

Government decision on the application by Teollisuuden Voima Oy to obtain a licence, referred to in section 18 of the Nuclear Energy Act, for the construction of a nuclear power plant unit on the Olkiluoto plant site in Eurajoki

Made in Helsinki on 17 February 2005

Application

Teollisuuden Voima Oy (TVO, below 'applicant') has in its application dated on 8 January 2004 requested a licence referred to in section 18 of the Nuclear Energy Act (990/1987) for the construction of a nuclear power plant unit called Olkiluoto 3 in the municipality of Eurajoki on the Olkiluoto nuclear power plant site. The applicant has supplemented its application on 3 February 2004 by a corrective page to Annex 6 and by an update of 28 December 2004 to Annex 2.

The applicant has attached the information referred to in section 32 of the Nuclear Energy Decree (161/1988) to the application for a construction licence. Annex 9 to the application contains a report on the environmental impacts of the project and a report on the environmental impact assessment (EIA report) of 1999 as its Appendix 9.1, as well as a statement on the EIA report by the coordinating authority as Appendix 9.2. Furthermore, the applicant has sent to the Finnish Radiation and Nuclear Safety Authority (STUK) the information in accordance with section 35 of the said decree.

In its application the applicant states that on 17 January 2002 the Government made a decision-in-principle on the nuclear power plant unit that is the subject of the application, and that Parliament decided to leave it in force as such on 24 May 2002.

The applicant reports to have initiated an invitation to tender for the project in the autumn of 2002, to have received the tenders on the new plant unit in March 2003, to have chosen Olkiluoto as the location in October 2003 and as the supplier of the plant a consortium composed of the German Framatome ANP GmbH, the French Framatome ANP SAS and the German Siemens AG. The applicant made an investment decision on the construction of the Olkiluoto 3 nuclear power plant unit in December 2003. The applicant states that the total cost estimate for the plant project would be around EUR 3.0 billion in the 2003 value.

In its application, the applicant has given the following information on the nuclear power plant unit:

The rated thermal output of the reactor of the nuclear power plant unit to be constructed will be 4,300 MW. The net electric power output will be approximately 1,600 MW and the estimated annual electric power output of around 13 TWh. The start of electricity generation at the new plant unit is scheduled for the beginning of 2009. The applicant gives 60 years or more as the operational lifetime of the plant unit.

The operating principle of the power plant unit is a water-moderated and water-cooled pressurised water reactor plant. In the reactor of the nuclear power plant unit uranium fuel heats the water recycled with pumps in the primary circuit. The pressurised water develops steam in separate steam generators within the primary circuit. The steam circulates in the secondary circuit rotating the turbine and the generator. The type name of the plant is EPR (European Pressurized water Reactor). The type is based on the plant types N4 and Konvoi last commissioned in France and in Germany.

The application covers the repositories for nuclear waste integrated in the plant unit, but not the operation of the external nuclear waste management installations of the plant unit, such as the final disposal facilities, nor their extension for the needs of the new nuclear power plant unit. According to the application, the above-mentioned decision-in-principle and the decisions-in-principle concerning the final disposal installation of Posiva Oy cover these functions as well.

Handling of the application and measures preceding the decision-making

The contents of the licence application and the documentation to be delivered by the applicant are provided in sections 31, 32 and 35 of the Nuclear Energy Decree. In addition, attention shall be paid to the provision of section 13(1) of the Environmental Impact Assessment Act (468/1994) according to which the licence may not be granted until the authority issuing the licence has received a report on the environmental impact assessment for its use and the statement given on it by the coordinating authority.

Section 23 of the Nuclear Energy Act, sections 37 and 37 a of the Nuclear Energy Decree, and the so-called Border Reactor Treaty (Treaty Series of the Statute Book of Finland 19/1977) contain provisions on the handling of the application. These list the instances from which the Ministry of Trade and Industry is to request a statement or which shall be notified of the pending of the application. Furthermore, provisions of the Administrative Procedure Act (434/2003), among others, shall be taken into account in the handling.

Invited statements on the application and consultation

In compliance with section 23 of the Nuclear Energy Act and section 37 of the Nuclear Energy Decree, the Ministry of Trade and Industry has invited a statement, and received one, from the following instances: the Finnish Radiation and Nuclear Safety Authority (STUK), the Ministry of the Environment, the Ministry of the Interior, the Ministry of Social Affairs and Health, the Advisory Committee on Nuclear Energy, the County Government Board of Western Finland and the Southwest Finland Regional Environment Centre.

The Ministry has also invited, and received, a statement from the following: the Industrial Safety District of Turku and Pori, the Environmental Permit Authority of Western Finland, the Finnish Environment Institute (SYKE) and the municipality of Eurajoki.

In accordance with section 37(3) of the Nuclear Energy Decree, the Finnish Radiation and Nuclear Safety Authority (STUK) has requested a statement from the Ministry of the Interior on the plans for physical protection and emergencies referred to in section 35(4) of

the Nuclear Energy Decree. The Finnish Radiation and Nuclear Safety Authority (STUK) has appended a specification of the documentation under section 35 of the Nuclear Energy Decree in accordance with section 36(4) of the Nuclear Energy Decree, and a safety analysis to its Statement of Position. STUK has also supplemented its Statement of Position with a statement of the Advisory Committee on Nuclear Safety by virtue of section 37(4) of the Nuclear Energy Decree.

The Ministry of Trade and Industry has sent the application for a construction licence for information to the following instances in view of obtaining a possible statement from them: the Ministry for Foreign Affairs, the Ministry of Defence, the Ministry of Finance, the Ministry of Agriculture and Forestry, the Ministry of Transport and Communications, the Ministry of Labour, the Employment and Economic Development Centre for Satakunta, the Regional Council of Satakunta, the Employment and Economic Development Centre for Southwest Finland, the Finnish Energy Industries' Federation Finergy, the Finnish Association for Nature Conservation, the Confederation of Finnish Industry and Employers TT, the Entrepreneurs of Finland, the Central Union of Agricultural Producers and Forest Owners (MTK), the Central Organisation of Finnish Trade Unions (SAK), AKAVA - the Confederation of Unions for Academic Professionals in Finland, the Finnish Confederation of Salaried Employees STTK, and the Central Union of Swedish-speaking Agricultural Producers in Finland (SLC).

