

Request for Quotation

Doc. No	FIN-SCM-RFQ-0003
Revision	3
Page	1 of 5

RFQ Number	PR00058375
RFQ Date	11 April 2024
RFQ Closing Date	2024-04-18
RFQ Closing Time	12:00
Compulsory Site Briefing?	YES NO No
	If YES: N/A
	Site Briefing Venue: N/A
	Site Briefing Date & Time: N/A
	Other Details: N/A
Necsa Contact Person	Willem Cilliers
Quotation Validity	90 days from the RFQ Closing Date
Submission Details	RFQ Response must be sent to: Willem.cilliers@necsa.co.za
RFQ Description	Supply of Bar Compliant to AM-18412-TDS-0003 Rev 1.0, AM-18412-TDS-0006 Rev 1.0 and AM-QAP4-QAR-0018 REV 7.0

Dear Service Provider

Kindly provide a quotation for goods and or services as outlined in section 2 of this document.

1. Introduction

The South African Nuclear Energy Corporation Limited (Necsa) is a state-owned public company (SOC), registered in terms of the Companies Act, (Act No. 61 of 1973), registration number 2000/003735/06.

The Necsa Group engages in commercial business mainly through its wholly-owned commercial subsidiaries: NTP Radioisotopes SOC Ltd (NTP), which is responsible for a range of radiation-based products and services for healthcare, life sciences and industry, and Pelchem SOC Ltd (Pelchem), which supplies fluorine and fluorine-based products. Both subsidiaries, together with their subsidiaries, supply local and global markets, earning valuable foreign exchange for South Africa and are among the best in their field in their respective world markets.

Necsa's safety, health, environment and quality policies provides for top management commitment to compliance with regulatory requirements of ISO 14001, OHSAS 18001 and RD 0034 (Quality and Safety Management Requirements for Nuclear Installations), ISO 9001 and ISO 17025.

Necsa promotes the science, technology and engineering expertise of South Africa and improves the public understanding of these through regular communications at various forums and outreach programmes to the community. We are a proudly South African company continuously striving, and succeeding in many respects, to be at the edge of science, technology and engineering related to the safe use of nuclear knowledge to improve our world.

For more information on Necsa, please visit: www.necsa.co.za.

2. Scope of Work

	ITEM DESCRIPTION	QUANTITY	UNIT OF MEASURE
1	Bar 25mm x 25mm x 140mm Long 316 Stainless Steel	1.00	EACH
2	Round Bar Ø60mm x 1500mm Long Aluminium Round Bar SB-221 A95083 O/H111	1.00	EACH
3	Round Bar Ø80mm x 50mm Long Aluminium Round Bar SB-221 A95083 O/H111	1.00	EACH
4	Round Bar Ø200mm x 520mm Long Aluminium Round Bar SB-221 A95083 O/H111	1.00	EACH
5	Round Bar OD 20mm x 2200mm Long Aluminium Round Bar SB-221 A95083 O/H111	1.00	EACH
6	Flat Bar 40mm x 5mm THK x 6000mm ; Long Aluminium	2.00	EACH
7	Angle 50mm x 30mm x 4mm THK x ; 2000mm Long; AL5083	1.00	EACH
8	Round Bar OD30mm x 50mm Aluminium Round Bar SB-221 A95083 O/H111	1.00	EACH
9	Round Bar OD14mm x 120mm Aluminium Round Bar SB-221 A95083 O/H111	1.00	EACH
10	Round bar, OD8mm x 300mm Long AISI 316 Stainless Stee	1.00	EACH
11	Round Bar OD30mm x 30mm Long Aluminium Bronz, Round Bar	1.00	EACH

12	OD12mm x 20mm Long Aluminium Bronz, Round Bar	8.00	EACH
13	OD60mm x 90mm Long Brass CZ121 (With material & UT Test Certs)	1.00	EACH
14	Round Bar OD6mm x 400mm Long Aluminium Round Bar SB-221 A95083 O/H111	1.00	EACH
15	OD30mm x 100mm Long Brass CZ121 (With material & UT Test Certs)	1.00	EACH
16	Round Bar OD15mm x 80mm Long Aluminium Round Bar SB-221 A95083 O/H111	1.00	EACH
17	OD12mm x 2000mm Long Phosphor Bronz - PB1	1.00	EACH
18	Round Bar, Ø60mm x 50mm Long Aluminium Round Bar SB-221 A95083 O/H111	1.00	EACH
19	Flat Bar, 40mm x 5mm x 6000mm Long Aluminium	2.00	EACH
20	SS 316 Round Bar OD50mm x 300mm ; Long	1.00	EACH
21	SS 316 Round Bar OD20mm x 40mm ; Long	1.00	EACH
22	SS 316 Round Bar OD40mm x 320mm ; Long	1.00	EACH

3. Pricing

- All price quoted to include all applicable taxes.
- Price must be fixed and firm
- Price should include additional cost elements such as freight, insurance until acceptance, duty where applicable, disbursements etc.
- Quotation must be completed in full, incomplete quote could result in a quote being disqualified.
- Payment will be according to Necsa's General Conditions of Purchase.

4. Evaluation

4.1. Phase 1- Functionality Evaluation / Technical Evaluation

Where functional or technical evaluation criterion is applicable, assessment will be performed in terms of the criterion listed below and the criterion may include Technical, Performance, Quality and Risk.

If the Bidder's response to the Technical templates does not indicate that the Bidder can support an acceptable technical solution, the Bidder's response will be rejected and not evaluated further.

Together the Technical, Performance & Quality and Risk criteria make up the functionality criterion and a Bidder's Proposal will be evaluated for functionality out of a possible 100 points. Only RFQ responses achieving an evaluation score of greater than the set threshold points out of the possible 100 points and which score a number of points for functionality that is greater than or equal to the set threshold points of the number of points achieved by the highest scoring Bid for functionality will be selected to progress to the second stage.

4.2. Phase 2 - Evaluation In Terms Of Preferential Procurement Policy Framework Act, 2022

This bid will be evaluated and adjudicated according to the 80/20 point system, in terms of which a maximum of 80 points will be awarded for price and 20 points will be allocated based on the specific goals (B-BBE status level).

