

Shipment Documentation Requirements (SDRL/MRB)

Defence Industry and Oil & Gas Industry

Focus: Manufacturing Record Books and Digital Documentation Systems

Prepared for: Aurelian Manufacturing

Services: CNC Milling and Turning Services

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1. Executive Summary

1.1 Purpose and Scope

This comprehensive report provides Aurelian Manufacturing with detailed guidance on shipment documentation requirements for both the defence and oil & gas industries. As a CNC milling and turning services provider, understanding and implementing robust documentation practices is essential for maintaining customer confidence, ensuring regulatory compliance, and securing contracts in these highly regulated sectors.

The report focuses specifically on Supplier Data Requirements Lists (SDRL) and Manufacturing Record Books (MRB)—the cornerstone documentation packages that accompany shipments of manufactured components. Unlike quality management system certifications (such as AS9100 or API Q1), which certify organizational capabilities, SDRL and MRB documentation provides objective evidence that specific parts meet all specified requirements at the time of shipment.

1.2 Key Findings: Defence Industry

The defence industry maintains some of the most stringent shipment documentation requirements globally. Key findings for this sector include:

Documentation Complexity: Defence contracts typically require between 15-40 distinct document types per shipment, depending on component criticality and contract specifications. The Manufacturing Record Book serves as the master compilation document, providing complete traceability from raw material through final inspection.

First Article Inspection Reports (FAIR): AS9102 First Article Inspection Reports are mandatory for initial production runs and following any process changes. These comprehensive reports require documentation of every characteristic on the engineering drawing, with measured values and compliance statements.

Certificate of Conformance (CoC) Requirements: Defence CoCs must include specific contract flow-down clauses, material certifications, special process certifications, and explicit statements of conformance to all applicable specifications. The CoC serves as a legal declaration of product compliance.

Traceability Mandates: Full material traceability to original mill certifications is required. Each component must be traceable through all manufacturing operations, heat treat lots, and inspection processes.

AS9100 Alignment: While AS9100 is a quality management system standard, its documentation requirements directly influence shipment documentation. Suppliers must demonstrate compliance with customer-specific documentation requirements as part of the quality record package.

Digital Transformation: Major defence primes are increasingly requiring digital delivery of MRB packages through secure portals, with structured data formats enabling automated verification.

1.3 Key Findings: Oil & Gas Industry

The oil & gas industry presents equally demanding but distinctly different documentation requirements, driven by safety considerations and international standards harmonization:

EN 10204 Material Certificates: The European standard EN 10204 defines four types of inspection documents (2.1, 2.2, 3.1, 3.2), with Type 3.1 and 3.2 certificates required for critical applications. Understanding when each certificate type is required is essential for compliance.

NORSOK Standards: Norwegian shelf operations have established NORSOK standards as the de facto international benchmark. NORSOK M-650 for qualification of materials and NORSOK Z-CR-006 for documentation requirements significantly influence global oil & gas documentation practices.

API Monogram and Licensing: American Petroleum Institute (API) documentation requirements, including API monogram licensing and spec-specific documentation, remain prevalent in North American operations and increasingly in international projects.

Positive Material Identification (PMI): PMI testing with documented results is mandatory for most pressure-containing and critical structural components, with requirements for 100% PMI on certain material grades.

Dimensional and NDE Reports: Comprehensive dimensional inspection reports and non-destructive examination (NDE) reports with qualified personnel certifications are standard requirements.

Digital Delivery: The oil & gas industry has embraced digital documentation delivery, with platforms like DocBoss becoming industry standards for SDRL management and document compilation.

1.4 Strategic Implications for Aurelian Manufacturing

For Aurelian Manufacturing to successfully serve both industries, the following strategic considerations emerge:

1. **Unified Documentation System:** Implementing a documentation management system capable of serving both industries' requirements maximizes efficiency while ensuring compliance.
2. **Personnel Training:** Documentation specialists must understand the specific requirements of each industry, including terminology differences and document format expectations.
3. **Supplier Management:** Raw material and special process suppliers must provide certifications meeting the most stringent customer requirements. Establishing clear expectations with suppliers prevents documentation delays.
4. **Digital Capabilities:** Investment in digital documentation tools is no longer optional—it is a competitive requirement for participation in major defence and oil & gas supply chains.
5. **Process Integration:** Documentation requirements must be integrated into production planning from job inception, not treated as a post-production administrative task.

The following sections provide detailed guidance on each aspect of shipment documentation, with practical implementation recommendations tailored to CNC machining operations.

2. Understanding SDRL and MRB

2.1 Supplier Data Requirements List (SDRL) Defined

The Supplier Data Requirements List, commonly abbreviated as SDRL, is a contractual document that specifies exactly what documentation a supplier must provide to the customer. The SDRL serves as the definitive checklist against which shipment documentation completeness is measured.

2.1.1 SDRL Structure and Components

A typical SDRL contains the following elements:

Element	Description	Example
Line Item Number	Unique identifier for each required document	SDRL-001, SDRL-002
Document Title	Formal name of required document	Material Test Report
Document Description	Detailed description of document content requirements	Mill certification showing chemical composition and mechanical properties per ASTM A182
Applicable Specification	Standard or specification governing document format	EN 10204 Type 3.1
Submission Timing	When document must be submitted	With shipment, Prior to shipment, Upon request
Submission Quantity	Number of copies required	2 hard copies + 1 electronic
Approval Required	Whether customer approval is needed before proceeding	Yes/No
Format Requirements	Specific format requirements	PDF/A, native CAD format

2.1.2 SDRL in Contract Flow-Down

The SDRL typically appears as an attachment or exhibit to the purchase order or contract. It may reference:

- Customer-specific documentation procedures
- Industry standards for document format
- Project-specific requirements
- End-user requirements (in multi-tier supply chains)

For Aurelian Manufacturing, reviewing the SDRL at order entry is critical. Any documentation requirements that cannot be met must be identified immediately, before production commences. Common issues include:

- Material certifications not available from stock material
- Special process certifications from non-approved suppliers
- Test requirements beyond in-house capabilities
- Format requirements incompatible with existing systems

2.1.3 SDRL Variations by Industry

Defence industry SDRLs typically use terminology aligned with MIL-STD-1388 (Logistics Support Analysis) or contract-specific data item descriptions (DIDs). Oil & gas SDRLs more commonly follow project-specific formats or align with ISO 10005 quality plan requirements.

2.2 Manufacturing Record Book (MRB) Defined

The Manufacturing Record Book is the comprehensive compilation of all quality records generated during the manufacture of a specific part, lot, or order. The MRB provides objective evidence that all specified requirements were met during production.

2.2.1 MRB Purpose and Function

The MRB serves multiple purposes:

Compliance Evidence: Demonstrates that all contractual, specification, and regulatory requirements were met during manufacture.

Traceability Record: Provides complete traceability from raw material through all manufacturing operations to final inspection and shipment.

Legal Protection: Serves as evidence of due diligence and compliance in case of product failures or disputes.

Quality History: Enables root cause analysis if problems are discovered after shipment.

Customer Assurance: Provides customers with documented evidence supporting acceptance of delivered products.

2.2.2 MRB Typical Contents

A complete MRB typically includes the following documents organized in a logical sequence:

Section	Contents	Purpose
Cover Sheet	Part number, description, PO number, quantity, revision level	Identification
Table of Contents	List of all documents with page numbers	Navigation
Purchase Order Copy	Relevant pages showing requirements	Reference
Material Certifications	Mill test reports, material certificates	Material compliance
Material Traceability	Heat/lot number tracking, cut records	Traceability
Process Certifications	Heat treat, plating, NDT certifications	Process compliance
In-Process Inspection	Inspection records during manufacture	Process control
Final Inspection Report	Dimensional inspection results	Dimensional compliance
First Article Report	AS9102 FAIR if applicable	First piece approval
Test Reports	Mechanical testing, pressure testing, etc.	Performance verification
NDT Reports	Radiography, UT, MT, PT reports	Internal quality
Certificate of Conformance	Supplier's declaration of compliance	Compliance statement
Packing List	Contents of shipment	Shipment verification

2.2.3 MRB Organization Principles

Effective MRB organization follows these principles:

Chronological Flow: Documents should be organized to follow the manufacturing sequence, allowing reviewers to trace the part's journey through production.

Clear Identification: Every document must clearly identify the part number, serial number (if applicable), purchase order, and revision level.

Cross-Referencing: Documents should reference each other where applicable. For example, the final inspection report should reference the material heat number, which traces back to the mill certification.

Completeness Verification: A checklist comparing MRB contents against the SDRL should be included, demonstrating that all required documents are present.

2.3 Relationship Between SDRL and MRB

The SDRL defines what documents are required; the MRB is the physical (or digital) package containing those documents. The relationship can be understood as follows:



For Aurelian Manufacturing, the workflow should be:

- Order Entry:** Receive SDRL with purchase order
- Review:** Compare SDRL requirements against capabilities
- Planning:** Incorporate documentation requirements into production planning
- Collection:** Gather required documents throughout production
- Compilation:** Assemble MRB according to SDRL requirements
- Verification:** Check MRB completeness against SDRL
- Submission:** Deliver MRB with shipment (or as specified)

2.4 Documentation vs. Certification Distinction

It is essential to distinguish between shipment documentation (SDRL/MRB focus) and quality management system certifications:

Aspect	Shipment Documentation (SDRL/MRB)	QMS Certifications
Scope	Specific parts/orders	Entire organization
Timing	Each shipment	Periodic (typically 3-year cycle)
Content	Objective evidence for specific parts	System procedures and compliance
Issuer	Supplier (self-declaration)	Third-party registrar
Purpose	Product acceptance	Supplier qualification
Examples	Material certs, inspection reports, CoC	AS9100, API Q1, ISO 9001

While QMS certifications are often prerequisites for supplier approval, they do not replace the need for comprehensive shipment documentation. A supplier can hold AS9100 certification yet still deliver non-conforming parts if shipment documentation is incomplete or inaccurate.

2.5 Legal and Contractual Implications

Shipment documentation carries significant legal implications:

Certificate of Conformance: The CoC is a legal declaration that products meet specified requirements. False statements on a CoC can result in fraud charges, particularly in defence contracts subject to the False Claims Act.

Record Retention: Contracts typically specify documentation retention periods, often 7-10 years for defence and similar for oil & gas. Some requirements extend to product lifetime plus additional years.

Liability Evidence: In product liability cases, MRB documentation is often central evidence in determining whether the manufacturer exercised due care.

Export Compliance: Certain documentation may be subject to export control regulations (ITAR, EAR), requiring appropriate handling and storage.

For these reasons, Aurelian Manufacturing must treat documentation with the same rigor applied to manufacturing processes themselves.

3. Defence Industry Shipment Documentation Requirements

3.1 Overview of Defence Documentation Framework

The defence industry documentation framework is built upon multiple layers of requirements flowing from government regulations through prime contractors to subcontractors and suppliers. Understanding this hierarchy is essential for CNC machining suppliers.

3.1.1 Regulatory Foundation

Defence documentation requirements originate from:

Federal Acquisition Regulation (FAR): Establishes baseline documentation and record-keeping requirements for all federal contractors.

