

# Quality Requirement

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## Manufacturing Record Book General Requirements

|                        |           |                 |
|------------------------|-----------|-----------------|
| RIG/PLANT              |           |                 |
| ADDITIONAL CODE        | SDRL CODE | TOTAL PGS<br>13 |
| REMARKS                |           |                 |
| MAIN TAG NUMBER        |           | DISCIPLINE      |
| CLIENT PO NUMBER       |           |                 |
| CLIENT DOCUMENT NUMBER |           |                 |

|   |   |                 |
|---|---|-----------------|
| REFERENCE<br><b>TM01169</b>   | REFERENCE DESCRIPTION<br>Quality Clause   |                 |
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**CHANGE DESCRIPTION**

| Revision | Change description   |
|----------|--|
| 4        | Revision to update System metadata<br>No content change  |
| 3        | Updated Section 4.1 & 5.1.1 To Add Requirement Of Referencing PO Line Number. Also, Updated Section 5.3.2 To Remove The Requirement For Referencing PO Number And PO Line Number As Well As Added Clarification Regarding Referencing Part Number And Traceability Number. In Addition, Updated Section 5.4 To Add The Requirement For Providing The WPS.              |
| 2        | Updated The Document Type, Sub-Type, And Title Of The Document. Also Updated Section 5.0 To Show The Correct Reference To The Sections Of The Document, Updated Section 5.3 To Add Requirement Of Putting Documents In Chronological Order Within Each Section/Part Number, And Updated Section 5.3.2 To Note "Each Document" Instead Of "Each Page Of Each Document". |
| 1        | Added Front Cover, Revision Page, and Back Cover Requirements. Also Added Additional Documentation/Certification Requirements And The MRB Deliverable Format. In Addition, Changed NOV-RS To NOV-RE Where Referenced.  |
| 0        | Initial Release  |

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## 1 INTRODUCTION

This document establishes the requirements for the content and organization of a Manufacturing Record Book (MRB) supplied to National Oilwell Varco – Rig Equipment (NOV-RE) for purchased equipment.

For purchased equipment that is proprietary to the supplier (i.e., items which are both engineered and manufactured by the supplier), the MRB shall meet the requirements of the International Association of Drilling Contractors (IADC) MRB Guidance Document, GU-IADC-SC-004. Therefore, this document should not be used to produce the MRB.

For purchased equipment that is proprietary to NOV-RE, the MRB shall meet the requirements established in this document. The requirements in this document were derived from GU-IADC-SC-004.

## 2 REFERENCE DOCUMENTS

The following document should be used, in conjunction with this document, to get a full overview of the requirements for producing a MRB.

| Document Number (RigOffice) | Document Title   |
|-----------------------------|--|
| GU-IADC-SC-004              | International Association of Drilling Contractors (IADC) MRB Guidance Document. Link to document:<br><a href="http://www.iadc.org/supply-chain-committee/resources/">http://www.iadc.org/supply-chain-committee/resources/</a> |

## 3 DEFINITIONS

For the purposes of this document the following are the definitions of certain terms used throughout this document.

|                           |   |
|---------------------------|---|
| Manufacturing Record Book | A compilation of manufacturing records for a Product.   |
| Product                   | Any equipment (part or assembly) that is a discrete unit or deliverable on the NOV-RE Purchase Order. |

## **4 FRONT COVER, REVISION PAGE, AND BACK COVER**

Every MRB shall have a Front Cover, Revision Page, and a Back Cover.

### **4.1 Front Cover Requirements**

The minimum requirements for the Front Cover are as follows:

- Supplier Name/Logo
- Supplier Order Number
- Supplier Part Number (If Applicable)
- Supplier Traceability Number (If Applicable)
- NOV-RE Purchase Order Number & Purchase Order Line Number
- NOV-RE Part Number
- NOV-RE Traceability Number (i.e., serial or lot number)
- MRB Title (Typically the Product (Part) Description)
- MRB Document Number
- MRB Revision

### **4.2 Revision Page Requirements**

The minimum requirement for the Revision Page are as follows:

- MRB Document Number
- MRB Revision
- MRB Revision Date
- Reason For Revision
- Who Prepared, Checked, And/Or Approved The MRB

The Revision Page must show the entire revision history of the MRB if the MRB gets revised.

