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# ACTIVITIES OF THE UCTE WORKING GROUPS



The Convenors of the permanent Working Groups, from left to right: Georges de Montravel (System Development), Carlo Crea (Communication Policy), Klaus Kleinekorte (Operations and Security), Jacek Ratz (Statistics).

As competence centers of UCTE, they made a cooperative contribution to the following objectives:

- Maintain the reliability of the power system in order to create and operate a robust, competitive, and non-discriminatory electric power market
- Gain and maintain the confidence of network users, government entities and market participants by providing them in a non-discriminatory way with high-quality data and information services
- Address the needs and requests of network users or neighboring systems to extend the UCTE synchronous area without jeopardizing the high quality standards developed by UCTE.

## Working Group »Operations and Security«

Convenor  
Klaus Kleinekorte



The Working Group's activities focused on drafting the UCTE Operation Handbook. This work started already in 2001 and basically consists in the transformation of UCTE ground rules and recommendations into a set of operation policies.

The 8<sup>th</sup> European Electricity Regulatory Forum in spring 2002 welcomed the UCTE approach on this item and asked to present a set of reliability standards. Therefore, the Working Group, in consultation with the Steering Committee, rescheduled its work plan to give initially priority to reliability aspects when developing the operation handbook. Three teams were set up to prepare draft documents for internal discussions. This task was mastered successfully, and UCTE was able to contribute a preliminary set of operation policies to the Regulatory Forum in October 2002.

#### IV. Security and reliability standards

*A comprehensive set of common security and reliability standards to be observed by TSOs and network users should be presented and further developed and put in the public domain in order to ensure the efficient and secure functioning of the interconnected system and appropriate quality of electricity supply. The UCTE, together with Nordel and other network associations were invited, in close collaboration with the Commission, the CEER, ETSO and other relevant stakeholders, to present and further develop such standards, and to present them for discussion by 1<sup>st</sup> September 2002.*

Excerpt of the  
»Conclusions – Eighth  
Meeting of the European  
Electricity Regulatory Forum  
– Florence 21-22 February  
2002«.

Another activity led to the introduction of the Multi Time Frame System for energy exchange schedules between load frequency control blocks. After careful analysis and extensive simulation of the system behaviour, the decision was taken to

leave it to the discretion of the control block leaders whether to implement exchange schedules with neighbours based on 15-minute, 30-minute or 60-minute intervals. Starting from October, exchange schedules were introduced as a pilot project by Austria and Germany on the basis of 15-minute intervals.

The Sub-group »TSO-Forum« provides a platform for the exchange of experience gained in system operation. The TSO-Forum is responsible for the definition of the share of primary control reserve among the control blocks. It was agreed to fix the starting date for the newly confirmed shares on 1 January, to go along with time intervals for tendering procedures in different member countries according to new rules of the liberalised market. The forum initiated another frequency measurement campaign whose results will be available in spring 2003. An ad hoc team was nominated to review the document on the distribution aspects for primary control reserve. Technical pros and cons have to be analysed to give an answer to the question under which conditions primary control reserve may be contracted as part of the ancillary services on a broader geographical basis. The report on extraordinary operational events which is part of this annual report was prepared by the TSO-Forum.

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>>> The Sub-group »Network Models & Forecast Tools« prepares, on a regular basis, reference network data sets (load-flow models, snapshots) and completes UCTE network models that are required for load-flow analyses, congestion forecasts and short-circuit calculations. Today the group is also responsible for the calculation of Net Transfer Capacity (NTC) values that are communicated through European Transmission System Operators (ETSO) to all market participants. All operational issues of the so-called Day Ahead Congestion Forecast (DACF) are co-ordinated by the Sub-group. In 2002, the daily day-ahead congestion forecast was implemented successfully among a greater number of UCTE members. This procedure was originally implemented by TSOs in Belgium, France and The Netherlands as the core team of the DACF methodology. The common goal is to implement the DACF procedure throughout the UCTE on an hourly basis. In 2002, the Sub-group also worked on an enhanced UCTE data format defini-

tion that is approaching finalisation. The »UCTE Format« is the basis for a standardised exchange of network model data.