	POINTS
PRICE	80
SPECIFIC GOALS (B-BBEE status level)	20
Total points for Price and SPECIFIC GOALS	100

**Preference goal
B-BBEE status level contributor**

B-BBEE Status Level of Contributor	Number of points (80/20 system)
1	20
2	18
3	14
4	12
5	8
6	6
7	4
8	2
Non-compliant contributor	0

5. Required Documentation

- Tax Clearance Certificate (Tax pin issued by SARS)
- Declaration of interest (SBD 4)
- BEE Certificate / Applicable Affidavit if classified as EME
- Letter of Good Standing (COID) only if Applicable due to the nature of work required ▪ Any other document or certification that might have been requested on this RFQ

6. Important

- 6.1. Quotation must be submitted on or before the RFQ closing date and time stated above.
- 6.2. Orders above R 30 000 will be evaluated according to the PPPFA 80/20-point system and a functionality scorecard where applicable and the ones above R 1 Million will be subjected to the tender process.
- 6.3. This RFQ is subjected to the Necsa's General Conditions of Purchase, Preferential Procurement Policy Framework Act 2000 and the Preferential Procurement Regulations, 2022, the General Conditions of Contract (GCC) and, if applicable, any other legislation or special conditions of contract
- 6.4. Failure on the part of a bidder to submit proof of B-BBEE Status level of contributor together with the bid, will be interpreted to mean that preference points for specific goals are not claimed.
- 6.5. The purchaser reserves the right to require of a bidder, either before a bid is adjudicated or at any time subsequently, to substantiate any claim in regard to specific goals, in any manner required by the purchaser.
- 6.6. For a Bidder to obtain clarity on any matter arising from or referred to in this document, please refer queries, in writing, to the contact details provided above. Under no circumstances may any other employee within Necsa be approached for any information. Any such action might result in a disqualification of a response submitted in competition to this RFQ.
- 6.7. No goods and/or services should be delivered to Necsa without an official Necsa Purchase order.
- 6.8. Necsa reserves the right to; cancel or reject any quote and not to award the RFQ to the lowest Bidder or award parts of the RFQ to different Bidders, or not to award the RFQ at all.
- 6.9. The supplier shall under no circumstances offer, promise or make any gift, payment, loan, reward, inducement, benefit or other advantage, which may be construed as being made to solicit any favour, to any Necsa employee or its representatives. Such an act shall constitute a material breach of the Agreement and the Necsa shall be entitled to terminate the Agreement forthwith, without prejudice to any of its rights
- 6.10. By responding to this request, it shall be construed that: the bidder, hereby acknowledge to be fully conversant with the details and conditions set out in the Necsa's General Conditions of Purchase, Preferential Procurement Policy Framework Act 2000 and the Preferential Procurement Regulations, 2022, the General Conditions of Contract (GCC), Technical Information and Specifications attached, and hereby agree to supply, render services or perform works in accordance therewith

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TITLE

REQUEST FOR QUOTATION

Necsa RFQ No.:		RFQ 18412-004 TUP - Bar		2 Man TUP1100 Pressure Vessel				
QAR's required (for ASME III materials):								
BOM Item No.	Drawing No. / Service	Rev	Specification	TDS No. & Rev.	Ordering of material Size	Qty	Unit Price	Price
12	HYD-0060195	A	Aluminium Round Bar SB-221 A95083 O/H111	AM-18412-TDS-0003	Round Bar, 260mm x 50mm Long	1		
21	HYD-0061043	A	Aluminium Flat Bar 40mm x 5mm THK	AM-18412-TDS-0003	Flat Bar, 40mm x 5mm x 6000mm Long	2		
108	HYD-0060983	C	SS 316 Round Bar OD50mm	HYD-0060983	SS 316 Round Bar OD50mm x 300mm Long	1		
109	HYD-0060995	A	SS 316 Round Bar OD20mm	HYD-0060995	SS 316 Round Bar OD20mm x 40mm Long	1		
110	HYD-0060996	B	SS 316 Round Bar OD40mm	HYD-0060996	SS 316 Round Bar OD40mm x 320mm Long	1		



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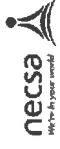
REQUEST FOR QUOTATION

TITLE

Necsa RFQ No.:		AM-18412-RFQ-0004 Bar		2-Man TDC1100 Pressure Vessel			
BOM Item No.		QAR's required (for ASME III materials):					
Drawing No. / Service	Rev	Specification	TDS No. & Rev.	Ordering of material Size	Qty	Unit Price	Price
HYD-0099193	A	Aluminium Round Bar SB-221 A95083 O/H111	AM-18412-TDS-0003	Round Bar Ø60mm x 1500mm Long	1		
HYD-0099178	A	Aluminium Round Bar SB-221 A95083 O/H111	AM-18412-TDS-0003	Round Bar Ø80mm x 50mm Long	1		
HYD-0099217	A	Aluminium Round Bar SB-221 A95083 O/H111	AM-18412-TDS-0003	Round Bar Ø200mm x 520mm Long	1		
HYD-0099240	A	Aluminium Round Bar SB-221 A95083 O/H111	AM-18412-TDS-0003	Round Bar OD 20mm x 2200mm Long	1		
HYD-0061045	A	Aluminium Flat Bar 40mm x 5mm THK	AM-18412-TDS-0003	Flat Bar 40mm x 5mm THK x 6000mm Long	2		
HYD-0099335	A	Aluminium Angle 50mm x 30mm x 4mm THK AL5083	AM-18412-TDS-0003	Angle 50mm x 30mm x 4mm THK x 2000mm Long	1		
HYD-0099355	A	Aluminium Round Bar SB-221 A95083 O/H111	AM-18412-TDS-0003	Round Bar OD30mm x 50mm	1		
HYD-0099361	A	Aluminium Round Bar SB-221 A95083 O/H111	AM-18412-TDS-0003	Round Bar OD14mm x 120mm	1		
HYD-009516	B	AlSI 316 Stainless Steel	HYD-009516	Round bar, OD8mm x 300mm Long	1		
HYD-009483	A	Aluminium Bronz, Round Bar	AM-18412-TDS-0006	Round Bar OD30mm x 30mm Long	1		
HYD-009489	A	Aluminium Bronz, Round Bar	AM-18412-TDS-0006	OD12mm x 20mm Long (x2 item 68, 8E)	8		
HYD-0060965	A	Brass CZ121 (With material & UT Test Certs)	HYD-0060965	OD60mm x 90mm Long	1		
HYD-0099338	A	Aluminium Round Bar SB-221 A95083 O/H111	AM-18412-TDS-0003	Round Bar OD6mm x 400mm Long	1		
HYD-0060964	B	Brass CZ121 (With material & UT Test Certs)	HYD-0060964	OD30mm x 100mm Long	1		
HYD-0099250	A	Aluminium Round Bar SB-221 A95083 O/H111	AM-18412-TDS-0003	Round Bar OD15mm x 80mm Long	1		
HYD-0060957	A	Phosphor Bronz - PB1	HYD-0060957	OD12mm x 200mm Long	1		

