

PART C1: AGREEMENTS & CONTRACT DATA

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C1.1 Form of Offer & Acceptance**Offer**

The Purchaser, identified in the Acceptance signature block, has solicited offers to enter into a contract for the procurement of:

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The tenderer, identified in the Offer signature block, has

<i>either</i>	examined the documents listed in the Tender Data and addenda thereto as listed in the Returnable Schedules, and by submitting this Offer has accepted the Conditions of Tender.
<i>or</i>	examined the draft contract as listed in the Acceptance section and agreed to provide this Offer.

By the representative of the tenderer, deemed to be duly authorised, signing this part of this Form of Offer and Acceptance the tenderer offers to perform all of the obligations and liabilities of the *Supplier* under the contract including compliance with all its terms and conditions according to their true intent and meaning for an amount to be determined in accordance with the *conditions of contract* identified in the Contract Data.

	The offered total of the Prices exclusive of VAT is	R
	Value Added Tax @ 15% is	R
	The offered total of the amount due inclusive of VAT is ¹	R
	(in words)	

This Offer may be accepted by the Purchaser by signing the Acceptance part of this Form of Offer and Acceptance and returning one copy of this document including the Schedule of Deviations (if any) to the tenderer before the end of the period of validity stated in the Tender Data, or other period as agreed, whereupon the tenderer becomes the party named as the *Supplier* in the *conditions of contract* identified in the Contract Data.

Signature(s)			
Name(s)			
Capacity			
For the tenderer:			
Name & signature of witness	(Insert name and address of organisation)	Date	

¹ This total is required by the *Purchaser* for budgeting purposes only. Actual amounts due will be assessed in terms of the *conditions of contract*.-

Acceptance

By signing this part of this Form of Offer and Acceptance, the Purchaser identified below accepts the tenderer’s Offer. In consideration thereof, the Purchaser shall pay the Supplier the amount due in accordance with the *conditions of contract* identified in the Contract Data. Acceptance of the tenderer’s Offer shall form an agreement between the Purchaser and the tenderer upon the terms and conditions contained in this agreement and in the contract that is the subject of this agreement.

The terms of the contract, are contained in:

- Part C1 Agreements and Contract Data, (which includes this Form of Offer and Acceptance)
- Part C2 Pricing Data
- Part C3 Scope of Work: Goods Information including Supply Requirements

and drawings and documents (or parts thereof), which may be incorporated by reference into the above listed Parts.

Deviations from and amendments to the documents listed in the Tender Data and any addenda thereto listed in the Returnable Schedules as well as any changes to the terms of the Offer agreed by the tenderer and the Purchaser during this process of offer and acceptance, are contained in the Schedule of Deviations attached to and forming part of this Form of Offer and Acceptance. No amendments to or deviations from said documents are valid unless contained in this Schedule.

The tenderer shall within two weeks of receiving a completed copy of this agreement, including the Schedule of Deviations (if any), contact the Purchaser’s agent (whose details are given in the Contract Data) to arrange the delivery of any securities, bonds, guarantees, proof of insurance and any other documentation to be provided in terms of the *conditions of contract* identified in the Contract Data at, or just after, the date this agreement comes into effect. Failure to fulfil any of these obligations in accordance with those terms shall constitute a repudiation of this agreement.

Notwithstanding anything contained herein, this agreement comes into effect on the date when the tenderer receives one fully completed original copy of this document, including the Schedule of Deviations (if any).

Signature(s)			
Name(s)			
Capacity			
for the Purchaser	Eskom Holdings SOC Ltd Duvha Power Station P O Box 2199 WITBAK 1035		
Name & signature of witness		Date	

Note: If a tenderer wishes to submit alternative tenders, use another copy of this Form of Offer and Acceptance.

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Schedule of Deviations to be completed by the Purchaser prior to contract award

Note:

1. This part of the Offer & Acceptance would not be required if the contract has been developed by negotiation between the Parties and is not the result of a process of competitive tendering.
2. The extent of deviations from the tender documents issued by the Purchaser prior to the tender closing date is limited to those permitted in terms of the Conditions of Tender.
3. A tenderer's covering letter must not be included in the final contract document. Should any matter in such letter, which constitutes a deviation as aforesaid be the subject of agreement reached during the process of Offer and Acceptance, the outcome of such agreement shall be recorded here and the final draft of the contract documents shall be revised to incorporate the effect of it.

No.	Subject	Details
1		
2		
3		
4		
5		

By the duly authorised representatives signing this Schedule of Deviations below, the Purchaser and the tenderer agree to and accept this Schedule of Deviations as the only deviations from and amendments to the documents listed in the Tender Data and any addenda thereto listed in the Tender Schedules, as well as any confirmation, clarification or changes to the terms of the Offer agreed by the tenderer and the Purchaser during this process of Offer and Acceptance.

It is expressly agreed that no other matter whether in writing, oral communication or implied during the period between the issue of the tender documents and the receipt by the tenderer of a completed signed copy of this Form shall have any meaning or effect in the contract between the parties arising from this Agreement.

	For the tenderer:		For the Purchaser
Signature			
Name			
Capacity			
On behalf of			Eskom Holdings SOC Ltd Duvha Power Station P O Box 2199 WITBAK 1035
Name & signature of witness			
Date			

C1.2 SC3 Contract Data**Part one - Data provided by the Purchaser**

Completion of this data in full, according to the Options chosen, is essential to create a complete contract.

Clause	Statement	Data
1	General	
	The <i>conditions of contract</i> are the core clauses and the clauses for Options	A: priced contract with price list
		W1: Dispute resolution procedure
		X2: Changes in the law
		X7: Delay damages
		Z: Additional conditions of contract
	of the NEC3 Supply Contract (April 2013)	
10.1	The <i>Purchaser</i> is (name):	Eskom Holdings SOC Limited (Reg No: 2002/015527/30), a juristic person incorporated in terms of the company laws of the Republic of South Africa
	Address	Registered office at Megawatt Park, Maxwell Drive, Sandton, Johannesburg
	Tel No.	+27 13 295 9465
	Fax No.	
10.1	The <i>Supply Manager</i> is (name):	Shirly Dhladhla
	Address	Duvha Power Station PO Box 2199 Witbank 1035
	Tel	+27 13 295 9465
	Fax	
	e-mail	DhladhS@eskom.co.za
11.2(13)	The <i>goods</i> are	Supply and delivery of various Boiler Tubing for Stock Items at Duvha Power Station

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11.2(14)	The following matters will be included in the Risk Register	1. Delays due to failed quality tests. 2. Delays due to civil unrests	
11.2(15)	The Goods Information is in	Part 3: Scope of Work and all documents and drawings to which it makes reference.	
11.2(15)	The Supply Requirements as part of the Goods Information is in	Part 3: Scope of work	
12.2	The <i>law of the contract</i> is the law of	the Republic of South Africa	
13.1	The <i>language of this contract</i> is	English	
13.3	The <i>period for reply</i> is	Three working days	
2	The <i>Supplier's</i> main responsibilities	Data required by this section of the core clauses is provided by the <i>Supplier</i> in Part 2 and terms in italics used in this section are identified elsewhere in this Contract Data.	
3	Time		
30.1	The <i>starting date</i> is.	1 September 2022	
30.1	The <i>delivery date</i> of the <i>goods</i> and <i>services</i> is:	<i>goods and services</i>	<i>delivery date</i>
		1	Supply and delivery of various Boiler Tubing for Stock Items at Duvha Power Station
31.1	The <i>Supplier</i> is to submit a first programme for acceptance within	Delivery schedule to be submitted one week after order placement	
32.2	The <i>Supplier</i> submits revised programmes at intervals no longer than	Five working days following the accepted revision to the original program.	

4	Testing and defects	<ul style="list-style-type: none"> <i>Spectra Testing to be done prior leaving the Manufacturer site(Before Shipping to South Africa) by TUV Third Party Inspector, confirming correct material as per Specifications attached.</i> <i>PLEASE NOTE : IF MATERIAL DELIVERED TO DUVHA, NOT ACCORDING TO 3.2A CERTIFICATION SPECIFICATIONS, AS WELL AS AN ON-SITE SPECTRA TEST, GOODS TO BE RETURNED</i> 	
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		<u>WITHOUT ANY PAYMENT DUE TO THE SUPPLIER.</u>
42	The <i>defects date</i> is	Same day as delivery, to be verified as correct material with 3.2A Certification
43.2	The <i>defect correction period</i> is	Two (2) weeks (locally, SA)
	except that the <i>defect correction period</i> for Foreign repairs	Four (4) weeks
42.2	The <i>defects access period</i> is	Two(2) working days
	except that the <i>defect access period</i> for	Foreign repairs are ten (10) days.
	Foreign repairs	

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5	Payment	
50.1	The <i>assessment interval</i> is	There will be continuous assessments upon safe delivery of materials to site and having met all the required quality standards and signed off.
51.1	The <i>currency of this contract</i> is the	South African Rands
51.2	The period within which payments are made is	Four (4) weeks after invoice received
51.4	The <i>interest rate</i> is	<p>(i) zero percent above the publicly quoted prime rate of interest (calculated on a 365 day year) charged from time to time by the Standard Bank of South Africa (as certified, in the event of any dispute, by any manager of such bank, whose appointment it shall not be necessary to prove) for amounts due in Rands and</p> <p>(ii) the LIBOR rate applicable at the time for amounts due in other currencies. LIBOR is the 6 month London Interbank Offered Rate quoted under the caption "Money Rates" in The Wall Street Journal for the applicable currency or if no rate is quoted for the currency in question then the rate for United States Dollars, and if no such rate appears in The Wall Street Journal then the rate as quoted by the Reuters Monitor Money Rates Service (or such service as may replace the Reuters Monitor Money Rates Service) on the due date for the payment in question, adjusted <i>mutatis mutandis</i> every 6 months thereafter and as certified, in the event of any dispute, by any manager employed in the foreign exchange department of The Standard Bank of South Africa Limited, whose appointment it shall not be necessary to prove.</p>
6	Compensation events	There is no reference to Contract Data in this section of the core clauses and terms in italics used in this section are identified elsewhere in this Contract Data.
7	Title	There is no reference to Contract Data in this section of the core clauses and terms in italics used in this section are identified elsewhere in this Contract Data.

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8	Risks, liabilities, indemnities and insurance	
80.1	These are additional <i>Purchaser's</i> risks	Damage of goods on transfer of ownership
84.1	The <i>Purchaser</i> provides these insurances from the Insurance Table	See notes about <i>Purchaser</i> provided insurance in Annexure B to this Contract Data
84.1	The <i>Supplier</i> provides these additional insurances	See notes in Annexure B
84.2	The minimum amount of cover for loss of or damage to any plant and materials provided by the <i>Purchaser</i> is:	The price of order value
84.2	The minimum limit of indemnity for insurance in respect of loss of or damage to property (except the <i>goods</i> , plant and materials and equipment) and liability for bodily injury to or death of a person (not an employee of the <i>Supplier</i>) caused by activity in connection with this contract for any one event is:	<p>whatever the <i>Supplier</i> deems necessary in addition to that provided by the <i>Purchaser</i> for any one event with cross liability so that the insurance applies to the Parties separately.</p> <p>However if the <i>Supplier</i> is exposed to damage to the <i>Purchaser's</i> property the cover limit amount is not less than</p> <ul style="list-style-type: none"> • R15 million (fifteen million Rand) for exposure to Generation Division property; • R7.5 million (seven million five hundred thousand Rand) for exposure to Transmission Division property and; <ul style="list-style-type: none"> • R1 million (one million Rand) for exposure to Distribution Division and all other <i>Purchaser's</i> property <p>for any one occurrence or series of occurrences arising out of one event but unlimited during the period of insurance.</p>
84.2	The minimum limit of indemnity for insurance in respect of death of or bodily injury to employees of the <i>Supplier</i> arising out of and in the course of their employment in connection with this contract for any one event is:	As prescribed by the Compensation for Occupational Injuries and Diseases Act No. 130 of 1993 and the <i>Contractor's</i> common law liability for people falling outside the scope of the Act with a limit of Indemnity of not less than R500 000 (five hundred thousand Rand).

