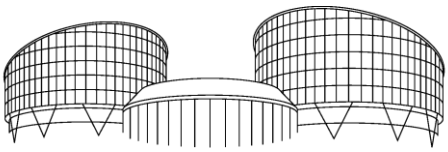

EUROPEAN COURT OF HUMAN RIGHTS
COUR EUROPÉENNE DES DROITS DE L'HOMME

FORMER FIRST SECTION

CASE OF VILNES AND OTHERS v. NORWAY

(Applications nos. 52806/09 and 22703/10)

JUDGMENT

STRASBOURG

5 December 2013

FINAL

24/03/2014

This judgment has become final under Article 44 § 2 of the Convention. It may be subject to editorial revision.

In the case of Vilnes and Others v. Norway,

The European Court of Human Rights (Former First Section), sitting as a Chamber composed of:

Nina Vajić, *President,*
Peer Lorenzen,
Khanlar Hajiyev,
Mirjana Lazarova Trajkovska,
Julia Laffranque,
Linos-Alexandre Sicilianos, *judges,*
Dag Bugge Nordén, ad hoc *judge,*

and Søren Nielsen, *Section Registrar,*

Having deliberated in private on 12 November 2013,

Delivers the following judgment, which was adopted on that date:

PROCEDURE

1. The case originated in two applications (nos. 52806/09 and 22703/10) against the Kingdom of Norway lodged with the Court under Article 34 of the Convention for the Protection of Human Rights and Fundamental Freedoms ("the Convention") on 24 September 2009 and 7 April 2010 respectively. Mr Dag Vilnes brought the first application. Mr Magn Håkon Muledal, Mr Anders Lindahl, Mr Sigurdur P. Hafsteinsson, Mr Knut Arvid Nygård, Mr Bjørn Anders Nesdal and Mr Per Arne Jakobsen brought the second application. Mr Lindahl is a Swedish national, Mr Sigurdur P. Hafsteinsson is an Icelandic national and the other five applicants are Norwegian nationals.

2. Mr Vilnes was represented by Mr E. Ludvigsen, a lawyer practising in Tønsberg. The other six applicants were initially represented by Mrs K. H. Øren, a lawyer practising in Oslo. Subsequently Mr Muledal, Mr Lindahl, Mr Sigurdur P. Hafsteinsson and Mr Nygård were represented by Mr E. Johnsrud, and Mr Nesdal and Mr Jakobsen were represented by Mrs K. Hellum-Lilleengen, assisted by Ms H. Bentsen, all three lawyers practising in Oslo. The Government were represented by Mr M. Emberland of the Attorney General's Office (Civil Matters) as their Agent.

3. The applicants complained in the main under Articles 2 and 8 of the Convention on account of damage to their health sustained after serving in diving operations in the North Sea at different times and periods during the "pioneer era" (of oil exploration). The first four applicants complained in addition under Article 3 of the Convention.

4. On 7 June 2011 a Chamber of the Fourth Section decided to communicate the applications to the Government. It also decided to rule on the admissibility separately (Article 29 § 1). After the recomposition of the

Court's sections, the applications were allocated to a Chamber of the First Section. On 10 February 2012 the President of the Chamber informed the parties that Erik Møse, the judge elected in respect of Norway, was unable to sit in the case (Rule 28) and that she had decided to appoint Dag Bugge Nordén to sit as an *ad hoc* judge (Rule 29 § 1(b)).

5. On 12 June 2012 the Court decided to join the applications and to invite the parties to an oral hearing. It subsequently informed the Governments of Iceland and Sweden of the applications lodged by Mr Sigurdur P. Hafsteinsson and Mr Lindahl, respectively (Article 36 § 1 of the Convention and Rule 44 of the Rules of Court). Neither Government expressed a wish to take part in the proceedings before the Court.

6. A hearing took place in public in the Human Rights Building, Strasbourg, on 18 September 2012 (Rule 54 § 5).

There appeared before the Court:

(a) *for the Government*
Mr M. EMBERLAND, Attorney, Attorney-General's Office (Civil Matters), *Agent*,
Ms. A. HESJEDAL SENDING, Attorney-General's Office (Civil Matters),
Ms. T. KJELDSBERG, Assistant Director General, Ministry of Labour
Ms B.H. TORSTENSEN, Senior Adviser, Ministry of Labour,
Mr. A ØSTRE, Senior Adviser, Ministry of Labour,
Mr. M. HEIDAR, Adviser, Ministry of Labour,
Mr. A. ASK, Principal Engineer, Petroleum Safety Authority Norway,
Mr. B. SANDVIK, Principal Engineer, Petroleum Safety Authority,
Mr. O. HAUSO, Senior Adviser, Petroleum Safety Authority, *Advisers*;

(b) *for Mr Vilnes*
Mr E. LUDVIGSEN, *Advocate*, *Counsel*;

(c) *for Mr Muledal and the further five applicants*
Mrs K. HELLUM-LILLEENGEN, *Advocate*,
Mr. E. JOHNSRUD, *Advocate*, *Counsel*,
Ms. H. BENTSEN, *Adviser*.

The Court heard addresses by Mr Emberland, Mrs Hellum-Lilleengen and Mr Ludvigsen.

7. On 1 October 2012, the parties were informed that on 18 September 2012 the Chamber had decided that the merits of the applications should be considered at the same time as its admissibility (Article 29 § 1 of the Convention taken in conjunction with Rule 54A § 3 of the Rules of Court) and that, should the Court consider the application admissible, it might immediately adopt a judgment under Rule 54A § 2. The applicants were

given a time-limit for submitting just satisfaction claims and certain particulars and the Government were given an opportunity to comment.

THE FACTS

I. THE CIRCUMSTANCES OF THE CASE

8. The applicants are:

1) Mr Dag Vilnes, born in 1949, who lives in Tønsberg;

2) Mr Magn Håkon Muledal, born in 1953, who lives in Førde;

3) Mr Anders Lindahl, born in 1942, who lives in Avaldsnes;

4) Mr Sigurdur P. Hafsteinsson, born in 1953, who lives in Jersey (United Kingdom);

5) Mr Knut Arvid Nygård, born in 1961, who lives in Tananger;

6) Mr Bjørn Anders Nesdal born in 1958, who lives in Kristiansand;

7) Mr Per Arne Jakobsen, born in 1954, who lives in Larvik.

