European Network of Transmission System Operators for Electricity

COMPLIANCE AUDIT REPORT

CREOS

27 – 28 OCTOBER 2015

COMPLIANCE AUDIT CONDUCTED IN THE NATIONAL CONTROL CENTRE IN HEISDORF BY ENTSO-E RGCE SG CME
COMPILANCE AUDIT REPORT
CREOS – 27 – 28 OCTOBER 2015

DISCLAIMER

The present Compliance Audit Report is based on the information as provided by the audited company. This report is in no way a guarantee that security and reliability on the system of the audited company and/or on the whole synchronously interconnected system of the Regional Group Continental Europe (RGCE) is ensured. This report cannot be considered as a certification of whatever form. Finally, this report does not as such have any impact on the compliance, by the audited company and/or by any other member of ENTSO-E, with the RGCE Operation Handbook and/or any other relevant applicable standard.
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1 EXECUTIVE SUMMARY

1.1 COMPLIANCE MONITORING IN ENTSO-E RGCE

The mission of the ENTSO-E System Operation Committee Regional Group Continental Europe (RGCE) is to improve the reliability and security of the interconnected power system in Continental Europe through developing and enforcing RGCE Operation Handbook (OH) standards, monitoring the interconnected power system and assessing its future adequacy. The RGCE member TSOs are subject to compliance with all approved OH standards. The Compliance Monitoring Program (CMP) is the RGCE program that monitors and assesses compliance with these standards via:

- The annual process of self-assessment, which is applied to all TSOs, as well as
- The annual process of mandatory on-site compliance audits, which is applied to a certain number of TSOs chosen on a rotating base either directly (in case of doubts that a certain TSO complies with OH Standards) or randomly.

Sub-Group Compliance Monitoring & Enforcement (SG CME) is in charge of performing above-mentioned two processes. The year 2015 is the 6th year of conducting mandatory compliance audits. SG CME performed 4 voluntary compliance audits in 2008-2009 and 36 mandatory audits in 2010-2015.

1.2 AUDITED TSO

The RGCE member TSO CREOS, was chosen for a Compliance Audit in 2015. CME conducted the audit on 27 and 28 October 2015 at CREOS premises: the National Control Centre (NCC) located in Heisdorf.

The onsite-audit focused on the training provided to the 9 dispatchers working in the National Control Centre.

1.3 AUDITED OH STANDARDS

The Compliance Audit encompassed 14 requirements/standards of Operation Handbook Policy 8 Operational Training. In 2014, CREOS made compliance declarations in the self-assessment process for all standards of OH Policy 8 and revised them during the pre-audit phase updating when appropriate. Assessments have been checked against their evidence during the audit.

1.4 RESULTS

The Audit Team audited 14 requirements/standards of Policy 8 and concluded that CREOS is fully compliant with ten and sufficiently compliant with four requirements/standards.

During the onsite audit, the Audit Team had the opportunity of visiting the national control room what helped the Audit Team to better understand the organisation and processes within the organisation of CREOS.

CREOS was well prepared for the audit. The documents considered as evidence were available during the audit. All these documents were a good basis for proving the compliance level of CREOS with the audited standards. Requests for additional material were promptly met by CREOS.

The general impression of the Audit Team is that CREOS has good practises in training the dispatchers but that the entire training process and procedures need to be better documented. Therefore the recommendation from the Audit Team to CREOS regarding the OH P8 is to improve on the formalisation of the process.

In the case of this Compliance Audit, all preconditions for a successful audit were fulfilled and the Audit Team wishes to express its gratitude to the CREOS staff involved in the Audit and the company management.

Table 1 describes CREOS compliance declaration with Policy 8 Requirements and standards in self-assessment questionnaires 2009 and 2014 and the compliance audit questionnaire 2015 with compliance level suggestion by the Audit Team after reviewing the evidence for the audited standards.
## Table 1: Compliance level changes for the audited OH standards

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<tbody>
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<td>P8-A-R1 TRAINING PROGRAM</td>
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<td>P8-A-R2 INITIAL PROGRAM</td>
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<td>P8-A-R4 ENGLISH TRAINING</td>
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<tr>
<td>P8-A-S2 TSO REFERENCE LIST OF ENGLISH TECHNICAL TERMS</td>
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<td>P8-B-R1 EXPERIENCE EXCHANGE</td>
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<td>P8-B-S1 COMMON TRAINING</td>
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<td>P8-C-S1 COORDINATION OF THE TRAINING</td>
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<td>P8-C-S2 ORGANIZATION</td>
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<tr>
<td>P8-C-S3 EVALUATION</td>
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<td>P8-C-S4 FIRST ACCREDITATION</td>
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<td>P8-C-S5 TRAINERS’ SELECTION</td>
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<tr>
<td>P8-C-S6 TRAINING OF TRAINERS</td>
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<td>FCo</td>
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2 Audit Representatives

The Audit Team has the task to prepare and perform the Compliance Audit as well as to develop the corresponding audit report. The Audit Team composition is given in Table 2. The TSO subject to a compliance audit may object any member of the Audit Team on the basis of a conflict of interests or the existence of other circumstances that could interfere with the impartial performance of his or her duties. The audited TSO is obligated to express its concerns with the proposed team member four weeks prior to the team’s arrival on-site. No objection was expressed by CREOS. CREOS personnel involved in the audit are given in Table 3.

<table>
<thead>
<tr>
<th>Table 2. SG CME Audit Team</th>
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<tbody>
<tr>
<td><strong>Audit Team role</strong></td>
</tr>
<tr>
<td>Audit team leader</td>
</tr>
<tr>
<td>Audit team member</td>
</tr>
<tr>
<td>Audit team member</td>
</tr>
<tr>
<td>Compliance Monitoring Advisor</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 3. CREOS Audit Staff</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Function in the company</strong></td>
</tr>
<tr>
<td>Head of Dispatching Department</td>
</tr>
<tr>
<td>Head of Power High Voltage Grid</td>
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</tbody>
</table>
3 AUDIT PLAN

3.1 GENERAL PROCEDURES

The audit covered a chosen set of Operation Handbook (OH) standards, which had already been monitored within the Compliance Monitoring Program 2009 and 2014 self-assessment process.

The completed Audit Worksheet was sent by CREOS via email to the ENTSO-E Secretariat and carbon copies to all Audit Team members four weeks before the first audit day. The complete schedule of the audit process for CREOS is given in Table 4.

In preparation for the audit, CREOS organised its supporting compliance documentation that is the evidence of the compliance with audited standards. The ENTSO-E RGCE SG CME’s audit team acknowledges an excellent preparation for the audit.

All documentation (evidence) required for the onsite audit of each standard was available in electronic format during the audit. The Control Area Manager and/or other responsible expert personnel were available during the audit to provide guidance to the Audit Team on where to look in the documentation for compliance to the OH standard and, if requested, to give further explanation on criteria and procedures implemented.

All documentation will be considered as confidential audit records and treated as such. The Audit Team prepares this report regarding the audit findings that will be published upon decision of the RGCE Plenary.

Table 4. SCHEDULE FOR THE COMPLIANCE AUDIT

<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
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<tbody>
<tr>
<td>Submittal of the audit material on behalf of the Audit Team</td>
<td>8 weeks prior to audit 2.9.2015</td>
</tr>
<tr>
<td>Objection or concern about audit team personnel</td>
<td>5 weeks prior to audit 22.9.2015</td>
</tr>
<tr>
<td>Submittal of the completed Audit Worksheet to the Audit Team by CREOS</td>
<td>4 weeks prior to audit 30.9.2015</td>
</tr>
<tr>
<td>Initial feedback based on the submitted Audit Worksheet sent to CREOS by the Audit Team</td>
<td>2 working days prior to audit 23.10.2015</td>
</tr>
<tr>
<td>Opening meeting of the Audit Team and CAM of CREOS</td>
<td>First audit day, 27.10.2015 09:00 – 09:30</td>
</tr>
<tr>
<td>(1) Introduction of the Audit Team members,</td>
<td></td>
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<tr>
<td>(2) Description of how the on-site audit will be conducted,</td>
<td></td>
</tr>
<tr>
<td>(3) Discussion on how confidential information will be handled,</td>
<td></td>
</tr>
<tr>
<td>(4) Discussion on data access required by the Audit Team,</td>
<td></td>
</tr>
<tr>
<td>(5) Announcement that CREOS will be asked to provide feedback on the audit process and results,</td>
<td></td>
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<tr>
<td>(6) Presentation of the TSO and TSO’s organization.</td>
<td></td>
</tr>
<tr>
<td>Start of the OH standards’ review*</td>
<td>First audit day, 27.10.2015 09:30 – 17:30</td>
</tr>
<tr>
<td>Continuation of the OH standards’ review</td>
<td>Second audit day, 28.10.2015 09:00 – 12:30</td>
</tr>
<tr>
<td>Internal Audit Team meeting</td>
<td>Second audit day, 28.10.2015 12:30 – 14:00</td>
</tr>
<tr>
<td>Closing meeting with CAM of CREOS</td>
<td>Second audit day,</td>
</tr>
</tbody>
</table>
(1) Presentation of preliminary audit findings and recommendations to be included on the draft audit report, with a strong emphasis on the evidence for each compliance level or non-compliance identified by the Audit Team,
(2) Discussion and feedback by CREOS with a possibility to object the findings,
(3) In case of any non-compliance or lack of evidence of compliance, first draft proposal of the TSO on an adequate mitigation plan, including deadline. Should such an immediate proposal not be possible, the TSO must submit it afterwards in written copy within seven days.

