

The Advisory Council on Ethics for the Norwegian Government Petroleum Fund

Oslo, 19 September 2005

(Unofficial English translation)

Recommendation on exclusion

Introduction

The Advisory Council on Ethics for the Government Petroleum Fund recommends that the companies BAE Systems Plc., Boeing Co., Finmeccanica Sp.A., Honeywell International Inc., Northrop Grumman Corp., United Technologies Corp. and Safran SA be excluded from the Petroleum Fund because they are presumed to be involved in production of nuclear weapons.

In the Ethical Guidelines' point 4.4, first sentence, it is stated:

"The Advisory Council shall issue recommendations on negative screening of one or several companies on the basis of production of weapons that through normal use may violate fundamental humanitarian principles."

In the Government whitepaper on ethical guidelines (NOU 22: 2003),¹ and through the subsequent discussions of the guidelines in Parliament it was decided that the Fund shall not invest in companies that "*develop and produce key components to nuclear weapons*". The Council assumes that "development and production" encompasses somewhat more than the actual production of nuclear warheads. It is presumed that the missile carrying the warhead as well as certain forms of testing of new weapons and maintenance of existing weapons also fall within the scope of the exclusion criteria.

The Council has reviewed the Petroleum Fund's portfolio and benchmark portfolio with the purpose of identifying companies that are involved in development and production of key components for nuclear weapons. It is to be emphasised that this recommendation does not necessarily contain a complete list of companies that fall within the exclusion criteria and that further recommended exclusions on this basis may follow later.

Further details on nuclear weapons

According to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT),² nuclear weapons are weapons of mass destruction that are illegal for most states to possess. The five so-called nuclear states (USA, UK, France, Russia and China) are, for historical reasons that will not be discussed here, exempted from this ban. It can also be assumed that India, Pakistan and Israel have developed nuclear weapons.

¹ <http://odin.dep.no/fin/english/topics/p10001617/p10001682/006071-220009/dok-bn.html>

² Treaty on the Non-Proliferation of Nuclear Weapons, <http://disarmament2.un.org/wmd/npt/npttext.html>

The effects from the use of nuclear are of a nature that makes it difficult to envisage that such use could discriminate between military and civilian targets. Use of such weapons will in any case render long term environmental damage and it can also be argued that it will lead to unnecessary suffering and superfluous injury which must be weighted against the military necessity. Many would therefore argue that use of nuclear weapons violates fundamental humanitarian principles.³ This problem is subject to further discussion in the Government Whitepaper on Ethical Guidelines (NOU 22: 2003).⁴

There are two main forms of nuclear weapons; fission and fusion based. The principle of fission based weapons is that atoms of fissionable material (enriched uranium or plutonium) are split into smaller components. This fission releases energy which creates the nuclear explosion. Fusions based weapons, also called hydrogen bombs, are based on the principle of isotopes of hydrogen merging to form helium. In order to start a fusion reaction, a fission process is used. The fusion process is the same as the sun's and releases huge amounts of energy.

Nuclear weapons have much greater explosive effects than conventional weapons. The most powerful fusion weapons tested had an effect equivalent to 50 million tons of conventional explosives (TNT). In addition to the shock wave caused by a nuclear detonation, energy in the form of intense heat and radioactive and electromagnetic radiation is emitted.⁵

Nuclear weapons have been used twice in conflict when the USA in 1945 dropped atomic bombs on Hiroshima and Nagasaki. Both these bombs were fission based. The bomb dropped on Hiroshima used enriched uranium, where as the bomb dropped on Nagasaki used plutonium as fissionable material. Both had explosive effects equivalent to approximately 20 000 tons TNT.

During the cold war, increasingly powerful nuclear weapons were developed as means of deterrence. A recent development that has been reported⁶ is the development of so called "mini nukes",⁷ i.e. tactical nuclear arms to be used against underground fortifications. These weapons are reported to have an explosive effect of approximately 1000 tons TNT. The purpose is to use such weapons in actual warfare and not as a deterrent. Such a strategy will lead to the collapse of the non-proliferation regime and will probably also lead to more states seeking to acquire nuclear weapons.

