



European Network of
Transmission System Operators
for Electricity

COMPLIANCE AUDIT REPORT HELLENIC TRANSMISSION SYSTEM OPERATOR S.A.

24 – 25.10.2011

COMPLIANCE AUDIT CONDUCTED IN ATHENS BY THE
ENTSO-E RG CE SG COMPLIANCE MONITORING &
ENFORCEMENT
AT THE CONTROL CENTRE OF THE ENTSO-E MEMBER
HTSO

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 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 by random.

SG Compliance Monitoring & Enforcement (CME) is in charge of performing above mentioned two processes. The 2011 is the second year of conducting mandatory compliance audits. In 2008 and 2009 CME performed four voluntary compliance audits and in 2010 six mandatory audits.

1.2 AUDITED TSO

The RGCE member TSO HTSO was chosen for a Compliance Audit in 2011. CME conducted the audit on the 24 & 25 October 2011 at the control centre of HTSO in Athens, Greece.

1.3 AUDITED OH STANDARDS

The Compliance Audit encompassed 21 standards of Operation Handbook Policies 1-3 which are related to Load-Frequency Control and Performance, Scheduling and Accounting, and Operational Security. In 2010 TenneT made compliance declarations in the self-assessment process for standards which will be checked against their evidence during the audit:

1	P1-A-S1.1 PRIMARY CONTROL Organisation
2	P1-B-S4 SECONDARY CONTROL RESERVE
3	P2-A-S4 General Agreements between UCTE System Operators who are affected by cross border scheduling
4	P2-A-S5 General Agreements between neighbouring CONTROL AREAS
5	P2-A-S5.1 Identification Code used-either EIC or GS1 (former EAN)
6	P2-A-S5.2 Agreement on the contents and granularity of the exchanged CAS (e.g. MTFs, resolution) in order to allow a sufficient matching
7	P2-A-S5.3 Agreed timing for processes (e.g. exchange of programs, matching, day ahead and intraday process, Gate Closure, Cut-Off Time)
8	P2-A-S5.4 Rules to solve mismatches at Cut-Off Time
9	P2-A-S5.5 Responsibilities (e.g. matching, CAPACITY check)
10	P3-A1-S2 Coordination for exceptional type of contingency
11	P3-A2-S1 Determination of the external contingency list and observability area
12	P3-A2-S2 Implementation of observability area
13	P3-A2-S5.2 Abroad consequences of TSOs decisions in operational planning and in real time
14	P3-A2-S6 Data provision
15	P3-A3-S2 Overloads in N-1 situation (simulation)
16	P3-A3-S4.1 Tie-lines operating conditions
17	P3-A4-S3 Principle of "No cascading with impact outside my border"
18	P3-A4-S4.1 Regional agreement for the set of remedial actions
19	P3-B-S1.2.2 Other REACTIVE POWER generation/absorption resources
20	P3-B-S2.1.2 Coordination for voltage and reactive power management
21	P3-D-S2 Transient angle Stability calculation

1.4 RESULTS

The Audit Team visited the HTSO control room at the beginning of the audit. All questions of the Audit Team were answered in a very precise manner. The evidences presented in the control room helped the auditors to better understand the organisation of the work and the processes.

HTSO was excellently prepared for the audit. All necessary documentation was easily available. This has significantly eased the audit process. The HTSO representatives answered all questions in a competent way and gave detailed explanations. The Audit Team wants to stress its full satisfaction with the approach of HTSO to the compliance audit.

The Audit Team upgraded HTSO from the level of sufficient compliance (SC) to the level of full compliance (FC) in case of the standard P2-A-S5.

The Audit Team downgraded HTSO from the level of full compliance (FC) to the level of non compliance (NC) in case of the standard P3-A4-S3.

The Audit Team downgraded HTSO from the level of full compliance (FC) to the level of sufficient compliance (SC) in case of the standard P3-A4-S4.1.

HTSO is not compliant with the standards P3-A2-S2 and P3-A2-S6, but is covered by valid addenda.

The table 1 describes HTSO's compliance declaration in self assessment questionnaire 2010 and compliance audit questionnaire 2011 with compliance level suggestion by CME audit team after reviewing the evidence for the audited standards. Upgrades are highlighted with green and downgrades with red colour. Standards which kept their declaration level are not highlighted.

TABLE 1: COMPLIANCE LEVEL CHANGES FOR THE AUDITED OH STANDARDS

OH Standard	Self assessment questionnaire 2010	Compliance audit questionnaire 2011	On site compliance audit 2011
P1-A-S1.1	FC	FC	FC
P1-B-S4	FC	FC	FC
P2-A-S4	FC	FC	FC
P2-A-S5	Not asked	SC	FC
P2-A-S5.1	SC	FC	FC
P2-A-S5.2	SC	FC	FC
P2-A-S5.3	SC	FC	FC
P2-A-S5.4	SC	FC	FC
P2-A-S5.5	SC	FC	FC
P3-A1-S2	SC	FC	FC
P3-A2-S1	FC	FC	FC
P3-A2-S2	NC	NC	NC (addendum)
P3-A2-S5.2	FC	FC	FC
P3-A2-S6	SC	NC	NC (addendum)
P3-A3-S2	FC	FC	FC
P3-A3-S4.1	FC	FC	FC
P3-A4-S3	SC	FC	NC
P3-A4-S4.1	NC	FC	SC
P3-B-S1.2.2	FC	FC	FC
P3-B-S2.1.2	SC	FC	FC



P3-D-S2	FC	FC	FC
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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 on 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. The HTSO didn't make any such objection. The HTSO staff present during the compliance audit is given on table 3.

TABLE 2: CME AUDIT TEAM FOR HTSO

Audit team role	Company or association	Name
Audit team leader	APG	Kurt Misak
Audit team member	Amprion	Heinz-Dieter Ziesemann
Audit team member	MAVIR	László Galambos
Compliance Monitoring Advisor	ENTSO-E Secretariat	Alexander Mondovic

TABLE 3: HTSO AUDIT STAFF

Function in the company	Title	Name
Operation & Security Department	Executive Director	Aristides Tassoulis
System Operation Branch	Director	Fourlaris Dimitrios
Market Operation Department	Assistant Director	Aslanis Pangiotis
System Operation Department	Assistant Director	Ziogas Vasilios
	Assistant Director	YioannisTolias
	Section Head at Control Centres IT and Support Branch	Dimitrios G. Michos
	Section Head of Control Centres IT and Support Branch	Christoforides George
Electrical Engineer		Antonopoulos George
Electrical Engineer		Nikolaos Athanasiadis
Electrical Engineer	Market Operation Branch	Evangelidis George

3 AUDIT PLAN

3.1 GENERAL PROCEDURES

The purpose of this chapter is to help and provide guidance to your organization regarding the oncoming Compliance Audit. The audit will cover a chosen set of Operation Handbook (OH) standards equivalent to those monitored within the Compliance Monitoring Program 2010 self-assessment process.

Please submit the completed Audit Worksheet by email to the ENTSO-E Secretariat and send carbon copies to all Audit Team members three weeks before the first audit day. In table 4 you may find the complete schedule of the audit process for your company.

All documentation (evidence) required for the onsite audit of each standard must be available as a hard copy or in electronic format at the audit location. The Control Area Manager and/or other responsible expert personnel must be 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.

In preparation for the audit, please organise your supporting compliance documentation which is the evidence for your compliance for audited standards. If possible, please try to provide English versions of the documents. Otherwise please translate the main title, index and last update of the document for the Audit Team. Previously mentioned preparations must be completed prior to the start of the audit. The ENTSO-E RGCE SG CME would like to emphasize the importance of preparation for the audit. 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	7 weeks prior to audit
Submittal of the completed Audit Worksheet to the Secretariat by HTSO	3 weeks prior to audit
Initial draft of the audit report based on the Audit Worksheet sent to HTSO by the Audit Team	2 working days prior to audit
Opening meeting of the Audit Team and CAM of HTSO (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 the HTSO will be asked to provide feedback on the audit process and results, (6) Presentation of the TSO and TSO's organization (7) Visit at the control room	First audit day, 24.10.2011 09:00 – 10:00
Start of the OH standards' review	First audit day, 24.10.2011 10:00 – 17:00
Continuation of the OH standards' review	Second audit day, 25.10.2011 09:00 – 14:30

Internal Audit Team meeting	Second audit day, 25.10.2011 14:30 – 16:00
Closing meeting with CAM of HTSO (1) Presentation of preliminary audit findings and recommendations to be included on the draft audit report, with a strong emphasis on the evidences for each compliance level or non compliance identified by the Audit Team, (2) Discussion and feedback by the HTSO 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, 25.10.2011 16:00 – 17:00
Delivery of the draft audit report to HTSO for review	2 weeks after the audit
Remarks by HTSO	4 weeks after the audit
Delivery of the final audit report to HTSO	6 weeks after the audit
Acknowledgement of the final Audit Report by ENTSO-E RGCE Plenary and decision on its possible internal or external publishing.	RGCE Plenary in 2012

3.2 OBJECTIVES

In 2011 the objective of Compliance Audits is to check chosen set of standards from OH Policies 1-3. These standards were also monitored in the 2010 regular compliance process via the self-assessment questionnaire. Furthermore, before performing the Compliance Audit, the Audit Team makes recommendations to the audited TSO to prepare the evidence or documentation on compliance with the audited OH standards.

3.3 SCOPE

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 2010 stored at the ENTSO-E Secretariat related to audited TSO concerning the audited OH standards
- Audit Worksheet 2011
- 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

3.4 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 2010 self-assessment questionnaires. It also processed (assessed) the answers in the 2011 Audit Worksheet filled in by the audited TSO.

The 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 identify the potential sources of audit evidence and estimate the amount and type of evidence needed.

The audit team uses an Audit Worksheet (AW) (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 determine whether the evidence presented by the TSO is sufficient. They do this by assessing the relevance, validity and reliability of the information and documentation presented.

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

3.5 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
- The TSO must fill in the audit questionnaire and submit to the audit team before the audit
- Identification of documents and other material the TSO has 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 2010 cross-border check regarding compliance level declarations)
- Analysis of the explanations and comments which the audited TSO made in the self-assessment 2010 and audit questionnaires 2011 in written form in order to evaluate the quality of explanations and comments.
- Identification of the missing explanations in the self-assessment 2010 and audit questionnaires 2011
- Analysis of the improvements achieved during the implementation of mitigation and improvement plans declared in the MLA Addendum/Addenda, in the self-assessment

questionnaire 2010 and in the Audit Worksheet 2011 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 2010 and audit questionnaire 2011.
 - The goal is 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 is to improve the quality of the presented evidence
 - The presented material must be 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

3.6 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 WORK SHEET

4.1 P1-A-S1.1 PRIMARY CONTROL ORGANISATION

PREPARATORY PHASE

SELF-ASSESSMENT QUESTIONNAIRE 2010
P1-A-S1.1.
<p>PRIMARY CONTROL Organisation. An organisational procedure to cover requirements and obligations for PRIMARY CONTROL actions and reserves performed by third parties in the CONTROL AREA including a monitoring procedure must be in place (e.g. GridCode, regulation, association agreement or contract).</p>
<p>Compliance Level: FC</p>
<p>Explanation for the full compliance declaration:</p>
<p>Additional Questions</p> <p>Do you have a formal procedure in place to ensure compliance with this standard? yes</p> <p>What level of legal support does the procedure entitle? (i.e. law, grid code, agreement, other)</p> <p>grid code</p> <p>How do you monitor the primary control response of your Control area? (i.e. as a whole, for each single generation unit, etc. Timeframe: realtime/retrospective)</p> <p>as a whole and for each single generation unit, . Timeframe: realtime</p>

AUDIT QUESTIONNAIRE 2011
<p>P1-A-S1.1 PRIMARY CONTROL Organisation. An organisational procedure to cover requirements and obligations for PRIMARY CONTROL actions and reserves performed by third parties in the CONTROL AREA including a monitoring procedure must be in place (e.g. Grid Code, regulation, association agreement or contract).</p>
<p>Compliance level FC <input checked="" type="checkbox"/> SC <input type="checkbox"/> NC <input type="checkbox"/></p>
<p>Concise explanation for declared compliance level:</p>
<p>Tests have been performed for primary control for all thermal units. The connection to the grid of new units is permitted after appropriate tests concerning the primary control capability of the units. Signals from specific units indicating that their primary control is active are collected through SCADA. Primary reserve is purchased by generating units through daily market procedure.</p>

Do you have an addendum to the standard? Yes No

In case of an existing addendum; list of evidences for a mitigation plan, comments:

[Redacted area]

Do you have a formal procedure in place to ensure compliance with this standard?

