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August 06, 2015

Mr. David K. Arakawa  
Federal Project Director,  
US Contributions to ITER  
Department of Energy  
Post Office Box 2008  
Oak Ridge, Tennessee 37831-6483

Dear Mr. Arakawa:

**Contract DE-AC05-00OR-22725, Request Concurrence on Closure Documentation for Level 2 Performance Plan Milestone**

This letter requests your concurrence on the closing of the FY 14 Performance Plan Milestone, **USEP09E1050; Deliver HV Potential Transformers (Lot 1) to ITER Site**, based on the attached IDM-approved Delivery Report.

Please provide your concurrence by signing below and return the original to my office at your earliest convenience. Should you have questions or concerns, please contact Suzanne Herron at 865-241-5128 or herronsa@ornl.gov.

Sincerely,

Ned R. Sauthoff, Project Manager  
US ITER Project

Concur: \_\_\_\_\_  
David K. Arakawa, Federal Project Director  
US Contributions to ITER

Date: \_\_\_\_\_

NRS:lfl

Cc: Bill Cahill  
Suzanne Herron  
Jama Hill  
Graeme Murdoch  
Charles L. Neumeyer  
Mark Pratt  
Wayne Steffey  
USIPO DCC (RC)

**ATTACHMENT**

**Contract DE-AC05-00OR-22725, Request Concurrence on Closure Documentation for Level 2 Performance Plan Milestone**

**Performance Plan Milestone:** Deliver HV Potential Transformers (Lot 1) to ITER Site

**Performance Plan Milestone Date:** September 30, 2014

**Completion Date:** September 30, 2014

**Justification for Milestone Closure:** IDM-approved Delivery Report

**Recommend for Closure:**

Concur: \_\_\_\_\_  
Charles L. Neumeyer, WBS Team Leader

Date: \_\_\_\_\_

Concur: \_\_\_\_\_  
Graeme Murdoch, Non-Nuclear Division Director  
US ITER Project

Date: \_\_\_\_\_

**DA DOCUMENT  
DELIVERABLE**

IDM UID  
**PSXSB3**

VERSION CREATED ON / VERSION / STATUS  
**10 Jun 2015 / 3.0 / Approved**

EXTERNAL REFERENCE  
**US\_D\_22PCSW, 1040100-PD0159**

**DA List**  
**Final Delivery Report for SSEN HV Current  
Transformers and HV Potential Transformers**

This document provides a list of items delivered, and a record of their delivery and acceptance by ITER, and associated documentation, for the ITER SSEN HV Current Transformers and HV Potential Transformers, in accordance with Procurement Arrangement 41.P8C.US 01 for the US Domestic Agency supply of materials for the Steady State Electrical Network (SSEN).

<i>Approval Process</i>			
	<i>Name</i>	<i>Action</i>	<i>Affiliation</i>
<i>Signatory</i>	<b>Neumeyer C.</b>	<b>10 Jun 2015:signed</b>	
<i>Co-signatories</i>			
<i>Reviewers</i>	<b>Benfatto I. Consolo G. Pajak P. * Qiao Y. Zaccarelli L.</b>	<b>17 Jun 2015:recommended 23 Jun 2015:recommended 22 Jun 2015:recommended 22 Jun 2015:recommended</b>	<b>IO/DG/COO/PED/EED IO/DG/COO/PED/EED/EPD IO/DG/RCO/QAA IO/DG/COO/CST/FLM F4E</b>
<i>Approver</i>	<b>Hourtoule J.</b>	<b>23 Jun 2015:approved</b>	<b>IO/DG/COO/PED/EED/EPD</b>
<i>Document Security: Internal Use RO: Hourtoule Joel</i>			
<i>Read Access</i>	<b>LG: DA TRO 4.1.P8C.US.01, AD: IO_Director-General, AD: EMAB, AD: Auditors, project administrator, RO, LG: USDA PA PT, LG: IO TRO, AD: ITER, AD: ITER Management Assessor</b>		

<i>Change Log</i>			
<b>Final Delivery Report for SSEN HV Current Transformers and HV Potential Transformers (PSXSB3)</b>			
<i>Version</i>	<i>Latest Status</i>	<i>Issue Date</i>	<i>Description of Change</i>
v1.0	Approved	29 Jul 2014	
v1.1	Approved	13 Oct 2014	To update and correct inspection appendices and add some additional information as required by Annex B for PA 1.P8C.US.01
v2.0	Approved	21 May 2015	Appendix III split into two; now Appendix III and IV. Appendices added for final report. (Delivered to ITER Site on 30 September 2014).
v3.0	Approved	10 Jun 2015	Updated document wording and Appendix II to add Cargo Receipt. Corrected typo in the IDM number for the referenced packaging report. Detailed split delivery due to crate damage.



CLASSIFICATION  
**Unclassified**

iDOCS UID  
**US\_D\_22PCSW**

PA/TA NUMBER  
**4.1.P8C.US.01**

VERSION CREATED ON / VERSION / STATUS  
**03 Jun 15 / 3.0 / Approved**

EXTERNAL REFERENCE  
**1040100-PD0159-R03**

## Final Delivery Report for SSEN HV Current Transformers and HV Potential Transformers

### Abstract or description:

This document provides a list of items delivered, and a record of their delivery and acceptance by ITER, and associated documentation, for the ITER SSEN HV Current Transformers and HV Potential Transformers, in accordance with Procurement Arrangement 41.P8C.US 01 for the US Domestic Agency supply of materials for the Steady State Electrical Network (SSEN).

<i>Workflow Role</i>	<i>Name</i>	<i>Action</i>
<i>Author</i>	<b>JEDIC B.</b>	<b>03 Jun 15:signed</b>
<i>Co-Authors</i>		
<i>Reviewers</i>	<b>DELLAS J. PARROTT J.</b>	<b>04 Jun 15:recommended 08 Jun 15:recommended</b>
<i>Approver</i>	<b>NEUMEYER C.</b>	<b>10 Jun 15:approved</b>

<i>Change Log</i>				
<i>Title (UId)</i>	<i>Version</i>	<i>Latest Status</i>	<i>Issue Date</i>	<i>Description of Change</i>
Final Delivery Report for SSEN HV Current Transformers and HV Potential Transformers (22PCSW_v3_0)	v3.0	Approved	03 Jun 15	Incorrect document uploaded in previous version.  Updated document wording and Appendix II to add Cargo Receipt. Corrected typo in the IDM number for the referenced packaging report. Detailed split delivery due to crate damage.
Final Delivery Report for SSEN HV Current Transformers and HV Potential Transformers (22PCSW_v2_1)	v2.1	Signed	29 May 15	Updated document wording and Appendix II to add Cargo Receipt. Corrected typo in the IDM number for the referenced packaging report. Detailed split delivery due to crate damage.
Final Delivery Report for SSEN HV Current Transformers and HV Potential Transformers (22PCSW_v2_0)	v2.0	Approved	11 May 15	Appendix III split into two; now Appendix III and IV. Appendices added for final report.  (Delivered to ITER Site on 30 September 2014)
Final Delivery Report for SSEN HV Current Transformers and HV Potential Transformers (22PCSW_v1_2)	v1.2	Approved	10 Oct 14	To update and correct inspection appendices and add some additional information as required by Annex B for PA 1.P8C.US.01
Final Delivery Report for SSEN HV Current Transformers and HV Potential Transformers (22PCSW_v1_1)	v1.1	Approved	28 Jul 14	The original submittal contained an incorrect link. The link is corrected here.
Final Delivery Report for SSEN HV Current Transformers and HV Potential Transformers (22PCSW_v1_0)	v1.0	Signed	28 Jul 14	



# Final Delivery Report

## for

# SSEN HV Current Transformers and HV Potential Transformers

**(Delivered to ITER Site on 30 September 2014  
and 7 October 2014)**

**1040100-PD0159-R04**

<b>PPPL Approval Process</b>			
<b>Author</b>	B. Jedic		Approval in iDocs
<b>Reviewers</b>	J. Dellas	PTR	Approval in iDocs
	J. Parrott		Approval in iDocs
<b>Approver</b>	C. Neumeyer	TRO	Approval in iDocs

REVISION HISTORY

<u>Revision No.</u>	<u>Revisions</u>	<u>Date</u>
0 (Initial Release)	None, First Issue	28 July 14
1	To update and correct inspection appendices and add some additional information as required by Annex B for PA 1.P8C.US.01	9 Oct 14
2	Appendix III split into two; now Appendix III and IV. Appendices added for final report	1 May 2015
3	Updated document wording and Appendix II to add Cargo Receipt. Corrected typo in the IDM number for the referenced packaging report. Detailed split delivery due to crate damage.	27 May 2015
4	Update to Appendix II to add missing cargo receipt.	3 June 2015



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**Appendix I - Preliminary Inspection on Transport Vehicle Before Unloading**

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## 1 PURPOSE

This document provides a list of items delivered, and a record of their delivery and acceptance by ITER, and associated documentation, for the ITER SSEN HV Current Transformers and HV Potential Transformers, in accordance with Procurement Arrangement 41.P8C.US 01 for the US Domestic Agency supply of materials for the Steady State Electrical Network (SSEN).

