

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. 3
Location / Address:	Tarcon Tarnobrzeg Poland

Date of Visit / Review: 2012-09-05 to 2012-09-06

Inspector: SISJ
Checked: ID
Approved: ID

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Distribution: SISJ/ID Rambøll

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Introduction

This report is the result from the third visit of the client's supervision and control (performed by Rambøll) at Tarcon in Poland the 5 of august to the 6 of august 2012. The purpose of the visit was to follow up on the issues from the first and second visit, the quality documentation and the 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 and Surveillance Report No. 02 - 12518016G-MB00017-2-ID.pdf concerning the second visit.

Summary

Overall impression is still that the execution of the steel work is at a high quality. Though, a concern is that several important parts of the procedures and the quality control are still missing or are not yet completed even though it has been commented several times.

Generally, the majorities of the comments from Rambøll haven't been answered with a fulfilling answer, and after visiting the production it is clearly that the comments haven't been successfully implemented. This concerns especially comments to the welding plans, WPS's and WPQR's, NDT, time schedule and drawings.

At this inspection at Tarcon Rambøll found that Tarcon had started on welding without a welding plan, furthermore Rambøll had some additional comments to the WPS's and WPQR's. The WPS's in the production was not coherent with the WPS's received from MT Højgaard. It is urgent that MT Højgaard is aware of which WPS's that are used. Concerning NDT and laminations test Tarcon informed that the plates aren't tested according to the control level demanded. These issues are not acceptable and shall be corrected immediately.

Rambøll had also a few major comments to the drawings. Based upon a trial test the revision in the production wasn't the newest. Rambøll have also asked for the drawings that shows the connections between the elements, but have never received these.

To meet the tight time schedule Tarcon are working on 3 shifts, this makes it even more important that MT Højgaard acts on the comments immediately,

Even though Tarcon works with a quick pace, Rambøll estimate that production is about 2-3 weeks delayed compared to time schedule from MT Højgaard version 7.

Total time for the inspection was approximately 8 hours at the shop.

Report

Participants from Tarcon

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

MT Højgaard

Svend Schneider Eliassen	QHSE Manager
Søren Sommer	Forman / inspektør

Banedanmark

Bent Jensen	Construction manager
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General comments concerning the first surveillance report from 23/07-2012

Generally, the documents that Rambøll ask for at the first and second visit have not been answered with a fulfilling answer, so the majority of comments from the first and the second are still relevant and have not been corrected and implemented. This is concerning because a lot of the comments have influence at the quality. MT Højgaard informed Rambøll that some of the documents are still in progress of being finished and will be forwarded soon. Rambøll commented again 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:

MT Højgaard showed Rambøll a drawing with stage of progress. Rambøll estimate that production is about 2-3 weeks delayed compared to the time schedule version 7. It is important that MT Højgaard makes a new time schedule that is updated, because the schedule is used to coordinate with other projects on the site location. Svend Elias from MT Højgaard promised that a new time schedule will be forwarded to Rambøll the 06-09-2012.

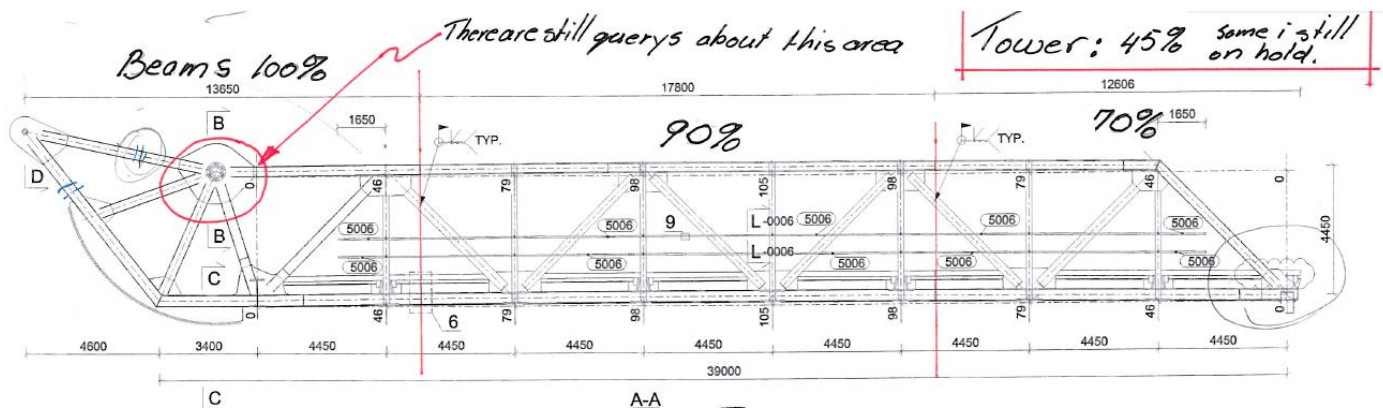
Tarcon estimated the following milestones:

