LEGISLATIVE PREPAREDNESS OF THE CZECH REPUBLIC AND OF OTHER EU CANDIDATE COUNTRIES FROM CENTRAL AND EASTERN EUROPE TO SOLVE TENORM TASKS

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1 ABSTRACT

2 INTRODUCTION

We have been asked to write a report how are the EU Candidate Countries from Central and Eastern Europe (CEE) prepared legislatively to solve tasks of TENORM type. We know, of course, this situation best in our country and in the neighbouring Slovakia, the second part of the previous Czechoslovakia. To gain information, relevant, complete and up to data, from the other countries it turned out to be difficult, sometimes impossible in the short time and esp. without direct contacts to the most relevant and interested officers in these countries.

In general it is possible to state these two principle matters of fact:

1. all the Candidate Countries from CEE had accepted the system of radiation protection (RP) principles formulated by ICRP and given by the Basic Safety Standards published by IAEA, WHO, ILO etc resulting from the membership in these international organisations, as well as in IRPA
2. the accession with EU is conditioned by the harmonisation of the national law with the common law of EU. This condition is one of the bases in the Accession Agreement.

With this it is guaranteed that not only articles VII of Council Directive 96/29/EURATOM but also all other articles and EC directives will be implemented in the legislation of Candidate Countries from CEE, not later than by their accession.

It is also possible to state that RP tasks of the type TENORM are not new ones. It was needed to solve them in the past, namely applying general RP principles in their actual form of development. Tasks were solved on the level of knowledge (complexity, perfection, consequenciality etc.) relevant to the time.

Further on one has to consider that national legislation arise from tradition and history and country-specific infrastructure of organisations - the act on RP as well (i.e. competence, inspection, sanctions, administration rules etc.). Therefore also TENORM regulations will be included in specific and different forms.

Another aspect is the expectable quickness and need to solve TENORM tasks in the individual Candidate Countries in comparison with all other urgent RP tasks, in nuclear energy, medical exposures, radon at home etc., with the given

capacity of inspection teams etc. But it will depend mainly on the level of establishment of liberal economy in the country as well as the willingness of the government to support the RP (and nuclear safety) – measured by the allocation of money from the government budget.
We will show therefore the approach to TENORM tasks in the Czech Republic in the past - reflecting a little also the attitude of the socialist regime. Later the general requirements are given for a TENORM legislation and how they are fulfilled in the proposed Czech atomic law. At the end information from other Candidate Countries are summarised.

3 EXAMPLES OF TENORM TASKS SOLVED IN THE CZECH REPUBLIC IN THE PAST

The Czech Republic is from the geological point of view characterised as a Uranium Province of Europe illustrated by a Radiometric map [1] and by Radon Risk Maps of the ground [2]; also Maps of U mining and milling residues (on about 4000 localities) exist. Therefore the higher frequency and higher level of problems of NORM and TENORM has to be awaited and they really occurred during the whole period that radiation protection started to act, at the beginning as a part of occupational hygiene, later as radiation hygiene of the Ministry of Health. Following some diverse examples are mentioned, arranged chronologically. The broad Czech Radon Programme was described several times in past [3] and is not mentioned here, as well as the huge database of radioactivity in building materials and underground water supplies [4].

3.1 ROLAVA - break of the dam of a U tailing depository during a flood in 1958

An old paper mill near Nejdek, standing on a small river Rolava, influx of river Ohre (Eger), was changed into an uranium mill to extract U from hard coal of two coal mines where seams with high concentration of U occurred. During a flood the dam of the tailing depository broke and the greater part of the content was washed out. The radiation harm to the population and environment was estimated to be less than that from the flood itself and only the dam was repaired. The accident was treated as highly "classified" as was the whole uranium industry under Soviet management (but under Czechoslovak rules). There was an information barrier also between West and East at that time. Experience from this accident was used in the construction of tailing deposits in three other locations later.
Now, about forty years later, layers with higher activity can be found deep in the sediments, resulting from several later floods, also in the river Ohre (Eger), hundred km far from the influx of Rolava.

