



REDDIG RTO/02

INTERNATIONAL CIVIL AVIATION ORGANIZATION

RLA/03/901

**SECOND MEETING ON THE TECHNICAL-
OPERATIONAL IMPLEMENTATION OF THE
NEW REDDIG II DIGITAL NETWORK**

RTO/02

FINAL REPORT

(Lima, Peru, 26 to 28 March 2014)

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HISTORY OF THE MEETING

ii-1. PLACE AND DURATION OF THE MEETING

The Second Meeting on the Technical-Operational Implementation of the New REDDIG II Digital Network, was carried out in the ICAO South American Regional Office, in Lima, Peru, from 26 to 28 March 2014.

ii-2. OPENING

Mr. Franklin Hoyer, Regional Director of the ICAO South American Regional Office, welcomed the participants, pointing out the importance of the topics to be dealt with and wishing success in the deliberations. Thereafter, he inaugurated the meeting. The opening of this event was carried out together with the Seventeenth Meeting of the REDDIG Coordination Committee (RCC/17), on 24 March 2014.

ii-3. AGENDA

Agenda Item 1: Design documents approved for the implementation of REDDIG II (Contract 22501200 - Phase 1)

Agenda Item 2: Action plan for REDDIG II implementation (Contract 225012000 - Phase 2)

Agenda Item 3: Activities required to be undertaken by REDDIG member States for REDDIG II implementation

Agenda Item 4: Other business

ii-4. WORKING LANGUAGES

The meeting working languages for the discussions and documentation were Spanish and English.

ii-4. PARTICIPANTS AND ORGANIZATION

The meeting counted with the assistance of 10 member States (Argentina, Brazil, Chile, Colombia, Ecuador, France, Paraguay, Peru, Trinidad & Tobago, and Uruguay), and one international organization (COCESNA), making a total of 28 participants, including ICAO officers. In addition, representatives from INEO and Level 3 were present. The list of participants is being presented in page iii-1.

Mr. Onofrio Smarrelli, Communications, Navigation and Surveillance (CNS) Regional Officer, acted as Secretary, assisted by Mr. Luis Alejos, REDDIG Administrator.

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Agenda Item 1: Design documents approved for the implementation of REDDIG II (Contract 22501200 - Phase 1)

1.1 The Meeting noted that the following final documents, and respective versions, were the last version to date, and that the documentation is found in the <http://www1.lima.icao.int/reddig/document/impreddig#> website:

- VSAT SDD
 - PART I – GENERAL CONSIDERATIONS AND VSAT, Version C
 - PART II - GROUND BACKBONE NETWORK, Version C
 - PART III – INSTALLATION AND OTHER EQUIPMENT, Version H
- NMS SDD, Version D
- EQUIPMENT DOCUMENTS, Version A
- ACCEPTANCE TEST PROTOCOLS
 - FAT, Version B
 - PSAT, Version E
 - FSAT, Version C
- TRAINING, Version C
- SDD PLAN, Version C
- DETAILED SCOPE OF SUPPLY, Version F

VSAT SDD Part I – General considerations and VSAT

1.2 The Meeting noted that the review of this document included an analysis of the number of interface cards of satellite VSAT routers and of the ground backbone, based on the services in operation on the date of the review, the new speech circuit requirements, and changes being envisaged in the features of some speech circuits.

1.3 As a result of the analysis made to the capacity of the amplifiers, RTO/1 meeting Nevertheless, at the RTO/1 meeting approved that the Cayenne, Manaus, Paramaribo and Recife nodes should use an 80-watt amplifier instead of the originally proposed 40 watts. The estimated cost of the new amplifiers was US\$ 32,316.00 (see **Appendix A** to this Agenda Item).

VSAT SDD, Part II - Ground backbone network

1.4 Regarding this document, INEO & Level 3 Consortium presented the SDD, Part III, Version C, that includes the review made to those sites of the ground network where last-mile connections are specified (section 3.9, paragraph 3.9.3).

1.5 The Meeting analyzed the changes, but noted that there was incomplete information as regards the last mile connections description, names of the communications links providers that had to be confirmed upon and mistakes in the addresses of some of the REDDIG nodes (Paraguay, Peru and Uruguay).