Yes No

List of evidences, comments:

1. Grid Code (Art.125§1,2,Art.57 § E,Art 59§3B, Art.82§IA, Art.275§A).
2. Dispatch Manual (DM) (Chapt.1 §1.1.1).
3. SOC / RGCE/ SG SF report (Minimal values of the "Primary Control Reserve Ppi " and of the "Kri Factor" to be adopted for the Year 2011).
4. Site HTSO / Day Ahead Scheduling (DAS) Requirements Publication.
5. Dispatch scheduling (DS).
6. Real Time Dispatch (RTD) application/ solution.
7. Response result after a disturbance in the CESA.
8. Signals from specific units indicating that their primary control is active.

What level of legal support does the procedure entitle? (i.e. law, grid code, agreement, other)

Grid Code, Dispatch Manual (DM), Market Manual (MM).

List of evidences, comments:

1. Grid Code (Art.125§1,2,Art.57 § E,Art 59§3B, Art.82§IA).
2. Dispatch Manual (Chapt.1 §1.1.1).
3. Market Manual (Chapt. 3 § 3.2, 3.4 and Appendix I.2, I.3).

How do you monitor the primary control response of your Control area? (i.e. as a whole, for each single generation unit, etc. timeframe: realtime/retrospective)

For the entire Control Area and for each single generation unit,(retrospective, resolution 2sec). In particular, after certain disturbances are calculated the deployed primary reserve of the control area. This procedure also is followed for the units assigned to provide primary reserve.

List of evidences, comments:

1. Response result after a disturbance in the CESA.
2. Signals from specific units indicating that their primary control is active.

AUDIT PHASE

COMPLIANCE AUDIT 2011

HTSO has shown the Grid Code, articles 124, 125 and 275. In article 124 it is defined that the units are obliged to offer primary, secondary and tertiary reserves. In article 125 the technical specifications about activation of reserves etc. are written. In article 275 grid connection requirements are specified.

In the document on Day Ahead Scheduling (DAS) the requirements to generators related to scheduling are described.

HTSO has presented test results about units' compliance with primary reserve requirements.

The requirements are also published day-ahead on the HTSO webpage (Excel tables).

Compliance Level suggestion by the audit team:

FC

Explanation for the suggested compliance level:

HTSO has given sufficient proof of full compliance.

Improvement/Mitigation plan with deadline:

n/a

4.2 P1-B-S4 SECONDARY CONTROL RESERVE

PREPARATORY PHASE

SELF-ASSESSMENT QUESTIONNAIRE 2010	
P1-B-S4.	
<p>SECONDARY CONTROL RESERVE. An adequate SECONDARY CONTROL RESERVE must be available to cover expected DEMAND and generation fluctuations. If the loss of the largest generating unit of the CONTROL AREA is not already covered by the requisite SECONDARY CONTROL RESERVE, additional TERTIARY CONTROL RESERVE (see -> P1-C) has to be activated to offset the shortfall within the required time (see P1-B-S2.1).</p>	
<p>Compliance Level: FC</p>	
<p>Explanation for the full compliance declaration:</p>	
<p>Additional Questions</p>	
<p>Does the sum of allocated Secondary and Tertiary Reserve cover normally and within the required time the loss of the largest generation unit connected in your control area?</p>	<p>yes</p>
<p>How does your TSO monitor and report about the technical availability of TERTIARY RESERVE?</p>	
<p>By SCADA</p>	

AUDIT QUESTIONNAIRE 2011	
<p>P1-B-S4 SECONDARY CONTROL RESERVE. An adequate SECONDARY CONTROL RESERVE must be available to cover expected DEMAND and generation fluctuations. If the loss of the largest generating unit of the CONTROL AREA is not already covered by the requisite SECONDARY CONTROL RESERVE, additional TERTIARY CONTROL RESERVE (see P1-C) has to be activated to offset the shortfall within the required time (see P1-B-S2.1).</p>	
<p>Compliance level FC <input checked="" type="checkbox"/> SC <input type="checkbox"/> NC <input type="checkbox"/></p>	
<p>Concise explanation for declared compliance level:</p>	
<p>Due to the presence of a lot of big hydro units in the Greek power system a sufficient, fast and reliable secondary and tertiary reserve can be activated, when needed, within the required time. Combined cycle power plants and gas turbines (open type) do also exist in our system and support efficiently the secondary and tertiary control. Secondary reserve is purchased by generating units through daily market procedure.</p>	
<p>Do you have an addendum to the standard? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>	
<p>In case of an existing addendum; list of evidences for a mitigation plan, comments:</p>	
<p> </p>	

Does the sum of allocated Secondary and Tertiary Reserve cover normally and within the required time (Secondary: 15 min and Tertiary: 30 min) the loss of the largest generation unit connected in your control area?

Yes No

List of evidences, comments:

1. Grid Code (Art.125§3,4,5,6,7,8, Art.57 § ΣΤ,ΙΑ, Art 59§3B, Art.82§ΙΑ Art.275§B, Γ).
2. Dispatch Manual (DM) (Chapt.1 §1.1. 2, 1.1.3).
3. Site HTSO / Day Ahead Scheduling (DAS) Requirements Publication.
4. Dispatch scheduling (DS).
5. Real Time Dispatch (RTD) application/solution.
6. EMS displays (GROSS display, AREA RESERVE MONITOR display, MARKET display).
7. EMS Reports for used secondary reserve/ up and down.
8. Market Manual (Chapt 3 §3.2, 3,3, 3.4 and Appendices I.2, I.3).

How does your TSO monitor and report about the technical availability of TERTIARY RESERVE?

We monitor, and record data in real time through EMS (System/Generation/ Real Time Generation/ Reserves Monitor). Generators are obliged to re-declare for each individual unit in real time through EMS and Real Time Dispatch about any problems that affect their availability.

List of evidences, comments:

1. Reports made with data recorded from EMS (System/Generation/ Real Time Generation/ Reserves Monitor).
2. Real Time Dispatch (RTD) application.

AUDIT PHASE

COMPLIANCE AUDIT 2011

Offering of reserves is mandatory and regulated by the Grid Code. HTSO uses a socio-economic calculation to determine the needs for reserves and sends the production set points to generators (every 5 minutes). The generators are obliged to follow. Thus, enough reserve is always guaranteed. The usual amount of the secondary reserve is about 450 MW. Tertiary reserve is about 500 MW (this is fast and slow tertiary reserve for replacement of the secondary reserve). The capacity of the largest generating unit is 400 MW. However, the outage of the DC cable between Italy and Greece can result in "generation" loss of 500 MW (capacity of the cable). Nevertheless, according to the loading (schedule) of the cable, the socio-economic calculation determines the exact value of needed reserves (can be less than 500 MW) and sends new set-points to generators.

HTSO has demonstrated all this in the control room and using documents.

Compliance Level suggestion by the audit team:
FC

Explanation for the suggested compliance level:
HTSO has given sufficient proof of full compliance.

Improvement/Mitigation plan with deadline:
n/a

4.3 P2-A-S4 General Agreements between UCTE System Operators who are affected by cross border scheduling

PREPARATORY PHASE

SELF-ASSESSMENT QUESTIONNAIRE 2010	
P2-A-S4.	
General Agreements between UCTE System Operators who are affected by cross border scheduling . For performing a proper matching process and especially for cases of troubleshooting the UCTE bodies (Control Areas, Control Blocks and CO-ORDINATION CENTRES) have to document common agreed rules e.g.	
Compliance Level: FC	
Explanation for the full compliance declaration:	
Additional Questions	
Do you have common agreed documents with corresponding ENTSOe bodies for Scheduling of Power Exchange?	Yes
Do you have an agreement which specifies MTFs (Multi Time Frame System) and number of digits?	Yes
What procedure do you apply for solving mismatches ?	

AUDIT QUESTIONNAIRE 2011

P2-A-S4 General Agreements between UCTE System Operators who are affected by cross border scheduling. For performing a proper matching process and especially for cases of troubleshooting the UCTE bodies (Control Areas, Control Blocks and CO-ORDINATION CENTRES) have to document common agreed rules e.g.

A-S-4.1 Agreed MTFs and number of digits

A-S-4.2 Solution for mismatches (see Guidelines)

A-S-4.3 Troubleshooting in case of problems with data exchange and matching process. (see P2-A-G2 & P2-A-G3 & P2-A-G4)

Compliance level FOR P2-A-S4 **FC** **SC** **NC**

Concise explanation for declared compliance level:

Rules for scheduling in the whole Balkan's area have been arranged before reconnection of the 2nd synchronous zone of UCTE (2004) to the rest Europe between all TSOs of the area with the assistance of Swissgrid and Amprion (then ETRANS/RWE).

TSOs of the area agreed to introduce among others:

- EIC coding scheme
- KISS format (excel) for all kind of exchanges (MPS, CAS, CBSb, CBSm)
- Resolution: 15min (even all exchanges are in hourly basis).

Basically the above rules remain the same concerning north borders except with Bulgaria, where

the adoption of common auction rules improved the whole process. Concerning TERNAL there is an automatic process based on xml files.

Bilateral Agreements, Auction Rules and matching specification documents govern the relations of the TSOs of the area.

Do you have an addendum to the standard? Yes No

In case of an existing addendum; list of evidences for a mitigation plan, comments:

Do you have common agreed documents with corresponding ENTISO-E bodies for Scheduling of Power Exchange?

Yes No

List of evidences, comments:

The following documents govern the HTSO scheduling:

1. Minutes and documents of meeting in Vienna 28-29/04/2004
2. Minutes of meeting in Zurich 05/05/2005
3. Conclusions of meeting in Belgrade 08/06/2005
4. Bilateral operational agreement with ESO (paragraphs 8, 10)
5. Bilateral operational agreement with MEPSO (paragraph 13)
6. Matching Specification with TERNAL
7. Matching Specification with ESO
8. Common Auction Rules with TERNAL (Appendix V) with nomination and matching rules
9. Common Auction Rules with ESO (Section VII) with nomination and matching rules
10. Auction Rules with MEPSO (Section VII) with nomination and matching rules

Do you have an agreement which specifies MTFIS (Multi Time Frame System) and number of digits?

Yes No

List of evidences, comments:

1. Minutes and documents of meeting in Vienna 28-29/04/2004

What procedure do you apply for solving mismatches?

1. Ask from party to correct his nomination
2. If this is not possible till the cut-off time application of the less value
3. In the morning matching (before Daily Auction) with TERNAL, in case of mismatch, for the direction IT->GR the nominations to TERNAL prevail. To the opposite direction the

nominations to HTSO prevail.

List of evidences, comments:

1. Common Auction Rules with TERN (Appendix V) with nomination and matching rules
2. Common Auction Rules with ESO (Section VII) with nomination and matching rules
3. Auction Rules with MEPSO (Section VII) with nomination and matching rules

AUDIT PHASE

COMPLIANCE AUDIT 2011

Rules for scheduling in the whole Balkan's area have been arranged before reconnection of the 2nd synchronous zone of UCTE (2004) to the rest Europe between all TSOs of the area with the assistance of Swissgrid and Amprion (then ETRANS/RWE).

TSOs of the area agreed to introduce among others:

- EIC coding scheme
- KISS format (excel) for all kind of exchanges (MPS, CAS, CBSb, CBSm)
- Resolution: 15min (even all exchanges are in hourly basis).

