EUROPEAN UNION

DELEGATION OF THE EUROPEAN COMMISSION
TO THE REPUBLIC OF SERBIA

Belgrade, 31/07/2009

CONTRACTING AUTHORITY'S CLARIFICATIONS No. 1

Emission Reduction from Nikola Tesla Thermal Power Plant in Obrenovac

Publication ref.: EuropeAid/127971/C/WKS/RS

Tender no.: 07SER01/21/21

No.	Question	Answer				
General Questions						
1.	**Volume 3, Section 3.9, Technical requirements / Flue gas design parameters for the guarantees of the upgraded EPS**	Power	P	MW	350	670
		Flue (designed)	Hd	kJ/kg	6700	6700
			A	%	20±2	20±2
		Flue actually	-	-	-	-
	TPP "Nikola Tesla" A&B: Please define ESP design flue gas parameters, i.e. flue gas parameters at ESP inlet for nominal upgraded unit's load and reference coal to be used, for each of the considered units, TENT A6 and TENT B2. Please fulfil the requested input data in attached our Form for Input data (App.1)	Flue gas ESP inlet	O_2	%	6	6
			CO_2	%	12,5	12,5
		Flue gas quantity (unit)	-	Nm^3/h	1.800.000	3.500.000
		Particles quantity in front of ESP	-	g/ Nm^3	52	53
		Particles quantity after of ESP	-	mg/ Nm^3	50	50
		Flue gas temperature before ESP	t	°C	170	170
		O_2 quantity in front of ESP	-	%	6	6,5

		Pressure drop in ESP	-	Pa	250	200 - 250
		Boiler efficiency (designed)	η_k	-	0,85	0,87
		Flue gas fan (designed)	-	m^3/h	1.500.000	3.500.000
		Fresh air fan (designed)	-	m^3/h	855.000	1.600.000
2.	**Volume 3, Section AppA6, Appendix 1 to Visual Inspection Report of the ESP of TPP-NT A6, ESP efficiency / 1. General information** Unit efficiency of 40.09 % is too high, even as design value. Please clarify.	Unit Efficiency is 35%.				
3.	**Volume 3, Section AppA6, Appendix 1 to Visual Inspection Report of the ESP of TPP-NT A6, ESP efficiency / 1. General information** The proposed value for required ESPs Collection Area increase, after ESPs refurbishment and steam turbine upgrade, of 139 % is too high and does not correspond to the proposed ESP retrofit options, Visual Inspection Report, page 38-40. Please clarify.	The proposed values are approximate, for information only and are not obligatory. The Contractor's Responsibility is to define Parameters precisely.				
4.	**Volume 3, Section AppA6, Appendix 1 to Visual Inspection Report of the ESP of TPP-NT A6, ESP efficiency / 5. EsPs operational data** The given value for „Fuel (lignite) consumption (calculated)" of 413t/h corresponds to unit efficiency of 40.09 %. As this efficiency is insubstantially high, the corresponding flue gas quantity is lower than expected after unit upgrading. Please clarify.	Unit Efficiency is 35%.				

5.	**Volume 3, Section AppB2, Appendix 1 to Visual Inspection Report of the ESP of TPP-NT B2, ESP effficiency / 1. General information** Unit efficiency of 40.52 % is too high, even as design value. Please clarify.	Unit Efficiency is 36%.
6.	**Volume 3, Section AppB2, 3.15, Ground water level** The meaning of sentence "Higher values shall be used for calculations" is not clear. Please clarify	In the case of discrepancy between data, higher value should be considered.
7.	**Volume 3, Section AppB2, 3.20, Permissible deformations** It is not clear on which type of deflection specified condition relates (vertical, horizontal, type of element: beam, column, bearing etc.)? Please clarify.	Item 3.20 describe permissible deformations of all equipment.
8.	**Volume 3, Section 4, 4.2.7.1, TE NT A6 - Electrical equipment, Primary voltage supply** Please provide the following existing as-built drawings: - Single line diagrams (SLD) of 6 kV distribution for feeding ESP - Control wiring diagrams of cubicles in 6 kV distribution for feeding ESP - SLD of 0,4 kV distribution 6EU - Control wiring diagrams of 0,4 kV feeders in 6EU for feeding ESP - SLD of 0,4 kV distribution ESP - Layouts (BH, 0,00) dwgs of 6 kV distributions, supplying 6/0,4 kV transformers for feeding ESP - Layouts (BH, 0,00) dwgs of Block's 0,4 kV reserve distribution 6EU - stand by feeding of ESP - Cable routes layouts between 6 kV distributions and 6/0,4 kV transformers for feeding ESP - Cable routes layouts between 0,4 kV distribution 6EU	Drawings have been sent on CD.