The production of nuclear weapons is very resource demanding and requires a broad range of means and efforts. The most critical component in a nuclear warhead is a sufficient amount of fissionable material, either plutonium or enriched uranium. Plutonium is not a naturally occurring element but is produced in nuclear reactors on the basis of uranium. Uranium occurs in nature and is extracted from mining, but must be processed and enriched to be usable in nuclear weapons. Enrichment may be done in different ways but is in any case very demanding with regard to resources and technology.⁸ Also uranium used as fuel in power producing nuclear reactors must be enriched. The grade of enrichment of uranium is lesser for nuclear fuel for civilian purposes than for fissionable material in nuclear weapons. Plutonium refined to so-called weapon's grade has no civilian applications.

Other components of a nuclear warhead can be relatively simple. Explosives and detonators to start the chain reaction are required, and the warhead must be packaged such that it is intact when it reaches its intended target.

³ Ref. the so called principle of proportionality, which is e.g. reflected in Article 35 of the first additional protocol to the Geneva Conventions.

⁴ <http://odin.dep.no/fin/english/topics/p10001617/p10001682/006071-220009/dok-bn.html>

⁵ Federation of American Scientists (www.fas.org)

⁶ <http://news.bbc.co.uk/2/hi/americas/3126141.stm>

⁷ <http://www.cbsnews.com/stories/2003/08/06/national/main566869.shtml>

⁸ http://www.fas.org/irp/imint/doe_ornl_k25_2.htm

Nuclear weapons can be brought to their targets by different means; they can be dropped or launched from aircraft, or launched by missiles from stationary or mobile sites on land or from surface ships and submarines.

Interpretation of the term “development and production of key components”

Production of fissionable material and warheads

To the knowledge of the Council, production of fissionable material that can be used in warheads and the production of the warheads themselves only take place at government owned facilities.

Development and testing of warheads

Private companies may be directly involved in the development and testing of nuclear warheads.

As a consequence of i.a. the political development related to the nuclear test ban treaty, the extent of testing of nuclear weapons has been significantly reduced in recent years, despite the treaty not having entered into force.⁹ However, testing of nuclear weapons may include simulations and other forms of testing that are not comprised by the treaty.

The Council considers any form of testing of nuclear weapons to be crucial to the development of nuclear weapons, and therefore such activity falls within the fund's exclusion criteria. This corresponds to the Whitepaper (NOU 2003:22),¹⁰ which states that the Government Petroleum Fund should not be invested in companies that “*develop and produce key components to nuclear weapons*”. This applies regardless of whether such activities take place within the framework of the test ban treaty.

Infrastructure for production of nuclear warheads

Companies that provide services related to operation and maintenance of buildings and general infrastructure at government facilities that may produce nuclear warheads, but take no other part in the actual production, are not subjected to the fund's exclusion criteria.

“Dual use” components

The complex problems related to so-called “dual use”, i.e. components for nuclear weapons that may also have other applications, is an important issue in the advancement of non-proliferation.

The Council finds that development or production of products or materials or other activities that may be categorised as “dual use” is, as a point of departure, not covered by the guidelines. This is in line with the recommendations provided in the Whitepaper (NOU 2003:22). This includes production or enrichment of uranium for other purposes than nuclear weapons. It also includes production and maintenance of delivery platforms (aircraft, surface ships, submarines, missiles) that can also be used to deliver conventional weapons. Also included are so-called nuclear submarines. Such submarines can carry both conventional and nuclear weapons although they are propelled by means of nuclear energy.