Basically, the above rules remain the same concerning north borders except with Bulgaria, where the adoption of common auction rules improved the whole process. Concerning TERN there is an automatic process based on xml files.

In the morning matching (before Daily Auction) with TERN, in case of mismatch, for the direction IT->GR the nominations to TERN prevail. To the opposite direction the nominations to HTSO prevail.

Bilateral Agreements, Auction Rules and matching specification documents govern the relations of the TSOs of the area:

1. Minutes and documents of meeting in Vienna 28-29/04/2004
2. Minutes of meeting in Zurich 05/05/2005
3. Conclusions of meeting in Belgrade 08/06/2005
4. Bilateral operational agreement with ESO (paragraphs 8, 10)
5. Bilateral operational agreement with MEPSO (paragraph 13)
6. Matching Specification with TERN
7. Matching Specification with ESO
8. Common Auction Rules with TERN (Appendix V) with nomination and matching rules
9. Common Auction Rules with ESO (Section VII) with nomination and matching rules
10. Auction Rules with MEPSO (Section VII) with nomination and matching rules

HTSO has shown the documents number 1, 4 (contains only a small reference in the sense of intention to agree on rules), 5 (contains more specific information), 7 (not signed, but exchanged with ESO-EAD; it contains clear rules on matching etc.).

Compliance Level suggestion by the audit team:

FC

Explanation for the suggested compliance level:

HTSO has given sufficient proof of full compliance. In some cases, rules are not formally agreed, but they are documented internally at least, and the processes are running without problems.

Improvement/Mitigation plan with deadline:

n/a

4.4 P2-A-S5 GENERAL AGREEMENTS BETWEEN NEIGHBOURING CONTROL AREAS

PREPARATORY PHASE

SELF-ASSESSMENT QUESTIONNAIRE 2010

P2-A-S5.

General Agreements between neighbouring CONTROL AREAS. For automatic matching neighbouring CONTROL AREAS have to document their agreement for common rules for their border. Rules relevant for Market Parties must be published or communicated towards the parties in question. This document has to contain:

Compliance Level:

Additional Questions

Do you perform automatic matching with your neighbouring CONTROL AREAS?	no
Do you have documented agreements on automatic matching with your neighbours?	no
Do you have agreements which define the contents and granularity of the exchanged CAS in order to allow sufficient matching?	yes
Do the agreements include timing for processes (e.g. exchange of programs, matching, day ahead and intra day process, Gate Closure, Cut-Off Time)?	yes
How are the relevant rules communicated to the Market Parties?	
Do you have rules which are agreed in advance to solve mismatches at Cut-Off Time?	no
Do the agreed responsibilities assignment follow the "Implementation Guide for the ESS (ETSO Scheduling System) in the UCTE processes"?	no

AUDIT QUESTIONNAIRE 2011

P2-A-S5 General Agreements between neighbouring CONTROL AREAS. For automatic matching neighbouring CONTROL AREAS have to document their agreement for common rules for their border. Rules relevant for Market Parties must be published or communicated towards the parties in question. This document has to contain:

A-S-5.1 Identification Code used-either EIC or GS1 (former EAN)

A-S-5.2 Agreement on the contents and granularity of the exchanged CAS (e.g. MTFs, resolution) in order to allow a sufficient matching

A-S-5.3 Agreed timing for processes (e.g. exchange of programs, matching, day ahead and intra day process, Gate Closure, Cut-Off Time)

A-S-5.4 Rules to solve mismatches at Cut-Off Time

A-S-5.5 Responsibilities (e.g. matching, CAPACITY check)

Neighbouring CONTROL AREAS shall implement and run their matching process according to the "Implementation Guide for the EES (ETSO Scheduling System) in the UCTE

processes”

Compliance level FC SC NC

Concise explanation for declared compliance level:

Bilateral Agreements, Auction Rules and matching specification documents govern the relations of the TSOs of the area, as it was mentioned at point **P2-A-S4**.

Rules relevant to market participants are mentioned to the Auction Rules and to the Market Manual.

Besides the whole matching process seems to work well due to the in-house tools developed by HTSO, the procurement of a tool for scheduling, which is expected in the future by means of the great project of the Integrated Enterprise Information System (IEIS), will equip HTSO with a professional tool for scheduling.

For this reason the compliance level is defined as Sufficient instead of Full.

Do you have an addendum to the standard? Yes No

In case of an existing addendum; list of evidences for a mitigation plan, comments:

Do you perform matching with your neighbouring CONTROL AREAS?

Yes No

List of evidences, comments:

1. Matching Specification with TERNA
2. Matching Specification with ESO
3. Common Auction Rules with TERNA (Appendix V) with nomination and matching rules
4. Common Auction Rules with ESO (Section VII) with nomination and matching rules
5. Auction Rules with MEPSO (Section VII) with nomination and matching rules

How are the relevant rules communicated to the Market Parties?

- Nomination rules are communicated to the market participants through Auction Rules. They have to sign the Declaration of acceptance of the Rules for nominations.
- HTSO provides Market Participants certain forms in KISS (excel) format to nominate their schedules. Into these forms validation rules are active to minimize faults.
- Information on all issues exist in Market Manual

List of evidences, comments:

1. Declaration of acceptance of the Rules for nominations concerning border with Italy (Annex II of the ARs)
2. Statement of acceptance of the Rules concerning border with Bulgaria (Annex I of the ARs)
3. Statement of acceptance of the Rules concerning border with FYROM (Annex I of the ARs)

4. Market Manual (par. 3.6.2): submission of nomination
5. Market Manual (par. 3.6.5): Matching of schedules
6. Market Manual (ANNEX VII.3): KISS form for MPS submission

AUDIT PHASE

COMPLIANCE AUDIT 2011

The Audit Team has checked this standard by evaluating every one of its sub-standards. The compliance level has been determined by summing up these results.

Compliance Level suggestion by the audit team:

FC

Explanation for the suggested compliance level:

HTSO is fully compliant with all sub-standards of this standard.

Improvement/Mitigation plan with deadline:

n/a

4.5 P2-A-S-5.1 IDENTIFICATION CODE USED-EITHER EIC OR GS1 (FORMER EAN)

PREPARATORY PHASE

SELF-ASSESSMENT QUESTIONNAIRE 2010	
P2-A-S5.1.	
Identification Code used - either EIC or GS1 (former EAN)	
Compliance Level: SC	
Actions taken to reach compliance: Contact with neighbour countries to agree on rules	
Deadline:	12/2013

AUDIT QUESTIONNAIRE 2011	
P2-A-S-5.1 Identification Code used-either EIC or GS1 (former EAN)	
Compliance level	FC <input checked="" type="checkbox"/> SC <input type="checkbox"/> NC <input type="checkbox"/>
Concise explanation for declared compliance level:	
<ul style="list-style-type: none">- HTSO uses EIC coding scheme for MPS, CAS, CBSb, CBSm files. Market participant without EIC code is not able to participate in Greek market.- HTSO has its own EIC issuing office.- The EIC codes issued by HTSO are announced on its site.- The EIC codes of parties no issued by HTSO are checked from the ETSO site.- The market platform of HTSO (ALSTOM) uses EIC for all entities	
Do you have an addendum to the standard? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
In case of an existing addendum; list of evidences for a mitigation plan, comments:	
<div style="background-color: #cccccc; height: 20px; width: 100%;"></div>	

AUDIT PHASE

COMPLIANCE AUDIT 2011

For all borders EIC is used.

Compliance Level suggestion by the audit team:

FC

Explanation for the suggested compliance level:

HTSO has given sufficient proof of full compliance.

Improvement/Mitigation plan with deadline:

n/a

4.6 P2-A-S-5.2 AGREEMENT ON THE CONTENTS AND GRANULARITY OF THE EXCHANGED CAS (E.G. MTFS, RESOLUTION) IN ORDER TO ALLOW A SUFFICIENT MATCHING

PREPARATORY PHASE

SELF-ASSESSMENT QUESTIONNAIRE 2010	
P2-A-S5.2.	
Agreement on the contents and granularity of the exchanged CAS(e.g. MTFS, resolution) in order to allow a sufficient matching	
Compliance Level: SC	
Actions taken to reach compliance: Contact with neighbour countries to agree on rules	
Deadline:	12/2013

AUDIT QUESTIONNAIRE 2011	
P2-A-S-5.2 Agreement on the contents and granularity of the exchanged CAS (e.g. MTFS, resolution) in order to allow a sufficient matching	
Compliance level	FC <input checked="" type="checkbox"/> SC <input type="checkbox"/> NC <input type="checkbox"/>
Concise explanation for declared compliance level: See the corresponding point above (P2-A-S4). Concerning the granularity of CAS file, HTSO uses, for all borders, the cross nomination (A to N) based on the Capacity Agreement ID. For the borders of FYROM – Albania – Turkey where the allocation of capacities follows the 50-50 rule, HTSO issues also CIDs for the allocated quota of neighbouring TSOs. All market participants submit their nominations based on CIDs. For assistance HTSO issues Capacity Usage Authorisation table for LT rights in D-2 (after the gate closure for transfers) and for ST rights after daily auction. The matching with TERN and ESO is based on Capacity Agreement ID and with MEPSO the In/OutParty pair.	
Do you have an addendum to the standard?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
In case of an existing addendum; list of evidences for a mitigation plan, comments: <div style="background-color: #cccccc; height: 20px; width: 100%;"></div>	
<hr/> <i>Do you have documented agreements on matching with your neighbours?</i>	

Yes No

List of evidences, comments:

1. Matching Specification with TERNA
2. Matching Specification with ESO
3. Common Auction Rules with TERNA (Appendix V) with nomination and matching rules
4. Common Auction Rules with ESO (Section VII) with nomination and matching rules
5. Auction Rules with MEPSO (Section VII) with nomination and matching rules

Do you have agreements which define the contents and granularity of the exchanged CAS in order to allow sufficient matching?

Yes No

List of evidences, comments:

1. Bilateral operational agreement with MEPSO (paragraph 13)
2. Matching Specification with TERNA
3. Matching Specification with ESO

AUDIT PHASE

COMPLIANCE AUDIT 2011

For Italy, HTSO has shown the document: "Access rules to France-Italy, Switzerland-Italy, Austria-Italy, Slovenia-Italy, Greece –Italy interconnection (capacity allocation rules 2011)". The matching specification document with Terna has been presented too.

For ESO-EAD, HTSO has shown the document "Access rules to Greece-Bulgaria interconnection (capacity allocation rules 2011)". The matching specification document with ESO-EAD has been presented too.

For MEPSO, the "Bilateral operational agreement with MEPSO (paragraph 13)" has been shown. Only 50% of the capacity is auctioned by HTSO. Therefore, there is only an internal HTSO document on auctioning this capacity: Access rules to Greece-FYROM and Greece- Albania interconnections". MEPSO auctions its own 50%. HTSO and MEPSO exchange the auction results. Greek market participants have to nominate their counter parties at the other side of the border.

Strictly speaking, HTSO doesn't have an agreement on the contents and granularity with MEPSO, but in the light of the explanations this requirement is not applicable.

Compliance Level suggestion by the audit team:

FC

Explanation for the suggested compliance level:

HTSO has given sufficient proof of full compliance.

