



European Network of
Transmission System Operators
for Electricity

COMPLIANCE AUDIT REPORT

ČEPS a.s

14-15 OCTOBER 2014

**COMPLIANCE AUDIT CONDUCTED IN THE NATIONAL
CONTROL CENTRE IN PRAGUE BY ENTSO-E RGCE SG CME**

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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ČEPS S.A. ERROR! BOOKMARK NOT DEFINED.

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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 the 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 2014 is the fifth year of conducting mandatory compliance audits. SG CME performed 4 voluntary compliance audits in 2008-2009 and 24 mandatory audits in 2010-2013.

1.2 AUDITED TSO

The RGCE member TSO ČEPS was chosen for a Compliance Audit in 2014. CME conducted the audit on 14 & 15 October 2014 in Prague (ČEPS premises), Czech Republic.

1.3 AUDITED OH STANDARDS

The Compliance Audit encompassed 16 standards/sub-standards of Operation Handbook Policy 3 (Operational Security). In 2013, ČEPS made compliance declarations in the self-assessment process for all standards of OH Policy 3, a subset of which has been checked against their evidence during the audit.

1.4 RESULTS

At the beginning of the first audit day, the Audit Team had an hour and a half long visit in the National Control Centre, which helped the Audit Team to better understand the organisation and processes in the system of ČEPS. Presentation of installed SCADA/EMS with demonstration of calculations was the significant part of this visit.

The Audit Team audited 16 standards/sub-standards. The Audit Team concluded that ČEPS is fully compliant with all 16 of the standards.

ČEPS was very 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 ČEPS with the audited standards. ČEPS representatives answered all questions in a competent way and gave detailed explanations.

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 ČEPS staff involved in the Audit and the company management. The audit team concludes that ČEPS is an excellently organised TSO with very high level of expertise.

Table 1 describes ČEPS compliance declaration in self-assessment questionnaire 2013 and compliance audit questionnaire 2014 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

OH Standard	Self- assessment questionnaire 2013	Compliance audit questionnaire 2014	On site compliance audit 2014
P3-A1-S3.3. CALCULATIONS IN REAL TIME OPERATION	FCo	FCo	FCo
P3-A1-S3.3.1 FREQUENCY CALCULATION	FCo	FCo	FCo
P3-A1-S3.3.2 ADDITIONAL N-1 CALCULATIONS	FCo	FCo	FCo
P3-A2-S1. DETERMINATION OF THE EXTERNAL CONTINGENCY LIST AND OBSERVABILITY AREA	SCo	FCo	FCo
P3-A2-S2 IMPLEMENTATION OF OBSERVABILITY AREA	FCo	FCo	FCo
P3-A2-S6 DATA PROVISION	FCo	FCo	FCo
P3-A3-S2. OVERLOADS IN N-1 SITUATION (SIMULATION)	FCo	FCo	FCo
P3-A3-S2.2 INSTANTANEOUS TRIPPING IN N-1 SIMULATIONS	FCo	FCo	FCo
P3-A3-S4.1 TIE-LINES OPERATION CONDITIONS	FCo	FCo	FCo
P3-A3-S4.2.2 SYNCHRONISING EQUIPMENT SETTINGS	FCo	FCo	FCo
P3-A3-S4.2.3 PROTECTION SYSTEM SETTING	FCo	FCo	FCo
P3-A4-S5 PREPARATION OF REMEDIAL ACTIONS IN THE OPERATIONAL PLANNING STAGE	FCo	FCo	FCo
OH STANDARD P3-A4-S5.1	FCo	FCo	FCo
OH STANDARD P3-A4-S5.2	FCo	FCo	FCo
OH STANDARD P3-A4-S5.3	FCo	FCo	FCo
OH STANDARD P3-A4-S5.4	FCo	FCo	FCo

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 ČEPS. ČEPS personnel involved in the audit are given in Table 3.

TABLE 2. SG CME AUDIT TEAM

Audit Team role	Company or association	Name	Email address
Audit Team leader	MAVIR	Galambos László	galambos@mavir.hu
Audit Team member	EMS	Vladimir Ilic	vladimir.ilic@ems.rs
Audit Team member	AMPRION	Heinz-Dieter Ziesemann	heinz-dieter.ziesemann@amprion.net
Compliance Monitoring Advisor	ENTSO-E Secretariat	Jaka Žvab	jaka.zvab@entsoe.eu

TABLE 3. ČEPS AUDIT STAFF

Function in the company	Name
Director of the Grid Operation Control Section	Miroslav Šula
Head of Control Centre	Radim Chrapek
Head of Department Network Operation Security	Dalibor Klajbl
Control Centre Shift Leader	Martin Řeháček
Network Calculation Specialist	Martin Bauer
EMS expert	Tomáš Klouček

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 2013 self-assessment process.

The completed Audit Worksheet was sent by 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 ČEPS is given in the Table 4.

In preparation for the audit, ČEPS organised its supporting compliance documentation which is the evidence of the compliance with audited standards. The ENTSO-E RGCE SG CME acknowledges a good preparation for the audit.

All documentation (evidence) required for the onsite audit of each standard was also 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 will prepare a public report of its audit findings.

TABLE 4. SCHEDULE FOR THE COMPLIANCE AUDIT

Submittal of the audit material on behalf of the Audit Team	8 weeks prior to audit 19.8.2014
Objection or concern about audit team personnel	5 weeks prior to audit 9.9.2014
Submittal of the completed Audit Worksheet to the Audit Team by ČEPS	4 weeks prior to audit 16.9.2014
Initial feedback based on the submitted Audit Worksheet sent to ČEPS by the Audit Team	2 working days prior to audit 10.10.2014
Opening meeting of the Audit Team and CAM of ČEPS (1) Introduction of the Audit Team members, (2) Description of how the on-site audit will be conducted, (3) Discussion on how confidential information will be handled, (4) Discussion on data access required by the Audit Team, (5) Announcement that ČEPS will be asked to provide feedback on the audit process and results, (6) Presentation of the TSO and TSO's organization.	First audit day, 14.10.2014 09:00 – 09:30
Start of the OH standards' review*	First audit day, 14.10.2014 09:30 – 17:30
Continuation of the OH standards' review	Second audit day, 15.10.2014 09:00 – 12:30
Internal Audit Team meeting	Second audit day, 15.10.2014 12:30 – 14:00
Closing meeting with CAM of ČEPS (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 ČEPS 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.	Second audit day, 15.10.2014 14:00 – 15:30
Delivery of the draft audit report to ČEPS for review	2 weeks after the audit 29.10.2014
Remarks by ČEPS	4 weeks after the audit 12.11.2014
Delivery of the final audit report to ČEPS	6 weeks after the audit 26.11.2014
Acknowledgement of the final Audit Report by ENTSO-E RGCE Plenary and decision on its possible internal or external publishing.	RGCE Plenary in 2015

3.2 SCOPE

The objective of Compliance Audits in 2014 is to check chosen set of standards from OH Policy 3. These standards were also monitored in the 2013 regular compliance process 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 2013 stored at the ENTSO-E Secretariat related to audited TSO concerning the audited OH standards
- Audit Worksheet (AW) 2014
- 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
- TSO's internal bodies (forums, panels) for the implementation of the 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 2013 self-assessment questionnaires. It also processed (assessed) the answers in the 2014 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 2013 cross-border check regarding compliance level declarations)
- Analysis of the explanations and comments which the audited TSO made in the self-assessment 2013 and audit questionnaires 2014 in written form in order to evaluate the quality of explanations and comments
- Identification of the missing explanations in the self-assessment 2013 and audit questionnaire 2014
- Analysis of the improvements achieved during the implementation of mitigation and improvement plans declared in the MLA Addendum/Addenda, in the self-assessment questionnaire 2013 and in the Audit Worksheet 2014 in case of non-compliance and sufficient compliance

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 2013 and audit questionnaire 2014.
 - 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 2014 ONSITE AUDIT

4.1 OH STANDARD P3-A1-S3.3. CALCULATIONS IN REAL TIME OPERATION

SELF-ASSESSMENT QUESTIONNAIRE 2013	
P3-A1-S3.3	
Calculations in real time operation. The N situation has to be determined by state estimation on the basis of measurements and topology. Each TSO must perform an automatic N-1 simulation for all the contingencies of the contingency list in real time.	
Compliance Level: FCo	
Additional Questions	
Do you determine the N situation by state estimation on the basis of measurements and topology?	yes
Do you have a list of contingencies for the automatic N-1 simulations in real time?	yes
Do you perform an automatic N-1 simulation for all the contingencies of the contingency list in real time?	yes

AUDIT QUESTIONNAIRE 2014

P3-A1-S3.3

Calculations in real time operation. The N situation has to be determined by state estimation on the basis of measurements and topology. Each TSO must perform an automatic N-1 simulation for all the contingencies of the contingency list in real time.

Compliance Level: FCo

Concise explanation and list of evidence for declared compliance level:

The State Estimation

The real time State Estimator is the basic tool of the ČEPS' EMS, which is integral part of the Control System. The input breaker oriented model is based on online measurements (analogs and state signals) and it is common model for all EMS tools. The source of all measurements is the SCADA system, which contains sufficient amount of redundant measurements to ensure stable operation of the State Estimator.

The State Estimation is performed:

- periodically every 60s,
- after significant topology change,
- prior to each run of online Contingency, Optimal Power Flow and Short Circuit analysis.