⁹ http://www.ctbto.org/treaty/treaty_text.pdf

¹⁰ <http://odin.dep.no/fin/english/topics/p10001617/p10001682/006071-220009/dok-bn.html>

Missiles

Missiles that serve no purpose other than to deliver nuclear warheads are not categorised as "dual use". These can for instance be intercontinental ballistic missiles launched from land (ICBM), or submarines (SBLM). The NPT does not include missiles, although the treaty's preamble uses the phrase "...the elimination from national arsenals of nuclear weapons and the means of their delivery..." Neither are there any other international treaties that govern the development, production or use of missiles as such. In 2002, a separate report on "*The issue of missiles in all its aspects*"¹¹ was produced by the United Nations.¹² The background for this report was concerns related to the number, range and geographic spread of missiles and their capability of delivering weapons of mass destruction. Since 1990, Norway has been a member of the Missile Technology Control Regime and through this worked to limit the proliferation of technology and components for missiles that can deliver weapons of mass destruction.¹³

The Council regards development and production of missiles that have no other purpose other than to deliver nuclear warheads to be covered by the investment restriction; as such missiles must be regarded as key components to nuclear weapons.

Missile upgrades

Weapon systems can be kept operational for decades by systematic maintenance and upgrade programs. In this way, e.g. nuclear weapons systems initially produced in the 1960s are being updated with technological developments. The Council has learnt that for example in the USA there are extensive programs for upgrading of the country's ICBM weapons. These weapons systems are subjected to upgrade programs which, over time, include renewal of several components such as propulsion, guidance and communications systems. The Council regards such programs of upgrade and renewal as a continuous production process and equals this to initial production of key components to nuclear weapons.

Infrastructure for maintenance of nuclear weapons systems

The fund may be invested in companies that are involved with e.g. maintenance of naval ships that carry nuclear weapons. As part of such maintenance, nuclear weapons may be handled, offloaded and temporarily stored elsewhere. Because naval vessels generally fall within "dual use", maintenance of vessels is not subjected to the investment restriction. Nor does the Council regard handling or transport of nuclear weapons (or missiles for their delivery) related to maintenance of launch platforms to fall inside the investment restriction, as this is viewed as too remote from the actual development and production of such weapons.

Other means and efforts

Through participation in Nuclear Suppliers Group (NSG), Norway contributes to limit the proliferation of nuclear weapons by upholding restrictions on trade in technology and components which may be used to produce nuclear weapons.¹⁴

The NSG has produced comprehensive guidelines for export of technology and components which are developed for nuclear purposes.¹⁵ This includes i.a. radioactive material as well as equipment and components for reactors and for enrichment of fissionable material. Further more, guidelines for export of components categorised as "dual use" are also established.¹⁶

¹¹ <http://daccessdds.un.org/doc/UNDOC/GEN/N02/493/38/PDF/N0249338.pdf?OpenElement>

¹² United Nations General Assembly, *The issue of missiles in all its aspects*, Report by the Secretary-General (A/57/229).

¹³ <http://www.mtcr.info/english/>

¹⁴ <http://www.nsg-online.org/>

¹⁵ <http://www.nsg-online.org/PDF/infcirc254r7p1-050223.pdf>

¹⁶ <http://www.nsg-online.org/PDF/infcirc254r6p2-050223.pdf>

The means and efforts for which the NSG has established guidelines fall within the investment restriction to the extent that they are key components to nuclear weapons. However, several of the means and efforts that are described in the NSG's guidelines are related to enrichment of uranium and operation of nuclear reactors. This will normally fall outside the Petroleum Fund's guidelines point 4.4. The fund does not have investment restrictions related to generation of nuclear energy.

Illegal trade

Extensive international treaties and control regimes have been established to prevent proliferation of components for nuclear weapons to non-nuclear states. Despite this, illegal trade of such components may occur. It is not possible for the Council to obtain first hand information on this type of activity, but if in the future it becomes known that companies in the Fund's portfolio or reference index are involved in such illegal trade, the Council may recommend that they be excluded from investment, as recommended in NOU 2003:22.¹⁷

Companies involved in production of nuclear weapons

The Council has based this recommendation on information received and acquired from different sources. Companies' internet web-sites have been searched as well as databases of *Jane's Information Group*. In addition, information has been acquired from the Norwegian Defence Research Establishment (FFI) and from the Ministry of Foreign Affairs.