A new Sub-group was formally founded with a view to tackling all operational issues of the Electronic Highway (EH) which was established on the initiative of ETSO, but is an operation tool today. The EH is a high speed data exchange infrastructure used among TSOs. It constitutes the backbone for a Europe-wide TSO Intranet. While it is mainly used for off-line data exchange today, there are plans to extend its use even to real-time data exchange. Some members are in a test phase already. Common goals are to enhance the topology of the EH with a view to achieving an even higher redundancy than it exists already today, and to enlarge the EH to the Southeast European region, to support the reconnection of the separated zone to the UCTE zone. <<<

Policy 1 – Load-Frequency Control and Performance	Policy 2 – Scheduling and Accounting	Policy 3 – Operational Security
<i>Policy Subsections</i>	<i>Policy Subsections</i>	<i>Policy Subsections</i>
A) Primary Control	H) Scheduling	3.1 N-1 Security (operational planning and real time operation)
B) Secondary Control	I) Online Observation	3.2 Voltage control and reactive power management
C) Tertiary Control	J) Accounting	3.3 Network faults elimination, short circuit currents
D) Time Control		3.4 Stability
E) Measures for Emergency Conditions		3.5 Technical requirements for inter-operability between TSOs
F) Performance Standards and Control Surveys		3.6 Co-ordinated switching
G) Technical Requirements and Qualifications for Generation		3.7 Outages scheduling
		3.8 Communication between TSOs

Excerpt of the draft of Policy 1 of the Operational Handbook of UCTE.



Convenor  
Georges de Montravel

During the last fifty years, UCTE has contributed to build one of the largest synchronous interconnected systems in the world supplying hundreds of millions of customers in a secure and reliable way.

The liberalisation of the electricity market has put new challenges on the UCTE:

- The commercial exchanges are growing dramatically and, as a result, the demand in transmission capacity exceeds by far the capacity offered, especially on international interconnections;
- the driving forces for the development of the system are now mainly defined by market considerations and less by security matters.

UCTE has thus to face simultaneously numerous challenges:

### *The creation of the internal electricity market*

The first goal of UCTE is to maintain the security and reliability of the system. This forms part of UCTE's commitment to facilitate the creation of the European electricity market through providing a reliable market platform. UCTE has to deal with the congestions appearing on the different borders, and has also to study the reinforcement of the European network.

### *Ongoing projects*

Three projects which are not finished yet are on the agenda of UCTE: the permanent connection of Bulgaria and Romania with the second UCTE zone, the connection of the Burshtyn island with the first UCTE zone and the reconnection of the second UCTE zone (extended to Bulgaria and Romania) to the first one.

### *Requests for system development*

UCTE has received a request from new countries or a group of countries, respectively, to be interconnected with the UCTE synchronous system: Turkey (supported by the neighbouring Greek TSO) and the UPS/IPS system (including Russia, Ukraine, Moldavia, Belarus, and Central Asia, and the Baltic States).

Beyond these formal requests, the connection of the systems of Libya, Egypt, Jordan, Syria and Lebanon to Tunisia which is synchronously interconnected with the UCTE system would lead to the creation of a loop around the Mediterranean Sea, known as the Mediterranean Ring.

Having to face these new challenges, UCTE asked the »System Development« Working Group to study different scenarios regarding the strategy for the development of the system and possible impacts on the UCTE as an Association. In parallel with previous activities, the Working Group continued its work on concrete projects.

### *Financing of the studies*

The present system has been constructed by vertically integrated utilities which shared among themselves the consequences of system extension (studies, investments in generation, etc...). UCTE is now a pure TSO Association which has the exclusive responsibility for technical and operational issues concerning the whole grid. With the liberalisation of the electricity sector in Europe, many stakeholders are now concerned with the interconnection of new systems. There is a large variety of issues they have to deal with, such as: nuclear safety, reciprocity in opening-up the market, investments in generation, investments in the network, commercial rules, effects on transit capacities between countries, etc...

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>>> One of the issues is the financing of the studies. To maintain the present security and reliability of the system, it is necessary to study the impact of the connection of the new system on the present one. These studies mainly consist in load-flow and dynamic stability analyses. Their costs are in the order of magnitude of 1 to 2 million €. This cost must be shared between the requesting system and other stakeholders, the European Commission being one of the key stakeholders.