### **4.3 Back Cover Requirements**

A Back Cover shall be added to show the end of the MRB. The Back Cover can be as simple as the Supplier Name/Logo or have more information and this will be up to the Supplier to confirm.

## 5 TABLE OF CONTENTS (TOC) STRUCTURE

In addition to the Front Cover, Revision Page, and Back Cover, the MRB will have a Table Of Contents (TOC) page and the TOC page will be made per the TOC structure of the MRB. The TOC structure shall be as follows:

### 1.0 – Finished Product Documentation

#### 1.1 – Declaration of Conformity

#### 1.2 – Traceability Photograph

(See section 5.1 of this document for TOC details)

### 2.0 – Certifying Authority Documentation

#### 2.1 – Final Product Certificates

(See section 5.2 of this document for TOC details)

### 3.0 – Traceability and Manufacturing Documentation

(See section 5.3 of this document for TOC details)

### 4.0 – Supplementary Documentation

(See section 5.4 of this document for TOC details)

All sections and subsections noted above shall be included in the MRB. Any section or subsection that is not applicable to the product must show a “Not Applicable” page after the respective section or subsection.

Note: For Lot Controlled equipment, one MRB shall be submitted per lot. If the lot is delivered in multiple shipments, the supplier shall revise the MRB (identifying all updates within the revision page of the MRB). For Serial Controlled equipment, one MRB shall be submitted per PO line and shipment.

### 5.1 Finished Product Documentation Section (MRB Section 1)

This section shall include the Declaration of Conformity (DoC) and the Traceability Photograph. These documents shall be submitted in every MRB, and therefore may never be marked as “Not Applicable” by the supplier.

### 5.1.1 Declaration of Conformity

The DoC, also known as the Certificate of Compliance/Conformance (CoC), shall conform to the requirements of GU-IADC-SC-004.

At a minimum, the following information shall be included on the DoC:

- Supplier Name/Logo
- Supplier Order Number
- Supplier Part Number (if applicable)
- Supplier Traceability Number (if applicable)
- NOV-RE PO Number and PO Line Number
- NOV-RE Part Number and Revision Level
- NOV-RE Part Description
- NOV-RE Traceability Number (i.e., serial or lot number)
- Date of the Completion of Manufacture
- Applicable Standards and Specifications with Revision (e.g., API 16A (Rev. 4), ABS+CDS (2012), DNV-GL Drill (2015), AX010020 (Rev. R), etc.)
- Manufacturer's Authorized Representative Printed Title, Name, and Signature
- DoC Document Number, Revision, and Date

### 5.1.2 Traceability Photograph

Suppliers shall furnish a photograph of the part number and traceability marking that is physically applied to the equipment. If a name plate is attached to the equipment, a photograph of the nameplate fulfils this requirement. For lot controlled items, one representative picture of the markings applied to all parts is sufficient.

## 5.2 Certifying Authority Documentation (MRB Section 2)

Within this section any certifying authority (i.e. ABS, DNV-GL, Lloyd's, CCS, RoHS, CE, etc...) certification will be included.

Examples of documents that would be included in this section would be as follows:

- ABS Subcomponent Report (issued upon completion of all survey and document review activities). Refer to ABS Publication 57 (Classification of Drilling System), Section 4.
- DNV Survey Report (issued upon completion of all survey and document review activities). Refer to DNVGL-OS-E101, Chapter 3.

If this section is not applicable to the equipment then a "Not Applicable" page must be placed in this section.

### 5.3 Traceability and Manufacturing Documentation (MRB Section 3)

The traceability and manufacturing documentation of the equipment and its subassemblies/components shall be included as applicable. This section shall never be “Not Applicable”.

The components and manufacturing documentation identified in the MRB will follow the Inspection and Test Plan (ITP) (if applicable) and/or Engineering Drawing requirements. This section shall contain the manufacturing documentation by part number with the part number ordered on the PO being the first subsection. If there are lower level assemblies or components (based on the Bill of Material), they shall be documented in additional subsections. For each section/part number, the manufacturing documentation will be placed in chronological order.

Each subsection will require a Material Traceability Index identifying the part number, part description, and traceability of the part and all its lower level parts, as applicable.

See Appendix A for examples.