Defence Federal Acquisition Regulation Supplement (DFARS): Adds defence-specific requirements, including counterfeit parts prevention, material traceability, and cybersecurity requirements for documentation systems.

Military Specifications and Standards: MIL-specs often contain specific documentation requirements for materials, processes, and inspections.

Contract Data Requirements List (CDRL): Prime contracts contain CDRLs specifying all data deliverables, which flow down to suppliers via SDRLs.

3.1.2 Prime Contractor Requirements

Major defence primes (Lockheed Martin, Boeing, Raytheon, Northrop Grumman, General Dynamics, BAE Systems, etc.) maintain supplier quality manuals that specify documentation requirements. These typically include:

- Company-specific document formats
- Approved supplier lists for special processes
- Electronic submission requirements
- Quality clause flow-downs

3.2 Manufacturing Record Book Structure for Defence

The defence MRB follows a standardized structure designed to provide complete traceability and compliance evidence.

3.2.1 Required Sections and Contents

Section 1: Identification and Index

Document	Content Requirements
Cover Sheet	Supplier name, CAGE code, part number, nomenclature, PO number, quantity, ship date
Table of Contents	Complete listing with page numbers
Document Revision Log	If MRB is revised after initial submission

Section 2: Contract Documentation

Document	Content Requirements
Purchase Order (relevant pages)	Requirements, specifications called out, quality clauses
Engineering Drawing	As-built revision with all changes incorporated
Specification List	All applicable specs with revision levels

Section 3: Material Documentation

Document	Content Requirements
Material Certifications	Mill test reports for all materials
Material Traceability Matrix	Cross-reference of heat/lot numbers to part serial numbers
Raw Material Receiving Inspection	Verification of material against certification
Conflict Minerals Declaration	If required by contract
Counterfeit Prevention Records	Source verification, testing records

Section 4: Manufacturing Process Documentation

Document	Content Requirements
Process Routing/Traveler	Signed-off operations with dates and operator IDs
CNC Program Verification	Evidence of program verification to drawing
In-Process Inspection Records	Inspection results at key operations
Deviation/Waiver Records	Any approved deviations from specifications

Section 5: Special Process Documentation

Document	Content Requirements
Heat Treatment Certification	Time-temperature charts, lot identification, spec compliance
Surface Treatment Certification	Plating, coating, passivation records
Welding Documentation	WPS, PQR, welder certifications (if applicable)
NDT Reports	MT, PT, RT, UT reports with operator certifications
Special Process Supplier Approvals	Evidence that special process suppliers are customer-approved

Section 6: Inspection Documentation

Document	Content Requirements
First Article Inspection Report	AS9102 FAIR for first production
Final Inspection Report	All drawing characteristics measured
CMM Reports	Coordinate measuring machine outputs
Gage Calibration Records	Evidence gages used were calibrated
Visual Inspection Records	Workmanship, marking verification

Section 7: Test Documentation

Document	Content Requirements
Functional Test Reports	Test results per specification
Proof/Leak Test Records	Pressure testing results (if applicable)
Environmental Test Data	If environmental testing required

Section 8: Compliance Declarations

Document	Content Requirements
Certificate of Conformance	Comprehensive compliance statement
RoHS/REACH Declarations	Environmental compliance (if required)
DFARS 252.225-7014 Compliance	Specialty metals compliance (if applicable)
Packing List	Itemized shipment contents

3.2.2 Document Format Requirements

Defence customers typically require:

- **Paper Size:** Letter size (8.5" x 11") or A4
- **Orientation:** Portrait preferred; landscape acceptable for wide tables
- **Font:** Minimum 10-point, legible
- **Resolution:** Minimum 300 DPI for scanned documents
- **File Format:** PDF/A for archival quality (increasingly required)
- **Naming Convention:** Customer-specified or logical part number/document type format

3.3 AS9100 Documentation Requirements

AS9100 is the aerospace quality management system standard based on ISO 9001 with additional aerospace-specific requirements. While AS9100 itself is a QMS standard, it drives specific shipment documentation requirements.

3.3.1 AS9100 Clause 8.5.2 - Identification and Traceability

AS9100 requires:

“The organization shall identify the outputs by suitable means throughout production and service provision... The organization shall control the unique identification of the outputs when traceability is a requirement, and retain documented information to enable traceability.”

For shipment documentation, this means:

- Unique identification on all documents
- Traceability from raw material to finished part
- Retention of traceability records
- Inclusion of traceability evidence in MRB

3.3.2 AS9100 Clause 8.6 - Release of Products and Services

AS9100 requires documented evidence of conformity before release:

“The organization shall retain documented information on the release of products and services. The documentation shall include: a) evidence of conformity with the acceptance criteria; b) traceability to the person(s) authorizing the release.”

This directly requires:

- Inspection records showing conformity
- Identification of inspection personnel
- Date/time stamps on release authorization

3.3.3 AS9100 Clause 7.1.5 - Monitoring and Measuring Resources

Documentation must demonstrate that measurement equipment was calibrated:

“The organization shall retain appropriate documented information as evidence of fitness for purpose of the monitoring and measurement resources.”

MRB implications:

- Reference to calibrated equipment in inspection reports
- Calibration due dates at time of inspection
- Traceability to calibration records

3.4 Certificate of Conformance Requirements (Defence)

The Certificate of Conformance is the supplier’s formal declaration that delivered products meet all requirements. In defence applications, the CoC carries significant legal weight.

3.4.1 Required CoC Elements

A compliant defence CoC must include:

Element	Description
Supplier Identification	Company name, address, CAGE code
Purchase Order Reference	Customer PO number and line items
Part Identification	Part number, revision, nomenclature
Quantity	Number of pieces, units of measure
Serial/Lot Numbers	As applicable
Specification Compliance	List of all specifications with compliance statement
Drawing Compliance	Drawing number, revision, compliance statement
Quality Clause Compliance	Statement of compliance with customer quality clauses
Special Process Compliance	Statement regarding special processes
Flow-Down Compliance	Confirmation that requirements flowed to sub-tier suppliers
Representative Signature	Authorized quality representative signature
Date	Date of certification

3.4.2 Sample Defence CoC Language

The following language elements are typically required:

Basic Compliance Statement:

"We hereby certify that the items listed above conform to all requirements of the applicable purchase order, engineering drawings, and specifications."

Special Process Statement:

"All special processes (heat treatment, plating, NDT) were performed by sources approved by [Customer Name] in accordance with applicable specifications."

Material Statement:

"All materials used in the manufacture of these items conform to the applicable material specifications and are traceable to mill certifications."

Counterfeit Prevention Statement:

"The items delivered are new and authentic, manufactured by the original component manufacturer or authorized sources, and have not been altered or modified."

Flow-Down Statement:

"All applicable requirements have been flowed down to sub-tier suppliers, and compliance has been verified."

3.4.3 CoC Signature Authority

Only designated personnel should sign CoCs. Requirements typically include:

- Quality department personnel (QA Manager, Quality Engineer, or designated Quality Representative)
- Documented training on CoC requirements
- Understanding of legal implications
- Authority to commit the organization

3.5 First Article Inspection Report (FAIR) - AS9102

The First Article Inspection Report per AS9102 is a critical defence documentation requirement for initial production and after significant changes.

3.5.1 When FAIR is Required

FAIR is typically required:

- First production run of a new part
- After a significant design change
- After a significant process change
- After a significant manufacturing location change
- After a break in production (customer-defined, often 2+ years)
- When using a new sub-tier supplier for key processes
- When requested by customer

3.5.2 AS9102 Form Structure

AS9102 specifies three forms:

Form 1 - Part Number Accountability

- Part number, name, revision
- Manufacturing process reference
- Drawing number and revision
- Serial number of FAI unit
- Reason for FAI
- Organization information
- FAI completion status

Form 2 - Product Accountability - Materials, Special Processes, and Functional Testing

- Raw material specifications and compliance
- Special process specifications and compliance
- Functional test specifications and compliance
- Supplier certifications (material and special process)

Form 3 - Characteristic Accountability, Verification, and Compatibility Evaluation

- Complete listing of all drawing characteristics
- Specification requirements for each characteristic
- Actual measured values

- Conformance determination
- Balloon numbers referencing drawing markup

3.5.3 FAIR Execution Best Practices

For Aurelian Manufacturing, FAIR execution should follow these practices:

1. **Drawing Markup:** Create a ballooned drawing identifying every characteristic with a unique balloon number corresponding to Form 3 entries.
2. **Characteristic Capture:** Document every dimension, tolerance, note, specification requirement, and material requirement from the drawing.
3. **Measurement Planning:** Develop an inspection plan ensuring every characteristic can be verified with appropriate equipment.
4. **Record Actual Values:** Record actual measured values, not just pass/fail determinations.
5. **Non-Conformance Documentation:** Any non-conforming characteristics require disposition (re-work, concession, or rejection) before FAIR completion.
6. **Partial FAIR:** For complex assemblies, partial FAIRs may be acceptable per customer agreement, with clear documentation of what is covered.

3.6 Material Traceability Requirements

Defence material traceability requirements are comprehensive, driven by counterfeit prevention and quality assurance needs.

3.6.1 Traceability Chain

The complete traceability chain includes:

```

Original Material Manufacturer (Mill)
    ↓
Mill Test Report (Heat/Lot Number)
    ↓
Material Distributor (if applicable)
    ↓
Receiving Inspection at Aurelian
    ↓
Material Issue to Production (with heat/lot identification)
    ↓
Process Traveler (maintaining identification)
    ↓
Finished Part (marked with identifying information)
    ↓
Shipment Documentation (complete traceability matrix)
  
```

3.6.2 Documentation Requirements

Each link in the traceability chain requires documentation:

Link	Required Documentation
Mill to Aurelian	Mill Test Report, Certificate of Compliance from mill
Receiving	Receiving inspection report, material verification
Storage	Material identification, location, status
Issue to Production	Cut ticket, material transfer record
Processing	Process traveler with material identification
Finished Part	Serial number, lot number, or identification marking
Shipment	Traceability matrix linking part to original material

3.6.3 Counterfeit Prevention Documentation

DFARS 252.246-7007 and related clauses require documentation supporting authenticity:

- Certificate that material is from original manufacturer or authorized distributor
- Documentation of supply chain (from mill through any intermediaries)
- For electronic components: test reports, visual inspection records, decapsulation reports (if required)
- Supplier qualification records for critical materials

3.7 Special Process Documentation Requirements

Special processes (those affecting material properties or requiring qualified personnel/equipment) require specific documentation.

