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TITLE OF THE TENDER: “PROCUREMENT, INSTALLATION AND COMMISSIONING OF THE SIGNALING & AUTOMATIC TRAIN CONTROL (ATC) SYSTEM AND OF THE AUTOMATIC TRAIN SUPERVISION SYSTEM (ATS) IN THE THESSALONIKI METRO EXTENSION TO KALAMARIA”

RFP - 335/18, Α.Σ. 59046

**CLARIFICATIONS
DOCUMENT**

CLARIFICATIONS DOCUMENT

This Clarifications Document is issued in accordance with the stipulations in paragraph 9.2 of the Invitation to Tender and incorporates responses to question submitted by the bidders.

The content of the Clarifications Document is viewed as an integral part of the Invitation to Tender.

A. RESPONSES TO QUESTIONS

Question 1

Article 7.3: In case a Joint Venture of companies participates in the Tender procedure, kindly clarify if all members of this Joint Venture are required to have access/be registered in the electronic system (Electronic Public Procurements System – Web Page www.promitheus.gov.gr) or if it is sufficient for one only member of this Joint Venture to have access / be registered in the system.

Response 1

It is sufficient for one only member of the Joint Venture to have access / be registered in the electronic system Ε.Σ.Η.Δ.Η.Σ (Web Page www.promitheus.gov.gr).

Question 2

Article 21.6.: Kindly clarify the following points, related to the legal statements mentioned in the 2nd paragraph of article 21.6 (i.e., Legal Statement of Law 1599/86 as far as Greek companies are concerned and Statement on a document with an equivalent validity for foreign companies):

- a) If they must be digitally signed
- b) If this is required (as per para 17.3.1), kindly clarify in relation to statements by foreign companies (which have been drafted in a language other than Greek and are accompanied by a translation into Greek) if the digital signature can be placed on the entire document that shall also include the translated text.
- c) Otherwise (if a digital signature is not required) kindly clarify if all legal statements (submitted by Greek and foreign companies) shall be submitted in a printed form (originals), along with the supporting documents mentioned in paragraph 11.4, i.e. within three working days after the submittal of the electronic offer.

Response 2

- a) Yes, they must be digitally signed.
- b) The legal statements by foreign companies (article 21.6) are not required to be digitally signed, because “legal statement” is meant to be a statement under oath, or, in Member States where there is no provision for statement under oath, a legal statement made before a competent judicial or administrative authority, a notary or a competent

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professional or trade body, in the country of origin or in the country whence that bidder comes.

- c) We confirm that the above legal statements mentioned in article 21.6 must be submitted in a printed form, as stipulated in article 17.3 of the Invitation. Article 11.4 that you mention, refers to the Offer Submittal Envelope and not to the supporting documents for the award.

Question 3

Kindly clarify if the equivalent statement by foreign companies shall have a certified signature and an Apostille.

Response 3

The legal statements by foreign companies (article 21.6) are replaced by statement under oath, or, in Member States where there is no provision for statement under oath, a legal statement made before a competent judicial or administrative authority, a notary or a competent professional or trade body, in the country of origin or in the country whence that bidder comes.

According to article 23 of the Invitation, the legally ratified photocopies, either by the Consular authorities in the country of the bidder, or by affixing the “Apostille” stamp as per the Hague Convention dated 05.10.61 (ratified by Law 1497/84) as a proof of their authenticity, refer only to public documents.

Question 4

Article 21: Kindly clarify if the documents (certificates, statements, etc.) that will be submitted as per article 17.3 by the Provisional Contractor as a proof of those declared in the ESPD, must be submitted in two versions, i.e., to cover the date of the Tender on the one hand, and on the other hand, be submitted in an updated form after the relevant invitation. For example, if the digitally signed legal statements (article 17.3.1) must be submitted a) with a digital signature covering the date of the Tender and b) with a digital signature after the relevant invitation to submit the supporting documents listed in paragraph 17.3.

Response 4

All supporting documents for the award (listed in article 21) must be submitted in an updated form after the relevant invitation for their submittal.

Question 5

Kindly clarify whether Eurobalise beacons or other types of beacons are used.

Response 5

Eurobalise beacons are used.

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Question 6

Kindly clarify the type of WiFi used between the train and the track. Does it comply with the 802.11 standard; Which Subset and which frequency?.

Response 6

The standard is 802.11, subset-n, frequency zone 5.9 GHz.

Question 7

Kindly clarify the frequency at which the onboard ATC equipment reports the train position.

Response 7

The train position reporting frequency is 5 times per second.