In accordance with section 41 of the Administrative Procedure Act, the Ministry of Trade and Industry published an announcement of the pending of the application in six newspapers on 14 January 2004, informing of the possibility of giving an opinion on the matter. These papers were the *Helsingin Sanomat*, *Hufvudstadsbladet*, *Länsi-Suomi*, *Turun Sanomat*, *Satakunnan Kansa* and *Uusi-Rauma*. In addition, the application for a construction licence was on the notice boards of the municipalities of Eura, Eurajoki, Kiukainen, Kodisjoki, Lapland, Luvia and Nakkila, as well as of the town of Rauma. The Ministry of Trade and Industry received around 40 opinions from the citizens and organisations. They mainly focused on matters-of-principle related to nuclear power or the safety of the project.

The corrective page to Annex 6 was sent for information to the organisations that had received the invitation to state their opinion and to the municipalities on the notice board of which the application for a construction licence could be read.

The statements and opinions received by the Ministry of Trade and Industry by 31 August 2004 have been combined into a publication of the Ministry (Papers by the Ministry of Trade and Industry 2/2004, ISBN 951-739-911-5). All the statements and opinions are also available on the website of the Ministry.

Contents of the statutory statements

The Finnish Radiation and Nuclear Safety Authority (STUK) states as its overall assessment that the Olkiluoto 3 nuclear power plant unit can be built to be safe under sections 5–7 of the Nuclear Energy Act. In its Statement of Position, it presents specifying comments and restrictions, which are described in the section of justifications of this decision.

The Ministry of the Environment, the Ministry of the Interior, the Advisory Committee on Nuclear Safety and the Southwest Finland Regional Environment Centre have in their

statements made comments on the application for a construction licence, which are discussed in the section of justifications of this decision.

The Ministry of Social Affairs and Health and the Advisory Committee on Nuclear Safety are in favour of granting the construction licence. The County Government Board of Western Finland has no remarks concerning the application for a construction licence.

Responses of the applicant

On 30 August 2004, the applicant gave its response on the statements and opinions presented by that date. The response is included in the above-mentioned publication of the Ministry of Trade and Industry.

The applicant gave its response on the Statement of Position of the Finnish Radiation and Nuclear Safety Authority (STUK) on 25 January 2005. In both its responses, the applicant handled the issues and comments presented in the various statements and opinions mainly relating to the safety and environmental impacts of the project. Both responses are available on the website of the Ministry.

Statement of the Commission of the European Communities

Under section 37 a of the Nuclear Energy Decree, the Ministry of Trade and Industry shall, before making its decision on the application for a construction licence, make certain that a statement of the Commission of the European Communities referred to in chapter IV of the Euratom Treaty has been obtained on the project and that the applicant has complied with the provisions of chapter IV of the Euratom Treaty and the regulations issued under it.

The statement of the Commission is included in document No. P(2004) 2079, "Commission position, adopted on 8 June 2004, in compliance with Article 43 of the Euratom Treaty, on the investment project of Teollisuuden Voima Oy (TVO) for constructing a new power plant unit on Olkiluoto located in Finland". The Commission considers that all matters related to the investment concerned comply with the objectives of the Euratom Treaty. The statement indicates that the applicant has notified the Commission of the project as required by the provisions of chapter IV of the Euratom Treaty and the regulations issued under it.

Notification under the "Border Reactor Treaty" to Sweden

On 19 July 2004 the Ministry of Trade and Industry sent a notification to the Swedish Nuclear Safety Authority, subject to the so-called Border Reactor Treaty (Treaty Series of the Statute Book of Finland 19/1977), of the application for a construction licence. In its reply of 30 September 2004, the Swedish Nuclear Power Inspectorate (Statens Kärnkraftinspektion, SKI) stated that it has no remarks on the project. SKI considers that the nuclear safety requirements set by the Swedish and Finnish authorities are up-to-date.

Provisions to be applied in the decision-making

The Government grants the licence for the construction of the nuclear power plant by virtue of section 16 of the Nuclear Energy Act.

Section 17 of the Nuclear Energy Act contains a provision on the eligible licensees. A licence to use nuclear energy may be granted only to natural persons, corporations or authorities under the jurisdiction of a Member State of the European Union.

Section 18 of the Nuclear Energy Act lays down that the licence may be granted for construction of a nuclear facility having considerable general significance, if:

- (1) a decision-in-principle referred to in section 11 of the Act has deemed the construction of a nuclear facility to be in line with the overall good of society, and Parliament has decided that the decision-in-principle remains in force; and
- (2) the construction of a nuclear facility also meets the prerequisites for granting a construction licence for a nuclear facility as provided in section 19 of the Act.

Section 38 of the Nuclear Energy Decree provides the contents of the licence decision. Furthermore, attention shall be paid to the provision of section 13(2) of the Act on Environmental Impact Assessment Procedure (EIA) (468/1994) according to which the licence decision concerning the project shall indicate in what way the assessment report and the statement of the coordinating authority on it have been taken into account.

Section 24 of the Nuclear Energy Act contains a provision on the validity of the licence. By virtue of this provision, a deadline can be set for the start-up of the construction of a nuclear power plant unit.

The following treaties or acts in particular comprise obligations to be taken into account in the licence consideration:

- Treaty between the nuclear-free Member States of the European Union, the European Atomic Energy Community and the International Atomic Energy Organisation on the implementation of Article III(1) and (4) of the Treaty on the Non-Proliferation of Nuclear Weapons (Treaty Series of the Statute Book of Finland 55/1995).
- Nuclear Safety Convention (Treaty Series of the Statute Book of Finland 74/1996).
- Convention on the Management Safety of Radioactive Waste from Spent Nuclear Fuel (Treaty Series of the Statute Book of Finland 36/2001).
- Nuclear Liability Act (484/1972) and the related conventions.

