet completed.

Generally, the documentation Rambøll have asked for after the first visit at Tarcon, has not been forwarded. Thus, the majorities of comments from the first report have not been corrected and are still relevant. Especially, this concerns the comments to the WPS's and WPQR's and the missing welding plan.

At this inspection at Tarcon Rambøll had some additionally comments to the WPS's and WPQR's and the missing welding plan. Concerning NDT and laminations test Tarcon need information's from NIRAS regarding stress working perpendicularly to plates and the utilization grade for weld. This is necessary for determining which elements to be tested and the extent to be used. These items are very urgent and need to be corrected as soon as possible. Especially, because the construction is in progress and approximately 40 % finished.

Rambøll had also a few major comments to the drawings. It was obviously that there were problems about revision control between the constructions drawings from NIRAS, the work shop drawings from MT Højgaard Vietnam and the cutting and welding drawings from Tarcon. Based on a trial test, Rambøll found some differences between the two set of drawings, and the workshop drawing was not stated as "on hold".

A concern is the very tight time schedule for the production when follow-up and planning the quality control (the issues listed above) is still going on. When working simultaneous there is a risk that it will affect the quality of the bridge whereas the demands in the tender material are set aside.

It is Rambølls impression that MTH are in the process of follow up on many of the issues above and have tightened up by performing extended control in the shop to ensure the right documentation as demanded by the client. Unfortunately, it was not fully implemented.

Total time for the inspection was approximately 5,30 hours at the shop.

Report

Participants from Tarcon

Romuald Pawelet	Chief of project engineering
Karol Vdjicki	Project manager
Gregour Panek	Welding engineer

General comments concerning the first surveillance report from 23/07-2012

Generally, the documents that Rambøll ask for at the first visit have not been forwarded, so the majority of comments from the first report are still relevant and have not been corrected. MT Højgaard informed Rambøll that some of the documents are in progress of being finished and are added on a FTP server that is used generally for the entire project. Rambøll commented that all documents and information that is required shall be sent/forwarded by email.

Information of the subcontractor Tarcon

Time schedule for production

Time schedule for:

Tarcon gave Rambøll a time schedule for the work in the shop. It was not possible to match this with the timeschedule for the project (revision 4) received friday the 10 august by MTH. There seems to be to different views of when the bridge is to be delivered. The time schedule doesn't include the tower project. Rambøll is concerned about how the problems about the lack of quality control and planning will affect the time schedule, and thereby if it will be possible for MT Højgaard to execute and complete the project as shown in the received time schedule from MTH.

Stage of progress

All beams are almost finished
40 % of the total work is completed

Number of metal workers, welders and painter on the job:

Approximately 13 welders are working on the project. A new welders list was received at the visit.

Shop drawings and construction

Shop drawings:

On the drawing note Rambøll was changed to Niras, maybe MT Højgaard should be mentioned.

Rambøll is concerned about revision control between; design drawings (NIRAS) – work shop drawings (MT Højgaard Vietnam) - cutting and welding drawings (Tarcon). Rambøll was informed that MT Højgaard doesn't use a system to track new revisions. Based on a trial test Rambøll found a detail that was changed on the design drawing but not the work shop drawing, even though that the workshop drawing had a newer revision date.

Rambøll was informed that NIRAS doesn't check all workshop drawings; Rambøll recommends that it is changed so NIRAS control all drawings to make sure that all revisions are correctly changed.

Based on a trial test at the inspection, the drawings in the shop was all the newest revision.

1st edition	Latest revision	Scale	Drawing name
Date and initial	Date and initial	1:5	LIMFJOF
2012.07.06 DLC	2012.08.13 HNT	Size	REPLAC
2012.07.06 HTR	2012.08.13 HTR		A1
Language	Revision		Drawing num
English	04.00 2012.08.13		

Drawing note from one of the drawings at the shop.

Erection, installation transport

Way of transport:

By truck from Tarcon to Aalborg, the bridge will be divided in 6 parts with maximums lengths of 4.5x3x17m, it is under consideration to divided the 2 long tall parts in further 2 part. Brackets are still under consideration.

Joints

Field welded joints:

After the first visit Rambøll asked for a verified WPS for site welds, including necessary weather protection suitable for the decided weld process and a description of an appropriate treatment of the field weld zone. Rambøll hasn't received this and find it important what it is ready and approved before the work on site starts.

Bolted joints:

Rambøll was informed that for the transversal beams bolted joints were no longer under consideration.

QA and execution in shop*Suitability of equipment for thermal cutting:*

Rambøll was informed that only gas cutting with propane gas was used. Based on a trial test in the shop Rambøll has no comments.