3.7.1 Common Special Processes in CNC Machining

For Aurelian Manufacturing, relevant special processes include:

- Heat treatment (performed by outside processor)
- Surface treatments (anodizing, plating, passivation, painting)
- Non-destructive testing (MT, PT, UT, RT)
- Welding (if performed)
- Shot peening
- Chemical conversion coating

3.7.2 Required Documentation Elements

Each special process requires:

Element	Description
Supplier Approval	Evidence that processor is customer-approved (NADCAP preferred)
Process Certification	Certificate from processor stating specification compliance
Lot Identification	Connection between processor's certification and specific parts
Process Parameters	For heat treat: time-temperature records; for NDT: technique sheets
Personnel Qualification	NDT Level III certifications, welder qualifications
Equipment Calibration	Evidence of calibrated equipment at processor

3.7.3 NADCAP and Special Process Approvals

NADCAP (National Aerospace and Defense Contractors Accreditation Program) accreditation is the preferred qualification for special process suppliers. Documentation should include:

- Current NADCAP certificate (showing accredited processes)
- Scope of accreditation (specific processes covered)
- Expiration date verification

For non-NADCAP suppliers, customer-specific approval documentation is required, which may include:

- Customer approval letter
- Survey/audit report
- Process qualification records

4. Oil & Gas Industry Shipment Documentation Requirements

4.1 Overview of Oil & Gas Documentation Framework

The oil & gas industry documentation framework differs significantly from defence, driven by different regulatory bodies, international standards, and operational environments. Understanding these differences is essential for suppliers serving both industries.

4.1.1 Regulatory and Standards Framework

Key standards governing oil & gas documentation include:

ISO Standards:

- ISO 9001 (Quality Management - baseline)

- ISO/TS 29001 (Petroleum and Natural Gas Industries - sector-specific QMS)
- ISO 10005 (Quality Plans)

API Standards:

- API Q1 (Quality Management System)
- API Q2 (Quality Management System for Service Supply Organizations)
- API product specifications (5CT, 6A, 6D, 17D, etc.)

European Standards:

- EN 10204 (Inspection Documents for Metallic Products)
- PED (Pressure Equipment Directive) requirements

NORSOK Standards:

- NORSOK M-650 (Qualification of Materials)
- NORSOK M-630 (Material Data Sheets for Piping)
- NORSOK Z-CR-006 (Documentation Requirements)

4.1.2 Regional Variations

Documentation requirements vary by operating region:

Region	Primary Standards	Key Characteristics
North America	API specs, ASME	API monogram emphasis
North Sea	NORSOK, EN standards	NORSOK M-650 emphasis
Middle East	Mix of API and ISO	Project-specific requirements
Asia Pacific	API with local additions	Varies by country
Brazil	API with Petrobras requirements	ANP regulatory overlay

4.2 Manufacturing Record Book Structure for Oil & Gas

The oil & gas MRB, often called a Material/Manufacturing Data Book or Manufacturer's Data Report (MDR), follows a structure optimized for equipment traceability and regulatory compliance.

4.2.1 Typical MRB/MDR Structure

Section 1: General Information

Document	Content Requirements
Cover Page	Project name, PO number, equipment tag, supplier information
Index/Table of Contents	Complete document listing with section references
Document Transmittal	Record of document submission and approvals

Section 2: Purchase and Technical Requirements

Document	Content Requirements
Purchase Order	Complete PO with technical attachments
Technical Specification	Applicable project specifications
SDRL	Supplier Data Requirements List
Data Sheet	Equipment-specific data sheet
Approved Drawings	Customer-approved manufacturing drawings

Section 3: Material Documentation

Document	Content Requirements
Material Traceability Record	Complete material trace from mill to finished product
Mill Test Reports	EN 10204 Type 3.1 or 3.2 certificates
PMI Reports	Positive Material Identification results
Material Certificates Summary	Cross-reference matrix

Section 4: Manufacturing Records

Document	Content Requirements
Manufacturing Procedure	Approved manufacturing procedure
Welding Documentation	WPS, PQR, WPQ (if welding involved)
Heat Treatment Records	Temperature charts, certifications
Dimensional Reports	Complete dimensional verification
Surface Finish Records	Ra values, coating thickness

Section 5: Testing and Inspection

Document	Content Requirements
Inspection Test Plan	ITP with hold/witness points signed off
NDE Reports	UT, RT, MT, PT reports with operator qualifications
Hydrostatic Test Records	Pressure test certificates
Functional Test Records	Performance testing results
Visual Inspection Records	Surface condition, marking verification

Section 6: Compliance Documentation

Document	Content Requirements
Certificate of Conformance	Manufacturer's compliance certificate
ATEX/IECEX Certificate	Explosion protection certification (if applicable)
PED Declaration	Pressure Equipment Directive compliance (if applicable)
API Monogram Sheet	API monogram details (if applicable)

Section 7: Preservation and Shipping

Document	Content Requirements
Preservation Procedure	Storage/preservation method documentation
Packing List	Detailed shipment contents
Shipping Documentation	Bill of lading, customs documentation

4.3 EN 10204 Material Certificates

EN 10204 is the foundational European standard defining types of inspection documents for metallic products. Understanding these certificate types is essential for oil & gas documentation.

4.3.1 Certificate Types Defined

Type	Name	Description	Issuer
2.1	Declaration of Compliance	Statement of compliance with order without test results	Manufacturer
2.2	Test Report	Test results by manufacturer, not from specific products	Manufacturer
3.1	Inspection Certificate 3.1	Test results from specific products by manufacturer's authorized inspection representative	Manufacturer's independent QA
3.2	Inspection Certificate 3.2	Same as 3.1 but also signed by purchaser's designated representative or inspector	Manufacturer + Third Party

4.3.2 When Each Type is Required

Application	Typical Requirement	Rationale
Standard commercial	Type 2.1 or 2.2	Basic assurance
General industrial	Type 3.1	Verified test results
Critical pressure-containing	Type 3.1	Regulatory requirement
High-criticality/safety	Type 3.2	Third-party verification
NORSOK applications	Type 3.1 minimum, often 3.2	Norwegian requirements

4.3.3 EN 10204 Type 3.1 Certificate Requirements

A valid EN 10204 Type 3.1 certificate must include:

Header Information:

- Manufacturer name and address
- Certificate number
- Date of issue
- Reference to EN 10204 Type 3.1

Product Identification:

- Product description
- Material specification (e.g., ASTM A182 F316)
- Heat/lot number

- Dimensions/quantity
- Order reference

Test Results:

Test Type	Typical Content
Chemical Analysis	All elements per specification with actual values
Mechanical Properties	Tensile strength, yield strength, elongation, reduction of area
Impact Testing	Charpy values (if specified)
Hardness	HB, HRC, or HV values
Grain Size	ASTM grain size number (if specified)
Non-Metallic Inclusions	Inclusion ratings (if specified)
Additional Tests	Corrosion testing, ultrasonic testing (as specified)

Certification Statement:

- Statement that material meets specification requirements
- Signature of authorized inspection representative
- Representative must be independent of manufacturing

4.3.4 EN 10204 Type 3.2 Additional Requirements

Type 3.2 adds third-party involvement:

- All Type 3.1 requirements
- Witness of testing by designated purchaser representative or accredited third-party inspector
- Third-party countersignature
- Third-party organization identification

For Aurelian Manufacturing, when purchasing raw material requiring EN 10204 Type 3.2, arrangements must be made with the mill in advance, as third-party witness is required during testing.

4.4 NORSOK Requirements

NORSOK standards, developed for Norwegian Continental Shelf operations, have become de facto international standards for demanding oil & gas applications.

4.4.1 NORSOK M-650: Qualification of Manufacturers

NORSOK M-650 requires suppliers to demonstrate manufacturing capability before supplying products. Documentation requirements include:

Qualification Documentation:

- Quality management system certification (ISO 9001 minimum)
- Manufacturing procedure specifications

- Evidence of production capability
- Personnel qualification records
- Equipment calibration records

Production Documentation per M-650:

- Material certificates (EN 10204 Type 3.1 minimum)
- Manufacturing records with complete traceability
- Test reports per applicable specifications
- Inspection records including dimensional verification
- Certificate of Conformance

4.4.2 NORSOK Z-CR-006: Documentation Requirements

This specification defines documentation requirements for NORSOK projects. Key elements include:

Document Types and Codes:

- Systematic document numbering
- Revision control procedures
- Document status tracking

Data Book Requirements:

- Complete documentation of materials, manufacturing, and testing
- Organized structure per specification
- Electronic format requirements (typically PDF/A)

Record Retention:

- Minimum 10 years after equipment/facility decommissioning
- Original certificates or certified copies

4.4.3 NORSOK Material Data Sheets (MDS)

NORSOK M-630 defines Material Data Sheets specifying:

Content	Description
Material grade	Specification and grade designation
Chemical composition	Limits and requirements
Mechanical properties	Required values with test conditions
Heat treatment	Required condition
Testing requirements	Extent of testing, specimen requirements
Documentation	Required certificate type

For Aurelian Manufacturing, when machining to NORSOK requirements, the MDS specifies documentation requirements that must be captured in the shipment package.

4.5 API Documentation Requirements

American Petroleum Institute (API) standards are prevalent in oil & gas, with specific documentation requirements.

4.5.1 API Monogram Program

The API Monogram Program licenses manufacturers to mark products with the API Monogram, indicating conformance to API specifications. Documentation requirements include:

For Monogram Products:

- API Monogram marking per specification
- API license number on documentation
- Test data per specification requirements
- Quality records per API Q1

Monogram Documentation Package:

- Product identification with monogram details
- Material certifications per specification
- Required testing (pressure testing, NDE, etc.)
- Certificate of Compliance with API license reference

4.5.2 Common API Specifications and Documentation Requirements

Specification	Product Type	Key Documentation Requirements
API 6A	Wellhead and Tree Equipment	Material certs, pressure test, NDE, functional test
API 6D	Pipeline Valves	Material certs, shell test, seat test, NDE
API 17D	Subsea Equipment	Extensive testing, third-party witness, qualification docs
API 5CT	Casing and Tubing	Material certs, dimensional, drift test, hydro test

4.5.3 API Q1 Quality Records Requirements

API Q1 Section 4.2.4 specifies quality record requirements:

- Records demonstrating conformity to requirements
- Records of management review
- Records of training
- Records of product realization including inspection and test results
- Traceability records for materials and products

For shipment documentation, API Q1 drives requirements for:

- Material traceability to original certificates
- Process records including any post-weld heat treatment
- Inspection and test records
- Calibration records for measurement equipment
- Certificate of Compliance

4.6 Positive Material Identification (PMI)

PMI is a critical requirement in oil & gas, providing verification of material composition independent of mill certifications.

4.6.1 PMI Requirements in Oil & Gas

PMI is typically required for:

- Pressure-containing materials
- Process piping materials
- Structural materials in corrosive environments
- Materials susceptible to environmental cracking
- Any materials where substitution could have safety consequences

4.6.2 PMI Methods and Documentation

Method	Description	Documentation Requirements
XRF (X-Ray Fluorescence)	Portable analysis of surface composition	PMI report with alloy identification, element readings, equipment ID
OES (Optical Emission Spectrometry)	More precise analysis	Certified report with full composition, traceability
Laboratory Analysis	Definitive composition determination	Accredited lab report with full chemistry

4.6.3 PMI Report Requirements

A compliant PMI report must include:

Element	Requirement
Equipment ID	Unique identification of PMI instrument
Calibration status	Evidence of current calibration
Operator qualification	Evidence operator is trained/certified
Material identification	Heat number, part number connection
Readings	Element readings with comparison to specification
Pass/Fail determination	Clear statement of acceptability
Date and signature	Date of test, operator signature

For Aurelian Manufacturing, PMI documentation must clearly link the PMI reading to specific parts and to the original mill certification heat number.