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88.1	The <i>Supplier's</i> liability to the <i>Purchaser</i> for indirect or consequential loss, including loss of profit, revenue and goodwill is limited to	R0.0 (zero Rand)
88.2	For any one event, the <i>Supplier's</i> liability to the <i>Purchaser</i> for loss of or damage to the <i>Purchaser's</i> property is limited to	<p>(1) for the <i>Purchaser's</i> existing and surrounding property in the care, custody and control of the <i>Supplier</i> the amount of the deductible (first amount payable) relevant to the event described in the "Format A" / "Format B" / "Format Dx" {choose the applicable format, then delete the others and this note}, insurance policy available on http://www.eskom.co.za/live/content.php?Item_ID=9248</p> <p>and</p> <p>(2) for all other existing <i>Purchaser's</i> property the highest applicable deductible (first amount payable) namely:</p> <ol style="list-style-type: none"> 1. R15 million (fifteen million Rand) for Generation Division property; 2. R7.5 million (seven million five hundred thousand Rand) for Transmission Division property and; 3. R1 million (one million Rand) for Distribution Division and all other <i>Purchaser's</i> property <p>See notes in Annexure B</p>
88.3	The <i>Supplier's</i> liability for Defects due to his design which are not notified before the last <i>defects date</i> is limited to:	Total of the Prices.
88.4	The <i>Supplier's</i> total liability to the <i>Purchaser</i> , for all matters arising under or in connection with this contract, other than the excluded matters, is limited to	Total of the Prices.
88.5	The <i>end of liability date</i> is	52 weeks after Delivery of the whole of the <i>goods and services</i> .
9	Termination and dispute resolution	
94.1	The <i>Adjudicator</i> is (Name)	The person selected from the Panel of Adjudicators listed in Annexure C to this Contract Data by the Party intending to refer a dispute to him.

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94.2(3)	The <i>Adjudicator nominating body</i> is:	the Chairman of ICE-SA, a Division of the South African Institution of Civil Engineering, or its successor body (See www.ice-sa.org.za)	
94.4(2)	The <i>tribunal</i> is:	arbitration	
94.4(5)	The <i>arbitration procedure</i> is	the latest edition of Rules for the Conduct of Arbitrations published by The Association of Arbitrators (Southern Africa) or its successor body.	
94.4(5)	The place where arbitration is to be held is	South Africa	
	The person or organisation who will choose an arbitrator - if the Parties cannot agree a choice or - if the arbitration procedure does not state who selects an arbitrator, is	the Chairman for the time being or his nominee of the Association of Arbitrators (Southern Africa) or its successor body.	
10	Data for Option clauses		
X2	Changes in the law		
X2.1	A change in the law of	South Africa is a compensation event if it occurs after the Contract Date	
X7	Delay damages		
X7.1	Delay damages for Delivery are	Delivery of	amount per day
		Supply and delivery of various Boiler Tubing for Stock Items at Duvha Power Station	5% of each late delivery per day to a maximum of 10% of the total task order.
Z	The <i>additional conditions of contract</i> are	Z1 to Z12 always apply for Eskom	
Z1	Cession delegation and assignment		
Z1.1	The <i>Supplier</i> does not cede, delegate or assign any of its rights or obligations to any person without the written consent of the <i>Purchaser</i> .		

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Z1.2 Notwithstanding the above, the *Purchaser* may on written notice to the *Supplier* cede and delegate its rights and obligations under this contract to any of its subsidiaries or any of its present divisions or operations which may be converted into separate legal entities as a result of the restructuring of the Electricity Supply Industry and the Electricity Distribution Industry.

Z2 Joint ventures

Z2.1 If the *Supplier* constitutes a joint venture, consortium or other unincorporated grouping of two or more persons or organisations then these persons or organisations are deemed to be jointly and severally liable to the *Purchaser* for the performance of this contract.

Z2.2 Unless already notified to the *Purchaser*, the persons or organisations notify the *Supply Manager* within two weeks of the Contract Date of the key person who has the authority to bind the *Supplier* on their behalf.

Z2.3 The *Supplier* does not substantially alter the composition of the joint venture, consortium or other unincorporated grouping of two or more persons without the consent of the *Purchaser* having been given to the *Supplier* in writing.

Z3 Change of Broad Based Black Economic Empowerment (B-BBEE) status

Z3.1 Where a change in the *Supplier's* legal status, ownership or any other change to his business composition or business dealings results in a change to the *Supplier's* B-BBEE status, the *Supplier* notifies the *Purchaser* within seven days of the change.

Z3.2 The *Supplier* is required to submit an updated verification certificate and necessary supporting documentation confirming the change in his B-BBEE status to the *Supply Manager* within thirty days of the notification or as otherwise instructed by the *Supply Manager*.

Z3.3 Where, as a result, the *Supplier's* B-BBEE status has decreased since the Contract Date the *Purchaser* may either re-negotiate this contract or alternatively, terminate the *Supplier's* obligation to Provide the Goods and Services.

Z3.4 Failure by the *Supplier* to notify the *Purchaser* of a change in its B-BBEE status may constitute a reason for termination. If the *Purchaser* terminates in terms of this clause, the procedures on termination are P1, P2 and P3 as stated in clause 92, and the amount due is A1 and A3 as stated in clause 93.

Z4 Ethics

Z4.1 Any offer, payment, consideration, or benefit of any kind made by the *Supplier*, which constitutes or could be construed either directly or indirectly as an illegal or corrupt practice, as an inducement or reward for the award or in execution of this contract constitutes grounds for terminating the *Supplier's* obligation to Provide the Goods and Services or taking any other action as appropriate against the *Supplier* (including civil or criminal action).

Z4.2 The *Purchaser* may terminate the *Supplier's* obligation to Provide the Goods and Services if the *Supplier* (or any member of the *Supplier* where the *Supplier* constitutes a joint venture, consortium or other unincorporated grouping of two or more persons or organisations) is found guilty by a competent court, administrative or regulatory body of participating in illegal or corrupt practices.

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Such practices include making of offers, payments, considerations, or benefits of any kind or otherwise, whether in connection with any procurement process or contract with the *Purchaser* or other people or organisations and including in circumstances where the *Supplier* or any such member is removed from the an approved vendor data base of the *Purchaser* as a consequence of such practice.

- Z4.3 Notwithstanding the provisions of core clause 90.2, the procedures on termination in terms of this clause are P1, P2 and P3 as stated in the core clause 92 and the amount due is A1 and A3 as stated in core clause 93.

Z5 Confidentiality

- Z5.1 The *Supplier* does not disclose or make any information arising from or in connection with this contract available to Others. This undertaking does not, however, apply to information which at the time of disclosure or thereafter, without default on the part of the *Supplier*, enters the public domain or to information which was already in the possession of the *Supplier* at the time of disclosure (evidenced by written records in existence at that time). Should the *Supplier* disclose information to Others in terms of clause 23.1, the *Supplier* ensures that the provisions of this clause are complied with by the recipient.
- Z5.2 If the *Supplier* is uncertain about whether any such information is confidential, it is to be regarded as such until notified otherwise by the *Supply Manager*.
- Z5.3 In the event that the *Supplier* is, at any time, required by law to disclose any such information which is required to be kept confidential, the *Supplier*, to the extent permitted by law prior to disclosure, notifies the *Purchaser* so that an appropriate protection order and/or any other action can be taken if possible, prior to any disclosure. In the event that such protective order is not, or cannot, be obtained, then the *Supplier* may disclose that portion of the information which it is required to be disclosed by law and uses reasonable efforts to obtain assurances that confidential treatment will be afforded to the information so disclosed.
- Z5.5 The *Supplier* ensures that all his subcontractors abide by the undertakings in this clause.

Z6 Waiver and estoppel: Add to core clause 12.3:

- Z6.1 Any extension, concession, waiver or relaxation of any action stated in this contract by the Parties, the *Supply Manager* or the *Adjudicator* does not constitute a waiver of rights, and does not give rise to an estoppel unless the Parties agree otherwise and confirm such agreement in writing.

Z8 Provision of a Tax Invoice and interest. Add to core clause 51

- Z8.1 Within one week of receiving a payment certificate from the *Supply Manager* in terms of core clause 51.1, the *Supplier* provides the *Purchaser* with a tax invoice in accordance with the *Purchaser's* procedures stated in the Goods Information, showing the amount due for payment equal to that stated in the payment certificate.
- Z8.2 If the *Supplier* does not provide a tax invoice in the form and by the time required by this contract, the time by when the *Purchaser* is to make a payment is extended by a period equal in time to the delayed submission of the correct tax invoice. Interest due by the *Purchaser* in terms of core clause 51.2 is then calculated from the delayed date by when payment is to be made.
- Z8.3 The *Supplier* (if registered in South Africa in terms of the companies Act) is required to comply with the requirements of the Value Added Tax Act, no 89 of 1991 (as

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amended) and to include the *Purchaser's* VAT number 4740101508 on each invoice he submits for payment.

Z9 Notifying compensation events

- Z9.1 Delete from the last sentence in core clause 61.3, "unless the *Supply Manager* should have notified the event to the *Supplier* but did not".

Z10 *Purchaser's* limitation of liability

- Z10.1 The *Purchaser's* liability to the *Supplier* for the *Supplier's* indirect or consequential loss is limited to R0.00 (zero Rand)
- Z10.2 The *Supplier's* entitlement under the indemnity in 83.1 is provided for in 60.1(12) and the *Purchaser's* liability under the indemnity is limited.

Z11 Termination: Add to core clause 91.1, at the second main bullet point, fourth sub-bullet point, after the words "against it":

- Z11.1 or had a judicial management order granted against it.

Z12 Addition to secondary Option X7 Delay damages (if applicable in this contract)

- Z12.1 If the amount due for the *Supplier's* payment of delay damages reaches the limits stated in this Contract Data for Option X7, the *Purchaser* may terminate the *Supplier's* obligation to Provide the Goods and Services using the same procedures and payment on termination as those applied for reasons R1 to R15 or R18 stated in the Termination Table.

Annexure A: Supply Requirements

[Notes: This template is based on the examples given in the NEC3 Supply Contract Guidance Notes pages 15 to 20 inclusive. Please read the Guidance Notes before finalising the information given below. Users may need to adjust the information to comply with actual requirements. First decide whether Incoterms will be used or not, then delete the arrangement below which does not apply and delete these notes]

The Supply Requirements for this contract are based on the use of INCOTERMS:

The *Supplier* supplies the *goods* in accordance with INCOTERMS 2000² as follows:

Group	Category	Term	Delivery Place
E	departure	EXW	Duvha Power Station
F	main carriage unpaid	FCA, FAS, FOB	
C	main carriage paid	CFR, CIF, CPT, CIP	
D	arrival	DAF, DES, DEQ, DDU DDP	

The Parties obligations described in Incoterms for the category and term selected are now incorporated into this contract as part of the Supply Requirements and hence the Goods Information.

The obligations of seller and buyer for the selected Incoterm determine each Party's costs, risks and insurance requirements incidental to the supply and transport of the *goods* from *Supplier* to *Purchaser*.

For each of the thirteen terms, Incoterms set out obligations of the seller (the *Supplier*) in ten paragraphs identified as A1 to A10 and the corresponding obligations of the buyer (the *Purchaser*) in paragraphs B1 to B10. These obligations cover the following subjects:

A	The <i>Supplier's</i> obligations	B	The <i>Purchaser's</i> obligations
A1	Provision of goods in conformity with contract	B1	Payment of the price
A2	Licences, authorisations and formalities	B2	Licences, authorisations and formalities
A3	Contracts of carriage and insurance	B3	Contracts of carriage and insurance
A4	Delivery	B4	Taking delivery
A5	Transfer of risks	B5	Transfer of risks
A6	Division of costs	B6	Division of costs
A7	Notice to the buyer	B7	Notice to the seller

² International Chamber of Commerce, Incoterms 2000, Paris, January 2000.