Improvement/Mitigation plan with deadline:

n/a

4.7 P2-A-S-5.3 Agreed timing for processes (e.g. exchange of programs, matching, day ahead and intra day process, Gate Closure, Cut-Off Time)

PREPARATORY PHASE

SELF-ASSESSMENT QUESTIONNAIRE 2010	
P2-A-S5.3.	
Agreed timing for processes (e.g. exchange of programs, matching, day ahead and intra day process, Gate Closure, Cut-Off Time)	
Compliance Level: SC	
Actions taken to reach compliance:	
Contact with neighbour countries to agree on rules	
Deadline:	12/2013

AUDIT QUESTIONNAIRE 2011	
P2-A-S-5.3 Agreed timing for processes (e.g. exchange of programs, matching, day ahead and intra day process, Gate Closure, Cut-Off Time)	
Compliance level FC <input checked="" type="checkbox"/> SC <input type="checkbox"/> NC <input type="checkbox"/>	
Concise explanation for declared compliance level:	
- The neighbours of HTSO have only Day Ahead Market (no intraday). This means that all markets are closed around 13:00CET. In such a case there is enough time to all TSOs in the area to follow the requirements of Policy 2 for timing.	
Do you have an addendum to the standard? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
In case of an existing addendum; list of evidences for a mitigation plan, comments:	
<i>Do the agreements include timing for processes (e.g. exchange of programs, matching, day ahead and intraday process, Gate Closure, Cut-Off Time)?</i>	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
List of evidences, comments:	
1. Minutes of meeting in Zurich 05/05/2005 2. Bilateral operational agreement with ESO (paragraphs 8, 10) 3. Bilateral operational agreement with MEPSO (paragraph 13)	

- 4. Matching Specification with TERNA
- 5. Matching Specification with ESO

AUDIT PHASE

COMPLIANCE AUDIT 2011

Same documents and explanation as to standard P2-A-S-5.2.

Compliance Level suggestion by the audit team:
FC

Explanation for the suggested compliance level:
HTSO has given sufficient proof of full compliance.

Improvement/Mitigation plan with deadline:
n/a

4.8 P2-A-S-5.4 RULES TO SOLVE MISMATCHES AT CUT-OFF TIME

PREPARATORY PHASE

SELF-ASSESSMENT QUESTIONNAIRE 2010	
P2-A-S5.4.	
Rules to solve mismatches at Cut-Off Time	
Compliance Level: SC	
Actions taken to reach compliance: Contact with neighbour countries to agree on rules	
Deadline:	12/2013

AUDIT QUESTIONNAIRE 2011	
P2-A-S-5.4 Rules to solve mismatches at Cut-Off Time	
Compliance level	FC <input checked="" type="checkbox"/> SC <input type="checkbox"/> NC <input type="checkbox"/>
Concise explanation for declared compliance level: With all neighbouring TSOs the rule of "less value" is applied at cut-off time	
Do you have an addendum to the standard?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
In case of an existing addendum; list of evidences for a mitigation plan, comments: 	
<hr/>	
Do you perform matching with your neighbouring CONTROL AREAS?	
Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
List of evidences, comments: 1. Matching Specification with TERNA 2. Matching Specification with ESO 3. Common Auction Rules with TERNA (Appendix V) with nomination and matching rules 4. Common Auction Rules with ESO (Section VII) with nomination and matching rules 5. Auction Rules with MEPSO (Section VII) with nomination and matching rules	

AUDIT PHASE

COMPLIANCE AUDIT 2011

Same documents and explanation as to standard P2-A-S-5.2.

Compliance Level suggestion by the audit team:

FC

Explanation for the suggested compliance level:

HTSO has given sufficient proof of full compliance.

Improvement/Mitigation plan with deadline:

n/a

4.9 P2-A-S-5.5 RESPONSIBILITIES (E.G. MATCHING, CAPACITY CHECK)

PREPARATORY PHASE

SELF-ASSESSMENT QUESTIONNAIRE 2010	
P2-A-S5.5.	
Responsibilities (e.g. matching, CAPACITY check) Neighbouring CONTROL AREAS shall implement and run their matching process according to the "Implementation Guide for the ESS (ETSO Scheduling System) in the UCTE processes".	
Compliance Level: SC	
Actions taken to reach compliance: Contact with neighbour countries to agree on rules	
Deadline:	12/2014

AUDIT QUESTIONNAIRE 2011	
P2-A-S-5.5 Responsibilities (e.g. matching, CAPACITY check)	
Compliance level FC <input checked="" type="checkbox"/> SC <input type="checkbox"/> NC <input type="checkbox"/>	
Concise explanation for declared compliance level:	
<div style="border: 1px solid black; padding: 5px;"><p>In the area both TSOs are responsible for matching. So, HTSO is doing the matching for every border with the adjacent TSO.</p><p>HTSO checks the capacity rights just after the reception of market parties' nominations (as it was mentioned above HTSO uses the Capacity Agreement ID for checking nominations (and for matching).</p><p>To assist market parties, HTSO issues the Capacity Usage Authorization table at D-2 for LT rights and at D-1 after daily auction.</p></div>	
Do you have an addendum to the standard? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
In case of an existing addendum; list of evidences for a mitigation plan, comments:	
<div style="border: 1px solid black; height: 20px; width: 100%;"></div>	
<i>Does the agreed responsibilities assignation follow the "Implementation Guide for the ESS (ETSO Scheduling System) in the UCTE processes"?</i>	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
List of evidences, comments:	
<div style="border: 1px solid black; padding: 5px;"><p>ESS implementation guide permits both TSOs to do the matching.</p><p>Capacity check is done automatically by HTSO for all submitted nominations. The usage of Capacity Agreement ID for the allocated capacity facilitates the process.</p></div>	

AUDIT PHASE

COMPLIANCE AUDIT 2011

Same documents and explanation as to standard P2-A-S-5.2.

Compliance Level suggestion by the audit team:

FC

Explanation for the suggested compliance level:

HTSO has given sufficient proof of full compliance.

Improvement/Mitigation plan with deadline:

n/a

4.10 P3-A1-S2 Coordination for exceptional type of contingency

PREPARATORY PHASE

SELF-ASSESSMENT QUESTIONNAIRE 2010	
P3-A1-S2.	
<p>Coordination for exceptional type of contingency. It is the responsibility of the operator of the concerned network elements to establish the list of the exceptional type of contingency for security calculation based on the likelihood of occurrence of the event and to communicate this list to the neighboring TSOs. Each TSO selects these exceptional contingencies based on the respective risk assessment by itself (see P3-A2-S1). Some exceptional events are considered only in case of temporary specific operational conditions, which have to be communicated to neighbors with a view of security calculation. If a TSO A considers a resulting risk for an exceptional type of contingency for elements located in the area of TSO B not considered in the contingency list of TSO B, both TSOs reconsider together their contingency lists.</p>	
Compliance Level: SC	
ESO EAD SC	MEPSO SC
Actions taken to reach compliance:	
There are related additional appendixes which will be added to the operational agreement	
Deadline:	12/2010
Additional Questions	
Do you establish and communicate to other TSOs a formal list of exceptional contingencies?	
ESO EAD no	MEPSO no
Do you consider the exceptional list from the neighbouring TSOs and reconsider your own contingency list with your neighbour TSO if needed?	
ESO EAD no	MEPSO no
How do you coordinate with your neighbouring TSOs the exceptional contingency list as of what to take into account and how to manage the list?	
ESO EAD Periodically we exchange exceptional contingencies by e-mail	
MEPSO Periodically we exchange exceptional contingencies by e-mail	

AUDIT QUESTIONNAIRE 2011
<p>P3-A1-S2 COORDINATION FOR EXCEPTIONAL TYPE OF CONTINGENCY. It is the responsibility of the operator of the concerned network elements to establish the list of the exceptional type of contingency for security calculation based on the likelihood of occurrence of the event and to communicate this list to the neighbouring TSOs. Each TSO selects these exceptional</p>

contingencies based on the respective risk assessment by itself (see P3-A2-S1). Some exceptional events are considered only in case of temporary specific operational conditions, which have to be communicated to neighbours with a view of security calculation.

If a TSO A considers a resulting risk for an exceptional type of contingency for elements located in the area of TSO B not considered in the contingency list of TSO B, both TSOs reconsider together their contingency lists.

Overall Compliance level FC SC NC

Neighbour	Compliance level
MEPSO	FC
ESO EAD	FC

Concise explanation for declared compliance level:

This list is included as Appendix in the Operational Agreements. The validation of the list is a responsibility of the TSO. We inform and the real time the neighbouring TSOs if needed. The final contingency list is validated in cooperation with neighbouring TSOs.

Do you have an addendum to the standard? Yes No

In case of an existing addendum; list of evidences for a mitigation plan, comments:

Do you establish and communicate to other TSOs a formal list of exceptional contingencies?

Neighbour	Yes	No
MEPSO	X	
ESO EAD	X	

List of evidences, comments:

1. Operational Agreement HTSO-MEPSO (Chapter 12, Appendices 22,23,24,25, Letter OSD/2304/16.09.2011).
2. Operational Agreement HTSO-ESO EAD (Appendix 16,17,18,19, Letter OSD/2304/16.09.2011).

Do you consider the exceptional list from the neighbouring TSOs and reconsider your own contingency list with your neighbour TSO if needed?

Neighbour	Yes	No

MEPSO	X	
ESO EAD	X	

List of evidences, comments:

1. Operational Agreement HTSO-MEPSO (Chapter 12, Appendices 22,23,24,25, Letter OSD/2304/16.09.2011).
2. Operational Agreement HTSO-ESO EAD (Appendix 16,17,18,19, Letter OSD/2304/16.09.2011).
3. Weekly Operational Teleconference (WOPT)-procedures- in operational planning.
4. 7th Annual Meeting of the Maintenance Group - Minutes of Meeting (MoM) held at 17/11/2010 in Bucharest.

How do you coordinate with your neighbouring TSOs the exceptional contingency list as of what to take into account and how to manage the list?

Neighbour	Explanation
MEPSO	The TSOs are exchanging the exceptional lists describing also the condition which is consider as an exceptional... If such conditions take place in real time, the NCC informs about it to the neighbouring TSOs
ESO EAD	

List of evidences, comments:

1. Operational Agreement HTSO-MEPSO (Chapter 12, Appendices 22,23,24,25, Letter OSD/2304/16.09.2011).
2. Operational Agreement HTSO-ESO EAD (Appendix 16,17,18,19, Letter OSD/2304/16.09.2011).
3. Weekly Operational Teleconference (WOPT)-procedures- in operational planning.

AUDIT PHASE

COMPLIANCE AUDIT 2011

HTSO has shown the document "Implementation of Policy 3 standards". It is written in form of a letter with an appendix to agree on. It contains the results of an analysis HTSO conducted using the

merged model for July 2011 of SEE region. A list of contingencies (including the exceptional ones) is specified in the document.

Compliance Level suggestion by the audit team:

FC

Explanation for the suggested compliance level:

HTSO has given sufficient proof of full compliance.

Improvement/Mitigation plan with deadline:

n/a

4.11 P3-A2-S1 DETERMINATION OF THE EXTERNAL CONTINGENCY LIST AND OBSERVABILITY AREA.

PREPARATORY PHASE

SELF-ASSESSMENT QUESTIONNAIRE 2010	
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 timeframes. Additionally exceptional contingencies (double lines, busbars) as announced by a neighboring TSO have to be included by the TSO if it considers them very relevant for risks.	
Compliance Level: FC	
ESO EAD FC	MEPSO FC

AUDIT QUESTIONNAIRE 2011													
<p>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 timeframes. 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.</p> <p>Overall Compliance level FC <input checked="" type="checkbox"/> SC <input type="checkbox"/> NC <input type="checkbox"/></p>													
<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="padding: 5px;">Neighbour</th> <th style="padding: 5px;">Compliance level</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">MEPSO</td> <td style="padding: 5px;">FC</td> </tr> <tr> <td style="padding: 5px;">ESO EAD</td> <td style="padding: 5px;">FC</td> </tr> <tr> <td style="padding: 5px;"> </td> <td style="padding: 5px;"> </td> </tr> <tr> <td style="padding: 5px;"> </td> <td style="padding: 5px;"> </td> </tr> <tr> <td style="padding: 5px;"> </td> <td style="padding: 5px;"> </td> </tr> </tbody> </table>	Neighbour	Compliance level	MEPSO	FC	ESO EAD	FC							<p>Concise explanation for declared compliance level:</p> <div style="background-color: #e0e0e0; padding: 5px; border: 1px solid #ccc;"> The external contingency list and external observability list are determined based on recommended methodologies of Policy 3. </div> <p>Do you have an addendum to the standard? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <p>In case of an existing addendum; list of evidences for a mitigation plan, comments:</p> <div style="background-color: #e0e0e0; height: 20px; margin-top: 5px;"></div>
Neighbour	Compliance level												
MEPSO	FC												
ESO EAD	FC												
<p>-----</p> <p><i>Do you determine the external contingency list? If yes how often do update it ?</i></p>													

Yes, depending on information from our neighbouring TSOs. Regularly every six months and in the case that a new element is added in the region.