4.7 Inspection Test Plans (ITP)

The Inspection Test Plan is a core document in oil & gas project execution, defining inspection and documentation requirements.

4.7.1 ITP Structure

A typical ITP includes:

Column	Content
Activity Number	Sequential operation identifier
Activity Description	Manufacturing/inspection step
Reference Document	Applicable specification or procedure
Acceptance Criteria	Pass/fail criteria
Record	Document to be generated
Manufacturer	R (review), W (witness), H (hold)
Third Party	R, W, H as required
Client	R, W, H as required
Remarks	Additional notes

4.7.2 Hold, Witness, and Review Points

Designation	Meaning	Documentation Impact
H (Hold)	Work stops until inspector releases	Release signature required
W (Witness)	Inspector invited; proceeds if not present after notice	Notice documentation, attendance record
R (Review)	Documentation reviewed, no physical witness	Review signature on documentation

4.7.3 ITP Sign-Off Documentation

The signed ITP becomes part of the shipment documentation, evidencing:

- All required inspections were performed
- Hold points were released
- Witness points were offered (and attended or waived)
- Review points were documented

4.8 Pressure Testing Documentation

Pressure testing is fundamental in oil & gas; documentation must be comprehensive.

4.8.1 Hydrostatic Test Documentation Requirements

Element	Requirement
Test Procedure	Reference to approved test procedure
Test Medium	Water (or specified fluid), source, treatment
Test Equipment	Pressure gauge ID, calibration status, range
Test Pressure	Specified and actual test pressure
Hold Time	Required and actual hold time
Ambient Temperature	Temperature during test
Test Chart	Continuous pressure recording (if required)
Observations	Any leakage, distortion, or other observations
Result	Clear pass/fail statement
Personnel	Tester name, signature, date
Witness	Third-party witness signature (if required)

4.8.2 Pneumatic Test Documentation

Pneumatic tests require additional safety documentation:

- Risk assessment
- Safety precautions implemented
- Test medium (air, nitrogen, etc.)
- All hydrostatic test documentation elements

5. Digital MRB Builders and Documentation Management Systems

5.1 Overview of Digital Documentation Systems

The transition from paper-based to digital documentation management is well underway in both defence and oil & gas industries. Digital systems offer significant advantages in efficiency, accuracy, and retrieval while meeting increasing customer requirements for electronic delivery.

5.1.1 Benefits of Digital Documentation Management

Benefit	Description
Efficiency	Reduced document handling time, automated compilation
Accuracy	Elimination of transcription errors, automated validation
Traceability	Complete audit trail of document creation and modification
Retrieval	Instant access to historical documentation
Space	Elimination of physical storage requirements
Customer Satisfaction	Faster delivery, professional presentation
Cost Reduction	Reduced labor, printing, shipping costs

5.1.2 System Categories

Digital documentation systems fall into several categories:

Enterprise Resource Planning (ERP) Integrated:

Systems built into or tightly integrated with ERP platforms, providing documentation management as part of overall business management.

Dedicated Documentation Management:

Specialized systems focused specifically on documentation compilation and delivery, typically interfacing with ERP for data.

Project-Specific Portals:

Customer-provided systems for documentation submission on specific projects.

Hybrid Approaches:

Combinations of the above, with internal systems feeding customer portals.

5.2 Integration with ERP Systems

For Aurelian Manufacturing, integration between documentation management and ERP is essential for efficiency and accuracy.

5.2.1 Key Integration Points

ERP Module	Documentation Integration
Sales Order	SDRL capture, documentation requirements flagging
Purchasing	Material certification requirements flow-down to suppliers
Inventory	Material traceability data, lot/heat number tracking
Production	Shop traveler data, operation completion, inspection results
Quality	Inspection records, non-conformance records, calibration data
Shipping	Packing list generation, documentation package completion

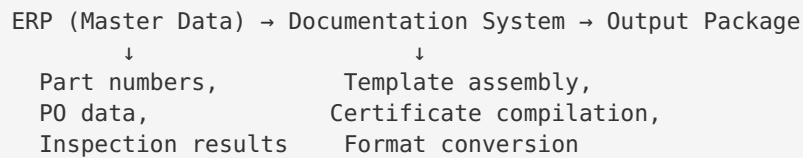
5.2.2 Common ERP Systems with Documentation Capabilities

System	Documentation Features	Strength
SAP	Quality Management module, document management	Large enterprise, complex requirements
Epicor	Quality module, DocStar integration	Mid-market manufacturing
IQMS (DELMIAworks)	Built-in quality tracking, document storage	Plastics/manufacturing focus
JobBOSS	Basic quality tracking, document attachment	Job shop focus
ProShop	Quality planning, traveler, document management	Precision manufacturing
E2 Shop System	Quality tracking, document attachment	Job shop focus

5.2.3 Integration Architecture Considerations

For Aurelian Manufacturing, key architecture considerations include:

Data Flow:



Integration Methods:

- Direct database connection (if same vendor or compatible)
- API integration (modern cloud systems)
- File-based export/import (legacy systems)
- Manual data entry (to be minimized)

Key Principle: Data should be entered once and flow automatically to all required documentation. Manual re-keying introduces errors and inefficiency.

5.3 DocBoss: Oil & Gas Documentation Standard

DocBoss has emerged as the de facto standard for oil & gas documentation management, particularly for SDRL management and document compilation.

5.3.1 DocBoss Capabilities

Feature	Description
SDRL Management	Import customer SDRLs, track requirements, manage submissions
Document Compilation	Automated assembly of documentation packages
Cover Sheet Generation	Professional cover sheets and transmittals
Revision Control	Track document revisions, maintain history
Customer Portals	Direct submission to customer systems
Status Tracking	Visual status of documentation completeness
Multi-Project	Handle multiple projects simultaneously
Supplier Management	Track supplier documentation submissions

5.3.2 DocBoss Workflow for CNC Suppliers

Typical DocBoss workflow for Aurelian Manufacturing:

1. Project Setup:

- Create new project from customer PO
- Import SDRL (manual entry or electronic import)
- Define document requirements per SDRL line

2. Document Collection:

- Upload documents as they become available

- Tag documents with metadata (part number, document type)
- Link documents to SDRL line items

3. Package Assembly:

- Select documents for submission
- Generate cover sheets and transmittals
- Compile into single PDF package
- Apply bookmarks and table of contents

4. Submission:

- Transmit to customer (email, portal, FTP)
- Record submission details
- Track customer comments

5. Revision Management:

- Receive customer comments
- Update documents
- Resubmit with revision tracking

5.3.3 DocBoss Implementation Considerations

For Aurelian Manufacturing implementing DocBoss:

Pros:

- Industry-standard tool recognized by customers
- Comprehensive SDRL management
- Professional output quality
- Cloud-based accessibility

Cons:

- Subscription cost (per-user pricing)
- Learning curve for staff
- May require process changes
- Integration with ERP may require custom work

Implementation Recommendations:

1. Start with a pilot project to learn the system
2. Develop standard templates for cover sheets
3. Create document type taxonomy aligned with SDRLs
4. Train documentation personnel thoroughly
5. Integrate with ERP for automatic data population where possible

5.4 Other Documentation Management Systems

While DocBoss dominates oil & gas, several other systems serve the broader manufacturing documentation market.

5.4.1 System Comparison

System	Primary Market	Key Features	Pricing Model
DocBoss	Oil & Gas	SDRL, compilation	Subscription
Paperless Parts	Job Shop	Quoting, quality	Subscription
Net-Inspect	Aerospace	AS9102, FAIR	Subscription
QualityXpert	Multi-industry	Inspection, SPC	Perpetual + maint
InspectionXpert	Manufacturing	Balloon drawings, FAI	Perpetual + maint
Ideagen Q-Pulse	Multi-industry	QMS, documentation	Subscription
MasterControl	Regulated	Document control, training	Subscription

5.4.2 Net-Inspect for Aerospace/Defence

Net-Inspect is specifically designed for aerospace supplier quality requirements:

Features Relevant to Aurelian:

- AS9102 FAIR creation and management
- Ballooned drawing management
- Inspection data collection
- SPC and capability analysis
- Supplier portal for customer access

Integration: Net-Inspect can integrate with ERP systems and provides data export capabilities.

5.4.3 Hybrid Approach Recommendation

For Aurelian Manufacturing serving both defence and oil & gas, a hybrid approach may be optimal:

Defence Documentation:

- ERP-based quality module for data collection
- Net-Inspect or similar for FAIR creation
- ERP document management for storage and retrieval

Oil & Gas Documentation:

- DocBoss for SDRL management and package compilation
- ERP integration for master data
- DocBoss output to customers

Unified Elements:

- Single source of truth for part master data (ERP)
- Common calibration system
- Unified material traceability system
- Single archive for long-term retention

5.5 Certificate of Conformance Automation

CoC generation is a critical documentation function that benefits significantly from automation.

5.5.1 Automated CoC Elements

Element	Automation Approach
Header information	Pull from customer master (ERP)
Part identification	Pull from sales order/work order
Quantity/Serial numbers	Pull from production records
Specification listing	Pull from part master BOM
Compliance statements	Template based on customer requirements
Signature	Digital signature or authorized signatory data-base

5.5.2 CoC Template Management

Effective CoC automation requires template management:

Customer-Specific Templates:

Many customers require specific CoC formats. Maintain a library of customer-specific templates with:

- Required language elements
- Logo and header requirements
- Signature block requirements
- Distribution requirements

Template Elements:

- Static text (compliance statements, legal disclaimers)
- Variable fields (part number, PO, quantity - pulled from data)
- Conditional text (appears based on order requirements)

5.5.3 Digital Signature Implementation

Digital signatures on CoCs provide authenticity and non-repudiation:

Options:

- PKI-based digital signatures (highest assurance)
- Electronic signature platforms (DocuSign, Adobe Sign)
- Image-based signatures with audit trail (minimum acceptable)

Requirements for Valid Digital Signature:

- Unique to signatory
- Created using means under signatory's control
- Linked to data so changes are detectable
- Time-stamped

5.6 Document Control and Revision Management

Proper document control is essential for maintaining documentation integrity.

5.6.1 Revision Control Requirements

Element	Requirement
Unique identification	Every document version uniquely identified
Revision status	Current revision clearly indicated
Revision history	Record of all revisions with changes noted
Approval workflow	Defined approval process for revisions
Distribution control	Obsolete versions removed from circulation

5.6.2 Document Control in Digital Systems

Digital systems should provide:

- Automatic version numbering
- Check-in/check-out to prevent conflicts
- Revision comparison (red-line capability)
- Approval workflow with electronic signatures
- Access control (who can view, edit, approve)
- Audit trail (complete history of all actions)

5.6.3 Long-Term Archival Considerations

Shipment documentation must be retained for extended periods:

Retention Requirements:

- Defence: Often 7-10 years, sometimes longer for critical systems
- Oil & Gas: Typically equipment life plus 5-10 years

Archival Format:

- PDF/A is the recommended format for long-term archival
- PDF/A ensures self-contained documents without external dependencies
- PDF/A-1b is minimum; PDF/A-2 or PDF/A-3 preferred for complex documents

Storage Requirements:

- Redundant storage (on-site and off-site)
- Regular backup verification
- Migration plan for technology changes
- Access control for sensitive documentation

6. Prompt Delivery of Documentation Best Practices

6.1 Importance of Timely Documentation

Documentation delays are a significant source of customer dissatisfaction and operational inefficiency. Parts ready for shipment cannot be shipped without complete documentation; conversely, documentation waiting for parts represents wasted effort if orders are cancelled or modified.