In June and August this year, the Council requested that Norges Bank approach a number of companies in order to clarify whether they were involved in production of nuclear weapons. The companies were requested to answer the following:

"In connection with the implementation of these Guidelines, we have been asked by the Advisory Council on Ethics for the Government Petroleum Fund to enquire into whether your company, or any of its subsidiaries, is involved in the development, testing, production, assembly or maintenance of components made for nuclear weapons."

The companies have, through this communication, been given the opportunity to comment on the recommendation to disinvest and the background for this in accordance with the guidelines' point 4.5.

The Council has learnt that some companies, i.a. Lockheed Martin and EADS, which already have been excluded from investment by the fund due to production of cluster munitions, may also be involved in production of key components of nuclear weapons. The Council does not find it necessary to discuss this further here.

Recommendation

The Advisory Council on Ethics recommends that the following companies be excluded from the Government Petroleum Fund according to the Guidelines' point 4.4, first sentence, which constitutes the basis for exclusion of companies that are involved in production of weapons that through normal usage may violate fundamental humanitarian principles:

Honeywell International Inc. is, through its subsidiary Honeywell Technology Solutions Inc, responsible for repair, development, calibration, operations and

¹⁷ <http://odin.dep.no/fin/english/topics/p10001617/p10001682/006071-220009/dok-bn.html>

maintenance of instrumentation and recording of data from simulated nuclear detonations at White Sands Missile Range in New Mexico. The company itself describes this activity as follows: ¹⁸

"As the Instrumentation Support Contractor, HTSI is responsible for maintaining an inventory of instrumentation to monitor and record data associated with simulated nuclear weapons and conventional weapons effects testing at White Sands Missile Range, New Mexico. Activities include repair, calibration, maintenance, operations, software development, engineering, documentation, and logistics support."

The Council regards this form of simulated nuclear warhead testing to be essential to the development of new nuclear weapons and to keep existing nuclear weapons operational.

Honeywell has not replied to the request from Norges Bank with question regarding the company's possible involvement in production of nuclear weapons components.

The Council recommends that Honeywell Inc. be excluded from the Petroleum Fund's portfolio.

BAE Systems Plc, Finmeccanica SpA and EADS have together formed the joint venture MBDA. The ownership structure, according to EADS' homepage, ¹⁹ is 37,5% BAE, 37,5 % EADS and 25% Finmeccanica. This is also confirmed on the homepages of BAE Systems²⁰ and Finmeccanica.²¹

According to *Jane's Air Launched Weapons*, MBDA is under contract to develop and produce the ASMP-A missile for the French armed forces. ASMP-A is described as a "nuclear warhead air-to-surface missile".

ASMP-A will, according to *Jane's* be equipped with a nuclear warhead to be supplied by the French government operated CEA (Commissariat à l'Énergie Atomique). The contract for delivery of ASMP-A was signed in 1996 and deliveries will be completed in 2008.

MBDA displays components of ASMP-A on its own homepage.²² It is not known that ASMP-A may have any function other than delivering nuclear warheads. The Council therefore considers ASMP-A to be a key component of a nuclear weapon.

MBDA produces missiles for various military purposes. It is not clear whether BAE and Finmeccanica play an active role in the development and production specifically of ASMP-A other than being partners in MBDA. This is in any event not decisive, as the Council will base its recommendation on the fact that both companies are active owners of MBDA and thus directly contribute to the production of key components to nuclear weapons.

In a letter to Norges Bank, BAE declines to comment whether the company is involved in development or production of key components to nuclear weapons. Finmeccanica has not replied to the request from Norges Bank. EADS is already excluded from the Petroleum Fund because the company probably produces cluster munitions and was therefore not approached with a request regarding nuclear weapons.

The Council recommends that BAE Systems Plc be excluded from the Petroleum Fund's portfolio.