1.6 In this respect, the INEO & Level 3 Consortium informed the Meeting it would be submitting the updated information by the first week of April 2014.

VSAT SDD, Part III – Installation and other equipment

1.7 The Meeting took note that the review of this document was mainly focused on the location of the new REDDIG II rack, the transition from the existing REDDIG to REDDIG II, the MEVA II/ REDDIG interconnection, and satellite link testing.

NMS SDD

1.8 The Meeting was indicated that aspects to be highlighted regarding this document are the review made of aspects contained in Section 1 – *Review of the network management system (NMS SDD)*, paragraph 1.2 – *NMS architecture*, with a view to including other equipment for NMS management; Section 2 - *Local NMS*, paragraph 2.5 - *Trends*, in which an on-line graphical view of bandwidth use in all satellite and ground links had been requested; Section 4, paragraph 4.2 – *Equipment resetting*, in which a description had been requested of how the network management system would gain local and remote access to the serial port console (to execute local commands) from any VSAT and ground backbone equipment for initial setting and recovery purposes; and Section 8 – *Redundant switching system (RSS) management by the NMS*, to find a solution for switching from chain A to chain B through the NMS.

Equipment documents

1.9 With regard to the documents equipment, the Meeting noted that no observations were made regarding the two original volumes of technical documentation concerning REDDIG II equipment.

Acceptance test protocols

1.10 Regarding acceptance test protocols, an analysis was made of factory acceptance (FAT), provisional site acceptance (PSAT), and final site acceptance (FSAT) tests.

1.11 Regarding the FAT, observations were made to Section 4 – *Communication tests* and Section 7 – *Network Management Stations NMS*. Regarding the PSAT, observations were made to tests related to: external units, including alignment (3), radar series (4.1.1), ATS/DS circuits (4.3), administrative voice (4.4), teleconferencing (4.5), AFTN circuits (4.6), AMHS (4.7), equipment failures (5.2), ground network backup tests (6.1), dedicated lines (6.2), NMS testing (7), and PSAT (9.1). Regarding the FSAT, it was felt that Part 1 – *Introduction* should include a provision whereby any test that had failed during the PSAT/NAT should be referred to, and conducted by, INEO personnel on the corresponding station.

Training



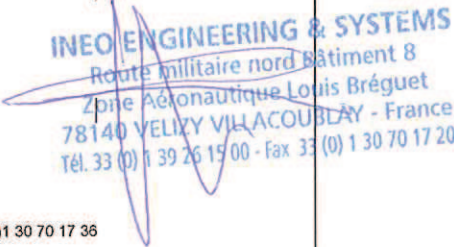
1.12 Regarding training, the content of training courses to be provided in Vélizy, France and Rio, Brazil was reviewed. The training to be provided in France will be addressed to technical personnel in Manaus and Ezeiza in charge of managing the REDDIG network. The course will contain advanced information on the NMS and the MODEM. Regarding theoretical and practical training in Brazil, it was proposed that it be modified as follows: 4 days for SKYWAN, 1 day for MPLS, and 1 day for maintenance. The new content of the course to be held in Rio will be sent by INEO to the ICAO SAM Regional Office one month before the starting date.

SDD plan

1.13 INEO & Level 3 Consortium distributed a list of verification activities to be carried out at the sites, related with electrical installations and cabling, and requested the focal points to complete the information. Once completed, same will be reflected in a new version of the blueprints that INEO will submit as SDD blueprints, Version D. This version is expected to be ready by mid-April 2014.

Detailed scope of supply

1.14 The Meeting took note of the last version of the list of equipment and cards (Version F), which, as indicated in paragraph 1.1. of this Agenda Item, is found in the REDDIG II website.