Question 8

In case of replacement of the existing onboard equipment, please clarify:

- What is the architecture of the onboard equipment? How many PC units exist at each train end?
- What are the dimensions of the onboard equipment?
- What is the timing frequency of the onboard computer?
- If new equipment must be added, what is the extra available space?

Response 8

- The architecture is 2 out of 3. Such a PC is present below the train floor level, at the second or third car out of the four.
- The dimensions of the above equipment are approximately 1650×620×490 mm.
- This is not necessarily pre-defined, because it also depends on parameters to be defined. From a theoretical point of view, a range of approximate values from 100 ms to 500 ms would be satisfactory.
- For on-board equipment installation similar to the current one, the available space shall be of similar dimensions.

Question 9

Kindly clarify how many electronic interlocking computers exist.

Response 9

The interlocking computers are located in Pylea OCC and ECC; their configuration is two times x (2 out of 2) i.e., [2x(2x2)].

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Question 10

Kindly confirm that they have available additional distinct (contacts) I/O ports which can be used as new interlocking interfaces. If not, kindly clarify which network protocol is used and how the necessary data is codified.

Response 10

Additional ports will be available. We cannot guarantee that this fact will be sufficient for the interface you speak about. Data codification that is based on open protocols and International Standards is well know to you. Data codification that is based on each Contractor's proprietary protocols is restricted in terms of intellectual property.

Question 11

Kindly indicate how many the ATC trackside computers are and what is their timing.

Response 11

There are two computers for monitoring the entire length of the line, each one with an architecture 2 out of 3, which are located in the OCC and the same configuration is repeated in the ECC.

The timing is customizable by the (each) Contractor, in order to satisfy the requirements of AM specifications.

Question 12

Kindly indicate which I/Os are available on the ATC trackside computers.

Response 12

This information shall be given to the Contractor, but it is pointed out that the information depends on proprietary communication protocols of ANSALDO Contractor of the Base Project. See also Response 10.

Question 13

Kindly indicate the protocol of communication among ATS, interlocking system and trackside ATC.

Response 13

The entire Signaling equipment communicates via DCS telecommunications system, as stipulated in Standard CBTC-EN1474. The DCS network is a TCP/IP and UDP/IP network, depending on the case. At lower levels the Ethernet protocol is used as well as Wi-Fi 802.11x standard, where x is the subset to n.

Question 14

In order to identify any compatibility issues, please indicate:

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- Which type of track circuits is utilized on the existing line;
- Does the existing system use another system for data communication between the onboard and trackside equipment, other than the WiFi system?
- Apart from the train location data beacon, does the existing system use another system for data communication between the onboard and trackside equipment, other than the WiFi?

Response 14

- The type of track circuits is: CBDAC acoustic frequency by ANSALDO.
- No.
- No.

Question 15

Technical Description

§ 3.2

Kindly clarify the reference to “Coordination of designs in combination with other Contractors”. Kindly clarify the reference to “Coordination and cooperation with other contractors”. The Candidate expects that a third entity shall act as Responsible for the Integration of General Systems and shall request specific information via interfaces or other means for a coordinated design.

The Candidate shall not perform systems coordination work, please clarify.

The Candidate shall provide support to the Owner in the coordination of interfaces with Signaling CBTC και DCS.

Coordination with other Contractors of the Project Owner must not be considered as a task falling under the candidate's responsibility.

Response 15

The Contractor (not the Candidate) of this contract shall support AM in the coordination of interfaces, by providing all information related only to Signaling and Train Control – CBTC and DCS for the line but also for the 15 new trains.

The Contractor shall not perform systems (and rolling stock) coordination work. The general coordination of all project designs and works is carried out by the main contractor of the extension to Kalamaria; in cases where other contractors are involved (e.g. the signaling contractor, the new rolling stock contractor, etc.) this shall be achieved through AM. At testing level, the combined tests also encompassing signaling (such as rolling stock, Platform Screen Doors – PDS, traction, etc.) shall be organized by AM in cooperation with the Project main Contractor.

Question 16

Technical Description

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§ 3.2

Kindly confirm that this requirement is not correct and must be amended. More specifically, the Candidate cannot be held responsible for the commissioning of the entire E/M and railway equipment, as well as of the pertinent subsystems and systems, because they fall outside the scope of the candidate's works. We believe that by this, you mean the signaling-related portion of the Metro network.

Response 16

In relation to paragraph 3.2 of the Technical Description, the Contractor shall be responsible only as regards the signaling and train control systems/subsystems (ATC type CBTC, IXL, ATS, ATP, ATO, DCS, etc.).

Question 17

Technical Description

§ 3,2

Kindly confirm that the personnel shall not be able to repair everything (e.g. Boards that will have to be sent to the factory for repair / testing), given that they are related to the Base Project.