¹⁸ <http://www.honeywell-tsi.com/programs/dtra.htm>

¹⁹ http://www.mbda.net/site/FO/scripts/siteFO_contenu.php?lang=FN&noeu_id=37

²⁰ <http://www.baesystems.com/internationalpartnerships/index.htm>

²¹ <http://www.finmeccanica.it/finmeccanica/default.htm>

²² http://www.mbda.net/site/FO/scripts/siteFO_contenu.php?noeu_id=77&lang=FN

Safran SA is the mother company of companies Snecma and Sagem. On 2 February 2005, *Jane's Missiles and Rockets*²³ wrote "EADS SPACE Transportation has signed a contract with the French armament procurement agency (DGA) for production of the M51 submarine-launched ballistic missile (SLBM) The contract covers series production of the M51 weapon system for a period of 10 years. Worth more than EUR3 billion (US\$4 billion), it includes a fixed tranche and several conditional options. EADS SPACE Transportation is prime contractor for the programme, while SNECMA, SNPE, DCN, Thales and Sagem are the main subcontractors."..."The M51 missile will enter service in 2010 on board the ballistic-missile submarine *Le Terrible*, followed by *Le Vigilant*, *Le Triomphant* and *Le Téméraire* after retrofit.

The new missile weighs more than 50 tonnes compared with the 35 tonnes of the current M45. Maximum range will be more than 6,000 km, with altitudes of up to 1,000 km at the peak of its trajectory. It has an increased payload capacity and a higher accuracy than the M45. The M45 can carry up to six TN-75 warheads, each with an estimated yield of 100 kT.

This information pertains to the development of a new missile system (M51) for strategic nuclear weapons for the French navy. Exact data for the weapons are not publicly available, but it is compared to the existing M45, which has six warheads, each with a yield equivalent to 100 000 tons of TNT. Although M51 is not explicitly described as a nuclear weapon, this is obvious given the weapon's explosive effect.

As of December 31, 2004, the fund was invested in companies Snecma²⁴ and Sagem.²⁵ These companies are no longer independently listed, but are wholly owned subsidiaries of Safran SA which is in the fund's reference portfolio.

Production of thrusters for the M51 is described on Safran's home pages:²⁶ "The DGA (military procurement office) notifies EADS SPACE Transportation of an order for 3 billion € for the production of the M51 ballistic missile for which Snecma Propulsion Solide supplies various thrusters." The Council considers thrusters for the M51 to be key components for nuclear weapons.

Safran SA has not replied to the request from Norges Bank with question regarding the company's possible involvement in production of nuclear weapons components. EADS and Thales are already excluded from investment by the fund because the companies probably produce cluster munitions and were therefore not approached with a request regarding nuclear weapons.

The Council recommends that Safran SA be excluded from the Petroleum Fund's portfolio.

Northrop Grumman is, according to its own press release,²⁷ contractor for maintenance and upgrading of the US Air Force's Minuteman III ICBM:

"Northrop Grumman is the Air Force's ICBM prime integration contractor charged with maintaining readiness of the United States' ICBM weapon system through 2020. In addition to sustaining and maintaining the force, Northrop Grumman manages more than 10 modernization efforts to maintain viability of our nation's ICBM fleet. This 15-year program, which began in December 1997, is currently valued at \$4.5 billion with a total projected value of \$6 billion. Northrop Grumman manages a team consisting of four principal team-mates and more than 20 subcontractors."

²³ Database provided by Jane's Information Group. See www.janes.com

²⁴ <http://www.snecma-moteurs.com/?&lg=en>

²⁵ <http://www.sagem.com/>

²⁶ http://www.safran-group.com/article.php3?id_article=903&lang=en

²⁷ <http://investor.northropgrumman.com/phoenix.zhtml?c=112386&p=IROL-nrtext&t=Regular&id=633147&>

ICBM, short for Intercontinental Ballistic Missiles, is the main element of the US land based strategic nuclear weapons. Following disarmament, the number of such weapons has been greatly reduced in later years. The USA will maintain i.a. 500 Minuteman III and 50 MX Peacekeeper missiles.²⁸ These are nuclear weapons systems that were developed in the 1960 and 1980s, respectively, and are now subjected to extensive program of upgrading in order to be kept operational for decades ahead. These upgrade programs include i.a. guidance systems, communications systems, engines and the launch sites themselves.