The third applicant is a Swedish national, the fourth applicant is an Icelandic national and the other five applicants are Norwegian nationals.

A. General background

9. After the adoption of the 1958 Convention on the Continental Shelf, the Norwegian Government proclaimed in a Royal Decree of 31 May 1963 Norwegian sovereignty over the sea floor and the ground beneath it outside Norway. This was followed up by the 1963 Act on the Exploration and Exploitation of Sub-Sea Natural Resources – the Continental Shelf Act 1963 (*kontinentalsokkelloven*). Drilling in the North Sea area started in June 1966. In this connection diving operations were carried out in part in sheltered waters from barges and smaller boats, for example in relation to the construction and equipment of drilling platforms, and in part in the open sea. During the first years the depths involved were not particularly great. In the Ekofisk oilfield the sea was approximately seventy metres deep, and in the Statfjord oilfield it was approximately 150 metres. To begin with, diving took place from oil rigs, supply ships, drilling ships or pipe-laying ships. From the mid-1970s specially built diving support vessels, operational regardless of weather conditions, were used, and after a while became the usual means.

For dives down to fifty metres air gas was used, and decompression took place either in the water or at the surface.

10. For professional North Sea diving, deep and relatively short diving jobs (rarely more than one hour) were described as *bounce diving*. This was

normally performed with a diving bell and a surface decompression chamber. Two divers would access the diving bell at the surface under regular atmospheric pressure. The diving bell would be lowered into the water and down to the work location on the seabed. When the diving bell was in position at the work location and the necessary tools had been lowered, the diving bell would be put under the same pressure as the work location, normally within minutes. The diver could then leave the diving bell and do the job.

11. Both the diving bell and the diver would be supplied with gas from tanks attached to the diving bell (normally heliox). One of the divers would perform the job while the other would serve as a combined "tender" and stand by the diver in case something went wrong. When the job had been completed the diver would return to the diving bell. Then the diving bell would be lifted to the surface and connected to a decompression chamber, where the divers would complete their decompression. Heliox would normally be replaced by air when the diving bell pressure was similar to the water pressure, at fifty metres. Generally, bounce diving was perceived as stressful, because divers had little time to do the job on the seabed and felt thermal unease (first the increased temperature when the diving bell was put under pressure, and then hypothermia when entering the water, which was five to seven degrees Celsius).

12. North Sea dives of longer duration were performed as *saturation diving*. The divers entered chambers at the surface (on the rig or on the diving support vessel) and were put under pressure similar to that which existed on the seabed at the work location. Then the chambers were connected to a diving bell. Two divers would leave the chamber in order to enter the diving bell, which would be lowered to the work location. The divers and the diving bell would be supplied by gas from the surface. The divers would normally wear warm water suits supplied with warm water from the surface. It normally took several hours from the time the diving bell left the chamber at the surface until it was reconnected. Subsequently, the divers were locked back into the chamber. This way of diving ensured continuous work on the seabed, while the divers could rest, sleep and eat in the chamber. After a period of work of several days or weeks, the divers were decompressed.

13. Until 1 April 1978 the Norwegian Labour Inspection Authority (*Arbeidstilsynet*), an agency ranging under the Ministry of Municipal Affairs and Labour (*Kommunal- og Arbeidsdepartementet*), was the public authority empowered and entrusted with the task of administrative supervision of diving operations and the granting of authorisation for such operations. Thereafter these functions were vested in the Petroleum Directorate (*Oljedirektoratet*), an agency under the Ministry of Oil and Energy (*Olje- og energidepartementet*).

14. The applicants were among the 350 to 400 persons who were permanently linked to Norway and who took part in diving related to the petroleum industry during the pioneer period (commonly defined as 1965 to 1990). After a while it became known that many of them had contracted health problems. Long-term studies carried out at the University of Bergen, the Norwegian Underwater Technology Centre (*Norsk Undervannsteknologisk SenterAS*, hereinafter referred to as "NUTEC") and Haukeland Hospital, both located in Bergen, showed possible connections between diving and damage to the central nervous system. Once it emerged that the compensation arrangements available covered the North Sea divers' situation only to a limited degree, the Ministry of Municipal Affairs appointed a commission (*Krombergutvalget*) which on 2 November 1993 submitted a report with recommendations. It was left to another commission (*Habberstadutvalget*) to follow up and coordinate their implementation.

15. On 27 November 2000 the Ministry of Social Affairs and Health proposed in a note to Parliament that divers who had experienced permanent damage to their health should be awarded an amount of up to 200,000 Norwegian kroner (NOK) (approximately 26,000 euros (EUR), in a lump sum as compensation, whilst emphasising that the State could not be regarded as having acted unlawfully or in a manner open to criticism, bearing in mind what was known at the time when the diving took place. On 13 June 2000 Parliament requested the Government to set up an independent commission of inquiry to assess all matters related to diving in connection with oil activities in the North Sea during the pioneer period. The Commission of Inquiry, which the Government had appointed on 2 March 2001, was led by High Court Justice Mr P.A. Lossius. On 31 December 2002 it presented its report, entitled `The Pioneer Divers in the North Sea (*Pionerdykkerne i Nordsjøen*), *Norges Offentlige Utredninger* ("NOU" Official Norwegian Report) 2003:5'. The Commission considered that the State had strict legal liability, and should therefore bear the financial responsibility for compensation for injuries sustained by divers as a result of diving in the North Sea and for disorders that they might develop. It recommended the establishment of a State-funded compensation scheme to cover their financial losses, and that licensees and operators should be invited to participate in funding the scheme. An English summary of the report included, *inter alia*, the following observations:

> "7.4 Assessments and conclusions after the survey
>
> Although the Commission of Inquiry could have hoped for a better basis for their assessments of the pioneer divers' state of health, it considers that the data obtained permit a qualitatively useful description of the situation. What is most striking is the wide variation: many subjects have managed well, indeed some very well, while a not insignificant share are struggling with serious medical problems.