Delivery of the draft audit report to CREOS for review 2 weeks after the audit 12.11.2015
Remarks by CREOS 4 weeks after the audit 25.11.2015
Delivery of the final audit report to CREOS 6 weeks after the audit 9.12.2015
Acknowledgement of the final Audit Report by ENTSO-E RGCE Plenary and decision on its possible internal or external publishing. RGCE Plenary in 2016

(*) A visit in the control room has been performed by the Audit Team during the standards’ review.

3.2 Scope

The objective of Compliance Audits in 2015 is to check all the requirements/standards from OH Policy 8. These standards were also monitored in the 2009 and 2014 regular compliance processes via the self-assessment questionnaire.

The scope of a compliance audit encompasses issues which are directly related to the compliance of the audited TSO with the investigated RGCE OH standards and issues which make a general background for the implementation of the OH at the audited TSO.

Directly related issues
Issues directly related to the audited RGCE OH standards:

- Existence of TSO’s addenda and/or non-compliance declarations/non-compliance self-reports
- Follow-up of the TSO’s mitigation plans to remove the declared non-compliances
- Self-assessment questionnaires of 2009 and 2014 stored at the ENTSO-E Secretariat related to audited TSO concerning the audited OH standards
- Audit Worksheet (AW) 2015
- Information and explanations which the Audit Team receives on site

General background
The compliance audit also encompasses issues of general nature listed below:

- General policies of the audited TSO rules and procedures for the control centre(s) related to the audited standards
- Procedures to control the application of the audited OH standards and their follow-up
- Procedures to improve the compliance with the audited OH standards
- TSO’s internal report related to the implementation of the audited OH standards
- TSO’s internal audits and/or documentation concerning implementation of OH standards
3.3 METHODOLOGY

The CME group prepared an audit schedule defining the chronological order of the compliance audit, which the audited TSO accepted without comment. The Audit Team reviewed the existing material on the audited TSO and its neighbouring TSOs already collected through the self-assessment process in the 2009 and 2014 self-assessment questionnaires. It also processed (assessed) the answers in the 2015 Audit Worksheet filled in by the audited TSO.

The applied methodology includes audit criteria and expectations based on best practices. The adopted criteria are objective, measurable (if possible), complete and relevant to the objectives. At defining the audit methodology, the auditors identified the potential sources of audit evidence and estimated the amount and type of evidence needed.

The Audit Team used an Audit Worksheet (see chapter 4) for reviewing the audited OH standards. The purpose of the AW is to ensure consistency and fairness. By using the AW the Audit Team documented the material reviewed and the observations made. One of the main reasons for an on-site visit is to review the existing documentation and to interview the staff. Thus, the auditors obtain “objective evidence” which support the self-assessed declarations of the audited TSO. The Audit Team determined whether the evidence presented by the TSO is sufficient. They did this by assessing the relevance, validity and reliability of the information and documentation presented.

It was the responsibility of the audited TSO to provide evidence of compliance with all audited OH standards. In most cases the evidence was in written form like documents, plans, programs or records. In some cases the evidence consisted of a review of computerized records or additional supporting material provided at interviews by the staff of the audited TSO.

3.4 EVALUATION PRINCIPLES

Preparatory phase – activities in charge of Audited TSO

- Inspection of the exact wording of each audited OH standard and of additional questions formulated by the CME
- Fill in the audit questionnaire and submit to the Audit Team before the audit
- Identification of documents and other material to present to the auditors in order to demonstrate its compliance level with each OH standard

Preparatory phase – activities in charge of CME Audit team

- Identification of compliance level declaration inconsistency with neighbouring TSOs (Self-assessment questionnaire 2014 cross-border check regarding compliance level declarations)
- Analysis of the explanations and comments which the audited TSO made in the self-assessment 2014 and audit questionnaires 2015 in written form in order to evaluate the quality of explanations and comments
- Identification of the missing explanations in the self-assessment 2014 and audit questionnaire 2015
- Analysis of the improvements achieved during the implementation of mitigation and improvement plans declared in the MLA Addendum/Addenda, in the self-assessment questionnaire 2014, in the Audit Worksheet 2015 and in Compliance Audit in 2012 in case of non-compliance and sufficient compliance or recommendations
Audit phase

- Request to the audited TSO to give additional explanations, especially related to standards which were not or not fully addressed by documents and other material mentioned in the self-assessment questionnaire 2014 and audit questionnaire 2015.
  - The goal was to improve the quality of the explanations.
- Request to the audited TSO to present that evidence and, if necessary, additional evidence, in printed or electronic form
  - The goal was to improve the quality of the presented evidence.
  - The goal was to present material relevant to the audited OH standard at all.
- Request to the audited TSO to remark the titles of all presented documents, their relevant chapters and even relevant passages.
- Request to the audited TSO to provide further written explanations related to the presented material.

3.5 Confidentiality

By signing this report the Audit Team members assure that they will maintain the confidentiality of information obtained during the compliance audit and drafting of the audit report. Moreover, they express their readiness to sign a supplementary confidentiality agreement, if the audited TSO assert such a claim.
4 AUDIT WORKSHEET FOR 2015 ONSITE AUDIT

4.1 OH REQUIREMENT P8-A-R1. TRAINING PROGRAM

**SELF-ASSESSMENT QUESTIONNAIRE 2014**

<table>
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<th>P8-A-R1</th>
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**Training program.** Each TSO provides its dispatchers with a structured training program that is designed to develop and improve their skills. This program includes initial and continuous parts. The training has to be permanently adapted to the operational evolutions. All the issues of the training have to be regularly checked and updated.

**Compliance Level:** FCo

Concise explanation and list of evidence for declared compliance level:

Training program. Each TSO provides its dispatchers with a structured training program that is designed to develop and improve their skills. This program includes initial and continuous parts. The training has to be permanently adapted to the operational evolutions. All the issues of the training have to be regularly checked and updated.

**Additional Questions**

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
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<tbody>
<tr>
<td>Do you have a training program including both initial and continuous part?</td>
<td>yes</td>
</tr>
<tr>
<td>Do you adapt the training program according to the operational evolutions?</td>
<td>yes</td>
</tr>
<tr>
<td>Do you have criteria to check whether the training program is in accordance with the current operational challenges?</td>
<td>yes</td>
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**AUDIT QUESTIONNAIRE 2015**

<table>
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**Training program.** Each TSO provides its dispatchers with a structured training program that is designed to develop and improve their skills. This program includes initial and continuous parts. The training has to be permanently adapted to the operational evolutions. All the issues of the training have to be regularly checked and updated.

**Compliance Level:** FCo
Concise explanation and list of evidence for declared compliance level:
The initial training consists of a theoretical course on switching manoeuvres following VDE 0105-100 (duration 8 hr), a course on protection concepts in the Creos grid (duration 8 hr), a course given by DUtrain on network operation (32 hr) and sessions of simulator training at DUtrain facilities (48 hr). In addition, the trainees are provided with a script concerning the Creos network components. The continuous training concerns inter TSO disturbances, large outages and grid restoration procedures. The continuous training is provided every second year to all our dispatchers by Dutrain (duration 20 hr).

Course DUtrain on network operations:
1-2_Betriebsfuehrung_netze_1; 1-3_Betriebsfuehrung_netze_2_Creos; 1-4_Sternpunkte; 1-5_Leittechnik; 2-2_Betrieb elektrischer Netze_Creos; 2-3_Aufbau von Schaltanlagen_Creos; 2-4_EinleitungEnergie_Creos; 3-1_Wirklstg_und_Frequenz_Creos; 3-2_Schutztechnik_Netze_Creos; 3-3_Spannung_und_Blindleistung_Creos.

Dispatcher training Network Elements:
Basic Grid Structure HV MV LV; Batteries _Guide; Circuit breakers; Current and Voltage transformers; Grid Protection elements; HV cables; Intersec breaker; isolators; Petersen coil; Protection systems and equipment; Ripple Control Description V-2010_PHU; Stations and Substations basic structure; Transformers.

INITIAL TRAINING FOR NEW DISPATCHERS:
2011\RESULTS:2011.pdf
2013\RESULTS:2013.pdf
2014\RESULTS:2014.pdf

Protection concepts:
Neutral point treatment: Sternpunktebehandlung Trafos 220_65kV; Sternpunkterdung
2012 02 09 Protect; 2012 02 22 Grid layout & protection philosophy; Mittelspannungsnetz_Schutz (4)

VDE 0105-100:
VDE 0105-100 Betrieb von elektrischen Anlagen Oktober 2009; VDE 0105-100 Kurzversion

Do you have a mitigation plan to the requirement? Yes ☐ No ☐

In case of an existing Addendum or a Non Compliance Declaration; list of evidence for a mitigation plan, comments:

Additional Questions

Do you have a training program including both initial and continuous part? Yes ☒ No ☐

Do you adapt the training program according to the operational evolutions? Yes ☒ No ☐
Do you have criteria to check whether the training program is in accordance with the current operational challenges?