The computation time is approximately 1 s (depends on the operation state).

A failure of the State Estimator (e.g. divergence of State Estimation) is automatically reported by an alarm to operators and via SMS to authorized ČEPS' administrators. The administrators hold on call service (24/7) and they have remote access into the Control System, so they can practically immediately try to solve the problem. EMS system uses the tools, which help to identify the purpose of the error. For instance suspicious measurements are automatically identified and reported in form table.

The Contingency Analysis

The Online Contingency Analysis tool is part of the EMS and it allows to simulate trip of one single or several modeled elements like a line, transformer, circuit breaker, generator and node. The impact of the contingencies is evaluated in perspective of change of network elements load and node voltage deviation.

The Online Contingency and Monitoring list is based on ČEPS' risk assessment. The both lists can be edited manually by authorized ČEPS' administrators. The Contingency list encompasses:

- all internal 400, 220 kV lines (without the unit lines),
- selected internal 110 kV lines,
- selected external 400, 220 kV lines, which have significant impact on internal system,
- internal system transformers (400/220 kV),
- selected external transformers, which have significant impact on internal system,
- selected internal bus bar couplers.

The Monitoring list encompasses:

- all internal nodes 400, 220 kV
- selected external nodes 400, 220 kV
- all internal 400, 220 kV lines (without the unit lines),
- selected internal 110 kV lines,
- selected external 400, 220 kV lines,
- selected internal bus bar couplers,
- selected external bus bar couplers,
- all internal transformers, (without the unit transformers).

The Contingency Analysis is performed periodically every 60 s and any N-1 violation is immediately presented to the users by always visible icon. A detailed interactive report is available. The results are stored and they are available in same form as the online results for all users. Computation time is approximately 0,6 s.

A failure of Contingency analysis is automatically reported by an alarm to operators and via SMS to authorized ČEPS' administrators. The administrators hold on call service (24/7) and they have remote access into the Control System, so they can practically immediately try to solve the problem.

The operators are trained in their workplaces regularly once a week (revision of functionalities and information about updates) and EMS manuals are also available.

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 determine the N situation by state estimation on the basis of measurements and topology?
Yes No

Do you have a list of contingencies for the automatic N-1 simulations in real time?
Yes No

Do you perform an automatic N-1 simulation for all the contingencies of the contingency list in real time?
Yes No

List of evidence, comments:

- 1) Live presentation of the EMS via Remote Access into ČEPS' Control System
- 2) ČEPS Observability Area (Screenshot from control system)
- 3) Internal substation detail (Screenshot from control system)
- 4) External substation detail (Screenshot from control system)
- 5) State Estimation time diagram
- 6) Contingency analysis time diagram
- 7) Contingency analysis protocol, branch loads view
- 8) Contingency analysis protocol, voltages view

- 9) Real time Contingency list
- 10) Real time Monitoring list
- 11) Suspicious measurement detection tool
- 12) State of EMS tools
- 13) A window with 5 worst Contingency cases (visible on projection wall)

COMPLIANCE AUDIT 2014

Compliance Level suggestion by the audit team: FCo

Explanation for the suggested compliance level:

In the control centre ČEPS representatives gave live presentation of the SCADA/EMS, on state estimation and contingency analysis. Contingency analysis are performed automatically every 60 seconds and operators receive information on the results. ČEPS representatives presented their observability area, external and internal substation details, contingency analysis protocol, real time contingency and monitoring list, suspicious measurements detection tool and the window with 5 worst Contingency cases displayed on the projection wall.

The contingency list does not encompass production unit lines, therefore audit team made the following recommendation:

At least the largest production unit lines should be included in the contingency list.

4.2 OH STANDARD P3-A1-S3.3.1 FREQUENCY CALCULATION

SELF-ASSESSMENT QUESTIONNAIRE 2013
P3-A1-S3.3.1
Frequency of calculation. The automatic N-1 simulation must run periodically, at least every 15 minutes in real time.
Compliance Level: FCo
Additional Questions How often do you perform an automatic N-1 simulation in real time? <i>every 60 s</i>

AUDIT QUESTIONNAIRE 2014
P3-A1-S3.3.1
Frequency of calculation. The automatic N-1 simulation must run periodically, at least every 15 minutes in real time.
Compliance Level: FCo
Concise explanation and list of evidence for declared compliance level: <i>The Contingency Analysis is performed periodically every 60 s and any N-1 violation is immediately presented to the users by always visible icon. A detailed interactive report is available. The results are stored in the ČEPS' Control System and they are available in same form as the online results for all authorized users. Computation time is approximately 0,6 s.</i>
Do you have a mitigation plan to the standard? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
In case of an existing Addendum or a Non Compliance Declaration; list of evidence for a mitigation plan, comments: <i>[Redacted]</i>
Additional Questions How often do you perform an automatic N-1 simulation in real time? <i>Every 60 seconds.</i>

Additional

List of evidence, comments:

- 1) Live presentation of the EMS via Remote Access into ČEPS´ Control System
- 2) Contingency analysis time diagram
- 3) Contingency analysis protocol
- 4) A window with 5 worst Contingency cases (visible on projection wall)

COMPLIANCE AUDIT 2014

Compliance Level suggestion by the audit team: FCo

Explanation for the suggested compliance level:

In the control centre ČEPS representatives gave live presentation of the SCADA/EMS, on state estimation and contingency analysis. Contingency analysis are performed automatically every 60 seconds and operators receive information on the results.

4.3 OH STANDARD P3-A1-S3.3.2 ADDITIONAL N-1 CALCULATIONS

SELF-ASSESSMENT QUESTIONNAIRE 2013

P3-A1-S3.3.2

Additional N-1 calculations. The TSOs must perform additional N-1 simulations prior to the application of important topology changes by manoeuvres (opening line, opening bus-bar) or after a relevant unexpected change of topology or a significant shift of the generation pattern (e.g. units tripped or out of operation).

Compliance Level: FCo

Additional Questions

In which cases or in which situations do you perform additional N-1 simulations?

We perform that before each topology change.

AUDIT QUESTIONNAIRE 2014

P3-A1-S3.3.2

Additional N-1 calculations. The TSOs must perform additional N-1 simulations prior to the application of important topology changes by manoeuvres (opening line, opening bus-bar) or after a relevant unexpected change of topology or a significant shift of the generation pattern (e.g. units tripped or out of operation).

Compliance Level: FCo

Concise explanation and list of evidence for declared compliance level:

ČEPS EMS allows to perform additional N-1 simulation in several ways. Each of them is appropriate for different occasion and user.

1. Automatic manipulation check

Manipulation check is performed automatically (without user interaction) before sending a command on a circuit breaker in substation. The intended change of topology (in case of line disconnection it is N-1 state) is verified by additional Load Flow calculation.

2. Offline Contingency Analysis

EMS contains an offline Network Analysis Tool, which allows to run one of the offline EMS tools (Load Flow, Contingency analysis, Short Circuit analysis, etc.). The user (usually operators) picks a desired time and date (history or a real time data) which he wants to analyze and then the relevant EMS model is load into the offline tool. The length of the archive is approximately half a year. The model can be manually modified (topology, generation shift) and the resulted data set is used as an input data for the analysis. The calculation reports are similar to the online EMS report and it is possible to easily compare results obtained on different state of grid.

3. Offline network analysis in Siemens PSS®E

The EMS model (results of the State Estimation) is regularly exported into the Siemens RAW format

version 29. Available data sets in RAW format:

- snapshot of internal grid, exported every 15minut
- snapshot of the Observability area, exported after significant change in topology
- Day Ahead Forecast models
- Two Days Ahead Forecast models
- Intraday Forecast models
- Merged European model (Day Ahead models or Day Ahead models plus snapshot of internal grid)

The users can choose appropriate data set for additional N-1 calculation, which is usually done in Siemens PSS®E. The length of the archive is approximately three years.

4. Offline network analysis in CTDS

Additional N-1 calculation is performed in TSC CTDS software on forecast models by operators on regular basis.

Operators are obliged according to operational guideline PI 620-15 to perform the security calculation before each important topological change. This activity is also part of their initial and continuous training.

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

In which cases or in which situations do you perform additional N-1 simulations?

Additionally N-1 can be performed:

- prior to sending a command on a circuit breaker,
- to verify intended manipulations,
- to verify or find remedial actions,
- to verify exceptional contingencies.

The calculation of LF is carried out automatically before each change of state of switchgear (switch on/switch off) initiated by the operator. In the case of more complicated or important topological changes operators are obliged to use the EMS Network Analysis Tool to check all steps of the topological change to fulfill all operational parameters (including N-1) during and after the topological change.

List of evidence, comments:

- 1) Live presentation of the offline EMS environment
- 2) Offline Contingency Analysis protocol
- 3) Online Contingency Analysis protocol
- 4) Snapshot of the grid in RAW format

- 5) Merged DACF model
- 6) Manual TRISQ EMS, chap.7 (*Manuál ČEPS_EMS_funkce.pdf, kap.7*)
- 7) Operational Guideline “Solving of N-1 violation and overloading” (*PI 620-15 “Řešení neplnění kritéria N-1 a přetížení”*)

COMPLIANCE AUDIT 2014

Compliance Level suggestion by the audit team: FCo

Explanation for the suggested compliance level:

Operational guideline “*Solving of N-1 violation and overloading*” (PI 620-15 “Řešení neplnění kritéria N-1 a přetížení”, dated from 7.10.2014) has been presented to the audit team, which includes the rule for performing the security analysis before each important change of the topology. According to this operational guideline dispatcher is obliged to perform the N-1 simulation before switching operations in the system.