		REDDIG II			
Detailed prices for optionnal VSAT equipment and services OPTION I					
INEO ENGINEERING & SYSTEMS Route militaire nord Bâtiment 8 Zone Aéronautique Louis Bréguet 78140 Vélizy Villacoublay - France (VAT N° FR 76 419 173 364 - SIRET 419 173 364 00060)			1st October 2013		
			Financial proposal for amendment II Upgrade of the SSPA - Calculation done with 3dB and 5dB OBO		
			Price list		
Upgrade of the SSPA - Calculation done with 3dB and 5dB OBO					
N° ITEM	QTY	DESIGNATION	UNIT Unit Price US DOLLARS	Total Total Price US DOLLARS	
1	8	IBUC 80W (To replace the 40W) Including the discount done in the contract	12 936	\$103 488	
2	8	IBUC 40W Including the discount done in the contract	-8 897	-\$71 172	
<i>Nota</i>		The calculation was done with 5dB OBO for Colombia and Venezuela Sites, and with 3dB OBO for the others.			
Total amount in US DOLLARS without tax or customs duties				\$32 316	
(Thirty two thousand and three hundred and sixteen dollars)					
DELIVERABLE : According to the contract N° 22501200 - Reddig II					
PAYMENT Terms and conditions of the Reddig II Contract					
VALIDITY: 1st January 2014					
			Inti Hébrard Capdeville Senior Project Manager		
			Tél. +33 (0)1 39 26 15 00 - Fax. +33 (0)1 30 70 17 36 Port. +33 (0)6 33 72 18 75 Mail: pierre-inti.hebrard-capdeville@cofelvimeo-gdfsuez.com Web: www.ineo-es.fr		
					

Agenda Item 2: Action plan for REDDIG II implementation (Contract 22501200 – Phase 2)

2.1 The Meeting analysed the action plan for the implementation of Phase 2 of the REDDIG II, updated the list of REDDIG II focal points, and took note of the arrangements being made for the REDDIG II training courses, the factory acceptance tests, and additional aspects concerning the installation of the REDDIG II.

Schedule of activities

2.2 The Meeting updated the action plan for the implementation of the REDDIG II, as shown in **Appendix A** to this agenda item. In this regard, based on the results of the seventeenth meeting of the REDDIG coordination committee (RCC/17), it modified the dates of the Third Technical/Operational Meeting of the REDDIG II and of the REDDIG II Preparatory Course (Bogota, Colombia, 28 July to 1 August 2014). The attached action plan does not contain all the changes indicated in paragraphs 2.3 to 2.5.

2.3 Likewise, the INEO & Level 3 Consortium informed that factory tests and possible adjustments and revisions derived therefrom might delay the delivery of equipment from the factory by one week. Such change would be reflected accordingly in the action plan.

2.4 Regarding customs clearance of the equipment, the Meeting agreed to give an additional margin of 15 days, thus modifying all the target dates for customs clearance of equipment in each node.

2.5 Regarding PSAT tests, the Meeting agreed to include a new activity in the action plan, entitled *Preparation for the PSAT*, create a new activity line for the NAT, separating it from the PSAT, and add 3 days for the conduction of the PSAT. Likewise, regarding the guarantee, the Meeting agreed to specify in the action plan the two-year duration of the guarantee, starting on the date of final acceptance of the network (FSAT).

2.6 Taking into account all of the above, the INEO & Level 3 Consortium would update the action plan and send it to the REDDIG management by the first week of April 2014 so that it may be circulated to all the focal points and posted on the REDDIG website.

Updated list of focal points

2.7 The Meeting revised the list of focal points, as shown in **Appendix B** to this agenda item. In this regard, the Meeting considered that those States that had more than one focal point per node should advise the project management which focal point should be contacted by the project management or the INEO & Level 3 Consortium to coordinate the activities foreseen in the nodes. Such information should be sent to the REDDIG II project management by 4 April 2014.

Training arrangements

2.8 The Meeting took note that the factory course would be held in Vélizy, France (21 April to 9 May 2014) and the REDDIG II theoretical-practical courses would be held in Rio, Brazil (between August and September 2014).

2.9 The factory course would be directed to personnel of the Manaus and Ezeiza NCCs. The REDDIG II contract covers air travel costs and *per diems* for 6 people, three from the Manaus NCC and 3 from the Ezeiza NCC. In addition to these 6 participants, the REDDIG Administrator, Mr. Luis Alejos, will also participate, his expenses to be covered by Project RLA/06/901.

2.10 In order to select the 36 participants of the course in Rio (whose travel expenses and *per diems* are already contemplated in the REDDIG Contract), the project management would send a letter to all REDDIG member States asking them to select two participants, who should be experts in communication networks, with experience in the operation and maintenance of VSAT satellite networks. The letter would be sent on the first week of April 2014, requesting a response by the States no later than 30 April 2014.