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A8	Proof of delivery, transport document or equivalent electronic message	B8	Proof of delivery, transport document or equivalent electronic message
A9	Checking - packing - marking	B9	Inspection of goods
A10	Other obligations	B10	Other obligations

[Should there be a need to amplify any of the published obligations listed above for the chosen INCOTERM, add them here. Before doing so read SC3 Guidance Notes pages 18 to 20 as well as the cross references to INCOTERMS included in the guidance.]

All other information NOT pertinent to the above is given in the balance of the Goods Information

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The Supply Requirements for this contract are as follows:

[Use these when INCOTERMS do not apply].

1. The requirements for the supply are	Timing as stipulated on the section 30.1 above	
2. The requirements for transport are	The mode of road transport to be used	
3. The delivery place is	Duvha Power Station	
4. Actions of the Parties during supply	Action	Party which does it
	Giving notice of Delivery	Supplier
	Checking packing and marking before dispatch	Supplier
	Contracting for transport	Supplier
	Pay costs of transport	Supplier
	Arrange access to delivery place	Supplier
	Loading the <i>goods</i>	Supplier
	Unloading the <i>goods</i>	Supplier
For international procurement	Undertake export requirements	N/A
	Undertake import requirements	N/A
5. Information to be provided by the <i>Supplier</i>	Title of document	
	Packing lists for cases and their contents	
	Copy of invoice for the <i>goods</i>	
	Delivery Note	
	Test results and maintenance manuals	
	As prescribed on the following documents	
	Annexure A: Works Information	

All other information NOT pertinent to the above is given in the balance of the Goods Information

Annexure B: Insurance provided by the Purchaser

These notes are provided as guidance to tendering suppliers and the Supplier about the insurance provided by the Purchaser. These notes are not part of this contract.

Transit insurance of goods originating from outside the borders of the Republic of South Africa

For the purpose of supply contracts, the only insurance provided by Eskom (the *Purchaser*) is transit shipment cover, commonly known as Marine Insurance for air, sea, rail and road freight (including local land arrangements) for conveyance of *goods* originating outside RSA. Please consult the website stated below to ascertain whether Format A, Format B or Format Dx is applicable to this contract and then the

- Marine Insurance Policy wording;
- Eskom Shipment Policies and Procedures – note a pre-shipment survey form has to be completed under certain circumstances;
- Marine Claims Handling Procedures – for important shipment actions and claims forms in event of damages to cargo freight via sea, barge, air, road or rail.

For EXW (Ex Works collections) this is of no concern to the *Supplier* but for any other Supply Requirement (such as CIF, DDU, or DDP) the *Supplier* need not provide such insurance even if the INCOTERM requires it and tendering suppliers should 'discount' their prices when tendering to allow for this provision by the *Purchaser* (Eskom).

Supplier's liability for damage to the Purchaser's property

Whilst this is a liability the *Supplier* carries and should cover (if he is required to deliver the *goods* to the *Purchaser's* premises) his liability is limited to the amount of cover provided to the *Purchaser* within his assets policy. This amount varies depending on the Division within Eskom to which the *Supplier* is making the delivery. For any one occurrence or series of occurrences arising out of one event but unlimited during the period of insurance the *Supplier's* liability would be:

- R15million for Generation Division projects,
- R7.5million for Transmission Division projects or
- R1.0million for Distribution Division projects

All other insurance

As required by clause 84, the *Supplier* provides all other insurance for his risks. The *Supplier* should give further consideration to providing for these additional insurance concepts [for amounts and periods of insurance the *Supplier* deems fit and necessary].

Professional Indemnity: The insurance provided shall indemnify the *Supplier* (and/or his professional consultant) for those sums which the *Supplier* or his consultant shall become legally liable to pay as damages arising from any claim first made against the *Supplier* / consultant and reported to their insurers during the Period of Insurance, directly arising out of any negligent act, error or omission committed or alleged to have been committed by the *Supplier* / consultant in the conduct of **professional services** (for example, design) in connection with this contract.

SUPPLY AND DELIVERY OF VARIOUS BOILER TUBING FOR STOCK ITEMS AT DUVHA POWER STATION

Products Liability: A special General Liability extension for liability arising out of the *Supplier's defective:*

- production and manufacturing process (workmanship or material), or
- product design, or
- warnings, instructions, usage and maintenance manuals and specifications.

For any further explanation of insurance requirements tendering suppliers are advised to consult their brokers or insurers who may in turn contact Eskom Insurance Management Services per contact details provided on the following website:

http://www.eskom.co.za/live/content.php?Item_ID=9248

SUPPLY AND DELIVERY OF VARIOUS BOILER TUBING FOR STOCK ITEMS AT DUVHA POWER STATION

Annexure C: The Purchaser's Panel of Adjudicators

The following persons listed in alphabetical order of their surname have indicated their willingness to be included in the *Purchaser's* Panel of Adjudicators. Their CV's may be obtained by using the contact details provided.

Name	Location	Contact details (phone & e mail)
Nigel ANDREWS	Gauteng	+27 11 836-6760 nigela@quoin.net
Andrew BAIRD	Gauteng	+27 11 803 3008 andrewbaird@ecsconsult.co.za
Christopher BINNINGTON	Gauteng	+27 11 888-6141 cdb@bca.co.za
Peter HIGGINS	UK	+44 1293 873 868 peterhiggins@pdconsult.co.uk
Adv. Bruce LEECH	Gauteng	+27 11 290 4000 leech@counsel.co.za
Nigel NILEN	Gauteng	+27 11 465 3601; nilences@global.co.za
Peter THURLOW	Gauteng	+27 11 787 6226 info@thurlowassoc.com

Information about the Panel and appointment of the selected *Adjudicator* is available from Eskom Supply Chain Operations management, by contacting Leighton Itholeng (Tel.: +27 (0)11 800 4031) (Fax :+27 (0)86 668 0419) E-mail: Leighton.Itholeng@eskom.co.za

C1.2 Contract Data**Part two - Data provided by the Supplier****Notes to a tendering supplier:**

1. Please read both the NEC3 Supply Contract (December 2009) and the relevant parts of its Guidance Notes (SC3-GN)³ in order to understand the implications of this Data which the tenderer is required to complete.
2. The number of the clause which requires the data is shown in the left hand column for each statement however other clauses may also use the same data
3. Where a form field like this [] appears, data is required to be inserted relevant to the option selected. Click on the form field **once** and type in the data. Otherwise complete by hand and in ink.

Completion of the data in full, according to Options chosen, is essential to create a complete contract.

Clause	Statement	Data		
10.1	The <i>Supplier</i> is (Name):			
	Address			
	Tel No.			
	Fax No.			
11.2(8)	The Goods Information for the <i>Supplier's</i> design is in:	Not applicable		
11.2(11)	The tendered total of the Prices is	R	Excluding VAT	
		(in words)		
11.2(12)	The <i>price schedule</i> is in:	C2.2 Price Schedule		
11.2(14)	The following matters will be included in the Risk Register	1. Delays due to failed quality tests.		
25.2	The restrictions to access for the <i>Supply Manager</i> and Others to work being done for this contract are	N/A		
30.1	The <i>delivery date</i> of the <i>goods</i> and <i>services</i> is:	goods and services		delivery date
		1	Supply and delivery of various Boiler Tubing for Stock Items at Duvha Power Station	Once off
31.1	The programme identified in the Contract Data is contained in:			
63.2	The <i>percentage for overheads and profit</i> added to the Defined Cost is	%		

³ Available from Engineering Contract Strategies Tel 011 803 3008 Fax 011 803 3009 www.ecs.co.za

PART 2: PRICING DATA**NEC3 Supply Contract**

Document reference	Title	No of pages
C2.1	Pricing assumptions	2
C2.2	The <i>price schedule</i>	

C2.1 Pricing assumptions

The conditions of contract**How goods and services are priced and assessed for payment**

Clause 11 in NEC3 Supply Contract, December 2009 (SC3) core clauses states:

Identified and defined terms 11
 11.2 (11) The Prices are the amounts stated in the price column of the Price Schedule. Where a quantity is stated for an item in the Price Schedule, the Price is calculated by multiplying the quantity by the rate.

(12) The Price Schedule is the *price schedule* unless later changed in accordance with this contract.

Assessing the amount due 50.2 The amount due is

- the Price for each lump sum item in the Price Schedule which the *Supplier* has completed,
- where a quantity is stated for an item in the Price Schedule, an amount calculated by multiplying the quantity which the *Supplier* has completed by the rate,
- plus other amounts to be paid to the *Supplier*,
- less amounts to be paid by or retained from the *Supplier*.
- ***Spectra Testing to be done prior leaving the Manufacturer site(Before Shipping to South Africa) by TUV Third Party Inspector, confirming correct material as per Specs. Supplied to Duvha.***
- ***PLEASE NOTE : IF MATERIAL DELIVERED TO DUVHA, NOT ACCORDING TO 3.2A CERTIFICATION SPECIFICATIONS, AS WELL AS AN ON-SITE SPECTRA TEST, GOODS TO BE RETURNED WITHOUT ANY PAYMENT DUE TO THE SUPPLIER.***

Any tax which the law requires the *Purchaser* to pay to the *Supplier* is included in the amount due.

This confirms that the Supply Contract is a priced contract where the Prices are derived from a list of items of *goods* and *services* which can be priced as lump sums or as expected quantities of *goods* and *services* multiplied by a rate, or a mix of both.

Function of the Price Schedule

Clause 53.1 states: "Information in the Price Schedule is not Goods Information". This confirms that instructions to do work or how it is to be done are not included in the Price Schedule but in the Goods Information. This is further confirmed by Clause 20.1 which states, "The *Supplier* Provides the Goods and Services in accordance with the Goods Information". Hence the *Supplier* does **not** Provide the Goods and Services in accordance with the Price Schedule. The Price Schedule is only a pricing document.

Preparing the *price schedule*

It will be assumed that the tendering supplier has read Pages 11 and 12 and Appendix 5 of the SC3 Guidance Notes before preparing the *price schedule*. Items in the *price schedule* may have been inserted by the *Purchaser* and the tendering supplier should insert any additional items which he considers necessary. Whichever party provides the items in the *price schedule* the total of the Prices is assumed to be fully inclusive of everything necessary to Provide the Goods and Services as described at the time of entering into this contract.

1 As the *Supplier* has an obligation to correct Defects (core clause 43.1) and there is no compensation event for this unless the Defect was due to a *Supplier's* risk, the lump sum Prices and rates must also include for the correction of Defects.

2 If the *Supplier* has decided not to identify a particular item in the *price schedule* at the time of tender the cost to the *Supplier* of doing the work is assumed to be included in, or spread across, the other Prices and rates in the *price schedule* in order to fulfil the obligation to Provide the Goods and Services for the tendered total of the Prices.

3 There is no adjustment to lump sum prices in the *price schedule* if the amount, or quantity, of work within that lump sum item of *goods* or *services* later turns out to be different to that which the *Supplier* estimated at time of tender. The only basis for a change to the Prices is as a result of a compensation event. See Clause 60.1.

4 Hence the Prices and rates tendered by the *Supplier* in the *price schedule* are inclusive of everything necessary and incidental to Providing the Goods and Services in accordance with the Goods Information, as it was at the time of tender, as well as correct any Defects not caused by a *Purchaser's* risk.

5 The *Supplier* does not have to allow in his Prices and rates for matters that may arise as a result of a compensation event. It should be noted that the list of compensation events includes those arising as a result of a *Purchaser's* risk event listed in core clause 80.1.

Format of the *price schedule*

(From Appendix 5 on page 78 of the SC3 Guidance Notes)

Entries in the first four columns in the *price schedule* in section C2.2 are made either by the *Purchaser* or the tendering supplier.

If the *Supplier* is to be paid an amount for the item which is not adjusted if the quantity of work in the item changes, the tendering supplier enters the amount in the Price column only, the Unit, Quantity and Rate columns being left blank.