> However, a large number, about three out of four, have experienced diving accidents or diving disorders. More than half have suffered decompression sickness, many of them a number of times. The fact that one in five divers has lost consciousness during dives is very serious. This can trigger post-traumatic stress syndrome in genetically predisposed individuals.
>
> A disturbingly large number of divers are on disability pension. The fact that relatively young people, aged around 40, are affected is especially significant. This, together with the relatively large number with mental disorders, suggests that many divers have had to deal with heavier stress than most people encounter in the ordinary world of work.
>
> In common with findings on the British side, the number of suicides among divers on the Norwegian shelf is disturbingly high. As in the case of other suicides, it is difficult to comment on causes. However, it is not inconceivable that the long-lasting and heavy pressure that divers had to endure may have been a significant factor in the process.
>
> When assessing the state of health of North Sea divers it is important to remember that many of them started out as a specially selected and well-trained group of young men. After an average of about 14 years in the North Sea, the majority are in a satisfactory state of health based on the information they have supplied. However, a relatively high proportion have acquired appreciable health problems, illustrated by the fact that almost one-fifth are disabled, and that a number of divers complain of concentration, memory and hearing impairments. The same symptoms are documented in Norwegian and foreign investigations alike. It seems probable that the extreme stress to which many North Sea divers have been exposed at work has been a significant factor behind the disorders that a number of them have developed. "

16. The Commission's report was sent for comment to the various institutions and organisations concerned. The legislation department of the Ministry of Justice expressed the view that the State did not have a sufficient connection to the oil activity for it to be liable on the ground of strict liability, and that employers' liability for the State was difficult to envisage, a matter to be considered by the Ministry of Employment and Administration. After the latter had stated its views, the Government affirmed in a note to Parliament that the pioneer divers who had done ground-breaking work in the North Sea from 1965 to 1990 should receive the compensation for non-pecuniary and pecuniary damage they deserved. Although the State was not liable from a legal point of view, the Government considered that it had a particular moral and political duty *vis-à-vis* the divers. It proposed that a special compensation scheme be put in place, to be administered by a board.

17. After parliamentary approval, the Government, by a Royal Decree of 4 June 2004, set up a board empowered to deal with compensation claims from divers under a State-budget financed scheme (hereinafter referred to as "the Special Compensation Board"). The payments were to be adjusted in accordance with the person's degree of disability according to the assessment made by the social security authorities in their decision on

disability compensation, and to be linked to the latter's base amount (*grunnbeløp*, "G"), with 40G or approximately NOK 2,300,000 (approximately EUR 303,000) being the maximum. In addition, divers were granted NOK 200,000 (approximately EUR 26,000) in compensation for non-pecuniary damage.

Pending disbursements under the above scheme, by a Royal Decree of 27 June 2003 it was decided to take emergency measures to compensate divers who were in financial difficulty. Following an individual assessment, they could thus be granted amounts of up to NOK 200,000 (deductible from any award made under the scheme mentioned above). This ceiling was later raised to NOK 300,000 (approximately EUR 38,000).

18. In addition to the above, there existed two further compensation schemes. One, adopted by Parliament on 13 June 2000 (when it requested the Government to appoint the Commission of Inquiry) and in effect since 1 July 2000, consisted of lump-sum payments in amounts of up to NOK 200,000 to divers who were receiving a disability pension and who had a degree of disability of 50% or more.

19. Another had been set up by Statoil on 1 November 2001, under which divers could apply for compensation regardless of whether they had been employed by the company. Under the latter, amounts of up to NOK 750,000 (approximately EUR 99,000) could be granted.

B. The factual circumstances underlying the applicants' complaints

20. The applicants submitted that they were disabled and had lost their capacity to work as a result of North Sea diving. Each of them received a disability pension and *ex gratia* compensation from the State, and some had received compensation from other sources, notably from Statoil.

1. The applicants' submissions as to their individual experiences

(a) Mr Vilnes

21. From the age of sixteen Mr Vilnes worked as a seaman for periods, pursued studies in mechanics and underwent secondary education and served as a marine soldier in the army until 1974. During the latter period he worked as a diver. From 20 May to 9 September 1975 Mr Vilnes was employed by the diving company ThreeX Diving Ltd., where he first worked as a diver and then as a diving team leader. Thereafter, he pursued further education in Switzerland. For a period, he took on diving jobs in parallel to studying.

(i) Incidents at the Arctic Surveyor

22. From early 1976 until 27 June 1978 Mr Vilnes was employed by Deep Sea Diving and was assigned to carry out work for the diving company Scan Dive AS. He worked offshore, on board the diving vessel *Arctic Surveyor* ("the *Arctic Surveyor*") at the Ekofisk oilfield in the North Sea. The diving was carried out at an approximate depth of seventy-five metres. The work consisted amongst other things of installing and repairing transport structures through the Ekofisk oilfield to Teesside in England and Emden in Germany.

23. Mr Vilnes submitted that during this period he had been exposed to several incidents in diving operations endangering his life and health. For instance, in 1977 he had been exposed to serious spinal decompression sickness owing to an excessively rapid decompression. This had most probably been the cause of his permanent brain and spinal injuries.

24. Mr Vilnes had further experienced that the umbilical supplying him with breathing gas and several other necessities had been pinned under a cement block weighing several tons that had been lowered from the sea surface. He had also experienced being pulled by the umbilical as the vessel drifted. He was not injured but, he pointed out, that drifting had been particularly dangerous because of the presence of a number of installations and devices on the sea floor, in which he could have been caught up or which could have led to the umbilical being torn off, with probably fatal results.

25. Mr Vilnes had also experienced the gas being cut off at a depth of seventy metres. In a diving operation in 1976 the *Arctic Surveyor* had been damaged in a hurricane while he and other divers were undergoing saturation. It was impossible for Mr Vilnes and the other divers to leave the vessel, and they had had to remain in the saturation chamber while the ship was taken to shore for repairs and was then brought back to sea in stormy weather so that work could continue.

26. While assigned to the *Arctic Surveyor*, Mr Vilnes performed bounce diving and saturation diving. He spent a total of 200 days doing saturation diving, which lasted nineteen days and nights on average, the longest period being twenty-six days and nights (see paragraph 77 below).

27. On 27 June 1978, after a conflict with his superior, Mr Vilnes was dismissed from his job with Scan Dive AS.

28. From March 1979 to October 1981 Mr Vilnes worked with a Danish company, Tage Nielsen & Co. K/S, on a project aimed at developing a special foam for use in rescue operations. He also worked on a number of other projects up to 1983.