Response 17

The corrective maintenance of the signaling and train control equipment to be installed by the Contractor in the framework of this contract, shall be the Contractor's responsibility for the warranty period (3 years).

Question 18

Technical Description

§ 3,2

The Candidate shall not perform systems coordination tasks, kindly clarify.

There is a system-level RAMS and subsystem-level RAMS. The Contractor shall provide RAMS assessment only on a subsystem level, on the basis of the suggestions by other system-level RAMS.

Will AM provide system-level RAMS?; If yes, please confirm that the Contractor is only responsible for the assessment of the subsystem-level RAMS, i.e., on ATC level.

Response 18

Please see response 15.

We confirm that the Contractor is responsible for RAMS assessment only on a signaling and train control level.

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Question 19

Technical Description

§ 3,2

“Cooperation with Thessaloniki Metro Operations Company and the compliance with its regulations and procedures both during the execution of the Project (as regards the access to and execution of works in areas under the jurisdiction of the Operations Company) and during the Testing and Trial Operation period.”

Being a Signaling Contractor, testing and commissioning activities shall be limited to the testing at the signaling completion level, so as to leave the overall system performance tests and system validation (including all systems, except signaling) outside the contract scope, Please confirm.

Response 19

It is confirmed. Please see also response No. 15.

Question 20

Technical Description

§ 3,2

Thessaloniki Metro Operation Company has already been established. Please confirm.

Response 20

Thessaloniki Metro Operation Company has not been officially established yet, but it is currently being organized. At the time when equipment tests are conducted, the Operation Company will be already running. As per paragraph 3.2 of the Technical Description, the Contractor is required to cooperate with Thessaloniki Metro Operation Company and comply with the latter's regulations and procedures, which shall be in accordance with the international practice; the Contractors are familiar with such practice.

Question 21

Technical Description

§ 3,2

The Candidate does not perform system coordination tasks, please clarify.

The Candidate shall support the Project Owner in the coordination of the interfaces with Signaling, CBTC and DCS.

Coordination with other AM Contractors should not be regarded as the Candidate's responsibility.

Response 21

See response No. 15.

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Question 22

Technical Description

§ 3,2

“Shall provide the appropriate training area (where required)”.

Kindly clarify the term “training area”. Can the Base Project training facilities be utilized?

Response 22

The “training area” mainly consists in the various rooms within Pylea Depot which shall be used in the framework of the Base Project for personnel training, and which are generally equipped with desks, chairs, computers, projectors, simulator, signaling equipment, train cab equipment, etc. These rooms shall be disposed to the Contractor of this contract, but the Contractor shall have the responsibility to ensure their availability and readiness to host the pertinent training activities. If another training area is required elsewhere (e.g. the signaling equipment manufacturing plant) the Contractor shall make sure their availability and readiness to support training activities.

Question 23

Technical Description

§ 3,2

“Shall see to the issuance of safety certificates, where required, and shall provide the entire equipment and documentation for the execution of the aforementioned tests”.

The Candidate is not responsible for system coordination; please clarify if the terms “entire equipment” refer only to ATC and DCS.

Response 23

The Contractor shall be responsible for the supply of the safety certificates related to the signaling and train control system and all its subsystems.

Question 24

Technical Description

§ 3,2

“The Contractor shall supply all spare parts required for the smooth and continuous operation of the Metro system, as set in the Specifications Documents”.

The Candidate is not responsible for system coordination; please clarify if the terms “all spare parts” refer only to ATC and DCS.

Response 24

The Contractor shall be responsible for the supply of the spare parts related to the signaling and train control system and all its subsystems (ATC type CBTC, IXL, ATS, ATP, ATO, DCS, etc.).

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Question 25

Invitation

§ 2.1

“as well as the installation of Signaling Systems in all fifteen (15) new train-sets foreseen for the Extension to Kalamaria “.

Kindly indicate the stabling area for these 15 new train-sets. There is no more available space in the existing depot and the Micra Depot does not seem to be available, while it is not included in the scope of this contract.

Response 25

AM commits itself to secure the appropriate stabling areas for the new trains within the network of Thessaloniki Metro.

Question 26

Invitation

§ 15.2.B1/4.8.1

«4.8.1 Proposal of the most suitable train spacing system as outlined below and description of his proposed system supported by calculations of achievable headways “.

...”supported by calculations of achievable headways”...

In order to carry out a performance analysis, the following are required:

- the Planning Manual for Kalamaria, not part of the contract (for description of the scenarios)
- definition of the Rolling Stock characteristics for the new trains (maximum acceleration, rotating mass, deceleration value, emergency break minimum value, service brake value, tractive effort, etc.)
- the CW data matrix referring to the characteristics of the track to Kalamaria (for the Tracks and the entire chainage: Gradient, elevation (Z), Curve radius, Vertical Curvature Radius, Ramp gradient, Cant, Cant deficiency, Stations, Beginning – End of Clothoid and Ramp Length).