List of evidences, comments:

1. Operational Agreement HTSO-MEPSO (Chapter 12, Appendices 22,23,24,25, Letter OSD/2304/16.09.2011) 16/09/2011).
2. Operational Agreement HTSO-ESO EAD (Appendices 16,17,18,19, Letter OSD/2304/16.09.2011).

Is your external contingency list integrated in all your N-1 security calculations?

Yes No

List of evidences, comments:

1. PSS/E (Software)-intraday procedures and security calculations.
2. EMS/CONTIGENCY lists included in the EMS Study and Real Time Network Analysis Application.

AUDIT PHASE

COMPLIANCE AUDIT 2011

The list of exceptional contingencies has been demonstrated in the previous standard.

For the calculations in the observability area some measurements from Bulgaria and Serbia are used. They are exported to PSS and merged with DACF files. Then, security calculations in the observability area are performed with PSS (intra-day also). Therefore, the calculations are performed close to real time, but not also in real-time. As the next standard is about implementation of security calculations in the observability area in the SCADA system, the Audit Team considers that the way HTSO proceeds qualifies it for "full compliance" i.e. the requirement to calculate "in all time frames" can be reduced here to close to real-time.

Compliance Level suggestion by the audit team:

FC

Explanation for the suggested compliance level:

HTSO has given sufficient proof of full compliance.

Improvement/Mitigation plan with deadline:

n/a

4.12 P3-A2-S2 IMPLEMENTATION OF OBSERVABILITY AREA

PREPARATORY PHASE

SELF-ASSESSMENT QUESTIONNAIRE 2010	
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: NC	
Actions taken to reach compliance:	
HTSO has already contacted some of the adjacent TSOs in order to implement a common neighbouring contingency and observability area through the SCADA system. The process is underway.	
Deadline:	12/2013
Temporary measures to preserve the security of interconnected system	
Existing addendum for this Policy reference	yes
There are no Questions defined for this company and this policy!	
Additional Questions	

AUDIT QUESTIONNAIRE 2011													
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.													
Overall Compliance level FC <input type="checkbox"/> SC <input type="checkbox"/> NC <input checked="" type="checkbox"/>													
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Neighbour</th> <th style="width: 50%;">Compliance level</th> </tr> </thead> <tbody> <tr> <td>MEPSO</td> <td style="text-align: center;">NC</td> </tr> <tr> <td>ESO EAD</td> <td style="text-align: center;">NC</td> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> </tbody> </table>	Neighbour	Compliance level	MEPSO	NC	ESO EAD	NC							
Neighbour	Compliance level												
MEPSO	NC												
ESO EAD	NC												
Concise explanation for declared compliance level:													
Do you have an addendum to the standard? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>													
In case of an existing addendum; list of evidences for a mitigation plan, comments:													
Main external network is modeled in SCADA system. However, the amount of													

exchanged online measurements is not enough yet for real-time observability of the external area.

Security calculations including the external system are done with exchanged DACF (and if necessary intraday) files. Expected date to reaching compliance by 30/12/2013.

Is the observability area implemented in the SCADA? If yes how often do update it?

NO

List of evidences, comments:

1. MULTIRATERAL AGREEMENT – Addendum (P3-A2-S2).

Do you have a proper amount of exchanged online data to ensure the real time observability by the state estimator

Yes No

List of evidences, comments:

1. MULTIRATERAL AGREEMENT – Addendum (P3-A2-S2).

AUDIT PHASE

COMPLIANCE AUDIT 2011

HTSO has an addendum for this standard. This addendum is valid till the end of 2013.

HTSO will obtain measurements from substations FYROM, Serbia, Montenegro, Bulgaria, Romania and Albania. Letter has been sent to EMS, ESO-EAD and MEPSO in 2009. A similar letter was sent to Transelectrica. However, no official response was received from them.

The problems HTSO encounters are the dimensioning of the database and quality flags of the existing EMS. However, this could be overcome by patches; although a new EMS (as stated in the addendum) would be a better solution (its implementation would automatically solve these problems).

Compliance Level suggestion by the audit team:

NC (covered by addendum)

Explanation for the suggested compliance level:

n/a

Mitigation plan with deadline:

Temporary measures are: using of DACF files in combination with on-line measurements for near to real time calculations (as described in the previous standard).

The mitigation plan mentioned in the addendum is not adequate. It foresees the implementation of a new EMS. What is needed, however, are the measurements from other TSOs.

The Audit Team recommends to HTSO to present this finding to the RG CE Plenary and to ask it to

take the decision that all TSOs of the region should provide necessary measurements to one another. Deadline for presenting the finding to the Plenary: first quarter (end of March) 2012. Official deadline for the addendum: end of 2013.

4.13 P3-A2-S5.2 Abroad consequences of TSOs decisions in operational planning and in real time

PREPARATORY PHASE

SELF-ASSESSMENT QUESTIONNAIRE 2010	
P3-A2-S5.2.	
Abroad consequences of TSOs decisions in operational planning and in real time. In case of changing the network configuration for network branches included in the external observability list of neighbors (e.g. outage of elements, double busbar operation) or major changes of generation pattern, the TSO must inform in due time and firstly in the operational planning phase its affected neighbors. If needed corresponding measures have to be coordinated to prevent counter-effects in neighboring networks.	
Compliance Level: FC	
ESO EAD FC	MEPSO FC
Explanation for the full compliance declaration:	
Additional Questions	
Have you implemented a procedure ensuring exchange of information related to changes of network configuration or major changes of generation pattern in operational planning and real time operation?	
ESO EAD no	MEPSO no
Do you have any agreed procedures in which counter measures to prevent counter-effect in neighbouring networks are determined?	
ESO EAD no	MEPSO no

AUDIT QUESTIONNAIRE 2011					
P3-A2-S5.2 ABROAD CONSEQUENCES OF TSOs DECISIONS IN OPERATIONAL PLANNING AND IN REAL TIME. In case of changing the network configuration for network branches included in the external observability list of neighbours (e.g. outage of elements, double busbar operation) or major changes of generation pattern, the TSO must inform in due time and firstly in the operational planning phase its affected neighbours. If needed corresponding measures have to be coordinated to prevent counter-effects in neighbouring networks.					
Overall Compliance level FC <input checked="" type="checkbox"/> SC <input type="checkbox"/> NC <input type="checkbox"/>					
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Neighbour</th> <th style="width: 50%;">Compliance level</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">MEPSO</td> <td style="text-align: center;">FC</td> </tr> </tbody> </table>	Neighbour	Compliance level	MEPSO	FC	
Neighbour	Compliance level				
MEPSO	FC				

ESO EAD	FC

Concise explanation for declared compliance level:

The obligation of exchange of information and Coordination of measures (if needed) are described in the Operational Agreement.

We communicate with the neighboring TSOs and inform for the changes in the elements in the frame of real time and Operational Planning as in Operational Agreement described.

Do you have an addendum to the standard? Yes No

In case of an existing addendum; list of evidences for a mitigation plan, comments:

Have you implemented a procedure ensuring exchange of information related to changes of network configuration or major changes of generation pattern in operational planning and real time operation?

Neighbour	Yes	No
MEPSO	X	
ESO EAD	X	

List of evidences, comments:

1. Day Ahead Congestion Forecast (DACF) with PSS/E (Software) Files-procedures-in operational planning.
2. Weekly Operational Teleconference (WOPT)-procedures- in operational planning.
3. Operational Agreement (OA) HTSO-MEPSO (Chapt. 17).
4. Operational Agreement (OA) HTSO-MEPSO (Letter to completed and signed- e mail).
5. Operational Agreement (OA) HTSO-ESO EAD (Chapt. 12).
6. Communicated procedures via Phone or Fax or e-mail – in real time.

Do you have any agreed procedures in which counter measures to prevent counter-effect in neighbouring networks are determined?

Neighbour	Yes	No
MEPSO	X	

ESO EAD	X	

List of evidences, comments:

1. Operational Agreement HTSO-MEPSO (Appendix 28, Letter OSD/2304/16.09.2011) 16/09/2011) - see remedial actions form.
2. Operational Agreement HTSO-ESO EAD (Appendix 21, Letter OSD/2304/16.09.2011) 16/09/2011) - see remedial actions form.
3. Weekly Operational Teleconference (WOPT)-procedures- in operational planning.

AUDIT PHASE

COMPLIANCE AUDIT 2011

HTSO has presented the operational agreement with MEPSO, which is not yet signed. However, MEPSO sent a mail confirming that the agreement will be signed. In chapter 17 the obligation to exchange information on changing the network configuration for network branches included in the external observability list of neighbours (e.g. outage of elements, double bus-bar operation) or major changes of generation pattern is specified (with reference to appendices).

As example for future information exchange HTSO has shown the template of the document "Confirmation of state of electric elements after the manoeuvres".

At present, the Weekly Operational Planning Teleconference) WOPT report is used. It is sent to all TSOs of SEE region. HTSO has shown the WOPT valid for the week from the 14th October till the 20th October. As to Italy, "Requests for operation actions on the link" from "Operating Procedures for the 400 kV HVDC Italy-Greece interconnection link" are used. Concrete examples of actions, performed on the 20th April 2011, have been presented.

Real time telephone communication is used too.

Compliance Level suggestion by the audit team:

FC

Explanation for the suggested compliance level:

HTSO has given sufficient proof of full compliance.

Improvement/Mitigation plan with deadline:

n/a

4.14 P3-A2-S6 DATA PROVISION

PREPARATORY PHASE

SELF-ASSESSMENT QUESTIONNAIRE 2010	
P3-A2-S6.	
Data provision. The TSO has to provide its neighbors in due time with all needed information for adequate simulations. Each TSO must provide the real-time telemetry and the network characteristics to its neighbors that is necessary for the neighboring 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: SC	
ESO EAD SC	MEPSO SC
Actions taken to reach compliance:	
Deadline:	
Additional Questions	
Do you have an agreement with your neighbouring TSOs which precises in details what data have to be exchanged concerning the network elements identified in the observability area ?	
ESO EAD yes	MEPSO no
What kind of communication methods do you use for data provision? (e.g. email, data server,...)	
ESO EAD EMS_SCADA	MEPSO E-MAIL

AUDIT QUESTIONNAIRE 2011	
P3-A2-S6 DATA PROVISION. The TSO has to provide its neighbors in due time with all needed information for adequate simulations. Each TSO must provide the real-time telemetry and the network characteristics to its neighbors 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.	
Overall Compliance level FC <input type="checkbox"/> SC <input type="checkbox"/> NC <input checked="" type="checkbox"/>	
Neighbour	Compliance level

MEPSO	NC
ESO EAD	NC

Concise explanation for declared compliance level:

Do you have an addendum to the standard? Yes No

In case of an existing addendum; list of evidences for a mitigation plan, comments:

Interconnections measurements are exchanged with ESO-EAD. Discussions under way with neighboring TSOs for the exchange of more measurements through ICCP.

Security calculations including the external system are done with exchanged DACF (and if necessary intraday) files. Expected date to reaching compliance by 30/12/2013.

Do you have an agreement with your neighbouring TSOs which describe in detail what data have to be exchanged concerning the network elements identified in the observability area?

Neighbour	Yes	No
MEPSO		X
ESO EAD		X

List of evidences, comments:

1. Letter to ESO EAD for external measurements-BALKAN AREA OVERVIEW (e-mail).
2. Letter to TRANSELECTRICA for external measurements-BALKAN AREA OVERVIEW (e-mail).
3. Letter to EMS-EPCG-MEPSO for external measurements-BALKAN AREA OVERVIEW (e-mail).