If the *Supplier* is to be paid an amount for the item which is the rate for the item multiplied by the quantity completed, the tendering *Supplier* enters the rate which is then multiplied by the Quantity to produce the Price, which is also entered.

If the *Supplier* is to be paid an amount for an item proportional to the length of time for which the *goods* and *services* are provided, a unit of time is stated in the Unit column and the length of time (as a quantity of the stated units of time) is stated in the Quantity column.

C2.2 the price schedule

Item no.	Stock number	Description	Unit	Qty	Rate/m	Price
1	56197	<p>TUBE, BOILER STRAIGHT. TYPE: SUPERHEATER 1. NOMINAL SIZE: 44.5mm. LENGTH: 6m. WALL THICKNESS: MINIMUM 5mm. MATERIAL: 15M03. GRADE: 1.5415. STRUCTURE: SMLS. ENDS: PLAIN. SPECIFICATION: BS EN 10216-2 STANDARD NUMBER 1.5415. ALL TO COLOUR CODED RADially ON BOTH ENDS AND AXIALLY IN RED ACROSS THE FULL LENGTH, CAPPED AND HARD STAMPED WITH LOW STRESS STAMPS, TO BE COATED WITH PLASCON TEMPORARY CORROSION PROTECTION, IMMEDIATLY AFTER CUTTING AND BEFORE CAPPING.</p> <p>CONSIGNMENT ACCORDING TO: ESKOM Procurement of High Pressure Pipework and Boiler Tubing Material Standard in the Generation Division.</p>	m	5000		
2	56201	<p>TUBE, BOILER STRAIGHT. TYPE: SUPERHEATER 1. NOMINAL SIZE: 44.5mm. LENGTH: 6m. WALL THICKNESS: MINIMUM 5.6mm. MATERIAL: 15M03. GRADE: 1.5415. STRUCTURE: SMLS. ENDS: PLAIN. SPECIFICATION: BS EN 10216-2 STANDARD NUMBER 1.5415. ALL TO COLOUR CODED RADially ON BOTH ENDS AND AXIALLY IN RED ACROSS THE FULL LENGTH, CAPPED AND HARD STAMPED WITH LOW STRESS STAMPS, TO BE COATED WITH PLASCON TEMPORARY CORROSION PROTECTION, IMMEDIATLY AFTER CUTTING AND BEFORE CAPPING.</p> <p>CONSIGNMENT ACCORDING TO: ESKOM Procurement of High Pressure Pipework and Boiler Tubing Material Standard in the Generation Division.</p>	m	5000		

3	56202	<p>TUBE, BOILER STRAIGHT. TYPE: SUPERHEATER 1. NOMINAL SIZE: 44.5mm. LENGTH: 6m. WALL THICKNESS: MINIMUM 4.5mm. MATERIAL: 15M03. GRADE: 1.5415. STRUCTURE: SMLS. ENDS: PLAIN. SPECIFICATION: BS EN 10216-2 STANDARD NUMBER 1.5415. ALL TO COLOUR CODED RADIALLY ON BOTH ENDS AND AXIALLY IN RED ACROSS THE FULL LENGTH, CAPPED AND HARD STAMPED WITH LOW STRESS STAMPS, TO BE COATED WITH PLASCON TEMPORARY CORROSION PROTECTION, IMMEDIATLY AFTER CUTTING AND BEFORE CAPPING.</p> <p>CONSIGNMENT ACCORDING TO: ESKOM Procurement of High Pressure Pipework and Boiler Tubing Material Standard in the Generation Division.</p>	m	5000		
4	56218	<p>TUBE, BOILER STRAIGHT: NOMINAL SIZE: 44.5mm. LENGTH: 6m. MATERIAL: 15MO3. WALL THICKNESS: MINIMUM 5.6mm. STRUCTURE: EXTRUDED FIN; SMLS; ENDS: PLAIN; SPECIFICATION: EN10216-2; FIN SIZE: 6mm. THICK X: 60mm. OVERALL LENGTH FROM FIN TIP TO FIN TIP. FINS ARE TO BE EXTRUDED, NOT WELDED ON. 3.2A TEST CERTIFICATES TO BE SUPPLIED. ALL TO COLOUR CODED RADIALLY ON BOTH ENDS AND AXIALLY IN RED ACROSS THE FULL LENGTH, CAPPED AND HARD STAMPED WITH LOW STRESS STAMPS, TO BE COATED WITH PLASCON TEMPORARY CORROSION PROTECTION, IMMEDIATLY AFTER CUTTING AND BEFORE CAPPING.</p> <p>CONSIGNMENT ACCORDING TO: ESKOM Procurement of High Pressure Pipework and Boiler Tubing Material Standard in the Generation Division.</p>	m	6000		
5	56214	<p>TUBE, BOILER STRAIGHT. NOMINAL SIZE: 38mm. LENGTH: 6m. MATERIAL: X20CRM0V12-1/XCRM0V1-1; GRADE: 3. WALL THICKNESS: MINIMUM 6.3mm. STRUCTURE: SMLS. ENDS: PLAIN FLAT SQUARE CUT;</p>	m	9000		

		<p>SPECIFICATION: EN10216-2; ALL TUBING TO BE STAMPED, EVERY 500mm AND VERIFIED BY THIRD PARTY STAMP, AND COLOUR CODED BLUE ALONG THE WOLE LENGTH OF THE TUBE. END CAPS TO BE FITTED, HEAT NUMBERS MUST BE PRESENT ON EACH TUBE. TEST CERTIFICATE TO BE SUPPLIED ACCORDING TO BS EN 10204:2004 TYPE 3.2A CERTIFICATION</p> <p>CONSIGNMENT ACCORDING TO: ESKOM Procurement of High Pressure Pipework and Boiler Tubing Material Standard in the Generation Division.</p>				
6	599479	<p>TUBE, BOILER STRAIGHT: NOMINAL SIZE: 38mm. LENGTH: 6m. MATERIAL: X20CRMOV11-10; WALL THICKNESS: MINIMUM : 5mm. STRUCTURE: SMLS; DELIVER AS PER SPEC UNIQUE IDENTIFIER: 474-10206 REV 2; SPECIFICATION: EN10216-2; ALL TUBING TO BE STAMPED, EVERY 500mm AND VERIFIED BY THIRD PARTY STAMP, AND COLOUR CODED BLUE ALONG THE WOLE LENGTH OF THE TUBE. END CAPS TO BE FITTED, HEAT NUMBERS MUST BE PRESENT ON EACH TUBE. TEST CERTIFICATE TO BE SUPPLIED ACCORDING TO BS EN 10204:2004 TYPE 3.2A CERTIFICATION</p> <p>CONSIGNMENT ACCORDING TO: ESKOM Procurement of High Pressure Pipework and Boiler Tubing Material Standard in the Generation Division.</p>	m	9000		
7	56213	<p>TUBE, BOILER STRAIGHT: NOMINAL SIZE: 38mm. LENGTH: 6m. MATERIAL: X20CRMOV11-10; WALL THICKNESS: MINIMUM: 5.6mm. STRUCTURE: SMLS; DELIVER AS PER SPEC UNIQUE IDENTIFIER: 474-10206 REV 2; SPECIFICATION: EN10216-2; ALL TUBING TO BE STAMPED, EVERY 500mm AND VERIFIED BY THIRD PARTY STAMP, AND COLOUR CODED BLUE ALONG THE WOLE LENGTH OF THE TUBE. END CAPS TO BE FITTED, HEAT NUMBERS MUST BE PRESENT ON EACH TUBE. TEST CERTIFICATE TO BE SUPPLIED ACCORDING TO BS EN 10204:2004 TYPE 3.2A CERTIFICATION</p>	m	5000		

		<p>CONSIGNMENT ACCORDING TO: ESKOM Procurement of High Pressure Pipework and Boiler Tubing Material Standard in the Generation Division.</p>				
8	56212	<p>TUBE, BOILER STRAIGHT: NOMINAL SIZE: 38mm. LENGTH: 6m. MATERIAL: X20CRMOV11-10; WALL THICKNESS: MINIMUM: 4.5mm. STRUCTURE: SMLS; DELIVER AS PER SPEC UNIQUE IDENTIFIER: 474-10206 REV 2; SPECIFICATION: EN10216-2; ALL TUBING TO BE STAMPED, EVERY 500mm AND VERIFIED BY THIRD PARTY STAMP, AND COLOUR CODED BLUE ALONG THE WOLE LENGTH OF THE TUBE. END CAPS TO BE FITTED, HEAT NUMBERS MUST BE PRESENT ON EACH TUBE. TEST CERTIFICATE TO BE SUPPLIED ACCORDING TO BS EN 10204:2004 TYPE 3.2A CERTIFICATION</p> <p>CONSIGNMENT ACCORDING TO: ESKOM Procurement of High Pressure Pipework and Boiler Tubing Material Standard in the Generation Division.</p>	m	5000		
9	598318	<p>TUBE, BOILER STRAIGHT: NOMINAL SIZE: 38mm. LENGTH: 6m. MATERIAL: X20CRMOV11-10; WALL THICKNESS: MINIMUM: 4mm. STRUCTURE: SMLS; DELIVER AS PER SPEC UNIQUE IDENTIFIER: 474-10206 REV 2; SPECIFICATION: EN10216-2; ALL TUBING TO BE STAMPED, EVERY 500mm AND VERIFIED BY THIRD PARTY STAMP, AND COLOUR CODED BLUE ALONG THE WOLE LENGTH OF THE TUBE. END CAPS TO BE FITTED, HEAT NUMBERS MUST BE PRESENT ON EACH TUBE. TEST CERTIFICATE TO BE SUPPLIED ACCORDING TO BS EN 10204:2004 TYPE 3.2A CERTIFICATION</p> <p>CONSIGNMENT ACCORDING TO: ESKOM Procurement of High Pressure Pipework and Boiler Tubing Material Standard in the Generation Division.</p>	m	5000		
10	0175814	<p>Tube, boiler straight: nominal size: 51 mm; wall thickness: min 5.6 mm; material: 15mo3; length: 8 m; structure: gilled; ends: plain; type: economizer; grade: 1.5415; specification: EN10216-2; welded steel, 150mm on each side ungilled, gill size 120mm x 51mm x 3mm, space 20mm apart with a 20mm gap on opposite sides</p>	ea	1 200		

		<p>standard number , to be colour coded, capped and hard stamped with low stress stamps at both ends indicating material and TUV stamp, wall thickness to be indicated on each, after manufacturing one element hold point for TUV, Eskom for inspection, material and test certificates to be according to BS EN 10204:2004 type 3.2A. certification.</p> <p>CONSIGNMENT ACCORDING TO: ESKOM Procurement of High Pressure Pipework and Boiler Tubing Material Standard in the Generation Division.</p>				
11	0055299	<p>Tube, boiler straight: nominal size: 51 mm; wall thickness: min 6.3 mm; material: 15mo3; length: 8 m; structure: plain; ends: plain; type: economizer; specification: en10216-2; 150mm on each side ungilled, welded steel, flow scheme 12, gill size 120mm x 51mm x 3mm, spaced 20mm apart with a 20mm gap on opposite sides, standard number 1.5415, to be capped, colour coded and hard stamped with low stress stamps at both ends of tubes indicating material and TUV stamp, wall thickness to be indicated on each, after manufacturing one element hold point for TUV, Eskom for inspection, material and test certificates to be according to BS EN 10204:2004 type 3.2A certification.</p> <p>CONSIGNMENT ACCORDING TO: ESKOM Procurement of High Pressure Pipework and Boiler Tubing Material Standard in the Generation Division.</p>	ea	1 200		
12	598217	<p>TUBE, BOILER STRAIGHT: TYPE: REHEATER 1 AND 2; NOMINAL SIZE: OD 48.3 MM; LENGTH: 6 M; MATERIAL: 10CRMO910; GRADE: 1.7380; WALL THICKNESS: MINIMUM 3.6 MM; STRUCTURE: SMLS; ENDS: PLAIN; SPECIFICATION: EN10216-2; STANDARD FLOW NO 115, REHEATER 1 ELEMENT, MATERIAL CERTIFICATES TO BE SUPPLIED WITH EVERY CONSIGNMENT, ALL TO BE COLOUR CODED RADIALLY ON BOTH ENDS AND AXIALLY IN GREEN, ALL TO BE CAPPED AND HARD STAMPED WITH LOW STRESS STAMPS ON BOTH ENDS; TEST CERTIFICATES TO BE SUPPLIED ACCORDING TO BS EN10204:2004 TYPE 3.2A.</p> <p>CONSIGNMENT ACCORDING TO: ESKOM Procurement of High Pressure Pipework and Boiler Tubing Material Standard in the Generation Division.</p>	m	1500		