Grid dispatcher presented a simulation of security analysis before change of the topology in the grid.

4.4 OH STANDARD P3-A2-S1. DETERMINATION OF THE EXTERNAL CONTINGENCY LIST AND OBSERVABILITY AREA

SELF-ASSESSMENT QUESTIONNAIRE 2013

P3-A2-S1

Determination of the external contingency list and observability area. Each TSO is required to determine the external contingency list and the external observability list related to its responsibility area. External contingency list items must be treated as normal type of contingencies in all N-1 security calculations in all time frames. Additionally exceptional contingencies (double lines, busbars) as announced by a neighbouring TSO have to be included by the TSO if it considers them very relevant for risks.

Compliance Level: SCo

Actions taken to reach compliance:

We are not able to solve multiple contingencies like double lines or busbars, we have to use contingency after N-1 calculation. FCo will be reached with new version of control system.

Additional Questions

Do you determine the external contingency list related to your responsibility area? yes

Do you determine the external observability list related to your responsibility area? yes

Which criteria do you implement in determination of the external contingency list and the external observability list related to your responsibility area?

The extension of both lists has been set based on experience as follows: It covers the whole first loop around the own grid + selected branches with relevant influence.

Do you include the elements of your external observability list in the model of your security analysis? yes

AUDIT QUESTIONNAIRE 2014

P3-A2-S1

Determination of the external contingency list and observability area. Each TSO is required to determine the external contingency list and the external observability list related to its responsibility area. External contingency list items must be treated as normal type of contingencies in all N-1 security calculations in all time frames. Additionally exceptional contingencies (double lines, busbars) as announced by a neighbouring TSO have to be included by the TSO if it considers them very relevant for risks.

Compliance Level: FCo

Concise explanation and list of evidence for declared compliance level:

Determination of the Contingency and Monitoring list and Observability Area is primary based on numerical network analysis performed on suitable UCTE reference model or similar European model in PSS@E. The final CA list (10% threshold) and the size of the OA (5% thresholds) is result of the outputs of the numerical analyses and our experience. The Contingency and the Monitoring list can be modified by authorized ČEPS' administrators.

The identified exceptional contingencies are implemented in the Contingency Analysis settings and can be easily enabled in the Contingency Analysis by authorized user.

Operators are obliged according to operational guideline PI 620-15 to consider activation of relevant external exceptional contingencies when we are informed by neighbors about the increased probability of their occurrence.

In stage of network planning (yearly, monthly and weekly) whole European grid model is used for complete contingency analysis using PSSE v.31. By this way the complete observability area is covered as well as external contingency checking. As regards exceptional contingencies only those relevant ones (taking into account probability and sensitivity criteria) from the lists received from partners are added to this analysis.

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 determine the external contingency list related to your responsibility area?

Yes No

Do you determine the external observability list related to your responsibility area?

Yes No

Which criteria do you implement in determination of the external contingency list and the external observability list related to your responsibility area?

ČEPS uses 10% numerical value limit for "Contingency influence threshold" and 5% for "Observability influence threshold". This value is determined empirically by OTDF calculation of PSSE. Obtained elements of neighboring system, whose outage changes the power flow at least of one internal item more than the limit. Thus obtained a collection of neighboring system elements determines external contingency list (external observability list).

All neighboring TSOs are included into the observability area of ČEPS. Lists of exceptional contingencies sent by all our neighbours are available.

Do you include the elements of your external observability list in the model of your security analysis?

Yes

No

List of evidence, comments:

- 1) Contingency list
- 2) Monitoring list
- 3) Size of the Observability Area
- 4) Example of the ČEPS Observability Area size assessment (article)
- 5) Output data from PSSE; complete European model used for network planning analysis.
- 6) External observability list of ČEPS
- 7) External contingency list of ČEPS
- 8) List of exceptional outages in 50HzT
- 9) List of exceptional outages in TenneT
- 10) List of exceptional outages in SEPS
- 11) List of exceptional outages in PSE
- 12) List of exceptional outages in APG
- 13) List of external contingencies for ČEPS area
- 14) Operational Guideline "Solving of N-1 violation and overloading" (PI 620-15 "Řešení neplnění kritéria N-1 a přetížení")

COMPLIANCE AUDIT 2014

Compliance Level suggestion by the audit team: FCo

Explanation for the suggested compliance level:

New SCADA/EMS is in operation from June 2014, since this date the standard is fulfilled. The Exceptional contingency list is predefined and these types of contingencies can now be included in the online contingency analysis by the operator.

The following lists and documents were presented and explained:

- Contingency list and Monitoring list
- Size of the Observability Area
- External observability list of ČEPS and External contingency list of ČEPS
- List of exceptional outages in 50HzT
- List of exceptional outages in SEPS
- Operational Guideline "Solving of N-1 violation and overloading" (PI 620-15 "Řešení neplnění kritéria N-1 a přetížení")

These documents were a good basis for proving the compliance level of ČEPS with this standard.

4.5 OH STANDARD P3-A2-S2 IMPLEMENTATION OF OBSERVABILITY AREA

SELF-ASSESSMENT QUESTIONNAIRE 2013	
P3-A2-S2	
Implementation of observability area. The external network model corresponding to the observability area must be implemented in the SCADA system and its real-time observability by state estimator must be ensured by a proper amount of exchanged online data.	
Compliance Level: FCo	
Additional Questions	
Are there external elements of your observability area that are not included in your SCADA/EMS model?	no

AUDIT QUESTIONNAIRE 2014	
P3-A2-S2	
Implementation of observability area. The external network model corresponding to the observability area must be implemented in the SCADA system and its real-time observability by state estimator must be ensured by a proper amount of exchanged online data.	
Compliance Level: FCo	
Concise explanation and list of evidence for declared compliance level:	
<p>The whole EMS model of the Observability Area is based on real time measurements from SCADA system. The EMS model is breaker oriented model, which contains sufficient amount of redundant measurements to ensure stable operation of the State Estimation. The device parameters are usually obtained from Day Ahead Congestion Forecast models, if not, so they are exchanged individually based on personal communication. Network configuration changes are exchanged with relevant TSO in the operational planning phase and also via email in due time. The Observability Area model encompasses online data from APG, TenneT, 50hertz, PSE, SEPS, MAVIR, HEP and ELES.</p> <p>Input data for Observability Area are ensured from both neighboring and non-neighboring TSOs. The contractual basis for data from neighboring TSOs is given by SOAs and by the respective Annexes.</p>	
<p>Do you have a mitigation plan to the standard? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>	
<p>In case of an existing Addendum or a Non Compliance Declaration; list of evidence for a mitigation plan, comments:</p>	

Additional Questions

Are there external elements of your observability area that are not included in your SCADA/EMS model?

Yes

No

List of evidence, comments:

- 1) Observability Area
- 2) Internal substation detail (Screenshot from control system)
- 3) External substation detail (Screenshot from control system)
- 4) Email notification of network configuration changes APG-ČEPS
- 5) Email notification of network configuration changes ČEPS-PSE
- 6) List of real-time telemetry
- 7) Agreement on Network and System Operation Management concerning System operation between ČEPS and VE Transmission (50HzT) p.19, Annex 15
- 8) Agreement on Grid and System Operation Management concluded between ČEPS,a.s. and E.ON Netz GmbH (Tennet DE) p.19, Annex 15
- 9) Agreement on Network and System Operation Management between ČEPS,a.s. and Verbund – Austrian Power Grid AG p.14, Annex 15
- 10) Agreement on Grid and System Operation Management concluded between ČEPS,a.s. and Slovenská elektrizačná prenosová sústava,a.s. (SEPS) p.16, Annex 13
- 11) System Operation Agreement concluded between ČEPS and PSE Operator S.A. (PSE) p.12, Appendix 12

COMPLIANCE AUDIT 2014

Compliance Level suggestion by the audit team: FCo

Explanation for the suggested compliance level:

The following lists and documents were presented and explained:

- External observability list of ČEPS Agreement on Network and System Operation Management concerning System operation between ČEPS and VE Transmission (50HzT) p.19, Annex 15
- Agreement on Grid and System Operation Management concluded between ČEPS,a.s. and E.ON Netz GmbH (Tennet DE) p.19, Annex 15
- Agreement on Network and System Operation Management between ČEPS,a.s. and Verbund – Austrian Power Grid AG p.14, Annex 15
- Agreement on Grid and System Operation Management concluded between ČEPS,a.s. and Slovenská elektrizačná prenosová sústava,a.s. (SEPS) p.16, Annex 13
- System Operation Agreement concluded between ČEPS and PSE Operator S.A. (PSE) p.12,

Appendix 12

These documents were a good basis for proving the compliance level of ČEPS with this standard.

Furthermore ČEPS has an online data exchange with the following non-neighbouring TSOs: ELES, MAVIR and HOPS.