Northrop Grumman manages more than 10 modernisation programs for ICBM, i.a. PRP (Propulsion Renewal Program) for replacement / upgrade of rocket engines for Minuteman III.²⁹

The Council regards this type of upgrades and replacement of components to be equivalent to initial production of the components.

Northrop Grumman has in a letter to Norges Bank confirmed that the company is involved in development, production, assembly, and maintenance of nuclear weapons systems.

The Council recommends that Northrop Grumman be excluded from the Petroleum Fund's portfolio.

Boeing Company is, according to its own home page,³⁰ a supplier of various forms of maintenance and upgrade services for the Minuteman III ICBM:

"Boeing is a member on the Air Force's ICBM Prime Integration Team led by TRW Inc.. The contract covers sustainment work for the United States' ICBM fleet. Boeing will provide leadership in guidance and control systems and liquid propulsion as well as on ground sub-systems. Additionally, Boeing will provide major support to the overall systems engineering and sustainment effort.

The value of Boeing's work package could reach \$824 million if the government exercises each of 14 annual options to continue the contract between now and the year 2012. The value of the entire ICBM Prime Team's contract could reach \$3.4 billion.

Boeing is already under contract directly to the government for the Minuteman III Guidance Replacement Program (GRP) - which will ultimately be incorporated into the ICBM Prime Integration contract. The GRP program will have a value well in excess of \$1 billion."

One of the upgrades which are specifically mentioned is the GRP (Guidance Replacement Program) which is related to renewal of guidance systems for Minuteman III. GRP³¹ is reported to have a contract value of over one billion dollars. Boeing also delivers upgrades equipment for communication between ICBM launch sites and command centres.

The Council regards this type of upgrades and replacement of components to be equivalent to initial production of the components.

²⁸ http://www.af.mil/factsheets/factsheet_print.asp?fsID=113&page=1

²⁹ <http://www.defenselink.mil/contracts/2005/ct20050714.html>

³⁰ <http://www.boeing.com/defense-space/ic/icbmsys/prime.html>

³¹ <http://www.boeing.com/news/frontiers/archive/2003/may/mainfeature.html>

Boeing Company has not replied to the request from Norges Bank with question regarding the company's possible involvement in production of nuclear weapons components.

The Council recommends that Boeing Company be excluded from the Petroleum Fund's portfolio.

United Technologies Corp was approached by Norges Bank on the basis of the company's press release³² that it had acquired Rocketdyne Propulsion & Power from Boeing Company on August 3, 2005.

Rocketdyne conducts upgrading and testing of thrusters for the USA's MX Peacekeeper ICBMs. These missiles have no function other than to carry nuclear warheads.

On the homepage³³ of Pratt & Whitney, which is a wholly owned subsidiary of United Technologies, this activity is described as follows: "*The PK [i.e. Peacekeeper] missiles remain in operational service with fifty missiles emplaced in silos at Warren Air Force Base. Rocketdyne continues to provide the Air Force with Sustaining Engineering and Aging & Surveillance Test support. Follow-on Operational Test & Evaluation (FOT&E) flights continue to occur at one flight per year.*" The council considers this to be testing and upgrading of key components for nuclear weapons.

The Council regards this type of upgrading, testing and replacement of components to be equivalent to initial production of the components.

United Technologies has not replied to the request from Norges Bank with question regarding the company's possible involvement in production of nuclear weapons components.

The Council recommends that United Technologies Corp. be excluded from the Petroleum Fund's portfolio.

This recommendation was given to the Ministry of Finance on 19 September 2005 by the Advisory Council on Ethics for the Government Petroleum Fund.

Gro Nystuen Andreas Føllesdal Anne-Lill Gade Ola Mestad Bjørn Østbø
(Chair)

³² http://www.pratt-whitney.com/pr_080305.asp

³³ http://www.pratt-whitney.com/prod_space_rdyne_pbps.asp