### *Turkey*

The inventory phase of projects and studies as well as the assessment of the studies have been performed in 2002.

This led to a program of work that was approved by the UCTE Steering Committee. This program consists in a load-flow study, tests on the Turkish system and a stability study which completes the study performed in 2001 in the framework of the TEN program «Feasibility and evaluation study of the electricity interconnection Greece-Turkey». Two scenarios will be studied, one with a connection between Turkey and Bulgaria only, and a second one with a line between Turkey and Greece.

The physical connection of Turkey implies two prerequisites: positive results of the study and the reconnection of the second UCTE zone to the first one. Regarding the stability study, contacts have been established with the European Commission to settle the question of financing.

### *UPS/IPS*

UCTE has received a request from RAO for synchronous interconnection of the two power systems. UCTE has decided to address this matter as a strategic issue, and has started the inventory of projects and studies already performed on the subject.

After finalisation of this inventory phase, and in view of the fundamentally different approach for system extension (the two systems are of comparable sizes and have different philosophies in terms of operation), UCTE decided to proceed in three main steps:

- a first load-flow study which will give some results on the ability of the UCTE system to host new transits
- a thorough analysis of the results at the UCTE General Assembly in May 2003, and a decision on a feasibility study
- a feasibility study that may require two years for analysing all the aspects inherent in the project.

Regarding the first load-flow study, first results are expected at the beginning of 2003.

### *Tunisia-Libya*

The request of the five countries (Libya, Egypt, Jordan, Lebanon and Syria) already interconnected, to be connected to the synchronous system via 225 kV lines between Tunisia and Libya, has been studied during the year 2002. The following work has been implemented in this respect:

- inventory of projects and studies;
- description of the power systems (representing 40,000 MW of installed capacity from Morocco to Syria);
- description and analysis of the defence plans;
- description and analysis of the protections on the Spain-Morocco cable;
- analysis of the results of the study performed by REE and Hydro-Québec in the framework of a contract with GECOL and STEG.

According to the conclusions and recommendations of the study, it is not recommended to close the Tunisia-Libya line in view of the present status of the network and defence plan. UCTE is now waiting for the countries concerned to show how the recommendations have been implemented. Furthermore, the study did not tackle the issue of potential inter-area low-frequency oscillations between the UCTE system and the electric systems of North Africa. This matter will be studied in 2003. <<<

## Working Group »Communication Policy«



Convenor  
Carlo Crea

Since a substantial part of implementation of the new UCTE strategy (on system development, Operational Handbook, enforceability of standards) depends on the communication performance of the association – internally and, above all, externally – the Working Group »Communication Policy« and the UCTE Secretariat have focused their activities on improving the public perception of major strategic issues.

After definition of the UCTE's communication goals, the Working Group determined the most effective ways of communication for each target group. There was a substantial increase in press releases and media contacts managed by the Secretariat. Thus, a mechanism was created for regular reporting on UCTE main issues. Inside the association, communication activities channelled the exchange of experience and results of the Working Groups. In this context, the first UCTE internal seminar was organised in 2002. Due to a broad participation, a direct dialogue was established at all levels of the association.

In order to mirror individual TSO activities in the context of the association, the new quarterly publication »Newsgrid« was introduced.

### *UCTE web site*

The main UCTE communication effort of the Secretariat has been to improve the UCTE information system.

Thanks to the renewed UCTE web site, public awareness about UCTE's rule-setting for operation and transmission and for system adequacy increased during the last year.

The new Web site has optimised the flows of information about UCTE's missions and activities. It represents an essential means to make UCTE publications available and to provide information about UCTE to the public.

### *UCTE Flyer*

The UCTE Flyer is a new and easily readable leaflet presenting the profile of UCTE to the external world. Particular emphasis is laid on the Association's scope of work, on memberships, and on services and projects which serve internal and external benefits.