The initial version is created prior to shipping and the final version is submitted after all details of shipping and acceptance by ITER have been completed. Signatures of authorized personnel are documented in the final version.

The signed version of the CMR<sup>1</sup> (for intra-EU land transport), Cargo Receipt, or Bill of Lading (for transoceanic transport), included in the final version of this report, serves to document the start of the warranty period that begins when the equipment has been loaded on the Logistics Service Provider's transport vehicle at the factory.

## 2 DEFINITIONS

Document type is "F" according to IDM UID definitions for "DA Deliverables".

## 3 REFERENCES

Note - The latest approved versions of the following documents (ITER\_XXXXXX) are applicable

[1]	4.1.P8C.US.01 SSEN Main PA (ITER_D_9BED3G)
[2]	Annex B for 41.P8C.US 01 (ITER_D_9RG6H9)
[3]	Document Deliverable List for SSEN PA 4.1.P8C.US.01 (ITER_D_AKHKWN)
[4]	Specification for High Voltage (HV) Current Transformers (ITER_D_DU63HK)
[5]	Specification for High Voltage (HV) Potential Transformers (ITER_D_DUBC2B)

## 4 REQUIREMENTS

This report addresses the requirements for a Delivery Report given in section 7.3.e and 7.4 of PA Annex B [2] and is a PA Deliverable according to [3].

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<sup>1</sup> CMR stands for 'Convention relative au contrat de transport international de Marchandises par route'. It is a standardized document for cross-border transport by roadway in the European Union

## 5 SCOPE OF DELIVERY

The delivery covered by this report includes the current transformers and potential transformers required for Procurement Groups 4 and 5 of Table 2-2 of PA Annex B and delineated in the Specifications [4 and 5]. This delivery report does not include the marshalling cubicles and the intrapole cabling, which will be shipped from other locations at a later date. The equipment was procured by the Princeton Plasma Physics Laboratory (PPPL) for the US ITER Domestic Agency under subcontract S012891-F between Princeton University and ABB Kuhlman, Tepeji Del Rio, Mexico. A complete list of items is given in **Table 1**.

**Table 1 – List of Items Delivered**

Pkg. No.	Serial No.	ITER Equipment Identifier	Item Description	Qty.
1	13019416-1	43AC00-TC-1000	CURRENT TRANSFORMER TYPE: CA-420	1
2	13019416-2	43AC00-TC-1004	CURRENT TRANSFORMER TYPE: CA-420	1
3	13019416-3	43AC00-TC-1008	CURRENT TRANSFORMER TYPE: CA-420	1
4	13019416-4	43AC00-TC-2000	CURRENT TRANSFORMER TYPE: CA-420	1
5	13019416-5	43AC00-TC-2004	CURRENT TRANSFORMER TYPE: CA-420	1
6	13019416-6	43AC00-TC-2008	CURRENT TRANSFORMER TYPE: CA-420	1
7	13019416-7	43AC00-TC-3000	CURRENT TRANSFORMER TYPE: CA-420	1
8	13019416-8	43AC00-TC-3004	CURRENT TRANSFORMER TYPE: CA-420	1
9	13019416-9	43AC00-TC-3008	CURRENT TRANSFORMER TYPE: CA-420	1
10	13019416-10	43AC00-TC-4000	CURRENT TRANSFORMER TYPE: CA-420	1
11	13019416-11	43AC00-TC-4004	CURRENT TRANSFORMER TYPE: CA-420	1
12	13019416-12	43AC00-TC-4008	CURRENT TRANSFORMER TYPE: CA-420	1
13	13019417-01	43AC00-TP-1000	VOLTAGE TRANSFORMER TYPE : UTF-420	1
14	13019417-02	43AC00-TP-1004	VOLTAGE TRANSFORMER TYPE : UTF-420	1
15	13019417-03	43AC00-TP-1008	VOLTAGE TRANSFORMER TYPE : UTF-420	1
16	13019417-04	43AC00-TP-2000	VOLTAGE TRANSFORMER TYPE : UTF-420	1
17	13019417-05	43AC00-TP-2004	VOLTAGE TRANSFORMER TYPE : UTF-420	1

Pkg. No.	Serial No.	ITER Equipment Identifier	Item Description	Qty.
18	13019417-06	43AC00-TP-2008	VOLTAGE TRANSFORMER TYPE : UTF-420	1
19	13019417-07	43AC00-TP-3000	VOLTAGE TRANSFORMER TYPE : UTF-420	1
20	13019417-08	43AC00-TP-3004	VOLTAGE TRANSFORMER TYPE : UTF-420	1
21	13019417-09	43AC00-TP-3008	VOLTAGE TRANSFORMER TYPE : UTF-420	1
22	13019417-10	43AC00-TP-4000	VOLTAGE TRANSFORMER TYPE : UTF-420	1
23	13019417-11	43AC00-TP-4004	VOLTAGE TRANSFORMER TYPE : UTF-420	1
24	13019417-12	43AC00-TP-4008	VOLTAGE TRANSFORMER TYPE : UTF-420	1

## **6 DELIVERY INFORMATION AND PACKING LIST**

The items will be delivered under the ITER framework contract to the Logistics Service Provider (LSP). They were transported over land from the ABB factory in Tepeji Del Rio, Mexico to the Veracruz Port in Mexico, then by sea to Fos-sur-Mer, Marseille, France, then by land to the ITER site at Cadarache, France. The shipping date was 9 August 2014 and the first delivery was on 30 September 2014 for twelve potential transformers and eight current transformers. Four current transformers were held at the port due to crate damage during unloading and subsequently delivered 7 October 2014 to complete the delivery.

Note that the shipping date will be documented by the CMR, Cargo Receipt and/or Bill of Lading and will establish the start date of the warranty period.

Detailed delivery information along with a packing list that details individual packages and their contents is available at ITER\_D\_Q74EKH.

Place of Delivery	Supplier Information
ITER Organization St Paul Lez Durance, France  Shipment received by: Qiao Yanchun, Transport & Logistics Resp. Officer	ABB Inc. 940 Main Campus Drive Raleigh, North Carolina USA

Packaging Date: 9 August 2014

## **7 RECEIPT AT ITER SITE**

Per PA Annex B section 6.5.1, ITER is responsible for incoming inspection, which shall occur in two steps, one before unloading, and another within 2 months after unloading.

### **7.1 PRELIMINARY INSPECTION ON TRANSPORT VEHICLE BEFORE UNLOADING (SHIPMENT INSPECTION)**

ITER personnel shall inspect the items prior to unloading from the LSP transport vehicle. Any anomalies shall be noted and documented and, if serious, should be brought to the attention of the US ITER Technical Representative as soon as possible. Once inspection is complete and/or anomalies are reconciled, physical custody of items shall be transferred to the ITER Organization.

An authorized ITER Representative shall sign the Appendix I form and the CMR and/or Bill of Lading (Appendix II) to complete this step.