13	598214	<p>TUBE, BOILER STRAIGHT: NOMINAL SIZE: 51 MM; WALL THICKNESS: MIN 3.6 MM; MATERIAL: 10CRMO910; LENGTH: 5 M; STRUCTURE: SMLS; ENDS: PLAIN; TYPE: REHEATER 1 AND 2; GRADE: 1.7380; SPECIFICATION: EN10216-2; FLOW NO 128; REHEATER 2 ELEMENT; MATERIAL CERTIFICATES TO BE SUPPLIED WITH EVERY CONSIGNMENT; ALL TUBES TO BE COLOUR CODED RADially ON BOTH ENDS AND AXIALLY IN GREEN; ALL TO BE CAPPED AND HARD STAMPED WITH LOW STRESS STAMPS ON BOTH ENDS; TEST CERTIFICATES TO BE ACCORDING TO BS EN10204:2004 TYPE 3.2;</p> <p>CONSIGNMENT ACCORDING TO: ESKOM Procurement of High Pressure Pipework and Boiler Tubing Material Standard in the Generation Division.</p>	m	1500		
14	56204	<p>TUBE, BOILER STRAIGHT: NOMINAL SIZE: 51 MM; WALL THICKNESS: MIN 3.6 MM; MATERIAL: 15M03; LENGTH: 5 M; STRUCTURE: SMLS; ENDS: PLAIN; TYPE: REHEATER 1 AND 2; GRADE: 1.5415; SPECIFICATION: EN10216-2; REFERENCE NO: FLOW113; LINEAR; FLOW NO 113; 1 ELEMENT; MATERIAL CERTIFICATES TO BE SUPPLIED WITH EVERY CONSIGNMENT; ALL TO BE COLOUR CODED RADially ON BOTH ENDS AXIALLY IN RED; ALL TO BE CAPPED AND HARD STAMPED WITH LOW STRESS STAMPS ON BOTH ENDS; TEST CERTIFICATES TO BE SUPPLIED ACCORDING TO BS EN10204:2004 TYPE 3.2;</p> <p>CONSIGNMENT ACCORDING TO: ESKOM Procurement of High Pressure Pipework and Boiler Tubing Material Standard in the Generation Division.</p>	m	6000		
15	220997	<p>TUBE, BOILER STRAIGHT: NOMINAL SIZE: 51 MM; WALL THICKNESS: MIN 3.6 MM; MATERIAL: X20CRMOV12-1/X20CRMOV11-1; LENGTH: 6 M; STRUCTURE: SMLS; ENDS: PLAIN; TYPE: REHEATER 1 AND 2; GRADE: 1.4922; SPECIFICATION: EN10216-2; FLOW NO 129, 2 ELEMENT, MATERIAL CERTIFICATES TO BE SUPPLIED WITH EVERY CONSIGNMENT, ALL TO BE COLOUR CODED RADially ON BOTH ENDS AND AXIALLY IN BLUE, ALL TO BE CAPPED AND HARD STAMPED WITH LOW STRESS STAMPS ON BOTH ENDS, TEST CERTIFICATES TO BE ACCORDING TO BS EN10204:2004 TYPE 3.2;</p>	m	5000		

		CONSIGNMENT ACCORDING TO: ESKOM Procurement of High Pressure Pipework and Boiler Tubing Material Standard in the Generation Division.				
16		Transportation to Duvha Power Station	Lumpsum			

- **ADHERE TO ESKOM GOODS INFORMATION REQUIREMENTS AND THE SUPPLIER WILL COMPLY TO THE FOLLOWING STANDARD (SEE PROCUREMENT OF HIGH PRESSURE PIPEWORK AND BOILER TUBING MATERIAL STANDARD IN THE GENERATION DIVISION 240-87733094 LATEST REVISION);**
- **MATERIAL CERTIFICATION TO EN10204/3.2;**
- **CONDUCT A MATERIAL ANALYSIS (SPECTROMETER TEST) ON EACH BATCH OF MATERIAL AT THE SUPPLIER'S PREMISES PRIOR DELIVERY TO THE POWER STATION;**
- **THE POWER STATION AIA WILL BE PRESENT TO REVIEW AND VERIFIED THE SPECTROMETER RESULTS.**
- **MATERIAL NOT MEETING THE REQUIREMENTS WILL BE REJECTED;**
- **THE SPECTROMETER RESULTS MUST CORRESPOND WITH THE MATERIAL CERTIFICATE;**
- **ALL THE DOCUMENTATION WILL BE EVALUATED BY ENGINEERING INCLUDING THE SPECTROMETER TEST RESULTS SIGNED BY POWER STATION AIA UPON DELIVERY BEFORE ACCEPTANCE OF THE MATERIAL;**
- **NOTE : MATERIAL WILL NOT BE ACCEPTED WITHOUT THE MATERIAL CERTIFICATES AND THE SPECTROMETER TEST CERTIFICATE SIGNED AND VERIFIED BY POWER STATION AIA TYPE 3.2A.**
- **PLEASE NOTE : IF MATERIAL DELIVERED TO DUVHA, NOT ACCORDING TO ABOVE REQUIRMENTS, GOODS TO BE RETURNED WITHOUT ANY PAYMENT DUE TO THE SUPPLIER.**

The total of the Prices

--

Full Names:	
Surname:	
Signature:	
Date:	

REFER TO ANNEXURES:

TECHNICAL WORKS INFORMATION

&

PROCURMENT OF HIGH PRESSURE PIPEWORK.

1. Material Procurement requirements

1.1 Material Specification

The material to be used for the design of the main steam system shall be EN10216 Part 2 – X20CrMoV11-1 (1.4922). EN 10216-2 10CrMo910 (1.7380) material will be used for selected drain piping and other attachments.

All forged components shall conform to the requirements of EN 10222. However the delivery conditions, mechanical and non-destructive testing shall be in accordance with EN 10216-2 and all other additional requirements stated below.

1.1.1 The following mandatory information from the material manufacturer must be supplied as part of the tender returnables:

Third Party / Notified Body certification (in accordance to EN 764-5) that the plant has been audited and authorised having a quality assurance system for material manufacture in accordance with PED 97/23/EC or 2014/68/EU (Pressure Equipment Directive) to produce the material grades and dimension ranges tendered for.

1.1.2 The following requirements shall be adhered to over and above the technical delivery conditions stated in EN 10216-2:

1.1.2.1 Declaration of Conformity

A declaration form must be signed to confirm that all the requirements of this section of the technical specification (section 5) can be met. If there are requirements that cannot be met, these should be listed on the declaration form. Supporting documents should be attached for evaluation and as proof. This is required for each plant where tubes will be manufactured and must be included with the tender submission.

1.1.2.2 Steel Making Process

The foundries used to supply cast billets for the manufacture of all piping and forging shall be listed in the tender documents.

The manufacturer shall provide Eskom with a short technical description of its process to ensure the production of “clean” steel. Raw material and scrap control by foundries must demonstrate low contamination levels of trace and dangerous (poisonous and radioactive) elements. Only fully killed steels will be acceptable.

Manufacturers shall also provide details of raw material suppliers and their PED certification.

1.1.2.3 Heat Treatment

The following requirements shall apply and be demonstrated and listed on both tender evaluation documents AND material certificates for each material order. For material certificates (3.2) actual data is required.

- (a) The calibration status of the furnace shall be demonstrated by the current valid calibration certificate. The actual certificate will be required for the ordered material.**
- (b) The horizontal, vertical and diagonal temperature differentials of the furnace shall be less than 20°C (±10°C) over the area where the pipes will be positioned during heat treatment. This must be demonstrated by placing a calibrated thermocouple blocks per furnace control area distributed over the entire loading area and to include the extremes. The plan to show how this was or will be achieved must be supplied and agreed on before the tender is awarded and the results to prove that it was achieved must be included in the furnace calibration certificates. Thermocouples must be used to demonstrate that the correct heat treatment process has been followed through the entire process. This should include the transformation process where applicable. For tubes and pipes that are not sensitive to heat**

treatment (low alloy steels) Eskom Engineering may waive the requirement to place thermocouples in the furnace if proper temperature control is demonstrated by the supplier.

- (c) Pieces must be packed and separated to avoid non-uniform heating and cooling rates (especially during austenitizing, hardening and tempering of CSEF steels) and associated non-uniform material properties.
- (d) The heat treatment plan (heating and cooling rates and mediums, with holding temperatures, times and sequence – dummy charts) for each material type and dimensions batch must be supplied with the tender documents. These heat treatment plans and the actual heat treatment charts of each batch should be included in the data books

1.1.2.4 Chemical Composition

- (a) **Both cast / melt analysis and product analysis (on the same sample used for mechanical testing) is required for the materials ordered.**
- (b) Trace elements must be controlled and reported (on mill material certificates) for the chemical analysis of *all* materials. The following limits must be adhered to:
 - Phosphorus (P) $\leq 0,015\%$
 - Sulphur (S) $\leq 0,005\%$
- (c) The following elements must be reported on the material certificate (EN10204)
 - Arsenic (As)
 - Antimony (Sb)
 - Tin (Sn)
 - Lead (Pb)
- (d) **The following special requirements, for both cast and product analysis (within but more stringent than code limits are required for X20CrMoV11-1 material:**
 - Nickel (Ni) – shall be within the range of 0.30 – 0.50%**
 - Copper (Cu) – shall be restricted to a maximum of 0.10%**

Additionally the control of Delta Ferrite will be maintained by adherence to the following formula:

$$(Cr + 6Si + 4Mo + 1,5W + 11V + 5Nb + 9Ti + 12Al) - (40C + 30N + 4Ni + 2Mn + 1Cu) < 12$$

1.1.2.5 Mechanical Properties

All mechanical testing shall be done in accordance with EN 10216-2 Table 13 Test Category 2 (TC 2) inclusive of all optional test requirements.

- (a) *Tensile testing* shall be done at room temperature and in the transverse direction except where the dimensions do not allow. The sample direction must be noted on the test report. Tensile properties shall comply with the respective codes. Yield strength (or 0,2% proof strength), ultimate tensile strength, elongation and reduction in area shall be reported.

High temperature tensile tests shall be carried out for all materials used in time-independent designs. A temperature of 550°C shall be used. Testing shall be in the transverse direction except where the dimensions do not allow. The sample direction must be noted on the test report. Tensile properties shall comply with the code values. Yield strength (or 0,2% proof strength), ultimate tensile strength, elongation and reduction in area shall be reported.

- (b) *Hardness testing* (macro-Vickers with 10kg load) shall be carried out on a cross section, close to the outside surface (0,5 - 1mm), in the centre and close to the inside surface (0,5 - 1mm) of each sample. Care must be taken to polish away the cold work effects from cutting of the samples.
- (c) *Impact testing* shall be done in the transverse direction except where dimension do not allow. The sample orientation must be noted on the test report. Impact properties shall comply with code values.

1.1.2.6 Non Destructive Examination

All testing shall be carried out in accordance with EN 10216 – 2 Table 13 Test Category 2 (TC 2) inclusive of all optional test requirements.

Additional NDT in the form of ultrasonic testing (UT) must be carried out in the transverse direction, and for the detection of laminar imperfections.