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### >>> *Newsgrid*

Newsgrid is the new quarterly newsletter of UCTE providing information on the main activities of the Association as well as information contributed by the TSO members. Subscription to the Newsletter is free of charge at the UCTE Web site, while paper copies may be obtained through e-mail addressed to [info@ucte.org](mailto:info@ucte.org)

### *Seminars and Conferences*

To facilitate the exchange of experience and Working Group results, the first UCTE internal seminar has been launched in 2002. The outcome of the seminar has been used to draw up the new UCTE strategy for the future. The seminar has contributed to increase the awareness of TSO members with regard to the efforts undertaken and the activities performed by the Association.

### *UCTE Press Conference*

On the occasion of the opening ceremony of the UCTE Secretariat in Brussels, a press conference was held in order to officially present the Association as the responsible body for security and reliability of the interconnected system.

### *Media contacts*

Press releases and media contacts were increased in order to generate a mechanism for regular reporting about UCTE's main issues and activities such as:

- the new online access tool to UCTE statistics and databases containing up-to-date statistics and information on production, load, consumption, physical exchanges in the 23 countries of the UCTE area;
- the new forecast method adopted by UCTE to prevent major grid disturbances;
- the presentation of the new draft for operational standards on the occasion of the last Electricity Regulatory Forum held in Rome.

The main efforts of external and internal communication will be focused for the time being on giving substantial value to the key strategic issues supported by UCTE, and on reprocessing their respective contents for presentation to the public.

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## Working Group »Statistics«



Convenor  
Jacek Ratz

The ongoing deregulation of the European electricity market had also in 2002 a direct impact upon UCTE statistics. Steadily growing expectations of market participants, consultants, political and regulatory bodies towards statistical information are still putting great challenges on the Working Group.

On the other hand, the unbundling process of the European electricity industry and the increasing shares of renewable energy sources and smaller producers make it more difficult to collect precise information in some statistical areas. New statistics on unavailability of international tie-lines, network reliability and scheduled electricity exchanges are new achievements meeting expectations of market participants and regulatory bodies.

The activities of the »Statistics« Working Group during the year 2002 were therefore mainly focused on the following key issues:

- introduction of the new statistics,
- improvement of the quality of data collection, processing and publication,
- appropriate follow-up of the enlargement of the UCTE synchronous zone,
- improvement of the Power Balance Forecast report with a view to adapting the scope.

The work on new statistics started two years ago with the report of the ad-hoc group »Statistics in the liberalised electricity market«. The main goals to be achieved by this new publication policy were:

- to satisfy the increasing demands of political, regulatory institutions as well as those of market participants,
- to satisfy the needs of TSOs,
- to support the strategy and image of TSOs and of UCTE,
- to define an early warning system for grid issues and
- to determine measurable criteria for reliability and quality.

After a successful trial period in 2001, during which all new statistics were collected, processed and monitored via internet technology, the regular publication of data on scheduled exchanges, network reliability and unavailability of international tie lines started in January 2002.

One of the greatest concerns of the »Statistics« Working Group – an issue that is becoming more and more difficult in the unbundled context of the European power industry – is the quality of statistical information. The Working Group maintains the high quality of its information by means of control procedures, an extensive use of internet technology and by promoting fruitful direct contacts between National Correspondents, the »Statistics« Working Group and the UCTE Secretariat.

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>>> The annual Statistical Workshop, which took place in Brussels in May 2002, has been one major measure to ensure an efficient internal communication between all parties involved in UCTE statistics. This year's event was concentrating on data quality, the whole process of data collection and processing as well as on the clarity and impact of UCTE's statistical publications. The second part of the workshop was oriented towards external stakeholders.

Another challenge for the Working Group is directly linked with the enlargement of the synchronous area. The Working Group actively sup-

ported these evolutions while starting a test collection of statistical data from the Burshtyn Island, Romania and Bulgaria. From January 2003 on, those new regions will be fully integrated in the UCTE Monthly Statistics.

The »Power Balance« Sub-group drafted the reports »UCTE Power and Energy Balance – Retrospect for the year 2001« and »UCTE System Adequacy Forecast 2003-2005« on the basis of current operating data. These reports evaluate the UCTE system adequacy and have been published in the Half-Yearly Reports I and II, and on the UCTE Web site.

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## System Adequacy Forecast 2003-2005

The expected development in the national and international transmission systems in the 20 UCTE countries shall reduce or prevent existing or foreseeable transmission bottlenecks by reducing internal constraints and/or by facilitating the energy flows. The European Internal Energy Market should take advantage of these developments although heavy transmission loadings, congestions and system limitations are expected to continue in some areas.