DECISION

By virtue of the Nuclear Energy Act and the Nuclear Energy Decree, the **G o v e r n m e n t** has decided to grant to Teollisuuden Voima Oy the licence referred to in section 18 of the Nuclear Energy Act

for the construction, on the island of Olkiluoto located in the municipality of Eurajoki, of a nuclear power plant unit of the pressurised water type with a rated thermal output of 4,300 MW, intended for electricity production, which corresponds the general characteristics and the essential features related to ensuring safety proposed in the application for a construction licence.

This licence ceases to be valid, unless the construction of the nuclear power plant unit is not started within two years from the beginning of the legal validity of the licence.

Justifications of the decision

Fulfilment of the condition concerning the licensee

According to the excerpt of the Trade Register appended to the application for a construction licence, Teollisuuden Voima Oy is a Finnish limited company, so that the precondition laid down in section 17 of the Nuclear Energy Act is fulfilled.

Requirement for the Government Decision-in-Principle in force

Upon the application of the applicant, the Government made a decision-in-principle on the construction of a nuclear power plant unit, referred to in section 11 of the Nuclear Energy Act, on 17 January 2002. Parliament left the decision-in-principle in force on 24 May 2002. The applicant states that the nuclear power plant unit that the application for a construction licence concerns is the construction project referred to in the decision-in-principle concerned.

The decision-in-principle states as follows:

“The construction of a new nuclear power plant unit and the construction or extension of the nuclear facilities needed for its operation either at the Loviisa or the Olkiluoto plant site, as presented by the application’s description of the solutions regarding the plants’ main operating principles and assurance of safety, are in line with the overall good of society.

The nuclear facilities included in the decision and needed for the operation of the new nuclear power plant unit at the same plant site will be used for storage of fresh nuclear fuel, intermediate storage of spent fuel as well as for handling, storing and final disposal of low- and medium-active operating waste of the plant unit.”

According to the decision-in-principle it ceases to be valid, unless a licence subject to the Nuclear Energy Act is not applied for by the construction of the nuclear power plant unit referred to in the decision-in-principle by 24 May 2007.

The Government states that no construction licence for a nuclear power plant unit has been applied for by virtue of the decision-in-principle of 17 January 2002 before the instigation of this application, that the nuclear power plant unit presented in the application complies with the decision-in-principle, that the site of the nuclear power plant unit is one of the two locations mentioned in the decision-in-principle and that the application has been submitted prior to the expiration of the deadline set in the decision-in-principle.

Fulfilment of the conditions laid down in section 19 of the Nuclear Energy Act

(1) the plans concerning the nuclear facility, its central operational systems and components entail adequate safety and protection of workers, and the population’s safety has otherwise been taken into account appropriately when planning operations

(a) the plans concerning the nuclear facility, its central operational systems and components entail adequate safety

According to the application, the safety of the plant unit will be ensured as preventive measures in the design and construction of the plant unit, as functions protecting the plant in cases of disturbance or damage and as functions limiting consequences in cases of accident. The applicant states that the nuclear power plant unit fulfils the safety requirements in force in Finland, whose general principles are included in Government decisions 395/1991, 396/1991 and 397/1991.

While drafting its Statement of Position and safety analysis, the Finnish Radiation and Nuclear Safety Authority (STUK) had the possibility of considering the nuclear safety issues presented in other statements as well.

Grounds of the safety analysis of the Finnish Radiation and Nuclear Safety Authority (STUK)

The Finnish Radiation and Nuclear Safety Authority (STUK) has checked the more detailed documentation supplementing the application under section 35 of the Nuclear Energy Decree and found the plans and procedures presented in the documents adequate for granting the construction licence.

The Finnish Radiation and Nuclear Safety Authority (STUK) has compared the applicant's plans with the requirements presented in the "Decision of the Council State on the General Regulations for the Safety Nuclear Power Plants" (395/1991). The view of STUK is that the Decision of the Council of State mentioned above is for the most part still up-to-date. The acutest updating needs concern a severe reactor accident and handling of aircraft crashes, as technology with their respect has developed dynamically since the beginning of the 1990s. STUK has evaluated these matters not included in the decision-in-principle on the basis of the Nuclear Power Plant Guidelines.

In its safety evaluation, the Finnish Radiation and Nuclear Safety Authority (STUK) has also examined the matters that have an effect on the evaluation of the design and safety of the Olkiluoto 3 nuclear power plant unit, which are presented in the preliminary safety analysis and its supplement related to the decision-in-principle.

The Finnish Radiation and Nuclear Safety Authority (STUK) states that, in order to demonstrate the fulfilment of the safety regulations, the plans of the construction licence stage concerning the Olkiluoto 3 nuclear power plant unit have been adequately analysed by means of both an accident analysis and a Probabilistic Safety Analysis. STUK regards the research and development activities related to the plant incident and accident processes as adequate. There still remain some tests or calculation analyses needed for justifying detailed solutions. As the project progresses and plans become more specified, supplementing the analyses will also be continued correspondingly, as part of the licensing process of the technical solutions of the power plant unit.

Design requirements for nuclear safety

The Finnish Radiation and Nuclear Safety Authority (STUK) has also examined how the design requirements for nuclear safety presented in the decision 395/1991 and the requirements presented in the Nuclear Power Plant Guidelines concerning nuclear safety have been fulfilled in the design of Olkiluoto 3 nuclear power plant unit. STUK states that adequate levels of protection against disturbances and accidents have been designed for the

Olkiluoto 3 nuclear power plant unit and that the nuclear power plant unit has adequate technical barriers to spreading of radioactivity.