Magnetic particle (MT) shall be carried out on all tubes/pipes. Should electromagnetic testing be used (in the case of tubing) it must be fully capable of detecting longitudinal defects.

In all cases leak tightness testing shall be electromagnetic testing.

1.1.2.7 Certification

Certification shall be in accordance with EN 10204 3.2 in all cases.

1.1.2.8 Protection Against Corrosion

All pipes and tubes must be dry, free of corrosion, and a temporary protective coating must be applied on each tube to protect it for long term storage in outside atmospheric conditions (open storage). Tube ends must be covered with tight fitting end caps and desiccant bags or suitable inhibitor must be placed in the inside of each tube to protect it for long term storage in atmosphere (outside storage). The manufacturer must supply details of the coating and desiccant /inhibitor that will be applied.

1.1.2.9 Marking

Standard and clear legible marking must be applied to all on both ends of each tube/pipe. All marking shall be in accordance with the relevant code.

1.1.2.10 Surface Condition

The surface of all tubes/pipes shall be of such a nature that all required NDT testing can be carried out without restriction.

All pipes/tubes shall be delivered free of external and internal scale.

1.1.2.11 Delivery

- (a) Order requirements and specifications (including declaration of conformity)
- (b) PED certification
- (c) Signed quality control documentation
- (d) Certificates according to EN 10204 (3.2) including all detailed results for destructive and non-destructive testing.
- (e) Heat treatment charts (austenizing and tempering) and/or a detailed explanation of the processes including ramp rates, hold times and temperatures.
- (f) Surface finish and corrosion protection applied.
- (g) All concession correspondence if applicable.

1.1.2.12 Manufacturing Plant Details

Name, street and postal address, contact names and telephone numbers of the plant (*site of manufacturing, inspection, testing, and release – if any activity is done at a different plant it must be listed*) where the material will be manufactured, must be supplied with the tender submission. Note that Eskom reserves the right to audit the facilities (or arrange for it by a third party). Under no circumstances can material be manufactured elsewhere without Eskom's written approval.

1.1.2.13 Creep Data

For materials operating in the creep regime (>450°C) certificates to prove that material of the same grade as the tendered or quoted material, was manufactured at the plant and subjected to actual creep testing of at least 40kh is required, no extrapolation is permitted (e.g. similar material appraisal info as in VdTÜV data sheets). In the event this cannot be supplied during the tendering process a signed declaration confirming the above point and allowing access to this documentation at any stage during the tendering process must be submitted.

1.1.2.14 List of Previous Supply

A list must be supplied of all material supplied over the past two years, with particular attention paid to the material required as part of the order. This should include both the material type and size. Additionally a reference list with contact details of the end users (Utilities) should be supplied with tender submission for evaluation by Eskom. The reference list must include dates of delivery, material grade, dimensions, tonnage and user contact details. Eskom reserves the right to audit the manufacturing plants or arrange for an audit by a third party without any obligation to give reasons for executing this right. Should a plant be unable to prove manufacturing of a specific grade of material, proof should be provided that the mill has produced pipes in a material grade of similar chemical composition and manufacturing complexity in the past.

WORKS INFORMATION FOR THE PURCHASE OF BOILER TUBES

Seamless tubes with dimensions and steel grades to be supplied as per attached schedule (APPENDIX 1), in accordance with most stringent of all requirements of the following specifications:

- EN 10216-2, 3, 4 and 5
- VGB Specification VGB-R 109
- VdTÜV WB511 (03.2009), – *X10CrMoVNb9-1 and T91 impact properties only*
- EPRI Guideline: Best Practice for Manufacturing and Construction of Grade P91 Steel Components – *Chemical analysis and heat treatment requirements for X10CrMoVNb9-1 and T91 only*

- VdTüV WB560/2 (03.2009) – *VM 12 only*
- VdTüV WB547 (06.2003) – *DMV 347 HFG only*
- ASTM A192/A192M
- ASTM A210/A210M
- ASTM A213/A213M
- Eskom Technical Specification

Notes:

1. ASTM/ASME specifications are exclusively for the use of Kendal Power Station.
2. Certification in terms of EN 10204: "Types of Inspection Documents" is required for all tubes supplied.
3. As no ASME equivalent to EN 10204 exists material supplied to ASTM/ASME specification should be supplied with certification as in Note 2 above.
4. The attached Works Information Check List (APPENDIX 2) MUST be completed in full with the tender documents. The Works Information Check List and supporting information will be used for the Technical Evaluation. If Quality Gatekeepers are not adhered to in full, the tender will be disqualified.

Important: TE1 – Complete a Works Information Check List point TE1 (APPENDIX 2) for each material grade and manufacturing plant by stating/committing to full compliance with the above requirements.

ESKOM TECHNICAL SPECIFICATION

Quality Gatekeepers

The information listed below must be included in the tender submission for each material grade and dimension group. Failure to volunteer/supply the following required details (with proof) and then comply with the supplied / listed information (known as the quality gatekeepers) will result in automatic disqualification of the tender.

- Name, street and postal address, contact names and telephone numbers of the manufacturing **plant** (*site of manufacturing, inspection, testing, and release – if any activity is done at a different plant it must be listed*) where the material will be manufactured, must be supplied with the tender submission. Note that Eskom reserves the right to audit the facilities (or arrange for it by a third party). Under no circumstances can material be manufactured elsewhere (Plant-Material grade combinations not listed) without Eskom's written approval.

Important: TE2 / QGK1 - Complete Works Information Check List point TE2 / QGK1 (APPENDIX 2) for each material grade and manufacturing plant by stating/committing to full compliance with the above requirements. Note that a sheet must be filled in for each manufacturing plant - material grade combination (if one manufacturing plant will supply 4 material grades in this contract, 4 Works Information Check Lists must be completed for the tender, if 3 manufacturing plants will all supply 1 material grade, 3 Works Information Check Lists must be completed for the tender).

- Third Party / Notifying Body / AIA **certification** that the **plant** has been audited and authorised having a quality assurance system for material manufacture in accordance with PED 97/23/EC (Pressure Equipment Directive) to produce the material grades and dimension ranges tendered for. Contact details of the third party/ notifying body to be supplied for evaluation by Eskom. Certificates and supporting / additional information must be supplied with the tender submission.

Important: TE3 / QGK2 - Complete Works Information Check List Attached point TE3 / QGK2 (APPENDIX 2) for each material grade and manufacturing plant by stating/committing to full compliance with the above requirements, include certificates and documents marked as TE3 / QGK2 in tender files.

- For materials operating in the creep regime (>500°C) certificates to prove that material of same grade and similar dimensions of the ordered material was manufactured at the **plant** and subjected to actual creep testing of at least 40kh is required, no extrapolation is permitted. In addition proof must also be provided that the ordered material has been in service for a minimum of 10 years (5 years in the case of VM12)

Important: TE4 / QGK3 - Complete Works Information Check List Attached point TE4 / QGK3 (APPENDIX 2) for each material grade and manufacturing plant by stating/committing to full compliance with the above requirements, include certificates and documents marked as TE4 / QGK3 in tender files.

- The **plant** should have delivered at least 500 tons of a material grade within the range of dimensions listed that operated for at least 7 years. A reference list with contact details of the end users (Utilities) should be supplied with tender submission for evaluation by Eskom. The reference list must include Company and plant delivered to, dates of delivery, material grade, dimensions, tonnage and user contact details. Eskom reserves the right to audit the manufacturing **plants** or arrange for an audit by a third party without any obligation to give reasons for executing this right. Should a **plant** be unable to prove manufacturing of a

specific grade of material, proof should be provided that the mill has produced tubes in a material grade of similar chemical composition and manufacturing complexity in the past.

Important: TE5 / QGK4 - Complete Works Information Check List Attached point TE5 / QGK4 (APPENDIX 2) for each material grade and manufacturing plant by stating/committing to full compliance with the above requirements, include certificates and documents marked as TE5 / QGK4 in tender files.

- Heat treatment dummy charts and heat treatment furnace capabilities are supplied with tender documents. The inclusion of this documentation is a requirement for all materials (including those certified as 3.1). See detail requirements in "Heat Treatment" paragraph below.

Important: TE6 / QGK5 - Complete Works Information Check List Attached point TE6 / QGK5 (APPENDIX 2) for each material grade and manufacturing plant by stating/committing to full compliance with the above requirements, include dummy charts, furnace loading plans, thermocouple locations, certificates and documents marked as TE6 / QGK5 in tender files.

- A declaration must be signed to confirm that all the requirements of this specification can be met. If requirements cannot be met those should be listed on the declaration form/letter. Supporting documents should be attached for evaluation and as proof. This is required for each **plant** where tubes will be manufactured and must be included with the tender submission. **Failure to do so will disqualify the tender.**

Important: TE7 / QGK6 - Complete Works Information Check List Attached point TE7 / QGK6 (APPENDIX 2) for each material grade and manufacturing plant by stating/committing to full compliance with the above requirements, include a declaration of conformance (letter) and documents stating non-conformance areas marked as TE7 / QGK6 in tender files.

General Requirements

Material is ordered as seamless tube to the requirements of British Standard BS EN 10216, incorporating newest amendments (A1:2004 and A2:2007). The requirements of VGB Specification VGB-R 109 "Material Specification for Components in Fossil-fired Power Plants", VdTÜV WB511 (03.2009) and additional Eskom requirements in the technical specification shall be included as minimum requirements to be adhered to.

In all cases seamless tubes to test category 2 (with all mandatory and optional tests as per tables in EN 10216) are ordered. Suppliers must indicate in their tenders (before evaluation by Eskom) if requirements cannot be met fully and supply limits that can be met. Technical Evaluation will favour suppliers that can meet all the technical requirements.

Manufacturing processes not covered by EN 10216 or ASME/ASTM equivalent (allowed for Kendal only) will not be considered in the Technical Evaluation.

Boiler tubes are specified as OD and minimum WT controlled tube. The material grades and the design conditions are attached in the schedule, APPENDIX 1, for each Power Station.

The requirements of this document are complementary to those laid down in national codes and standards, and are based on latest knowledge available and experience necessary to design and manufacture boiler pressure parts operating at high pressures and temperatures, which may be used safely with minimum routine maintenance, for not less than 200 000 hours under design conditions. In all cases the requirements of SANS 347 and the Pressure Equipment Regulations of South Africa, also PED 97/23/EC (Pressure Equipment Directive) must be complied with, *and a Certificate of Conformity provided before acceptance by Eskom and shipment of the material to Eskom.*

Steel Making Process

The foundries used to supply cast billets for tube manufacturing shall be listed in the tender documents.

Material shall be manufactured under controlled melting processes (as a minimum, electric arc process with vacuum degassing, argon bubbling, inductive stirring, bottom pouring and appropriate after-treatment) to ensure that clean steel which is also “free” of inclusions is delivered to the tube manufacturing plant. Raw material and scrap control by foundries must demonstrate low contamination levels of trace and dangerous (poisonous and radioactive) elements. Only fully killed steels will be acceptable.

For Austenitic Stainless Steels, only Argon-Oxygen-Decarburisation (AOD) or Vacuum-Oxygen-Decarburisation (VOD) processes are allowed.

Details of the foundries that supply billets and the steel making processes shall be supplied with the tender.

Important: TE8 - Complete Works Information Check List point TE8 (APPENDIX 2) for each material grade and manufacturing plant by stating/committing to full compliance to clean steel making processes, include documents of proof marked as TE8 in your tender files.

The processes followed and the supplier of the castings/billets must also be listed on the foundries' material certificates and included in the final data books.

All stainless steel tubes must be manufactured to comply with the requirements of EN 10216-5 and this Works Information. Surface finish and protection must be specified by the supplier and must comply with the intent of Points 14 and 15 of the Options section in this document. Minimum delivery condition is CFD and in addition DMV 347 HFG tubes operating in the creep regime must be shot-peened on the internal bore.

Important: TE9 - Complete Works Information Check List point TE9 (APPENDIX 2) for each material grade and manufacturing plant by stating/committing to full compliance, include documents of proof marked as TE9 in your tender files.