### **7.2 UNLOADING, HANDLING, STORAGE**

The ITER Organization shall be responsible for unloading and subsequent handling and storage. Note that the delivered items are US Government Property during this period, until final acceptance, and that the ITER Organization assumes responsibility for risk of damage after preliminary inspection as described in 7.1 and in Article I.3.1 of PA Main [1].

### **7.3 FINAL INSPECTION WITHIN 2 MONTHS AFTER UNLOADING (COMPONENT INSPECTION)**

The ITER Organization shall be responsible for final inspection prior to acceptance. Once inspection is complete and/or anomalies are reconciled, ownership of items shall be transferred to the ITER Organization in accordance with Article I.3.2 of PA Main [1].

An authorized ITER Representative shall sign the Appendix III form to complete this step.

After completion of this step, the final version of the Delivery Report shall be prepared and submitted to IDM, and the US DA shall be entitled to request credit as described in Article II.2.2 of PA Main [1].

### **7.4 TRANSFER OF OWNERSHIP**

The transfer of ownership will be completed by the completion of the Transfer of Ownership form attached hereto as Appendix IV.

## **8 HANDLING AND STORAGE REQUIREMENTS**

Handling and storage requirements are indicated on the itemized packing list. If there are any special requirements they are attached hereto as Appendix V.

## **9 ADDITIONAL DOCUMENTATION**

Any additional documentation associated with the delivery is attached hereto as Appendix VI.

# APPENDIX I

## Preliminary Inspection on Transport Vehicle Before Unloading

Description of Shipment: ITER SSEN HV Current Transformers and HV Potential Transformers

Results of Preliminary Inspection:

- Satisfactory
- Unsatisfactory with major deviations

Comments (include impact recorder data, attach additional sheets, if necessary):

The packages of some wood cases were found to be seriously damaged, so the preliminary inspection was not satisfactory. Details please refer to the attached report.

Name and Title of ITER IO Representative: YANCHUN QIAO  
Transport & Logistics Responsible Officer

Signature of ITER IO Representative: 

Date: 20-Oct-2014 Time: 15h00

After completion, sign CMR and/or Bill of Lading, attach and scan this document plus CMR/Bill of Lading, and e-mail to [bjedic@pppl.gov](mailto:bjedic@pppl.gov) and [joel.hourtoule@iter.org](mailto:joel.hourtoule@iter.org)

## Delivery Deviation Report

### Observation

After the preliminary inspection was conducted, two major deviations were identified:

- Two wooden crates were serious damaged and securing of the components inside the wooden crates failed;
- The plastic sealing films to cover the component inside the four wooden crates were broken. it is likely the anti-moisture approach (desiccant) failed (no moisture indicators to check);

More details please see the attached photos.

### Analysis & conclusion

The wooden packages were stuffed in the sea-freight containers too tightly in the Mexican terminal and when the container was de-stuffed in Fos terminal, the wooden packages were damaged. The plastic sealing films were cut by the sharp edges of the components during the transportation. Cushions should be applied between the sharp edge and the plastic sealing films.

### Actions

This deviation's root cause is the handling service and package quality before the delivery to France. The following action is therefore recommended:

- US DA to check with the LSP partner in USA for the quality of container stuffing;
- US DA to request the supplier to improve the package quality.

Prepared by: Yanchun (Kevin) Qiao

20 Oct, 2014







The packages were seriously damaged and securing of the components inside the package failed and the position of components has been shifted.



The inner plastic sealing film was cut by the sharp edge of the components, and anti-moisture approach is likely to fail.


## APPENDIX II

# CMR, Cargo Receipt, and/or Bill of Lading Form As Applicable

*Signed Bill of Lading or CMR to be inserted here after completion of delivery*

CACHET DU TRANSPORTEUR	<b>COURRIER TRANSPORT MIMETAIS</b> Z.I. les Estroublans 7, Av. de Bruxelles 13127 VITROLLES Tél. : 04 42 10 30 44 - Fax : 04 42 89 41 38 N° SIRET : 333 295 137 00041 - RCS : Salon de Provence 333 297 137 TVA Intracommunautaire : FR 14 333 295 137	LETTRE DEVOITURE R00069228 Délivré le : 30/09/14 Commande n° : Immat. TR : CM 555 YZ 13 Immat. SR : CP 102 Conducteur : <i>Simeon guoni</i> Autres :	EUROS <input type="checkbox"/> PORT PAYE PORT DÙ Prix du TPT Taxes Diverses Contre Rembt Total H.T. T.V.A. Total T.T.C.		
	NOMBRE, MARQUE ET NATURE DE LA MARCHANDISE, Poids, Volume, Mètres linéaires déclarés par l'expéditeur Poids : 0 Kgs Volume : 8T M3 ML : 4 Caisses	MD	DP	DONNEUR D'ORDRE (nom, adresse) SCHENKER-JOYAU MARSEIL ZAC EUROFLORY PARC 13130 BERRE L ETANG	
INSTRUCTIONS DU TRANSPORTEUR AU(X) CONDUCTEUR(S) Itinéraire sommaire, heure et lieu de début de mission et prise d'ordre éventuelle en cours de mission 03486640					
NOM ET ADRESSE DE L'EXPÉDITEUR-REMETTANT / Lieu de prise en charge EUROFOS CFS EMPOTAGE SECTEUR 86 FOS GRAVELEAU DARSE 3 13230 PORT ST LOUIS DU R Arrivée : le 30/09/14 à 8 h 00 Départ : le 30/09/14 à h Livraison demandée le à h		NOM ET ADRESSE DU DESTINATAIRE / Lieu de livraison ITER WORKSITE PORTE B ROUTE DE VINON 13115 ST PAUL LES DURANC Arrivée : le 30/09/14 à 11 h 30 Départ : le 30/09/14 à 15 h 40			
Prestations annexes réalisées au chargement MAT ELECTRIQUE 52100146 CI DU CHAUFFEUR		Prestations annexes réalisées au déchargement JEAN YVES 0680478480			
NOM ET SIGNATURE DU CONDUCTEUR 30/09/14 0h00 Le <i>[Signature]</i> Réserves éventuelles :	NOM, CACHET ET SIGNATURE DU REMETTANT <i>[Signature]</i> Le 30/09/14 Réserves éventuelles :	NOM ET SIGNATURE DU CONDUCTEUR 30/09/14 0h00 Le <i>[Signature]</i> Réserves éventuelles :	NOM, CACHET ET SIGNATURE DU DESTINATAIRE <i>[Signature]</i> Le 30-9-2014 Réserves éventuelles :		
PALETTES Type : <input type="checkbox"/> 80/120 <input type="checkbox"/> autres : <input type="checkbox"/> Europe <input type="checkbox"/> Perdu <input type="checkbox"/> 100/120	ORIGINE DES PALETTES	CHARGÉES CHEZ L'EXPÉDITEUR	RENDUES A L'EXPÉDITEUR	LIVRÉES AU DESTINATAIRE	RENDUES PAR LE DESTINATAIRE