Traceability – principle of marking of items:

Tarcon informed Rambøll, what pen markers were/are used for welder's signature on the steel surfaces. Based on a trial test in the shop, Rambøll found that only pen markers were used, and a logbook with notes about which welds each welders had produced were shown. Rambøll was informed that welders ID additionally will be noted on the production drawings. Rambøll has no comments.

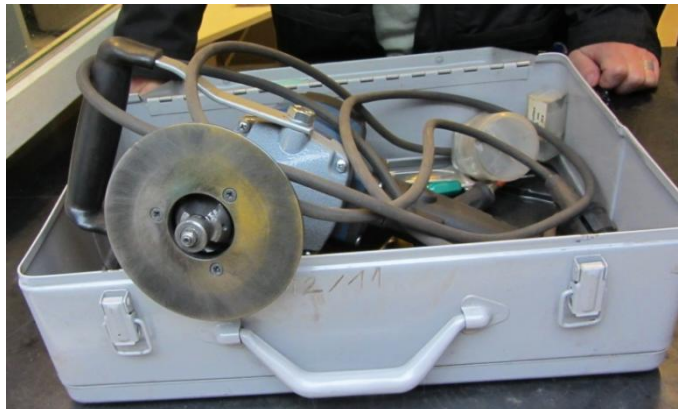


Welder number S26 signature made with a pen marker.

Rambøll was informed that scrapped elements and the replacement had the same tags. Rambøll found it a problem that there is no difference between scrapped elements and new elements, Rambøll cannot see how to distinguish between which elements that have been checked at the end documentation – checked element can be the ones that are scrapped. A procedure is needed to ensure that new replacement elements get the right quality control.

Sharp edges to be rounded to radius 2 mm:

Tarcon showed the equipments for rounding the edges and some profiles where the edges had been rounded. Based on a trial test Rambøll has no comments.



The equipment for rounding the edges

Pressure test:

No box and pipes profiles had been closed before the visit, so it wasn't possible to inspect some reports from pressure tests.

Procedure for flame straightening:

Rambøll was informed that flame straightening wasn't used; instead hydraulics ram was used to straightening the profiles. Tarcon was aware of the need of performing inspection report for each flame straightening if it is used, according to EN1090-2 section 6.5.3. Rambøll has no further comment based on a trial test.

NDT:

At the shop Rambøll found traces after MPI testing on both stump and fillets welds. A logbook showing which testing there had been made on each element was shown together with examples of documentation documents for UT and MPI testing. Rambøll was concerned about the extent of NDT and commented that the amount shall be according to EN1090-2.

According to EN 1090-2 the extent of NDT is for some types of welds defined by the coefficient of utilization. NIRAS as the consultant is the only one to give Tarcon this information. Rambøll find it urgent to follow up on the extent of NDT and whether it is checked – especially because some welds (for selected connections) cannot be checked after execution.

To ensure that Tarcon know exactly where it is needed - it is important that Niras give this information and check that it is on the production drawing. Otherwise, Tarcon will not test the elements.

The logbook for NDT testing

After the visit Rambøll have looked at the received documentation of UT and MPI testing and has the comments that the documentation shall be written in English so it's possible for the client and Rambøll to read the results.



Traces after MPI testing.

Tension force perpendicular to surface:

Rambøll was informed that NIRAS hadn't informed Tarcon where UL-examination is required. At the first visit Rambøll commented that UL-examination shall be according to EN 10160, class S2, and all places which it is needed has to be shown on the constructions/workshop drawings. Rambøll find it urgent that this is corrected because of the production is started and already 40 % completed.

Welding procedures, welding plan

Weld plan:

After the first visit at Tarcon Rambøll had the following comments to the weld plan:

Rambøll received a welding plan from Tarcon. After the meeting Rambøll has the following comments.

- The welding engineer informed Rambøll that an additional drawing will be performed for showing WPS numbers and welding sequences.

- The welding plan shall fulfill the requirement in EN 1090-2 section 7.2.2 and EN ISO 3834-2 section 10.1 and include; Preheat of tack welds, removal of tack welds when performing final welds, minimizing of distortions, sequence of welding, intermediate NDT checking, turning of components during welding, welding positions, avoid of lamellar tearing, acceptance criteria level B+ for welds (highest level)
- Ref. to WPS no. 16/9 shall be changed to WPS no. 138/10 on the welding plan by Tarcon.

Rambøll did also comment on the WPS's and the WPQR's and wrote; that at latest the 26. th of July and before proceeding of the weldings on the actual project MT Højgaard / Tarcon shall forward the revised welding plan incl. WPS's and WPQR's to Rambøll.

Rambøll has never received the required welding plan including WPS's and WPQR's, or any answers to the comments.