Do you provide the realtime telemetry necessary for the state estimator and for the N-1 calculations to the neighbouring TSOs? (to be asked border by border),...

Neighbour	Yes	No
MEPSO		X
ESO EAD		X

List of evidences, comments:

1. MULTIRATERAL AGREEMENT – Addendum (P3-A2-S6).
2. Letter to ESO EAD for external measurements-BALKAN AREA OVERVIEW (e-mail).
3. Letter to TRANSELECTRICA for external measurements-BALKAN AREA OVERVIEW (e-mail).
4. Letter to EMS-EPCG-MEPSO for external measurements-BALKAN AREA OVERVIEW (e-mail).

AUDIT PHASE**COMPLIANCE AUDIT 2011**

The explanation HTSO has given to this standard is the same for P3-A2-S2 “Implementation of observability area”. An addendum is available. It is valid till the end of 2013.

Compliance Level suggestion by the audit team:

NC (covered by addendum)

Explanation for the suggested compliance level:

n/a

Improvement/Mitigation plan with deadline:

Same recommendation as for P3-A2-S2 (see above).

Deadline for presenting the finding to the Plenary: first quarter (end of March) 2012.

Official deadline for the addendum: end of 2013.

4.15 P3-A3-S2 Overloads in N-1 situation (simulation).

PREPARATORY PHASE

SELF-ASSESSMENT QUESTIONNAIRE 2010	
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 remedialactions are available as to get back any overloaded network element below itsrespective Permanent Admissible Transmission Loading PATL.	
Compliance Level: FC	
Explanation for the full compliance declaration:	
Additional Questions	
Which measures do you take if there is no possible remedial action in terms of topological modifications and generation redispatching available in such a case? (That means remedial actions allowed by laws, regulators, which can be applied in such a situation, but which are not prepared in advance for regular application, e.g. no contracts,...)	
Reduction of consumption	
If a remedial action is considered as "available", which time lag is taken into account for this action to become effective?	
5 min	

AUDIT QUESTIONNAIRE 2011	
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	FC <input checked="" type="checkbox"/> SC <input type="checkbox"/> NC <input type="checkbox"/>
Concise explanation for declared compliance level:	
According to our operational criteria load more than the PATL is not allowed for tie lines. Overloads on other network elements under N-1 situation are admitted only if remedial actions are available to reduce the load below PATL.	
Do you have an addendum to the standard?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
In case of an existing addendum; list of evidences for a mitigation plan, comments:	
<div style="background-color: #cccccc; height: 20px; width: 100%;"></div>	

<i>Which measures do you take if there is no possible remedial action in terms of topological modifications and generation redispatching available in such a case? (That means remedial actions allowed by laws, regulators, which can be applied in such a situation, but which are</i>	

not prepared in advance for regular application, e.g. no contracts,..)

There are available remedial actions allowed by Grid Code and EC1228/2003 such as counter program, change of production (start/stop generators, pumps), emergency help, load shedding, Memorandum with DSO.

List of evidences, comments:

1. Grid Code (Chapter 23 Art.118, 121, Chapter 52 Art.267).
2. Defence plan.
3. Special Protections (PLC automation documents).
4. Memorandum with Distribution System Operator (DSO).

If a remedial action is considered as "available", which time lag is taken into account for this action to become effective?

To be realized from 1 min till 30 min (depending of the elements involved in the incident).

List of evidences, comments:

1. Special Protections (PLC automation documents).
2. Memorandum with Distribution System Operator (DSO).
3. MAXIMUM PERMISSIBLE CURRENT VALUES OF O.H.L 66,150,400 KV (Table with PATL, TATL and TC values for internal lines).
4. Table with Protection settings and PATL, TATL values of the Tie - lines.
5. EMS/ Line - Branch limits lists.

AUDIT PHASE

COMPLIANCE AUDIT 2011

For redispatching no special contracts with producers are necessary. The production of power plants for the purpose of redispatching can be changed within the scope of the socio-economic calculation mentioned under P1-B-S4 SECONDARY CONTROL RESERVE. This is remunerated as ex-post imbalance price (article 127 of the Grid Code).

In the "Market Manual" there are also some details which allow redispatching in real-time.

As a matter of last resort load shedding is used (PLC – program logic controller algorithm). There are contracts with DSOs for that purpose. HTSO has shown article 118 of the Grid Code in which load shedding obligations of DSOs are described. In article 87 the right of HTSO to give dispatching instruction is mentioned. In article 91 the obligation of DSOs to comply is stated.

HTSO has also presented the document "Memorandum - demand regulation procedure" (signed with PPC – Public Power Company which owns distribution grids) in which the non-critical load categories are listed (like irrigation systems).

Compliance Level suggestion by the audit team:

FC

Explanation for the suggested compliance level:

HTSO has given sufficient proof of full compliance.

Improvement/Mitigation plan with deadline:

n/a

4.16 P3-A3-S4.1 Tie-lines operating conditions

PREPARATORY PHASE

SELF-ASSESSMENT QUESTIONNAIRE 2010	
P3-A3-S4.1.	
Tie-lines operating conditions. The information on values of PATL, TATL or couples (TATL	
Compliance Level: FC	
ESO EAD FC	MEPSO FC
Explanation for the full compliance declaration:	
Additional Questions	
Do you share values of PATL, TATL and TC for all tie-line with adjacent TSOs?	
ESO EAD yes	MEPSO yes
Do you inform neighbours in case of settings changes at the time of the change?	
ESO EAD yes	MEPSO yes

AUDIT QUESTIONNAIRE 2011

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.

Overall Compliance level FC SC NC

Neighbour	Compliance level
MEPSO	FC
ESO EAD	FC

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Concise explanation for declared compliance level:

HTSO maintains a list with all Tie-Lines settings that is distributed to the neighbouring TSOs.

Do you have an addendum to the standard? Yes No

In case of an existing addendum; list of evidences for a mitigation plan, comments:

Do you share values of PATL, TATL and TC for all tie-line with adjacent TSOs?

Neighbour	Yes	No
MEPSO	X	
ESO EAD	X	

List of evidences, comments:

1. Table with Protection settings and PATL, TATL values of the Tie – lines, (distributed to neighbouring TSOs via e-mail).

Do you inform neighbours in case of settings changes at the time of the change?

Yes No

List of evidences, comments:

1. Operational Agreement (OA) HTSO-MEPSO (Chapter 4 § 4.3.4.4).
 2. Operational Agreement (OA) HTSO-ESO EAD (Chapter 4 § 1, 2, 3, 4.).
 3. Table with Protection settings and PATL, TATL values of the Tie – lines, (distributed to neighbouring TSOs via e-mail).

AUDIT PHASE

COMPLIANCE AUDIT 2011

HTSO has presented the document “Table with protection settings and PATL and TATL values on the tie-lines”. It contains detailed information to all components of each tie-line on both sides of a border. This document is regularly updated.

A mail has been shown about how a single piece of this information was exchanged with MEPSO. In another mail which was shown EMS informs HTSO about protection settings of its tie-lines.

Compliance Level suggestion by the audit team:

FC

Explanation for the suggested compliance level:

HTSO has given sufficient proof of full compliance.

Improvement/Mitigation plan with deadline:

n/a

4.17 P3-A4-S3 PRINCIPLE OF “NO CASCADING WITH IMPACT OUTSIDE MY BORDER”

PREPARATORY PHASE

SELF-ASSESSMENT QUESTIONNAIRE 2010	
P3-A4-S3.	
Principle of "No cascading with impact outside my border". TSOs commonly identify, prepare and implement in a coordinated way all possible operational measures and remedial actions (doing their best efforts in accordance with their legal framework) so that the simulated situations ⁴ based on the contingency lists cannot lead to the propagation of cascading effects outside their borders.	
Compliance Level: SC	
ESO EAD SC	MEPSO SC
Actions taken to reach compliance:	
Deadline:	
Additional Questions	
Do you share datasets and additional information to identify risks of cascading effects on the interconnection by the means of calculations?	
ESO EAD yes	MEPSO yes
Do you define in advance a set of contingencies and relative coordinated remedial actions with neighbouring TSOs?	
ESO EAD yes	MEPSO yes
How do you check the effectiveness of prepared measures for situations based on the contingency list?	
ESO EAD By simulations	MEPSO By simulations
Do you have a procedure to coordinate remedial actions with your neighbouring TSOs in case of detected violations on the interconnection?	
ESO EAD no	MEPSO no

Do you have agreed methods of cost sharing?	
ESO EAD no	MEPSO no

AUDIT QUESTIONNAIRE 2011

P3-A4-S3 PRINCIPLE OF “NO CASCADING WITH IMPACT OUTSIDE MY BORDER”. TSOs commonly identify, prepare and implement in a coordinated way all possible operational measures and remedial actions (doing their best efforts in accordance with their legal framework) so that the simulated situations based on the contingency lists cannot lead to the propagation of cascading effects outside their borders.

Overall Compliance level FC SC NC

Neighbour	Compliance level
MEPSO	FC
ESO EAD	FC

Concise explanation for declared compliance level:

Possible operational measures and remedial actions are verified with security analysis during planning phase. The above measures are communicated with the neighbouring TSOs via WOPT procedure in order to coordinate the remedial actions.

Do you have an addendum to the standard? Yes No

In case of an existing addendum; list of evidences for a mitigation plan, comments:

Do you share datasets and additional information to identify risks of cascading effects on the interconnection by the means of calculations?

Neighbour	Yes	No
MEPSO	X	
ESO EAD	X	

List of evidences, comments:

1. Weekly Operational Teleconference (WOPT)-procedures- in operational planning.
2. Day Ahead Congestion Forecast (DACF) with PSS/E (Software) Files-procedures-in operational planning.
3. Intraday snapshots (if needed).

Do you define in advance a set of contingencies and relative coordinated remedial actions with neighbouring TSOs?

Neighbour	Yes	No
MEPSO	X	
ESO EAD	X	

List of evidences, comments:

1. Operational Agreement HTSO-MEPSO (Appendix 28, Letter OSD/2304/16.09.2011) 16/09/2011).
2. Operational Agreement HTSO-ESO EAD (Appendix 21, Letter OSD/2304/16.09.2011) 16/09/2011).
3. 7th Annual Meeting of the Maintenance Group - Minutes of Meeting (MoM) held at 17/11/2010 in Bucharest.
4. Weekly Operational Teleconference (WOPT)-procedures- in operational planning.
5. Day Ahead Congestion Forecast (DACF) with PSS/E (Software) Files-procedures-in operational planning.
6. Operational Agreement (OA) HTSO-MEPSO (Chapt.12).

How do you check the effectiveness of prepared measures for situations based on the contingency list?

Neighbour	Explanation
MEPSO	Remedial actions are checked in the planning phase. Additionally during real time operation, National Control Center (NCC) can check the effectiveness of the prepared measures using real time snapshots from the EMS / SCADA system. All measures are taken in close cooperation with the adjacent TSO's.
ESO EAD	

List of evidences, comments:

1. Day Ahead Congestion Forecast (DACF) with PSS/E (Software) Files-procedures-in operational planning.
2. PSS/E (Software)-intraday procedures and security calculations.
3. EMS / Study applications.

Do you have a procedure to coordinate remedial actions with your neighbouring TSOs in case of detected violations on the interconnection?

Neighbour	Yes	No
MEPSO	FC	
ESO EAD	FC	

List of evidences, comments:

1. Operational Agreement HTSO-MEPSO (Appendix 28, Letter OSD/2304/16.09.2011) 16/09/2011).
2. Operational Agreement HTSO-ESO EAD (Appendix 21, Letter OSD/2304/16.09.2011) 16/09/2011).
3. Day Ahead Congestion Forecast (DACF) with PSS/E (Software) Files-procedures-in operational planning.
4. PSS/E (Software)-intraday procedures and security calculations.