Furthermore, the Finnish Radiation and Nuclear Safety Authority (STUK) has stated that the integrities of the nuclear fuel, primary circuit and the containment building of the Olkiluoto 3 power plant unit are adequately secured. The safety functions of the power plant unit have been adequately secured, avoiding human errors have been taken into account in the design of the nuclear power plant unit and in design of its operations, the safety classification is appropriate and the plans concerning the supervision and control of the plant unit are adequate in view of the construction licence. The acceptability of detailed solutions and procedures is evaluated as part of the licensing process of systems that continues during the construction, in so far as the design becomes more specified.

The Finnish Radiation and Nuclear Safety Authority (STUK) also states that the design of the Olkiluoto 3 nuclear power plant unit is good in regard to preparedness for external incidents and fires. As for aircraft crashes, certain design particulars will, however, still need final specification, completion of ongoing or supplementary analyses and verification of the analytical results by testing.

Further, the Finnish Radiation and Nuclear Safety Authority (STUK) states that the operating experiences obtained from other plants and the results of the safety research have been taken into account in the design of the new plant unit. The design criteria of the nuclear power plant unit to be built will be continuously evaluated during the construction and operating licence handling by applying the best knowledge available.

Regulations on radiation exposure and emissions of radioactive substances

Based on the applicant's plans and analyses conducted, the Finnish Radiation and Nuclear Safety Authority (STUK) has further stated that the threshold values for the radiation exposure and radioactive emissions of the nuclear power plant unit laid down in decision 395/1991 are not reached. Among these are the threshold values of the radiation exposure of the population in normal operation, operational disturbances to be expected, possible accidents and severe reactor accidents. In STUK's view, the Olkiluoto 3 nuclear power plant unit has been designed to be adequately safe in terms of the threshold values of the emissions.

Statement of the Advisory Committee on Nuclear Safety

According to the view of the Advisory Committee on Nuclear Safety, the plant project can be implemented as required in sections 6 and 7 of the Nuclear Energy Act. The Advisory Committee agrees with STUK in that the preconditions under section 9 of the Nuclear Energy Act are met in terms of nuclear and radiation safety. The Advisory Committee considers it important that safety issues will be prioritised during the construction and that enough time will be reserved for handling safety issues.

In the Preliminary Safety Analysis Report the applicant has given the 50 MWd/kgU discharge burnup upper limit (megawatt day per one kilogram of uranium). In STUK's view, the acceptability of this value has not been demonstrated in the light of current knowledge, and thus STUK retains the upper limit of 45 MWd/kgU, unless the applicant can experimentally demonstrate to STUK that the higher value can fulfil all pertinent safety

criteria. Similarly, the Advisory Committee on Nuclear Safety requires that the discharge burnup of nuclear fuel be limited to comply with the safety requirements.

The Government considers that the plans concerning the nuclear power plant unit, its central operational systems and components are adequate in view of safety. At the same time, the Government states that if the applicant wishes to set a upper limit higher than 45 MWd/kgU for the discharge burnup at the operational phase of the plant unit, it shall demonstrate by tests to the Finnish Radiation and Nuclear Safety Authority (STUK) that the higher value proposed will fulfil the safety requirements.

(b) Physical protection has been taken into account appropriately when planning operations

According to the application, all organisations participating in the nuclear power plant project are required to present clear objectives defined and confirmed by the top management and principles that when followed make all factors influencing safety receive the attention their safety importance calls for.

The Industrial Safety District of Turku and Pori points out in its statement that along with the Olkiluoto 3 project attention should be paid especially to the teaching and guiding of the employees filling in new vacancies. The Industrial Safety District considers that the objectives and requirements regarding following of a safety culture set out in the application correspond to the objectives of the Occupational Health and Safety Act (738/2002).

According to Finnish Radiation and Nuclear Safety Authority (STUK), the Olkiluoto 3 nuclear power plant unit has been designed to be adequately safe in view of limiting the radiation exposures of the workers. As for operation and maintenance, the design of the plant has also observed the target of keeping the radiation dose of the workers as low as practically possible.

The Government states that health and safety at work has been appropriately taken into account in the planning of operations.

(c) The population's safety has otherwise been taken into account appropriately when planning operations

After having received from the Ministry of the Interior the statement required under section 37 of the Nuclear Energy Decree, the Finnish Radiation and Nuclear Safety Authority (STUK) has checked the preliminary emergency plan of the Olkiluoto 3 nuclear power plant unit, which concerns the planned emergency arrangements for the operation of the Olkiluoto 3 nuclear power plant unit, and found it adequate at this stage.

STUK has also checked and approved the emergency plan for the existing plant units of the Olkiluoto nuclear power plant, in which the construction site of the Olkiluoto 3 nuclear power plant unit has been taken into account in view of the emergency planning of the nuclear power plant units currently in operation.

As a summary, the Finnish Radiation and Nuclear Safety Authority (STUK) states that, in view of emergency arrangements, the design of the Olkiluoto 3 nuclear power plant unit and the related measures and those related to its construction, as well as the plans for measures

on the site, are adequate and meet the regulations under the Decision of the Council of State 397/1991.

The Government considers that – on top of the plans for the nuclear power plant, its central operational systems and components that have been examined in point 1(a) above and the safety arrangements in point (3) below, the safety of the population has otherwise appropriately been taken into account in operational planning.

(2) The location of the nuclear facility is appropriate with respect to the safety of the planned operations and environmental protection has been taken into account appropriately when planning operations

(a) The location of the nuclear facility is appropriate with respect to the safety of the planned operations

According to the application, Olkiluoto fulfils the preconditions of a site for a high-power condensing power plant and also the special requirements for a site of a nuclear power plant. The applicant states further that the new plant unit can utilise some systems, structures, equipment and arrangements of the current power plants on Olkiluoto. The emergency plan and the safety arrangement plan are common to the plant entity formed by the two existing power plant units and the new power plant unit on Olkiluoto.