	and 0,4 kV distribution for ESP - Layouts dwgs of 6/0,4 kV transformers, 0,4 kV distributions, local control room and other ESP electrical rooms - Layouts dwgs of outdoor earthing system.	
9.	**Volume 3, Section 4, 4.1.2, Breakdown of tender price, 4.1.2.1.a / Item 2.3.4 &4.1.2.1.b / Item 2.3.4 Field Instruments** In Breakdown of the Tender price stated that "Field instruments" will be delivered, mounted and calibrated by Tenderer (Bidder). Does this Item include also other measurement instrument not explicitly declared in Tender such as: flue gas velocity measurement, oxygen density, etc. Please confirm. Also please clarify are there any special requirements for this equipments in the manner of unification with other ESP's measuring equipment in TPP "Nikola Tesla"? Please clarify.	Yes, we confirm that there are no special requirements other than those presented in the Tender Dossier.
10.	**Volume 3, Section 4, 4.1.2, Breakdown of tender price, 4.1.2.1.a / Item 2.5 & 4.1.2.1.b / Item 2.5 All other services to complete ESP** Temporary electrical power supply: Please confirm that Beneficiary will provide temporary electrical supply including cables and cables mounting, so that the Project limit for temporary electrical supply is temporary distribution boards that will be Tenderer (Bidder) obligation. Please confirm.	A6: The site power network is to be installed and operated up to the primary distribution boards (low-voltage distribution of the transformer stations) or up to the load centre distribution boards. Any extensions or amendments thereto may only be carried out by the Beneficiary. Site power distribution boards including service cables to the primary distribution or load centre distribution boards are to be provided and installed by the Contractors themselves, i.e. the area of responsibility commences at the output terminals on the primary distribution or load centre distribution boards. Therefore, cables and cable mountings, as well as temporary distribution boards will be the Contractor's obligation. B2: The Beneficiary will provide the connection point in the excavator station for power supply during the works. Cables and distribution boards are obligation of the Contractor.
11.	**Volume 3 - Technical Requirements - 3.6.3 Fly Ash Resistivity**	

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<table>
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<td>You specify the ash resistivity from the available data, lies in the range of high resistivity ashes (10^{10} to 10^{13}) i.e. equal to 5 x 10^{12}. If we use this figure for the ash resistivity the required plate area is very high, almost a factor of 5 times above the area calculated using a resistivity of 5 x 10^{10}. The ash resistivity value used has a direct impact on the plate area required and in Volume 5 - Appendix 1 you specify the plate area for TENT A6 should be increased to 72,535m² however, this is significantly below the plate area we calculate if the resistivity value of 5 x 10^{12} is used.
Can you please clarify the statement about resistivity and what this is based on?</td>
<td colspan="4">
<table>
<tr><th>TPP</th><th>Year</th><th>Resistivity</th><th>Temperature</th></tr>
<tr><td>TPP NT A2</td><td>1972</td><td>5x10^{12}</td><td>157</td></tr>
<tr><td>TPP Kolubara</td><td>1977</td><td>3,23x10^{12}</td><td>195</td></tr>
<tr><td>TPP NT</td><td>1977</td><td>6,94x10^{12}</td><td>168</td></tr>
<tr><td>TPP NT</td><td>1979</td><td>5x10^{12}</td><td>181</td></tr>
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<td>12.</td>
<td>Volume 5 –
TENT A6 - Appendix 1 and TENT B2 - Appendix 1, plate areas

i) TENT A6 - You specify 3 plate area increases:
a) 72,535 = 139% plate increase - Calculations according to ESP design data
b) 61,017 = 101% plate increase - Calculations based on operating data
c) 54,091 = 78% plate increase - Calculations based on operating data without upgrade
For each you specify "Required ESPs Collection Area to meet Directive's 2001/80/EC limits" - Therefore is the ESP we are to supply required to have the plate area as specified for a) above? or are we to specify what plate area is required to meet the emission requirement of the upgraded boiler (350MW) based on our calculations?