Kindly provide the above data.

Response 26

- The Planning Manual for Kalamaria is attached hereto.
- The technical and operational Rolling Stock characteristics for the 15 new Trains to which you refer (maximum acceleration, rotating mass, deceleration value, emergency break minimum value, service brake value, tractive effort, etc.) may be initially considered as those covering as a minimum the contractual performance requirements of the original 18 trains of the Base Project; in addition, they should cover performance requirements compatible with the new available technologies on trains and signaling, which are to be specified in the upcoming tender for the 15 new trains.

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- Attached hereto you will find the profile alignment of the Extension to Kalamaria, showing all requested geometrical data of the track.

Question 27

Invitation

§ 4.12.4

“Drawings of all typical installations of the proposed track circuit and bonding equipment. In addition, submission of drawings of all typical installations regarding the proposed system on Interrupted – Non-Continuous communication ATP for the new downgraded operation of the Extension to Kalamaria, described in paragraph 5.6.1”.

Kindly indicate the document that contains the specific paragraph 5.6.1

Kindly clarify what AM means with the reference to the system on Interrupted – Non-Continuous communication ATP for the new downgraded operation of the Extension to Kalamaria.

Does AM refer to a specific drive mode? Please note that this drive mode is not valid and is not requested in the base project contract. (See also item 59 – Signaling 5.6.1). We wish to point out that in para 6.3 of T_DP15250 (Operation Modes), the same modes of operation are defined as for the base project.

By reading the requirement in para 5.6.1 of T_DP15250, it is not clear if the above required operation mode is requested only for the Extension to Kalamaria. Should AM decide to implement the above described operation mode, will this be done via an instruction for financial amendment?

Response 27

Regarding your first question, the document that contains the description of paragraph 5.6.1 is the Signaling Specification T_DP12250.

As regards your second question, AM means: Interrupted – Non-Continuous communication ATP for the new downgraded operation of the Extension to Kalamaria, or differently “intermittent ATP” or “spot ATP”.

As regards your remaining queries in Question 27, please see Response No. 34.

Question 28

Invitation

§ 15.2 B2

“A full description of the proposed OCC Control room layout including description of the proposed workstations”.

Kindly confirm that the OCC for the extension to Kalamaria is the same room as for the Base Project, i.e. in Pylea Depot.

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Kindly also clarify if one central workstation is requested for the following Controllers: Technical Works Controller, Incident Manager, Station and Train Supervisor, in order to control and monitor the extension to Kalamaria. This is not clear and is not specified.

Response 28

We confirm that the OCC to be used for the extension to Kalamaria is the same OCC as for the Base Line Project (with back-up operation from the ECR), i.e., at Pylea Depot.

If the new data – from the extension – are compatible with the existing workstations, then these additional data shall be incorporated into the existing workstations. If the data are incompatible, then additional workstations shall be used.

Question 29

Signaling Specification

§ 3,6

“Transfers on the connection track to the Running Shed from the automatic controlled area to the manually controlled area as defined in the Planning Manual of the Base Project and Kalamaria “.

Kindly provide the Planning Manual of the Extension to Kalamaria.

Response 29

Please see Response No. 26.

Question 30

Signaling Specification

§ 4.3.18

“Except the train rescue procedure - through the manual operations of the involved sub-systems - and the strict adherence to the coupling procedure applied in the base project of Thessaloniki Metro, in the Kalamaria Extension project this procedure shall be automated and the subject upgrading shall also integrate the base project network. The fully automated procedure without any superintendent (GoA4 based on safety standards for automated trains, IEC-62267, IEC-62290 and obligatory application of EN1474 part 1, paragraph 4.5.2) shall be also feasible even in case the on-board Signaling equipment fails and the train – any train - is at standstill at any location belonging to the automated area of the Thessaloniki Metro network. This means that a “healthy” train – as far as its signaling systems are concerned – regardless of whether it carries passengers or not – shall approach the standstill train, under the commands of the OCC, and shall execute a specific mode of operation of the ATP, in coordination with the Rolling Stock systems. This mode of operation of the ATP shall allow the rescue train, after the automatic coupling of the standstill train, to provide to the OCC the necessary indications and commands regarding its monitoring and towing. The passengers of the coupled trains shall disembark in two stages of the “opening-closing” operation of the PSDs in the subsequent station, where the coupled trains shall stop – one operation for each alignment of each train constituting the composite

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train-set. It is noted that during the automatic coupling, the involved sub-systems of each train are bonded with the respective sub-systems of the other train, so that the composite train-set executes the commands coming from the ATP system of the “healthy” train. Indications and commands necessary for the operation of the automatic coupling shall be provided to the ATS system (SIL2) and/or to a safety sub-system of the signaling system (SIL4)”.