3.2 RYNHOLEC - slag with high radium concentration in building material

At Rynholec, a village near Nove Straseci, the mine Anna mined hard coal, in some seams with high U concentrations. In the 50-ties uranium was extracted

from this coal in the mill near Nejdek upon Rolava This coal was burned in a power station beneath and the slag deposited beginning with about 1880. The slag (about 5 kBq/kg of Ra 226) was used to produce building material, first for the army and later for construction of several housing quarters.

In 1960 measurements in buildings show that dose rates of gamma radiation reach the double of the average background. No international rules about natural radioactivity in building material were available and indoor radon issue was not realized yet. The official decision was: no restriction or remediation for existing houses, but for new production search for lower contaminated slag on the deposit (not a prohibition). The examination report and the decision were "classified", of course.
In the same plant the production of prefabricated family and small tenant houses (type START) in an amount of about 4000 started in 1968. No information about the unsuitability of the slag was transferred to the new management. The higher radium concentration of the building material (about 4 kBq/kg) and insufficient ventilation of houses caused that action levels 500 Bq/m^3 and 1 μSv/h (and the summing rule for combined internal and external exposure) were exceeded in three-quarters of the houses in 1989. After the Velvet Revolution in November 1989 a radical pressure group of owners of these houses (with high emotional risk perception combined with political accusation) attack the minister of environment, responsible for the radon at home problems at that time. This resulted in the start of the Radon Programme (still acting but in modified form) and the high financial support from the state budget for remediation costs, not only for owners of these START houses but also for houses affected by radon from the ground - this was a great change of thinking of the democratic administration compared with the socialistic one.

3.3 JACHYMOV - a town with continuous harmful radiation effects starting with medieval mining of silver up to intensive mining of uranium after World War II

Jachymov (Joachimstal), a famous historical mining town in the Krusne Hory (Ore Mountains, Erzgebirge) upon an Ag-Co-As-Bi-U ore deposit, laying on the frontier of Czechia with Germany, nearly opposite to the famous historical mine town Schneeberg. Both mining towns are known by the first occurrence of the specific lung disease of miners (Bergkrankheit) identified later as occupational lung cancer and explained later by Prof. F.J.Bale, and independently by the Czech Prof. F.Behounek, only in 1956 as the result of the deposit of radon daughters on the lung airways and irradiation of basal cells of their epithelium by alpha radiation.
Contamination of the intravilan of the town with wastes from mining and milling silver ore (contaminated with uranium ore) and with wastes (up to 100 kBq/kg of Ra-226) from the production of uranium paints, the position in a deep valley full of piles from uranium mining, with radon exhalations from the mine producing radon water for the radon spa and also the insufficient isolation in about 500 houses against radon from the ground lead to an exposure range from 100 to 40 000 Bq/m^3, with about 50% of the house stock above the action level. The survey of this situation was finished in 1980, "classified" from the beginning.

Only after the Velvet Revolution inhabitants of Jachymov were informed about the high radon risk and the government supported intensively the remediation programme. Very interesting was to see the rational acceptance of the high radiation risk by the citizens.

3.4 PORICI - production of aerated concrete using flying ash with higher radium content

The mining of low quality hard coal in the Svatonovice-Zacler district, burning of this coal in a special power plant EPO at Porici and production of aerated concrete using the flying ash constituted a prosperous industrial chain. Building material for about 30 000 family houses was produced before the intervention. In 1982 the building materials mass activity of about 1 kBq/kg of Ra-226 were found. The origin of the activity was ascertained in the high uranium content of the coal seam Balthazar in the mine Katharine at Radvanice (the same coal which was previously milled near Nejdek upon Rolava, again without warning for other application).
In this case the socialist government decided to decrease the contamination below 120 Bq/kg within one year. Later the indoor radon survey of the houses built from this material has shown, that the action level was exceeded only in some percents of cases (a combined effect of not too high radium concentration and of very good thermal insulation properties enabling the owners to ventilate sufficiently also at higher cost of heating).