4.6 OH STANDARD P3-A2-S6 DATA PROVISION

SELF-ASSESSMENT QUESTIONNAIRE 2013				
P3-A2-S6				
<p>Data provision. The TSO has to provide its neighbours in due time with all needed information for adequate simulations. Each TSO must provide the real-time telemetry and the network characteristics to its neighbours that is necessary for the neighbouring TSOs to have a sufficient external network model of the observability area for the state estimator and for the N-1 security calculations. This implies among others all data related to switching status, active and reactive power flows, voltage, injections and loads, tap changer position of transformers.</p>				
Compliance Level: FCo				
50Hertz FC	TenneT GmbH FC	APG FC	PSE FC	SEPS FC
Additional Questions				
Do you provide the data requested by the neighbouring TSO in due time?				
50Hertz yes	TenneT GmbH yes	APG yes	PSE yes	SEPS yes
Do you receive the data requested from the neighbouring TSO in due time?				
50Hertz yes	TenneT GmbH yes	APG yes	PSE yes	SEPS yes

AUDIT QUESTIONNAIRE 2014

P3-A2-S6

Data provision. The TSO has to provide its neighbours in due time with all needed information for adequate simulations. Each TSO must provide the real-time telemetry and the network characteristics to its neighbours that is necessary for the neighbouring TSOs to have a sufficient external network model of the observability area for the state estimator and for the N-1 security calculations. This implies among others all data related to switching status, active and reactive power flows, voltage, injections and loads, tap changer position of transformers.

Compliance Level: FCo

50Hertz

TenneT GmbH APG

PSE

SEPS

Concise explanation and list of evidence for declared compliance level:

The real time data provision with neighboring TSOs is based on the System Operational Agreements and the data are exchanged via Electronic Highway (EH). ČEPS exchanges data with: APG, TenneT, 50hertz, PSE, SEPS, MAVIR, HEP and ELES.

We are also able to provide data set in UCTE file format on offline basis:

- any state of internal grid in desired time from EMS archive with a depth of half a year.
- 15 min Snapshots of the internal grid from archive with a depth of almost three years.

Input data for Observability Area are ensured from both neighboring and non-neighboring TSOs. Contractual basis for data from neighboring TSOs is given by SOA and by the respective Annexes.

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 provide the data requested by the neighbouring TSO in due time?

50Hertz
Yes No

TenneT GmbH
Yes No

APG
Yes No

PSE
Yes No

SEPS
Yes No

Do you receive the data requested from the neighbouring TSO in due time?

50Hertz
Yes No

TenneT GmbH
Yes No

APG
Yes No

PSE
Yes No

SEPS
Yes No

List of evidence, comments:

- 1) List of available Snapshots
- 2) List of real-time telemetry
- 3) Agreement on Network and System Operation Management concerning System operation between ČEPS and VE Transmission(50HzT) p.19, Annex 15
- 4) Agreement on Grid and System Operation Management concluded between ČEPS,a.s. and E.ON Netz GmbH (Tennet DE) p.19, Annex 15
- 5) Agreement on Network and System Operation Management between ČEPS,a.s. and Verbund – Austrian Power Grid AG p.14, Annex 15
- 6) Agreement on Grid and System Operation Management concluded between ČEPS,a.s. and Slovenská elektrizačná prenosová sústava,a.s. (SEPS) p.16, Annex 13
- 7) System Operation Agreement concluded between ČEPS and PSE Operator S.A. (PSE) p.12, Appendix 12

COMPLIANCE AUDIT 2014

Compliance Level suggestion by the audit team: FCo

Explanation for the suggested compliance level:

The following documents were presented and explained:

- Agreement on Network and System Operation Management concerning System operation between ČEPS and VE Transmission (50HzT) p.19, Annex 15
- Agreement on Grid and System Operation Management concluded between ČEPS,a.s. and E.ON Netz GmbH (Tennet DE) p.19, Annex 15
- Agreement on Network and System Operation Management between ČEPS,a.s. and Verbund – Austrian Power Grid AG p.14, Annex 15
- Agreement on Grid and System Operation Management concluded between ČEPS,a.s. and Slovenská elektrizačná prenosová sústava,a.s. (SEPS) p.16, Annex 13
- System Operation Agreement concluded between ČEPS and PSE Operator S.A. (PSE) p.12, Appendix 12

These documents were a good basis for proving the compliance level of ČEPS with this standard.

Furthermore ČEPS has an online data exchange with the following non-neighbouring TSOs: ELES, MAVIR and HOPS.

4.7 OH STANDARD P3-A3-S2. OVERLOADS IN N-1 SITUATION (SIMULATION)

SELF-ASSESSMENT QUESTIONNAIRE 2013

P3-A3-S2

Overloads in N-1 situation (simulation). Considering the loss of a network element (N-1 situation) overloads on impacted network elements are admitted only if remedial actions are available as to get back any overloaded network element below its respective Permanent Admissible Transmission Loading PATL.

Compliance Level: FCo

Additional Questions

What type of remedial action do you use to get back an overloaded network element below its respective PATL?

Reconfiguration and redispatch.

AUDIT QUESTIONNAIRE 2014

P3-A3-S2

Overloads in N-1 situation (simulation). Considering the loss of a network element (N-1 situation) overloads on impacted network elements are admitted only if remedial actions are available as to get back any overloaded network element below its respective Permanent Admissible Transmission Loading PATL.

Compliance Level: FCo

Concise explanation and list of evidence for declared compliance level:

In frame of network planning different situations are checked on appropriate models (the operational state closest to the expected one, modified by adequate production, consumption and transits). The first objective is to confirm that planned outages (lines, transformers and generators) don't threaten safe operation at all. Second objective is to define external/internal conditions for limiting state. For identified overloading (N-1) either corrective remedy is recommended (if available) or preventive remedy has to be applied. Finally the need of recommended measure is examined by dispatchers in so called improving process of regional TSO security cooperation (during evening's operation planning teleconference).

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

What type of remedial action do you use to get back an overloaded network element below its respective PATL?

We use two types of reconfiguration. In large substation there is possible to find optimal connection (Hradec, Sokolnice, Lískovec, Přeštice). This reconfiguration has more preventive character as it is applied already in advance, but in case of fast change of operation state, it is possible to do also as corrective measure. In some important substations (Slavětice, Kočín) there is no possibility to change the base schema due to keeping of nuclear power plants safe connection (Dukovany and Temelín).

Another kind of reconfiguration is in small substation, where opening of circuit breaker means reduction of parallel operation to radial one to interrupt transiting flows. The typical place is substation Opočíněk and substations 110kV (Výškov, Chotějovice) operated in parallel with transmission grid.

Application of redispatch depends on availability of generators for decreasing as well as increasing. Also speed of ramping is limiting factor for this use to relieve overloaded line in time.

For maximal utilization of the line capability we use thermal rating/dynamic loading. Based on on-line temperature monitoring alongside the whole trace of chosen lines the real ampacity is always known (the secure distance guarantee). For predictive models (DACF, D2CF and IDCF) we take conservative prediction of temperature to determine ampacity in advance (trial phase). This ampacity is in principle different hour by hour according to conditions. Application of thermal rating is possible only for lines where investigation of longitudinal profile has been checked and improved and there is no limiting equipment in substation (in July 2014 it is 10 transmission lines 400kV and 12 lines 220kV).

This line improvement has rapidly decreased the need of remedial action in our grid since beginning of this year.

List of evidence, comments:

- 1) Regular Annex to the weekly network planning (*Příloha k týdennímu programu sítě a zdrojů DŘ ČEPS*)
- 2) Operational Guideline "Solving of N-1 violation and overloading" (*PI 620-15 "Řešení neplnění kritéria N-1 a přetížení"*)
- 3) Operational Guideline "Ampacity of lines and transformers" (*PI 520-146 "Zatížitelnost vedení a transformátorů"*)
- 4) Agreement on Network and System Operation Management concerning System operation between ČEPS and VE Transmission(50HzT) p.15, Annex 12
- 5) Agreement on Grid and System Operation Management concluded between ČEPS,a.s. and E.ON Netz GmbH (Tennet DE) p.15, Annex 12, Annex 13,
- 6) Agreement on Network and System Operation Management between ČEPS,a.s. and Verbund – Austrian Power Grid AG p.12, Annex 12, Annex 13
- 7) Agreement on Grid and System Operation Management concluded between ČEPS,a.s. and Slovenská elektrizačná prenosová sústava,a.s. (SEPS) p.13, Annex 10
- 8) System Operation Agreement concluded between ČEPS and PSE Operator S.A. (PSE) p.8, Appendix 10
- 9) Agreement concerning cross-border Redispatch (ČEPS - 50HzT)
- 10) Agreement on Cross-border redispatch (ČEPS - Tennet DE)
- 11) Agreement concerning cross-border Redispatch of Power Generation (ČEPS – APG)
- 12) The Agreement on the Rules of electricity supply in the case of cross-border redispatch for the needs of ČEPS (ČEPS - SEPS)
- 13) General Agreement on Emergency Energy Exchange (ČEPS – PSE)
- 14) Agreement on Trial Phase of Multilateral Remedial Actions within TSC (MRA) - Amendments 1 +4, Annex 4

- 15) Practical Example of Realization MRA
- 16) Agreement on the procedures of the producer and the TSO in managing electricity flows using redispatch (ČEPS - Sokolovská uhelná)
- 17) Agreement on the procedures of the producer and the TSO in managing electricity flows using redispatch (ČEPS - Elektrárna Dětmorovice)
- 18) Agreement on the procedures of the producer and the TSO in managing electricity flows using redispatch (ČEPS - Elektrárna Chvaletice)
- 19) Agreement on the procedures of the producer and the TSO in managing electricity flows using redispatch (ČEPS - ČEZ,a.s.)
- 20) Partial agreement on the procedures of the producer and the TSO in managing electricity flows using redispatch (ČEPS - ČEZ Elektrárna Temelín)

COMPLIANCE AUDIT 2014

Compliance Level suggestion by the Audit Team: FCo

Explanation for the suggested compliance level:

Annexes of SOA with neighbouring TSOs include predefined remedial actions.