Kindly clarify this prerequisite. In the Base Project, the SEP activation implies "Stop the trains on the three track circuits before the platform on both lines, in order to prevent train entering into the critical section”.

Response 30

The above cited paragraph 4.3.18 is very detailed in its reference concerning the specific train rescue operation. In the rest of your question, we fail to understand the correlation of the automatic coupling and train rescue with the SEP function to which you refer.

Question 31

Signaling Specification

§ 4.4.2

“Except the train rescue procedure - through the manual operations of the involved sub-systems - and the strict adherence to the coupling procedure applied in the base project of Thessaloniki Metro, in the Kalamaria Extension project this procedure shall be automated and the subject upgrading shall also integrate the base project network. The fully automated procedure without any superintendent (GoA4 based on safety standards for automated trains, IEC-62267, IEC-62290 and obligatory application of EN1474 part 1, paragraph 4.5.2) shall be also feasible even in case the on-board Signaling equipment fails and the train – any train - is at standstill at any location belonging to the automated area of the Thessaloniki Metro network. This means that a “healthy” train – as far as its signaling systems are concerned – regardless of whether it carries passengers or not – shall approach the standstill train, under the commands of the OCC, and shall execute a specific mode of operation of the ATP, in coordination with the Rolling Stock systems. This mode of operation of the ATP shall allow the rescue train, after the automatic coupling of the standstill train, to provide to the OCC the necessary indications and commands regarding its monitoring and towing. The passengers of the coupled trains shall disembark in two stages of the “opening-closing” operation of the PSDs in the subsequent station, where the coupled trains shall stop – one operation for each alignment of each train constituting the composite train-set. It is noted that during the automatic coupling, the involved sub-systems of each train are bonded with the respective sub-systems of the other train, so that the composite train-set executes the commands coming from the ATP system of the “healthy” train. Indications and commands necessary for the operation of the automatic coupling shall be provided to the ATS system (SIL2) and/or to a safety sub-system of the signalling system (SIL4)”.

... “EN1474 part 1, paragraph 4.5.2”... Kindly clarify (this should be IEEE and not EN).

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Moreover, the reference “*shall be also feasible even in case the on-board Signalling equipment fails and the train – any train is at standstill*”, is not clear. Kindly clarify what you mean by “any train”.

Kindly clarify that rescue of Service Vehicles (SV) is not permitted (at least automatic).

We point out that one of the preconditions for automatic rescue is the amendment and/or upgrading of the hardware/software of the 18 Base Project trains, which do not fall under the scope of this contract, nor under the scope of signaling.

Response 31

As to your first query, we agree. The standard is IEEE-1474.

As to your second query, we mean any train equipped with the same ATP system, as well as the “healthy” train.

As to your third query, we agree. We confirm that automatic train rescue does not concern the service vehicles (SV).

As to your last comment, the 18 trains of the Base Project fall under the scope of this contract only as far as the signaling and train control systems are concerned, and specifically only the automatic train rescue, while the modifications to these 18 trains (to couplers, train trunk networks, control system of electric aspects of traction, doors, brakes, etc.) fall outside the scope of this contract.

Question 32

Signaling Specification

§ 4.12.2

“Vehicle / train detection shall be based on track circuit systems. The track circuits shall be of joint less audio frequency track circuit type. In case of CBTC systems, the primary system for train detection shall be ensured through radio waves, while the line circuit shall be the secondary detection system”.

Kindly explain the reference “... «...train detection shall be ensured through radio waves “. In the Base Project, the train location is transmitted by means of radio waves (WiFi), but train detection itself is based on train movement, which is calculated by means of speed sensors and accelerometer data and precise re-positioning by means of tags/tag readers (again radio waves).

Response 32

It is clarified that in the case of a CBTC type signaling system, the primary detection of the train location is implemented via the CBTC system, i.e., transmission of the train location via radio waves and detection as you point out in your question, and, in case of failure of the CBTC system, the stand-by position detection system shall operate via track circuits, as it has been designed for the Base Project. In any case, the reference in the Specification speaks about the “train detection” function, which is possible even for trains at standstill. This is not the “Train tracking” or “train follow-up” function.