6.1.1 Impact of Documentation Delays

Impact Area	Consequence
Cash Flow	Delayed shipment = delayed invoicing = delayed payment
Customer Satisfaction	Documentation delays frustrate customers
Inventory	Finished goods occupy floor space waiting for docs
Production Planning	Documentation bottlenecks disrupt scheduling
Expediting Costs	Rush shipping to recover lost time
Reputation	Poor documentation performance limits growth

6.1.2 Root Causes of Documentation Delays

Understanding root causes enables systematic improvement:

Root Cause	Description	Typical Source
Missing supplier certs	Material certs not received from supplier	Purchasing
Incomplete inspection	Inspection not completed or documented	Quality
Special process delays	Outside processor certs not received	Production Control
Data errors	Part number, revision, or other data errors	Multiple
Template issues	CoC or cover sheet errors	Documentation
Approval delays	Required signatures not obtained	Management
System issues	Software problems, access issues	IT

6.2 Documentation Planning at Order Entry

Effective documentation delivery begins at order entry, not at shipment time.

6.2.1 Order Entry Documentation Review Checklist

At order entry, the following documentation review should occur:

Item	Verification	Action if Issue
SDRL received	Complete SDRL attached to PO	Request from customer
Requirements clear	All document types understood	Clarify with customer
Capabilities confirmed	Can provide all required documents	Identify gaps, negotiate
Material certs available	Can obtain required cert types	Verify with supplier
Special process certs	Approved processors have cert capability	Verify with processors
Format requirements	Can meet format specifications	Assess tools/capabilities
Timeline feasible	Documentation timeline achievable	Adjust schedule if needed

6.2.2 Documentation Requirements in Production Planning

Production planning should incorporate documentation milestones:

Work Order Documentation Requirements:

- List of required documents on work order
- Documentation responsibility assignments
- Documentation due dates (before ship date)
- Special documentation notes (customer-specific requirements)

Scheduling Considerations:

- Allow time for outside certifications
- Schedule inspection with documentation completion in mind
- Account for approval cycles
- Include buffer for documentation errors/corrections

6.3 Real-Time Documentation Collection

Documentation should be collected throughout production, not compiled at the end.

6.3.1 Point-of-Origin Documentation Capture

Production Stage	Documents to Capture
Material receipt	Mill certs, packing lists, receiving inspection
Material issue	Cut ticket, traceability record
First operation	Setup verification, first-piece inspection
In-process	Operation completion records, in-process inspection
Special processes	Send-out records, certifications upon return
Final inspection	Dimensional reports, CMM data
Final processing	Cleaning, marking verification

6.3.2 Electronic Data Capture

Modern quality systems enable real-time data capture:

Inspection Data Collection:

- Digital calipers and micrometers connected to SPC systems
- CMM data automatically stored
- Digital checklists and forms
- Barcode/RFID tracking for traceability

Benefits:

- Data available immediately upon operation completion
- Eliminates transcription errors
- Creates automatic timestamps
- Enables real-time status visibility

6.3.3 Supplier Certification Tracking

Supplier certifications are a common documentation bottleneck. Best practices:

At Purchase Order Placement:

- Specify certification requirements clearly
- Include certification due date (before material need date)
- Reference applicable specifications

At Material Receipt:

- Verify certifications received with material
- Reject material without required certifications (or hold pending)
- Enter certification data into tracking system immediately

For Special Processes:

- Confirm certification timeline when sending parts out
- Follow up before expected return date
- Verify certifications complete upon part return

6.4 Documentation Compilation Workflow

A structured compilation workflow ensures complete, accurate documentation packages.

6.4.1 Pre-Shipment Documentation Checklist

Step	Activity	Responsible
1	Verify all production operations complete	Production
2	Verify all inspections complete and passed	Quality
3	Verify all supplier certs received	Purchasing/Quality
4	Compile documentation package	Documentation
5	Complete SDRL checklist (all items present)	Documentation
6	Generate Certificate of Conformance	Quality
7	Review package for completeness and accuracy	Quality Manager
8	Obtain required signatures	As required
9	Create packing list	Shipping
10	Package documentation with shipment (or transmit separately)	Shipping/Documentation

6.4.2 Quality Gate for Documentation

Implement a documentation quality gate preventing shipment without complete documentation:

Gate Criteria:

- All SDRL items present and verified
- All documents properly formatted
- All signatures/approvals obtained
- CoC complete and signed
- Packing list accurate

Gate Enforcement:

- System lock preventing shipment release without documentation approval
- Physical process requiring documentation sign-off before packing

6.5 Managing Documentation Across Supply Chain Tiers

For Aurelian Manufacturing, supplier documentation management is critical.

6.5.1 Supplier Documentation Requirements Communication

Communication Element	When	How
Documentation requirements	At PO issuance	Written in PO terms
Certification formats	At PO issuance	Attachment to PO
Due dates	At PO issuance	Specified in PO
Issues or changes	As they arise	Direct communication + documented
Receipt confirmation	At material receipt	Receiving inspection process

6.5.2 Supplier Certification Verification

Verify supplier certifications upon receipt:

Verification	Action
Certificate present	Confirm cert received with material
Certificate matches material	Heat/lot number matches tags/markings
Certificate complete	All required elements present
Certificate type correct	EN 10204 type, test scope per requirements
Specification compliance	Results meet specification limits
Authorized signature	Proper signature/authorization

6.5.3 Dealing with Certification Problems

Common certification problems and resolutions:

Problem	Resolution Approach
Certificate not received	Contact supplier immediately; do not release material
Certificate incomplete	Request corrected/complete certification
Wrong certificate type	Request correct type; may require retest
Values out of spec	Reject material or seek engineering disposition
Certificate mismatch	Verify marking; may require PMI
Missing signature	Request properly signed certificate

6.6 Post-Shipment Documentation Processes

Documentation responsibilities continue after shipment.

6.6.1 Customer Feedback Management

Track and respond to documentation feedback:

Feedback Types:

- Document missing from package
- Document error (data, format, signature)
- Additional documents requested
- Clarification requests

Response Process:

- Acknowledge feedback promptly
- Investigate root cause
- Correct and resubmit if appropriate
- Update templates/processes to prevent recurrence
- Track feedback patterns for improvement

6.6.2 Documentation Archive Process

After shipment and customer acceptance:

Activity	Timing	Responsible
Final package assembly	Within 1 week of shipment	Documentation
Quality review of final package	Within 2 weeks of shipment	Quality
Archive to long-term storage	Within 1 month of shipment	Documentation
Backup verification	Per IT schedule	IT

6.6.3 Retrieval Procedures

Establish clear procedures for documentation retrieval:

Authorized Requestors:

- Customer quality representatives
- Internal quality personnel
- Engineering (for reference)
- Sales (customer support)
- Management

Retrieval Process:

- Request submitted with part number, PO, date range
- Documentation located in archive
- Copy provided (controlled distribution for restricted data)
- Retrieval logged

7. Comparison Between Defence and Oil & Gas

7.1 Documentation Philosophy Differences

Understanding the philosophical differences between industries helps in tailoring approaches.

Aspect	Defence	Oil & Gas
Primary Driver	Contract compliance, national security	Safety, operational reliability
Standards Origin	Government/military specifications	Industry consensus standards
Approval Philosophy	Pre-approved suppliers, qualified processes	Qualification through documentation
Traceability Focus	Counterfeit prevention, accountability	Material verification, failure analysis
Documentation Quantity	Extensive, often exceeds technical need	Focused on technical requirements

7.2 Certificate and Report Differences

Specific documentation elements differ between industries:

7.2.1 Material Certification Comparison

Element	Defence	Oil & Gas
Standard Reference	MIL-specs, AMS, ASTM	EN 10204, ASTM, API
Certificate Type	Mill cert with full compliance	EN 10204 Type 3.1/3.2
Third Party	Not typically required	Type 3.2 for critical items
PMI Requirement	Sometimes	Almost always
Chemical Analysis	Full per spec	Full per spec
Mechanical Testing	Per spec requirements	Per spec requirements
Additional Testing	As specified (often extensive)	Impact testing common

7.2.2 Inspection Report Comparison

Element	Defence	Oil & Gas
Format Standard	AS9102 for FAI; company forms for others	Project-specific; ITP driven
First Article	AS9102 FAIR	May use FAIR or other format
CMM Reports	Common	Common
100% Inspection	Often required	Sampling common except critical
Witnessed Inspection	Government/customer source inspection	Third-party witness (H/W points)

7.2.3 Special Process Documentation Comparison

Element	Defence	Oil & Gas
Process Approval	NADCAP preferred; customer approval	Project-specific approval
Heat Treat Records	Time-temp charts, spec compliance	Time-temp charts, spec compliance
NDT Personnel	NAS 410/EN 4179	SNT-TC-1A or ASNT CP-189
NDT Reports	Per NAS 410 format	Per project or SNT-TC-1A
Surface Treatment	Per spec (AMS 2700, etc.)	Per spec (NORSOK, project spec)

7.3 Certificate of Conformance Comparison

CoC requirements differ significantly:

7.3.1 Defence CoC Requirements

- Explicit contract/PO reference
- Detailed specification listing
- Quality clause compliance statements
- Counterfeit prevention declaration
- Flow-down confirmation
- Authorized quality representative signature
- Often uses customer-specific format

7.3.2 Oil & Gas CoC Requirements

- EN 10204 alignment common
- Project/PO reference
- Specification compliance statement
- Material traceability statement
- May include equipment-specific test results summary
- Manufacturer's authorized representative signature
- Third-party countersignature for Type 3.2

7.4 Practical Implications for Dual-Industry Suppliers

For Aurelian Manufacturing serving both industries:

7.4.1 Unified vs. Separate Systems

Approach	Pros	Cons
Unified System	Single system to maintain, consistent data	Must accommodate both sets of requirements
Separate Systems	Optimized for each industry	Duplication, inconsistency risk
Hybrid	Core unified, industry-specific overlays	Complexity in implementation

Recommendation: Hybrid approach with unified core data (ERP-based) and industry-specific documentation generation tools.