The safety evaluation of the Finnish Radiation and Nuclear Safety Authority (STUK) shows that, in view of the points to be checked by STUK, the Olkiluoto industrial site is a suitable location for the planned Olkiluoto 3 nuclear power plant unit. Then it has taken into account the conclusions it has made on the evaluations on radiation exposure and emissions of radioactive substances, as well as the emergency and safety arrangements.

The Government considers that the location of the power plant is appropriate in terms of the safety of its planned operations.

(b) Environmental protection has been taken into account appropriately when planning operations

Taking the assessment of environmental impacts into account

The evaluation report on the environmental impacts of the project “Extension of the Olkiluoto nuclear power plant by a third plant unit” is included in the construction licence application material. The environmental impact assessment was carried out so that it covered several optional cooling water solutions and alternatives for locating the plant unit on the island of Olkiluoto, including the solutions now chosen.

As the coordinating authority defined in the Act on Environmental Impact Assessment Procedure (EIA), the Ministry of Trade and Industry considered in its statement on the EIA report that the report on the environmental impact assessment on the Olkiluoto site is, given the stage of the project, wide-scoped and detailed enough and that it fulfils the requirements of the Act and Decree on Environmental Impact Assessment Procedure and that it meets the objectives set in the assessment programme.

The statement also points out that if the project were implemented, it may lead to a situation in which the implementation of certain nationally or locally important projects, which do not fall within the scope of the EIA handling in question, would be imposed on some other operator than the one responsible for the project. The electricity transmission connections from the plant site to the grid, strengthening of the grid and improvement of the transport connections leading to Olkiluoto are mentioned as such projects.

According to the application for a construction licence, no such significant changes have taken place in the surroundings of the plant site that would have influenced the results of the environmental impact assessment. The cooling water solution chosen by the applicant is one of the options included in the environmental impact assessment, and in the detailed design the intake and drainage of cooling water have been selected in such a way that the recycling of warm water remains minor and the discharge flow is channelled so that the warmed-up water is blended effectively.

The Ministry of the Environment considers in its statement that the applicant does not clearly state how it will take the comments and measures presented in the EIA procedure into account in the implementation of the project. Further, it states that the impacts of radioactive waste on living organisms are handled only in broad outline in the EIA report.

In its response the applicant points out that the aspects put forth in the statements given on the EIA report have been, and will be, taken into account as the project progresses and describes the implementation stage of the ancillary projects mentioned in the coordinating authority's statement as well. It is also stated in the response that the Olkiluoto power plant already has today a comprehensive and versatile control programme for monitoring ambient radiation, which also covers important species other than those that are important for the food chain of humans. In the framework of the programme, sensitive measurements are carried out to identify radioactive substances from the power plant in the organisms near the power plant. The contents are so low that they have no discernible impacts, and the new plant unit will not change this situation.

The statement of the coordinating authority does not present any actual remarks or measures. As for the impacts of the spreading of radioactive emissions, it states that the impacts are presented in the manner approved at the EIA programme stage. The EIA procedures concerning power lines have already been completed, but the EIA procedure concerning the reserve power plant is still in progress. The road to the Olkiluoto power plant was improved during 2004.

Environmental impacts during construction

The Ministry of the Environment considers it necessary that the applicant drafts an environmental protection plan related to the construction, which includes information on noise abatement, climate protection, water protection and environmental protection actions connected to water management during the construction. In the Ministry's view, the plan is to be delivered to the environmental protection authorities for their approval.

The Southwest Finland Regional Environment Centre, too, sees that the applicant should submit an environmental protection plan related to the construction to the environmental protection surveillance authority for its approval before the start-up of the construction, even if there were no direct statutory obligation for doing this. The Environment Centre proposes

that an environmental protection plan should be imposed as a precondition for a construction licence.

In its response the applicant states that, in order to supervise and manage the implementation of the construction stage, an environmental plan, which it would be ready to deliver to the environmental authorities for their information, should be drafted. The applicant is also ready to hear and consider the opinions and comments of the environmental protection surveillance authorities on its contents. The plan comprises the environmental aspects and impacts related to the application of the Environmental Protection Act and the Water Act and, as necessary, the possible joint effects with the Onkalo project of Posiva Oy during the construction. The plan will be supplemented, when necessary, as the construction progresses.

The County Government Board of Western Finland considers in its statement that all the licences subject to the Water Act and related to the cooling water structures of the power plant unit, which are necessary before starting the construction works, have already come into effect.

Taking environmental protection into account

Besides the EIA report, a survey of the environmental impacts of the nuclear power plant and an account of the design criteria that the applicant intends to follow to avoid environmental damages and to limit the environmental burden are appended to the application.

The Ministry of the Environment does not have any other remarks related to environmental protection besides the aspects presented above.

The County Government Board of Western Finland considers in its statement that the handling of the environmental licences subject to the Environmental Protection Act related to the projects and the handling of the licence for the intake of the cooling water are in progress. The Board expects the decisions on the applications to be made during 2005.

In the view of the Finnish Environment Institute (SYKE), the Olkiluoto 3 nuclear power plant unit can be implemented in such a way that it will meet the requirements set for environmental protection in sections 18 and 19 of the Nuclear Energy Act, so that the environmental impacts are not an obstacle to granting a construction licence.

The Finnish Radiation and Nuclear Safety Authority (STUK) considers that the environmental impacts of the placing on Olkiluoto of the Olkiluoto 3 nuclear power plant unit have been adequately taken into account in view of the issues belonging to STUK's sector. It also considers that the arrangements planned for the control of the emissions and contents of the radioactive substances from the Olkiluoto 3 nuclear power plant unit in the environment are efficient enough.

The applicant's environmental system includes consideration of environmental aspects during the entire life cycle of nuclear energy production and the principle of continuous improvement of the management of environment-related matters. The applicant has a scheme for managing environmental matters, which meets the requirements laid down in

standard ISO 14001 and the EMAS Decree (Eco-Management & Audit Scheme) 761/2001 and which has been EMAS-registered under the code FIN-000039.