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REQUEST FOR QUOTATION

TITLE

Necsa RFQ No.:		RFQ 18412-004 Stanga - Bar		Stanag Flange Assembly				
QAR's required (for ASME III materials):								
BOM Item No.	Drawing No. / Service	Rev	Specification	TDS No. & Rev.	Ordering of material Size	Qty	Unit Price	Price
11	HYD-0063525	A	316 Stainless Steel	HYD-0063525	Bar 25mm x 25mm x 140mm Long	1		

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DOC No: AM-18412-TDS-0006 Rev. No. 1.0 Page 1 of 6

TITLE: TECHNICAL DATA SHEET

Description: Material Purchase Specification Date: See Signature Block

Technical Data Sheet for the supply of: ASTM B 221M, Aluminium and Aluminium-Alloy Extruded Alloy 6060 and 6063 Tubes for ASME VIII, Division 1, Applications.

	Name	Signature	Date
Prepared	SR Mngoma Mechanical Engineer		02/04/2024
Reviewed	TP Choou QC Manager		02/04/2024
Reviewed	CIK Corbitt QA Manager		2024/04/02
Approved	M van Heerden MO Manager		2024/04/02

REVISION HISTORY

Rev	Date	Description of changes
1.0	See signature block	First Issue

1 SCOPE

1.1 Supplying of Aluminium and Aluminium-Alloy Extruded Alloy 6060 and 6063 Tubes shall conform to all the applicable requirements of:

1.1.1 ASTM B 221M, Specification for Aluminium and Aluminium Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes, ref.[1]. With certification and a test report that have also been made mandatory to be in compliance with ASME SB-221, 2023 Edition;

1.1.2 ANSI H35.1, Specifications for Alloy and Temper Designation Systems for Aluminium, ref. [2];

1.2 The supplier shall supply the material in compliance with this TDS.

2 APPLICABLE DOCUMENTS

[1] ASTM B 221M, 2012 Edition, with certification and a test report that have also been made mandatory to be in compliance with ASME SB-221, 2023 Edition.

[2] ANSI H35.1, 2017 Edition.

[3] ASME BPVC Section VIII, Division 1, 2023 Edition;

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DOC No: AM-18412-TDS-0006

Rev. No. 1.0

Page 2 of 6

TITLE: TECHNICAL DATA SHEET

3 BASIC REQUIREMENTS

3.1 Ordering Information:

3.1.1 Code of Construction:	ASME BPVC Section VIII, Div. 1, 2023 Edition, ref. [3]
3.1.2 Material Specification:	ASTM B 221M, ref. [1]
3.1.3 ASTM Designation:	Acceptable ASTM Editions – 1988 through 2012 with exceptions as stated in Table II-200-1of ASME Section II, Part B
3.1.4 Name of Material:	Aluminium
3.1.5 Process:	Hot Extrusion or similar method
3.1.6 Alloys:	6060 and 6063
3.1.7 Temper:	T6 for 6060 and T1 for 6063
3.1.8 Dimensions:	As per par. 15 of ref. [1]
3.1.9 UNS Designation:	A96060 and A96063
3.1.10 Product form:	Tube
3.1.11 Size:	As per Purchase Order
3.1.12 Length:	As per Purchase Order
3.1.13 Quantity:	As per Purchase Order
3.1.14 End finish:	As per par. 8 and 14.3 of this TDS
3.1.15 Certification:	Certification is required as per Section 16 of this TDS
3.1.16 Optional Requirements:	As per Purchase Order
3.1.17 Supplementary Requirements:	Not applicable
3.1.18 Special Requirements:	As specified in this TDS
3.2 SI units of measure shall be used;	
3.3 All documents shall be provided in the English language.	

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DOC No: AM-18412-TDS-0006 Rev. No. 1.0 Page 3 of 6

TITLE: TECHNICAL DATA SHEET

- 3.4 No Code Cases are allowed.
- 3.5 Notification and Hold Points, if any, shall be as given on the Purchase Order.

4 MANUFACTURING PROCESS

4.1. Shall conform to par. 5 of ASTM B 221M, ref. [1].

5 CHEMICAL COMPOSITION REQUIREMENTS

5.1 The composition limits shall comply with par. 7 and conform to Table 1 of ASTM B 221M, ref. [1].

TABLE 1 Chemical Composition Limits ^{A,B,C}

Note: 1—In case of a discrepancy between the values listed in Table 2 and those listed in the "International Alloy Designations and Chemical Composition Limits for Wrought Aluminum and Wrought Aluminum Alloys" (known as the "Teal Sheets"), the composition limits registered with the Aluminum Association and published in the "Teal Sheets" should be considered the controlling composition. The "Teal Sheets" are available at <http://www.aluminum.org/tealsheets>.