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Question 33

Signaling Specification

§ 4.12.7

“With regard to wireless digital systems for train position communication, these shall be immune against malicious actions, e.g. deliberate interference, interception of critical parameters of the transmission system or of other data. Contractors to include such a system in their offer, shall document their compliance with IEC-62446 Standard “Cyber security Railway Signaling and Processing Systems“. The Contractor shall monitor the progress made in the data protection technology (Cyber security) and, upon AM’s request or at his own initiative, shall update the protection methods up to the provisional acceptance of the Signalling system, following a relevant submission and approval by AM”.

IEC-62446 refers to photovoltaic (PV) systems. Kindly verify the standard.

In this case, please clarify the reference to “Cyber security Railway Signaling and Processing Systems”.

Response 33

The standard we refer to is IEC-62443 “Industrial communication networks – Network and system security”.

Standard IEC-62446 you refer to is another Standard.

Question 34

Signaling Specification

§ 5.6.1

Kindly clarify the following: In a design of his, the Contractor shall present the aforesaid gradual degradation of the operability in a different manner than downgraded operation, as valid in the case of the Base Project (train movement with reset - ATP) underlining that network availability with downgraded operation is maintained to the maximum possible extent”.

Does AM refer to a specific drive mode? Please note that this drive mode is not valid and is not requested in the base project contract. (See also item 59 – Signaling 5.6.1). We wish to point out that in para 6.3 of T_DP15250 (Operation Modes), the same modes of operation are defined as for the base project.

By reading the requirement in para 5.6.1 of T_DP15250, it is not clear if the above required operation mode is requested only for the Extension to Kalamaria. Should AM decide to implement the above described operation mode, will this be done via an instruction for financial amendment?

It is pointed out that as far as the extension to Kalamaria is concerned, the same gradual degraded operation is expected as in the base project, which means that the system runs in SMM mode whenever the AM mode is not available and in PM mode whenever the SMM mode is not available.

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Response 34

This design inadvertently referred to downgraded mode of operation for the entire extension to Kalamaria. We do not request a downgraded operation design, nor a new drive mode. We actually request a future interoperability design for Micra terminal Station, and especially for the platform or forestation area. In this design, the Contractor shall also utilize, among other pieces of equipment, trackside Eurobalise beacons of an upgraded functionality compared to the beacons of the Base Project, i.e., according to ECTS Level 1 or Level 2, which will potentially allow Thessaloniki Metro to go beyond Micra Station, with a new signaling system, in the framework of the European Railway Transport Management System (ERTMS), a product of collective development by all Manufacturing Firms and, therefore, a commonly accepted interoperability mode.

More specifically, the interoperability design shall examine the twin nature of the area of the last platform or forestation, which shall also function as a zone supervised by another system of intermittent ATP with the use of programmable eurobalise beacons, so as to achieve an open future interface with future extensions, based on the model of the ETCS Level 1 or 2 system, or the CBTC system of other manufacturers. This design shall also analyze the implications on all Signaling and Train control subsystems, or possibly on other subsystems of Thessaloniki Metro.

The interoperability design shall be submitted to AM at an initial stage of the Final Design, for completeness approval, so that it can satisfy the needs arising from future extensions, other than the extension to Kalamaria.

We refer to design and not to construction.

If AM decides to implement the above design, this shall be on the basis of an instruction for work additional to this contract.

Question 35

Signaling Specification

§ 6.4.16

The base project has two schemes for providing information about the health status of the vehicle; via DCS and/or TETRA channel. Critical data are transmitted via DCS as part of the CBTC signal and all data related to the health state via the radio TETRA channel. Please confirm.

Response 35

We confirm.

Question 36

Signaling Specification

§ 6.5.11

Can AM clarify why this requirement is different in relation to the base project?

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Can AM clarify why 8m are required?

Can AM clarify the meaning of the reference “This action shall be of safety level SIL 4”? Is AM requesting the management of the direction between the train-borne and train to be done vitally?

If yes, this requirement is addressed to Rolling Stock and not Signaling.

It is clarified in T_DP15250 that the amendment to the hardware/software of the signaling and control system in the 15 new and the 18 trains of the base project, as described in the relevant article about the Automatic Train Protection (ATP) system, is related to the automatic train coupling.

Response 36

As regards your first and second query, the requirement in the specification is an error. The correct requirement as regards the Roll Back Supervision is that the performance of the ATC – Signaling system must be at least equal or better than the respective performance in the Base Project, at network locations with the same gradient.

As regard your third query, AM means that the requirement for roll back control and restriction at equal or better levels than the Base Project shall be implemented by the trainborne ATP system and shall be certified as one of the SIL4 functions supervised by the trainborne ATP. AM does not mean the compatibility of the Rolling Stock equipment, not its cooperation with the trainborne ATP system in order to achieve equal or better roll back performance.