(ii) Incidents at the Tender Comet

29. In 1983 Mr Vilnes was employed by the diving company Wharton Williams Taylor (2W), which had been hired by the then

Mobil Oil to carry out diving operations, *inter alia* in connection with repairs to a buoy at the Statfjord oilfield on the Norwegian Continental Shelf. The diving operations were carried out from the diving vessel *Tender Comet* ("the *Tender Comet*") as deep as 180 metres.

30. From 10 to 29 June 1983 Mr Vilnes had taken part in a saturation dive which had been planned to last for approximately two weeks. The dive had been shorter than planned, as Mr Vilnes had experienced a very serious breach of the safety requirements pertaining to divers, and had chosen to discontinue the dive. He had amongst other things suffered from earache and severe pain during decompression. He submitted that the diving from the *Tender Comet* had been conducted with tables, routines and equipment which were dangerous and harmful to him. It had caused him to suffer Post Traumatic Stress Syndrome ("PTSD") and buzzing in the ears.

31. A few days before Mr Vilnes boarded the *Tender Comet*, the Petroleum Directorate had carried out an inspection on board the vessel, formally as an observer of the diving company's internal quality control. The medical logbook had indicated that a number of incidents of sores and infections had occurred, that seven people had had earache or infection in their ears (one of which could have been due to the overuse of tablets), that one person had had eye problems, that two people had become ill in the diving bell and had had to stop the dive, and that there had been four instances of decompression sickness involving two people.

32. According to Mr Vilnes, the humidity inside the decompression chamber had been consistently at 90-100%; communication between the diving bell and the diving vessel had been deficient, so that it was impossible for divers to make contact when communication took place between a diver and the diving bell. He had thus risked not being heard in the event of a crisis, at a depth of 180 metres. The diving bell also had shortcomings. For example the spring lifting the door at the bottom of the bell was broken, so that divers had to use their own strength to lift the door.

33. The decompression was not stopped during the night while divers were asleep, thereby increasing the risk of bubbles accumulating in the absence of any movement in their joints. This had led to unnecessary and considerable pain. In addition, Mr Vilnes had suffered earache during the dive, making decompression even more painful.

34. The Norwegian authorities had approved the diving operation and had granted a dispensation with regard to the maximum length of the umbilical and the saturation time.

35. Mr Vilnes complained to the Petroleum Directorate and lodged complaints against the diving company with the police on 17 October 1983. In response, the Petroleum Directorate carried out an inspection on board the *Tender Comet*, which revealed several shortcomings regarding divers' safety.

36. Several *Tender Comet* divers were also interviewed by police. In February 1984 the police communicated the matter to the Petroleum Directorate, which in May 1984 asked the police to carry out further interviews. After doing so, the police again communicated the case to the Petroleum Directorate for comment; on 26 March 1985 the Directorate made a statement to the police. In May 1985 the police recommended to the State Prosecutor that the case be dropped as time-barred. On 18 September 1985 the police telephoned Mr Vilnes and informed him that the case was time-barred.

37. Mr Vilnes complained to the State Prosecutor of Rogaland and to the Petroleum Directorate about their handling of his police complaint of 1983, which as a result of having been sent back and forth between them had become time-barred. This led to an internal inquiry in the Directorate and an inquiry report, and subsequent criticism of the report expressed by an officer of the Directorate.

(iii) Subsequent events

38. After the above-mentioned dive at *Tender Comet* Mr Vilnes ended his career as a diver. From 1984-86 he was employed at the State Diving School and then decided to terminate his employment after a disagreement with the management. From 1988 until 1 June 1989 Mr Vilnes was employed at Borregaard Engineering AS. From 1990 onwards he was employed by his own limited liability company and did various jobs. Mr Vilnes has not worked since 2000.

39. Mr Vilnes was one of several divers who were examined by Haukeland University Hospital in August 2002. According to a specialist statement of 20 February 2004 given by the department of occupational medicine, Mr Vilnes suffered from a pathological condition potentially related to a "lazy" left leg after spinal bends in 1977. His medical invalidity resulting from slight encephalopathy was assessed at 20%. Buzzing in the ear and reduced hearing had produced a 5% reduction. His other neurological symptoms were so unspecific that they could not be verified. Possible PTSD had to be the subject of another assessment.

40. According to a psychiatrist's statement of 10 June 2004 Mr Vilnes was clearly suffering physically and psychologically from work-related injuries. He had a delayed development of PTSD which was becoming more and more apparent and present. His condition was chronic and was difficult to treat in any other way than Mr Vilnes' adapting himself to his own reduced capacities. Since his condition was unstable it was difficult for him to plan and he could not therefore take on an ordinary job in which he had to fulfil conditions and meet expectations. He needed flexibility. He needed to use his remaining capacities for himself in order to manage the exigencies of daily life. His psychological incapacity was assessed at 34%.

41. On 16 August 2005 the Social Security Office granted Mr Vilnes work-related injury benefits, taking the view that his injury dated back to 1 January 1985. On an appeal by Mr Vilnes, the Social Security Court (*trygderetten*) maintained the latter date by a judgment of 7 July 2006. It held that his medical invalidity amounted to 40%, covering a low degree of encephalopathy, reduced hearing, buzzing in the ear and PTSD.

42. Under the special compensation schemes described under paragraphs 16 to 18 above Mr Vilnes received various sums totalling NOK 3,613,657 (approximately EUR 476,000) in compensation (including NOK 300,000 in Immediate Aid from Rogaland County Social Security Office, NOK 750,000 in support from Statoil, NOK 2,451,120 from the Special Compensation Board (which amount included NOK 200,000 in *ex gratia* compensation for non-pecuniary damage), and NOK 112,537 in compensation for permanent injury).

(b) Mr Muledal

43. Mr Muledal worked as a North Sea diver from 1978-89. He performed saturation dives for periods totalling approximately 500 days and also performed approximately 200 bounce dives. In a medical assessment by Haukeland University Hospital dated 28 June 2005, it was stated that on two or three occasions he had suffered from bends in the joints. He had also suffered several diving accidents and had had near accidents. On a number of occasions, he had been exposed to a gas-cut while diving. He had recovered several dead bodies in the sea following the accident on the Alexander Kielland drilling rig (which capsized during operations in the Ekofisk field in March 1980, killing 123 people).

44. Mr Muledal participated in a test dive known as "OTS III" at a depth of 360 metres which lasted twenty-eight days (see paragraph 109 below). He lost seven kilos because he could not eat properly during the dive and has suffered from stomach problems since. He also suffered from High Pressure Neurological Syndrome (HPNS).