CACHET DU TRANSPORTEUR	<b>COUPRIER TRANSPORT MIMETAIS</b> Z.I. les Estroublans 7, Av. de Bruxelles 13127 VITROLLES Tél. : 04 42 10 30 44 - Fax : 04 42 89 41 38 N° SIRET : 333 295 137 00041 - RCS : Salon de Provence 333 297 137 TVA Intracommunautaire : FR 14 333 295 137		LETTRE DEVOITURE R00069227 Délivré le : 30/09/14 Commande n° : Immat. TR : DG 867 GU Immat. SR : BY 316 ET Conducteur : RANISIO Seb Autres :		EUROS <input type="checkbox"/> PORT PAYE    PORT DÙ Prix du TPT Taxes Diverses Contre Rembt Total H.T. TVA. Total T.T.C.	
	NOMBRE, MARQUE ET NATURE DE LA MARCHANDISE, Poids, Volume, Mètres linéaires déclarés par l'expéditeur 0 4 caisses Poids : 0 Kgs Volume : 97 M3    ML :			MD DP <b>DONNEUR D'ORDRE (nom, adresse)</b> SCHENKER-JOYAU ZAC EUROFLORY 13130 BERRE L ETANG		
INSTRUCTIONS DU TRANSPORTEUR AU(X) CONDUCTEUR(S) Itinéraire sommaire, heure et lieu de début de mission et prise d'ordre éventuelle en cours de mission 03486642 ECMU949484-8						
NOM ET ADRESSE DE L'EXPÉDITEUR-REMETTANT / Lieu de prise en charge EUROFOS CFS EMPOTAGE SECTEUR 86 FOS GRAVELEAU DARSE 3 13230 PORT ST LOUIS DU R Arrivée : le ..... à ..... h. Départ : le ..... à ..... h. Livraison demandée le ..... à ..... h.			NOM ET ADRESSE DU DESTINATAIRE / Lieu de livraison ITER ORGANISATION ENTREE CHANTIER WORKSITE PORTE B ROUTE DE VINON 13115 ST PAUL LES DURANC Arrivée : le 30-9-14 à 19h45 Départ : le 30-9-14 à 14h40			
Prestations annexes réalisées au chargement MAT ELECTRIQUE 52100146 CHAUFFEUR CI			Prestations annexes réalisées au déchargement YVES JEAN 0680478480			
NOM ET SIGNATURE DU CONDUCTEUR 30/09/14 0h00 Le RANISIO Seb		NOM, CACHET ET SIGNATURE DU REMETTANT Le 30/09/14		NOM ET SIGNATURE DU CONDUCTEUR 30/09/14 0h00 Le RANISIO Seb		
NOM, CACHET ET SIGNATURE DU DESTINATAIRE Le 30-9-2014		Réserves éventuelles :		Réserves éventuelles :		
PALETTES Type : <input type="checkbox"/> 80/120 <input type="checkbox"/> autres : <input type="checkbox"/> 100/120		ORIGINE DES PALETTES <input type="checkbox"/> Europe <input type="checkbox"/> Perdu		CHARGÉES CHEZ L'EXPÉDITEUR    RENDUES A L'EXPÉDITEUR LIVRÉES AU DESTINATAIRE    RENDUES PAR LE DESTINATAIRE		



**STE AURELIENNE DE TRANSPORTS**  
 S.A.R.L. au capital de 7 622,45 €  
 Les Broquetiers - Ancienne route de Cornillon  
 13300 SALON DE PROVENCE  
 Tél. : 04 90 42 26 60 - Fax : 04 90 42 29 96  
 Adresse Mail : andre.ferrato@orange.fr  
 RC Salon B 400 666 646 00021

**LETTRE DE VOITURE NATIONALE**  
 N° F **013979**  
 ORDRE DE MISSION (Date et heure)  
 DEBUT :  
 FIN :  
**EX POUR LE DESTINATAIRE**

---

DÉLIVRÉ LE : **30/9/14**  
 DONNEUR D'ORDRES :

CONDUCTEUR : **Dent**

IMMATRICULATION : MOTEUR **DU76260**  
 REMORQUE **CO6627L**

---

EXPÉDITEUR - REMETTANT  
 NOM : **EUROFOS**  
 ADRESSE : **BOIS SAINT LOUIS RAAS**

DESTINATAIRE  
 NOM : **ITER OAG**  
 ADRESSE : **Saint Poul les Dinançes**

---

NBRE	NATURE DES MARCHANDISES	POIDS	Longueur ou volume occupé	VALEUR DÉCLARÉE	DÉTAILS DES FRAIS	PORT DÙ ou PORT PAYÉ
	<b>cont. 420729.0</b>			<b>9T</b>	Prix du transport	
	<b>17 CAISSES</b>				Taxe de valeur déclarée	
	<b>REF. 61303486723</b>				Taxe de Contre-Remb.	
					Terme fixe	
					<b>TOTAL H.T.</b>	
					T.V.A.	
					<b>TOTAL T.T.C.</b>	
					Débours - Contre-Remb.	
					<b>TOTAL A RECOURVRE</b>	
					INSTRUCTIONS DU TRANSPORTEUR	

---

TRANSPORTEUR  
 DATE - SIGNATURE

RECEPTION - OBSERVATIONS - RESERVES EVENTUELLES  
 EXPÉDITEUR - REMETTANT\*  
 DATE - CACHET - SIGNATURE

DESTINATAIRE\*  
 DATE - CACHET - SIGNATURE

---

**CHARGEMENT**  
 DATE ET HEURE D'ARRIVÉE : LE **30/9/14** à **19h30**  
 PRESTATIONS ANNEXES EXECUTÉES PAR LE CONDUCTEUR : Chargement OUI  NON   
 Autres :  
 DATE ET HEURE DE DÉPART LE : **30/9/14** à **10h30**

**DOCUMENT DE SUIVI**  
 DATE ET HEURE D'ARRIVÉE : LE **30/9/14** à **12h45**  
 PRESTATIONS ANNEXES EXECUTÉES PAR LE CONDUCTEUR : Déchargement OUI  NON   
 Autres :  
 DATE ET HEURE DE DÉPART LE : **30/9/14** à **15h30**

**DECHARGEMENT**  
 DATE ET HEURE D'ARRIVÉE : LE **30/9/14** à **12h45**  
 PRESTATIONS ANNEXES EXECUTÉES PAR LE CONDUCTEUR : Déchargement OUI  NON   
 Autres :  
 DATE ET HEURE DE DÉPART LE : **30/9/14** à **15h30**

---

SIGNATURE DU CONDUCTEUR

NOM ET SIGNATURE DE L'EXPÉDITEUR - REMETTANT

SIGNATURE DU CONDUCTEUR

NOM ET SIGNATURE DU DESTINATAIRE

---

DATE ET HEURE D'ARRIVÉE AU LIEU DE DÉCHARGEMENT  
 DEMANDÉES PAR L'EXPÉDITEUR - REMETTANT : LE

à

h

MODELE CONFORME A L'ARRETE DU 9-11-99  
 CONDITIONS GÉNÉRALES AU VERSO  
 \*LE REFUS NON MOTIVÉ DE SIGNATURE ENGAGE LA RESPONSABILITÉ DES INTÉRESSÉS

MODELE CONFORME A L'ARRETE DU 9-11-99

CONDITIONS GENERALES AU VERSO  
\*LE REFUS NON MOTIVE DE SIGNATURE ENGAGE LA RESPONSABILITE DES INTERESSES



**E.B.T.S.**  
S.A.R.L. au capital de 40 000 €  
Route d'Aix en Provence - BP 12  
Quartier Bas Saint Martin - 84120 PERTUIS  
Tél. : 04 90 08 82 43 - Fax : 04 90 08 82 86  
RCS Avignon B 479 718 587 - APE 4941 B - TVA FR 44 479 718 587

**LETTRE DE VOITURE NATIONALE**

N° F **022470**

ORDRE DE MISSION (Date et heure)  
DEBUT :  
FIN :

**EX POUR LE DESTINATAIRE**

DÉLIVRÉ LE: **30/09/14.** CONDUCTEUR: **AQ** IMMATRICULATION: MOTEUR **BX 730 GC**  
DONNEUR D'ORDRES: REMORQUE **BT 830 CN**

EXPÉDITEUR - REMETTANT DESTINATAIRE  
NOM: **EUROFOS.** NOM: **I PER ORGANISATION**  
ADRESSE: **BFOS au HER.** ADRESSE: **OH CADARACHE.**

NBRE	NATURE DES MARCHANDISES	POIDS	Longueur ou volume occupé	VALEUR DÉCLARÉE	DÉTAILS DES FRAIS	PORT DÙ ou PORT PAYE
	<b>10 caisses de matériel.</b>			<b>87 000.</b>	Prix du transport Taxe de valeur déclarée Taxe de Contre-Remb. Terme fixe	
	<b>10 caisses alimentaires, paquets dans l'été.</b>				<b>TOTAL H.T.</b> T.V.A. 19,60 % <b>TOTAL T.T.C.</b> Débours - Contre-Remb.	