7.4.2 Template Management

Maintain separate template libraries for each industry:

Defence Templates:

- AS9102 FAIR forms
- Customer-specific CoC formats
- Process traveler with defence-specific fields
- Material traceability matrix for defence

Oil & Gas Templates:

- EN 10204 aligned material certificate summaries
- ITP formats
- Pressure test certificates
- NORSOK-compliant data sheet formats

7.4.3 Personnel Training

Training should address both industries:

Training Topic	Defence Focus	Oil & Gas Focus
Specifications	MIL-specs, AMS, AS standards	API, NORSOK, EN standards
CoC Requirements	Contract flow-down, legal implications	EN 10204, third-party involvement
Inspection	AS9102, source inspection	ITP, witness points
Special Processes	NADCAP, customer approval	Project qualification
Digital Systems	Prime contractor portals	DocBoss, operator portals

7.5 Regulatory and Compliance Differences

7.5.1 Export Control Considerations

Aspect	Defence	Oil & Gas
Primary Regulations	ITAR, EAR	EAR (less commonly ITAR)
Documentation Impact	May restrict document distribution	Typically less restricted
Customer Countries	Often classified allies	Global distribution
Handling Requirements	May require secure storage	Generally commercial handling

7.5.2 Quality System Certifications

Certification	Defence	Oil & Gas
Baseline	AS9100 (aerospace)	ISO 9001
Industry-Specific	AS9100D, NADCAP	API Q1, ISO/TS 29001
Customer-Specific	Prime contractor approvals	Operator qualifications

8. Practical Implementation Roadmap for Aurelian Manufacturing

8.1 Current State Assessment

Before implementing improvements, assess the current documentation state.

8.1.1 Assessment Checklist

Area	Assessment Questions
Customer Requirements	Are all customer documentation requirements clearly understood?
SDRL Management	How are SDRLs currently tracked and managed?
Material Traceability	Can materials be traced from mill to finished part?
Process Records	Are all manufacturing operations documented?
Inspection Records	Are inspection results captured electronically?
Special Processes	Are special process certifications systematically tracked?
CoC Generation	How are CoCs generated? Manual or automated?
MRB Compilation	How are MRB packages compiled? Time required?
Customer Feedback	What documentation complaints are received?
Delivery Performance	What percentage of shipments have documentation delays?

8.1.2 Gap Analysis

Compare current state against requirements:

Requirement	Current State	Gap	Priority
AS9102 FAIR capability	[Assess]	[Identify]	[High/Med/Low]
EN 10204 tracking	[Assess]	[Identify]	[High/Med/Low]
PMI documentation	[Assess]	[Identify]	[High/Med/Low]
Digital MRB delivery	[Assess]	[Identify]	[High/Med/Low]
CoC automation	[Assess]	[Identify]	[High/Med/Low]

8.2 Phase 1: Foundation (Months 1-3)

Establish fundamental documentation capabilities.

8.2.1 Phase 1 Objectives

- Document current processes
- Establish material traceability system
- Create standard operating procedures
- Train personnel on requirements

8.2.2 Phase 1 Activities

Week	Activity	Deliverable
1-2	Document current document-ation processes	Process maps
3-4	Define material traceability procedure	SOP for traceability
5-6	Create SDRL review proced-ure	SOP for order entry docu-mentation review
7-8	Develop standard MRB struc-ture	MRB template
9-10	Create CoC templates	Coc templates for defence and oil & gas
11-12	Training	All relevant personnel trained

8.2.3 Phase 1 Investment

Item	Estimated Cost
Procedure development (internal labor)	80-120 hours
Template development	40-60 hours
Training development and delivery	40-60 hours
External consulting (optional)	\$5,000-15,000

8.3 Phase 2: System Implementation (Months 4-9)

Implement digital systems to automate and improve documentation.

8.3.1 Phase 2 Objectives

- Select and implement documentation management software
- Integrate with existing ERP
- Automate CoC generation

- Implement electronic data capture

8.3.2 Phase 2 Activities

Month	Activity	Deliverable
4	Requirements definition	System requirements document
4-5	Software selection	Selected software, contract signed
5-6	Implementation planning	Implementation plan
6-7	Core implementation	Software installed, configured
7-8	ERP integration	Integration operational
8-9	User training, pilot	Pilot project completed
9	Go-live, stabilization	Production use

8.3.3 Software Selection Criteria

Criterion	Weight	Evaluation Questions
Functionality	25%	Meets identified requirements?
Integration	20%	Integrates with current ERP?
Ease of use	15%	User interface intuitive?
Vendor stability	15%	Vendor financially stable, committed?
Cost	15%	Total cost of ownership acceptable?
Support	10%	Training and support adequate?

8.3.4 Phase 2 Investment

Item	Estimated Cost
Software licenses (annual)	\$5,000-25,000
Implementation services	\$10,000-30,000
Integration development	\$5,000-20,000
Training	\$3,000-8,000
Hardware (if needed)	\$2,000-10,000
Internal labor	200-400 hours

8.4 Phase 3: Optimization (Months 10-18)

Optimize processes and expand capabilities.

8.4.1 Phase 3 Objectives

- Achieve paperless documentation
- Implement advanced analytics
- Expand customer portal capabilities
- Achieve industry certifications

8.4.2 Phase 3 Activities

Quarter	Activity	Deliverable
Q4	Paperless shop floor	Electronic travelers, inspection
Q4	Customer feedback integration	Automated feedback tracking
Q5	Supplier portal implementation	Supplier certification submission portal
Q5	Analytics dashboard	Documentation KPI dashboard
Q6	Continuous improvement	Process optimization based on data
Q6	Certification preparation	AS9100 or API Q1 certification (if pursuing)

8.4.3 Phase 3 Investment

Item	Estimated Cost
Additional software modules	\$3,000-15,000/year
Hardware (tablets, scanners)	\$5,000-15,000
Certification costs (if applicable)	\$15,000-40,000
Internal labor	300-500 hours

8.5 Implementation Success Factors

Critical success factors for implementation:

8.5.1 Leadership Commitment

- Executive sponsor identified
- Resources allocated
- Documentation quality as strategic priority

8.5.2 Change Management

- Clear communication of reasons for change
- Involvement of shop floor personnel
- Recognition of improvements

8.5.3 Training

- Comprehensive training program
- Ongoing refresher training
- Job aids and quick reference materials

8.5.4 Metrics and Accountability

- KPIs defined and tracked
- Regular review meetings
- Accountability for performance

8.6 Key Performance Indicators

Track these KPIs to measure documentation performance:

KPI	Definition	Target
Documentation On-Time Rate	% of shipments with complete documentation	>98%
SDRL Compliance Rate	% of SDRL line items provided	100%
Documentation Error Rate	Errors per 100 document packages	<2
Customer Complaints	Documentation-related complaints per quarter	<5
Time to Compile MRB	Average hours to compile MRB package	Reduce 50%
First-Pass CoC Approval	% of CoCs accepted without revision	>95%
Supplier Cert On-Time	% of supplier certs received on time	>95%

9. Cost-Benefit Analysis

9.1 Costs of Poor Documentation

Understanding the costs of documentation problems justifies investment in improvements.

9.1.1 Direct Costs

Cost Category	Description	Typical Impact
Shipment Delays	Lost revenue from delayed invoicing	Days of DSO impact
Expediting	Rush shipping to recover schedule	3-10x normal shipping
Rework	Correcting documentation errors	2-4 hours per package
Rejected Shipments	Material returned for documentation issues	Full order value at risk
Customer Chargebacks	Penalties for documentation non-compliance	\$100-1,000+ per incident

9.1.2 Indirect Costs

Cost Category	Description	Typical Impact
Lost Opportunities	Customers avoiding poor documentation suppliers	Difficult to quantify; significant
Reputation Damage	Industry reputation for documentation problems	Long-term business impact
Audit Findings	QMS audit non-conformances	Audit follow-up costs
Staff Frustration	Turnover due to chaotic processes	Hiring and training costs

9.1.3 Case Study: Cost of Documentation Delay

Scenario: Order for 100 machined components worth \$50,000 delayed 2 weeks due to missing special process certifications.

Impact	Calculation	Cost
Expedited shipping	\$2,500 additional shipping cost	\$2,500
Delayed payment	$\$50,000 \times (2/52) \times 8\%$ cost of capital	\$154
Inventory carrying	\$10,000 WIP \times 2 weeks	\$38
Personnel time	8 hours @ \$50/hour chasing certs	\$400
Customer goodwill	Unquantified	Significant
Total quantified		\$3,092

9.2 Benefits of Improved Documentation

9.2.1 Operational Benefits

Benefit	Description	Value
Faster compilation	Automated MRB assembly	50-75% time reduction
Fewer errors	Automated validation	80-90% error reduction
Faster retrieval	Electronic archive	Minutes vs. hours
Better visibility	Real-time status tracking	Proactive problem resolution

9.2.2 Strategic Benefits

Benefit	Description	Value
Customer satisfaction	Reliable documentation delivery	Repeat business, referrals
New market access	Meeting stringent requirements	Defence, oil & gas contracts
Competitive advantage	Documentation as differentiator	Win rates improvement
Certification readiness	Supporting AS9100, API Q1	New customer qualification

9.3 Investment vs. Return Analysis

9.3.1 Investment Summary (18-Month Implementation)

Category	Low Estimate	High Estimate
Software	\$10,000	\$50,000
Implementation services	\$15,000	\$50,000
Hardware	\$5,000	\$25,000
Internal labor (500-1000 hours @ \$50)	\$25,000	\$50,000
Training	\$5,000	\$15,000
Total Investment	\$60,000	\$190,000

9.3.2 Annual Benefits Estimate

Benefit Category	Conservative	Optimistic
Labor savings (documenta- tion time)	\$20,000	\$50,000
Expediting cost reduction	\$5,000	\$15,000
Error reduction (rework avoid- ance)	\$10,000	\$25,000
Avoided customer penalties	\$5,000	\$20,000
New business enabled	\$50,000	\$200,000
Total Annual Benefit	\$90,000	\$310,000

9.3.3 Payback Analysis

Scenario	Investment	Annual Benefit	Payback Period
Conservative	\$60,000	\$90,000	8 months
Moderate	\$125,000	\$150,000	10 months
Optimistic	\$190,000	\$310,000	7 months

9.4 Risk Analysis

9.4.1 Implementation Risks

Risk	Likelihood	Impact	Mitigation
Software doesn't meet needs	Medium	High	Thorough require- ments, pilot
ERP integration diffi- culties	Medium	Medium	Experienced integrat- or, contingency
User resistance	Medium	Medium	Change manage- ment, training
Scope creep	High	Medium	Clear scope defini- tion, phased ap- proach
Vendor issues	Low	High	Vendor due diligence, contract terms

9.4.2 Risk of Non-Implementation

Risk	Likelihood	Impact
Losing current customers	Medium	High
Failing to win new contracts	High	High
Increasing compliance costs	High	Medium
Audit failures	Medium	Medium
Continued inefficiency	Certain	Medium

10. Key Recommendations

10.1 Immediate Actions (0-3 Months)

The following actions should be taken immediately to address the most critical documentation needs:

10.1.1 Formalize Documentation Procedures

Action: Create written procedures for documentation processes.

Specific Steps:

1. Document current SDRL review process
2. Create material traceability procedure
3. Develop MRB compilation procedure
4. Establish CoC approval process

Expected Outcome: Consistent documentation practices, reduced errors.

10.1.2 Implement SDRL Tracking

Action: Establish systematic SDRL tracking for every order.

Specific Steps:

1. Create SDRL tracking spreadsheet (interim) or implement in ERP
2. Require SDRL review at order entry
3. Assign documentation responsibility for each order
4. Track documentation status weekly

Expected Outcome: No surprises at shipment time.