3.5 Water-supply stations

In Czechia 60% of the population is supplied with water from underground sources with a geometrical mean radon concentration 10 Bq/l with 0.2 % of sources exceeding the limit concentration of 300 Bq/m^3. Remedial measures based on deemantation of the water [4] are used in such cases. Starting in 1985 also radon concentrations in the air of water supply stations were measured and in some of them the annual dose of 6 mSv was exceeded. An effective co-operation with the Water-Supply Management (state enterprise) and simple and cheap remediation (mostly by ventilation near the accumulation reservoir) lead to reduction of annual doses below 1 mSv.

3.6 Decommissioning of armour plates used for testing arms with DU

In 1985 it had to be decided if armour plates used for testing arms with depleted uranium could be recycled in the steel industry. The contamination with U was estimated to be below one per mile therefore without severe radiation risk. After satisfactory results from an experimental melting the recycled steel was exempted from RP inspection.

3.7 Caves - radon exposure to staff

In the Czech Republic 7 caves are open for visitors with radon concentration in the range of 900 to 9600 Bq/m^3 and also one cave for therapy of asthmatic children. The environment in caves is preserved by an act on protection of nature - it is not allowed to change it. Visitors are exposed mostly once, so RP is concerned of the staff and can be controlled by the occupation time only.

Very good co-operation with the management of the caves and existence of a large amount of measurements (local monitoring as well as individual dosimetry) resulted in an approved monitoring system in all caves, in two of them controlled areas were set up not to exceed individual doses of 6 mSv.

3.8 Uranium glass - production and utilisation

Uranium glass is now produced with depleted uranium (DU) nevertheless it is produced under the severe inspection of non-proliferation of fissile material. Uranium dissolved in glass is excluded from this control and common occupational rules are sufficient also for RP at the workplace. The product with about 70 kBq/kg of U 238 is above the exemption level of 1 kBq/kg for Unat (it means uranium isotopes are in radioactive equilibrium and in natural composition) as well as above the exemption level of a mixture of uranium isotopes (10 kBq/kg). But the exemption of the uranium glass is founded on the low radiation exposure of members of the public at common and reasonable scenarios of usage of the products.

3.9 RADVANICE – remediation of a burning pile of rubbish from a coal mine

In 1998 it was decided to smother a burning pile of rubbish from coal mine which threatened people living in close proximity by smoke and pyrite gases. Interesting was also the fatal danger for seekers of new minerals originating under high temperature in this extraordinary conditions. (The pile material came from the coal mine Katharine containing coal with high uranium content and in the past used as U ore in the mentioned U mill near Nejdek upon Rolava). The radiation aspect of the intervention during remediation of burning pile was estimated as negligible for the workers as well as the public if common care is taken (e.g. reduction of dust).

3.10 LOVOSICE - production of artificial fertilisers

Applying the atomic act, now valid in our country and without special conditions for TENORM, an inspection was realised to estimate the radiation situation in a large chemical plant where also artificial fertilisers are produced in an amount of 10^4 tons pr year. Cola phosphate and KCl from Belarus are used as raw materials to produce NPK fertiliser. Along the whole processing line no place was found with dose rate above 0.3 μGy/h. The production is automatic, continuous (in 3 shifts with 40 workers) and in a closed cycle (10 years earlier the waste was released to the river Labe (Elbe)). The production line is cleaned for technological reasons each quarter of the year. Therefore with ore from Cola (apathite) there seems to be negligible NORM risk.

Note: Shown examples reflect also the complications and limitations given by the socialist political regime (special administration for the uranium industry, classified surveys and decisions, step by step acceptance of concern of public and environment). These circumstances were common and similar in all Candidate Countries.

4 WHAT THE LEGISLATION FOR TENORM TASKS HAS TO INCLUDE

The main instructions are given in the Recommendation for the implementation of Title VII of the BSS concerning significant increase in exposure due to natural radiation sources [5], esp. Section 3 - Industrial processes involving natural radionuclides other than radon. But as is stated above and in [5] also "old" RP principles enables to solve TENORM tasks without specialised requirements.

5 WHICH ARE THESE SPECIALISED REQUIREMENTS?

In legislative wording the amendments in the law on RP and in its implementing regulations have to adjust and to facilitate for TENORM tasks:

- the delimitation of TENORM workplaces,
- the explicit duty for the TENORM producer to solve TENORM problems,
- the system of state supervision.