MARCHANDISES DANGEREUSES <input type="checkbox"/>	CHARGÉES CHEZ L'EXPÉDITEUR <input type="checkbox"/>	REMISES A L'EXPÉDITEUR <input type="checkbox"/>	LIVRÉES AU DESTINATAIRE <input type="checkbox"/>	RENDUES PAR LE DESTINATAIRE <input type="checkbox"/>	NON RENDUES A REPRENDRE <input type="checkbox"/>	PALETTES <input type="checkbox"/>
SOUS TEMPÉRATURE DIRIGÉE <input type="checkbox"/>						BACS <input type="checkbox"/>
DÉCLARATION / PECES JOINTES <input type="checkbox"/>						ROLLS <input type="checkbox"/>

**RECEPTION - OBSERVATIONS - RESERVES EVENTUELLES**

TRANSPORTEUR: \_\_\_\_\_ EXPÉDITEUR - REMETTANT\*: \_\_\_\_\_ DESTINATAIRE\*: \_\_\_\_\_

DATE - SIGNATURE: \_\_\_\_\_ DATE - CACHET - SIGNATURE: \_\_\_\_\_ DATE - CACHET - SIGNATURE: \_\_\_\_\_

INSTRUCTIONS DU TRANSPORTEUR

CHARGEMENT	DOCUMENT DE SUIVI	DECHARGEMENT
DATE ET HEURE D'ARRIVÉE : LE <b>30/09</b> à _____ h		DATE ET HEURE D'ARRIVÉE : LE <b>30/09</b> à <b>17</b> h <b>30</b>
PRESTATIONS ANNEXES EXECUTÉES PAR LE CONDUCTEUR : Chargement OUI <input type="checkbox"/> NON <input type="checkbox"/>		PRESTATIONS ANNEXES EXECUTÉES PAR LE CONDUCTEUR : Déchargement OUI <input type="checkbox"/> NON <input type="checkbox"/>
Autres : _____		Autres : _____
DATE ET HEURE DE DÉPART LE : _____ à _____ h		DATE ET HEURE DE DÉPART LE : _____ à <b>18</b> h <b>00</b>
SIGNATURE DU CONDUCTEUR: _____	NOM ET SIGNATURE DE L'EXPÉDITEUR - REMETTANT: <b>30/09/14</b>	SIGNATURE DU CONDUCTEUR: _____
		NOM ET SIGNATURE DU DESTINATAIRE: _____
DATE ET HEURE D'ARRIVÉE AU LIEU DE DÉCHARGEMENT		NOM ET SIGNATURE DE L'EXPÉDITEUR - REMETTANT
DEMANDÉES PAR L'EXPÉDITEUR - REMETTANT : _____		

# FAN TRANSPORTS

16, Av. de St-Antoine - 13015 MARSEILLE  
 Tél. 04 91 03 97 44 - Fax 04 91 03 97 21  
 Port. 06 25 89 40 67 / 06 20 76 42 22  
 RCS Marseille 350 159 646 - Siret 350 159 646 00040  
 TVA FR 87 350 159 646 - APE 4941 A

LETTRE DE VOITURE  
 PETIT FORMAT N°

0015065

Date	Immatriculation véhicule	Immatriculation de la semi	Conducteur 1	Conducteur 2	Réf. de la commande
30/09	B.2767EV	CE080CF	ISMAILID		

Donneur d'ordres ..... Livraison demandée : Date ..... de ..... h ..... à ..... h .....

EXPÉDITEUR	DESTINATAIRE
C.F.S. P.S. LUIS	OREAWISATI ST PAUL les ZURPAC
Arrivée le 11h20 à ..... h ..... Départ le ..... à ..... h .....	Arrivée le ..... à ..... h ..... Départ le ..... à ..... h .....

Nombre	Nature de la marchandise	Poids	Valeur déclarée	Port dû <input type="checkbox"/>	Port payé <input type="checkbox"/>
1	Caisse 2.6 MTR	ST			
				Prix du transport	.....
				Taxes diverses	.....
				Contre remboursement	.....
				Total H.T.	.....
				TVA %	.....
				Total T.T.C. Euros	.....

Palettes	Chargées chez l'expéditeur	Rendues à l'expéditeur	Livrées au destinataire	Rendues par le destinataire	Non rendues / à reprendre	Marchandises dangereuses <input type="checkbox"/> OUI <input type="checkbox"/> NON	Transport sous température dirigée <input type="checkbox"/> OUI <input type="checkbox"/> NON

Nom, cachet du transporteur	Nom, cachet et signature du remettant	Nom, cachet du transporteur	Nom, cachet et signature du destinataire
Le 30/09/14 	Le 30/09/14 	Le 30/09/14 	Le 30-09-2014 Yanchun Dao
*Réserves éventuelles :	*Réserves éventuelles :	*Réserves éventuelles :	*Réserves éventuelles :



# ATTARD TRANS

SA au capital de 50 000 €  
Les Jonquiers de Provence - Route de Martigues  
**13170 LES PENNES MIRABEAU**  
Tél. : 04 42 02 16 08 - Fax : 04 42 02 13 19  
RCS Aix en Provence 398 845 313 - Code NAF 4941 A - TVA FR 17 398 845 313

## LETTE DE VOITURE NATIONALE

### N° F 000798

ORDRE DE MISSION (Date et heure)  
DEBUT :  
FIN :

#### EX POUR LE DESTINATAIRE

DÉLIVRÉ LE : CONDUCTEUR : IMMATRICULATION : MOTEUR PA237 XM  
DONNEUR D'ORDRES : REMORQUE :

NOM : Eurocoris EXPÉDITEUR - REMETTANT ES  
ADRESSE : PCAN - Aubagne  
NOM : ITER DESTINATAIRE  
ADRESSE : Ab de Viana  
33/51 PAUL Es denace

NBRE	NATURE DES MARCHANDISES	POIDS	Longueur ou volume occupé	VALEUR DÉCLARÉE	DÉTAILS DES FRAIS	PORT DÙ ou PORT PAYÉ
<u>4 caisses</u>	<u>=</u>	<u>17060</u>			Prix du transport	
					Taxe de valeur déclarée	
					Taxe de Contre-Remb.	
					Terme fixe	
					<b>TOTAL H.T.</b>	
					T.V.A.	
					<b>TOTAL T.T.C.</b>	
					Débours - Contre-Remb.	
					<b>TOTAL A RECOURRER</b>	

MARCHANDISES DANGEREUSES <input type="checkbox"/>	CHARGÉES CHEZ L'EXPÉDITEUR <input type="checkbox"/>	REMISES A L'EXPÉDITEUR <input type="checkbox"/>	LIVRÉES AU DESTINATAIRE <input type="checkbox"/>	RENDUES PAR LE DESTINATAIRE <input type="checkbox"/>	NON RENDUES A REPRENDRE <input type="checkbox"/>	PALETTES <input type="checkbox"/>
SOUS TEMPÉRATURE DIRIGÉE <input type="checkbox"/>						BACS <input type="checkbox"/>
DÉCLARATION / PÈCES JOINTES <input type="checkbox"/>						ROLLS <input type="checkbox"/>

**RECEPTION - OBSERVATIONS - RESERVES EVENTUELLES**

TRANSPORTEUR	EXPÉDITEUR - REMETTANT*	DESTINATAIRE*
DATE - SIGNATURE	DATE - CACHET - SIGNATURE	DATE - CACHET - SIGNATURE

**CHARGEMENT**                      **DOCUMENT DE SUIVI**                      **DÉCHARGEMENT**

DATE ET HEURE D'ARRIVÉE : LE 7/10/14 à 8 h 00                      DATE ET HEURE D'ARRIVÉE : LE 7/10/14 à 13 h 00  
PRESTATIONS ANNEXES EXECUTÉES PAR LE CONDUCTEUR : Chargement OUI  NON                       PRESTATIONS ANNEXES EXECUTÉES PAR LE CONDUCTEUR : Déchargement OUI  NON

Autres :  
DATE ET HEURE DE DÉPART LE : 7/10/14 à 15 h 00                      DATE ET HEURE DE DÉPART LE : 7/10/14 à 13 h 50