Factory tests

2.11 The Meeting took note that, according to the REDDIG II contract, factory tests (FAT) would have 6 participants: two from project management (the CNS officer of the ICAO SAM Regional Office, and the REDDIG Administrator) and four from REDDIG member States. The REDDIG management considered that those participating in the FAT should be those that had actively participated in the drafting of the REDDIG technical specifications, the bidding process, and the review of the REDDIG II design documentation. The participants selected by project management are from Argentina, Brazil, Paraguay, and Peru. The expenditures of the 6 people participating in the FAT will also be covered by the REDDIG II contract.

2.12 **Appendix C** to this agenda item contains the name of the persons selected by the REDDIG management to attend the factory course and the factory tests (FAT).

Additional considerations regarding the installation of the REDDIG II

2.13 The focal point of Colombia informed the Meeting that services at the new Bogota ACC would be operational in April 2014; therefore, the REDDIG II node would be installed where the REDDIG I was currently located. He also reported that a new antenna for the REDDIG II would be installed near the new ACC. The focal point of Colombia asked the Meeting to consider the possibility of not changing the coaxial cables and waveguides of the existing REDDIG antenna and to keep the coaxial cables, waveguides and other possible accessories contained in the list of REDDIG spare parts for the installation of the new antenna. In this regard, the representative of the INEO & Level 3 Consortium would analyse the request, taking into account its possible impact on the REDDIG II, and inform Colombia and the other REDDIG members about such possibility.

APPENDIX B / APENDICE B

REDDIG II FOCAL POINTS / PUNTOS FOCALES REDDIG II

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	Remigio Blanco, AASANA	Responsable de Telecomunicaciones AASANA	rblanco@asana.bo	(591 2) 237-0340	Aeropuerto Internacional El Alto, Bloque Técnico AASANA
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STATE / ESTADO	Name / Nombre	Cargo	E-Mail / Correo-e	Telephone / Teléfono	Address / Dirección
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	Renaldo Lansdorf, Ministry of Transport, Communication and Tourism, Civil Aviation Department	Senior Aeronautical Telecommunication Technician	r.lansdorf@yahoo.com	(597) 325-123; (597) 325-172	J. A. Pengel International Airport, Zanderij, district Para, Zorg en Hoop Airport, Paramaribo
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	Veronica Ramdath, Civil Aviation Authority	Manager Telecommunications and Electronics	vramdath@caa.gov.tt; vramdath@gmail.com	(1-868) 669-4806; (1-868) 669-4706; (1 868) 681-4407	

STATE / ESTADO	Name / Nombre	Cargo	E-Mail / Correo-e	Telephone / Teléfono	Address / Dirección
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VEN	Vicente FioreFedullo, INAC	Jefe Región Maiquetía-Venezuela	v.fiore@inac.gob.ve	(58 212) 355-2143; (58 212) 355-1412	Edificio ATC, 2do piso, Depto. De Comunica., Maiquetía, Edo. Vargas, Venezuela
	Luis Escobar, INAC	Coordinador de los Sistemas de Comunicaciones CNS Región Maiquetía	lescobar@inac.gob.ve	(58 212) 355-2143; (58 212) 355-1412	Edificio ATC, 2do piso, Depto. De Comunica., Maiquetía, Edo. Vargas, Venezuela

APPENDIX C / APENDICE C**PERSONNEL TO ASSIST TO REDDIG II FACTORY THEORETICAL/PRACTICAL COURSE
PERSONAL QUE ASISTIRA AL CURSO TEORICO/PRACTICO EN FÁBRICA DE LA REDDIG II**
(Vélizy, France, 21 April to 9 May 2014 / Vélizy, Francia, 21 de abril al 9 de mayo de 2014)