At the same time the activities resulting in radiation exposures from TENORM have not to be licensed but exposures to workers and public have to be estimated by the "producer" themselves and decreased below the action level or regulated in accordance with common RP principles.

For the delimitation of potential activities or "producers" it is the best to publish a list of examples.

External and internal exposure, the exposure of workers and of members of the public in the surrounding, basic principles of RP etc have to be mentioned.

A guide has to be published with examples of exposure and risk assessment, optimisation analysis and remediation approaches.

Qualified teams for measurements and assessments are an advantage.

With this the willingness of the government is expressed to solve the TENORM problems and to spend money for the inspection and, at the same time of course, to charge the "producers" to pay for the raised expenses.

6 TENORM LEGISLATION IN THE CZECH REPUBLIC

In the CR where ICRP principles of RP are applied already about 45 years the competence in RP is no on the behalf of the State Office for Nuclear Safety (and Radiation Protection). Previously up to 1995 it was on behalf of the Ministry of Health. The Atomic Act No. 18/1997 Coll. and the Decree of SONS on RP No. 184/1997 Coll. is now in the process of amendment. The draft amendments to Atomic Act, including specialised TENORM requirements, was approved by the government and is now discussed in second reading in the Parliament, later it will be submitted to the Senate for approval and be signed by the President. TENORM problems are treated as given above in general requirements.

The draft amendment to the RP Decree will be submitted for interministerial discussion and submitted to the government for approval, not later than October 31, 2001. Lower and upper action levels of 1 and 6 mSv per year and monetary equivalent of collective dose of 0.5 mil CZK/Sv are proposed.

It is not calculated to enlarge the team of inspectors. The new duties will be imposed to the existing team of 8 regional inspectors specialised on natural radionuclides, esp. in building materials and water and co-operating in the Radon Programme of the CR.

Some more details about the proposed RP Decree:

- Uranium mining and milling is treated separately because of previous good experience and strict regulation,
- Special attention is paid to workplaces with elevated radon concentration. Under this category come all subterraneous workplaces, waterworks with radon remedial measures and all other workplaces, where Radon concentrations above 1000 Bq/m^3 were found. If remedial measures are not able to decrease Radon concentration below 1000 Bq/m^3, the workplaces is treated as controlled area.
- The most complicated seems to be the reasonable regulation of workplaces with NORMs. The issue is to find reasonable system of classification of materials, having in mind legislation and guidance/limit values for building materials and effluents from workplaces with artificial radionuclides. The proposed system is based on exemption levels from BSS as the first classification, above this level special treatment is required. Below this level the classification distinguishes between solid, insoluble NORM materials and others (soluble or non-solid). For the first case (solid, insoluble matters) index I

$$I = \frac{C_{Ra}}{300\ Bq/kg} + \frac{C_{Th}}{200\ Bq/kg} + \frac{C_{K}}{3000\ Bq/kg}$$

(proposed by EC Document, Radiation Protection 112, 1999 recommendation for regulation of activity of building material) is used as indicator for NORM regulation. I = 2 is used as guidance level. “Other” materials are treated by the same way as materials used in “practices”.

A study was supported to prepare a detailed list of plants and workplaces in the Czech Republic with potential TENORM risk [6] as a database to estimate:

- the range of inspection work, time and expenses
- the expected level of exposure
- and to use it as examples in the amendment of the regulation.

7 TENORM LEGISLATION IN OTHER EU CANDIDATE COUNTRIES FROM CENTRAL AND EASTERN EUROPE

According to data given by www.europa.eu.int: the list of CEE countries that started accession negotiations with EU is:

from 30 March 1998	**from February 2000**
Czechia	Bulgaria
Estonia	Latvia
Hungary	Lithuania
Poland	Romania
Slovenia	Slovakia

The ***Accession Partnership with the EU*** is based on an Accession Agreement, which each Candidate Country has to sign with the EU and must be ratificated by the European Parliament and the national parliament. Candidate Countries elaborates ***National programme for the adoption of the acquis communautaire*** divided into 29 chapters for each year - **RP is included in chapter 22 - Environment**. The progress is monitored and reported continuously. According to the legislation each Candidate Country prepare a ***Timetable of legislative steps for transposition of EC legislation into the national law. Implementation Plans*** are also elaborated foe each directive, regulation and other kind of EC legislation. The national legislative has to be fully in accord till an exact date if a transitional period is not requested This is a part only of the complex, complicated, laborious, time-consuming etc official framework of the accession process.