SIGNATURE DU CONDUCTEUR	NOM ET SIGNATURE DE L'EXPÉDITEUR - REMETTANT	SIGNATURE DU CONDUCTEUR	NOM ET SIGNATURE DU DESTINATAIRE
	<u>7/10/14</u>		<u>Yancku Diad</u>

DATE ET HEURE D'ARRIVÉE AU LIEU DE DÉCHARGEMENT DEMANDÉES PAR L'EXPÉDITEUR - REMETTANT : LE \_\_\_\_\_ à \_\_\_\_\_ h \_\_\_\_\_

MODÈLE CONFORME A L'ARRÊTÉ DU 9-11-99

CONDITIONS GÉNÉRALES AU VERSO

\*LE REFUS NON MOTIVÉ DE SIGNATURE ENGAGE LA RESPONSABILITÉ DES INTÉRÉSÉS



Dakota No.360 Col. Nápoles  
 Deleg. Benito Juárez  
 03810 México, D.F.  
 55.23.35.06 56.69.40.98  
 Tels. 56.87.00.20 56.87.94.16  
 55.23.51.56 55.43.90.83  
 Fax: 55.23.25.05  
 e-mail cotrans@mail.internet.com.mx

**RECIBO DE CARGA**

FECHA / DATE : 08/08/2014

SHIPPER : Transformadores y Tecnología SA de CV  
 Km. 73,540 Ant. Carretera Federal México-Querétaro  
 42855 Tepejí del Río de Ocampo  
 Estado de Hidalgo  
 Atención Julio Ceron / Raúl Perea

REFERENCIA : 14-044AT  
 COMMODITY : TRANSFORMADORES ELECTRICOS

MARCAS	CANTIDAD	PESO	DIMENSIONES
VOLTAGE TRANSFORMER	12 CAJAS	26,000 KGS	109.84 M3
13019416-1			
13019416-2			
13019416-3			
13019416-4			
13019417-1			
13019417-2			
13019416-5			
13019416-6			
13019416-7			
13019416-8			
13019417-3			
13019417-5			
<b>TOTAL</b>	<b>12 CAJAS</b>	<b>26,000 KGS</b>	

PLACAS / OPERADOR

FMS	54	182ET9	JOSE GERARDO BANDA CASTILLO
-----	----	--------	-----------------------------

FECHA DE CARGA TEPEJI DEL RIO : 07/08/2014

CONFIRMACION DE ENTREGA DE LA MERCANCIA ARRIBA DESCRITA EN APARENTEMENTE BUEN ESTADO Y CONDICIONES:

FECHA: ..... NOMBRE: Jose Gerardo FIRMA: .....



Dakota No.360 Col. Nápoles  
 Deleg. Benito Juárez  
 03810 México, D.F.  
 55.23.35.06 56.89.40.98  
 Tels. 56.87.00.20 56.87.94.16  
 55.23.51.56 55.43.90.83  
 Fax: 55.23.25.05  
 e-mail cotrans@mail.internet.com.mx

**RECIBO DE CARGA**

FECHA / DATE 09/08/2014

SHIPPER Transformadores y Tecnología SA de CV  
 Km. 73,540 Ant. Carretera Federal México-Querétaro  
 42855 Tepejí del Río de Ocampo  
 Estado de Hidalgo  
 Atención Julio Ceron / Raúl Perea

REFERENCIA : 14-044AT  
 COMMODITY : TRANSFORMADORES ELECTRICOS

MARCAS	CANTIDAD	PESO	DIMENSIONES
VOLTAGE TRANSFORMER	12 CAJAS	26,800 KGS	90.08 M3
13019417-4			
13019417-6			
13019417-7			
13019417-8			
13019417-9			
13019417-10			
13019417-11			
13019417-12			
13019416-9			
13019416-10			
13019416-11			
13019416-12			
<b>TOTAL</b>	<b>12 CAJAS</b>	<b>26,800 KGS</b>	

PLACAS / OPERADOR

FMS	122	311-DN5	SIMON ALEJANDRO CARRILLO ALONSO
-----	-----	---------	---------------------------------

FECHA DE CARGA TEPEJI DEL RIO : 09/08/2014

CONFIRMACION DE ENTREGA DE LA MERCANCIA ARRIBA DESCRITA EN APARENTEMENTE BUEN ESTADO Y CONDICIONES:

FECHA: ..... NOMBRE Simon Carrillo FIRMA:

## Special Note:

The following completed Appendix III came from a previous revision of the Delivery report prior to Appendix III being separated into separate appendices (III and IV). Therefore the title does not match the index, but the content is still valid.

### Earlier Delivery Report (revision 1)

- Appendix III – Final Inspection And Transfer of Ownership

### Revised for Final Delivery Report (revision 2)

- Appendix III – Final Inspection
- Appendix IV – Transfer of Ownership

# APPENDIX III

## Final Inspection And Transfer of Ownership

Description of Shipment: ITER SSEN HV Current Transformers and HV Potential Transformers

Results of Final Inspection:

- Satisfactory
- Unsatisfactory
- Not required

Comments (attach additional sheets, if necessary):

• Tests on units	CT1000
	CT1004
were successful	

Name and Title of ITER IO Representative: J. HOURTOULE

Signature of ITER IO Representative: 

Date (must be within 2 months of preliminary inspection): 27/04/2015

*After completion, attach and scan this document and e-mail to [bjedic@pppl.gov](mailto:bjedic@pppl.gov) and [joel.hourtoule@iter.org](mailto:joel.hourtoule@iter.org)*

# APPENDIX IV

## Transfer of Ownership

The purpose of this form is to transfer the ownership of the following items from the Princeton Plasma Physics Laboratory, located in Princeton, New Jersey, USA to the ITER International Fusion Energy Organization, Route de Vinon-sur-Verdon, 13115 Saint-Paul-lès-Durance, France, in accordance with Article I.3 of the Main document of PA 4.1.P8C.US.01:

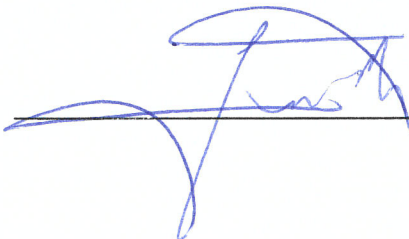
ITER SSEN HV Current Transformers and Potential Transformers delivered and received at the ITER site on 30 September 2014. Details of the items being transferred can be found in Table I of the Final Delivery Report of which this is an Appendix.

### TRANSFER OF OWNERSHIP APPROVALS:

I agree to the transfer of ownership of the items identified above:

Submitted by US DA TRO:  Date: 6 Jan 2015

I agree to accept the transfer of ownership of the items identified above:

Accepted by ITER IO TRO:  Date: 19 Jan 2015

*Final signed form to be scanned and sent to US DA TRO neumeyer@pppl.gov and bjedic@pppl.gov with original retained in file by ITER IO TRO*

# APPENDIX V

## Handling and Storage Documentation

No additional information

# APPENDIX VI

## Additional Documentation

---



## Special Note:

Due to the container damage sustained to the packaging of the components as detailed in “Appendix I – Preliminary Inspection”, special testing was contracted through the manufacturer to ensure the damage to the packaging did not damage the contents.

The following e-mail from ABB/Arteche (supplier) and test report from LCOE (testing company) confirmed that the damage was only to the packaging and that the components within the packaging were unharmed and fit for service.

**From:** [Cheryl Harrod](#)  
**To:** [John Dellas](#)  
**Cc:** [Charles Neumeyer](#); [Barry Jedic](#); [Dan T. Tucker](#)  
**Subject:** RE: ITER Site Testing of ABB/Arteche HV CT's conducted on April 22nd  
**Date:** Wednesday, April 29, 2015 12:43:45 PM  
**Attachments:** [image003.png](#)  
[Report PPPL\\_2015043L0189M2.pdf](#)

---

Hi John,  
See attached and below.

Hola Sherry.