The Government considers that environmental protection has been appropriately taken into account in operational planning and that the cooling water solutions chosen can be regarded as at least as good as the other options brought up in the environmental impact assessment report. It also considers that it is not justified to connect to the licence to be granted a condition concerning an environmental protection plan to be submitted to the environmental authorities for their approval, as the environmental impacts of the construction of the plant do not include any special features arising from the use of nuclear energy and thus there is no need for exceptional regulation in view of the objectives of nuclear energy legislation.

(3) Safety arrangements have been taken into account appropriately when planning operations

After having received the statement required in section 37 of the Nuclear Energy Decree from the Ministry of the Interior, the Finnish Radiation and Nuclear Safety Authority (STUK) has checked the preliminary safety arrangement plan, whose procedures are aimed at preventing unlawful actions against the Olkiluoto 3 nuclear power plant unit after the commissioning of the plant unit, and found it adequate.

STUK has also checked and approved the current safety plan of the Olkiluoto nuclear power plant, in which the construction site of the Olkiluoto 3 nuclear power plant unit has been taken into account in view of the safety arrangements of the existing nuclear power plants.

According to STUK, the Olkiluoto 3 nuclear power plant unit and its safety arrangements have been adequately planned to sustain external threats and illegal actions, and they have been found to meet the provisions of the Council of State's Decision-in-Principle 396/1991.

The Government considers that the safety arrangements have been taken into account appropriately when planning operations.

(4) A site has been reserved for constructing a nuclear facility in a town plan in accordance with the Land Use and Building Act (132/1999), and the applicant has possession of the site required for the operation of the facility

The location planned for the nuclear power plant unit is to the west of the existing Olkiluoto 1 and Olkiluoto 2 nuclear power plant units on a property called Eskonmaa, owned and governed by the applicant, (register number 51-409-2-705) in the village of Kirkonkylä in the Eurajoki municipality, on the southwest cape of the Olkiluoto Island.

The building plan, which entered into force by virtue of the Building Act (370/1958), is in force in accordance with the transition provision of the Land Use and Building Act (132/1999) as a town plan in the Olkiluoto region. The amendment to the building plan concerning block 1 of the Olkiluoto power plant area was adopted in 1996 by the Eurajoki Municipal Council and confirmed by the Southwest Finland Regional Environment Centre in 1997. The new nuclear power plant unit will be located in this block 1, which is wholly owned by the applicant.

The Government considers that the applicant has the governance of the region required by

the operation of the plant and that the town plan in force in the area allows the construction of the Olkiluoto 3 nuclear power plant unit.

(5) The methods available to the applicant for arranging nuclear waste management, including the final disposal of nuclear waste and the decommissioning of the facility, are sufficient and appropriate

In Finland the main principle of nuclear waste management is to permanently isolate waste from organic nature. Thus the nuclear waste management of the existing Olkiluoto nuclear power plants is based on the Council of State's Decision-in-Principle on the Objectives of the Research, Analysis and Planning of Nuclear Waste Management of 10 November 1983 and on the decision made by virtue of the Nuclear Energy Act on the principles to be followed in nuclear waste management (7/815/91 MTI).

According to the applicant, the company's responsibility for implementing nuclear waste management is distributed so that the applicant itself tends to the intermediate storage of the spent fuel, power plant waste management, as well as the planning and implementation of the decommissioning of the power plants, whereas the preparatory work related to the final disposal of spent fuel is the responsibility of the applicant's subsidiary, Posiva Oy. Furthermore, the applicant considers that the nuclear waste management arrangements already in its use or planned will also suit to the nuclear waste management of the new power plant unit.

Handling of spent nuclear fuel

According to the application, nuclear fuel used after its removal from the reactor will be stored in the water basin of the Olkiluoto 3 nuclear power plant unit typically for 3–8 years. The storing will be continued in the intermediate storage of spent fuel common to all the Olkiluoto power plant units, which is already in use. It is estimated that this storage should be extended for the needs of the existing Olkiluoto nuclear power plant units around in 2012.

The intermediate storage of spent fuel depends both administratively and process-technologically on the Olkiluoto 1 and 2 nuclear power plant units, and its operating licence is tied to the operating licences of the Olkiluoto 1 and 2 nuclear power plant units, which will be valid until the end of the year 2018 (granted on 13 August 1998).

The spent fuel of the new nuclear power plant unit is to be permanently disposed of in the same final repository planned on Olkiluoto as the spent fuel of the Olkiluoto 1 and 2 nuclear power plant units. The Government made a decision-in-principle on the construction of this final repository on 21 December 2000. The final disposal method will be packaging the spent nuclear fuel into metal containers and placing them into the bedrock, to the depth of 400–700 metres.

On 17 January 2002 the Government made a decision-in-principle that the Olkiluoto final repository could be extended in such a way that the spent nuclear fuel from the operation of the new nuclear power plant unit can also be treated and disposed of at the repository. On 24 May 2002 Parliament decided that the decision-in-principle would remain in force. According to the decision, final disposal facilities corresponding to approximately 2,500 tonnes of uranium at maximum can be built for the needs of the new plant unit.

Treatment of power plant waste

According to the application, the new nuclear power plant unit comprises the machinery and premises needed for the treatment and initial storage of power plant waste created during operation. At present the majority of the power plant waste from the Olkiluoto nuclear power plant is immediately packaged for treatment, storing and final disposal. Similar methods will also be applied at the Olkiluoto 3 nuclear power plant unit. The medium-active ion-exchange resins used for cleaning the process water are either dried in barrels or solidified by concreting or bituminisation. Other liquid waste and sludge are dried in barrels or solidified with concrete or other binders.