#### 5.3.1 Document Types

The following document types (as applicable) are required to be in Section 3 of the MRB:

- Inspection & Test Plan (ITP)
- Material/Mill Test Report (MTR)
- Weld Start Report
- Weld Map
- Post Weld Heat Treat/Stress Relief Report (PWHT)
- Non-Destructive Examination Report (NDE)
- Hardness Report
- Pressure Vessel Report (U-1A Form)
- Electrical Reports, as required by industry standards per contract requirements.
- Electrical Certification (ATEX, IEEE, IEC, UL)
- Hydrostatic and Functional Test Report
- Pull Test Report
- Coating/Painting Report
- Preservation Report
- Weight Report

The minimum content requirements for many of these document types are listed in GU-IADC-SC-004 and shall be in accordance with NOV-RE Standard Operating Procedures. If there is a question concerning a document type that is not listed above, contact the respective NOV-RE Quality Manager.



### 5.3.2 Information Required for Documentation Traceability

In order to maintain the traceability of documents to orders and equipment, each document shall include the following information:

- NOV-RE Part Number
- NOV-RE Traceability Number
- Heat or Batch Number (Lot Controlled items only)

It is important to note that each document must have the correct NOV-RE Part Number and Traceability Number per the Bill Of Material (BOM) structure and applicable part level.

In the example Material Traceability Index shown below, the documents required for the part number 11127466-001 should only reference part number 11127466-001 and traceability number ABCXX1234.

Similarly, the documents required for the part number 10632938-001 should only reference part number 10632938-001 and traceability number 123456-7.

The Material Traceability Index will be the link between the part numbers and their respective traceability numbers per the BOM structure.

| <b>Material Traceability Index</b> |  |                   |
|------------------------------------|--|-------------------|
| Part Number                        | Part Description                                     | Part Traceability |
| 10632938-001                       | CYL,OPER,14"ID,14"ULTRLK II,CHROMED ID,18-15M<br>NXT | 123456-7          |
| 11127466-001                       | OPER CYL FORG, 14"ID, 18-15M, NXT, RM & LQ&T         | ABCXX1234         |

#### **5.4 Supplementary Documentation (MRB Section 4)**

This section shall be used for additional NOV-RE required documentation, not otherwise previously specified. The records (as applicable) shall be organized as specified below:

- Red-line Engineering Drawings
- NOV-RE approved Requests for Deviation
- Approved Supplier Lot Number Request Form, or Lot Number Issuance Form
- Weld Procedure Specification (WPS) & WPS Approval Letters from both NOV and Third Party (as applicable)
- Welder Personnel Qualification Records (including Visual Acuity)
- Final Dimensional Reports
- NDE Personnel Qualification Records (including Visual Acuity)
- NDE Level III approved Magnetic Particle Inspection Technique Sheets
- NDE Level III approved Ultrasonic Inspection Scan Plans
- NDE Level III approved Radiographic Shooting Sketches
- Paint Inspector Certification (NACE) – Only when PO calls for this requirement typically through NORSOK requirements
- Material Safety Certificates
- Fastener Torque Verification Records
- Additional Manufacturing Records which the supplier may deem important (e. g., correspondence between the supplier and NOV-RE)

If there is a question concerning a document type that is not listed above, contact the respective NOV-RE Quality Manager.

#### **6 MRB DELIVERABLE FORMAT**

One electronic file in PDF format, preferably using Adobe Acrobat, shall be delivered for each MRB unless otherwise stated in the NOV-RE PO. The PDF file must have bookmarks within it per the major sections of the MRB (i.e. Front Cover, Revision Page, TOC, All Sections (i.e. 1.0, 1.1, etc...), All Subsections In Section 3.0, and the Back Cover).

The PDF file should be sent per the instructions on the NOV-RE PO. If no instructions are provided in how to send the PDF file please contact the respective NOV-RE Buyer and/or NOV-RE Quality Manager.