The following documents were presented and explained:

- Operational guideline PI 620-15 (dated from 7.10.2014)
- Operational Guideline "Ampacity of lines and transformers" (PI 520-146 "Zatížitelnost vedení a transformátorů"), 1.7.2014
- Agreement on Network and System Operation Management concerning System operation between ČEPS and VE Transmission(50HzT) p.15, Annex 12
- Agreement on Grid and System Operation Management concluded between ČEPS,a.s. and E.ON Netz GmbH (Tennet DE) p.15, Annex 12, Annex 13
- Agreement on Network and System Operation Management between ČEPS,a.s. and Verbund – Austrian Power Grid AG p.12, Annex 12, Annex 13
- Agreement on Grid and System Operation Management concluded between ČEPS,a.s. and Slovenská elektrizačná prenosová sústava,a.s. (SEPS) p.13, Annex 10
- System Operation Agreement concluded between ČEPS and PSE Operator S.A. (PSE) p.8, Appendix 10

In addition the calculation of ampacity of lines with dynamic rating of temperature was presented. Also a practical example of MRA was shown and explained in the special report of TSC from 14.7.2014.

These documents were a good basis for proving the compliance level of ČEPS with this standard.

As an example for topology changes a possible reconfiguration in substation Hradec was shown.

4.8 OH STANDARD P3-A3-S2.2 INSTANTANEOUS TRIPPING IN N-1 SIMULATIONS

SELF-ASSESSMENT QUESTIONNAIRE 2013

P3-A3-S2.2

Instantaneous tripping in N-1 simulation. It is admitted to overpass the TC of a network element after a N-1 simulation exclusively if there is no uncontrolled evolution for the overall system (no cascading tripping, no voltage collapse, no loss of synchronism). If the N-1 simulation indicates an uncontrolled evolution or cascading effects with impact outside the boundaries, preventive remedial actions are mandatory to come back to an N-1 secure situation. TSO informs its neighbours as soon as the danger of over-passing is detected and no remedial actions are available to avoid it.

Compliance Level: FCo

Additional Questions

Do you apply preventive remedial actions in case that probable
instantaneous tripping in N-1 simulation leads to a cascading effect? yes

AUDIT QUESTIONNAIRE 2014

P3-A3-S2.2

Instantaneous tripping in N-1 simulation. It is admitted to overpass the TC of a network element after a N-1 simulation exclusively if there is no uncontrolled evolution for the overall system (no cascading tripping, no voltage collapse, no loss of synchronism). If the N-1 simulation indicates an uncontrolled evolution or cascading effects with impact outside the boundaries, preventive remedial actions are mandatory to come back to an N-1 secure situation. TSO informs its neighbours as soon as the danger of over-passing is detected and no remedial actions are available to avoid it.

Compliance Level: FCo

Concise explanation and list of evidence for declared compliance level:

During the network planning (particularly weekly checking of predicted states) special attention is paid to the identification of uncontrolled tripping of the important network elements. Need of application of different preventive measures and their sufficiency is identified on the predictive models week ahead or day ahead if necessary. In case of the risk for neighboring TSO we start discussion.

Cascading effect is simulated manually on the predictive models in planning stage as well as day ahead and intraday models of TSO regional cooperation.

Finally the need of recommended measure is examined by dispatchers in so called improving process of regional TSO security cooperation (during evening's operation planning teleconference).

The operation under the risk of cascading tripping without fast and efficient measure is not allowed.

The special case are the lines equipped by overcurrent protection (tie lines 400kV with 50HzT). These protections with sort set delay have to secure these lines against damages. On bilateral base there are agreed procedures for fast relieving the lines using cross border redispatch with 50HzT (between fast hydro power plants on both sides of border).

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 apply preventive remedial actions in case that probable instantaneous tripping in N-1 simulation leads to a cascading effect?

Yes No

List of evidence, comments:

- 1) Operational Guideline "Overflow automatics on tie-lines with 50HzT" (PI 920-4 "Přetoková automatika na vedení V445 a V446")
- 2) Operational Guideline "Solving of N-1 violation and overloading" (PI 620-15 "Řešení

neplnění kritéria N-1 a přetížení")

- 3) mail communication - Example of complex solving and coordination of measures – planned outage of V437,8 –
- 4) Agreement on Network and System Operation Management concerning System operation between ČEPS and VE Transmission(50HzT) p.15, Annex 12
- 5) Agreement on Grid and System Operation Management concluded between ČEPS,a.s. and E.ON Netz GmbH (Tennet DE) p.15, Annex 12, Annex 13,
- 6) Agreement on Network and System Operation Management between ČEPS,a.s. and Verbund – Austrian Power Grid AG p.12, Annex 12, Annex 13
- 7) Agreement on Grid and System Operation Management concluded between ČEPS,a.s. and Slovenská elektrizačná prenosová sústava,a.s. (SEPS) p.13, Annex 10
- 8) System Operation Agreement concluded between ČEPS and PSE Operator S.A.(PSE) p.8, Appendix 10

COMPLIANCE AUDIT 2014

Compliance Level suggestion by the audit team: FCo

Explanation for the suggested compliance level:

Cascading effects are simulated manually on the predictive models in planning stage as well as on day ahead and intraday models in relation with TSO regional cooperation.

Annexes of SOA with neighbouring TSOs include predefined remedial actions.

The following lists and documents were presented and explained:

- Agreement on Network and System Operation Management concerning System operation between ČEPS and VE Transmission(50HzT) p.15, Annex 12
- Agreement on Grid and System Operation Management concluded between ČEPS,a.s. and E.ON Netz GmbH (Tennet DE) p.15, Annex 12, Annex 13
- Agreement on Network and System Operation Management between ČEPS,a.s. and Verbund – Austrian Power Grid AG p.12, Annex 12, Annex 13
- Agreement on Grid and System Operation Management concluded between ČEPS,a.s. and Slovenská elektrizačná prenosová sústava,a.s. (SEPS) p.13, Annex 10
- System Operation Agreement concluded between ČEPS and PSE Operator S.A. (PSE) p.8, Appendix 10

These documents were a good basis for proving the compliance level of ČEPS with this standard.

In addition an example of complex solving and coordination of measures concerning the planned outage of the 400 kV double tie line between ČEPS and APG (Slavetice – Dürnrrohr) was presented (document: Long term planning Pilot 2, 26.5.2014)

4.9 OH STANDARD P3-A3-S4.1 TIE-LINES OPERATION CONDITIONS

SELF-ASSESSMENT QUESTIONNAIRE 2013

P3-A3-S4.1

Tie-lines operating conditions. The information on values of PATL, TATL or couples (TATL; Duration), overload conditions (acceptable duration of overload), and TC of tie-lines must be shared with adjacent TSOs. Mutual information must be agreed and implemented. In case of settings changes TSO has to inform the adjacent TSO on the new values.

Compliance Level: FCo

Additional Questions

Do you have a reference document with the values of PATL, TATL and TC for both sides of tie-lines agreed by both TSOs?

50Hertz	TenneT GmbH	APG	PSE	SEPS
yes	yes	yes	yes	yes

Please, describe the procedure of changing settings of PATL, TATL and TC on tie-lines?

All changes are communicated in frame of System Operational Agreement - annexes update in advance.

AUDIT QUESTIONNAIRE 2014

P3-A3-S4.1

Tie-lines operating conditions. The information on values of PATL, TATL or couples (TATL; Duration), overload conditions (acceptable duration of overload), and TC of tie-lines must be shared with adjacent TSOs. Mutual information must be agreed and implemented. In case of settings changes TSO has to inform the adjacent TSO on the new values.

Compliance Level: FCo

Concise explanation and list of evidence for declared compliance level:

The actual transmission limits both PATL and TATL of tie-lines are given by the relevant Annexes of the System Operational Agreements with neighboring TSOs, which are regularly checked and updated if necessary.

As a pilot project there is stepwise application of the thermal/dynamic rating on APG tielines for maximal utilization of the line capability Based on on-line temperature monitoring alongside the whole trace of chosen lines the real ampacity is always known (the secure distance guarantee) values of the Czech and Austrian part are on-line exchanged. This ampacity is in principle different hour by hour according to conditions.

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 have a reference document with the values of PATL, TATL and TC for both sides of tie-lines agreed by both TSOs?

50Hertz
Yes No

TenneT GmbH
Yes No

APG
Yes No

PSE
Yes No

SEPS
Yes No

Please, describe the procedure of changing settings of PATL, TATL and TC on tie-lines?

Actual transmission limits of tie-lines are given by relevant Annexes of the System Operational Agreements with neighboring TSOs, which are regularly checked and updated if necessary. Every change of the transmission limit must be accompanied by a change of the respective annex of SOA. In case of TATL calculated from on-line data they must be transmitted and implemented on-line in the control system. On-line data exchange for this purpose is also covered by the relevant Annex of SOA.