Yes ☑ No ❏

List of evidence, comments:

As concerns the last question, we don’t have written criteria due to the fact that our grid is of very small size. The new interconnection with the Elia grid will profoundly modify our operational status and we will of course adapt our training program to the fact that Creos will become a real interconnected TSO (albeit with no power plants connected to its grid and no LFC processes).

**AUDIT PHASE**

**COMPLIANCE AUDIT 2015**

**Compliance Level suggestion by the audit team:** FCo

**Explanation for the suggested compliance level:**
The audit team checked the content and the structure of both initial and continuous program. Creos provided evidence (e.g. Grid restoration for Luxembourg training, simulator based training April 2014 and 2012 and the related attendance lists) from the period 2009-2015 for continuous and initial training programs.
The audit team confirmed the good practices used by Creos for the training program, however no formal written training program is currently available.

**Recommendation:**
The audit team strongly recommends to elaborate a formal written training program including continuous and initial parts.
4.2 OH REQUIREMENT P8-A-R2. INITIAL PROGRAM

**P8-A-R2.**

**Initial program.** The initial program consists of a theoretical part and on-the-job part complemented by simulator sessions.

**Compliance Level:** FCo

Concise explanation and list of evidence for declared compliance level:

The training is adjusted to new elements in the network (eg. New lines or transformer etc) resp. to new insights discovered in the common simulation training. Creos takes care that the topology of the grid used in the simulation at DUtrain always reflects the topology of the real grid. The duration of the simulator training is 48 hr (2 x 2 days). See also reply to question 1. Trainees have to accomplish assisted training on the job during 1 year, in parallel they have to follow the courses listed under question 1 and they have to take and succeed in a final exam at Dutrain. This exam consists of a theoretical part and a practical part on the simulator where the candidate has to cope with different fault scenarios which might also happen in reality. The methodology and the time needed by the candidate to solve the problem are deciding factors for his success in the exam.

**Additional Questions**

- Does your initial program consist of theoretical part? **yes**
- Does your initial program consist of on-the-job part? **yes**
- Does your initial program include simulator sessions? **yes**
Concise explanation and list of evidence for declared compliance level:

The training is adjusted to new elements in the network (eg. New lines or transformer etc) resp. to new insights discovered during the simulation at DUtrain always reflects the topology of the real grid. The duration of the simulator training is 48 hr (2 x 2 days). See also reply to question 1. Trainees have to accomplish assisted training on the job during 1 year, in parallel they have to follow the courses listed under question 1 and they have to take and succeed in a final exam at DUtrain. This exam consists of a theoretical part and a practical part on the simulator where the candidate has to cope with different fault scenarios which might also happen in reality. The methodology and the time needed by the candidate to solve the problem are deciding factors for his success in the exam.

Do you have a mitigation plan to the requirement? Yes [ ] No [ ]

In case of an existing Addendum or a Non Compliance Declaration; list of evidence for a mitigation plan, comments:

Additional Questions

Does your initial program consist of theoretical part? Yes [ ] No [ ]

Does your initial program consist of on-the-job part? Yes [ ] No [ ]

Does your initial program include simulator sessions? Yes [ ]

List of evidence, comments:


AUDIT PHASE

COMPLIANCE AUDIT 2015

Compliance Level suggestion by the audit team: FCo

Explanation for the suggested compliance level:
The audit team checked the content and the structure of the initial program and that on the job training part takes at least one year. The initial training is complemented by simulation sessions at DUtrain. Creos provided evidence of the initial training program for 9 dispatchers.
4.3 OH REQUIREMENT P8-A-R3. CONTINUOUS PROGRAM

SELF-ASSESSMENT QUESTIONNAIRE 2014

P8-A-R3.

Continuous program. The continuous program is applied to all dispatchers as soon as they are certified and nominated to a dispatcher position. The main aim of the continuous program is to keep and extend the dispatchers’ knowledge and competences. The continuous program is established to complement the initial program with: advanced theoretical parts; learning of new rules and procedures; additional simulator sessions.

Compliance Level: FCo

Concise explanation and list of evidence for declared compliance level:

The continuous training is done at DUtrain. Advanced theoretical concepts are based on the operation handbook and discussed and explained. New procedures or rules pertaining for instance to neutral point treatment or bus bar protection schemes are discussed. The simulator training relates essentially to grid restoration procedures.

Additional Questions

Are your dispatchers taught on advanced theoretical parts in the continuous training program? yes

Are your dispatchers taught on new rules and procedures in the continuous training program? yes

Do your dispatchers perform additional simulator sessions in the continuous training program? yes

AUDIT QUESTIONNAIRE 2015

P8-A-R3.

Continuous program. The continuous program is applied to all dispatchers as soon as they are certified and nominated to a dispatcher position. The main aim of the continuous program is to keep and extend the dispatchers’ knowledge and competences. The continuous program is established to complement the initial program with: advanced theoretical parts; learning of new rules and procedures; additional simulator sessions.

Compliance Level: FCo
Concise explanation and list of evidence for declared compliance level:
The continuous training is done at DUtrain. Advanced theoretical concepts are based on the operation handbook and discussed and explained. New procedures or rules pertaining for instance to neutral point treatment or bus bar protection schemes are discussed. The simulator training relates essentially to grid restoration procedures.

Do you have a mitigation plan to the requirement?  Yes ☐  No ☐
In case of an existing Addendum or a Non Compliance Declaration; list of evidence for a mitigation plan, comments:

Additional Questions

Are your dispatchers taught on advanced theoretical parts in the continuous training program?  Yes ☑  No ☐

Are your dispatchers taught on new rules and procedures in the continuous training program?  Yes ☑  No ☐

Do your dispatchers perform additional simulator sessions in the continuous training program?  Yes ☑  No ☐

List of evidence, comments:
In the folder P8-A-R3 you will find the folder DU Train Training which contains for the years 2009 to 2015 all the trainings (course content and organisation as well as debriefing material) done by Creos or together with partners (mainly Amprion), the so called ICT (InterCompanyTrainings).

COMPLIANCE AUDIT 2015

Compliance Level suggestion by the audit team: FCo

Explanation for the suggested compliance level:
The audit team checked the content and the structure of the continuous program. Advanced theoretical courses and additional simulation sessions are coordinated with DUtrain. It was explained to the audit team that the continuous program takes into account the modifications on rules and procedures. Creos provided evidence of the continuous training program for 9 dispatchers.

Recommendation:
In order to improve the management of the continuous training, the audit team recommends to consider to elaborate a monitoring for the dispatcher continuous training program.
4.4 OH REQUIREMENT P8-A-R4. ENGLISH TRAINING

SELF-ASSESSMENT QUESTIONNAIRE 2014


**English training.** Dispatchers in contact with neighboring control areas shall have sufficient knowledge of English and operational terms to carry out their tasks, ensuring the safe and smooth flow of information in an international environment using clear expressions in order to ease an immediate understanding.

**Compliance Level:** SCo

Concise explanation and list of evidence for declared compliance level:

All our dispatchers speak fluently German and French. All information exchanges with our colleagues of Amprion are in German. Although the English language is taught in school it is rarely used in the professional life of a dispatcher. Therefore additional training of the English language would be without any additional benefit because it is not used in the exchanges between the Dispatchings of Amprion and Creos respectively between Sotel and Creos.

**Additional Questions**

Do you verify English speaking skills of your dispatchers who are in contact with neighbouring control areas? **Yes**

Does the learning of English technical terms relevant to system operation make a part of the dispatcher training for those dispatchers who are in contact with neighboring control areas? **No**

AUDIT QUESTIONNAIRE 2015


**English training.** Dispatchers in contact with neighboring control areas shall have sufficient knowledge of English and operational terms to carry out their tasks, ensuring the safe and smooth flow of information in an international environment using clear expressions in order to ease an immediate understanding.

**Compliance Level:** SCo

Concise explanation and list of evidence for declared compliance level:

All our dispatchers speak fluently German and French. All information exchanges with our colleagues of Amprion are in German. Although the English language is taught in school it is rarely used in the professional life of a dispatcher. Therefore additional training of the English language would be without any additional benefit because it is not used in the exchanges between the Dispatchings of Amprion and Creos respectively between Sotel and Creos.

Do you have a mitigation plan to the requirement? **Yes ☐ No ☐**
In case of an existing Addendum or a Non Compliance Declaration; list of evidence for a mitigation plan, comments:

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</table>

**Additional Questions**

Do you verify English speaking skills of your dispatchers who are in contact with neighbouring control areas?

Yes ☒  No ☐

Does the learning of English technical terms relevant to system operation make a part of the dispatcher training for those dispatchers who are in contact with neighbouring control areas?

Yes ☐  No ☒

List of evidence, comments:

No evidence available

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**COMPLIANCE AUDIT 2015**

**Compliance Level suggestion by the audit team:** Sco

**Explanation for the suggested compliance level:**
Currently Creos dispatchers do not use English on a regular basis. Therefore Creos does not consider necessary to develop this skill. However the audit team checked that the English training is included in the public education (e.g. School diploma includes English knowledge according to the national law). In addition, the audit team had a fluent dialog with several dispatchers during the visit to the control centre.