State / International Organization Estado / Organización Internacional	Name / Nombre	Passport / Pasaporte	Email/Tel
Argentina	Christian Javier Vittor	24.149.263	jvittor@anac.gov.ar +54 11 4480 2350
	Hernán Gabriel Canna	23.757.543	hernancanna@cecodi.com.ar +54 11 15573 31237
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Brasil	Sandro Israel de Moura Mendes	SA220857	ttst-13@cindacta4.decea.gov.br +55 928 244 5660
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	Joan Magno Correia Macedo	FH408594	joan.magno@gmail.com
ICAO/OACI	Luis Alejos	5313129 (Perú)	lalejos@icao.int +55 923 652 5714

**PERSONNEL TO ASSIST TO REDDIG II FACTORY ACCEPTANCE TRIALS (FAT)
PERSONAL QUE ASISTIRA A LAS PRUEBAS DE ACEPTACION EN FÁBRICA (FAT)
DE LA REDDIG II**

(Vélizy, France, 12 to 16 May 2014 / Vélizy, Francia, 12 al 16 de mayo de 2014)

State / International Organization Estado/Organización Internacional	Name / Nombre	Passport / Pasaporte
Argentina	Omar Gouarnalusse	11.662.541
Brasil	Francisco Almeida	SB052790
Paraguay	Aldo Pereira	1899437
Perú	Jose Luis Paredes	3545301
ICAO/OACI	Onofrio Smarrelli	5301835 (Venezuela)
ICAO/OACI	Luis Alejos	5313129 (Perú)

Air tickets and daily subsistence expenses for the duration of the FAT will be covered by Project RLA/03/901 (Contract 22501200) /

Los gastos de boleto aéreo y estadía para el periodo de la FAT son cubiertos por el Proyecto RLA/03/901 (Contrato 22501200).

In addition, Argentina will be sending Mr. Gustavo Chiri, Passport 16.653.965. Related expenses will be covered by Argentina /

Adicionalmente, Argentina enviará al señor Gustavo Chiri, Pasaporte 16.653.965. Los costos para esta persona serán cubiertos por Argentina.

Agenda Item 3: Activities required to be undertaken by REDDIG member States for REDDIG II implementation

3.1 The Meeting was informed that, even though the implementation and start-up of REDDIG II is a turnkey contract, there are activities requiring previous actions to be conducted by the REDDIG member States, for INEO & Level 3 Consortium's execution and compliance of the tasks indicated in the implementation chronogram in Contract 22501200, Phase 2.

3.2 These activities are classified into:

- a) Administrative / Logistical; and
- b) Technical.

3.3 **Administrative / logistical activities**

- a) For the drafting of the goods' shipment documentation (equipment and parts), responsibility of INEO & Level 3 Consortium, each of the REDDIG member States and COCESNA is to submit to the ICAO SAM Regional Office as soon as possible and before 15 April 2014, the "SHIP TO" information, as well as any other relevant information to be included in the shipment documentation (commercial invoice, packing list, AWB, B/L), for their proper importation and customs clearance.
- b) To obtain the "SHIP TO" information, REDDIG II focal points are recommended to consult and request it from the areas responsible for this in their respective States, explaining the importance of counting with this information for the delivery of the equipment within the target date.
- c) The ICAO SAM Regional Office will consolidate the "SHIP TO" information received from States and COCESNA and will submit it to INEO & Level 3 Consortium..
- d) As per the INEO chronogram, Task No. 33, INEO has estimated one (1) month for the import and customs clearance of the goods at each State and COCESNA. In the analysis of activities in the REDDIG II action plan under Agenda Item 2, it was deemed convenient that an additional period of 15 days be give to the customs clearance and importation process. Therefore, the goods should arrive and each State is to receive the complete shipping documentation no later than 31 July 2014, to start with the goods' customs clearance and importation.
- e) Once all States and COCESNA receive the complete set of shipment documents, they will review and verify they are correct, in order to immediately start with the goods customs clearance and importation. In the event that the information contained in the documentation is incorrect as regards the information submitted in activity a), the ICAO SAM Regional Office is to be immediately informed of it, so INEO is duly notified for the issuance of the respective rectification.
- f) All States and COCESNA will have, once activity e) is completed, 45 days for the goods' clearance, import and local transfer to the respective installation site. The target date is 15 September 2014.