ii) TENT B2 - You specify 3 plate area increases:
a) 75,815 = 2.56% plate increase - Calculations according to ESP design data
b) 83,367 = 12.78% plate increase - Calculations based on operating data
c) 78,697 = 6.46% plate increase - Calculations based on operating data without upgrade
For each you specify "Required ESPs Collection Area</td>
<td colspan="4">The Consultant who prepared technical specifications performed provisional calculations to approximately specify the plate area that should be able to meet the emission requirement of the upgraded boiler (350/667MW).

The final and accurate calculation of the plate area should be performed by the Contractor.</td>
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	to meet Directive's 2001/80/EC limits" - Therefore is the ESP we are to supply required to have the plate area as specified for b) above? or are we to specify what plate area is required to meet the emission requirement of the upgraded boiler (670MW) based on our calculations? Also unlike A6 above the plate area "according to ESP design data" is less than you specify "calculated based on operating data" is this correct? iii) The plate area you have calculated for TENT A6 will be almost the same after the upgarde of the boiler and ESP as that for TENT B2 after the boiler and ESP upgrade. However, the boiler capacity of TENT A6 (350MW) is almost half that of TENT B2 (670MW), but we understand both stations are using the same fuel. Therefore is there an error in the calculations you presented in the enquiry document? As we understand the ash resistivity figure quoted in Volume 3 - Technical Requirements - 3.6.3 Fly Ash Resistivity - apply to both stations A6 & B2	
13.	**Clarifications 4** In your "Clarifications 4" document you make the statement the air volume should be 1,800,000m^3 N,dry/h. However, you do not state if this is per ESP casing or for 2 ESP casings. Can you please clarify? As you can appreciate this information is critical to the ESP sizing in order for us to calculate costs and work out site layouts. We would be grateful for your earliest reply.	Please see the answer No. 1.
14.	**Clarification note No4** **Q21 – the flue gas flow is stated 1,800,000 $m^3_{N,dry}$/h** You have stated a flue gas flow value in dry basis however we think that this value should be in wet basis. Please check it one more time.	Yes, it is dry gas.

15.	**Volume 3, Technical Specifications, Pos 3.7** Please state the water content in flue gas for TENT A6 and B2.	See previous clarifications and answer No. 14.
16.	**Volume 3, Technical Specifications, Pos 7.7** The upgraded electrostatic Precipitation System must comprise at least 16 separately energized zones. Is this a must requirement both for A6 and B2?	Yes.
17.	**Volume 4, 4.1.12 Breakdown of tender price; item 4.1.2.1.a – 2.4.1 and 4.1.2.1.b – 2.4.1 – Dismantling existing equipment** In Your clarification note 4 you are writing that the Beneficiary will perform dismantling works…Does it also refer to dismantling of thermal insulation and its disposal?	Yes, it refers to thermal insulation as well.
18.	**Volume 4, 4.1.12 Breakdown of tender price; item 4.1.2.1.a – 2.2.4 and 4.1.2.1.b – 2.2.4 – Transformers rectifiers** Does the Beneficiary deliver only T/R units or T/R units together with the controller and control cubicles?	TENT B – Only T/R sets. TENT A – T/R units together with the controller and control cubicles.
19.	Does new visualisation and control systems with PC station have to be installed or it can use the existing SCADA System with new software delivered by contractors?	TENT B – New visualization and control system has to be installed. TENT A – The existing SCADA system can be used.
20.	Does the EsP on each flue gas stream in TENT A6 have a dividing wall in the middle? Is it a full gas tight wall or just bracings?	ESP on unit A6 are with own casing.
21.	**Volume1, Section 1: Instruction to Tenderers – item 13.4**	Yes, it is necessary to state the taxes/values since they should be quoted in the VAT exemption requests.