**Recommendation:**
The audit team recommends Creos to consider to offer additional activities to the dispatchers to maintain their English skills.
4.5 OH STANDARD P8-A-S1 TRAINING PROGRAMS

<table>
<thead>
<tr>
<th>SELF-ASSESSMENT QUESTIONNAIRE 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>P8-A-S1.</strong></td>
</tr>
<tr>
<td><strong>Training programs.</strong> The initial and continuous program has to consider the relevant parts of the UCTE Operation Handbook and mutual agreements between TSOs. Each TSO defines its specific requirements for the initial program and the continuous program and their duration.</td>
</tr>
<tr>
<td><strong>Compliance Level:</strong> FCo</td>
</tr>
<tr>
<td>Concise explanation and list of evidence for declared compliance level:</td>
</tr>
<tr>
<td>As the continuous training is essentially a training of grid restoration procedures, the relevant parts of the operation handbook and of the agreement on grid and system management signed between Amprion and Creos are applied. In addition, every year dispatchers from Creos participate in a grid restoration training from Amprion. The duration and content of the continuous training program are defined together with Dutrain.</td>
</tr>
<tr>
<td><strong>Additional Questions</strong></td>
</tr>
<tr>
<td>Does your initial training program cover agreements between TSOs?</td>
</tr>
<tr>
<td>Does your initial training program consider the relevant parts of the UCTE OH?</td>
</tr>
<tr>
<td>Does your continuous training program cover agreements between TSOs?</td>
</tr>
<tr>
<td>Does your continuous training program consider the relevant parts of the UCTE OH?</td>
</tr>
<tr>
<td>Do you define specific requirements and duration of the initial program and the continuous program?</td>
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<table>
<thead>
<tr>
<th>AUDIT QUESTIONNAIRE 2015</th>
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<tr>
<td><strong>P8-A-S1.</strong></td>
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</tr>
<tr>
<td><strong>Compliance Level:</strong> FCo</td>
</tr>
<tr>
<td>Concise explanation and list of evidence for declared compliance level:</td>
</tr>
</tbody>
</table>
| As the continuous training is essentially a training of grid restoration procedures, the relevant parts of the operation handbook and of the agreement on grid and system management signed between Amprion and Creos are applied. In addition, every year dispatchers from Creos participate in a grid restoration training from Amprion. The duration and content of the continuous training program are defined together with Dutrain.
Do you have a mitigation plan to the standard? Yes ☐ No ☐

In case of an existing Addendum or a Non Compliance Declaration; list of evidence for a mitigation plan, comments:

Additional Questions

Does your initial training program cover agreements between TSOs? Yes ☒ No ☐

Does your initial training program consider the relevant parts of the UCTE OH (ENTSO-E RGCE OH)? Yes ☒ No ☐

Does your continuous training program cover agreements between TSOs? Yes ☒ No ☐

Does your continuous training program consider the relevant parts of the UCTE OH (ENTSO-E RGCE OH)? Yes ☒ No ☐

Do you define specific requirements and duration of the initial program and the continuous program? Yes ☒ No ☐

List of evidence, comments:

In the P8-A-S1 folder you will find the following document: DUtrain ENTSO-E.pdf (a course prepared and given by DUtrain) and UCTE Policy Summary.pdf (a document prepared by Creos for the Dispatchers with the intent to provide a readers guide to the ENTSO-E Operational Handbook).

COMPLIANCE AUDIT 2015

Compliance Level suggestion by the audit team: FCo

Explanation for the suggested compliance level:
The audit team checked that the relevant parts and updates of the Operation Handbook Policies are included in the initial and continuous training programs coordinated with DUtrain.
### 4.6 OH STANDARD P8-A-S2 TSO REFERENCE LIST OF ENGLISH TECHNICAL TERMS

#### SELF-ASSESSMENT QUESTIONNAIRE 2014

**P8-A-S2.**

**TSO reference list of English technical terms.** Each TSO makes available a reference list of technical terms in English with translation to the mother language of dispatchers for operation and for training based on the existing UCTE reference list (see Appendix 8).

**Compliance Level:** NCo

Concise explanation and list of evidence for declared compliance level:

Creos does not have such a list today. This has never been an obstacle as Creos Dispatching is not in direct contact with English speaking TSOs (or TSOs not fluent in German or French).

**No Additional Questions**

#### AUDIT QUESTIONNAIRE 2015

**P8-A-S2.**

**TSO reference list of English technical terms.** Each TSO makes available a reference list of technical terms in English with translation to the mother language of dispatchers for operation and for training based on the existing UCTE reference list (see Appendix 8).

**Compliance Level:** FCo

Concise explanation and list of evidence for declared compliance level:

Creos has developed a reference list of technical terms in English with translation to German and French (mother language makes no sense here)

**Do you have a mitigation plan to the standard?**  
Yes [ ]  No [ ]

In case of an existing Addendum or a Non Compliance Declaration; list of evidence for a mitigation plan, comments:

List of evidence, comments:

In the folder P8-A-S2 you will find an Excel file with the relevant technical terms in English, French and German) dictonnaire.xls
COMPLIANCE AUDIT 2015

Compliance Level suggestion by the audit team: FCo

Explanation for the suggested compliance level:
The audit team checked that the reference list of English technical terms is available and up to date in the control centre.
4.7 **OH REQUIREMENTS P8-B-R1. EXPERIENCE EXCHANGE.**

### SELF-ASSESSMENT QUESTIONNAIRE 2014

**P8-B-R1.**

**Experience exchange.** TSOs have to exchange the operational experience with their neighbours in order to cope with normal and abnormal situations in a coordinated way.

**Compliance Level:** FCo

Concise explanation and list of evidence for declared compliance level:

Creos and Amprion regularly organise Cross visits to facilitate the exchange between both dispatching. The first cross visit took place on December 15th 2012 and the last cross visit took place at Brauweiler on April 2nd 2014.

**Additional Questions**

Do your dispatchers participate in the exchange of the operational experience with neighbouring TSOs?  
Yes

### AUDIT QUESTIONNAIRE 2015

**P8-B-R1.**

**Experience exchange.** TSOs have to exchange the operational experience with their neighbours in order to cope with normal and abnormal situations in a coordinated way.

**Compliance Level:** FCo

Concise explanation and list of evidence for declared compliance level:

Creos and Amprion regularly organise Cross visits to facilitate the exchange between both dispatching. The first cross visit took place on December 15th 2012 and the last cross visit took place at Brauweiler on April 2nd 2014. The next cross visit is scheduled for December 1st at Heisdorf.

**Do you have a mitigation plan to the requirement?**  
Yes ☐  No ☐

In case of an existing Addendum or a Non Compliance Declaration; list of evidence for a mitigation plan, comments:
**Additional Questions**

Do your dispatchers participate in the exchange of the operational experience with neighbouring TSOs?  

Yes ☑  No ☐

List of evidence, comments:

**COMPLIANCE AUDIT 2015**

**Compliance Level suggestion by the audit team:** FCo

**Explanation for the suggested compliance level:**
The audit team checked the agenda and reports from the operational experience exchanges between Creos and Amprion in 2010 and 2014.
4.8 OH STANDARD P8-B-S1 COMMON TRAINING

SELF-ASSESSMENT QUESTIONNAIRE 2014

P8-B-S1.

Common training. Each TSO implements at least one of the four actions defined in guidelines P8-B-G3 to improve communication and coordinated measures between neighbouring TSO dispatchers. The actions taken have to be chosen depending on the mutual level of risks for secure system operation with the first (or further) neighbouring TSO.

Compliance Level: FCo

Concise explanation and list of evidence for declared compliance level:

Creos and Amprion regularly organise Cross visits to facilitate the exchange between both dispatching. The last cross visit took place at Brauweiler on April 2nd 2014. Every year Creos participates in the grid restoration exercise of Amprion at DUtrain with 2 dispatchers during 2 days.

Additional Questions

Which actions defined in guidelines P8-B-G3 do you implement?


Amprion

G3.1 G3.4

AUDIT QUESTIONNAIRE 2015

P8-B-S1.

Common training. Each TSO implements at least one of the four actions defined in guidelines P8-B-G3 to improve communication and coordinated measures between neighbouring TSO dispatchers. The actions taken have to be chosen depending on the mutual level of risks for secure system operation with the first (or further) neighbouring TSO.

Compliance Level: FCo

Concise explanation and list of evidence for declared compliance level:

Creos and Amprion regularly organise Cross visits to facilitate the exchange between both dispatching. The last cross visit took place at Brauweiler on April 2nd 2014. Every year Creos participates in 2 grid restoration exercises of Amprion at DUtrain with 2 dispatchers during 2 days.

Do you have a mitigation plan to the standard? Yes □ No □
In case of an existing Addendum or a Non Compliance Declaration; list of evidence for a mitigation plan, comments:

Additional Questions

Which actions defined in guidelines P8-B-G3 do you implement?


<table>
<thead>
<tr>
<th>Neighbour</th>
<th>G3.1</th>
<th>G3.2</th>
<th>G3.3</th>
<th>G3.4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amprion</td>
<td>☑</td>
<td></td>
<td></td>
<td>☑</td>
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</tbody>
</table>

List of evidence, comments:

In the folder P8-B-S1 you will find a complete list with all the intercompany trainings accomplished since 2011 (description of the training, participant list, debriefing material, photos).