Common procedure is under improvement with APG experts since November 2013. Graphs and experience are described in the APG presentation. In next step further improvement of the equipment (CT) on both sides is planned till 06/2015

List of evidence, comments:

- 1) Agreement on Network and System Operation Management concerning System operation between ČEPS and VE Transmission(50HzT) p.13, Annex 8a
- 2) Agreement on Grid and System Operation Management concluded between ČEPS,a.s. and E.ON Netz GmbH (Tennet DE) p.14, Annex 8a
- 3) Agreement on Network and System Operation Management between ČEPS,a.s. and Verbund – Austrian Power Grid AG p.11, Annex 8a
- 4) Agreement on Grid and System Operation Management concluded between ČEPS,a.s. and Slovenská elektrizačná prenosová sústava,a.s. (SEPS) p.12, Annex 7a
- 5) System Operation Agreement concluded between ČEPS and PSE Operator S.A.(PSE) p.6, Appendix 4
- 6) On-line demonstration in SCADA (The lines overview, The system automatics of the lines V445, V446)
- 7) Operational Guideline “Ampacity of lines and transformers” (PI 520-146 “Zatížitelnost vedení a transformátorů”)
- 8) “Dynamic Rating with APG” – presentation from the last meeting 03/2014

COMPLIANCE AUDIT 2014

Compliance Level suggestion by the Audit Team: FCo

Explanation for the suggested compliance level:

The following documents were presented and explained:

- Agreement on Network and System Operation Management concerning System operation between ČEPS and VE Transmission(50HzT) p.13, Annex 8a
- Agreement on Grid and System Operation Management concluded between ČEPS,a.s. and E.ON Netz GmbH (Tennet DE) p.14, Annex 8a
- Agreement on Network and System Operation Management between ČEPS,a.s. and Verbund – Austrian Power Grid AG p.11, Annex 8a
- Agreement on Grid and System Operation Management concluded between ČEPS,a.s. and Slovenská elektrizačná prenosová sústava,a.s. (SEPS) p.12, Annex 7a
- System Operation Agreement concluded between ČEPS and PSE Operator S.A.(PSE) p.6, Appendix 4
- On-line demonstration in SCADA (The lines overview, The system automatics of the lines V445, V446)
- Operational Guideline “Ampacity of lines and transformers” (PI 520-146 “Zatížitelnost vedení a transformátorů”)

These documents were a good basis for proving the compliance level of ČEPS with this standard.

In addition a presentation of “Dynamic Rating with APG” was shown.

4.10 OH STANDARD P3-A3-S4.2.2 SYNCHRONISING EQUIPMENT SETTINGS

SELF-ASSESSMENT QUESTIONNAIRE 2013

P3-A3-S4.2.2

Synchronising equipment settings. TSO is obliged to inform the neighbouring TSO about the settings of the synchronising equipment for switching supervision installed on tie-lines (voltage phase angle difference, voltage module difference, frequency difference).

Compliance Level: FCo

Additional Questions

Do you inform your neighbours about the settings of the synchronising equipment for switching supervision installed on your side of tie-lines?

50Hertz	TenneT GmbH	APG	PSE	SEPS
yes	yes	yes	yes	yes

Do you have information about the settings of the synchronising equipment for switching supervision installed on the neighbouring side of tie-lines?

50Hertz	TenneT GmbH	APG	PSE	SEPS
yes	yes	yes	yes	yes

AUDIT QUESTIONNAIRE 2014

P3-A3-S4.2.2

Synchronising equipment settings. TSO is obliged to inform the neighbouring TSO about the settings of the synchronising equipment for switching supervision installed on tie-lines (voltage phase angle difference, voltage module difference, frequency difference).

Compliance Level: FCo

Concise explanation and list of evidence for declared compliance level:

Setting of synchronization devices on both sides of tie-lines is described in the respective Annex of SOA with neighbouring TSOs which are regularly checked and updated.

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 inform your neighbours about the settings of the synchronising equipment for switching supervision installed on your side of tie-lines?

50Hertz Yes No **TenneT GmbH** Yes No **APG** Yes No **PSE** Yes No **SEPS** Yes No

Do you have information about the settings of the synchronising equipment for switching supervision installed on the neighbouring side of tie-lines?

50Hertz Yes No **TenneT GmbH** Yes No **APG** Yes No **PSE** Yes No **SEPS** Yes No

List of evidence, comments:

- 1) Agreement on Network and System Operation Management concerning System operation between ČEPS and VE Transmission (50HzT) p.14, Annex 9
- 2) Agreement on Grid and System Operation Management concluded between ČEPS,a.s. and E.ON Netz GmbH (Tennet DE) p.14, Annex 9
- 3) Agreement on Network and System Operation Management between ČEPS,a.s. and Verbund – Austrian Power Grid AG p.11, Annex 9
- 4) Agreement on Grid and System Operation Management concluded between ČEPS,a.s. and Slovenská elektrizačná prenosová sústava,a.s. (SEPS) p.12, Annex 8
- 5) System Operation Agreement concluded between ČEPS and PSE Operator S.A.(PSE) p.10, Appendix 6

COMPLIANCE AUDIT 2014

Compliance Level suggestion by the Audit Team: FCo

Explanation for the suggested compliance level:

The following documents were presented and explained:

- Agreement on Network and System Operation Management concerning System operation between ČEPS and VE Transmission (50HzT) p.14, Annex 9 (at the moment ČEPS is in a process of updating this annex)
- Agreement on Grid and System Operation Management concluded between ČEPS,a.s. and E.ON Netz GmbH (Tennet DE) p.14, Annex 9
- Agreement on Network and System Operation Management between ČEPS,a.s. and Verbund – Austrian Power Grid AG p.11, Annex 9
- Agreement on Grid and System Operation Management concluded between ČEPS,a.s. and Slovenská elektrizačná prenosová sústava,a.s. (SEPS) p.12, Annex 8
- System Operation Agreement concluded between ČEPS and PSE Operator S.A.(PSE) p.10, Appendix 6

These documents were a good basis for proving the compliance level of ČEPS with this standard.

4.11 OH STANDARD P3-A3-S4.2.3 PROTECTION SYSTEM SETTING

SELF-ASSESSMENT QUESTIONNAIRE 2013

P3-A3-S4.2.3

Protection system settings. The settings of protection systems for tie-lines have to be co-ordinated between TSOs. Therefore TSO is obliged to inform in advance neighbouring TSOs of the settings of protection systems and of changes in operating conditions of tie lines.

Compliance Level: FCo

50Hertz
FC

TenneT GmbH
FC

APG
FC

PSE
FC

SEPS
FC

Additional Questions

How do you coordinate the settings of protection systems for tie-lines with neighbouring TSOs ?

All changes are communicated in frame of System Operational Agreement - annexes update in advance.

AUDIT QUESTIONNAIRE 2014

P3-A3-S4.2.3

Protection system settings. The settings of protection systems for tie-lines have to be co-ordinated between TSOs. Therefore TSO is obliged to inform in advance neighbouring TSOs of the settings of protection systems and of changes in operating conditions of tie lines.

Compliance Level: FCo

50Hertz
FCo

TenneT GmbH
FCo

APG
FCo

PSE
FCo

SEPS
FCo

Compliance Level:

Concise explanation and list of evidence for declared compliance level:

Both the installation and the setting of the protections on the common tie-lines are matter of discussion for the experts where the final conclusion is affirmed in the relevant Annex of SOA by accountable people from both affected TSOs.

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

How do you coordinate the settings of protection systems for tie-lines with neighbouring TSOs ?

Both the installation and the setting of the protections on the common tie-lines are matter of discussion for the experts where the final conclusion is affirmed in the relevant Annex of SOA by accountable people from both affected TSOs.

List of evidence, comments:

- 1) Agreement on Network and System Operation Management concerning System operation between ČEPS and VE Transmission (50HzT) p.13, Annex 8b
- 2) Agreement on Grid and System Operation Management concluded between ČEPS,a.s. and E.ON Netz GmbH (Tennet DE) p.14, Annex 8c
- 3) Agreement on Network and System Operation Management between ČEPS,a.s. and Verbund – Austrian Power Grid AG p.11, Annex 8b
- 4) Agreement on Grid and System Operation Management concluded between ČEPS,a.s. and Slovenská elektrizačná prenosová sústava,a.s. (SEPS) p.12, Annex 7c
- 5) System Operation Agreement concluded between ČEPS and PSE Operator S.A. (PSE) p.10, Appendix 6

COMPLIANCE AUDIT 2014

Compliance Level suggestion by the audit team: FCo

Explanation for the suggested compliance level:

The following documents were presented and explained:

- Agreement on Network and System Operation Management concerning System operation between ČEPS and VE Transmission (50HzT) p.13, Annex 8b
- Agreement on Grid and System Operation Management concluded between ČEPS,a.s. and E.ON Netz GmbH (Tennet DE) p.14, Annex 8c
- Agreement on Network and System Operation Management between ČEPS,a.s. and Verbund – Austrian Power Grid AG p.11, Annex 8b
- Agreement on Grid and System Operation Management concluded between ČEPS,a.s. and Slovenská elektrizačná prenosová sústava,a.s. (SEPS) p.12, Annex 7c
- System Operation Agreement concluded between ČEPS and PSE Operator S.A. (PSE) p.10, Appendix 6

These documents were a good basis for proving the compliance level of ČEPS with this standard.