10.1.3 Train Documentation Personnel

Action: Provide comprehensive training on industry requirements.

Specific Steps:

1. Develop training materials for defence requirements
2. Develop training materials for oil & gas requirements
3. Train all quality and documentation personnel
4. Document training records

Expected Outcome: Knowledgeable staff capable of meeting customer requirements.

10.2 Short-Term Initiatives (3-12 Months)

10.2.1 Implement Documentation Management Software

Action: Select and implement appropriate documentation management tools.

Recommendation:

- For Oil & Gas focus: DocBoss
- For Defence focus: Net-Inspect or similar
- For balanced needs: Evaluate both and implement based on primary business

Expected Outcome: Automated MRB compilation, professional output, reduced time.

10.2.2 Automate Certificate of Conformance Generation

Action: Implement automated CoC generation linked to ERP.

Specific Steps:

1. Define CoC data requirements for each customer type
2. Create templates with variable fields
3. Implement data pull from ERP
4. Establish electronic signature process

Expected Outcome: Consistent, accurate CoCs generated in minutes.

10.2.3 Enhance Material Traceability System

Action: Implement robust material traceability from receiving through shipment.

Specific Steps:

1. Require material certifications before material acceptance
2. Implement barcode or RFID tracking of material heat/lot numbers
3. Link material identification through production travelers
4. Include traceability matrix in every MRB

Expected Outcome: Complete traceability for any shipped part.

10.3 Medium-Term Strategic Initiatives (12-24 Months)

10.3.1 Pursue Relevant Quality Certifications

Action: Obtain certifications that enable access to target markets.

Options to Evaluate:

- AS9100 for aerospace/defence
- API Q1 for oil & gas
- NADCAP for special processes (if performed in-house)

Expected Outcome: Qualification for new customers requiring certification.

10.3.2 Implement Supplier Documentation Portal

Action: Create portal for suppliers to submit certifications electronically.

Specific Steps:

1. Define portal requirements
2. Select/develop portal solution

3. Onboard key suppliers
4. Expand to all suppliers

Expected Outcome: Faster receipt of supplier certifications, reduced follow-up.

10.3.3 Establish Documentation Excellence as Competitive Advantage

Action: Market documentation capabilities as a differentiator.

Specific Steps:

1. Develop case studies of documentation success
2. Include documentation capabilities in marketing materials
3. Train sales team on documentation value proposition
4. Track customer feedback on documentation

Expected Outcome: Documentation quality as a sales tool, premium pricing potential.

10.4 Summary of Recommendations

Priority	Recommendation	Timeline	Investment	Impact
1	Formalize documentation procedures	Immediate	Low	High
2	Implement SDRL tracking	Immediate	Low	High
3	Train documentation personnel	Immediate	Low	High
4	Implement documentation software	3-6 months	Medium	High
5	Automate CoC generation	3-6 months	Medium	Medium
6	Enhance material traceability	6-12 months	Medium	High
7	Pursue quality certifications	12-24 months	High	High
8	Implement supplier portal	12-24 months	Medium	Medium
9	Market documentation excellence	18-24 months	Low	Medium

11. Conclusion

11.1 Summary of Findings

This comprehensive review of shipment documentation requirements for the defence and oil & gas industries reveals several critical insights for Aurelian Manufacturing:

Documentation is a Core Business Function: In both defence and oil & gas, shipment documentation is not a peripheral administrative task but a core element of product delivery. Products cannot be accepted without complete, accurate documentation. Investment in documentation capabilities is investment in delivery capability.

Industry Requirements Differ Significantly: While both industries demand rigorous documentation, the specific requirements differ substantially. Defence emphasizes AS9102 FAIRs, customer-specific formats, and counterfeit prevention. Oil & gas emphasizes EN 10204 certificates, PMI, and inspection test plans. Serving both industries requires understanding and accommodating these differences.

Digital Transformation is Essential: The transition to digital documentation is not optional for serious participation in defence and oil & gas supply chains. Customers increasingly require electronic submission through portals, digital signatures, and structured data formats. Investment in digital tools is a competitive necessity.

Supplier Management is Critical: A significant portion of shipment documentation comes from suppliers—material certifications, special process certificates, and test reports. Effective supplier management, including clear requirements communication and systematic tracking, is essential for documentation success.

Integration Enables Efficiency: Documentation efficiency depends on integration between systems. When quality data flows automatically from inspection equipment to quality systems to documentation packages, errors decrease and speed increases. Disconnected systems requiring manual data transfer are both inefficient and error-prone.

11.2 Strategic Importance for Aurelian Manufacturing

For Aurelian Manufacturing, excellence in shipment documentation offers strategic advantages:

Market Access: Many defence and oil & gas customers require demonstrated documentation capability as a prerequisite for supplier approval. Robust documentation systems open doors to contracts that would otherwise be inaccessible.

Customer Retention: Consistent, accurate, on-time documentation delivery builds customer confidence and loyalty. In industries where switching costs are significant, documentation reliability supports long-term customer relationships.

Operational Efficiency: Systematic documentation processes reduce firefighting, rework, and expediting costs. Time not spent chasing missing certificates is time available for value-adding activities.

Risk Mitigation: Proper documentation provides legal protection in case of product issues. Complete, accurate records demonstrate due diligence and support defense against claims.

Premium Positioning: In a market where many suppliers struggle with documentation, excellence in this area can support premium pricing and preferred supplier status.

11.3 Call to Action

The recommendations in this report provide a roadmap for Aurelian Manufacturing to achieve documentation excellence. The path forward requires:

Commitment: Leadership commitment to documentation as a strategic priority, with resources allocated accordingly.

Investment: Financial investment in systems, training, and potentially certifications, with payback demonstrated through improved efficiency and new business.

Discipline: Organizational discipline to follow procedures, track performance, and continuously improve.

Patience: Recognition that documentation excellence is built over time through consistent execution, not achieved through one-time efforts.

The defence and oil & gas industries reward suppliers who reliably deliver conforming products with complete documentation. Aurelian Manufacturing has the opportunity to build this capability and leverage it for competitive advantage. The roadmap presented in this report provides the path; execution depends on organizational commitment and follow-through.

11.4 Next Steps

To begin implementing these recommendations, Aurelian Manufacturing should:

1. **Review this report** with key stakeholders (management, quality, production, sales)
2. **Conduct internal assessment** using the checklist provided in Section 8.1
3. **Prioritize initiatives** based on current customer requirements and business strategy
4. **Develop implementation plan** with timelines, responsibilities, and budgets
5. **Execute Phase 1** activities to establish the foundation
6. **Measure and adjust** based on results and feedback

The journey to documentation excellence begins with the first step. This report provides the map; Aurelian Manufacturing must now take the journey.

12. Appendices

Appendix A: Defence Industry SDRL Checklist

A.1 Complete Defence SDRL Item Checklist

Line	Document	Required	Format	Notes
1	Purchase Order Acknowledgment	<input type="checkbox"/>	PDF	With acceptance of all terms
2	First Article Inspection Report (AS9102)	<input type="checkbox"/>	AS9102 Forms	Forms 1, 2, 3 complete
3	Ballooned Drawing	<input type="checkbox"/>	PDF	All characteristics numbered
4	Certificate of Conformance	<input type="checkbox"/>	Customer format	Signed by authorized representative
5	Material Certifications (Raw Material)	<input type="checkbox"/>	PDF	All materials, complete chem/mech
6	Material Traceability Matrix	<input type="checkbox"/>	Spreadsheet/ PDF	Heat numbers to serial numbers
7	Heat Treatment Certification	<input type="checkbox"/>	PDF	Time-temp records, spec compliance
8	Surface Treatment Certification	<input type="checkbox"/>	PDF	Per applicable specification
9	NDT Reports - Magnetic Particle	<input type="checkbox"/>	PDF	Personnel certs included
10	NDT Reports - Penetrant	<input type="checkbox"/>	PDF	Personnel certs included
11	NDT Reports - Radiographic	<input type="checkbox"/>	PDF	Film reading sheets
12	NDT Reports - Ultrasonic	<input type="checkbox"/>	PDF	Technique sheet, results
13	Dimensional Inspection Report	<input type="checkbox"/>	PDF	All characteristics
14	CMM Report	<input type="checkbox"/>	PDF	

Line	Document	Required	Format	Notes
				Raw data and summary
15	Process Traveler (signed)	<input type="checkbox"/>	PDF	All operations signed off
16	Special Process Supplier Certifications	<input type="checkbox"/>	PDF	NADCAP or customer approval evidence
17	Welding Documentation (WPS, PQR)	<input type="checkbox"/>	PDF	If welding required
18	Welder Qualification Records	<input type="checkbox"/>	PDF	If welding required
19	Calibration Certificates	<input type="checkbox"/>	PDF	For gages used in inspection
20	Test Reports	<input type="checkbox"/>	PDF	Per specification requirements
21	Conflict Minerals Declaration	<input type="checkbox"/>	PDF	If required by contract
22	Counterfeit Prevention Certificate	<input type="checkbox"/>	PDF	If required by contract
23	DFARS Compliance Certificates	<input type="checkbox"/>	PDF	Specialty metals, etc.
24	Packing List	<input type="checkbox"/>	PDF	Contents of shipment
25	Export Documentation	<input type="checkbox"/>	PDF	If applicable

Appendix B: Oil & Gas Industry SDRL Checklist

B.1 Complete Oil & Gas SDRL Item Checklist

Line	Document	Required	Format	Notes
1	Purchase Order/ Contract	<input type="checkbox"/>	PDF	With technical attachments
2	Data Sheet (Equipment)	<input type="checkbox"/>	PDF	Customer-ap- proved
3	Manufacturing Drawing	<input type="checkbox"/>	PDF	As-built revision
4	Manufacturing Procedure	<input type="checkbox"/>	PDF	If required by spec
5	Quality Plan / ITP	<input type="checkbox"/>	PDF	Signed off at all hold/witness points
6	Material Certific- ates - EN 10204 3.1	<input type="checkbox"/>	PDF	All materials
7	Material Certific- ates - EN 10204 3.2	<input type="checkbox"/>	PDF	If third-party wit- ness required
8	PMI Reports	<input type="checkbox"/>	PDF	100% for critical materials
9	Heat Treatment Records	<input type="checkbox"/>	PDF	Time-temperat- ure charts
10	Dimensional Re- port	<input type="checkbox"/>	PDF	All critical di- mensions
11	Surface Finish Reports	<input type="checkbox"/>	PDF	Ra values
12	NDE Reports - UT	<input type="checkbox"/>	PDF	With operator qualifications
13	NDE Reports - RT	<input type="checkbox"/>	PDF	With film inter- pretation
14	NDE Reports - MT	<input type="checkbox"/>	PDF	With operator qualifications
15	NDE Reports - PT	<input type="checkbox"/>	PDF	With operator qualifications