COMPLIANCE AUDIT 2015

Compliance Level suggestion by the audit team: FCo

Explanation for the suggested compliance level:
The audit team checked that Creos performed cross visits with Amprion on 2010 and 2014 and every second year Creos performs common training on DTS in DUtrain.
### 4.9 OH STANDARD P8-C-S1 COORDINATION OF THE TRAINING

#### SELF-ASSESSMENT QUESTIONNAIRE 2014

<table>
<thead>
<tr>
<th>P8-C-S1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Coordination of the training.</strong> TSO appoints a training coordination manager responsible for training organization: designing, following-up and updating the full training process.</td>
</tr>
<tr>
<td><strong>Compliance Level:</strong> FCo</td>
</tr>
<tr>
<td>Concise explanation and list of evidence for declared compliance level:</td>
</tr>
<tr>
<td>Creos does not have any train the trainers program, but as the main focus of the dispatcher training is DUtrain, we rely on the competences of trainers of DUtrain.</td>
</tr>
<tr>
<td><strong>No Additional Questions</strong></td>
</tr>
</tbody>
</table>

#### AUDIT QUESTIONNAIRE 2015

<table>
<thead>
<tr>
<th>P8-C-S1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Coordination of the training.</strong> TSO appoints a training coordination manager responsible for training organization: designing, following-up and updating the full training process.</td>
</tr>
<tr>
<td><strong>Compliance Level:</strong> FCo</td>
</tr>
<tr>
<td>Concise explanation and list of evidence for declared compliance level:</td>
</tr>
<tr>
<td>The main focus of the dispatcher training is DUtrain, we rely on the competences of trainers of DUtrain. Currently Mr. Paul Hulten, Head of HV Dispatching, is responsible for training coordination and organisation.</td>
</tr>
<tr>
<td><strong>Do you have a mitigation plan to the standard?</strong></td>
</tr>
<tr>
<td>In case of an existing Addendum or a Non Compliance Declaration; list of evidence for a mitigation plan, comments:</td>
</tr>
<tr>
<td><strong>Additional Questions</strong></td>
</tr>
<tr>
<td>Who has the role of Training Coordination Manager in your TSO? (please provide first and second name)</td>
</tr>
<tr>
<td>Paul Hulten</td>
</tr>
<tr>
<td>List of evidence, comments:</td>
</tr>
</tbody>
</table>
In the folder P8-C-S1 you will find the Job description of the Head of Dispatching (HV DFC_CLH06_Head of Power HV_VF_140101) which documents that the training coordination is one of the main tasks of the Head of Dispatching HV.

**COMPLIANCE AUDIT 2015**

**Compliance Level suggestion by the audit team:** SCo

**Explanation for the suggested compliance level:**
The audit team checked that there is a person who performs the role of training coordination manager, however he is not formally appointed.

**Recommendation:**
The audit team recommends to Creos to formally appoint a training coordination manager.
4.10 OH STANDARD P8-C2 ORGANIZATION

SELF-ASSESSMENT QUESTIONNAIRE 2014

P8-C-S2

Organization. The training coordination manager determines appropriate procedures for the training organization. These procedures shall cover: - a description of the dispatchers required qualifications (knowledge and skills); - a reference list of topics for training programs linked to the dispatchers required qualification; - the processes for the initial and continuous programs including scripts/documents; of the theoretical sessions, time-schedules, supervision, tools, support for trainees, evaluation/validation and continuous improvement of the programs; - the process of dispatchers accreditation; - trainers selection and training of trainers.

Compliance Level: FC0

Concise explanation and list of evidence for declared compliance level:
The job description of the dispatchers is done together with HR and the head of Dispatching Power High Voltage who is also in charge of coordinating the initial training as well as operational trainings and restoration trainings which includes updating of scripts and procedures as well as fixing the content of the trainings held at DUtrain facilities.

Additional Questions

Do your procedures for training include a description of the dispatchers required qualifications? Yes

Do your procedures for training include a reference list of topics for training programs linked to the dispatchers required qualification? Yes

Do your procedures for training include the processes for the initial and continuous programs including scripts/documents; of the theoretical sessions, time-schedules, supervision, tools, support for trainees, evaluation/validation and continuous improvement of the programs? Yes

Do your procedures for training include the process of dispatchers accreditation? Yes

Do your procedures for training include trainer selection and training of trainers? Yes

AUDIT QUESTIONNAIRE 2015

P8-C-S2

Organization. The training coordination manager determines appropriate procedures for the training organization. These procedures shall cover: - a description of the dispatchers required qualifications (knowledge and skills); - a reference list of topics for training programs linked to the dispatchers required qualification; - the processes for the initial and continuous programs including scripts/documents; of the theoretical sessions, time-schedules, supervision, tools, support for trainees, evaluation/validation and continuous improvement of the programs; - the process of dispatchers accreditation; - trainers selection and training of trainers.
continuous improvement of the programs; - the process of dispatchers accreditation; - trainers selection and training of trainers.

**Compliance Level:** SCo

Concise explanation and list of evidence for declared compliance level:

The job description of the dispatchers is done together with HR and the head of Dispatching Power High Voltage who is also in charge of coordinating the initial training as well as operational trainings and restoration trainings which includes updating of scripts and procedures as well as fixing the content of the trainings held at DUtrain facilities.

---

**Additional Questions**

Do your procedures for training include a description of the dispatchers required qualifications?  
Yes ☑  No ☐

Do your procedures for training include a reference list of topics for training programs linked to the dispatchers required qualification?  
Yes ☑  No ☐

Do your procedures for training include the processes for the initial and continuous programs including scripts/documents; of the theoretical sessions, time-schedules, supervision, tools, support for trainees, evaluation/validation and continuous improvement of the programs?  
Yes ☑  No ☐

Do your procedures for training include the process of dispatchers accreditation?  
Yes ☑  No ☐

Do your procedures for training include trainer selection and training of trainers?  
Yes ☐  No ☑

List of evidence, comments:

Creos does not have formalised training procedures.

In the folder P8-C-S2 you will find all the certifications for all our Dispatchers. We don’t have procedures for trainer selection and training of trainers

---

**COMPLIANCE AUDIT 2015**

**Compliance Level suggestion by the audit team:** SCo

**Explanation for the suggested compliance level:**

The audit team checked the good practice on organization of the training processes, however Creos does not have formal evidence for the all required procedures of the standard.

**Recommendation:**
The audit team recommends to Creos to formalize all the required procedures from the standard.

### 4.11 OH STANDARD P8-C-S3 EVALUATION

#### SELF-ASSESSMENT QUESTIONNAIRE 2014

**P8-C-S3**

**Evaluation.** The initial program has to be completed by an evaluation in which the knowledge and capabilities of a candidate to perform a dispatcher job are tested. This evaluation is performed by the trainers; a relevant document is forwarded to the manager of the candidate.

**Compliance Level:** FCo

Concise explanation and list of evidence for declared compliance level:

Our Dispatcher take a final exam at Dutrain (theory and practical tests on the simulator). The Creos Management gets informed by Dutrain about the results and performance of the candidates.

**Additional Questions**

Do you complete the initial program with a test of the knowledge of dispatches candidates?  
Yes

Do the trainers issue a document containing the results of the evaluation to the manager of the candidate?  
Yes

---

#### AUDIT QUESTIONNAIRE 2015

**P8-C-S3**

**Evaluation.** The initial program has to be completed by an evaluation in which the knowledge and capabilities of a candidate to perform a dispatcher job are tested. This evaluation is performed by the trainers; a relevant document is forwarded to the manager of the candidate.

**Compliance Level:** FCo

Concise explanation and list of evidence for declared compliance level:

Our Dispatchers take a final exam at Dutrain (theory and practical tests on the simulator). The Creos Management gets informed by Dutrain about the results and performance of the candidates.

**Do you have a mitigation plan to the standard?**  
Yes ☐  No ☐
In case of an existing Addendum or a Non Compliance Declaration; list of evidence for a mitigation plan, comments:

Additional Questions

Do you complete the initial program with a test of the knowledge of dispatches candidates? Yes ☒ No ☐

Do the trainers issue a document containing the results of the evaluation to the manager of the candidate? Yes ☒ No ☐

List of evidence, comments:

In the folder P8-C-S3 you will find the subfolder INITIAL TRAINING FOR NEW DISPATCHERS which contains all the Dutrain examination results since 2011.

COMPLIANCE AUDIT 2015

Compliance Level suggestion by the audit team: FCo

Explanation for the suggested compliance level:
Creos explained to the audit team with the support of evidence (e.g. examination results) the evaluation process executed through an exam supervised by DUtrain and Creos.
4.12 OH STANDARD P8-C-S4 FIRST ACCREDITATION

**SELF-ASSESSMENT QUESTIONNAIRE 2014**

**P8-C-S4**

**First accreditation.** The TSO has to deliver a first accreditation to the dispatcher candidate that authorizes him to perform his job in the control room. The first accreditation is attributed according to defined criteria for a duration decided by the TSO as in below-mentioned guidelines.

**Compliance Level:** FCo

Concise explanation and list of evidence for declared compliance level:

Our Dispatcher take a final exam at Dutrain (theory and practical tests on the simulator). The Creos Management gets informed by Dutrain about the results and performance of the candidates.