According to the application, the power plant waste accrued during operation can be disposed of at the final repository of power plant waste on the site. It can also be stored temporarily in separate intermediate storage of medium-active waste and intermediate storage of low-active waste. When necessary, more space can be excavated in the final repository of power plant waste near the present facilities.

Both the intermediate storage of medium-active waste and the intermediate storage of low-active waste will be used for the needs of the Olkiluoto 1 and 2 nuclear power plant units for the intermediate storage of nuclear waste. This may continue until the end of 2018 based on the operating licence of the existing plant units. The final repository of nuclear waste was taken into use in 1992 and the operating licence runs until the end of 2051 (granted on 9 April 1992).

Treatment of decommissioning waste

According to the applicant, the existing nuclear power plant units in Finland can be decommissioned by applying modern technology and the decommissioning waste can be safely disposed of together with the power plant waste in the final repository of power plant waste. On the basis of the operating lifetime envisaged, the measures related to the decommissioning of the new nuclear power plant unit would start at the end of the 2060s at the earliest.

Statement of Position of the Finnish Radiation and Nuclear Safety Authority (STUK)

The Finnish Radiation and Nuclear Safety Authority (STUK) considers in its Statement of Position that both the plans for the final disposal of power plant waste and the plans and arrangements for the final disposal of spent fuel in Finland are adequate in view of the construction licence.

In STUK's view, the decommissioning of the Olkiluoto 3 nuclear power plant unit and the final disposal of the decommissioning waste can be implemented in the same way as in the case of the existing nuclear power plant units.

Furthermore, it states that the applicant's safety analysis of the final repository of power plant waste is to be revised in 2007. In connection with the revision, the final disposal of the power plant waste created from the operation of the Olkiluoto 3 nuclear power plant unit should also be examined, as the current safety analysis covers only the power plant waste from the Olkiluoto 1 and 2 nuclear power plant units.

STUK also considers that the survey presented in Annex 12 to the application for a construction licence "Report on the applicant's plans and the methods available to arrange nuclear waste management" is very general in nature. The adaptation of Posiva Oy's final disposal plan to the needs of the Olkiluoto 3 nuclear power plant unit should be started so that more detailed plans can be presented in the three-year review of nuclear waste management TKS-2006 to be published in 2006.

The Government states that mainly the same nuclear waste management arrangements will be used for the new plant unit as in the case of the existing nuclear power plant units. The methods available to the applicant for arranging the nuclear waste management of the new nuclear power plant unit are adequate and appropriate.

(6) The applicant's plans for arranging nuclear fuel management are sufficient and appropriate

Fuel management consists of various material and service acquisitions, which can be bought either together or separately. According to the application for a construction licence, the applicant will carry its fuel management by itself, including the invitation to tender for the suppliers.

According to the application, today the company acquires the uranium concentrate mainly from Canada and Australia. The applicant has long-term procurement contracts with the local companies. At present the applicant purchases the conversion services from a French and a Canadian company and the enrichment services from France. The manufacture of the fuel rod bundles for the initial core loading will be purchased from Framatome ANP, and the manufacture of the fuel may take place at the factories of this company or of its sub-contractor in Germany, France or Spain. A competition situation is prevailing in manufacture of fuel.

According to the OECD's Nuclear Energy Agency NEA, the availability of uranium will not be a problem within the next few decades. It is also to be noted that the share of fuel costs of the total expenditure of electricity generated by nuclear power is relatively low, of the order of 10%.

The Government's view is that the availability of uranium at a reasonable price will be possible for many decades. Given this, the Government states that the applicant's fuel management arrangements are adequate and appropriate.

(7) The applicant's arrangements for the implementation of control by the Radiation and Nuclear Safety Authority (STUK) as referred to in paragraph 3 of section 63(1), in Finland and abroad, and for the implementation of control, as referred to in paragraph 4 of section 63(1), are sufficient

The applicant has provided the Finnish Radiation and Nuclear Safety Authority (STUK) with a report in which it has presented the procedures ensuring sufficient control possibilities in order to manufacture and install the systems, structures and machinery of the Olkiluoto 3 nuclear power plant unit in a manner approved by the authorities.

STUK has approved the report and states in its Statement of Position that enough time should be reserved for the administrative procedures needed to ensure the control possibilities during the construction. STUK is to receive in good time information on the manufacturing schedules of the machinery, structures and systems that will be important for safety, on the basis of which STUK can confirm that the control measures required in the nuclear power plant guidelines will be implemented.

The Government states that the applicant's arrangements are adequate in view of the control referred to in section 63 of the Nuclear Energy Act. At the same time, the Government states that if enough time is not reserved for the control subject to chapter 15 of the Nuclear Energy Act, this will lead to prolongation of the construction period.

(8) The applicant has the necessary expertise available

The applicant has had two nuclear power plant units, Olkiluoto 1 and Olkiluoto 2, constructed and is now operating them. According to the application, the personnel that has been employed since the start-up of the plant units has acquired 20–30 years' experience of the construction, operation and maintenance of the plant units, and thereby considerable expertise. The company has also taken actions to ensure the transfer of the know-how gained to the new generation.

According to the Finnish Radiation and Nuclear Safety Authority (STUK), the applicant has sufficient expertise in completing the construction project. When compiling the project implementing the nuclear power plant unit, the applicant has extended its organisation and recruited experts in various sectors especially for implementing the project. STUK also considers that, based on the inspections and observations it has made in connection with the handling of the application for a construction licence, the consortium in charge of the plant delivery has adequate expertise in the field of nuclear technology.

STUK considers that the applicant has adequate arrangements for recruiting the personnel and organisation needed for a safe operation of the Olkiluoto 3 nuclear power plant unit. STUK requires that the applicant will ensure the sufficiency of its expertise also during the future operation of the nuclear power plant unit. Thus owing to the characteristics of the new plant and the technologies applied in it, the applicant should ensure that its organisation, which will be strengthened during the construction period, will remain competent enough also upon the shift over to the operational stage, particularly in the fields of nuclear safety, mechanical technology and automation technology.