45. As a consequence of contracting chronic obstructive lung disease, he lost his diving licence in 1987. For that reason, his former employer, Aker Comex, terminated his employment in 1989. The said disease constituted a 15% disability. He may also have PTSD. He sustained damage to his hearing which may increase his degree of disability. In addition, he is suffering from encephalopathy, which represents a 20% disability.

46. From 1990 he received a 50% disability pension with occupational injury benefits and, from November 2008, a 100% disability pension.

47. Under the special compensation schemes described under paragraphs 16 to 18 above Mr Muledal received in total NOK 3,646,635 (approximately EUR 480,000) in compensation (including NOK 150,000 in Immediate Aid from Rogaland County Social Security Office; NOK 375,000 in support from Statoil; NOK 200,000 in *ex gratia*

compensation from Parliament; NOK 2,057,230 plus another NOK 364,405 from the Special Compensation Board; and NOK 500,000 for loss of licence).

(c) Mr Lindahl

48. Mr Lindahl served as a North Sea diver from 1970-1993. He stated that thereafter he worked as an inshore construction diver on a significantly lower salary in a job that was easier to handle, despite his health problems. Because of chronic obstructive lung disease, he lost his medical certificate for diving in 2002. In a medical report on him by Haukeland University Hospital dated 26 February 2003 and an undated psychologist's report, it was noted that he had suffered from decompression sickness twenty times, with skin bends, mostly in the early phase of his career, and that these incidents had not been treated in a decompression chamber. It was further noted that he had been treated a number of times for decompression sickness involving skin bends and joint bends, and once, in 1981, for vestibular decompression sickness after diving at depths ranging between 120 and 150 metres on a North Sea saturation dive. As a result of the latter his hearing became impaired.

49. During his first saturation dive in 1974, Mr Lindahl and several colleagues experienced sudden decompression and error in gas supply due to power failure, leading to unconsciousness among the divers. Mr Lindahl also suffered from generalised convulsions. He submitted that incompetence and routine failings had caused the incident. Mr Lindahl had recovered bodies of people who had died in accidents. He had also experienced uncontrolled decompressions and near-accidents in which heavy objects had almost hit him while diving.

50. Mr Lindahl participated in the Deep Ex I test dives to 300 metres and Deep Ex II to 504 metres. During Deep Ex I, he experienced decompression sickness, and Doppler tests revealed gas bubbles in the artery.

51. According to a specialist medical statement dated 11 May 2008, diving in the North Sea caused him injury, including reduced lung capacity, producing a medical disability of 20%. Furthermore, he was 30% disabled by PTSD. Since 2003 he has received a 100% disability pension with occupational injury benefits, the occupational injury being assessed to have been originally sustained in 1985.

52. Under the special compensation schemes described under paragraphs 16 to 18 above Mr Lindahl received various sums totalling NOK 3,066,739 (approximately EUR 403,000) in compensation (including NOK 200,000 in Immediate Aid from Rogaland County Social Security Office; NOK 315,619 in support from Statoil; NOK 2,351,120 from the Special Compensation Board, which amount included NOK 200,000 in *ex gratia* compensation for non-pecuniary damage).

(d) Mr Sigurdur P. Hafsteinsson

53. Mr Sigurdur P. Hafsteinsson was employed as a North Sea diver from 1978-90. After his medical certificate for diving was withdrawn in 1990, he worked as a dive supervisor and did other similar jobs. From 2001 his health gradually worsened, and from 2003 he was found to have 100% occupational disability.

54. According to a medical statement by Haukeland University Hospital of 2 May 2003, he had participated in two deep dives at 350 and 400 metres and had spent more than 300 days in saturation. He had suffered bends on three occasions (in his right knee). On several occasions he had witnessed fatal accidents and experienced near accidents.

55. For instance, he related an incident in 1982 when, while on a saturation dive at a depth of 150 metres, he and three fellow divers had just returned to the chamber when an unskilled worker was about to loosen a clamp that connected the diving bell to the diving chamber. Fortunately, the supervisor had heard the noise and managed to intervene just in time. Had this operation not been stopped, the divers would have been subjected to an explosive decompression. A similar error had led to the death of five people and seriously injured a sixth person in a diving bell on the Byford Dolphin rig in 1983.

56. On one occasion, in 1984, Mr Sigurdur Hafsteinsson's umbilical and the diving bell wire had been trapped in drilling wires and had been damaged. On another occasion, when working at a depth of seventy metres, there had been a powerful explosion which had caused sudden pain to his head and ears and possibly unconsciousness. He had been bleeding from the ears. Following this accident, he had suffered from impaired hearing. He had taken part in recovering bodies from the Alexander Kielland accident (see paragraph 43 above).

57. According to Mr Sigurdur Hafsteinsson, in 1983 and 1985, he had participated in test diving at NUTEC. In the first test dive, called Statpipe, divers had been taken down to 350 metres. In the second test dive, called Troll (the name of the rig), divers had been taken down to 450 metres. At 450 metres, he could hardly breathe and panicked. One of his colleagues had collapsed and had to be revived. In 1990, his diving licence was revoked. The medical expert declaration from Haukeland Hospital concluded that diving had caused him to suffer from an obstructive lung disease constituting a 25% medical disability. A medical expert in psychiatry had concluded that he suffered from PTSD representing a 35% disability and that he was 100% disabled.

58. Under the special compensation schemes described under paragraphs 16 to 18 above Mr Sigurdur Hafsteinsson received various sums, totalling NOK 5,901,120 (approximately EUR 776,000) in compensation (NOK 2,551,120 from the Special Compensation Board, which amount included NOK 200,000 in *ex gratia* compensation for non-pecuniary

damage; NOK 2,750,000 from Chartis Insurance; and NOK 600,000 for loss of licence).

(e) Mr Nygård

59. Mr Nygård worked as a North Sea diver from 1987-94. He carried out more than 200 air dives and saturation dives totalling approximately 200 days. He experienced numerous accidents and near-accidents as a North Sea diver. For instance, in 1988 he was almost hit by a crane ball (the massive hook on the vessel's main lifting crane, weighing between 100 and 300 kilos) while working at a depth of 150 metres, and just barely escaped death. His supervisor had apparently removed his headset and had not heard Mr Nygård's message of "all stop" and therefore had not told the crane operator to stop the crane.