Therefore also the **Implementation Plan for the Council Directive 96/29/EURATOM** has to be worked out **with details on all titles and articles, e.g. title VII about tasks on NORM** according to the ***Table of Concordance*** - see Table 1 from the Czech Republic.

One of the duties of the Accession Partnership is the free access of citizens to information. Therefore all CEE countries with Accession Partnership started to issue web sites. A list of relevant is given in Table below.

Relevant web site references for national authorities in CEECs providing information in regard to the accession process to the EU
- by courtesy of Nina Hoffmann phare-tacis@cec.eu.int

Government of Republic of **Bulgaria**	http://www.government.bg/eng/index.html
Czech Republic and European Union	http://www.euroskop.cz/index.html
Estonia and EU	http://www.vm.ee/euro/english/
Hungarian Foreign Ministry	http://www.mfa.gov.hu/
Ministry of Foreign Affairs, **Latvia**	http://www.mfa.gov.lv/
Ministry of Foreign Affairs, **Lithuania**	http://www.urm.lt/

Polish European Integration Committee	http://www.ukie.gov.pl/index.htm
Department of European Integration, **Romania**	http://servernt1.exec.gov.ro/die/
Negotiating team for accession of **Slovenia** to the EU	http://www.gov.si:90/ops/ang/
The Slovak Republic Government Office	http://www.government.gov.sk/english/

Another detailed Directory with web sites and e-mail addresses of officers engaged in enlargement of the EU is published by D.I.S.M. (Decentralised Information Service Management - deloge@ibf.be).

The reality is not so perfect, of course. Sometimes the connection is working slowly (e.g. half-hour for LT), important (for us!) documents are not translated to English (LV), the web site is empty (BG) or not up-dated. The most interesting documents - tables of concordance - are not published and only drafts are announced in progress reports. This makes a specified survey impossible.

A ***Survey of the progress in the negotiations of Candidate Countries*** (including Cyprus and Malta) is worked out and published by EU in the course which give the best information about the state of art - the last version from 17 May 2001 is shown in Tab. 2. Chapter 22 - Environment contains the matter of RP and of NORM. Also this has to be "closed" before an exact date sufficiently before the accession of the Candidate State and therefore NORM task solved in law and implemented in the RP practice.

8 CONCLUSION

All the Candidate Countries from CEE are in process of implementation of Title VII of Council Directive 96/29/EURATOM into their national law o RP and must implement the BSS till an exact date to be ready to access EU and fulfil its obligations also in this area.

9 ACKNOWLEDGEMENT

The authors would like to thank Mrs. Lenka Budinova from SONS for kind help in EU legislative matter.

10 REFERENCES

1. Manova M., Matolin M., Radiometric Map of the Czech Republic, 1:500 000, Czech Geological Survey, 1995

2. Barnet I., et al., Map of Radon Risk from the Ground, 1:50 000 (covered half of the country up to now) and Derived Map of the Radon Risk, 1:200 000 (for the whole country) 1990

3. www.suro.cz/radonovy or Thomas J., et al., Radon Programme of the Czech Republic in: Proc. European Conf. Protection against Radon at Home and at Work, 1997, Praha

4. Hulka J., Vlcek J., Natural radionuclides in water of Czech water supplies (in Czech), Research Report SURO, 2000

5. European Communities, Recommendation for the implementation of Title VII of the European Basic Safety Standards Directive (BSS) concerning significant increase in exposure due to natural radiation sources, Luxembourg, 1997

6. Laciok A., Proposal of a complex solution of handling contaminated materials (including NORM), Report E15 of a complex project Liquidation of radiation sources, in Czech, 2000

Table 1

Progress Monitoring on the Approximation of the Accession Countries of Central and Eastern Europe

Table of Concordance (revised for monitoring purposes)

COUNCIL DIRECTIVE of 13 May 1996 laying down basic safety standards for the protection of the health of workers and the general public against the dangers arising from ionising radiation (96/29/EURATOM)