**Additional Questions**

Do you deliver a first accreditation to your dispatcher? Yes

Do you have criteria for accreditation of dispatcher candidate? Yes

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**AUDIT QUESTIONNAIRE 2015**

**P8-C-S4**

**First accreditation.** The TSO has to deliver a first accreditation to the dispatcher candidate that authorizes him to perform his job in the control room. The first accreditation is attributed according to defined criteria for a duration decided by the TSO as in below-mentioned guidelines.

**Compliance Level:** FCo

Concise explanation and list of evidence for declared compliance level:

Our Dispatchers take a final exam at Dutrain (theory and practical tests on the simulator). The Creos Management gets informed by Dutrain about the results and performance of the candidates.

**Do you have a mitigation plan to the standard?**

Yes ☐  No ☐

In case of an existing Addendum or a Non Compliance Declaration; list of evidence for a mitigation plan, comments:

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**Additional Questions**
<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you deliver a first accreditation to your dispatcher?</td>
<td>☒</td>
<td></td>
</tr>
<tr>
<td>Do you have criteria for accreditation of dispatcher candidate?</td>
<td>☒</td>
<td></td>
</tr>
</tbody>
</table>

List of evidence, comments:

See P8-C-S2. No additional evidence available

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**COMPLIANCE AUDIT 2015**

**Compliance Level suggestion by the audit team:** FCo

**Explanation for the suggested compliance level:**
Creos presented to the audit team the evidence (e.g., individual dispatcher certification) of the first accreditation of new dispatchers issued after the finalization of the initial training program.
### 4.13 OH STANDARD P8-C-S5 TRAINERS' SELECTION

#### SELF-ASSESSMENT QUESTIONNAIRE 2014

**P8-C-S5**

**Trainers' selection.** TSOs have to determine the profile of trainers with regards to their respective tasks and responsibilities in the training programs. Trainers are selected internally (experienced dispatchers) or from external bodies.

**Compliance Level:** FCo

Concise explanation and list of evidence for declared compliance level:

The switching course is given by the responsible of the HSE department of Creos (Health and Security and Environment). The course on protection system is given by the responsible of the Special Tasks on Planning, Service of Asset Management Grid Strategy. Training on the job is done by experienced dispatchers under the surveillance of the Head of Dispatching High Voltage (This task is also listed in the job description of the head of Dispatching Power High Voltage). All the other courses are given by DUtrain.

**Additional Questions**

Have you determined the profile of trainers? **Yes**

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#### AUDIT QUESTIONNAIRE 2015

**P8-C-S5**

**Trainers' selection.** TSOs have to determine the profile of trainers with regards to their respective tasks and responsibilities in the training programs. Trainers are selected internally (experienced dispatchers) or from external bodies.

**Compliance Level:** SCo

Concise explanation and list of evidence for declared compliance level:

The switching course is given by the responsible of the HSE department of Creos (Health and Security and Environment). The course on protection system is given by the responsible of the Special Tasks on Planning, Service of Asset Management Grid Strategy. Training on the job is done by experienced dispatchers under the surveillance of the Head of Dispatching High Voltage (This task is also listed in the job description of the head of Dispatching Power High Voltage). All the other courses are given by DUtrain.

**Do you have a mitigation plan to the standard?** **Yes [ ]**  **No [ ]**

In case of an existing Addendum or a Non Compliance Declaration; list of evidence for a mitigation plan, comments:

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**Additional Questions**
Have you determined the profile of trainers?  

Yes ☐   No ☒

List of evidence, comments:

No further evidence available.

COMPLIANCE AUDIT 2015

Compliance Level suggestion by the audit team: SCo

Explanation for the suggested compliance level:
The audit team could not find formal evidence of the required profile for trainers, nevertheless the audit team confirms that Creos has good practices in training dispatchers.
4.14 OH STANDARD P8-C-S6 TRAINING OF TRAINERS

SELF-ASSESSMENT QUESTIONNAIRE 2014

P8-C-S6

Training of trainers. Depending on education and previous experience, an individual training program is defined for each trainer; it can be provided by internal sessions or by outsourced training sessions.

Compliance Level: FCo

Concise explanation and list of evidence for declared compliance level:
Soft skill education is offered via the Human Resources Department. Based on the needs, the experience and the education of the candidate a tailored training program will be put together.

No Additional Questions

AUDIT QUESTIONNAIRE 2015

P8-C-S6

Training of trainers. Depending on education and previous experience, an individual training program is defined for each trainer; it can be provided by internal sessions or by outsourced training sessions.

Compliance Level: FCo

Concise explanation and list of evidence for declared compliance level:
Soft skill education is offered via the Human Resources Department. Based on the needs, the experience and the education of the candidate a tailored training program will be put together.

Do you have a mitigation plan to the standard? Yes ☐ No ☐
In case of an existing Addendum or a Non Compliance Declaration; list of evidence for a mitigation plan, comments:

List of evidence, comments:
No evidence available

COMPLIANCE AUDIT 2015

Compliance Level suggestion by the audit team: FCo

Explanation for the suggested compliance level:
Most of the trainings are outsourced and the training of trainers is guaranteed by DUtrain. Creos explained to the audit team that for internal trainers, individual training for trainers is it offered by the human resources department.
5 FOLLOW-UP TO THE 2012 ONSITE AUDIT

In this chapter all standards that were not fully compliant during the 2012 audit on Policy 5 are listed, a sub chapter per standard. The TSO is requested to fill in the current situation on the standard. This will be discussed during the audit with the audit team and will be part of reporting of the audit team.

5.1 P5-A-S1 APPRECIATION OF TSO SYSTEM STATES

AUDIT QUESTIONNAIRE 2012

P5-A-S1 APPRECIATION OF TSO SYSTEM STATES. The system state is determined by the constrained TSO according to its N-1 security assessment, based on potential influence on neighbouring systems taking into account the efficiency of remedial actions.

Compliance level  
- FC
- SC
- NC

Concise explanation and list of evidences for declared compliance level:

The SCADA system in the operation center is able to monitor the network state in real time. Due to the fact that the HV grid is very small compared to other TSOs (only 127 km 220 kV line no 400 kV) and that no large generators are connected to the Creos Grid, a N-1 security calculation was up to now not necessary. As the SCADA system is currently being upgraded, a N-1 security calculation will nevertheless be implemented.

Do you have a mitigation plan to the standard?  Yes ☐ No ☐

In case of an existing Addendum or a Non Compliance Declaration; list of evidences for a mitigation plan, comments:

--------------------------------------------------------------------------------------------------------------------------

Do you have tools/procedures to assess system state of your own system in real time?

Yes ☒ No ☐

List of evidences, comments:

- SCADA documentation; visit of control room

AUDIT PHASE

COMPLIANCE AUDIT 2012

Compliance Level suggestion by the audit team:

NC

Explanation for the suggested compliance level:

Creos SCADA does not have N-1 security analysis tool at the moment. The future upgrade of SCADA will include also security analysis tools. Creos relies on its dispatchers’ experience to assess system security situation. A human estimate can give adequate results for the security analysis due to Creos’ small grid size. Creos does not have written criteria for appreciation of system states. They rely on dispatcher assessment on the system state. “Agreement on Grid and System Operation Management
between Creos and Amprion” chapter 3.5.4. states that Amprion and Creos are both responsible for system security in their own grid area.

Creos is non compliant to the standard as the standard explicitly demands for N-1 assessment and appreciation of system state which are not present at the moment.

Mitigation plan with deadline:
Creos already has an offer by Psi (the SCADA system vendor) to include N-1 security analysis tool into the system in the context of currently ongoing upgrade of the SCADA system. Creos will order this tool and it will be implemented by the end of 2013.

Together with Amprion, Creos will review chapter 3.5.4 of the Agreement on Grid and System Operation Management concluded between Creos and Amprion to include written criteria for the appreciation of system states. This implementation will be finished by mid 2013 at the latest.


COMPLIANCE AUDIT 2015

CREOS current process description and improvements made since 2012:

The N-1 security analysis tool has been implemented in the SCADA system.

Audit team comments:
Creos showed to the audit team the recently implemented automatic N-1 calculations in their SCADA system.
5.2 **P5-A-S2 INFORMATION BETWEEN CONTROL ROOMS BY THE CONSTRAINED TSO**

**AUDIT QUESTIONNAIRE 2012**

**P5-A-S2 INFORMATION BETWEEN CONTROL ROOMS BY THE CONSTRAINED TSO.**
The constrained TSO has to inform at least all direct neighbouring TSOs about the state of its own system.