60. In 1990, while working at thirty metres in saturation, an oxy-arc (cutting tool) had exploded in his hand, hitting him hard in the chest, because a riser (a pipe conducting oil and gas between the sea bed and the oil rig) which Mr Nygård was burning had not been emptied of water, although the supervisor had confirmed several times that there was no water pressure in it. Consequently, the water pressure had blown the flame, sparks and oxygenic gas back at the oxy-arc that Mr Nygård was holding, which had thus exploded in his hands.

61. Mr Nygård further stated that in 1995 his medical certificate for diving had been revoked, as a result of his being diagnosed with chronic obstructive lung disease. For most of 1995 he had been on sick leave, and between 1995 and 2000 he had received retraining benefits as part of his re-adaptation funded by social security after he had quit diving. He obtained a degree in economics, and worked for a couple of years until he became incapacitated by his health problems.

62. According to a medical expert opinion dated 24 October 2005, mainly due to diving in the North Sea, Mr Nygård suffered from several medical disabilities, of which chronic obstructive lung disease amounted to 15%, PTSD to 34% medical disability, diver hands to 10%, and encephalopathy to 14 %. With effect from 1 October 2003 he was granted a 100% disability pension with occupational injury benefits. He submitted to the Court that his encephalopathy and chronic obstructive lung disease probably resulted from the use of rapid (dive) tables.

63. Under the special compensation schemes described under paragraphs 16 to 18 above Mr Nygård received various sums totalling NOK 6,773,935 (approximately EUR 891,000) in compensation (including NOK 3,651,560 and NOK 1,130,968, respectively for past and future loss of income from Vesta Insurance under the Workers' Compensation Act; NOK 1,254,196 from the Special Compensation Board, which amount included NOK 200,000 in *ex-gratia* compensation for non-pecuniary damage, and after deduction of the amount granted for future loss by Vesta Insurance;

plus a further NOK 242,796 from the board, NOK 57,999 plus NOK 136,416 in compensation for permanent injury, and NOK 300,000 for loss of licence).

(f) Mr Nesdal

64. Mr Nesdal worked as a North Sea diver from 1982 to 1994. In parallel he also worked as an assistant diving attendant. In 1988 and 1989 he experienced dizziness on several occasions while diving and when off work. His health gradually deteriorated and in 1994 he quit diving. He later qualified to work as a sheet metal worker, which enabled him to pursue gainful employment until 2001, when he was granted a disability pension.

65. According to a medical statement by Haukeland University Hospital of 27 January 2005, he had experienced bends in his left elbow and had on two occasions suffered from decompression sickness assessed as bends in his lymph. On all three occasions the symptoms had disappeared following treatment in a compression chamber. He had later suspected that the bends in his lymph could have related to something else.

66. He experienced neurological symptoms on a saturated dive in 1985 and dizziness and nausea in several subsequent dives. On a number of occasions he had been exposed to life-threatening incidents while diving in the North Sea. Once he had been stuck in a shaft while hearing on the inter-communication system that divers should immediately revert to the diving bell because the diving vessel was drifting away. Mr Nesdal had observed the diving bell moving and had at the last minute managed to get released from the shaft and returned to the bell.

67. Another near accident had happened when he participated in the testing of a ROV (Remote Operated Vehicle, an unmanned submarine operated from the surface), weighing several tons. His umbilical had got hooked on to the ROV which had drifted away, stretching it almost to the point of bursting. Mr Nesdal had also witnessed two divers getting caught in the propeller behind the vessel, one of whom had died. Because of the great variations in the level of competence of surface crew, he had sometimes felt unsafe when receiving assistance from its members.

68. According to a medical statement from Haukeland University Hospital, dated 25 February 2005, no organic causes had been found for his episodes of dizziness. which most probably related to his depression and anxiety. a condition caused by diving and which represented a medical disability degree of 15-20%. The social security authorities first regarded him as having 60% incapacity for work, then in 2004 he was granted a 70% disability pension. His disability was found to date back to 1994.

69. Under the special compensation schemes described under paragraphs 16 to 18 above Mr Nesdal received various sums totalling NOK 2,945,786 (approximately EUR 388,000) in compensation (including NOK 160,000 in Immediate Aid from Rogaland County Social Security Office;

NOK 410,651 in support from Statoil; NOK 200,000 in *ex gratia* compensation from Parliament; and NOK 2174,786 from the Special Compensation Board).

(g) Mr Jakobsen

70. Mr Jakobsen worked as a North Sea diver from 1975-83. At the end of this period he also worked as a diving supervisor and diving superintendent, as he also did from time to time thereafter until he definitively left the diving industry in 1992. He then briefly served as project manager in a subsea project and in the following years he tried to make a career in business. Because of reduced working capacity and health problems he ceased working in 2004 and was granted a 100% disability pension in 2005. Norwegian social security set the date of the occupational injury at 1980.

71. According to a medical statement by the Haukeland University Hospital, dated 21 December 2005, he had experienced bends on fifteen to twenty occasions (once in his skin, on other occasions in his joints – the right shoulder and elbow).

72. He submitted to the Court that he had been exposed to a life-threatening situation in 1979 when using surface-supplied breathing gas in a dive in the North Sea. He had been diving alone inside a rig construction on the seabed, checking the welding, when he suddenly heard a crack. The hawser attaching the vessel to the rig had torn apart and the vessel had pulled backwards, dragging him along by the umbilical. He risked being caught in the propeller and losing air from the umbilical. Fortunately he managed to locate the diving basket on the seabed and climb into it and receive decompression treatment there. During that same period a colleague of his had been crushed to death by a container during a crew change.

73. On several occasions he had experienced a loss of seal on the diving bell, causing it to lose pressure and mist over. Losing the seal on the diving bell during a dive was always life-threatening. Gas was streaming out of the bell. Reacting quickly and going down to deeper waters inside the bell, with the surface crew lowering the bell back to working depth to maintain pressure was the only way to survive. The divers' lives had depended entirely on their knowledge of how to address the problem and on the skills of diving management at the surface. During a saturated dive in 1978, Mr Jakobsen had experienced the diving bell wire being torn apart and the bell falling to the sea bed. He had been in the chamber while his fellow workers had been under the bell. They had received a new wire and had been rescued.