According to the applicant's responses, the challenges brought by the construction project to the organisation have been acknowledged and the necessary measures have already been

started. Adequate resources during the construction phase and operation will be ensured by following the recruitment and training plans made since the launching of the project.

The Government considers that the applicant has the necessary expertise at its disposal.

(9) The applicant has sufficient financial prerequisites to implement the project and carry on operations

According to the application, the project will be financed in such a way that the applicant's shareholders will invest around 20% in the company of the total costs of the project as new share capital and give approximately 5% as a shareholder loan. The rest, c. 75%, will be covered by loans from financial institutions under commercial terms. The binding loan and stand-by credit contracts at the first stage were concluded on 17 December 2003 with several different financiers. On 18 December 2003, the credit rating company Standard & Poor's confirmed BBB (long-term) and A-2 (short-term) as the applicant's credit eligibility categories. According to the applicant's plans, its equity ratio will remain above 25%.

According to the applicant, the operational stage has also been taken into account in the arrangements of the external financing of the Olkiluoto 3 project. The financing during the construction stage has been planned so that it will be possible to flexibly shift over to the financing of the operational stage, considering the market situation.

The Ministry of Finance has no remarks on the application. It considers in its statement that arranging the financing in the manner proposed by the applicant will be possible so that a satisfactory equity ratio and sufficiently good credit eligibility rating can be ensured for the applicant.

When answering to some questions related to the financial status put forth in the Ministry of Finance's statement, the applicant states in its response that before the actual investment decision of December 2003, the applicant organised a competition related to the financing of the project on the international finance market and concluded contracts with the financiers on the financing during the construction period. When making their financing decision, the financiers have considered the project's effect on the development of the applicant's financial indicators and the company's ability of take care of the financing of the project.

The applicant also states that it carried out analyses of the effect of the credit eligibility rating on the company's financing costs before the investment decision. They also took account of the lowering of the equity ratio, which the applicant's current credit rating also noted. In addition, the terms of the financing contracts are binding, so that a possibility lowering of the credit eligibility rating will have no effect on the interest costs of the project and thereby on the payback periods of the investments.

According to the applicant, it will supply electricity to the company's shareholders at cost price under the so-called Mankala principle, according to which the company's B series shareholders will bear the costs of the production of electricity generated by the Olkiluoto 3 nuclear power plant unit.

The Government considers that the applicant has adequate financial possibilities of implementing the Olkiluoto 3 nuclear power plant unit and of carrying out the subsequent operations.

(10) The applicant is otherwise considered to have the prerequisites to engage in operations safely and in accordance with Finland's international contractual obligations

The Government states that no such matters have arisen that would question the applicant's prerequisites for engaging in the operations safely. Furthermore, it considers that the Olkiluoto 3 project could otherwise be implemented in accordance with Finland's international contractual obligations.

The planned nuclear facility otherwise fulfils the principles laid down in sections 5–7 of the Nuclear Energy Act

After the Government's decision-in-principle, an emissions trading system has been taken into use in Finland since the beginning of 2005. In the Government's view, this development will not, however, have any effect on the evaluation of the Olkiluoto 3 project as a project complying with the overall good of society.

In the statements by authorities invited by the Ministry of Trade and Industry it has not been proposed that the Olkiluoto 3 project would be against the overall good of society, but in some other statements and in many opinions such views have been presented that could be interpreted so that they consider the project to be against the overall good of society. However, no such issue is presented in these views that the Government and Parliament would not have known in 2002, when they made the decision-in-principle on the Olkiluoto 3 project. Furthermore, some statements and many opinions have been against the project on a general level.

According to the Statement of Position of the Finnish Radiation and Nuclear Safety Authority (STUK), the Olkiluoto 3 nuclear power plant unit can be built safe in accordance with sections 5–7 of the Nuclear Energy Act.

On the basis of what has been said above, the Government considers that the preconditions for granting the construction licence are met.

Justifications for the deadline for the start-up of the construction of the nuclear power plant unit

Taking into account the applicant's readiness to start the construction work, which is indicated in the application and in the responses given by the applicant to the statements of various different instances, the Government considers that it is justified to start the construction of the nuclear power plant unit without delay. On the other hand, the deadline should not be set so short that it would limit the applicant's possibilities of timing the construction of the plant on a date most advantageous to the applicant.

Appeal and implementation of the decision

Any actor unsatisfied with this decision may appeal it to the Highest Administrative Court by a written complaint. The decision may be appealed by the actor to which the decision is addressed or on whose right, obligation or benefit the decision has direct effects. An appeal

may be made on the ground that the decision is illegal. The petition of appeal must be delivered to the Registry of the Highest Administrative Court within the period of appeal.

By virtue of section 31(2) of the Administrative Procedure Act (586/1996), the Government has decided that this decision will be taken into effect despite any appeal, as the implementation of this decision should not be postponed due to overall good.

The Government considers that the completion of the project without any unnecessary delays is in line with overall good. After its completion, the project will reduce the expenditure of the national economy as Finland strives to meet her emission target during the first commitment period under the Kyoto Protocol during the years 2008–2012. After its completion, the nuclear power plant unit will also improve the security of electricity supply in Finland.

The Government also considers that a temporary suspension of the project would have an adverse effect on the regional employment situation by causing discontinuance and uncertainty on the labour market. Further, a suspension might prolong the project's implementation period by impeding the project management. It is also to be noted that the nuclear power plant unit will be built on an industrial site, and thus the changes brought about by the construction work started in the natural circumstances will be minor.

Payment

A payment of EUR 58,900, laid down under the Decree on Fees Charged for Government Decisions Regarding Supervision of Nuclear Energy Use (1474/2001), has been collected from Teollisuuden Voima Oy.

Helsinki, 17 February 2005

Minister of Trade and Industry

Mauri Pekkarinen

Senior Engineer

Jorma Aurela