- g) With the aim of complying with activity f), States and COCESNA are requested to carry out all necessary previous arrangements (submittance of explanatory letters, coordination meetings) in order to receive appropriate support from the institutions and authorities responsible for the goods' customs clearance, import and local transport, with the aim of completing this process in 45 days, maximum.
- h) Information was provided that the Contract has been translated, in the event same were necessary for the administrative/logistical paperwork.

3.4 With regard to the shipping documents indicated in the Contract, Clause 9.9, particularly the commercial invoice that the contractor should send to the REDDIG member States, the ICAO SAM Regional office will make the respective consultation to the ICAO Technical Cooperation Bureau in Montreal.

3.5 **Technical activities**

- a) Antenna maintenance. It is requested that a general cleaning and maintenance be carried out to every antenna at the REDDIG stations, as per the following chronogram:

SAEZ	16 July 2014
SBCT	17 July 2014
SBMN	18 July 2014
SBRF	29 July 2014
SCEL	22 July 2014
SEGU	23 July 2014
SGAS	24 July 2014
SKED	25 July 2014
SLLP	28 July 2014
SMPM	04 August 2014
SOCA	05 August 2014
SPIM	21 July 2014
SUMU	30 July 2014
SVMI	31 July 2014
SYGC	06 August 2014
TTZP	07 August 2014

- b) A request was made to update the information registered at the national entities administering the radio frequency spectrum, regarding the new equipment and frequencies composing REDDIG II. INEO will inform REDDIG members the value of the frequencies at the beginning of May 2014. Therefore, the registration should be carried out by 15 May 2014.

- c) In accordance with the INEO chronogram, Task No. 57, INEO has scheduled 18 September 2014 as the date to start with the installation at all the nodes (sites). Therefore, it is the responsibility of each State that the 16 REDDIG nodes have available, at the site designated for the installation of the new rack, the corresponding connector cabling of all services (voice and data) specified and detailed in the approved REDDIG II final design documents. Those nodes having a different site to the current one designated for the new installation, must have the connections in parallel up to the new rack installation site, of all services (voice and data). The target date is 15 September 2014.
- d) Installation, INEO chronogram, Task No. 57.
It is the responsibility of each State to verify INEO & Level 3 Consortium compliance regarding the requirements necessary prior to the PSAT trials, such as the execution of the nine (9) phases of installation, as indicated in the SDD document, VSAT, Part III, including the 'Pol Alignment' and 'Downlink Adjustment' tests for the two (2) SSPA, which are to be approved by Intelsat for each station. Inform the ICAO SAM Regional Office in the event there were negative observations.
- e) Assembly and installation of equipment at COCESNA.
The ICAO SAM Regional Office will send an expert to the COCESNA node in Tegucigalpa, Honduras, from 25 to 28 September 2014, to assemble the equipment ('router' plus satellite modem), using the current Band L, Type N (F) combiners/dividers. Consideration will be given to the cabling (type, longitude and connectors) to be used between the router and satellite modem equipment, as well as between the satellite modem and Band L combiners/dividers. Account is also to be given to the station's current RF local oscillator amplifier's frequency.
It is INEO's responsibility to start up the COCESNA node within REDDIG II, once the assembly of the afore indicated equipment has been carried out. To this end, INEO it to provide beforehand the operational configuration archives for the router and satellite modem, with the aim that they are uploaded locally in the COCESNA node by the expert sent by the ICAO SAM Regional Office. Once this has been done, all tests indicated in the chronogram will be carried out.
- f) PSAT/NAT tests, INEO chronogram. Tasks No. 58 and 59.
It is the responsibility of each State to verify the conduct and compliance of the PSAT tests protocols, as well as the validation of the PSAT trials and, under coordination with the ICAO SAM Regional Office, the respective NAT tests.
- g) FNAT trials, INEO chronogram, Tasks No. 60 and 61.
The ICAO SAM Regional Office, together and in coordination with each of the States, will verify that INEO & Level 3 Consortium satisfactorily complies with all the tests that have not passed through the PSAT/NAT trials, and will evaluate the satellite and ground networks performance during the Operational Readiness Demonstration (ORD) period. Once all of the above has been satisfactorily complied with, will the final acceptance certificate be signed, when the two (2) years guarantee period will start.

Agenda Item 4: Other matters

4.1 No topics were presented for discussion under this Agenda Item.