**Compliance level**  
[ ] FC  Select [ ] SC  Select [ ] NC

Concise explanation and list of evidences for declared compliance level:

The Creos SCADA System is connected to the Amprion control center via TASE 2. Amprion is able to see in real time our complete HV Grid and Creos is able to see the first mesh in the Amprion grid. Creos also delivers input values to the real-time alarm and awareness system (RAAS) of Amprion. Agreement on Grid and System Operation Management, chapter 3.5 signed in May 2012

Do you have a mitigation plan to the standard?  
[ ] Yes  Select [ ] No

In case of an existing Addendum or a Non Compliance Declaration; list of evidences for a mitigation plan, comments:

--------------------------------------------------------------------------------------------------------------------------

**Do you have procedures with direct neighbours for information on system states?**

<table>
<thead>
<tr>
<th>Neighbour</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amprion</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

List of evidences, comments: Agreement on Grid and System Operation Management, chapter 3.5 signed in May 2012

**AUDIT PHASE**

**COMPLIANCE AUDIT 2012**

**Compliance Level suggestion by the audit team:**

NC

**Explanation for the suggested compliance level:**

Amprion can observe whole Creos 220 kV grid in its SCADA and Creos can see first loop in Amprion's grid in its SCADA. Creos informs failure of a critical element in their grid to Amprion. The Creos' critical elements are defined in "Agreement on Grid and System Operation Management between Creos and Amprion", 26.9.2012, annex 5a "Grid elements with inter-regional relevance". The chapter 3.5.4 defines common actions on "Measures taken to restore the (N-1) grid security".
Creos does not have written rules for appreciation of system states which makes it impossible to communicate them to Amprion.

**Mitigation plan with deadline:**
Together with Amprion, Creos will review chapter 3.5.4 of the Agreement on Grid and System Operation Management concluded between Creos and Amprion to include written criteria for the appreciation of system states. This implementation will be finished by mid 2013 at the latest.

Deadline: 30.06.2013

---

**COMPLIANCE AUDIT 2015**

**CREOS current process description and improvements made since 2012:**

Information about System States will be done via EAS.

**Audit team comments:**
Creos explained to the audit team that work with the update of the agreement with Amprion is still ongoing. Regarding EAS, it is still not yet in place, however it is expected to be operational by the end of November 2015.
5.3 P5-B-S3.1 BACK-UP OF CONTROL ROOM FUNCTIONS

AUDIT QUESTIONNAIRE 2012

P5-B-S3.1 BACK-UP OF CONTROL ROOM FUNCTIONS. The control room functions shall be backed up to face any damage to the main installations. This shall be activated within less than three hours and tested for operation at least once a year.

Compliance level  FC ☑   SC ☐   NC ☐

Concise explanation and list of evidences for declared compliance level:

The SCADA system is duplicated physically in Heisdorf and a back-up system is located on another geographical site. This back-up system is in cold stand-by and has to be activated manually as well as the switching of the gateways and the telecommunication lines. We estimate that it will take 3 hours to have the cold back-up system fully operational. The back-up system (cold stand-by) has not been tested yet (risk of switching from the active system to the cold stand-by is judged as too high). Creos is currently upgrading its SCADA system. In the wake of this process, the cold stand-by will be eliminated and replaced by a hot-standy. The automatic switching from one site to another site should then be feasible within minutes. It should also be mentioned that SCADA clients exists in Schifflange, Roosevelt (City of Luxembourg) and Wiltz. From all these sites it is possible to control the HV grid.

Do you have a mitigation plan to the standard?  Yes ☐   No ☑

In case of an existing Addendum or a Non Compliance Declaration; list of evidences for a mitigation plan, comments:

-----------------------------------------------

Do you have a back-up of control room functions in separate locations?

Yes ☑   No ☐

List of evidences, comments:

-----------------------------------------------

How often do you test such ability?

List of evidences, comments:

-----------------------------------------------

AUDIT PHASE

COMPLIANCE AUDIT 2012

Compliance Level suggestion by the audit team:  NC
Explanation for the suggested compliance level:
Creos has not a written procedure on transfer of control centre functions and has not tested the back up control room. All dispatchers have visited the back up control room which is in cold standby mode.

Due to missing tests and procedures the back up control room cannot be proved as operational which makes Creos non compliant to the standard.

Mitigation plan with deadline:
Written procedures for transferring the control centre functions to the back-up control room will be delivered by end of 2013. These procedures will be mainly influenced by the currently ongoing process of upgrading the SCADA system. The testing of these procedures will be done during the first semester of 2014. Deadline: 30.06.2014

**COMPLIANCE AUDIT 2015**

**CREOS current process description and improvements made since 2012:**
In the meantime, Creos has changed its infrastructure entirely. By the end of the year all SCADA Systems (Servers) will be migrated to 2 different Data Centers from an external provider (LuxConnect) located in 2 geographically separated sites (Bettembourg & Bissen). These Data Centers are certified as TIER 4 (highest security level possible). In each Data Center, Creos will have two redundant SCADA systems. As Creos is also a registered Telecom operator, due to its dark fibre activity and optical fibre network, it has the possibility to interconnect these Data Centres directly with its own optical fibres without needing any services from third parties. This double redundancy allows for a seamless SCADA operation from the Dispatchers perspective: even if 3 out 4 systems fail, it will not handicap the Dispatcher in his work.

If Creos has to evacuate the Control Room in Heisdorf, the procedure is that the HV Dispatcher will move to the regional centre of Schifflange, where he can log on again in the SCADA system and continue his work albeit with a smaller projection display, but the whole Creos office infrastructure (phones, e-mail, internet access) is present at this site.

Creos is currently setting up a BCP and a DRP in the context of a ISMS (Information Security Management System). The whole procedure will be documented and also tested, hopefully before the visit of the Audit team end-October.

List of evidences, comments:

> In the folder Compliance Audit P5 you will find the subfolder P5-B-S3.1 which contains the Business Continuity Plan STA_17-2_BCP HV dispatching_v0.3

**How often do you test such ability?**

> successfully tested on October 14th 2015. Tests are foreseen on yearly basis.

List of evidences, comments:

> In the folder Compliance Audit P5 you will find the subfolder P5-B-S3.1 which contains the test report REC_17-5_BC Test Report 20151014_v1.0

**Audit team comments:**
The evidence provided by Creos shows that the mitigation plan has been successfully implemented. Creos explained that tests are foreseen to be performed on yearly basis.
5.4 P5-B-S6.4.1.1 LOAD SHEDDING CAPABILITIES

AUDIT QUESTIONNAIRE 2012

P5-B-S6.4.1.1 LOAD SHEDDING CAPABILITIES. For cases where there is a major frequency drop, automatic function for load shedding in response to a frequency criterion must be installed in order to prevent a further frequency drop and the collapse of the system.

Compliance level FC ☐ SC ☐ NC ☐

Concise explanation and list of evidences for declared compliance level:

UFLS relays are installed on all 65/20 kV transformers, but they are not activated because they are not in line with the national load shedding plan with requires that household consumer should be shedded as a last resort measure. The national load shedding plan (which as been agreed by all Luxembourgish DSOs and by Creos), makes a distinction between foreseeable power shortages and under frequency load shedding. Creos, as the operating party in this plan, seek to switch of first industrial customers (as they represent nearly a quarter of the complete electricity consumption in Luxembourg) and than only as a last resort the private customers. At this stage we are not in a position to differentiate, on the 20 kV level, between a household, a hospital or a small or medium enterprise (SME). Therefore, Creos will stepwise implement UFLS relays at the industrial customer substations and then modify the relays on the 65/20 kV transformers in order to obtain a higher degree of selectivity on the level of the 20 kV in feeders. This is a problem of manpower and budget. In addition it should be mentioned that by the means of UFLS in the first phase of the ENTSO-E load shedding plan, only a maximum of 80 MW can be shedded, which is probably of no great help for Amprion. A deadline to reach compliance here has not yet been fixed.

Do you have a mitigation plan to the standard? Yes ☑ No ☐

In case of an existing Addendum or a Non Compliance Declaration; list of evidences for a mitigation plan, comments:

in a first phase it is foreseen to equip the largest industrial clients at the level of their own substations with UFLS relays.

Do you have automatic UFLS installed in your system?

Yes ☑ No ☐

List of evidences, comments:

List to be provided by HV Asset Service. No additional evidence available until now.

AUDIT PHASE

COMPLIANCE AUDIT 2012
Compliance Level suggestion by the audit team:
SC

Explanation for the suggested compliance level:
The "Plan de délestage des réseaux électriques du Grand-Duché de Luxembourg" which is issued by Luxembourgian Ministry of Economic Affairs on 30.6.2010 forbids automatic load shedding in Luxembourg. Creos has ULFS relays installed in all 65/20 kV transformers but they are not in operation due to previously mentioned regulation. Creos has a plan for manual load shedding based on three steps set by Ministry of Economic Affairs.

The three manual load shedding steps are:
1. 140.9 MW
2. 74.9 MW
3. 35.6 MW

Creos is missing automatic load shedding but due to small demand in its grid and manual load shedding plan it is sufficient compliant as it cannot endanger the Continental synchronous system.

Improvement plan with deadline:
Creos will implement ULFS relays in industrial customer substations so as to be compliant to the minimum ENTSO-E requirement of being able to shed at least 5% of the total load at 49.2 Hz. This will be done till the end of 2013.

COMPLIANCE AUDIT 2015

CREOS current process description and improvements made since 2012:
ULFS relays are installed at the industrial customer site of Galvalange (a producer of coated steel sheet), Circuitfoil (a copper foil producer) and Cimenterie. The 3 customers account for more than 5% of the consumption in Creos grid. The relays are set at 49 Hz.

Audit team comments:
Creos confirmed that the first step of the automatic demand disconnection plan has been implemented.
### 5.5 P5-B-S6.4.1.2 Load Shedding Criterion

**AUDIT QUESTIONNAIRE 2012**

**P5-B-S6.4.1.2 Load Shedding Criterion.** At 49.0 Hz the automatic load shedding of customer consumption shall start and will reach at least 5% as the first step. The total control area consumption has to be considered in the stepwise percentages to shed on the basis of individual evaluations by TSOs.