Alloy	Silicon	Iron	Copper	Manganese	Magnesium	Chromium	Zinc	Titanium	Vanadium	Other Elements ^D		Aluminum
										Each	Total ^E	
1060	0.25	0.35	0.05	0.03	0.03	...	0.05	0.03	0.05	0.03	...	99.60 min ^F
1100	0.50	0.85 Si + Fe	0.05-0.20	0.05	...	...	0.10	...	...	0.05 ^G	0.15	99.00 min ^F
2014	0.50-1.2	0.7	3.9-5.0	0.40-1.2	0.20-0.8	0.10	0.25	0.15 ^H	...	0.05 ^H	0.15	remainder
2024	0.50	0.50	3.9-4.9	0.30-0.9	1.2-1.8	0.10	0.25	0.15 ^H	...	0.05 ^H	0.15	remainder
2219	0.20	0.30	5.9-6.8	0.20-0.40	0.02	...	0.10	0.02-0.10	0.05-0.15	0.05 ^I	0.15 ^I	remainder
3003	0.6	0.7	0.05-0.20	1.0-1.5	...	...	0.10	...	...	0.05	0.15	remainder
Alclad 3003	...	...	3003 Clad with 7072 alloy	...	...	...	...	...	...	...	...	...
3004	0.30	0.7	0.25	1.0-1.5	0.8-1.3	...	0.25	...	...	0.05	0.15	remainder
3102	0.40	0.7	0.10	0.05-0.40	...	...	0.30	0.10	...	0.05	0.15	remainder
5052	0.25	0.40	0.10	0.10	2.2-2.8	0.15-0.35	0.10	...	...	0.05	0.15	remainder
5083	0.40	0.40	0.10	0.40-1.0	4.0-4.9	0.05-0.25	0.25	0.15	...	0.05	0.15	remainder
5086	0.40	0.50	0.10	0.20-0.7	3.5-4.5	0.05-0.25	0.25	0.15	...	0.05	0.15	remainder
5154	0.25	0.40	0.10	0.10	3.1-3.9	0.15-0.35	0.20	0.20	...	0.05 ^O	0.15	remainder
5454	0.25	0.40	0.10	0.50-1.0	2.4-3.0	0.05-0.20	0.25	0.20	...	0.05	0.15	remainder
5456	0.25	0.40	0.10	0.50-1.0	4.7-5.5	0.05-0.20	0.25	0.20	...	0.05	0.15	remainder
6005	0.6-0.9	0.35	0.10	0.10	0.40-0.6	0.10	0.10	0.10	...	0.05	0.15	remainder
6005A	0.50-0.9	0.35	0.30	0.50 ^J	0.40-0.7	0.30 ^J	0.20	0.10	...	0.05	0.15	remainder
6020 ^K	0.40-0.9	0.50	0.30-0.9	0.35	0.6-1.2	0.15	0.20	0.15	...	0.05	0.15	remainder
6041 ^L	0.50-0.9	0.15-0.7	0.15-0.6	0.05-0.20	0.8-1.2	0.05-0.15	0.25	0.15	...	0.05	0.15	remainder
6042 ^M	0.50-1.2	0.7	0.20-0.8	0.40	0.7-1.2	0.04-0.35	0.25	0.15	...	0.05	0.15	remainder
6060	0.30-0.8	0.10-0.30	0.10	0.10	0.35-0.6	0.5	0.15	0.10	...	0.05	0.15	remainder
6061 ^N	0.40-0.8	0.7	0.15-0.40	0.15	0.8-1.2	0.04-0.35	0.25	0.15	...	0.05	0.15	remainder
6063	0.20-0.6	0.35	0.10	0.10	0.45-0.9	0.10	0.10	0.10	...	0.05	0.15	remainder
6064 ^O	0.40-0.8	0.7	0.15-0.40	0.15	0.8-1.2	0.05-0.14	0.25	0.15	...	0.05	0.15	remainder
6066	0.9-1.8	0.50	0.7-1.2	0.6-1.1	0.8-1.4	0.40	0.25	0.20	...	0.05	0.15	remainder

5.2 Table 1 of ref. [1] on 7.1.3 of this TDS shows the chemical composition limits that supplier shall conform to for both 6060 and 6063 alloys.

6 HEAT TREATMENT

6.1 Shall comply with par. 9 of ASTM B 221M, ref. [1]

7 MECHANICAL PROPERTIES

7.1 For both alloys, all material's mechanical properties requirement shall comply with Table 2 of ASTM B 221M, ref. [1]. The tests are listed below:

7.1.1 Tensile test: Shall conform to par. 8 of ASTM B 221M, ref. [1].

7.1.2 Retest shall comply with par. 8.5 of ASTM B 221M, ref. [1].

8 WORKMANSHIP, FINISH AND APPEARANCE

8.1 General quality and appearance shall comply with par. 16 of ASTM B 221M, ref. [1].

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DOC No: AM-18412-TDS-0006

Rev. No. 1.0

Page 4 of 6

TITLE: TECHNICAL DATA SHEET

9 FRACTURE TOUGHNESS REQUIREMENTS

9.1 Impact testing is not required, as indicated in UNF-65 of ASME VIII, Div.1, ref. [3]

10 EXAMINATIONS

10.1 Inspections/Examinations shall comply with par. 6 and par. 18 of ASTM B 221M, ref. [1].

10.2 Retest and Rejection shall be in accordance with par. 19 of ASTM B 221M, ref. [1].

11 OPTIONAL AND SPECIAL REQUIREMENTS

11.1 As specified on the Purchase Order.

12 NON-CONFORMANCES

12.1 The Purchaser shall be notified by non-conformance reports of any condition that does not comply with standard requirements of this TDS, the Purchase Order, Applicable Codes and Standards as listed in Section 2 of this document, the delivery, or any Counterfeit, Fraudulent or Suspect Items.

12.2 Disposition of the material with non-conformances require approval from the Purchaser.

13 IDENTIFICATION AND MARKING OF MATERIAL

13.1 Material and Package shall be marked in accordance with:

13.1.1 Par. 20 and 21 of ASTM B 221M, ref. [1]

13.1.2 Requirements of this TDS

13.2 At minimum the marking shall include:

13.2.1 Specification Number (ASTM B 221M)

13.2.2 Alloys (6060 and 6063)

13.2.3 Temper (T6 for 6060 and T1 for 6063 alloy)

13.2.4 Size (As per Purchase Order)

13.2.5 Heat number

13.2.6 Heat treatment process (As per section 6 of this TDS)

13.2.7 Manufacturer's name

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DOC No: AM-18412-TDS-0006

Rev. No. 1.0

Page 5 of 6

TITLE: TECHNICAL DATA SHEET

14 HANDLING, PACKAGING AND DELIVERY

- 14.1 The Supplier shall not dispatch material from its works until it has received the Purchaser's written acceptance of the material certificates.
- 14.2 All material supplied shall have a good surface finish,
- 14.3 All items shall be protected from damage and contamination (inside and outside).
- 14.4 The Material Supplier shall provide suitable means to clearly identify the following information on the outside of the packaging:
 - 14.4.1 Material Specification, Alloy and Temper;
 - 14.4.2 Overall weight of Package;
 - 14.4.3 Material Organisation Name and Details;
- 14.5 Inspection and Release notes shall accompany all material for delivery. No material will be accepted without the abovementioned release notes.
- 14.6 It is important that the full complement of items in the Purchase Order is to be delivered as specified on the Purchase Order.

15 RIGHT OF ACCESS

- 15.1 Access to the Supplier's and its Sub tier Supplier's facilities shall be provided to the Purchaser, Authorized Inspector or others authorized by the Purchaser including his customer and end user for surveillance, inspection, or audit.