- First bridge elements leaving Tarcon, week nr. 38-39
- Last bridge element leaving Tarcon, week nr. 42
- The tower is send sometime between week nr. 39-42, but before the last bridge element. (Some parts are still on hold, this can affect the time schedule)

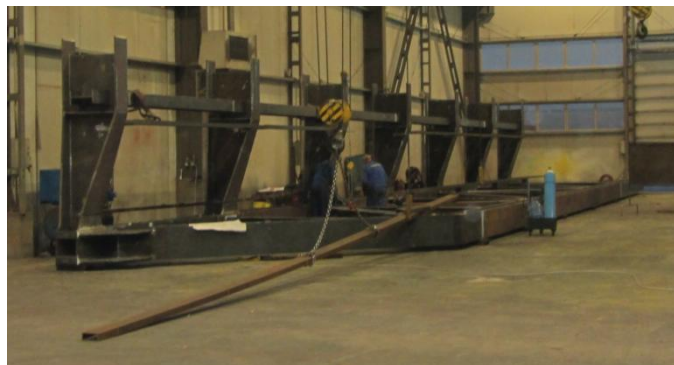
In addition to the week number stated above the transport time from Tarkon to Alborg is estimated to 5 days.

To make it possible for Rambøll to follow the stage of progress, Rambøll has required that MT Højgaard sends some pictures showing stages of progress approximately every second day.

Stage of progress at the visit



None of the elements have got any surface treatment yet. Rambøll was informed that it takes approximately 7 days to sandblast and paint an element.



Trial assemble

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

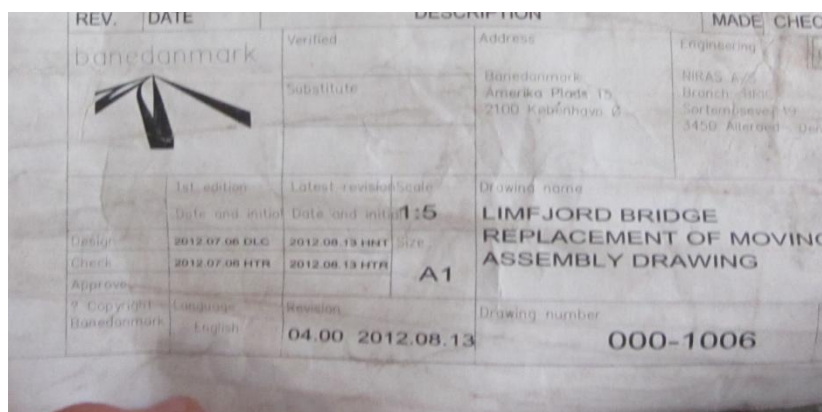
The number of welders has gone from approximately 13 to 24 welders that are working on the project. A new welders list was received at the visit.

Shop drawings and construction

Shop drawings:

Rambøll was informed that MT Højgaard has implemented a new system for revision control, and that Niras now controls all drawings from MT Højgaard Vietnam. Some documentation showing the control system will be forwarded.

Based on a trial test Rambøll found that some of the drawings in the production weren't the newest revision. This is not acceptable and shall be corrected.



Drawing note from one of the drawings at the shop, the newest revision for this drawing was the 2012.08.31.