## 7 APPENDIX A – TOC & MATERIAL TRACEABILITY INDEX EXAMPLES

### Example No. 1: TOC & Material Traceability Index For An Assembly With DNV-GL Requirements

#### Table Of Contents

#### 1.0 – Finished Product Documentation

1.1 – Declaration of Conformity

1.2 – Traceability Photo

#### 2.0 – Certifying Authority Documentation

2.1 – DNV Survey Report

#### 3.0 – Traceability and Manufacturing Documentation

3.1 – 10722492-001 (Lift Ring Assembly)

3.2 – 10722489-001 (Lift Ring Finish Machine)

3.3 – 10722469-001 (Retainer Plate)

} Top Level Assembly – Note  
Part Number and  
Description Format

} Sub-Assemblies/Components –  
Note Part Number and Description  
Format

#### 4.0 – Supplementary Documentation

4.1 – NOV-RE approved Requests for Deviation

4.2 – Lot Number Issuance Form

4.3 – WPS & WPS Approval Letters from NOV & DNV

4.4 – Welder Personnel Qualification Records (including Visual Acuity)

4.5 – Final Dimensional Reports

4.6 – NDE Personnel Qualification Records (including Visual Acuity)

4.7 – NDE Level III approved Magnetic Particle Inspection Technique Sheets

4.8 – NDE Level III approved Ultrasonic Inspection Scan Plans

4.9 – Additional Manufacturing Records which the supplier may deem important (e. g., email communication and Requests for Information submitted to NOV-RE during the manufacturing process)

Material Traceability Index

| <b>Material Traceability Index</b> |  |                        |
|------------------------------------|--|------------------------|
| Part Number                        | Part Description                               | Part Traceability      |
| 10722492-001                       | LIFT RING ASSY, 18-10M SBOP MTD, BOP STK       | 12345                  |
| 10722489-001                       | LIFT RING, FM, 18-10M SBOP MTD, BOP STK        | 23456                  |
| 10722487-001                       | LIFT RING, WA, 18-10M SBOP MTD, BOP STK        | 34567                  |
| 10722487-101                       | RG, ROLLED, 79-1/2" OD X 76" ID X 12-3/8" TALL | AAABB1234              |
| 10722487-102                       | PLT, 2" THK                                    | CCCDD1234              |
| 10722487-103                       | PLT, 2-3/4" THK                                | EE1234FF               |
| 10722487-104                       | PLT, 2-1/2" THK                                | 1234ABCD               |
| 10722487-105                       | PLT, 2" THK                                    | CCCDD1234              |
| 10722487-106                       | PLT, 4" THK                                    | 12ABCD34               |
| 10722487-107                       | PLT, 1-1/2" THK                                | 9876AABB               |
| 10722487-108                       | PLT, 1-1/2" THK                                | 5432CCDD               |
| 10722487-109                       | PLT, 2" THK                                    | ABCDEF12               |
| 10722487-110                       | PLT, 7/8" THK                                  | 987123AABB             |
| 10722487-111                       | PLT, 2" THK                                    | ABCDEF12,<br>CCCDD1234 |
| 10722469-001                       | PLT, RETNR, LIFT RG,18-15M BOP STK             | 123456789              |

Example No. 2: TOC & Material Traceability Index for a Component (Non-Assembly)  
With No Third Party Requirements

Table Of Contents

1.0 – Finished Product Documentation

1.1 – Declaration of Conformity

1.2 – Traceability Photo

2.0 – Certifying Authority Documentation

(Insert “Not Applicable Page”)

3.0 – Traceability and Manufacturing Documentation

3.1 – 10632938-001 (Operator Cylinder)

3.2 – 11127466-001 (Operator Cylinder Forging)

} Top Level – Note Part Number  
And Description Format  
} Lower Level – Note Part Number  
And Description Format

4.0 – Supplementary Documentation

4.1 – Lot Number Issuance Form

4.2 – Final Dimensional Reports

4.3 – NDE Personnel Qualification Records (including Visual Acuity)

4.4 – NDE Level III approved Magnetic Particle Inspection Technique Sheets

4.5 – NDE Level III approved Ultrasonic Inspection Scan Plans

Material Traceability Index

| Material Traceability Index |  |                   |
|-----------------------------|--|-------------------|
| Part Number                 | Part Description                                     | Part Traceability |
| 10632938-001                | CYL,OPER,14"ID,14"ULTRLK II,CHROMED ID,18-15M<br>NXT | 123456-7          |
| 11127466-001                | OPER CYL FORG, 14"ID, 18-15M, NXT, RM & LQ&T         | ABCXX1234         |