Country:	**Czech Republic**	Date Table Completed: Revised : Revised : Revised :	**28.10.1998** **September 1999** **April 2000** **April 17. 2001**
Person(s) completing Table:	Dr. Jan Salava, tel. 02/216 24 255, e-mail:Jan.Salava@sujb.cz Explanation : All data used in the Progress Monitoring Project (PMP) were extracted exclusively from official documents adopted, approved or published by the Ministry of the Environment CR Full text translations of Czech legal acts and other legal documents can be obtained from the Ministry of the Environment (European Integration Department) or from the Ministry of Foreign Affairs CR (EU Integration Co-ordination Department)		
Total no. of points if full transposition:	830 (166 x 5)	Total no. of points for current status of transposition:	**685**

Article	EU Obligation[1]	Existing national law[2] (give relevant law or regulation & no. of article)	Fully in accord? (yes/no)	If not, how will transpos'n occur? (L, GO, MO)	If draft, give no. of article transposing EU obligation[1]	Status of transposition (5-0 accdg to lawmaking stage)	Planned year for full transpos'n
Example	**Example**						
Art. 40.1	**Significant increase in exposure due to natural radiation sources (Title VII) :** Arts. 40-42 apply to work activities not covered by Art. 2.1 within which presence of natural radiation sources leads to significant increase in exposure of workers or of members of public which cannot be disregarded from radiation protection point of view.	0	No	L, MO	Amendment to Act No. 18/1997 Coll., § 6.2 Amendment to Decree 184/1997 Coll., § 60-63	3	2002

[1] This Table of Concordance is in summary form. The Directive's full legal text should be used in carrying out transposition.
[2] Attach English translations of existing legislation and proposed legislation.
L - law, GO - governmental order, MO - ministerial order (decree, regulation,...)

Table 2

Progress in the Negotiations of Candidate Countries (as of 17 May 2001)