16 DOCUMENTATION TO BE PROVIDED BY THE SUPPLIER

- 16.1 Copies of the material certificates for the material as required by par. 22 of ASTM B 221M, ref. [1], and this TDS shall be submitted by email for acceptance by the Purchaser. No material shall be shipped without the Purchaser's acceptance of the certificates.
- 16.2 The manufacturer shall provide the test report, according to par. 22 of ASTM B 221M, ref. [1]. The material certificates shall include, but not limited to test results and information as applicable:
 - 16.2.1 Heat treatment report (If available).
 - 16.2.2 Chemical Analyses results (heat and/or product).
 - 16.2.3 Tensile test/property results.
 - 16.2.4 Width in the gage length (if longitudinal strip tension tests were used)

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DOC No: AM-18412-TDS-0006

Rev. No. 1.0

Page 6 of 6

TITLE: **TECHNICAL DATA SHEET**

16.2.5 Hydrostatic test pressure or Non-destructive electric test method.

16.2.6 Results of all other tests required by ref. [1] and this TDS.

16.2.7 Visual acceptance of material surfaces, cleanliness and packaging.

16.2.8 A statement that the Aluminium tubes were manufactured, heat treated, sampled, tested, inspected, handled and packaged in accordance with the requirements of the material specification (ASTM B 221M), and this TDS, and were found to meet the requirements.

16.3 The following information shall be included in the documentation to be furnished by the supplier:

16.3.1 Description of material

16.3.2 Identification marking of content

16.3.3 Clear reference to the producing mill or factory

16.4 Legible copies of the original certificates from the Mill are required.

16.5 All material certificates and test reports shall be traceable to the material identification.

17 QUALITY ASSURANCE REQUIREMENTS

17.1 All general and specific Quality Assurance requirements shown in the Purchase Order and this TDS shall be met.

17.2 The material supplier shall be certified as an ISO 9001 company as a minimum.

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DOC No: AM-18412-TDS-0003 Rev. No. 1.0 Page 1 of 6

TITLE: **TECHNICAL DATA SHEET**

Description: Material Purchase Specification **Date:** See Signature Block

Technical Data Sheet for the supply of: ASTM B 221M, Aluminium and Aluminium-Alloy Extruded Bars and Rods for ASME VIII, Division 1, Applications.

	Name	Signature	Date
Prepared	SR Mngoma Mechanical Engineer		02/04/2024
Reviewed	TP Choou QC Manager		02/04/2024
Reviewed	CIK Corbitt QA Manager		2024/04/02
Approved	M van Heerden MO Manager		2024/04/02

REVISION HISTORY

Rev	Date	Description of changes
1.0	See signature block	First Issue

1 SCOPE

1.1 Supplying of Aluminium and Aluminium Alloy Extruded Bars and Rods shall conform to all the applicable requirements of:

1.1.1 ASTM B 221M, Specification for Aluminium and Aluminium-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes, ref.[1]; With certification and a test report that have also been made mandatory to be in compliance with ASME SB-221, 2023 Edition;

1.1.2 ANSI H35.1, Specifications for Alloy and Temper Designation Systems for Aluminium, ref. [2];

1.2 The supplier shall supply the material in compliance with this TDS.

2 APPLICABLE DOCUMENTS

[1] ASTM B 221M, 2012 Edition, with certification and a test report that have also been made mandatory to be in compliance with ASME SB-221, 2023 Edition .

[2] ANSI H35.1, 2017 Edition.

[3] ASME BPVC Section VIII, Division 1, 2023 Edition;

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DOC No: AM-18412-TDS-0003

Rev. No. 1.0

Page 2 of 6

TITLE: TECHNICAL DATA SHEET

3 BASIC REQUIREMENTS

3.1 Ordering Information:

3.1.1	Code of Construction:	ASME BPVC Section VIII, Div. 1, 2023 Edition, ref. [3].
3.1.2	Material Specification:	ASTM B 221M, ref. [1]
3.1.3	ASTM Designation:	Acceptable ASTM Editions – 1988 through 2012 with exceptions as stated in Table II-200-1 of ASME Section II, Part B
3.1.4	Name of Material:	Aluminium
3.1.5	Process:	Hot Extrusion or similar method
3.1.6	Alloy:	5083
3.1.7	Temper:	O or H111
3.1.8	Dimensions:	As per par. 15 of ref. [1]
3.1.9	UNS Designation:	A95083
3.1.10	Product form:	Round bar
3.1.11	Size:	As per Purchase Order
3.1.12	Length:	As per Purchase Order
3.1.13	Quantity:	As per Purchase Order
3.1.14	End finish:	As per par. 8 and 14 of this TDS
3.1.15	Certification:	Certification is required as per Section 16 of this TDS
3.1.16	Optional Requirements:	As per Purchase Order
3.1.17	Supplementary Requirements:	Not applicable
3.1.18	Special Requirements:	As specified in this TDS
3.2	SI/Inch pound units of measure shall be used;	
3.3	All documents shall be provided in the English language.	

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DOC No: AM-18412-TDS-0003

Rev. No. 1.0

Page 3 of 6

TITLE: TECHNICAL DATA SHEET

3.4 No Code Cases are allowed.

3.5 Notification and Hold Points, if any, shall be as given on the Purchase Order.

4 MANUFACTURING PROCESS

4.1. Shall conform to par. 5 of ASTM B 221M, ref. [1].

5 CHEMICAL COMPOSITION REQUIREMENTS

5.1 The composition limits shall comply with par. 7 and conform to Table 1 of ASTM B 221M, ref. [1].

6 HEAT TREATMENT

6.1 Alloy 5083 is a non-heat-treatable alloy, and it shall receive either Temper O or H111, to be specified on the Purchase Order, as per par. 9 to 11 of ASTM B 221M, ref. [1]

7 MECHANICAL PROPERTIES

7.1 All material's mechanical properties requirement shall comply with Table 2 of ASTM B 221M. The tests are listed below:

7.1.1 Tensile test: Shall conform to par. 8 of ASTM B 221M, ref. [1].

7.1.2 Retest shall comply with par. 8.5 of ref. [1].

8 WORKMANSHIP, FINISH AND APPEARANCE

8.1 General quality shall comply with par. 16 of ASTM B 221M, ref. [1].

9 FRACTURE TOUGHNESS REQUIREMENTS

9.1. Impact testing is not required, as indicated in UNF-65 of ASME VIII, Div.1, ref. [3].

10 EXAMINATIONS

10.1 Inspections/Examinations shall comply with par. 18 of ASTM B 221M, ref. [1].

10.2 Retest and Rejection shall be in accordance with par. 19 of ASTM B 221M, ref. [1].

11 SUPPLEMENTARY AND ADDITIONAL REQUIREMENTS

11.1 None.

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DOC No: AM-18412-TDS-0003

Rev. No. 1.0

Page 4 of 6

TITLE: TECHNICAL DATA SHEET

12 NON-CONFORMANCES

- 12.1 The Purchaser shall be notified by non-conformance reports of any condition that does not comply with standard requirements of this TDS, the Purchase Order, Applicable Codes and Standards as listed in Section 2 of this document, the delivery, or any Counterfeit, Fraudulent or Suspect Items.
- 12.2 Disposition of the material with non-conformances require approval from the Purchaser.