Note: Welding is not permitted during pipe manufacture or forming processes.

Inspection Certificate

Certification in terms of EN 10204: “Types of Inspection Documents” is required for all tubes supplied.

EN 10204: 3.2 certification is a requirement for the following materials:

- X20CrMoV11-1
- X10CrMoVNb9-1 (T91)
- X12CrCoWMoVNb 12-2-2 (VM12-SHC)
- 7CrWVMoNb9-6 (T23)
- 7CrMoVTiB10-10 (T24)
- X8CrNi19-11 (DMV347HFG)
- All stainless steel tubes

- 15NiCuMoNb5-6-4 (WB36) – special consideration is required to use as tubes (via modifications process approved by Group Technology Engineering)

In exceptional circumstances EN 10204: 3.1 certification for the steels listed above will be accepted. This acceptance is subject to approval/concession by Group Technology Pippework Specialists and RT&D Materials Specialists PRIOR TO SHIPMENT FROM MANUFACTURER. As a minimum however, it must be ensured that the requirements of the Eskom specification is met and additional testing of one sample per batch for tests not performed as per the Eskom specification will be required in addition to the 3.1 certificate. Eskom might also require repeat testing (visual inspection for defects, chemical analysis, room and high temperature tensile testing and impact testing, where practical) on one sample per batch to verify the information contained on the 3.1 certificates. Non-destructive evaluation, including hardness testing, could be requested as well although it will not form part of the standard verification testing. Group Technology Engineering and RT&D Chief Metallurgists must be involved to establish minimum test verification required. All additional test certificates should be added to the 3.1 certificates.

EN 10204: 3.1 Certification will be acceptable for the following materials:

- All grades of carbon steel
- 16Mo3
- 13CrMo45 (T11)
- 10CrMo910 (T22)

Note: Material supplied to ASME/ASTM specification (Kendal only) should also be supplied with certification as listed above.

Important: TE10 - Complete Works Information Check List point TE10 (APPENDIX 2) for each material grade and manufacturing plant by stating/committing to full compliance, include certificates and documents of proof marked as TE10 in your tender files.

Heat Treatment

The following requirements shall apply, must be demonstrated and listed on both the tender evaluation documents (if omitted, the tender will fail technical compliance and cannot be considered) and certificates:

- The calibration status of the furnace, temperature sensors (thermocouples) and monitoring instrumentation loops must be verified before heat treatment commences.
- The control thermocouple shall maintain the target temperature within 2°C (+/- 1°C)
- The horizontal, vertical and diagonal temperature differentials of the furnace must be less than 20°C (+/- 10°C) over the areas where the tubes will be positioned during heat treatment.
- This must be demonstrated by placing at least 1 calibrated thermocouple block per furnace control area distributed over the entire loading area and to include the extremes. The plan to show how this was or will be achieved must be supplied and agreed on before the tender is awarded and the results to prove that it was achieved must be included in the furnace calibration certificates. Thermocouples must be used for the austenizing, hardening, tempering, and solution annealing heat treatments. (carbon and low alloy steels not requiring 3.2 certification excluded)
- Eskom reserves the right to waiver the use of thermocouples where the plant can prove to Eskom's satisfaction that the gradients will be within the tolerances required for the loading pattern of the furnace. This right is exercisable without any obligation to supply details for the decision.

- Pieces must be packed and separated to avoid non-uniform heating and cooling rates (especially during austenizing, hardening and tempering of CSEF steels) and associated non-uniform material properties. A heat treatment packing plan must be supplied with tender documents for the materials requiring 3.2 certification. The packing plan must indicate how development of “soft” zones is prevented (refer to EPRI guideline)
- The heat treatment plan (heating and cooling rates and mediums, with holding temperatures, times and sequence) for each material type and dimensions batch must be supplied with the tender documents. These heat treatment plans and the actual heat treatment charts of each batch should be included in the data books
- The most stringent parameters of EN 10216, VGB-R 109, VdTÜV WB511, 547,560 and the equivalent ASME codes or this Eskom Technical Specification must be adhered to.
- For heat treatments the following apply:
 - For each step (eg. Austenitizing, hardening, tempering) soaking time must allow the full thickness to reach the desired temperature. Soaking must be done for at least 10 minutes at temperature (or longer for some materials) in the last area reaching temperature. For martensitic steels, continuous and uniform cooling after austenizing must be done at a rate $>5^{\circ}\text{C}/\text{min}$ at least down to 450°C and then slower rates are allowed to a temperature below the Martensite finish temperature (at least $<80^{\circ}\text{C}$ for the CSEF steels and X20CrMoV111). Care must be taken that the components in the hardened condition do not crack (keep dry and avoid thermal and mechanical shock). Cooling rates for austenitic stainless steels must prevent sensitisation, and requires rates $>>5^{\circ}\text{C}/\text{min}$.
- For X10CrMoVNb9-1 (T91) the following limits must be adhered to:
 - Austenitizing should be done at 1060°C . The minimum temperature on any component should be 1050°C and the maximum 1080°C . Once the full thickness reaches the desired temperature, soaking must be carried out for at least 10 minutes at this temperature. After Austenitizing, the hardening process requires cooling to temperatures $<80^{\circ}\text{C}$, reached by the through thickness of the product. Tempering should be done at 760°C observing strict control between limits of 750°C - 770°C . Soaking starts once the full thickness reaches the desired temperature. Temper temperature and soaking time (which must be reported) must be chosen to provide the required hardness limits (215HV – 260HV). The aim must be to achieve hardness in the centre towards the higher range to allow a minimum hardness of $>205\text{HV}$ after bending and welding heat treatment processes. Cooling must be in air after tempering. Please note that upper and lower limits specified must not be exceeded at all, even including measurement tolerances. Impact properties specified in VdTÜV datasheet 511/2 06.2001 must be achieved for acceptance (also on welds)

Note: this is part of the technical quality gatekeepers as indicated above.

Important: TE6 / QGK5 - Complete Works Information Check List Attached point TE6 / QGK5 (APPENDIX 2) for each material grade and manufacturing plant by stating/committing to full compliance with the above requirements, include dummy charts, furnace loading plans, thermocouple locations, certificates and documents marked as TE6 / QGK5 in tender files.

Options

Several options exist within the various codes and Eskom requires the following as a minimum requirement:

1 Restriction on Copper and Tin Content

Cu $< 0.250\%$, This is applicable to only the materials for which 3.2 certification is a requirement.

Sn < 0.010%. These chemical analyses results (Cu & Sn) per batch must be supplied with the certificates.

Important: TE11 - Complete Works Information Check List point TE11 (APPENDIX 2) for each material grade and manufacturing plant by stating/committing to full compliance, include certificates and documents of proof marked as TE11 in your tender files.

2 Chemical composition

- (a) Trace elements to be controlled and reported for the cast analysis of the materials. The following limits must be adhered to. This is applicable only to the materials for which 3.2 certification is a requirement, and these elements must appear on the test certificates. P ≤ 0,020; S ≤ 0,010; As ≤ 0,010; Sb ≤ 0,003; and As +Sn +Sb +Pb <0.01

Important: TE12 (a) - Complete Works Information Check List point TE12 (a) (APPENDIX 2) for each material grade and manufacturing plant by stating/committing to full compliance, include certificates and documents of proof marked as TE12 (a) in your tender files.

- (b) Product analysis must be done for the following materials on the same tube subjected to mechanical testing:
- 15NiCuMoNb5-6-4 (WB36)
 - 7CrWVNb9-6 (T23)
 - 7CrMoVTiB10-10 (T24)
 - X10CrMoVNb9-1 (T91)
 - X10CrWMoVNb9-2 (T92)
 - X20CrMoV11-1
 - VM12-SHC (as per V&M data sheet and VGB-R 109)

Special requirements for these steels include analysis for adherence to the following:
P ≤ 0,020; S ≤ 0,010; As ≤ 0,010; Sb ≤ 0,003; Al ≤ 0,020; Zr ≤ 0,01 and

The following special requirements must also be maintained and specifically reported on the material certificates.

- For: X10CrMoVNb9-1 (P/T91), X10CrWMoVNb9-2 (P/T92) and VM12-SHC:
N 0,035 – 0,060; N/Al > 4; Ni ≤ 0,20 and to control delta ferrite:
(Cr + 6Si + 4Mo + 1,5W +11V + 5Nb + 9Ti + 12Al) – (40C +30N + 4Ni +2Mn +1Cu) < 12
- For: X20CrMoV11-1:
Ni ≤ 0,40 and to control delta ferrite:
(Cr + 6Si + 4Mo + 1,5W +11V + 5Nb + 9Ti + 12Al) – (40C +30N + 4Ni +2Mn +1Cu) < 12
- For: 7CrWVNb9-6 (P/T23):
Ti 0,005 – 0,060; N ≤ 0,015; Ti/N > 3,5; Ni < 0,40; B 0,001 – 0,006.
- For: 7CrMoVTiB10-10 (P/T24):
Ni < 0,20.

The chemical analysis results and techniques used must be reported for all these elements on the test certificates.

Note: Number of samples per test unit shall be in accordance with paragraph 10.1.2 of EN 10216 except for material grades listed above where a minimum of two sample tubes per test unit will apply, even if the total number of tubes is less than 20 tubes.

Important: TE12 (b) - Complete Works Information Check List point TE12 (b) (APPENDIX 2) for each material grade and manufacturing plant by stating/committing to full compliance, include certificates and documents of proof marked as TE12 (b) in your tender files.

3 Test pieces for impact test – only where practical

The sample orientation must be noted on the test report. The most stringent of the minimum values given in VBG R-109 and Table 4 of EN 10216-2 and Table 5 of EN 10216-5 apply. For X10CrMoVNb9-1 (T91), X10CrWMoVNb9-2 (T92) and VM12-SHC the values in the latest VdTÜV Material Data Sheets apply.

Note: Number of samples per test unit as per “Note” in paragraph “2. Chemical Composition” above.

Important: TE13 (a) - Complete Works Information Check List point TE13 (a) (APPENDIX 2) for each material grade and manufacturing plant by stating/committing to full compliance, include certificates and documents of proof marked as TE13 (a) in your tender files.

4 Longitudinal impact testing at -10°C for non-alloy steel grades – only where practical

This option is required for non-alloy steels as per Table 4 of EN 10216-2 and for 15NiCuMoNb5-6-4 (WB36).

Important: TE13 (b) - Complete Works Information Check List point TE13 (b) (APPENDIX 2) for each material grade and manufacturing plant by stating/committing to full compliance, include certificates and documents of proof marked as TE13(b) in your tender files.

5 Mechanical properties

Tensile testing must be done at room temperature in the transverse direction except where dimensions do not allow it. The sample orientation must be noted on the test report. The tensile properties must comply with the most stringent values (higher than highest minimum and lower than lowest maximum) given in VGB R-109, EN 10216, VdTÜV data sheets, Eskom Specification. The yield strength (or 0.2% proof strength), ultimate tensile strength, elongation and reduction in area must be reported. ASME materials shall conform to the applicable ASME Standard as listed above (except for T91, T23 and DMV 347 HFG where the most stringent criteria of all specifications apply).

Important: TE14 (a) - Complete Works Information Check List point TE14 (a) (APPENDIX 2) for each material grade and manufacturing plant by stating/committing to full compliance, include certificates and documents of proof marked as TE14 (a) in your tender files.

Hardness testing (macro Vickers with 10kg load) must be carried out on a cross section, close to the outside surface (0,5 - 1mm), in the centre and close to the inside surface (0,5 - 1mm) of each sample. Care must be taken to polish away the cold work effects from cutting of the samples. For a hardness correlation of (UTS in MPa = HV / 0.31), the UTS values derived from hardness values must be within the most strict ranges as per applicable codes and this specification

For X10CrMoVNb9-1 (T91) manufactured tubes must be in the hardness range of 215HV – 260HV. The hardness range after bending and forming must be 210HV – 260HV and after final site welding processes must be 205HV – 260HV.