	In the first sentence you write that we should separately quote taxes, customs and import duties. And in the second sentence you write that all imports and local procurements are exempted from sales taxes, duties, etc. Due to this fact is it necessary to state the taxes etc. values?	
22.	The Beneficiary will perform all dismantling works on EsP. To reduce the costs please state if there will be a possibility to use your tower crane that you will use for dismantling for our erection purpose. In this case the erection costs of the crane will fall off. State the costs of the crane taking over by us.	Only during dismantling period, the Beneficiary shall employ a Company for dismantling works and Lifting Equipment. During the erection period, the hiring of the Lifting Equipment is under the Contractor's Work Scope.
23.	Is there a possibility to negotiate the Contract Form and Special Conditions?	Both the Contract Form and the Special Conditions are not negotiable.
24.	**Form 4.6.3.12 - Subcontractors** In this form is stated to give subcontractors names for design and works >5% of the contract value. And in the form 4.6.3.12.2 we should state the subcontractors that we use over 10%. Please clarify which % value is correct.	The correct value is 5%.
25.	• **Volume 2, Section 3, Special conditions, paragraph 7** • **Volume 1, Section 1, Instructions to tenderers, paragraph 3.6** We identified that the instructions to tenderers specify the upper limit for subcontracting of 30% whereas the special conditions, paragraph 7 specifies a maximum limit of 50% of the value of the tender. <u>Question 1:</u> Can you please clarify the correct percentage?	<u>Answer 1:</u> The upper limit authorized for subcontracting of works is 30% of the value of the tender. <u>Answer 2:</u> The aggregate value of all subcontracts must not exceed the specified percentage.

	Question 2: Which of the two interpretations for this clause is correct? a) The aggregate value of all subcontracts must not exceed the specified percentage or b) The value of each subcontract must not exceed the specified percentage Please note: We intend to do all Design; Engineering, Quality Assurance, Manufacturing Supervision and Erection Supervision ourselves. Please confirm that this business model is acceptable.	
26.	• **Volume 1, Section 2, Appendix to Tender, paragraph 34** • **Volume 2, Section 3, Special Conditions, paragraph 34** • **Volume 3, Appendix 2, Time Schedules** In the Appendix to Tender and in the Special Conditions the following key dates are specified : Access to Site Unit A6: 01/05/2010 – 30/11/2011 Outage for project implementation Unit A6: 01/06/2010 – 31/10/2010 Access to Site Unit B2: 01/04/2011 – 31/07/2012 Outage for project implementation Unit B2: 01/05/2011 – 31/07/2011 We identified the following critical path for Unit A6: • Contract Award on 31 October 2009 • Commencement of Outage for project	Answer 3 : It is not acceptable to adjust key dates as you proposed.

	implementation on 01 June 2010 • End of outage for project implementation (=start of commercial operation) on 31 October 2010 • Considering these key dates, the period for Design and Manufacturing of the EsP for Unit A6 is approximately 7 months and the period for installation on site is only 4 months (including dismantling of existing equipment). • Both periods seem too short for being realistic because of the necessary time demand for Engineering, Fabrication and Erection of the required scope of supply. For the Unit A6 it is obvious that the existing EsP's shall be demolished completely and replaced by new larger EsP's. **<u>Question 3:</u>** **Can you please confirm that it is acceptable to adjust key dates as follows:** **Outage for project implementation Unit A6: 01/03/2011 – 01/11/2011** **Outage for project implementation Unit B2: 01/05/2011 – 30/09/2011.**	
27.	**Volume 3, 3.9 Flue gas design parameters for the guarantees of Upgraded Electrostatic Precipitators** Dust concentration should be guaranteed in relation to 6% of O_2 content and dry gases. Please define flue gas humidity for guarantee obligations.	See answer 1 clarifications round 5, answer 1 clarifications round 6, and paragraph 3.3.9.
28.	**Dust concentration at EsP inlet** Please provide us with latest results of measurement of dust concentration at EsP inlet.	The latest results are included in tender dossier.