AUDIT PHASE

COMPLIANCE AUDIT 2011

The Audit Team is convinced that HTSO makes its best efforts to fulfil this standard (e.g. by the way of NTC calculations). However, HTSO didn't perform an analysis with its neighbouring TSOs in which possible propagation of cascading effects is analyzed. There are no operational measures and remedial actions which HTSO has commonly identified, prepared and implemented in a coordinated way with its neighbouring TSOs.

The location of the HTSO system (being a peninsula) is specific. It is very improbable that disturbances originating from the HTSO system may endanger neighbouring systems. In a certain sense, the standard is not applicable to HTSO. Nevertheless, the standard requires cooperation between neighbouring TSOs and common identification of possible remedial actions.

Compliance Level suggestion by the audit team:

NC

Explanation for the suggested compliance level:

HTSO doesn't have the necessary proofs.

Mitigation plan with deadline:

To perform an analysis in which possible propagation of cascading effects is analyzed, and possible remedial actions are proposed. To share the results of this study with neighbouring TSOs and to reach common understanding on these issues. The results should be written down in a common document comprising all relevant TSOs of the region.

Deadline: Third quarter 2012 (end of September 2012).

4.18 P3-A4-S4.1 REGIONAL AGREEMENT FOR THE SET OF REMEDIAL ACTIONS

PREPARATORY PHASE

SELF-ASSESSMENT QUESTIONNAIRE 2010	
P3-A4-S4.1.	
Regional agreement for the set of remedial actions. For probable constraints impacting neighboring control areas TSOs have to agree in advance with their neighbors in the same region on a set of remedial actions and on related procedures of activation.	
Compliance Level: NC	
ESO EAD NC	MEPSO NC
Actions taken to reach compliance:	
Deadline:	1/2013
Temporary measures to preserve the security of interconnected system	
Existing addendum for this Policy reference	no
Additional Questions	
Do you have any written agreements on procedures to provide maximal assistance to adjacent TSOs no longer capable to face a critical situation, taking into account cross-border remedial actions. (i.e. changes of network topology, cross-border re-dispatching, counter-trading, NTC curtailment, etc.)?	
ESO EAD yes	MEPSO no

AUDIT QUESTIONNAIRE 2011

P3-A4-S4.1 REGIONAL AGREEMENT FOR THE SET OF REMEDIAL ACTIONS. For probable constraints impacting neighbouring control areas TSOs have to agree in advance with their neighbours in the same region on a set of remedial actions and on related procedures of activation.

Overall Compliance level FC SC NC

Neighbour	Compliance level
MEPSO	FC
ESO EAD	FC

Concise explanation for declared compliance level:

Possible operational measures and remedial actions are verified with security analysis during planning phase. The above measures are communicated with the neighbouring TSOs via WOPT procedure in order to coordinate the remedial actions.

Do you have an addendum to the standard? Yes No

In case of an existing addendum; list of evidences for a mitigation plan, comments:

[Redacted area]

Have you agreed with your neighbouring TSOs in the same region on a set of remedial actions and on activation of related procedures for probable constraints impacting neighbouring control areas?

Yes No

List of evidences, comments:

1. Operational Agreement HTSO-MEPSO (Appendix 28, Letter OSD/2304/16.09.2011) 16/09/2011).
2. Operational Agreement HTSO-ESO EAD (Appendix 21, Letter OSD/2304/16.09.2011) 16/09/2011).
3. 7th Annual Meeting of the Maintenance Group - Minutes of Meeting (MoM) held at 17/11/2010 in Bucharest.

AUDIT PHASE

COMPLIANCE AUDIT 2011

HTSO has shown a template in appendix 28 of the operational agreement with MEPSO and the template in appendix 21 of the operational agreement with ESO-EAD in which proposed remedial actions of HTSO can be sent to these neighbouring TSOs for checking and confirmation. However, this procedure has not yet been practised.

HTSO doesn't have a common analysis with its neighbouring TSOs in which possible remedial actions are identified on the basis of a general analysis of probable constraints impacting neighbouring control areas.

Compliance Level suggestion by the audit team:

SC

Explanation for the suggested compliance level:

HTSO has demonstrated that a significant effort has been made to fulfil the requirements of this standard. However, for full compliance a clear proof of successful communication in the sense of the standard with neighbouring TSOs is necessary.

Improvement plan with deadline:

Implementation of the operational agreements with neighbouring TSOs and common procedures which are already in preparation. The Audit Team recommends, however, preparing a set of principal remedial actions in order to simplify and ease the use of common procedures related to this standard.

Deadline: Third quarter (end of September 2012).

4.19 P3-B-S1.2.2 OTHER REACTIVE POWER GENERATION/ABSORPTION RESOURCES

PREPARATORY PHASE

SELF-ASSESSMENT QUESTIONNAIRE 2010

P3-B-S1.2.2.

Other REACTIVE POWER generation/absorption resources. TSOs have to keep available a sufficient number of other reactive power sources like generators, capacitors and reactors connected to the grid, which contribute to REACTIVE POWER generation or absorption, in order to maintain or get back the voltage in normal ranges after any contingency.

Compliance Level: FC

Explanation for the full compliance declaration:

Additional Questions

Do you check regularly whether you have a sufficient additional reserve of reactive power in order to recover the normal range in N-1 situation	yes
Do you have information about the availability/restriction of reactive power reserves?	yes
Do you have any contracts with adjacent TSOs for the exchange of reactive power reserve in case of necessity (e.g. voltage margins violations)?	no

AUDIT QUESTIONNAIRE 2011

P3-B-S1.2.2 OTHER REACTIVE POWER GENERATION/ABSORPTION RESOURCES. TSOs have to keep available a sufficient number of other reactive power sources like generators, capacitors and reactors connected to the grid, which contribute to REACTIVE POWER generation or absorption, in order to maintain or get back the voltage in normal ranges after any contingency.

Compliance level **FC** **SC** **NC**

Concise explanation for declared compliance level:

In the Greek power system are installed sufficient reactive power sources. In particular a lot of capacitors banks are installed in HV and MV levels. Reactors are installed at the tertiary winding of the autotransformers (400/150/30 KV) and at buses connected to cables. A lot of hydro power units have the capability to operate as synchronous condensers. Moreover autotransformers are equipped with On Line Tap Changers (OLTC).

All units are obliged to provide reactive power and tested for their capability. EMS has a lot of tools for the coordination of the reactive power resources.

Do you have an addendum to the standard? Yes No

In case of an existing addendum; list of evidences for a mitigation plan, comments:

Do you check regularly whether you have a sufficient additional reserve of reactive power in order to recover the normal range in N-1 situation?

Yes No

List of evidences, comments:

1. EMS/SCADA/ Voltage overview application displays in real time (related to voltage and reactive resources).
2. EMS / N-1 contingency analysis.
3. VSA (Voltage Security Assessment) – as real time application.
4. Grid Code (Art.127, 136, 143, 247 § 3, 4).
5. Report from test of the units.

Do you have information about the availability/restriction of reactive power reserves?

Yes No

List of evidences, comments:

1. Maintenance Generation Plan-Yearly/weekly/daily program.
2. EMS/SCADA/ Voltage overview application displays in real time (related to voltage and reactive resources).
3. Weekly Operational Teleconference (WOPT)-procedures- in operational planning.
4. VSA (Voltage Security Assessment) – as real time application.
5. Optimization of reactive power resources with Optimal Power Flow (OPF) application of EMS.

AUDIT PHASE

COMPLIANCE AUDIT 2011

Since 2005 HTSO doesn't have voltage problems any more. In the control room, the audit Team has seen the list of available coils and capacitors. According to the Grid Code HTSO can freely use the generators for reactive power production and consumption. Additionally, in a voltage security calculation, the load at which the voltage could collapse is calculated.

In the CIGRE document "Experience gained by application of real-time voltage security assessment method at HTSO" all these experiences are described and summarized.

Compliance Level suggestion by the audit team:
FC

Explanation for the suggested compliance level:
HTSO has given sufficient proof of full compliance.

Improvement/Mitigation plan with deadline:
n/a

4.20 P3-B-S2.1.2 COORDINATION FOR VOLTAGE AND REACTIVE POWER MANAGEMENT

PREPARATORY PHASE

SELF-ASSESSMENT QUESTIONNAIRE 2010	
P3-B-S2.1.2.	
Coordination for voltage and reactive power management. A coordination between adjacent TSOs is needed in order to manage voltage control (primary and other means) and reactive power resources near boundary preventing that individual actions have a contrary effect to the security of neighbors (including border nodes for voltage) in normal operation and in case of disturbances.	
Compliance Level: SC	
ESO EAD FC	MEPSO SC
Actions taken to reach compliance:	
Deadline:	1/2012
Additional Questions	
Do you have any reactive power resources which are placed near to the boundaries of your system?	
ESO EAD yes	MEPSO yes
Do you inform your neighbours in advance if you intend to perform an action that will cause significant increase or decrease of voltage at your boundary substations?	
ESO EAD yes	MEPSO yes
Do you inform your neighbours if a disturbance which occurred in your system causes a significant change of voltage at boundary substations and additional reactive flows on tie-lines?	
ESO EAD yes	MEPSO yes
How do you control voltages and reactive power flows on tie-lines (i.e. using of reactors or capacitors, generator based reactive power dispatch, etc.)?	
ESO EAD using of reactors or capacitors, generator based reactive power dispatch, change tap transformer	
MEPSO using of reactors or capacitors, generator based reactive power dispatch, change tap transformer	

AUDIT QUESTIONNAIRE 2011

P3-B-S2.1.2 COORDINATION FOR VOLTAGE AND REACTIVE POWER MANAGEMENT. A coordination between adjacent TSOs is needed in order to manage voltage control (primary and other means) and reactive power resources near boundary preventing that individual actions have a contrary effect to the security of neighbours (including border nodes for voltage) in normal operation and in case of disturbances.

Overall Compliance level FC SC NC

Neighbour	Compliance level
MEPSO	FC
ESO EAD	FC

Concise explanation for declared compliance level:

We comply with the standard according to Operational Agreements with ESO EAD and MEPSO.

Do you have an addendum to the standard? Yes No

In case of an existing addendum; list of evidences for a mitigation plan, comments:

Do you inform your neighbours in advance if you intend to perform an action that will cause significant increase or decrease of voltage at your boundary substations?

Neighbour	Yes	No
MEPSO	X	
ESO EAD	X	

List of evidences, comments:

1. Operational Agreement (OA) HTSO-MEPSO (chapter 5, 20).
2. Operational Agreement (OA) HTSO-ESO EAD (chapter 11).
3. Weekly Operational Teleconference (WOPT)-procedures- in operational planning.
4. Day Ahead Congestion Forecast (DACF) with PSS/E (Software) Files-procedures- in operational planning.

Do you inform your neighbours if a disturbance which occurred in your system causes a

Neighbour	Explanation
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significant change of voltage at boundary substations and additional reactive flows on tie-lines?

Neighbour	Yes	No
MEPSO	X	
ESO EAD	X	

List of evidences, comments:

1. Operational Agreement (OA) HTSO-MEPSO (chapter 5, 20).
2. Operational Agreement (OA) HTSO-ESO EAD (chapter 11/ 11.4, 11.5, chapter 15/ 15.1, 15.6, 15.7).

The EMS application of contingency analysis runs every 10 minutes giving results on voltage levels including boundary buses. NCC informs the adjacent TSOs.

How do you control voltages and reactive power flows on tie-lines (i.e. using of reactors or capacitors, generator based reactive power dispatch, etc.)?