Line	Document	Required	Format	Notes
16	Hardness Test Report	<input type="checkbox"/>	PDF	As required
17	Impact Test Report	<input type="checkbox"/>	PDF	Charpy values
18	Hydrostatic Test Certificate	<input type="checkbox"/>	PDF	Pressure, duration, medium
19	Functional Test Report	<input type="checkbox"/>	PDF	If applicable
20	Welding Procedure (WPS)	<input type="checkbox"/>	PDF	If welding involved
21	Procedure Qualification (PQR)	<input type="checkbox"/>	PDF	If welding involved
22	Welder Qualification (WPQ)	<input type="checkbox"/>	PDF	If welding involved
23	Coating/Painting Report	<input type="checkbox"/>	PDF	DFT, adhesion tests
24	Certificate of Conformance	<input type="checkbox"/>	PDF	EN 10204 aligned
25	API Monogram Sheet	<input type="checkbox"/>	PDF	If API licensed
26	PED Declaration	<input type="checkbox"/>	PDF	If PED applicable
27	ATEX/IECEX Certificate	<input type="checkbox"/>	PDF	If explosion protection required
28	Preservation Certificate	<input type="checkbox"/>	PDF	Storage/preservation details
29	Packing List	<input type="checkbox"/>	PDF	Detailed contents
30	Shipping Documents	<input type="checkbox"/>	PDF	BOL, customs

Appendix C: Certificate of Conformance Templates

C.1 Defence Industry CoC Template

[COMPANY LETTERHEAD]

CERTIFICATE OF CONFORMANCE

Certificate No.: [Auto-generated number]

Date: [Date]

Supplier Information:

Company Name: Aurelian Manufacturing

Address: [Address]

CAGE Code: [CAGE Code]

Customer Information:

Customer Name: [Customer Name]

Purchase Order No.: [PO Number]

Contract No.: [If applicable]

Product Information:

Part Number: [Part Number]

Revision: [Revision]

Nomenclature: [Description]

Quantity: [Quantity]

Serial Numbers: [If applicable]

CERTIFICATION

We hereby certify that the items described above:

1. Conform to all requirements of Purchase Order [PO Number], including all referenced specifications, drawings, and quality clauses.
2. Were manufactured using materials that conform to the applicable material specifications and are traceable to original mill certifications.
3. Were processed through all required special processes (heat treatment, surface treatment, non-destructive testing) by sources approved by [Customer Name], in accordance with applicable specifications.
4. Have been inspected and tested in accordance with the requirements of the applicable specifications and drawings, and meet all acceptance criteria.
5. Are new, authentic items from approved sources, and no counterfeit or suspect counterfeit parts have been used.
6. Meet all applicable flow-down requirements, which have been imposed on sub-tier suppliers.
7. Comply with all applicable DFARS clauses, including but not limited to specialty metals requirements (if applicable).

Specification Compliance:

- Drawing: [Drawing Number, Revision]
- Material Spec: [Material Specification]
- Process Specs: [List applicable process specifications]
- Customer Specs: [Customer quality requirements reference]

This certificate covers the items listed on the attached Packing List.

Authorized Quality Representative_____
Date

[Name]

[Title]

C.2 Oil & Gas Industry CoC Template

[COMPANY LETTERHEAD]

MANUFACTURER'S CERTIFICATE OF COMPLIANCE
(Reference: EN 10204)

Certificate No.: [Number]
Date: [Date]

Manufacturer:
Name: Aurelian Manufacturing
Address: [Address]
Quality System: ISO 9001:20XX [Certificate Number]

Customer: [Customer Name]
Project: [Project Name/Number]
Purchase Order: [PO Number]

Product Description:
Item: [Description]
Part/Tag Number: [Part Number]
Drawing Reference: [Drawing Number, Revision]
Quantity: [Quantity]
Material: [Material Grade per specification]

Applicable Specifications:
- [List all applicable specifications]

Material Traceability:
Heat Number(s): [Heat numbers used]
Mill: [Original material manufacturer]

COMPLIANCE STATEMENT

We hereby certify that the above-described items have been manufactured, inspected, and tested in accordance with the requirements of the purchase order and applicable specifications.

The items comply with:

- ☐ Material specification requirements
- ☐ Dimensional requirements per drawing
- ☐ Surface finish requirements
- ☐ NDT requirements (if applicable)
- ☐ Pressure test requirements (if applicable)
- ☐ PMI verification completed
- ☐ All other specified requirements

Supporting Documentation:

The following documents are attached/provided separately:

- Material Test Reports (EN 10204 Type [3.1/3.2])
- Dimensional Inspection Report
- NDT Reports
- [Other applicable documents]

This certificate is issued under the authority of our quality management system and represents our verification that all requirements have been met.

Authorized Representative
[Name]
[Title]

Date

Third Party Verification (if EN 10204 Type 3.2):

[Third Party Inspector Name]
[Organization]
[Certificate/Authorization Number]

Date

Appendix D: Glossary of Terms

Term	Definition
AMS	Aerospace Material Specification (SAE International)
API	American Petroleum Institute
AS9100	Aerospace Quality Management System Standard
AS9102	Aerospace First Article Inspection Requirement
ASTM	American Society for Testing and Materials
CAGE Code	Commercial and Government Entity Code
CDRL	Contract Data Requirements List
CMM	Coordinate Measuring Machine
CoC	Certificate of Conformance/Compliance
DFARS	Defense Federal Acquisition Regulation Supplement
EN 10204	European Standard for Metallic Products Inspection Documents
ERP	Enterprise Resource Planning
FAIR	First Article Inspection Report
FAR	Federal Acquisition Regulation
H (Hold Point)	Inspection point requiring release before proceeding
ITP	Inspection Test Plan
ITAR	International Traffic in Arms Regulations
MDR	Manufacturer's Data Report
MDS	Material Data Sheet
MIL-STD	Military Standard
MRB	Manufacturing Record Book

Term	Definition
MT	Magnetic Particle Testing
NADCAP	National Aerospace and Defense Contractors Accreditation Program
NDE/NDT	Non-Destructive Examination/Testing
NORSOK	Norwegian Shelf's Competitive Position (Standards)
OES	Optical Emission Spectrometry
PDF/A	Archival PDF format (ISO 19005)
PED	Pressure Equipment Directive (European)
PMI	Positive Material Identification
PQR	Procedure Qualification Record (Welding)
PT	Penetrant Testing
R (Review Point)	Documentation review point
RT	Radiographic Testing
SDRL	Supplier Data Requirements List
SPC	Statistical Process Control
UT	Ultrasonic Testing
W (Witness Point)	Inspection point where witness is invited
WPS	Welding Procedure Specification
WPQ	Welder Performance Qualification
XRF	X-Ray Fluorescence

Appendix E: Reference Standards

E.1 Defence Industry Standards

Standard	Title	Relevance
AS9100D	Quality Management Systems - Aerospace	QMS requirements
AS9102B	Aerospace First Article Inspection Requirement	FAIR format
NAS 410	NAS Certification and Qualification of NDT Personnel	NDT personnel
AMS 2750	Pyrometry	Heat treatment equipment
AMS 2759	Heat Treatment of Steel Parts	Heat treatment process
MIL-STD-1916	DOD Preferred Methods for Acceptance of Product	Sampling
SAE AS6081	Counterfeit Electronic Parts; Avoidance	Counterfeit prevention
SAE AS6174	Counterfeit Materiel; Assuring Acquisition of Authentic Parts	Counterfeit prevention

E.2 Oil & Gas Industry Standards

Standard	Title	Relevance
EN 10204	Metallic Products - Types of Inspection Documents	Material certificates
ISO 9001	Quality Management Systems	QMS baseline
ISO/TS 29001	Petroleum and Natural Gas Industries - QMS	Sector-specific QMS
API Q1	Specification for Quality Management System	API QMS
API 6A	Specification for Wellhead and Christmas Tree Equipment	Wellhead equipment
API 6D	Specification for Pipeline and Piping Valves	Valves
NORSOK M-650	Qualification of Manufacturers	Supplier qualification
NORSOK Z-CR-006	Documentation Requirements	Documentation
ASNT SNT-TC-1A	Personnel Qualification and Certification in NDT	NDT personnel
ASME B31.3	Process Piping	Piping systems

Appendix F: Implementation Checklists

F.1 Documentation System Readiness Checklist

Item	Status	Notes
Procedures		
SDRL review procedure documented	<input type="checkbox"/>	
MRB compilation procedure documented	<input type="checkbox"/>	
CoC generation procedure documented	<input type="checkbox"/>	
Material traceability procedure documented	<input type="checkbox"/>	
Document control procedure documented	<input type="checkbox"/>	
Templates		
Defence CoC template created	<input type="checkbox"/>	
Oil & gas CoC template created	<input type="checkbox"/>	
MRB cover sheet template created	<input type="checkbox"/>	
Transmittal template created	<input type="checkbox"/>	
Systems		
Document storage system identified	<input type="checkbox"/>	
Document retrieval process defined	<input type="checkbox"/>	
Backup procedures established	<input type="checkbox"/>	
Archive procedures established	<input type="checkbox"/>	
Training		
Training materials developed	<input type="checkbox"/>	

Item	Status	Notes
Personnel trained	<input type="checkbox"/>	
Training records maintained	<input type="checkbox"/>	
Integration		
ERP integration defined	<input type="checkbox"/>	
Data flow mapped	<input type="checkbox"/>	
Customer portals identified	<input type="checkbox"/>	

F.2 Order-Level Documentation Checklist

Item	Required	Received/Complete	Notes
Order Entry			
SDRL received and reviewed	<input type="checkbox"/>	<input type="checkbox"/>	
Documentation requirements identified	<input type="checkbox"/>	<input type="checkbox"/>	
Special requirements flagged	<input type="checkbox"/>	<input type="checkbox"/>	
Documentation responsibility assigned	<input type="checkbox"/>	<input type="checkbox"/>	
Material			
Material certifications required	<input type="checkbox"/>	<input type="checkbox"/>	
Material certifications received	<input type="checkbox"/>	<input type="checkbox"/>	
PMI required	<input type="checkbox"/>	<input type="checkbox"/>	
PMI completed and documented	<input type="checkbox"/>	<input type="checkbox"/>	
Manufacturing			
Traveler complete with signatures	<input type="checkbox"/>	<input type="checkbox"/>	
In-process inspection documented	<input type="checkbox"/>	<input type="checkbox"/>	
Special process certs received	<input type="checkbox"/>	<input type="checkbox"/>	
Final Inspection			
Dimensional inspection complete	<input type="checkbox"/>	<input type="checkbox"/>	
CMM reports generated	<input type="checkbox"/>	<input type="checkbox"/>	
FAIR required	<input type="checkbox"/>	<input type="checkbox"/>	

Item	Required	Received/Complete	Notes
FAIR complete	<input type="checkbox"/>	<input type="checkbox"/>	
Final Documenta- tion			
All SDRL items present	<input type="checkbox"/>	<input type="checkbox"/>	
CoC generated and signed	<input type="checkbox"/>	<input type="checkbox"/>	
Packing list prepared	<input type="checkbox"/>	<input type="checkbox"/>	
MRB compiled	<input type="checkbox"/>	<input type="checkbox"/>	
MRB reviewed and approved	<input type="checkbox"/>	<input type="checkbox"/>	

Document Control

Version	Date	Author	Changes
1.0	February 18, 2026	Documentation Team	Initial release

End of Document

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