Attached you can find the final report.  
After physical review only in the unit # 2, shown a small dent in the top cover , however, no affect the function of the unit.  
ie. the units are Ok. To operate correctly.  
Regards



**Gerardo Jiménez**  
Service Engineer  
Servicio y Asistencia Técnica  
**INSTRUMENT TRANSFORMERS**

Sincerely,  
Sherry Harrod  
ABB Kuhlman  
HVIT Customer Service  
[cheryl.harrod@us.abb.com](mailto:cheryl.harrod@us.abb.com)  
PH: 859-219-6045  
FAX: 859-223-2025  
CELL: 859-361-0642

---

**From:** John Dellas [<mailto:jdellas@pppl.gov>]  
**Sent:** Tuesday, April 28, 2015 9:27 AM  
**To:** Cheryl Harrod  
**Cc:** Charles Neumeyer; Barry Jedic; Dan T. Tucker  
**Subject:** FW: ITER Site Testing of ABB/Arteche HV CT's conducted on April 22nd

Hello Sherry,

I did not receive a response to my inquiry below. When can we expect to receive the test report?

Thank you.

Best regards,

John Dellas

---

**From:** John Dellas [mailto:[jdellas@pppl.gov](mailto:jdellas@pppl.gov)]  
**Sent:** Friday, April 24, 2015 8:14 AM  
**To:** 'Cheryl Harrod'  
**Subject:** ITER Site Testing of ABB/Arteche HV CT's conducted on April 22nd

Hello Sherry,

I understand that the testing at the ITER site was successfully completed on Wednesday. Please can you let me know when we can expect to receive the test report?

Thank you.

Best regards,

John Dellas



John Dellas  
Princeton Plasma Physics Laboratory  
PO Box 451 – MS41 - B332  
Princeton, NJ 08543-0451  
Phone: (609)243-2173  
Fax: (609)243-3266

# LCOE

**LABORATORIO CENTRAL OFICIAL DE  
ELECTROTECNIA**  
FUNDACIÓN PARA EL FOMENTO DE LA INNOVACIÓN INDUSTRIAL  
Centro Tecnológico UPM – Tecnogetafe  
C/ Eric Kandel, 1 – 28906 Getafe (Madrid)  
Teléfono: +34 91 491 81 68  
www.f2i2.net

## TEST REPORT

(Issued in electronic format)

## 2015043L0189M2

**TEST OBJECT:** CURRENT TRANSFORMERS

**MANUFACTURER:** KUHLMAN ELECTRIC / ARTECHE

**MODEL:** CA-420

**REQUESTED BY:** HV Test, S.A. de C.V.  
Eléctricos 9 y 10 Parque Ind. Chichimeco Jesus Maria,  
Aguascalientes, 20900 México for::  
  
TRANSFORMADORES Y TECNOLOGIA S.A. de C.V.  
Ant. Carretera Federal México - Querétaro km. 73.540  
42855 Tepeji del Rio de Ocampo Hidalgo, México.

**TEST DATE:** April 22<sup>nd</sup>, 2015

**ISSUE DATE:** April 27<sup>th</sup>, 2015

**This test report has 9 pages.**

Authorized signature:

D. Sergio Ramos Guallart  
Technical responsible for On Site tests.

*This Certificate may not be partially reproduced, except with the prior written permission of the issuing laboratory and ENAC. The results of this Certificate refer to the moment and conditions in which the measurements were made. The issuing Laboratory assumes no responsibility for damages ensuing misuse of the calibrated instruments.*

INDEX

1. DEVICES UNDER TEST.....	3
2. GENERAL ON TESTS.....	5
3. ELECTRICAL POWER FACTOR MEASUREMENT.....	6
4. INSULATION RESISTANCE MEASUREMENT.....	7
5. TURNS RATIO MEASUREMENT.....	8

## 1. DEVICES UNDER TEST.

### 1.1. Description of the samples.

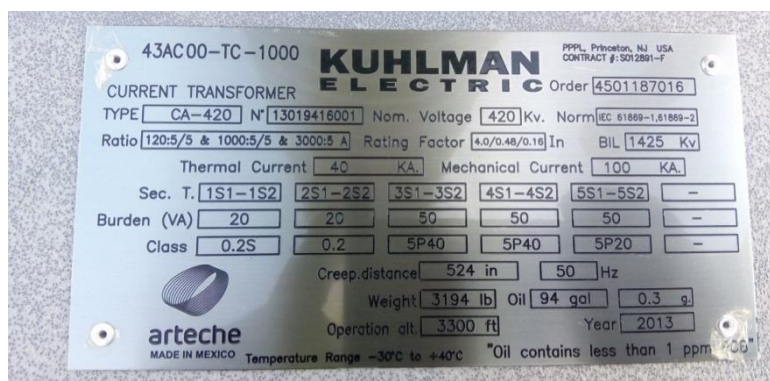
Three current transformers located in ITER facilities (storage area).

Manufacturer: KUHLMAN ELECTRIC / ARTECHE  
 Type: CA-420  
 Rated voltage: 420 kV  
 Ratio: 120:5/5 & 1000:5/5 & 3000:5 A  
 Accuracy class: 0.2S (1S1-1S2)  
 0.2 (2S1-2S2)  
 5P40 (3S1-3S2) (4S1-4S2)  
 5P20 (5S1-5S2)

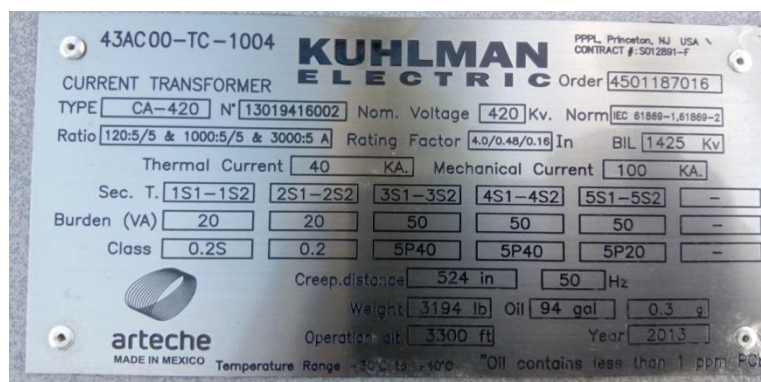
Year: 2013  
 Order: 4501187016

Serial: 13019416001 (sample #1)  
 13019416002 (sample #2)  
 13019416003 (sample #3)

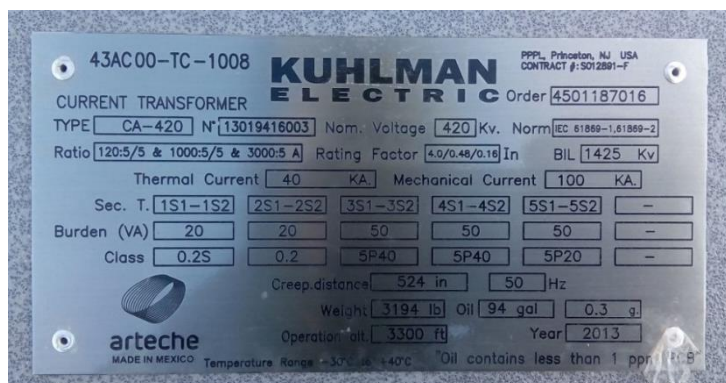
Photographs n° 1 to n° 3 below show respectively the marking plate of the tested transformers.



Photograph n° 1. Marking plate of sample #1.



Photograph n° 2. Marking plate of sample #2.



Photograph n° 3. Marking plate of sample #3.

## 1.2. Samples condition.

ITER has reported to LCOE technicians that:

- Transformer ref. 13019416001 (sample #1) showed damages in the packing.
- Transformer ref. 13019416002 (sample #2) showed damages in the packing and a dent in the upper cover (see photograph n° 4).
- Transformer ref. 13019416003 (sample #3) did not show any damage.

The visual inspection made by LCOE did not show additional damages other than indicated above.



Photograph n° 4. Dent in sample #2.

### 3. GENERAL ON TESTS

#### 3.1. General information.

Tests were made on site at ITER facilities, located at ITER Organization, Route de Vinon-sur-Verdon - CS 90 046 - 13067 St Paul Lez Durance Cedex – France.