13 IDENTIFICATION AND MARKING OF MATERIAL

13.1 Material and Package shall be marked in accordance with:

13.1.1 Par. 20 and 21 of ASTM B 221M

13.1.2 Requirements of this TDS

13.2 At minimum the marking shall include:

13.2.1 Specification Number (ASTM B 221M)

13.2.2 Temper (O or H111)

13.2.3 Dimensions

13.2.4 Alloy (5083)

13.2.5 Size (As per purchase order)

13.2.6 Heat number

13.2.7 Heat treatment process (As per section 6 of this TDS)

13.2.8 Manufacturer's name

14 HANDLING, PACKAGING AND DELIVERY

- 14.1 Handling, Packaging and Delivery shall comply with par. 21 of ASTM B 221M, ref. [1].
- 14.2 The Supplier shall not dispatch material from its works until it has received the Purchaser's written acceptance of the material certificates.
- 14.3 All material supplied shall have a good surface finish,
- 14.4 All items shall be protected from damage and contamination.
- 14.5 The Material Supplier shall provide suitable means to clearly identify the following information on the outside of the packaging:

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DOC No: AM-18412-TDS-0003

Rev. No. 1.0

Page 5 of 6

TITLE: **TECHNICAL DATA SHEET**

14.5.1 Material Specification, Alloy and Temper;

14.5.2 Overall weight of Package;

14.5.3 Material Organisation Name and Details;

14.6 Inspection and Release notes shall accompany all material for delivery. No material will be accepted without the abovementioned release notes.

14.7 It is important that the full complement of items in the Purchase Order is to be delivered as specified on the Purchase Order.

15 RIGHT OF ACCESS

15.1 Access to the Supplier's and its Sub tier Supplier's facilities shall be provided to the Purchaser, Authorized Inspector or others authorized by the Purchaser including his customer and end user for surveillance, inspection, or audit.

16 DOCUMENTATION TO BE PROVIDED BY THE SUPPLIER

16.1 Copies of the material certificates for the material as required by par. 22 of ASTM B 221M, and this TDS shall be submitted by email for acceptance by the Purchaser. No material shall be shipped without the Purchaser's acceptance of the certificates.

16.2 The manufacturer shall provide the test report when required, according to par. 22 of ASTM B 221M, ref. [1]. The material certificate shall include, but not limited to test results and information as applicable:

16.2.1 Heat treatment report (if available)

16.2.2 Chemical Analyses results (heat and/or product).

16.2.3 Tensile test/property results.

16.2.4 Width in the gage length (if longitudinal strip tension tests were used)

16.2.5 Results of all other tests required by ref. [1] and this TDS.

16.2.6 Non-destructive Electric Examination and Test Method (if available).

16.2.7 Visual acceptance of material surfaces, cleanliness and packaging.

16.2.8 A statement that the Aluminium/Aluminium-Alloy round bars were manufactured, sampled, tested, inspected, handled and packaged in accordance with the requirements of the material specification (ASTM B 221M), and this TDS, were found to meet the requirements.

16.3 The following information shall be included in the documentation to be furnished by the supplier:

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DOC No: AM-18412-TDS-0003

Rev. No. 1.0

Page 6 of 6

TITLE: **TECHNICAL DATA SHEET**

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17 QUALITY ASSURANCE REQUIREMENTS

17.1 All general and specific Quality Assurance requirements shown in the Purchase Order and this TDS shall be met.

17.2 The material supplier shall be certified as an ISO 9001 company as a minimum.

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Department	<u>Advanced Manufacturing</u>
Procedure	Quality Assurance Requirements for Procurement of Qualified Source Material from Approved Suppliers
Number	<u>AM-QAP4-QAR-0018</u>
Revision	<u>7.0</u>

APPROVAL & DISTRIBUTION

	NAME	SIGNED	DATE
Prepared	<u>CIK Corbitt</u> QA Manager		2023/10/25
Reviewed	<u>TP Choou</u> QC Manager		2023/10/25
Reviewed	<u>G v Heerden</u> ASME Design Manager	<u>G. J van Heerden</u>	2023/10/25
Approved	<u>S Mnyani</u> General Manager: AM		2023/10/26
Distribution	As per distribution list		

Doc. No	AM-QAP4-QAR-0018
Revision	7.0
Page	2 of 9

TABLE OF CONTENTS	PAGE
APPROVAL & DISTRIBUTION	1
REVISIONS	2
1. PURPOSE AND SCOPE	3
2. REFERENCES, ABBREVIATIONS AND DEFINITIONS	3
3. SUPPLIER QUALIFICATION	4
4. QUALITY ASSURANCE REQUIREMENTS	<u>4</u>
5. ACCESS TO SUPPLIER'S FACILITIES	<u>8</u>

REVISIONS

This document has been revised in accordance with the following schedule:

Rev. No.	Date approved	Nature of Revision	Prepared
1.0	2014-06-09	First issue.	S Venter
2.0	2014-08-20	Changes of a minor nature to clarify requirements.	S Venter
3.0	2015-07-31	Revised in accordance with the requirements of the 2015 Edition of the Code.	S Venter
4.0	2016/10/18	Sections 5 (Supplier Approval) and 6.1 (Quality System) updated in accordance with the QA Manual. Other changes of a minor nature.	S Venter
5.0	2020/11/19	Template changed. Responsibilities updated. Revised to include Subcontracting by Suppliers	CIK Corbitt
6.0	<u>2022/09/14</u>	Responsibilities and References updated	CIK Corbitt
<u>7.0</u>	<u>As per title page</u>	Nuclear Manufacturing changed to Advanced Manufacturing. NM prefix in the document number changed to AM and where referenced in the Procedure. Other changes of a minor nature.	CIK Corbitt