Chapter	CY	EST	SLO	H	SK	CZ	PL	LIT	M	LAT	BG	RO
1 - Free movement of goods	✓11/00	✓12/00	✓3/01	✓3/01	✓3/01	✓12/99	✓3/01	✓5/01	📄12/00	✓3/01	📄12/00	
2 - Freedom of movement for persons	🕮5/00	🕮5/00	🕮5/00	🕮5/00	📄12/00	🕮5/00	🕮5/00	📄12/00	📄12/00	📄12/00		
3 - Freedom to provide services	✓5/01	✓3/01	✓11/00	✓3/01	✓5/01	✓3/01	✓11/00	🕮11/00	🕮3/01	🕮11/00	🕮3/01	
4 - Free movement of capital	✓3/01	✓5/00	✓3/01	🕮9/99	🕮11/00	🕮9/99	🕮9/99	✓3/01	🕮11/00	✓5/01	🕮11/00	📄01/01
5 - Company law	✓4/00	✓4/00	✓4/00	✓3/01	✓5/01	✓3/01	🕮5/99	✓5/01	✓11/00	✓5/01	🕮11/00	🕮3/01
6 - Competition policy	🕮5/99	🕮5/99	🕮5/99	🕮5/99	🕮5/00	🕮5/99	🕮5/99	🕮5/00	🕮11/00	🕮5/00	🕮3/01	🕮11/00
7 - Agriculture	🕮6/00	🕮6/00	🕮6/00	🕮6/00	📄12/00	🕮6/00	🕮6/00	📄12/00	📄2/01	📄8/00		
8 - Fisheries	✓4/00	✓4/00	✓5/99	✓5/99	✓10/00	✓4/99	🕮4/99	🕮3/01	🕮10/00	🕮10/00	🕮3/01	📄01/01
9 - Transport policy	✓5/01	🕮11/99	🕮11/99	🕮11/99	🕮11/00	🕮11/99	🕮12/99	🕮11/00	🕮11/00	🕮11/00	📄12/00	📄12/00
10 - Taxation	🕮11/99	🕮11/99	🕮11/99	🕮11/99	📄11/00	🕮11/99	🕮12/99	📄12/00	📄12/00	📄12/00		
11 - Economic and monetary union	✓12/99	✓12/99	✓12/99	✓12/99	✓3/01	✓12/99	✓12/99	✓3/01	✓11/00	✓11/00	📄12/00	
12 - Statistics	✓4/99	✓5/99	✓4/99	✓4/99	✓5/00	✓4/99	✓4/99	✓5/00	✓10/00	✓5/00	✓10/00	✓10/00
13 - Social policy and employment	✓4/00	✓10/00	✓12/00	✓11/00	✓5/01	🕮9/99	🕮9/99	✓3/01	🕮11/00	🕮3/01		
14 - Energy	✓5/01	🕮11/99	✓3/01	✓10/00	🕮5/01	🕮11/99	🕮11/99	📄12/00	📄12/00	🕮3/01		
15 - Industrial policy	✓12/98	✓4/99	✓4/99	✓4/99	✓10/00	✓6/99	✓5/99	✓10/00	✓5/00	✓10/00	📄5/00	
16 - Small and medium-sized undert.	✓11/98	✓11/98	✓11/98	✓11/98	✓5/00	✓11/98	✓11/98	✓5/00	✓5/00	✓5/00	✓5/00	✓5/00
17 - Science and research	✓11/98	✓11/98	✓11/98	✓11/98	✓5/00	✓11/98	✓11/98	✓5/00	✓5/00	✓5/00	✓5/00	✓5/00
18 - Education and training	✓11/98	✓11/98	✓11/98	✓11/98	✓5/00	✓11/98	✓11/98	✓5/00	✓5/00	✓5/00	✓5/00	✓5/00
19 - Telecommunications	✓6/99	✓4/99	✓4/99	✓4/99	✓5/01	✓4/99	✓5/99	✓3/01	✓5/00	🕮3/01	🕮10/00	🕮11/00
20 - Culture and audio-visual policy	✓12/98	✓11/00	🕮11/98	🕮11/98	✓11/00	🕮11/98	✓12/00	✓3/01	✓10/00	✓3/01	✓11/00	🕮10/00
21 - Regional policy	🕮4/00	🕮4/00	🕮4/00	🕮4/00	🕮3/01	🕮4/00	🕮4/00	🕮3/01	🕮3/01	🕮3/01		
22 - Environment	🕮12/99	🕮12/99	✓3/01	🕮12/99	🕮3/01	🕮12/99	🕮12/99	🕮11/00	📄01/01	🕮3/01		
23 - Consumers and health protection	✓5/99	✓5/99	✓5/99	✓5/99	✓10/00	✓5/99	✓5/99	✓3/01	✓10/00	✓10/00	✓10/00	📄12/00
24 - Justice and home affairs	🕮5/00	🕮5/00	🕮5/00	🕮5/00	📄12/00	🕮5/00	🕮5/00	📄12/00	📄12/00	📄12/00		
25 - Customs union	✓5/99	🕮5/99	🕮5/99	🕮5/99	🕮10/00	✓6/00	✓3/01	🕮3/01	📄12/00	🕮3/01	📄12/00	📄12/00
26 - External relations	✓5/99	✓4/00	🕮5/99	✓10/00	✓5/00	✓6/00	✓11/99	✓10/00	✓5/00	✓11/00	✓11/00	✓5/00
27 - Common foreign and sec. pol.	✓4/00	✓4/00	✓4/00	✓4/00	✓5/00	✓4/00	✓4/00	✓5/00	✓5/00	✓5/00	✓5/00	✓5/00
28 - Financial control	✓6/00	✓3/01	✓6/00	✓6/00	📄12/00	🕮4/00	✓6/00	📄12/00	✓3/01	📄12/00		
29 - Financial and budgetary prov.	🕮5/00	🕮5/00	🕮5/00	🕮5/00	🕮3/01	🕮5/00	🕮5/00	🕮3/01	🕮3/01	🕮3/01		
Summary: 🕮 =	29	29	29	29	24	29	29	23	21	24	14	10
17 May 2001 ✓ =	21	18	18	17	16	15	15	15	13	13	8	6

Notes: 📄 - negotiating position submitted, 🕮 - chapter opened, ✓ - chapter provisionally closed