Concerning the adequacy of installed generating capacity compared to the load, the report points out the situation of the system in terms of Remaining Capacity. Remaining Capacity can be interpreted as the excess of the installed capacity necessary to cover the difference between the monthly peak load and the UCTE coincident reference load, and longer term power plant outages, and is often estimated at about 5% of the installed capacity. Expected remaining capacity shows a substantial increase over the period from 2003 to 2005 (essentially concentrated on the first half-year 2004, then stable). This will improve the security of the UCTE system.

For the UCTE as a whole, over the period from 2003 to 2005, the remaining capacity represents more than 8% of the total generating capacity, but this overall potential sometimes cannot be exploited by all the UCTE members due to transmission system bottlenecks; thus, the situation should also be analysed on a region-by-region basis.

The above-mentioned additional power plant operator reserves of about 5% will not be fully available in Belgium (in winter), Germany (in summer), Italy and the Netherlands. However, these countries consider that national system security will not be at risk thanks to the use of interconnection capacity, new generating capacity, long-term import contracts and participation contracts in power plants located outside the national territory.

In the second UCTE synchronous zone (Greece, Federal Republic of Yugoslavia (YU), Former Yugoslav Republic of Macedonia), the increase in generating capacity seems to be inadequate to match load growth. In January 2004, the remaining capacity will be equal to zero in this zone. From July 2004 on, an improvement of this situation is expected when the additional 5% reserves will be nearly reached. Concerning the individual countries in this zone, there will be no evolution in the YU generating capacity while the load increases. In Greece, peak load will be covered by hydro production and imported energy, especially in case of delays in the construction of the new power plants. Therefore, interconnections will play a key role for ensuring the security of supply. The resynchronisation of this second synchronous zone to the main part of the UCTE network, expected by the end of 2003, will also improve the import capacity. So, the use of interconnection capacity is likely to relieve this system, and its security will not be compromised.



## Legal Experts Network (LEN)

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In response to the developments in the European electricity market, UCTE introduced some fundamental methodology changes in the preparation of the power balance forecasts in 2000. This year's reports adhered to this new methodology, but starting from this year's forecast, some supplementary information was given on transmission grid developments. The aim is to provide a more complete overall view on the power system evolution, and to investigate not only generating capacity adequacy but also transmission system adequacy. The contents of these reports were also made known to interested parties through Press Releases, increasing notably the resonance of this information in the European Press.

From the next years on, the System Adequacy Forecast report will therefore cover a 5-year period with the same quantitative data as in the past, and include an additional 5-year period with more qualitative information on the UCTE system. This becomes more than ever a powerful tool to fulfil the task of monitoring and giving an appropriate early warning system to all stakeholders of the electricity sector, thus supporting UCTE's mission as the organisation responsible for the security of interconnected system operation.

In the field of security of supply, the »Statistics« Working Group will co-operate with the ETSO Task Force »Security of supply« which is dealing with market aspects of this issue, and which covers a broader geographical range than UCTE.

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The first major task of the Legal Experts Network after its setting up in June 2002 was to prepare a procedure with a view to making UCTE standards enforceable – according to the request of regulators at the spring session of the »European Electricity Regulatory Forum«.

Three basic options of how to achieve this goal were investigated by LEN:

1. To modify and amend the present Articles of Association,
2. Voluntary adherence to a multilateral agreement between TSO – UCTE members, and,
3. To incorporate UCTE standards into the European legislation.

All three possibilities were analysed, and a multilateral agreement was identified by a majority of TSOs as the preferred direction for making standards enforceable and binding. Simultaneously, modification of the Articles of Association is examined.

By undersigning a multilateral agreement, TSOs shall be contractually committed and bound to observe the provisions indicated in the Operational Handbook. Such an agreement shall settle relations not only between UCTE and its members but also between TSOs themselves. A gradual penalty mechanism and compensation for possible damages caused by parties shall be introduced. Additionally, the LEN examines provisions of WTO and the Energy Charter Treaty, and their interference with a multilateral agreement.

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