1. PURPOSE AND SCOPE

- 1.1. This Quality Assurance Requirements document (QAR) is a contractual element of Requests for Quotations or Purchase Orders issued by the Purchaser to Suppliers of Qualified Source Material (QSM) and complements the technical and quality requirements contained in Purchase Orders (which includes the Purchaser's Technical Data Sheet (TDS)).
- 1.2. Any submitted quotation or acknowledgement of receipt of a Purchase Order implies that the Supplier has studied and accepted the following requirements and undertakes to comply with those applicable to the envisaged supply of source material.
- 1.3. This document covers the quality assurance requirements for the supply of QSM by Approved Suppliers; as governed by Section III, Division 1 of the ASME Boiler and Pressure Vessel Code (the Code).
- 1.4. The Purchaser will convert the QSM (see definition) to material (see definition) by:
 - (a) Subcontracting any additional tests and examinations required by the ASME Code (Section III) and the material specification (in addition to the tests and examinations specified in the Purchaser's Technical Data Sheet (TDS)); and
 - (b) Certifying the material in accordance with the requirements of the Code (NCA-1224).

2. REFERENCES, ABBREVIATIONS AND DEFINITIONS

- ASME Code, Section III: Subsection NX (NB/NCD/NC/ND/NE/NF/NG); the Edition specified in the Purchase Order (TDS).
- ASME Code, Section III: Subarticle NCA-3300 of Subsection NCA (General Requirements for Division 1 and Division 2); latest Edition.
- ASME Code, Section III: Subarticle NCA-4250 of Subsection NCA (General Requirements for Division 1 and Division 2); latest Edition.
- ASME Code, Section IX: Welding, Brazing and Fusing Qualifications; Edition specified in the Purchase Order (TDS).

- 2.1. This list contains the abbreviations and definitions used in this document:

Approved Supplier

A Supplier that has been evaluated and approved by the Purchaser in accordance with the requirements of the Code (NCA-3300) to supply Qualified Source Material (QSM) to the Purchaser (for conversion to material).

material

For Section III, Division 1, metallic materials manufactured to an SA, SB, SFA, or any other material specification permitted in Section III and that are manufactured, identified, and certified in accordance with the requirements of Section III.

Doc. No	<u>AM-QAP4-QAR-0018</u>
Revision	<u>7.0</u>
Page	4 of 9

Purchaser

The Advanced Manufacturing (AM) organization of the South African Nuclear Energy Corporation Limited.

Qualified Source Material (QSM)

Metallic products (pipe, plate, bar, rod, forging, etc.) produced by an Approved Supplier in accordance with the requirements of the Purchaser's TDS and this QAR (AM-QAP4-QAR-0018) (which meets the appropriate requirements of the Code (NCA-3300)).

Supplier

The organisation (i.e. the Qualified Material Organization) that provides material to the Purchaser in accordance with the requirements of the Purchase Order.

ABBREVIATION / ACRONYM	DEFINITION
QAR:	Quality Assurance Requirements document (issued by the Purchaser as part of the Purchase Order)
TDS:	Technical Data Sheet for the source material (issued by the Purchaser as part of the Purchase Order).

3. SUPPLIER APPROVAL

- 3.1. The Purchaser shall accept the written document(s) of the Supplier that describes the Supplier's controls applicable to the activities performed for the Purchaser (see 4.1.1 below). The revision(s) and date(s) of the control document(s) shall be shown on documentation that accompanies the source material supplied to the Purchaser.
- 3.2. The Purchaser shall audit, evaluate, and approve the Supplier's quality system. The Purchaser shall thereafter perform triennial audits covering all elements of the Supplier's established quality system that was approved by the Purchaser.
- 3.3. In addition, the Purchaser shall perform annual evaluations of the Supplier's quality system, including a review of the history of conditions adverse-to-quality, nonconformances, and corrective actions.

4. QUALITY SYSTEM REQUIREMENTS

4.1 Quality System

- 4.1.1. The Supplier shall define and document the controls needed to meet the requirements of the Purchaser's specification (TDS) and the below-mentioned quality system requirements (4.2 to 4.10).

- 4.1.2. The Supplier is responsible for specifying the technical and quality requirements for procured metallic products and quality-related services; and for verifying conformance to the specified requirements.

4.2 Personnel

- 4.2.1. Personnel performing or managing activities affecting the quality of the source material shall be trained. The extent of training shall be commensurate with the scope, complexity, and nature of the activity as well as the education, experience, and proficiency of the person. Records shall be maintained of the implementation of training.
- 4.2.2. All nondestructive examination personnel shall be qualified in accordance with NB/NCD/NC/ND/NE/NF/NG-5521 of the applicable Subsection of Section III of the Code. Qualification records of all nondestructive examination personnel shall be documented and maintained.

Note 4.2.2

Alternatively, the Supplier may contract a supplier of nondestructive examination services that has been audited, evaluated, and approved by the Purchaser for the particular examination method.

4.3 Procurement of Metallic Products and Services

- 4.3.1. Procurement documents for metallic products and quality-related services shall include requirements necessary to assure compliance with the Purchaser's TDS and this QAR (AM-QAP4-QAR-0018).
- 4.3.2. Procurement documents that specify quality requirements or prescribe activities affecting quality shall be reviewed for adequacy and approved for release by authorized personnel.
- 4.3.3. Measures shall be established to assure that purchased metallic products and services conform to the requirements of the procurement documents.

4.4 Identification, Marking, and Material Control

- 4.4.1. Source material shall be identified throughout the manufacturing process; during the performance of tests, examinations, repairs, and treatments; and during storage, handling, and shipment.
- 4.4.2. Identification marking shall be transferred to all pieces when source material is divided.
- 4.4.3. Source materials shall be marked by any method acceptable to the Purchaser that will not result in harmful contamination or sharp discontinuities and will identify the source materials in accordance with the TDS.
- 4.4.4. The identification of completed source material shall consist of marking the material with the applicable specification and grade of the material; the heat number or heat code of the material; and any additional marking required by the TDS to facilitate traceability of the material to reports of the results of all tests and examinations performed on the material.