29.	**Boiler operation** What is the value (typical, range) of air excess during normal boiler operation?	The value of air excess is between 20-40% during normal boiler operation after overhaul.
30.	**Boiler condition** According to information about planned increase of boiler capacity please provide us with short description of planned scope of boiler modernisation (improved tightness of boiler).	It is foreseen to improve the boiler tightness.
31.	**Volume 3.3.11 Imbalances between precipitator/casings and particulate streaming** Please inform us about level of imbalances which we must take into consideration during design.	During the unit operation in limited time periods (2 to 3 times per day) the dust content in the flue gas could be increased up to 85g/Nm^3
32.	**Volume 1, Instruction to tenderers, Item 8, Country of origin** Please provide us with information is it allowed to offer equipment from USA, Japan or Canada, in case that we use some parts which are critical from technological point of view and they are not available (even with close to required parameters) in any of EU Country or ACP States.	The origin of works, supplies and services has been explained not in the Item 8, but in the articles 3.1 (Participation), 12.1.9 and 12.1.11 of the Instruction to tenderers (Information/documents to be supplied by the tenderer). As specified in the Special Conditions, Article 40 (Origin and quality of works and materials), sub-article 40.1: There are no derogations from the rules of origin. Please, see also the answer to the Question 23.
33.	If Bidder / Consortium is bidding for both Lots and if it is obliged to provide an access to credit facilities, is it obliged to provide a reference/certificate about the access to credit facilities for each lot , i.e. for e.g.: - A certificate for access to credit facilities for Lot 1 - Unit A6 in amount of EUR 5 million with validity date 31.10.2010 from August 2009 and - A certificate for access to credit facilities for Lot 2 - Unit B2 in amount of EUR 5 million with validity date 31.07.2011 from August 2009.	If the Bidder / Consortium is bidding for both lots he is obliged to prove the access to sufficient credit and other financial facilities to cover the required cashflow for the duration of the contract for each lot independently. With regard to the amount, please see the Clarification Round 4, Q2 and Instructions to tenderers, Volume 1, 12.2.. Validity dates are defined with the schedule of implementation / the duration of the contract for each lot. Please see the

	Please state precisely, the amounts of credit facilities and the validity dates for each Lot.	Instructions to tenderers, Volume 1, 12.2.3.
34.	Volume 3, **Item 13 Design Condition Emission (page 87)** According to Technical Specification it is required to prepare correction factors. One of them must be related to the content **of *carbon*** *in ash et the time of test* (unburned particles). In data available in specification there is no information about actual and/or expected value of this parameter. If this coefficient is a part of correction formula necessary information must be available. Please submit information about actual and/or expected content of carbon in ash.	The content of carbon in ash amounts 1-1,5% (unburned particles).
35.	With reference to Volume 1 Instruction to Tenderers Item 8 and 18 we kindly request to postpone the date for submission of tenders by four weeks (September 11th, 2009). Up to now we didn't receive answers on questions which are important for chosen design and particular technical solution. Extension of the deadline for submission of our tender will let to prepare a reliable and competitive offer.	The deadline cannot be postponed. This would endanger the whole concept of the phase shifted intervention on A6 and B2. According to the Procurement Notice, the clarification period for the bidders ends 21 days before the deadline for submission of tenders and the clarification period for the Contracting Authority ends 11 days before the deadline for submission of tenders. Both deadlines have to be respected.
36.	B2 - What is the the lifting capacity of the existing hoist rail for transport of T/R sets from the roof of ESP	Lifting capacity is 5t.

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37.	B2, A6 - It is not possible to fulfill the requirement stated in tender documents - columns 3, page 57, article 7.7 - 2 zones fed from one T/R sets will be placed on roof of ESP. Will it be accepted?	A6: According to the tender documentation, any failure or short-circuit of a T/R set must not increase the emissions to more than 100 mg/Nm^3. It is on contractor to define solution for this requirement. B2: There is no reason because 16 T/R already exist.
38.	A6 - What is the length of cable between 6kV switchgear 6BB and electrical room of ESP at level +9m? B2 - What is the length of cable between 6kV switchgear 2BA and 2BB and electrical room of ESP at level +0m?	A6: The length of the cable is 150m for the optimal route. B2: The length of the cable is 160m each.
39.	A6 - What is the length of cable between the electrical room of ESP at the level +9m and the control room of Unit A6? B2 - What is the length of cable between the electrical room of ESP at the level +0m and the control room of Unit B2?	A6: The length of the cable is 100m. B2: The length of the cable is 170m each.