74. In 1980 Mr Jakobsen had participated with a colleague in the recovery and identification of the deceased after the above-mentioned accident at the *Alexander Kielland* drilling rig. They had spent sixteen days

in saturation under the platform, an extremely dangerous operation, and had recovered many corpses. After that incident his colleague had quit diving altogether, whereas Mr Jakobsen had continued.

75. An expert in psychiatry had concluded on 3 June 2005 that he found it probable that Mr Jakobsen had experienced numerous critical situations and suffered from traumatic stress caused by dangerous and sometimes life-threatening incidents. He suffered from PTSD mainly caused by stress connected to North Sea diving. On account of psychological injury his medical disability was assessed at 35% and he was 100% disabled. The findings as to his medical disability were confirmed by a medical expert statement from the Haukeland University Hospital dated 21 December 2005.

76. Under the special compensation schemes described under paragraphs 16 to 18 above Mr Jakobsen received various sums totalling NOK 2,627,960 (approximately EUR 346,000) in compensation (including NOK 300,000 in Immediate Aid from Rogaland County Social Security Office; NOK 200,000 in *ex gratia* compensation from Parliament; and NOK 2,024,465 plus another NOK 303,495 from the Special Compensation Board).

2. General risk factors complained of

(a) Dispensations from safety regulations

77. Pursuant to the 1978 safety regulation, the saturation period for saturation diving should not exceed sixteen days. However, the Petroleum Directorate could authorise an extension of the period to twenty-four days and exceptionally to thirty-two days, provided this had been agreed between the diving companies and the divers' representatives. Such dispensation arrangements had to be seen against the background that certain operations took more than sixteen days, and that avoiding sending in a second team permitted a reduction in certain risks involved in subjecting a new diving team to pressure in order to complete the work (NOU 2003: 5, p. 80).

78. The safety regulation further provided that diving from a diving bell was not permitted if the divers' umbilical was longer than twenty-nine metres and that the umbilical of the diver remaining in the bell should not exceed thirty-one metres. Dispensations were sought for safety reasons, notably in order to reduce the risk of the diving vessel and the diving bell getting too close to the oil platform.

79. In both respects, the Directorate practised a liberal policy in granting dispensations. The Lossius Commission observed that the granting of dispensations appeared to be almost automatic; this was a practice which was criticised by divers' organisations. At the same time, the Commission stated:

"The Petroleum Directorate would probably have avoided criticism from the divers if the maximum length of the umbilical had been set at, for example, sixty metres, and the maximum number of saturation days had been set at thirty-two. Then dispensations for the umbilical would only have been given in exceptional cases. The thinking behind the rules and the Petroleum Directorate's dispensation practices seems to have been that - taking all factors into consideration - safety work would be better promoted by having a main rule for the umbilical of about thirty metres and a saturation period of up to sixteen days, combined with extensive use of dispensations."

(b) Decompression tables

80. The diving companies using tables involving shorter decompression time and therefore lower labour costs had a competitive advantage over other companies operating with longer saturation periods. In order to strengthen their own competiveness, the companies treated the decompression tables which they used as confidential information that should not be disclosed to other diving companies or to the Norwegian authorities.

81. A letter of 10 July 1969 from The University of Newcastle Upon Tyne (M.R.C. Decompression Sickness Central Registry) to the Norwegian Labour Inspection Authority states:

"...We will be very pleased to have your cooperation with regard to our research into the immediate effects (Decompression of Sickness) and long term effects (Aseptic Necrosis of Bone) of decompression and will do all we can to help you. Should you require it I would be pleased to visit you and give advice to the best of my ability.

Our research over the years has shown that the Regulation decompression procedures used in this and other countries were inadequate and experiments are being made, particularly in this country [the United Kingdom] and the United States, with whom we are cooperating, with new decompression tables and varying periods of exposure to higher pressure.

In this country we have been using the tables produced by Mr. Hempleman, and of which you have a copy, for about three years. Our standard periods of exposure (length of shift) remain at 8 hours, but in America and some other countries the length of shift is reduced as the working pressure is increased. We were hoping to produce a satisfactory decompression for the longer periods of exposure as very short periods are uneconomical from the Contractors' point of view.

Our revised decompression tables are considerably longer than our Regulation (1958) tables, and are based on Naval Diving tables, with longer periods of time spent at the medium pressures and dropping to normal atmosphere from 4 pounds per square inch (approximately 0.28 kg per square centimetre or 3 metres of water). The tables used in Washington State, California and also Australia are considerably longer on average, and the longer period of decompression time is spent at the lower pressures. I gather that you prefer this type of decompression so I enclose a photostat copy of the tables and also the maximum periods of exposure allowed at various working pressures.

Some years ago we realised that with organised medical services and careful therapeutic recompression procedures the immediate decompression sickness cases could be well controlled even though they could not be prevented and that the long term effects of decompression, aseptic necrosis of bone, was the greater hazard of working in compressed air. Too many healthy young men were being crippled with secondary osteoarthritis of their shoulder and hip joints.

The use of these new procedures certainly reduces remarkably the incidence of the serious forms (Type 2) of decompression sickness and we are optimistic that it will reduce the incidence of bone necrosis but it appears probable that we will have to give even longer decompression times or reduce the periods of exposure, or both, before we obtain really satisfactory results. It is a strange fact that these prolonged procedures do not reduce the incidence of the simpler form (Type l) of decompression sickness but that is easily treated (see monograph).

Radiological examination of joints

We have examined about 1500 compressed air workers, many of them on a number of occasions, and have found that among well experienced men decompressed by the old procedures as many as 50% have signs of bone necrosis. Collections of 80 radiographs showing typical appearances have been produced.

We think it is important that men exposed to pressure of one atmosphere gauge pressure should be radiologically examined before exposure, every six months during exposure and, if possible, twelve months after exposure.

Medical examinations

The initial examination is the same as for a life insurance examination. A chest radiograph enforced in some countries. Fat men should not be employed and long period (shift) workers should be aged over 40 (see monograph).

Men working at pressures over one atmosphere gauge have a shorter examination every month and if working at lower pressures, every three months.

No further research has been done concerning surface tension and it is ignored at present ...

I would also be pleased to know when compressed air work is expected to commence, how many men will be employed and over what period of time."

82. At the initial phase tables for bounce diving developed by the US Navy were being used. The Labour Inspection Authority had no access to tables used in saturation diving. In 1972 it took the initiative to develop Norwegian tables. A German research body was contacted but cooperation proved to be difficult.