- 4.4.5. Welding materials shall be clearly identified by legible marking on the package or container to ensure positive identification of the material. The marking shall include the heat or lot number as applicable; a control marking code that identifies the material with the material test report; and other information such as specification, grade and classification number, Supplier's name, and trade designation.

4.5 Process Control

- 4.5.1. Processes affecting quality of source materials shall be controlled. Special processes that control or verify quality, such as those used in welding, heat treating, or nondestructive examination, shall be performed by qualified personnel using qualified procedures in accordance with specific requirements.
- 4.5.2. Operations shall be performed under a controlled system such as process sheets, shop procedures, checklists, travellers, or equivalent procedures. Measures shall be established to ensure that processes, including heat treatment, are controlled in accordance with the TDS and the rules of this QAR (AM-QAP4-QAR-0018).
- 4.5.3. When welding is required in the repair of source material, it shall be performed in accordance with procedures and by welders or welding operators qualified in accordance with Subsection NX of Section III and Section IX of the Code. The qualification of procedures and welders or welding operators shall be documented.

Note 4.5.3

- 4.5.4. Alternatively the Supplier may undertake not to use any welding process to repair the source material.
- 4.5.5. Measures shall be established for handling, storage, shipping, and preservation of source material in order to prevent damage or deterioration.

4.6 Control of Inspection, Nondestructive Examination, and Tests

- 4.6.1. Inspections, examinations, and tests shall be established to assure conformance with the requirements of the TDS.
- 4.6.2. Inspections or examinations required to verify conformance of source material to specified requirements shall be planned. Characteristics to be inspected or examined, and inspection or examination methods to be employed, shall be specified. Inspection or examination results shall be documented.
- 4.6.3. Tests required to verify conformance to specified requirements shall be planned. Characteristics to be tested and test methods to be employed shall be specified. Test results shall be documented and their conformance with acceptance criteria shall be evaluated.
- 4.6.4. All characteristics required to be reported by the TDS shall be verified and the results recorded. Records shall be traceable to the document and revision to which an inspection, examination, or test was performed.

4.7 Control of Measuring and Test Equipment

- 4.7.1. Tools, gauges, instruments, and other measuring and testing devices used to verify compliance with the TDS shall be calibrated and properly adjusted at specific periods or use intervals to maintain accuracy within necessary limits. Periodic checks on equipment may be performed to determine that calibration is maintained.
- 4.7.2. Calibration shall be against certified equipment having known valid relationships and documented traceability to nationally recognized standards, where such standards exist. If no known nationally recognized standards exist, the basis of calibration shall be documented.
- 4.7.3. Measuring and test equipment shall be identified. The calibration status shall be indicated by equipment marking or on records traceable to the equipment.

4.8 Discrepancies in Measuring or Testing Equipment

- 4.8.1. When discrepancies in excess of tolerances for measuring or testing equipment are found at calibration, appropriate corrective action shall be taken, and source material measured or tested since the previous calibration shall be reviewed to determine that all applicable requirements have been met.
- 4.8.2. When periodic checks on equipment are performed to determine that calibration is maintained, potential material discrepancies need only be resolved to the previous check, provided:
 - (a) The methods used and frequency of periodic checking are described in calibration procedures; and
 - (b) The calibration discrepancy was found by periodic check.

4.9 Inspection and Test Status

The status of any required inspections, examinations, or tests shall be shown through indicators such as physical location and tags, marking, shop travellers, stamps, inspection records, or other suitable means. The authority for application and removal of such indicators shall be specified.

4.10 Control of Nonconforming Material

- 4.10.1. Source material with nonconformances shall be identified, segregated when practical, and reviewed for acceptance, rejection, or repair in accordance with documented procedures. The responsibility and authority for the disposition of nonconformances shall be defined.
- 4.10.2. Repaired source material shall be re-examined in accordance with applicable procedures, in order to verify compliance with TDS requirements.



Doc. No	AM-QAP4-QAR-0018
Revision	7.0
Page	8 of 9

5. SUBCONTRACTING BY SUPPLIER

- 5.1. If any Items are subcontracted by the Supplier, the Supplier shall incorporate appropriate quality assurance requirements, as required in this document AM-QAP4-QAR-0018, in sub-tier procurement documents.
- 5.2. The quality system of the Supplier's subcontractor shall be approved, audited and evaluated by the Purchaser.
- 5.3. The Supplier shall accept subcontracted material certificates by reviewing the objective evidence for conformance to the procurement documents, signing and dating.

6. CERTIFICATION REQUIREMENTS

- 6.1. The Supplier shall reference the revision(s) and date(s) of the accepted control document(s) (see 4.1 above) on documentation that accompanies the source material.
- 6.2. The Supplier shall provide the Purchaser with reports that include the results of all chemical analyses, tests, nondestructive examinations, and inspections that are required to demonstrate conformance to the Purchaser's TDS requirements.
- 6.3. The heat analysis shall comply with the specific requirements contained in the TDS.
- 6.4. The method of manufacture shall comply with the specific requirements contained in the TDS. The Supplier's documentation provided to the Purchaser shall clearly state the method of manufacture.
- 6.5. If heat treatment is applicable, the Supplier shall:
 - (a) Comply with the specific requirements contained in the Purchaser's TDS; and
 - (b) Provide the Purchaser with records of the heat treatment; including:
 - (i) Actual heating and cooling rates, holding temperature and holding time for specimens and material;
 - (ii) Type of thermocouples and Time and Temperature (T-T) recording devices that were used; and
 - (iii) Copies of calibration certificates for the thermocouples and T-T recording devices.
- 6.6. The Supplier shall not despatch material from its works until it has received the Purchaser's written acceptance of the documentation prescribed in the Purchase Order.
- 6.7. The Purchaser reserves the right to perform receiving examination of the source material at its works. Source material shown to be not in accordance with the specified requirements in the TDS is subject to rejection.

7. ACCESS TO SUPPLIER'S FACILITIES

The Purchaser's representatives shall be given access to the Supplier's facilities, procedures, and records to review objective evidence of conformance to the procurement documents. Access to the Supplier's facilities shall be limited to those areas and documents relevant to the activities performed for the Purchaser.



Doc. No	AM-QAP4-QAR-0018
Revision	7.0
Page	9 of 9

8. SUPPLIER'S RESPONSIBILITY

Any survey, audits or surveillances by the Purchaser in no way diminish the responsibility of the Supplier to execute the Purchase Order requirements properly and to comply with the technical specifications.