4.12 OH STANDARD P3-A4-S5 PREPARATION OF REMEDIAL ACTIONS IN THE OPERATIONAL PLANNING STAGE

SELF-ASSESSMENT QUESTIONNAIRE 2013

P3-A4-S5

Preparation of remedial actions in the operational planning stage. Preventive and curative remedial actions are due to be prepared in the operational planning stage.

Compliance Level: FCo

No Additional Questions

AUDIT QUESTIONNAIRE 2014

P3-A4-S5

Preparation of remedial actions in the operational planning stage. Preventive and curative remedial actions are due to be prepared in the operational planning stage.

Compliance Level: FCo

Concise explanation and list of evidence for declared compliance level:

First need of remedial action can be discovered in frame of yearly planning, when more representative models (different 3-4 typical situations for each month) are created to check complex planned situations, respecting of corresponding neighborhood (known connection, expected production/consumption and from that coming export/import/transit). This measure could be preventive (only reconfiguration in this stage) or curative in case of application of TATL is possible.

During the monthly planning the previously checked situation is further precised and recalculated. Additional situations are investigated (also low-load regimens, U/Q issue, high transit, no transit, high export, small import) if it is realistic. For some special situations also new measures have to be activated (automatics, requests for DSOs, Generators etc).

As far as production/generation of particular resources is definitely known only in short term network planning, the necessity and availability of remedial actions have to be checked.

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:

1) Operational Guideline "Solving of N-1 violation and overloading" (PI 620-15 "Řešení

neplnění kritéria N-1 a přetížení”)

- 2) Analysis of yearly planning – summary, model database (electronic form).
- 3) Monthly report – description of expectations, modelled situation, contingency analysis results and recommendation of remedies.
- 4) Regular Annex to the weekly network planning (*Příloha k týdennímu programu sítě a zdrojů DŘ ČEPS*)

COMPLIANCE AUDIT 2014

Compliance Level suggestion by the Audit Team: FCo

Explanation for the suggested compliance level:

The following documents were presented and explained:

- Operational Guideline “Solving of N-1 violation and overloading” (PI 620-15 “Řešení neplnění kritéria N-1 a přetížení”)
- Analysis of yearly planning for 2014– summary, model database (electronic form)., kapitola 7, Nov 2013
- Monthly report, for July 2014 – description of expectations, modelled situation, contingency analysis results and recommendation of remedies.
- Regular Annex to the weekly network planning available for dispatchers and updated daily (*Příloha k týdennímu programu sítě a zdrojů DŘ ČEPS*, e.g. 30th and 42nd week of 2014)

These documents were a good basis for proving the compliance level of ČEPS with this standard.

In addition “emergency dispatcher” presented the processes for preparation of remedial actions in day ahead and in intraday with the CTDS-tool.

4.13 OH STANDARD P3-A4-S5.1

SELF-ASSESSMENT QUESTIONNAIRE 2013
P3-A4-S5.1
Remedies are prepared pursuant to the time horizons they are detected: from year ahead, to week ahead and till day ahead.
Compliance Level: FCo
No Additional Questions

AUDIT QUESTIONNAIRE 2014
P3-A4-S5.1
Remedies are prepared pursuant to the time horizons they are detected: from year ahead, to week ahead and till day ahead.
Compliance Level: FCo
Concise explanation and list of evidence for declared compliance level: Remedies are prepared pursuant to the time horizons they are detected: from year ahead, to week ahead and till day ahead. First need of remedial action can be discover in frame of yearly planning, when more representative models (different 3-4 for each month) are created to check all planned situations, respecting of corresponding neighborhood (known connection, expected production/consumption and from that coming export/import/transit). This measure could be preventive (only reconfiguration in this stage) or curative in case of application of TATL is possible. During the monthly planning the previously checked situation is further specified and recalculated. Additional situations are investigated (also low-load regimes, U/Q issue, high transit, no transit, high export, small import) if it is realistic. For some special situations also new measures have to be activated (automatics, requests for DSOs, Generators etc). Recommended measures (preventive/curative) are checked during evening's coordination teleconference, i.e. efficiency, availability, side effect to the partners. Application is discussed by dispatchers. The time of application is agreed. As a special type of remedies we used automatics for solving permanent weakness of the grid before its improvement (long term issue). Their setting is derived from the adequacy of the lines and it is subject of agreement with producers in particular area.
Do you have a mitigation plan to the standard? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
In case of an existing Addendum or a Non Compliance Declaration; list of evidence for a mitigation

plan, comments:

- - -

List of evidence, comments:

- 1) Analysis of yearly planning – summary, model database (electronic form)
- 2) Monthly report – description of expectations, modelled situation, contingency analysis results and recommendation of remedies.
- 3) Regular Annex to the weekly network planning (*Příloha k týdennímu programu sítě a zdrojů DŘ ČEPS*)
- 4) Operational Guideline “Planned and automatic reduction of generation in area Výškov” (PI 928-2 “POV a AOV Výškov”)
- 5) Operational Guideline “Planned and automatic reduction of generation in PP Vřesová” (PI 928-1 “AOV PPC Vřesová”)

COMPLIANCE AUDIT 2014

Compliance Level suggestion by the Audit Team: FCo

Explanation for the suggested compliance level:

The following documents were presented and explained:

- Analysis of yearly planning for 2014 – summary, model database (electronic form), kapitola 7, Nov 2013
- Monthly report, for July 2014 – description of expectations, modelled situation, contingency analysis results and recommendation of remedies.
- Regular Annex to the weekly network planning available for dispatchers and updated daily (*Příloha k týdennímu programu sítě a zdrojů DŘ ČEPS*, e.g. 30th and 42nd week of 2014)

These documents were a good basis for proving the compliance level of ČEPS with this standard.

In addition “emergency dispatcher” presented the processes for preparation of remedial actions in day ahead and in intraday with CTDS tool.

ČEPS representatives presented a method for automatic reduction of generation described in Operational Guideline “Planned and automatic reduction of generation in area Výškov” (PI 928-2 “POV a AOV Výškov”, 31.7.2013) and Operational Guideline “Planned and automatic reduction of generation in PP Vřesová” (PI 928-1 “AOV PPC Vřesová”, 10.7.2014).

4.14 OH STANDARD P3-A4-S5.2

SELF-ASSESSMENT QUESTIONNAIRE 2013

P3-A4-S5.2

These remedial actions (preventive/curative) have to be previously assessed by numerical simulations in order to evaluate the efficiency of those measures on the constraints.

Compliance Level: FCo

No Additional Questions

AUDIT QUESTIONNAIRE 2014

P3-A4-S5.2

These remedial actions (preventive/curative) have to be previously assessed by numerical simulations in order to evaluate the efficiency of those measures on the constraints.

Compliance Level: FCo

Concise explanation and list of evidence for declared compliance level:

These remedial actions (preventive/curative) are previously assessed by numerical simulations in order to evaluate the efficiency of those measures on the constraints.

First need of remedial action can be discovered in frame of yearly planning, when more representative models (different 3-4 for each month) are created to check all planned situations, respecting of corresponding neighborhood (known connection, expected production/consumption and from that coming export/import/transit).

During the monthly planning the previously checked situation is further precised and recalculated. Additional situations are investigated (also low-load regimes, U/Q issue, high transit, no transit, high export, small import) if it is realistic. For some special situations also new measures have to be activated (automatics, requests for DSOs, Generators etc).

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:

- 1) PSS/E output analyzing data of remedial actions.
- 2) Regular Annex to the weekly network planning (*Příloha k týdennímu programu sítě a zdrojů DŘ ČEPS*)

3) Report on efficiency of remedies after improving of common models (CTDS)

COMPLIANCE AUDIT 2014

Compliance Level suggestion by the Audit Team: FCo

Explanation for the suggested compliance level:

The following documents were presented and explained:

- Regular Annex to the weekly network planning available for dispatchers and updated daily (Příloha k týdennímu programu sítí a zdrojů DŘ ČEPS, e.g. 30th week of 2014)
- DOPT Report - on efficiency of remedies after improving of common models (CTDS), 14.7.2014, including proposed remedial actions and calculation of the efficiency/results of these remedial actions in the final run of DACF process

These documents were a good basis for proving the compliance level of ČEPS with this standard.

In addition “emergency dispatcher” presented the processes for preparation of remedial actions in day ahead and in intraday with the CTDS tool.

4.15 OH STANDARD P3-A4-S5.3

SELF-ASSESSMENT QUESTIONNAIRE 2013

P3-A4-S5.3

The remedial actions applied by a TSO with possible influence abroad must be checked between all TSOs of the same region in order to prevent counter-effects to neighbouring networks. Additional simulations have to be executed.

Compliance Level: FCo

Additional Questions

How are remedial actions with possible influence abroad checked between all TSOs of your region(s) before applied by the TSO(s), in the different time frames?

In frame of day ahead sharing of models and teleconference of TSC/CTDS.

AUDIT QUESTIONNAIRE 2014

P3-A4-S5.3

The remedial actions applied by a TSO with possible influence abroad must be checked between all TSOs of the same region in order to prevent counter-effects to neighbouring networks. Additional simulations have to be executed.

Compliance Level: FCo

Concise explanation and list of evidence for declared compliance level:

It is done by regular inter TSO activities in frame of TSC on common tool and the results are discussed in daily operation planning teleconference (DOPT) every evening.