At this visit MT Højgaard showed a weld plan that was in progress of being written and some drawings showing weld sequences and WPS numbers.

Rambøll find it urgent that a weld plan is forwarded including the comments from the first visit, especially because this document should have been completed before they started welding on the project.

WPS:

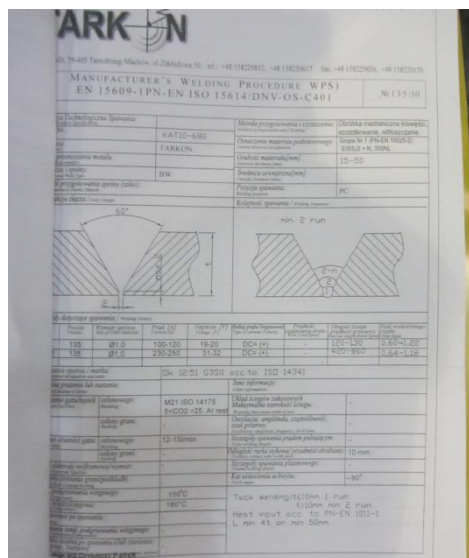
After the first visit Rambøll had the following comments:

- WPS no. KAT 10-707 is verified according to DnV. This differs to the required EN 15614. Tarcon shall perform a deviation report.
- The welding engineer showed a WPS for butt welds in 50 mm plates with a preheating of 150 degrees celcius. The welding engineer informed Rambøll that butt welds in 20-40 mm plates will be performed with preheating of approximately 75 degrees Celsius. A WPS for this type of welding was missing. Tarcon shall forward an additional WPS for butt welds in 20-40 mm plates.
- On WPS no. 87/09 and no. 24/09, shall the travel speed, heat input and allowable wearing (maximum width of run) to be stated. This shall be according to the WPQR. This comment governs for all WPS where relevant.

Rambøll haven't received the required documents before the second visit and only the demanded deviation rapport was received at the visit. After the visit Rambøll has the following question to the deviation rapport; is it correct that the HV differs a lot from EN 15614 tabel 2?

At the inspection Rambøll asked the welding engineer about WPS number 135 with focus on the preheat temperature (this WPS was present in the project specified folder at the shop floor). The welding engineer informed that they for plates with thickness around 50 mm preheat as stated on the WPS, but for smaller plates they lowered the preheat temperature. Rambøll find it concerning that the welding engineer told that they doesn't follow the WPS correctly, because then the coherent WPQR isn't valid. Rambøll find it necessary that Tarcon find out where they have used this WPS and if they have used it with a lower preheat then stated on the WPS some additional tests may be needed.

Rambøll also find that a preheat of 150 degrees of celsius is high for plates with a thickness between 20-40 mm, therefore as required after the first visit an additional WPS shall be used and forwarded to Rambøll.



WPS number 135 placed in the project specified folder

The welding engineers check:

Bascule span to the Railway bridge "Jernbanebroen over Limfjorden"

At the inspection in the shop Rambøll asked for some documentation from the welding engineer showing that they control arc voltages, travel speed, preheat and welding sequence etc. The only documentation that was shown was a log with the elements numbers and coherent WPS and the engineer's signature. This documentation is not fulfilling, it should include the results from the required control in 3834-2 section 14.3.



The documentation that was shown regarding the engineers control.

Qualification test of welders according to EN 287:

At the inspection in the shop Rambøll made a trial based test to check that the welders working on the project are certified by EN287 and present on the newest welder list. Welder Dabek Mirosław with welder number S26 was welding on element 3001 on cross section #250 and Hasuner Marcin with welder number S34 was welding on element 3003 with cross section #270. At the shop Rambøll received the newest welders list and the checked welder were stated on the new list. At the final documentation Tarcon shall include the welders list including certificates. Based on this trial test Rambøll has no further comments.

Tack welds:

By a trial based testing Rambøll found that tack welds was made minimum 50 mm long and was removed before the final welds is performed. Rambøll has no comments.



A tack weld from this project

Does the individually welder possess the WPS?

The project specified WPS's were shown by the production manager, and were placed on a table in the production shop.



WPS from this project was placed on a table in the production shop

Surface irregularities:

Based on a trial based test at the shop, the surfaces irregularities are repaired.



Surface irregularities are repaired

Storage and handling of welding consumables:

Rambøll checked the facilities for the storage of welding consumables and had no comments.



The storage at tarcon

Sub-contractors

Tarcon informed Rambøll that no subcontractors had been used on this project, and they had no plans of using sub contractors on this project..

Surface treatment

Paint system:

Tarcon has forwarded a welding system, but needs an approval.
Test plates according to En 12944 will be forwarded.