Neighbour	Explanation
MEPSO	Voltage management is performed by using reactors, capacitor banks or by adjustment of reactive power produced by nearby power plants. OLTC of autotransformers are also used and if needed appropriate line switching is activated to regulate the reactive power flows on tie-lines.
ESO EAD	

List of evidences, comments:

1. Grid Code (chapt.19 / Art.89 §2, 5, chapt.91/ Art.91 §6, chapt.48/ Art.247).
2. Operational Agreement (OA) HTSO-MEPSO (chapter 5, 20).
3. Operational Agreement (OA) HTSO-ESO EAD (chapter 11 /11.4, 11.5, chapter 15/ 15.1, 15.6, 15.7).
4. Day Ahead Congestion Forecast (DACF) with PSS/E (Software) Files-procedures-in operational planning.
5. EMS Network applications.

d) Do you have any reactive power resources which are placed near to the boundaries of your system?

MEPSO	The major part of the Greek power plants is located in North region where the interconnection lines exist. The more suitable units are those that are connected to Thessaloniki S/S 400 KV (ENTHESS), Kardias S/S 400 KV (Kardias 1,2,3,4) and HYDRO power plant THE SAVROS (generator / pump) in 150KV. Capacitors, reactors and autotransformers are also available in the boundary substations.
ESO EAD	

List of evidences, comments:

1. EMS capacitors / reactors lists (EMS/SHUNT SUMMARY).
2. EMS display concerning the reactive power of units.
3. EMS transformers display showing tap positions.

AUDIT PHASE

COMPLIANCE AUDIT 2011

HTSO has shown the operational agreement with MEPSO. In chapter 5 the procedures for switching of tie-lines are described. The voltage ranges are mentioned in this document.

In the operational agreement with ESO-EAD the voltage control at the border is described in chapters 11.4 and 11.5.

Coils and capacitors, transformers with tap changers, and generator units close to the border are available.

Compliance Level suggestion by the audit team:

FC

Explanation for the suggested compliance level:

HTSO has given sufficient proof of full compliance.

Improvement/Mitigation plan with deadline:

n/a

4.21 P3-D-S2 TRANSIENT ANGLE STABILITY CALCULATION

PREPARATORY PHASE

SELF-ASSESSMENT QUESTIONNAIRE 2010
P3-D-S2.
Transient angle Stability calculation. Each TSO has at its own disposal relevant dynamic models and dedicated software in order to carry out dynamic simulations ensuring transient angle stability in its responsibility area.
Compliance Level: FC
Explanation for the full compliance declaration:
Additional Questions
Do you have relevant dynamic models in order to carry out dynamic simulations ensuring transient angle stability in your responsibility area.

AUDIT QUESTIONNAIRE 2011
P3-D-S2 TRANSIENT ANGLE STABILITY CALCULATION. Each TSO has at its own disposal relevant dynamic models and dedicated software in order to carry out dynamic simulations ensuring transient angle stability in its responsibility area
Compliance level FC <input checked="" type="checkbox"/> SC <input type="checkbox"/> NC <input type="checkbox"/>
Concise explanation for declared compliance level:
According to our Grid Code we require from generators to supply us with all appropriate data for dynamic simulation. From the available data we build dynamic models that we are able to carry out simulations with dedicated software package.
Do you have an addendum to the standard? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
In case of an existing addendum; list of evidences for a mitigation plan, comments:

<i>Do you have relevant dynamic models in order to carry out dynamic simulations ensuring transient angle stability in your responsibility area?</i>
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
List of evidences, comments:
<ol style="list-style-type: none"> 1. Grid Code (Article 295 § 5, 6, 7, 8, 12, 13, 14). 2. ASCII FILE OF HTSO DYNAMIC MODELS FOR THE SIEMENS PSS/E SOFTWARE PACKAGE. 3. Generator Data Sheets document.

AUDIT PHASE

COMPLIANCE AUDIT 2011

According to the Grid Code, generators have to deliver to HTSO all appropriate data for dynamic simulation (generator data sheets have been presented too). From the available data HTSO builds dynamic models to carry out simulations with the software package PSS/E.

An ASCII file of the dynamic model has been presented.

HTSO has shown the POWER TECH document (for the conference on 01-05/072007 in Lausanne): "Inter-area oscillations and tie-line transients in the Hellenic Interconnected System" about severe disturbance of tie-lines connecting the HTSO system with the rest of the SEE region. This study was performed using the dynamic model and the PSS/E software.

Compliance Level suggestion by the audit team:

FC

Explanation for the suggested compliance level:

HTSO has given sufficient proof of full compliance.

Improvement/Mitigation plan with deadline:

n/a

5 CONCLUSIONS

The Audit Team visited the HTSO control room at the beginning of the audit. All questions of the Audit Team were answered in a very precise manner. The evidences presented in the control room helped the auditors to better understand the organisation of the work and the processes.

HTSO was excellently prepared for the audit. All necessary documentation was easily available. This has significantly eased the audit process. The HTSO representatives answered all questions in a competent way and gave detailed explanations. The Audit Team wants to stress its full satisfaction with the approach of HTSO to the compliance audit.

The Audit Team upgraded HTSO from the level of sufficient compliance (SC) to the level of full compliance (FC) in case of the standard P2-A-S5.

At the border to MEPSO only 50% of the capacity is auctioned by HTSO. Therefore, there is only an internal HTSO document on auctioning this capacity: "Access rules to Greece-FYROM and Greece-Albania interconnections". MEPSO auctions its own 50%. HTSO and MEPSO exchange the auction results. Greek market participants have to nominate their counter parties at the other side of the border. Therefore, strictly speaking, HTSO doesn't have an agreement with MEPSO, but in the light of the explanations this requirement is not applicable. The Audit Team doesn't see a reason to evaluate the compliance level of HTSO with this standard with a lower grade than full compliance, but it recommends to HTSO to improve the cooperation with MEPSO.

The Audit Team downgraded HTSO from the level of full compliance (FC) to the level of non compliance (NC) in case of the standard P3-A4-S3.

The Audit Team is convinced that HTSO makes its best efforts to fulfil this standard (e.g. by the way of NTC calculations). However, HTSO didn't perform an analysis with its neighbouring TSOs in which possible propagation of cascading effects is analyzed. There are no operational measures and remedial actions which HTSO has commonly identified, prepared and implemented in a coordinated way with its neighbouring TSOs.

The location of the HTSO system (being a peninsula) is specific. It is very improbable that disturbances originating from the HTSO system may endanger neighbouring systems. In a certain sense, the standard is not applicable to HTSO. Nevertheless, the standard requires cooperation between neighbouring TSOs and common identification of possible remedial actions.

Mitigation plan: To perform an analysis in which possible propagation of cascading effects is analyzed, and possible remedial actions are proposed; to share the results of this study with neighbouring TSOs and to reach common understanding on these issues. The results should be written down in a common document comprising all relevant TSOs of the region. Deadline: Third quarter (end of September) 2012.

The Audit Team downgraded HTSO from the level of full compliance (FC) to the level of sufficient compliance (SC) in case of the standard P3-A4-S4.1.

HTSO doesn't have a common analysis with its neighbouring TSOs in which possible remedial actions are identified on the basis of a general analysis of probable constraints impacting neighbouring control areas. HTSO has demonstrated that a significant effort has been made to fulfil the requirements of this standard. However, for full compliance a clear proof of successful communication in the sense of the standard with neighbouring TSOs is necessary.

Improvement plan: Implementation of the operational agreements with neighbouring TSOs and common procedures which are already in preparation. The Audit Team recommends, however, preparing a set of principal remedial actions in order to simplify and ease the use of common procedures related to this standard. Deadline: Third quarter (end of September) 2012.

Remark:

After the Compliance Audit, but during the commenting phase of the Compliance Audit Report, HTSO submitted to the Audit Team the document "Remedial actions procedures among TSOs" dated with 18th November 2011 (sent to Mr. M. Hristozov, Mr. Z. Todorovski, and Mr. L. Aranitasi), containing "the results of the analysis of the requirements of Policy 3 regarding remedial actions among TSOs and updated lists which correspond to winter 2011/2012" (including general description of Greek NTC). In the accompanying mail HTSO writes:

"We want to notice the following:

- We agree on the findings of the pre final Compliance Auditing report.
- About the Standard P3-A4-S3 and P3-A4-S4.1 which were evaluated by the auditing team as 'Non Compliant', we consider that we are compliant. As we explained during the auditing, there is not any internal (in the Greek area) disturbance that could cause cascades impacting other external neighboring systems. The reasons are:
 - system is at the end of peninsula,
 - it is mainly importing,
 - the interconnections and the grid close to the borders are strong enough relative to the allocated capacities.

Our main concern is a probable disturbance originated from a neighboring system that could create cascading effects to our system. For that reason we are very sensitive in the calculations of importing NTC values in monthly and daily allocations. During this procedure we communicate the results of our studies to the neighboring TSOs, including the remedial actions, asking their confirmation. As you can see the remedial actions proposed to our neighbours, for all the examined scenarios, are cross border redispatching which decreases the importing schedules. For verification we attach the relative study (including tables of remedial actions) in the context of December 2011 NTC calculations."

The Audit Team would like to specify that, as a general rule established by the RG CE Subgroup Compliance Monitoring & Enforcement, the results of a Compliance Audit cannot be changed after the audit.

Nevertheless, the Audit Team is ready to evaluate the submitted document, and highly appreciates the fast reaction of HTSO at implementing its mitigation plan related to standard P3-A4-S3 and of its improvement plan related to standard P3-A4-S4.1.

In the opinion of the Audit Team, the document delivered by HTSO after the audit represents an excellent example of how a thorough study concerning risks for the system through outages (including cascading effects) and possible remedial actions should look like. The Audit Team recommends performing such studies not only for winter 2011/2012 but also in the future for all seasons of a year.

The standard P3-A4-S3 states that "TSOs commonly identify, prepare and implement in a coordinated way all possible operational measures and remedial actions". In this light, the Audit Team is of opinion that HTSO fulfilled the first part of its mitigation plan: "to perform an analysis in which possible propagation of cascading effects is analyzed, and possible remedial actions are proposed; to share the results of this study with neighbouring TSOs". It remains to "reach common understanding on these issues" and to "write down the results in a common document comprising all relevant TSOs of the region". As HTSO has done what is in its power so far, the Audit Team considers that HTSO is sufficiently compliant with the standard P3-A4-S3.

The standard P3-A4-S4.1 states that "for probable constraints impacting neighbouring control areas TSOs have to agree in advance with their neighbours in the same region on a set of remedial actions and on related procedures of activation". Obviously, in case of HTSO, this requirement is not yet fulfilled. Nevertheless, through the submitted document, HTSO made a significant progress at fulfilling

its improvement plan: “preparing a set of principal remedial actions in order to simplify and ease the use of common procedures related to this standard”. What remains is the “implementation of the operational agreements with neighbouring TSOs and common procedures”. Therefore, the Audit Team appreciates the progress made, but considers that HTSO is still sufficiently compliant with the standard P3-A4-S4.1.

End of remark

HTSO is not compliant with the standards P3-A2-S2 and P3-A2-S6, but is covered by addenda which are valid till end of 2013. Temporary measures are: using of DACF files in combination with on-line measurements for near to real time calculations.

The mitigation plans mentioned in the addenda are not adequate. They foresee the implementation of a new EMS. What is needed, however, are the measurements from other TSOs.

The Audit Team recommends to HTSO to present this finding to the RG CE Plenary and to ask it to take the decision that all TSOs of the region should provide necessary measurements to one another.

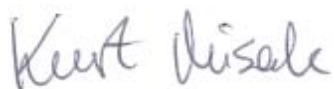
Deadline for presenting the finding to the Plenary: first quarter (end of March) 2012.

The Audit Team made the experience that HTSO is an excellently organized TSO with a very high level of expertise.

The Audit Team wishes to express its gratitude to the HTSO company management for fulfilling all preconditions for an excellent and successful audit.

6 SIGNATURE PAGE

ENTSO-E Audit Team Members:



Kurt Misak (Audit Team Leader)



Heinz-Dieter Ziesemann (Audit Team Member)



László Galambos (Audit Team Member)



Alexander Mondovic (Audit Team Member)

Date and Place: 28.11.2011, Brussels, Belgium