<table>
<thead>
<tr>
<th>Compliance level</th>
<th>FC</th>
<th>SC</th>
<th>NC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concise explanation and list of evidences for declared compliance level:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5% of the consumption passing through the 2 tie lines to Amprion represents less than 30 MW. This very low value will probably not be of any significance in this context but it will cause economic damage to the concerned companies. We propose to start at 48,5 Hz with the load shedding of the entire industrial consumption which represents approximately 133 MW.</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

**Do you have a mitigation plan to the standard?** Yes [ ] No [X]

In case of an existing Addendum or a Non Compliance Declaration; list of evidences for a mitigation plan, comments:

-----------------------------

**Do you respect the first stage of load shedding of at least 5% of the total customer consumption at 49Hz?**

Yes [ ] No [X]

List of evidences, comments:

-----------------------------

**How many stages is your UFLS consisted of and what percentage of load is operated under the load shedding relays in each stage?**

Creos proposes to fix only one stage at 48,5 Hz which represents some 130 MW.

List of evidences, comments:

-----------------------------
NC

**Explanation for the suggested compliance level:**
Creos does not have automatic load shedding which makes it noncompliant.

Creos plans to have automatic load shedding at 48.5 Hz even though standard demands it at 49 Hz. Creos tries to minimise financial cost of load shedding for their customers and feel that they can be effective at 48.5 Hz. Audit Team gives recommendation to Creos to follow the standard as it is written.

**Mitigation plan with deadline:**
Creos will follow the standard as it is written and modify its UFLS relays on industrial customers' sites accordingly.


---

**COMPLIANCE AUDIT 2015**

**CREOS current process description and improvements made since 2012:**
See previous question

**Audit team comments:**
Creos explained that the demand disconnection at 49.0Hz is 5% of the total load. The audit team noticed that time delays are implemented in the protection settings which according to the policy should not take place.

In the meantime this policy has changed and Creos commits to implement the additional requirements.
### 5.6 P5-C-S1.2 TSO RESTORATION PLAN

**AUDIT QUESTIONNAIRE 2012**

**P5-C-S1.2 TSO RESTORATION PLAN.** Each TSO has to prepare in advance and update regularly a restoration plan. This restoration plan includes a bottom-up approach and a top-down approach.

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<tr>
<th>Compliance level</th>
<th>FC</th>
<th>SC</th>
<th>NC</th>
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</table>

Concise explanation and list of evidences for declared compliance level:

- Creos restoration plan

**Do you have a mitigation plan to the standard?**

- Yes [ ]
- No [ ]

In case of an existing Addendum or a Non Compliance Declaration; list of evidences for a mitigation plan, comments:

--------------------------------------------------------------------------------------------------------------------------

**Do you have restoration procedures?**

- Yes [ ]
- No [ ]

List of evidences, comments:

- Creos restoration plan

**Does your restoration plan include a bottom-up approach and a top-down approach?**

- Yes [ ]
- No [ ]

List of evidences, comments:

- Creos restoration plan

**Do you update your restoration plan regularly?**

- Yes [ ]
- No [ ]

List of evidences, comments:

- Following yearly trainings at DUtrain (simulations)

**AUDIT PHASE**
**COMPLIANCE AUDIT 2012**

**Compliance Level suggestion by the audit team:**
SC

**Explanation for the suggested compliance level:**
Creos has a top down approach in their restoration plan which is verified with DuTrain simulation. The restoration plan is updated at least once per year usually after bi-annual simulation training with Amprion. Current version is from 1.4.2012 and it was tested in June 2012.

There is no bottom up plan as Creos does not have any black start capable units. Creos cannot endanger the Continental synchronous system with its current practice which makes it sufficiently compliant.

**Improvement plan with deadline:**
Chances are very low that there will be any new additional large power plant in Luxembourg. Creos has elaborated a bottom-up plan with Twinerg and the pumped storage power plant of Vianden and tested it together with SEO (the owner and operator of the pumped storage power plant of Vianden) at Dutrain facilities. In theory it could work, but it is extremely complex to handle and would require both the consent of Elia and Amprion and would depend on the existing situation in case of a black-out. Creos will integrate this bottom-up plan in its restoration plan by the end of January 2013.

Deadline: 31.01.2013

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**COMPLIANCE AUDIT 2015**

**CREOS current process description and improvements made since 2012:**

The CCGT power plant of Twinerg will be mothballed by eof October 2015. A bottom-up plan is not feasible anymore.

**Audit team comments:**
Due to the lack of production capabilities connected to the Creos grid, no changes on this standard have been achieved.
5.7 P5-C-S3.6 Coordination with DSOs for reconnection of shed load

Audit Questionnaire 2012

P5-C-S3.6 Coordination with DSOs for reconnection of shed load. TSOs have to coordinate the reconnection of shed load with DSOs. Local and remote reconnection of customers’ loads has to be agreed in advance in cooperation between the TSO and its DSOs. Automatic reconnection has to be avoided.

**Compliance level**

Completion: \( \checkmark \) \( \square \) \( \square \) \( \square \)

Concise explanation and list of evidences for declared compliance level:

As Creos is as well the sole TSO in Luxembourg and the most important DSO and the sole operating authority in case of load shedding resp. reenergizing, there should be no problem with switching on unexpected high loads. Automatic reconnection is prohibited in our internal procedures.

**Do you have a mitigation plan to the standard?** Yes \( \square \) No \( \square \)

In case of an existing Addendum or a Non Compliance Declaration; list of evidences for a mitigation plan, comments:

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**Do you have procedures for reconnection with DSOs which are connected to TSO’s grid and are involved in load shedding?**

Yes \( \checkmark \) No \( \square \)

List of evidences, comments:

National load shedding plan

**Are you in a position to avoid automatic reconnection of loads after load shedding?**

Yes \( \checkmark \) No \( \square \)

List of evidences, comments:

SCADA documentation. No automatic reconnection process. This is done manually following the national load shedding plan.

Audit Phase

Compliance Audit 2012

Compliance Level suggestion by the audit team:

SC
**Explanation for the suggested compliance level:**
Creos is the biggest DSO in the Luxembourgian grid which allows it to manage load reconnection after load shedding. The Sotel industrial grid is connected to Belgian grid and it is not connected to Creos' grid. Creos can disconnect all DSOs which reconnect their load without Creos' permission.

Creos is lacking formal agreements with Luxembourgian DSOs on reconnection rules after load shedding which makes it sufficient compliant.

**Improvement plan with deadline:**
Article 4.5 of the “Plan National de délestage” on Reconnection of customers, states that Creos as coordinating grid operator has to judge when a reconnection of customers is again feasible in due respect of safe network operation. Article 4.5. also states that this reconnection will happen step by step, taking into account the risks and the priority rules defined in Article 5.3. (which means that the last customer having been shed is the first one to be reconnected.

Audit Team comment regarding improvement plan:
Creos supplied necessary documentation to complete their improvement plan and achieve FC status after onsite audit during Audit Report drafting process but due to CME Audit practices the Creos compliance level for the standard in the report will remain SC.

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### COMPLIANCE AUDIT 2015

**CREOS current process description and improvements made since 2012:**
None

**Audit team comments:**
Creos confirmed that it is still lacking formal agreements with all DSOs on reconnection rules after load shedding. Creos commits to update the formal agreements together with all the relevant parties by the end of 2016.
6 CONCLUSIONS

The Audit Team audited 14 requirements/standards. The Audit Team found out that CREOS is fully compliant with 10 audited standards and sufficiently compliant with 4 standards.

During the onsite audit, the Audit Team had the opportunity to visit the national control room that helped the Audit Team to better understand the organisation and processes within the organisation of CREOS.

Regarding the follow up on the findings during the on-site audit in 2012 on Policy 5 the Audit Team appreciates the significant progress made to eliminate the non-compliances and at the same time encourages CREOS to do its best efforts to eliminate the remaining ones as well.

CREOS estimates that their staff needed 120 human hours for the preparation of the compliance audit.

CREOS was well prepared for the audit. The documents considered as evidence were available during the audit. Requests for additional material were promptly met by CREOS.

The general impression of the Audit Team is that CREOS has good practices for the dispatchers training, however no formal written procedures are available. Therefore, the audit team recommends to CREOS regarding the OH Policy 8 to formalize the total organization and processes of dispatcher’s training, in particular:

- to elaborate a formal written training program including continuous and initial parts;
- to elaborate a monitoring mechanism for the dispatcher continuous training program, in order to improve dispatchers training management;
- to consider to offer additional activities to the dispatchers to maintain their English skills;
- to formally appoint a training coordination manager;
- to formalize all the required procedures, related to the training organization.

In the case of this Compliance Audit, all preconditions for a successful audit were fulfilled and the Audit Team wishes to express its gratitude to the CREOS staff involved in the Audit and the company management.
7 SIGNATURE PAGE

ENTSO-E Audit Team Members:

Jan Van Putten (Audit Team Leader)

Ivo Nishanov (Audit Team Member)

Robert Kielak (Audit Team Member)

Carlos Castel Conesa (Compliance monitoring Advisor)

Date and Place: 9/12/2015, Brussels, Belgium