Tests were made by:

<u>Name:</u>	<u>Company:</u>
Mr. Enrique Falagán Rodríguez.	LCOE
Mr. Pablo Cerezo Gallego.	LCOE

#### 3.2. Measurement uncertainty.

Uncertainty associated to the test measurements is calculated and at disposal of the client.

All the equipment used was suitably calibrated at test dates.

#### 3.3. Measurement instruments.

Instruments used to perform the tests were (LCOE internal codes):

- Megger: III 1 MEG 001
- Turns ratio meter Haefely: III 1 PTE 001
- Tan delta measuring system: III-2-PM61-001

NO TEXT UNDER THIS LINE



#### 4. ELECTRICAL POWER FACTOR MEASUREMENT.

##### Test procedure:

Measurement of the power factor was performed using a dedicated Tan  $\delta$  measuring instrument, with a test voltage of 10 kV at a frequency of 50 Hz.

Power factor (PF) was calculated from the measured tan  $\delta$  (dissipation factor, DF) value by means of the following equation:

$$PF = \frac{DF}{\sqrt{1 + DF^2}}$$

Typical test circuit is shown in figure 1 (source: product manual).

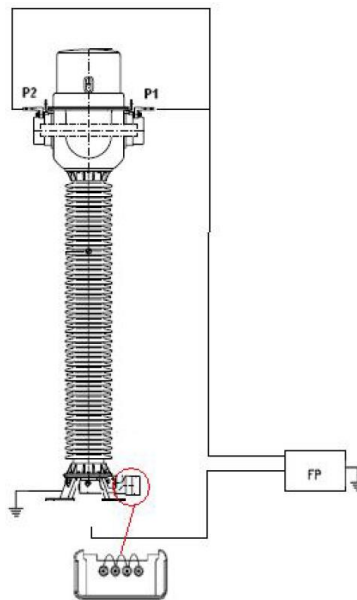


Figure 1.

##### Test results:

Table 1 below shows the results of the electrical power factor measurement of the three samples:

Table n° 1. Electrical power factor measurement results.

Sample under test	Test voltage	Tan delta	Electrical power factor (*)
Ref. 13019416001	10028 V	0.3302	0.330 %
Ref. 13019416002	10027 V	0.3302	0.330 %
Ref. 13019416003	10025 V	0.3266	0.327 %

(\*) According to the product manual, typical values should not exceed 0.5 %

## 5. INSULATION RESISTANCE MEASUREMENT.

### Test procedure:

Insulation resistance measurement was performed applying a direct voltage supplied by a Megger type instrument, with a test voltage of 2500 V DC.

Insulation resistance was measured:

- On insulation between Primary winding and secondary windings (connected in short circuit and to earth).
- Between Secondary winding/s and earth.
- Between secondary windings (if more than one)

Typical test circuits are shown in figure 2 (source: product manual).

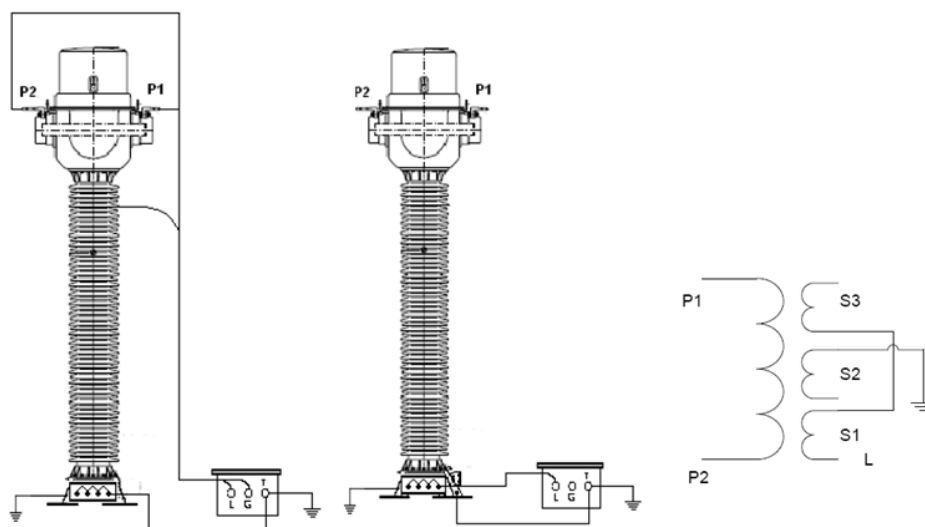


Figure 2.

### Test results:

Table 2 below shows the results of the insulation resistance measurement of the three samples:

Table nº 2. Insulation resistance measurement results.

Sample under test	Winding under test					
	Primary	1S1-1S2	2S1-2S2	3S1-3S2	4S1-4S2	5S1-5S2
Ref. 13019416001	212 GΩ	154 GΩ	162 GΩ	165 GΩ	162 GΩ	172 GΩ
Ref. 13019416002	230 GΩ	242 GΩ	244 GΩ	232 GΩ	228 GΩ	220 GΩ
Ref. 13019416003	206 GΩ	168 GΩ	163 GΩ	167 GΩ	167 GΩ	176 GΩ

Measured values do not show a fault in the insulation of the transformers.

## 6. TURNS RATIO MEASUREMENT.

### Test procedure:

The measurement was made with a suitable transformer turn ratio instrument.

The transformer was excited through one of the secondary windings while the other secondary windings were connected in short-circuit.

Value of injected current was 10 A at a frequency of 50 Hz.

The measurement was repeated for each of the secondary windings.

Typical test circuit is shown in figure 3 (source: product manual).

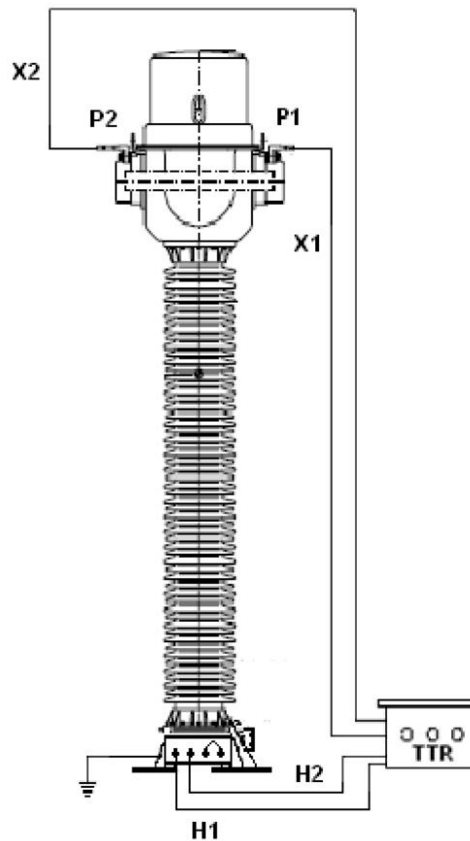


Figure 3.

**Test results:**

Table 3 below shows the results of the turns ratio measurements over the three samples:

Table nº 3. Turns ratio measurement results.

Sample under test	Windings	Rated turn ratio	Measured turn ratio	Ratio error (%)	Phase error (min)
<b>Ref. 13019416001</b>	1P-1S	24	23.988	-0.048	0.014
	1P-2S	24	23.987	-0.052	-0.007
	1P-3S	200	200.10	0.048	0.003
	1P-4S	200	200.07	0.033	-0.011
	1P-5S	600	600.53	0.089	0.102
<b>Ref. 13019416002</b>	1P-1S	24	23.984	-0.065	0.008
	1P-2S	24	23.985	-0.061	-0.002
	1P-3S	200	199.97	-0.017	-0.005
	1P-4S	200	199.97	-0.017	-0.016
	1P-5S	600	600.47	0.079	0.069
<b>Ref. 13019416003</b>	1P-1S	24	23.971	-0.119	-0.005
	1P-2S	24	23.977	-0.094	0.014
	1P-3S	200	200.09	0.043	-0.004
	1P-4S	200	200.02	0.008	-0.009
	1P-5S	600	600.35	0.059	0.093

Measured error values are inside the precision limits according to the accuracy class of the windings under test.

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