Hardness ranges listed in VGB-R 109 are further applicable to all materials and hardness values will be used by Eskom to reject material.

Important: TE14 (b) - Complete Works Information Check List point TE14 (b) (APPENDIX 2) for each material grade and manufacturing plant by stating/committing to full compliance, include certificates and documents of proof marked as TE14 (b) in your tender files.

6 Leak-tightness test method

The leak-tightness test shall be Electromagnetic testing to be performed on each tube.

Important: TE15 - Complete Works Information Check List point TE15 (APPENDIX 2) for each material grade and manufacturing plant by stating/committing to full compliance, include certificates and documents of proof marked as TE15 in your tender files.

7 Non-destructive testing

All tubes must be subjected to non-destructive testing for the detection of longitudinal imperfections in accordance with paragraph 11.11.11 of EN 10216-2. No dressing of defects will be permitted unless agreed to by Eskom on a case by case basis. All recordable indications and dressing there-of must be reported on the test certificate documents.

Important: TE16 - Complete Works Information Check List point TE16 (APPENDIX 2) for each material grade and manufacturing plant by stating/committing to full compliance, include certificates and documents of proof marked as TE16 in your tender files.

8 Diameter and wall thickness

The tubes shall be delivered to the diameters and wall thickness as per the schedule supplied with the tender documents. Unless if otherwise stated, tubes are OD and min WT controlled.

Rifle bore tubes are included for Kendal, Matla and Lethabo (schedule in APPENDIX 1). The Kendal tubes have an A-type profile with 8 ribs while Matla and Lethabo have a B-type profile with 12 ribs. NOTE: The **plant** / material grade combination for rifle bore tubes require separate Works Information Check Lists.

Also refer to paragraph 10 on “Dimensional Inspection”.

Important: TE17 - Complete Works Information Check List point TE17 (APPENDIX 2) for each material grade and manufacturing plant by stating/committing to full compliance, include certificates and documents of proof marked as TE17 in your tender files.

9 Lengths

The tubes shall be delivered as per the schedule to random lengths of not <6m and not longer than 12m (or transport container length).

10 Inspection documents

Certification in terms of EN 10204: "Inspection Certificate" is required for all tubes supplied as per the requirements stipulated under the paragraph "Inspection Certificate" in this document.

The inspection documents / certificates shall also contain copies of the heat treatment charts (as per above) and reports for optional/additional inspections requested by the purchaser and Eskom.

Important: TE10 - Complete Works Information Check List point TE10 (APPENDIX 2) for each material grade and manufacturing plant by stating/committing to full compliance to certification requirements, include certificates and documents of proof marked as TE10 in your tender files.

11 Dimensional inspection

Shall be carried out as per the relevant code

Important: TE17 - Complete Works Information Check List point TE17 (APPENDIX 2) for each material grade and manufacturing plant by stating/committing to full compliance, include certificates and documents of proof marked as TE17 in your tender files.

12 Option 16: Non-destructive testing

Shall be carried out as per the code

13 Marking of tubes

Standard and clear legible marking (stencil painting) must be applied on the outer surfaces along the lengths of the pipes at both ends of each tube. Requirements of VGB-R 109 must be complied with. Third party marking must be included.

Important: TE18 - Complete Works Information Check List point TE18 (APPENDIX 2) for each material grade and manufacturing plant by stating/committing to full compliance, include certificates and documents of proof marked as TE18 in your tender files.

14 Protection

All pipes and tubes must be dry, free of corrosion, and a temporary protective coating must be applied on each tube to protect it for long term storage in outside atmospheric conditions (open storage). Tube ends must be covered with tight fitting end caps and desiccant bags or suitable inhibitor must be placed in the inside of each tube to protect it for long term storage in atmosphere (outside storage). The manufacturer must supply details of the coating and desiccant /inhibitor that will be applied for approval by Eskom.

Important: TE19 - Complete Works Information Check List point TE19 (APPENDIX 2) for each material grade and manufacturing plant by stating/committing to full compliance, documents with details of coatings and inhibitors/desiccant to be supplied and marked as TE19 in your tender files.

15 Surface finish

Inside + outside: The surface of all tubes and pipes must be clear of mill scale and the surface finish must be adequate to allow code compliant non-destructive testing as per paragraph 6.1.13 of EN 10216-2.

The manufacturer must supply details of surface finish with the tender and clarify Eskom acceptance. If no information is supplied, a surface roughness of $R_a < 1.6$ ($RMS < 64.3$) or better will be required

Important: TE20 - Complete Works Information Check List point TE20 (APPENDIX 2) for each material grade and manufacturing plant by stating/committing to full compliance, documents with details of surface finish to be supplied (if outside Eskom requirement) and marked as TE20 in your files.

Additional Information Requirements

The supplier must commit delivery timelines to the material schedule during the tendering process and for time critical projects penalties could be included if timelines are not adhered to.

All tenders must include required documentation for evaluation of gatekeepers and to assess adherence to technical specification requirements as part of the "Technical Evaluation". Severe penalties will be incurred where suppliers deviate from Eskom requirements and where adequate documentation of proof / information is not supplied. Tenders will go through a technical and commercial evaluation, each conducted independently by committees and according to standardised criteria for the specific order. The Works Information Check List and Supporting Documentation will form the basis of the "Technical Evaluation".

Important: TE21 – Indicate the Works Information Check List is completed in full.

Plant assessments by Eskom may be required.

Concession requests for deviations must be presented via the contract manager to the Engineer who must involve Group Technology Pipework Specialist and RT&D Metallurgists for review and to make the decision as and when required. Adherence to the requirements stipulated and agreed in the contract is critical and concessions will, as a rule not be granted, at least not for deviation from technical specification items.

Upon completion, technical data books must be supplied containing as a minimum:

- Order requirements and specifications (including the declaration form and supporting documents supplied with the tender) as well as heat treatment and furnace packing plans
- Signed quality control plans.
- Steel making processes and foundry material certificate
- Certificates according to EN 10204 (3.1, 3.2) including detailed results for all destructive and non-destructive testing, tensile curves, additional testing, etc.
- Heat treatment charts (austenizing and tempering) and or detail explanation of the heat treatment processes with ramp rates, quench media, holding times and temperatures
- Agreed surface finish and protection applied.
- All concessions correspondence.
- Certificate of Conformance to SANS 347 and the South African Pressure Equipment Regulations.

The data books shall be supplied as follows (unless agreed differently):

- On or before material shipment to Eskom

- Originals to the Eskom Project Manager with hard copy to Eskom Project Engineer, Group Technology Representative and site AIA
- Electronic copies to each of the Eskom Project Manager, Engineer and AIA who will keep it safe. One copy must go onto HyperWave (BTFR or Pipework site).

An example of a quality control plan / inspection and test plan (ITP) used for manufacturing of tubes at each facility must be supplied with the tender documents for evaluation by Eskom. This must demonstrate how processes will be controlled to meet all the requirements of this specification.

Important: TE22 – Works Information Check List must be completed for a quality Control Plan (or ITP) and supporting documents added and marked as TE22 in your tender files.

APPENDIX 1: BOILER TUBE SCHEDULE

Boiler Section	Sub Section	Stock Number	ENABLING CONTRACT TECHNICAL SPECIFICATION					DESIGN INFORMATION		
			Code	Grade	Outside Diameter (mm)	WT (mm)	Length (m)	Code	Pressure (MPa)	Temp (°C)

APPENDIX 2: Tube Order Works Information Check Sheet

One form is required per manufacturing plant and per material group listed in the *Materials Grades Table* below

TE2 / QGK 1 Manufacturer details:

Company Name
Street Address
Postal Address
Contact Name
Tel No

MATERIAL GRADE TENDERED FOR:

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(See Material Grades Table Below)

Reference	Description	Compliance Commitment (Yes/No)	Documentation of Proof Included in Tender	COMMENTS
TE1	Manufacturing according to enclosed Eskom Works Information (Yes/No)			
TE3 / QGK2	Certificate of Quality Assurance System for Material Manufacture to PED 97/23/EC:			
TE3 / QGK2 (a)	Manufacturing facility certified - State compliance and supply valid copy as proof in tender			
TE3 / QGK2 (b)	Material grades certified - State compliance and supply valid copy as proof in tender (list all materials)			
TE3 / QGK2 (c)	Certified by: (Note certification body under "comments" column, supply valid copy as proof)			
TE4 / QGK3	Creep Testing and Usage			
TE4 / QGK3 (a)	State compliance to creep testing requirements and supply Creep Test Certificates as proof			
TE4 / QGK3 (b)	State compliance to usage requirements and supply proof of usage for 10 years (VM 12 - 5 years)			
TE5 / QGK4	Previous material supply reference list with contact detail:			
TE5 / QGK4 (a)	State compliance to requirements, tonnage manufactured & delivered (in comments column) and attach documents of proof			
TE5 / QGK4 (b)	State compliance to requirements, date of delivery and years in operation (in comments column), attach detail/proof			
TE5 / QGK4 (c)	Users' Names (attach detail/proof)			
TE5 / QGK4 (d)	Users Contact details (attach detail/proof)			
TE6 / QGK5	Furnace Capabilities and Calibration			
TE6 / QGK5 (a)	State compliance to requirements and supply Dummy Heat Treatment charts / procedure limits			
TE6 / QGK5 (b)	State compliance to requirements and supply Furnace Capability Certificates			
TE6 / QGK5 (c)	State compliance to requirements and supply Furnace loading plans			
TE6 / QGK5 (d)	State compliance to requirements and supply Thermocouple locations to be used			
TE 7	Declaration of Conformance (included as a letter with technical information)			
TE 8	Original Material Supply			
TE 8 (a)	State compliance and list of foundries supplying billet material (in comments column)			
TE 8 (b)	State how compliance to clean steel making process will be guaranteed. Supply documentation indicating steel making processes to be followed up to billet phase			
TE 9	Delivery Condition			
TE 9 (a)	State compliance to delivery condition minimum requirement of CFD (Yes / No)			
TE 9 (b)	State compliance to deliver DMV 347HFG shot peened on internal bore (Yes / No) and add detail documentation of how it will be done.			
TE 10	Compliance to EN 10204 Inspection Certificate and testing (as per Eskom Works Information)			
TE 11	Compliance to restriction on Cu and Sn			
TE 12	Chemical Composition			
TE 12 (a)	State Compliance to restrictions on trace elements			
TE 12 (b)	Compliance to requirements of Product Analysis as per Works Information			
TE 13	Impact Testing			
TE 13 (a)	State compliance to requirements and indicate orientation and where it will be applied			
TE 13 (b)	State compliance to Longitudinal Impact Testing at -10°C for non alloy steels			
TE 14	Mechanical Testing			
TE 14 (a)	State full compliance to Tensile Testing requirements (list deviations if any)			
TE 14 (b)	State full compliance to Hardness Testing requirements (list deviations if any)			
TE 15	Electromagnetic Leak Tightness Testing (state compliance to requirement)			
TE 16	Non Destructive Testing for longitudinal Imperfections (state compliance to requirement)			
TE 17	Compliance to Outside Diameter and Minimum Thickness (and rifling) as per Schedule			
TE 18	Marking of Tubes (state compliance to requirement)			
TE 19	Supply details for the protection to be applied to tubes in supporting documentation			
TE 20	State compliance and supply details of the surface finish of the tubes			
TE 21	Works information Checksheet completed			
TE 22	Inspection and Test Plan - example/sample included			

MATERIAL GRADES TABLE

1	C Steels & C-Mn Steels
2	0,3% Mo and 0,5% Mo Steels
3	1%Cr, Mo & 2,25%Cr, Mo Steels
4	7CrWVMoNb9-6 (T23)
5	X20CrMoV11-1
6	X10CrMoVNb9-1 (T91)
7	VM 12 SHC (V&M Supply Only)
8	TP-347H (SA-213 Grade TP 347H) X5CrNiMo17-12-2 (316 SS)
9	X8CrNi19-11 (DMV 347HFG)
10	Others (materials not covered above)