Rambøll showed concern about the execution of some of the connections with K butt welds, for example detail 1 and 2 on drawing nr. Bro-21214-2012-015. Tarkon agreed that there are some problems about some of the connections that have to be solved, and that they have contacted MT Højgaard for a solution to some of these problems. Rambøll find it urgent that a solution is found and that NIRAS has to be involved.

As required at second visit drawings showing the connections between the 8 bridges parts shall be forwarded.

Erection, installation transport

Way of transport:

By truck from Tarkon to Aalborg, the bridge will be divided in 8 parts with maximums lengths of 4.5x3x17m, it has been decided that the tall part is to be divided in total 4 parts. Brackets are still under consideration. Tarkon is working with a transport company that is specialized in special transport, and has started the progress of getting a transport permit that governs from Tarkon to Aalborg Harbor.

Joints

Field welded joints:

After the first visit Rambøll asked for a verified WPS's 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.

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:

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. Based on a trial test Rambøll has no comments.

Rambøll was informed that scrapped elements has removed from production and placed separate in the production. And no further elements have been scrapped since the second visit.

Sharp edges to be rounded to radius 2 mm:

Based on trial test on some of the elements Rambøll has no comments.

Pressure test:

Some box and pipes profiles had been closed before the visit, but pressure test hadn't been made yet. A report shall be forwarded to Rambøll as soon as Tarkon starts performing pressure tests.

Procedure for flame straightening:

Rambøll was informed that flame straightening had been used. An inspection report, according to EN1090-2 section 6.5.3, shall be forwarded to Rambøll.

NDT:

At the shop Rambøll found traces after MPI testing on both stump and fillets welds. Tarkon showed Rambøll logbooks and drawings showing which element that was tested together with an inspection report. Rambøll emphasized the importance of testing on mixed lots. Based on a trial test Rambøll has no further comments.

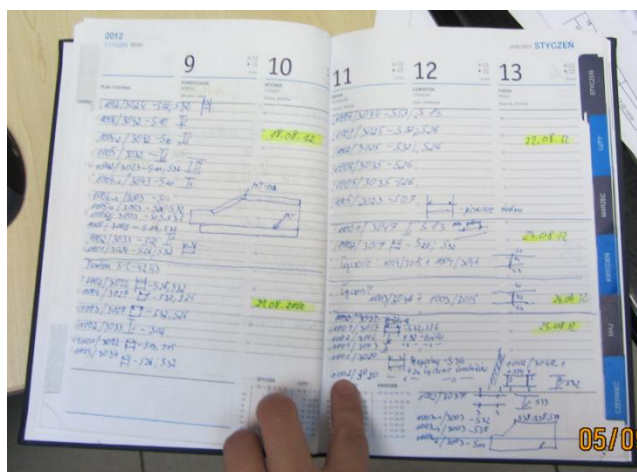
After last visit Rambøll commented on the extent of NDT, and that it is determent by the welds coefficient of utilization, Niras has afterwards informed at all welds has a coefficient of utilization over 50 %, and that all butts welds will be tested by MPI. Rambøll has no further comments.

Rambøll have received a NDT plan where the quality level is stated as B and not B+ as required. At the visit Rambøll was informed that it was only a typing mistake and Tarkon showed some NDT reports that stated quality level B+. Rambøll comment that the NDT plan shall be corrected, so further confusion is avoided.

Tension force perpendicular to surface:

At the first visit Rambøll commented that UL-examination shall be according to EN 10160, class S2, and all places that has to be tested shall be shown on the constructions/workshop drawings. Rambøll was informed that Niras has stated on the drawings where lamination testing is required Based on a trial test of the drawings Rambøll has no comments. Tarkon informed Rambøll that all plates over 20 mm that is delivered UT tested don't fulfill the demanded quality level S2, but only S1. This is not acceptable.

Rambøll asked if the need for materials with improved though thickness properties had been examined, according to EN 1993-1-10. Rambøll was informed that MT Højgaard would investigate if this issue has been solved.