This requirement does not concern the Rolling Stock but only the Signaling.

We agree with your concluding remark. We confirm that the modifications to the hard/software of the 18+15 trains, as they are described in the relevant article about the Automatic Train Protection system (ATP), are related to the remote, .i.e., from the OCC, train coupling. The same function is also described in the specifications as “automatic coupling”, for reasons of agreement with international terminology.

Question 37

Signaling Specification

§ 6.6.1

Can AM clarify why this requirement is different in relation to the base project?

Can AM clarify why 12m are required?

Is AM requesting the management of the direction between the train-borne and train to be done vitally? If yes, this requirement is addressed to Rolling Stock and not Signaling.

It is clarified in T_DP15250 that the amendment to the hardware/software of the signaling and control system in the 15 new and the 18 trains of the base project, as described in the relevant article about the Automatic Train Protection (ATP) system, is related to the automatic train coupling.

Response 37

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For all queries in Question 37, please see Response No. 36.

Question 38

Signaling Specification

§ 13

“... a telecommunications workstation for the signaling data from/to the train with simulated train and communication interfaces..”. Please clarify your request for a telecommunications workstation, because in the base project an ATP/ATO onboard system with simulated train and communication interfaces is requested.

Response 38

The Base Project communications, at least in terms of Signaling, have been changed by the introduction of the CBTC, which makes use of the DCS data transmission system. We confirm that the training bench shall incorporate DCS equipment and workstation, with simulated on-board and wayside ATP interfaces, as well as other non-crucial data.

Question 39

ATS Specification

§ 1,1

Kindly confirm that only signaling (IXL, ATO, ATP), ATS and DCS are included in the Contractor’s scope.

Kindly confirm that TETRA system, Telecommunication – CCTV, Clocks, Passenger Information System and updating of Telecommunication System are not included in the Contractor’s scope. More specifically, please confirm that the fiber optics backbone for DCS fall outside the Contractor’s scope of works.

Response 39

We confirm that only signaling (IXL, ATO, ATP), ATS and DCS are included in the Contractor’s scope.

We confirm that Tetra, Telecommunications-CCTV, Clocks, Passenger Information System (PIS) and update of Telecom system are not included in the Contractor’s scope. However, we point out that, in our opinion, the operation of the Signaling and Train control system of the extension to Kalamaria is not possible without the DCS fiber optic backbone and, for this reason, its extension has been incorporated in the scope of the Contractor of this contract.

Question 40

ATS Description

§ 1,1

CLARIFICATIONS DOCUMENT

Kindly clarify the references to the Passenger Information System and the system Clocks. More specifically and in connection with the clocks, please provide more information regarding the distribution of time reporting to the new trains and the OCC.

Response 40

The references to the PIS and the system clocks are made for the complete description of the Signaling system environment and of the interfaces with these two communications systems.

Once the time signal is received by GPS in the OCC and demodulated, the network time is distributed via a Time Synchronization Server, using a reliable distribution and NTP synchronization protocol, to the entire DCS network, which is the telecommunication system that connects the entire signaling equipment from the OCC to the trains.

Question 41

ATS Description

§ 3.2.5

Kindly confirm that only automatic train coupling is required for the train rescue activities and that the Train Attendant shall supervise train uncoupling from the EDP. Indeed, the requirement for available commands and indications on an ATS level, is only related to train coupling. Uncoupling takes place manually in the workshop.

We point out that one of the preconditions for automatic rescue is the amendment and/or upgrading of the hardware/software of the 18 Base Project trains, which do not fall under the scope of this contract, nor under the scope of signaling.

Response 41

We confirm that only automatic train coupling is required for the train rescue activities and that the Train Attendant shall supervise train uncoupling from the EDP.

The Base Project signaling does not foresee automatic train coupling, but only obliges the Contractor to present the provisions in his design, which will allow automatic coupling at a later stage, .i.e., in a future extension, with the minimum possible modifications.

The requirements for automatic coupling of the 18 trains of the Base Project and the 15 new trains –the trains themselves and their subsystems (see also response 31) – are planned to be included in the Specifications for the supply of the 15 new trains. These requirements are repeated in the Signaling and Train Control Specification for the extension to Kalamaria, so that the offered Signaling /Train Control system will be able cope with automatic coupling in terms of design, hardware and software.

More specifically, the provisions to be presented by the Base Project Contractor concerning the automatic coupling shall be assessed and utilized in the compilation of the pertinent paragraphs of the Specifications for the new Rolling Stock; these provision shall define the necessary detailed interfaces for achieving the automatic coupling of the 15 new, as well as of the 18 original trains.