Recommended measures (preventive/curative) are checked during evening's coordination teleconference, i.e. efficiency, availability, side effect to the partners. Application is discussed by dispatchers in frames of so called "improvement phase". In case of worsening the application of other remedy is investigated - next round of calculation. Finally the time of application is agreed/set.

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

How are remedial actions with possible influence abroad checked between all TSOs of your region(s) before applied by the TSO(s), in the different time frames?

The set of typical countermeasures used for solving regularly occurring congestions is described in the respective Annexes of SOAs. Operators are trained to indicate, check and propose suitable countermeasures to solve any congestion.

Checking of remedial action is performed in frame of regional TSO cooperation – day ahead as well as intraday permanent checking of operation on common detailed hourly models.

List of evidence, comments:

- 1) Common models stored in the TSC archive
- 2) Daily operating planning reports (findings of each day are summarized).
- 3) Agreement on Network and System Operation Management concerning System operation between ČEPS and VE Transmission(50HzT) p.15, Annex 12
- 4) Agreement on Grid and System Operation Management concluded between ČEPS,a.s. and E.ON Netz GmbH (Tennet DE)p.15, Annex 12, Annex 13,
- 5) Agreement on Network and System Operation Management between ČEPS,a.s. and Verbund – Austrian Power Grid AG p.12, Annex 12, Annex 13
- 6) Agreement on Grid and System Operation Management concluded between ČEPS,a.s. and Slovenská elektrizačná prenosová sústava,a.s. (SEPS) p.13, Annex 10
- 7) System Operation Agreement concluded between ČEPS and PSE Operator S.A. (PSE) p.8, Appendix 10
- 8) "Procedure of the user behavior in the process D-1" ("*Postup chování uživatele v D-1 procesu CTDS*")
- 9) Rulebook of TSC

COMPLIANCE AUDIT 2014

Compliance Level suggestion by the Audit Team: FCo

Explanation for the suggested compliance level:

The following documents were presented and explained:

- DOPT Report - on efficiency of remedies after improving of common models (CTDS), 14.7.2014, including proposed remedial actions and calculation of the efficiency/results of these remedial actions in the final run of DACF process
- "Procedure of the user behavior in the process D-1" ("*Postup chování uživatele v D-1 procesu CTDS*"), 27.6.2013
- "Procedure of the user behavior in the process IDCF" ("*Postup chování dispecera v IDCF procesu CTDS*"), 23.1.2014
- Template of DOPT report, 4.4.2014
- Rulebook of TSC

- Agreement on Network and System Operation Management concerning System operation between ČEPS and VE Transmission(50HzT) p.15, Annex 12
- Agreement on Grid and System Operation Management concluded between ČEPS,a.s. and E.ON Netz GmbH (Tennet DE) p.15, Annex 12, Annex 13
- Agreement on Network and System Operation Management between ČEPS,a.s. and Verbund – Austrian Power Grid AG p.12, Annex 12, Annex 13
- Agreement on Grid and System Operation Management concluded between ČEPS,a.s. and Slovenská elektrizačná prenosová sústava,a.s. (SEPS) p.13, Annex 10
- System Operation Agreement concluded between ČEPS and PSE Operator S.A. (PSE) p.8, Appendix 10

These documents were a good basis for proving the compliance level of ČEPS with this standard.

4.16 OH STANDARD P3-A4-S5.4

SELF-ASSESSMENT QUESTIONNAIRE 2013				
P3-A4-S5.4				
The remedial actions with possible influence abroad have to be agreed by the neighbouring TSOs in advance. Therefore information between TSOs is due to be exchanged without any delay as soon as a problem is detected for the real time operation.				
Compliance Level: FCo				
50Hertz FC	TenneT GmbH FC	APG FC	PSE FC	SEPS FC
No Additional Questions				

AUDIT QUESTIONNAIRE 2014				
P3-A4-S5.4				
The remedial actions with possible influence abroad have to be agreed by the neighbouring TSOs in advance. Therefore information between TSOs is due to be exchanged without any delay as soon as a problem is detected for the real time operation.				
Compliance Level: FCo				
50Hertz FCo	TenneT GmbH FCo	APG FCo	PSE FCo	SEPS FCo
<p>Concise explanation and list of evidence for declared compliance level:</p> <p>An intention to apply remedial action with an impact to the neighboring TSO is advised and discussed in advance.</p> <p>Especially the flexible reconfiguration of the main substation Hradec is a subject of permanent investigation and optimizing of flows. The indicative influence is shared with all relevant partners (50HzT, TenneT G, APG and PSE). Monthly plans, remedies and limits of transiting flow (safe from ČEPS TG point of view) in one package with models are every month send by mail to all colleagues in participation list.</p> <p>On weekly base the teleconference is held to exchange of all actual information (see internal archive).</p> <p>Recommended measures (preventive/curative) are checked during evening's coordination teleconference, i.e. efficiency, availability, side effect to the partners. Application is discussed by</p>				

dispatchers in frames of so called "improvement phase". In case of worsening the application of other remedy is investigated - next round of calculation. Finally the time of application is agreed/set.

Operators are obliged to inform neighbours about occurred contingencies that have an impact on their 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 evidence for a mitigation plan, comments:

List of evidence, comments:

- 1) Monthly information package
- 2) Common models stored in the TSC archive
- 3) Daily operating planning reports (findings of each day are summarized).
- 4) Agreement on Network and System Operation Management concerning System operation between ČEPS and VE Transmission(50HzT) p.15, Annex 12
- 5) Agreement on Grid and System Operation Management concluded between ČEPS,a.s. and E.ON Netz GmbH (Tennet DE) p.15, Annex 12, Annex 13,
- 6) Agreement on Network and System Operation Management between ČEPS,a.s. and Verbund – Austrian Power Grid AG p.12, Annex 12, Annex 13
- 7) Agreement on Grid and System Operation Management concluded between ČEPS,a.s. and Slovenská elektrizačná prenosová sústava,a.s. (SEPS) p.13, Annex 10
- 8) System Operation Agreement concluded between ČEPS and PSE Operator S.A. (PSE) p.8, Appendix 10
- 9) "Procedure of the user behavior in the process D-1" ("Postup chování uživatele v D-1 procesu CTDS")
- 10) Rulebook of TSC

COMPLIANCE AUDIT 2014

Compliance Level suggestion by the Audit Team: FCo

Explanation for the suggested compliance level:

The following documents were presented and explained:

- DOPT Report - on efficiency of remedies after improving of common models (CTDS), 14.7.2014, including proposed remedial actions and calculation of the efficiency/results of these remedial actions in the final run of DACF process
- "Procedure of the user behavior in the process D-1" ("Postup chování uživatele v D-1 procesu CTDS"), 27.6.2013
- "Procedure of the user behavior in the process IDCF" ("Postup chování dispecera v IDCF procesu CTDS"), 23.1.2014
- Template of DOPT report, 4.4.2014
- Rulebook of TSC
- Agreement on Network and System Operation Management concerning System operation between ČEPS and VE Transmission(50HzT) p.15, Annex 12
- Agreement on Grid and System Operation Management concluded between ČEPS,a.s. and

- E.ON Netz GmbH (Tennet DE) p.15, Annex 12, Annex 13
- Agreement on Network and System Operation Management between ČEPS,a.s. and Verbund – Austrian Power Grid AG p.12, Annex 12, Annex 13
 - Agreement on Grid and System Operation Management concluded between ČEPS,a.s. and Slovenská elektrizačná prenosová sústava,a.s. (SEPS) p.13, Annex 10
 - System Operation Agreement concluded between ČEPS and PSE Operator S.A. (PSE) p.8, Appendix 10

These documents were a good basis for proving the compliance level of ČEPS with this standard.

5 CONCLUSIONS

The Audit Team audited 16 standards and sub-standards. The Audit Team concluded that ČEPS is fully compliant with all the audited standards. ČEPS estimates that their staff needed about **200 man hours** for the preparation of the compliance audit.

At the beginning of the first audit day, the Audit Team had an hour and a half long visit in the National Control Centre, which helped the Audit Team to better understand the organisation and processes in the system of ČEPS. Presentation of installed SCADA/EMS with demonstration of calculations was the significant part of this visit.

Concerning standard P3-A2-S1 ČEPS declared SCo level in self-assessment 2013. A new SCADA/EMS is in operation since June 2014. Therefore ČEPS is able to take into account exceptional contingencies in the contingency analysis. In the questionnaire of the on-site audit worksheet ČEPS declared FCo for this standard and that was confirmed by the audit team.

Concerning standard P3-A1-S3.3 calculations in real time operation the audit team made the recommendation that at least the largest production unit lines should be included in the contingency list.

ČEPS was very 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 ČEPS with the audited standards. ČEPS representatives answered all questions in a competent way and gave detailed explanations.

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 ČEPS staff involved in the Audit and the company management. The audit team concludes that ČEPS is an excellently organised TSO with very high level of expertise.

6 SIGNATURE PAGE

ENTSO-E Audit Team Members:



László Galambos (Audit Team Leader)



Vladimir Ilić (Audit Team Member)



Heinz-Dieter Ziesemann (Audit Team Member)



Jaka Žvab (Compliance monitoring Advisor)

Date and Place: 4.11.2014, Brussels, Belgium