Notes from the NDT inspector

Welding procedures, welding plan*Weld plan:*

Rambøll found that Tarkon has started welding on the tail section and the tower without a welding plan. This is not acceptable and shall be corrected immediately. MT Højgaard has informed Rambøll that they check that the right WPS's are used, but how is this possible when there is no welding plan, telling which WPS's and which welding sequence that shall be used?

A welding plan for the northern end section was shown but it was in polish so this needs to be translated to English. Svend Eliassen promised that the welding plan for the onsite welds will be forwarded before the work starts in Aalborg. In the tender material it states that the welding plan shall be forwarded to Rambøll before they start welding.

After the first and second inspection Rambøll wrote that 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)

Rambøll had the following comments to the welding plans received from Tarcon.

- The need for run off and on plates shall be stated (Rambøll found that Tarcon uses run off and on plates)
- The need for geometric control measurement shall be stated
- A description of the controls that the welding engineer has to make.
- NDT testing shall be made intermediate and not only after the entire section is finished.

WPS:

At the inspection in the production Rambøll found several WPS's that wasn't coherent with the WPS's found on MT Højgaard's FTP server. Rambøll find it concerning that the impression is that MT Højgaard doesn't know which WPS's there is used and valid for this project. Rambøll has several times asked for a list showing which WPS's and coherent WPQR's that are used on this project. Svend Elias from MT Højgaard couldn't show Rambøll this list but informed Rambøll that this list is 95 % finished, so it should be possible to forward this list to Rambøll soon. Rambøll have commented that the WPS list shall include which WPS's there have been deviated from, and which new WPS's and coherent WPQR's that will prove that the deviation is acceptable.

Rambøll find it urgent that MT Højgaard immediately makes sure that it is the right WPS's that is used and placed in production.

At the second inspection at Tarcon Rambøll found that Tarcon deviated from some of the WPS's with a high preheat. After the second visit at Tarcon Rambøll required that MT Højgaard investigated where Tarcon had made deviations from the WPS's. Rambøll has several times commented on that several of the WPS's placed on the FTP server still has a high preheat, and some of the additional WPS's found in production have also a high preheat. Rambøll was informed that MT Højgaard is still working on a report; this shall be forwarded to Rambøll as soon as possible.

After the second visit at Tarcon Rambøll had the following question to the deviation rapport; is it correct that the HV differs a lot from EN 15614 table 2? This question still needs to be answered.

The welding engineers check:

At the second 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.

At this inspection Rambøll found that the welding engineer still doesn't document that they make the required control. It is urgent that this I corrected immediately, it is not possible to make this control later. This control is also important to registered where Tarcon deviates from the WPS's.

Qualification test of welders according to EN 287:

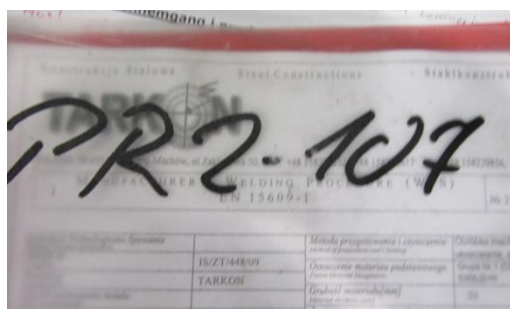
At the inspection in the shop Rambøll made a trial based test to check that the welders working on the project are certified by EN287 and present on the newest welder list. Welder Andrzej Kianowski with welder number S18 and Pawel Pluta with welder number S17 were checked. At the shop Rambøll received the newest welder list and the checked welders were stated on the new list, and they are both certified to weld in the checked welding position. At the final documentation shall Tarcon include the welder list including certificate. Based on a trail 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.

Does the individually welder possess the WPS?

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



The folder containing the project specified WPS` s

Surface irregularities:

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

Sub-contractors

Tarcon informed Rambøll that they considered using subcontractors for the details concerning the main bearings. Rambøll asked that information on the subcontractor will be forwarded to Rambøll.

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Surface treatment

Paint system:

Tarcon has got an approval for the painting system. The paint wasn't delivered yet.

Rambøll has required that a test plates according to En 12944 is forwarded before the paint work on the bridges sections starts.