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Question 42

CONDITIONS OF CONTRACT

Paragraph 9.2

“As regards the supply of the 15 new train-sets, gradual access shall be provided to the Contractor for the execution of works on the subject trains, starting as follows:

Access for the installation of the signalling equipment on the 1st train-set in the manufacturing plant....”.

The Contractor is requested to install the signalling onboard system in the manufacturer plant. Considering that there is no indication regarding rolling stock supplier and therefore the place for the said installation, we will assume in our offer that the installation of the onboard equipment on the 15 new train-sets will be carried out in Pylea Depot, where all the necessary conditions for the installation of the onboard equipment will be ensured. Please confirm.

We assume that the installation of the cables necessary for the connection of the signalling onboard equipment will be carried out by the rolling stock provider. All the necessary cable specifications will be provided by the Contractor. Please confirm.

Response 42

The installation of signalling equipment on the first train must be carried out at the facilities of train manufacturer. After that, the tests on the first train, the installation of the signalling equipment on the next 14 trains, as well as their testing can be conducted in Pylea Depot.

The installation of the cables necessary for the connection of the signalling onboard equipment will be carried out mostly by the train supplier. The connections via junction box and terminal strips – which shall serve as the common interface – shall be carried out by the Contractor of each of these interfaces.

Question 43

CONDITIONS OF CONTRACT

Paragraph 10.2.1, TABLE A

Payments: According to Table A of the Conditions of Contract, for all the items, and in particular for item 10, considering that the contract allows partial payments (paragraph 10.2.1), we assume that at the Supply of the equipment on site (without installation), 85% of the related amount will be paid. For items 11 – 12 – 13 we consider that partial payments per stations, per new train- sets and initial train sets will be applied. Please confirm.

Response 43

Item 10 of Table A in the Conditions of Contract, in addition to the supply, also includes the installation and SAT testing on the 15 new trains. Therefore, a prerequisite for the payment of the 32% of the contractual price, is the completion of all works sited in item 10 of Table A.

As regards items 11, 12 and 13 of Table A of the Conditions of Contract, the option is provided for partial payments per station, per train, etc.

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Question 44

DESIGN, PERFORMANCE, MATERIALS & WORKMANSHIP SPECIFICATIONS

Paragraph 4.4.2

We assume that train coupling is automatic while train uncoupling is manual. Please confirm.

Response 44

We confirm the automatic and remote (OCC & ECR) coupling and the local manual de-coupling.

Question 45

DESIGN, PERFORMANCE, MATERIALS & WORKMANSHIP SPECIFICATIONS

Paragraphs 4.1.1, 4.2.1, 4.3.8, 4.3.15, 4.3.17, 4.7, 4.10, 5.6.8, 5.6.12

Based on the base project configuration of the signalling system, the local IXL workstation is not required. Please confirm the applicability also to the Kalamaria Extension project.

Response 45

We confirm that no local IXL workstations are required on the extension to Kalamaria.

Question 46

An extension of the Attiko Metro signaling in Thessaloniki has been published, understanding the due to the nature of the solution to be provided is open to the several signaling competitors that can provide such technology.

Nevertheless, we don't understand that the experience to be provided in order to be an eligible bidder has to come through a CBTC project, as it is not needed and specified in the technical solution for the aforementioned project. As you may know, in case a CBTC is installed in a metro line, any extension must use the same signaling provider technology for the trackside and the on-board equipment.

We can provide a solution based on ATO over ETCS L2 that would make foreseen line extensions interoperable with other technologies.

Therefore, we kindly request to accept other type of experience instead of metro CBTC systems for the Technical competence.

Response 46

1. There are many points in the specifications clearly requesting the extension of the existing signalling system (which is CBTC type).
2. With the exception of the first pages, there are several references to the CBTC system within individual units of the specifications.
3. Your proposed solution on the basis of an ATO over ETCS L2 system, is relevant to systems with a train driver, driver cab and respective signalling, while the signalling

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system on the extension to Kalamaria is clearly a driverless system, a requirement extensively sited in the specifications.

4. The interoperability design, which is indeed requested, is only related to the last section of the Extension, in order to investigate the possibility for a dual nature system in terms of the Signaling system in that area, in order to investigate if, in a future extension, the possibility for probable participation in the Tender can be provided to any reliable manufacturing Firm of Signaling systems, either ETCS or CBTC technology.

In view of the above, no technology other than the CBTC technology can be accepted for the signalling system on the extension to Kalamaria.

B. ENCLOSURES

- 1. PLANNING MANUAL FOR THE EXTENSION TO KALAMARIA**
- 2. PROFILE ALIGNMENT OF THE EXTENSION TO KALAMARIA**