83. In section 5.7.4 of the above-mentioned 2003 Lossius report, the following observation may be found under the title "Work on diving tables offshore":

"[1] Diving tables specify how rapidly a diver can be decompressed following a dive (a table for compression prior to a dive is called a compression profile). The

physical and medical factors are addressed in more detail in (3), above. It is primarily the decompression tables that have been and continue to be the subject of discussion. The main issue here is the ascent speeds indicated in the tables and the use of increased O2 content in the breathing gas in order to reduce the ascent time. The time factor is important since the purpose of the table is to bring the diver up to normal pressure without injuries, while prolonged decompression can be very uncomfortable for the diver. In the case of commercial diving in the North Sea, the time factor was moreover a competition factor between the diving companies. Diving contracts were often awarded to the company with the most rapid tables. Regard for the health of the divers thus ran counter to strong commercial interests. This issue [*problemstilling*] was well known to the oil companies, the diving companies, the divers themselves, diving doctors and the Norwegian authorities.

[2] According to the Commission's information, the tables used at the start of drilling for oil in the North Sea were tables for bounce diving developed by the US Navy. These tables were developed over a period of several years.

[3] Saturation diving was introduced as a method in the North Sea at the start of the 1970s. Neither the Norwegian diving companies of the day nor the Norwegian Labour Inspection Authority had access to the tables that were used for this form of diving, ,since the tables used by the foreign companies were regarded as private property and confidential. This was a problem for the Labour Inspection Authority because, pursuant to Article 121 of the 1967 Resolution, the Authority was responsible for approving the decompression procedures used by the diving companies. In order for the Norwegian diving companies ThreeX and Nordive to be able to compete for contracts, there was a need for available tables to a depth of 200 metres. According to information from the Labour Inspection Authority, the only available tables in 1972 for the use of helium-oxygen mixtures were the American marine tables to a depth of 116 metres.

[4] At the end of 1972, the Labour Inspection Authority took the initiative of developing specific Norwegian tables, and, following an application to the Ministry of Industry, was allocated NOK 52,000 for this purpose. In addition, the Norwegian Navy made available two divers who had volunteered to take part in developing these tables. The Labour Inspection Authority approached the *Institut fur Flugmedlzin* (Institute of Aviation Medicine) at Bad Godesberg in Germany, which was commissioned to develop the tables. According to the Labour Inspection Authority's letter of 29 March 1973, 'for the divers concerned, test diving is covered by their insurance contract', but they 'will need to be insured against loss of licence'.

[5] In parallel with this, the Labour Inspection Authority also contacted the University of Zurich, which had expertise in this area. The Authority's letter of 16 April 1973 to the university stated that the large international diving companies had developed helium tables to a depth of 200 metres, but that the tables were kept secret, and nor was information made available concerning the incidence of decompression sickness. When asked about the incidence of such sickness, the response of diving companies was generally 'very low' or 'approximately 5%'.

[6] However, divers provided quite different information. The letter further stated that, were helium tables to be made freely available, there would no longer be any commercial basis for secrecy regarding the tables, and this would enable free exchange of views regarding the tables.

[7] Concerted efforts could then be made to develop optimal diving tables, while the competitiveness of the diving companies would to a greater extent be dependent on the training and skills of the divers and the safety and reliability of the equipment.

[8] The reply from the University of Zurich dated 30 April 1973 stated that no research institute or diving company currently had access to tables for depths of 100-200 metres that were secure enough to be made generally available. Nor was it possible on the basis of a limited amount of money and two test divers to develop such general tables. Large diving companies such as Oceaneering, Comex, SSOS and others withheld information regarding decompression methods, not only for commercial reasons but also out of regard for liability issues. The letter further stated (translation from German):

'At the moment, all decompression procedures for dives with O2/HE have a higher risk for "Bends", than, for instance the tables used by the US Navy for conventional dives with air ...

I am available any time to demonstrate, in Zurich and under my full medical liability, simulated dives with your test divers up to 300 metres with a risk of "Bends" of less than 5%.'

[9] The Commission would add that a limit of 5% decompression sickness is today regarded as a relatively high risk of decompression sickness. Current tables operate with considerably lower risk of decompression sickness.

[10] An internal memorandum of 30 November 1973 from the Inspection Department of the Labour Inspection Authority stated as follows:

'... stressed that he would attempt to avoid a situation whereby Norwegian companies obtained dubious tables abroad that had not been properly tested, and therefore could not be approved. This might result in newspaper headlines that could show the Norwegian authorities in an unfavourable light.'

[11] According to information received by the Commission from one of the test divers, a simulated test dive was conducted in December 1973 at the *Institut fur Flugmedizin* (Institute of Aviation Medicine). Simulated dives to depths of 100 metres and more were carried out without accidents. However, after the two test divers had conducted simulated dives to 150 metres, one of them showed symptoms of decompression sickness and was then recompressed to approximately 90 metres, following which he was free of symptoms. In the meantime, the other diver had shown symptoms of decompression sickness but, owing to a lack of gas and other practical problems, the decompression sickness was not treated by means of recompression, but in another way. A diving doctor has informed the Commission that both divers suffered from spinal and cerebral bends, and that both of them suffered permanent damage, more serious in the case of the diver who was not recompressed. Assuming that the Commission has perceived the circumstances of the test diving correctly, it was irresponsible to conduct such a trial when apparently it had not been ascertained that it would be possible to treat both test divers for decompression sickness should this occur.

[12] Work continued on developing tables for saturation diving to a depth of 200 metres, and in 1975 the Labour Inspection Authority was allocated NOK 113,500 to complete the project. One of the pioneer divers the Commission has been in contact

with has informed it that in 1975, at the request of the Labour Inspection Authority, he tested decompression in accordance with one of the tables that had been developed. In his view, the table was not usable in the North Sea, which he clearly stated to the Labour Inspection Authority.

[13] The British Royal Naval Physiological Laboratory had at the same time conducted trials of tables it had developed to a depth of 200 m, which were made available to Norway for 'governmental use'. Finally, the Norwegian diving company ThreeX had commissioned development of tables at Tarrytown Labs. Inc. In the USA.

[14] Although the Norwegian authorities gradually gained access to decompression tables for saturation diving, the tables were not made publicly available. The diving companies continued largely to withhold from their competitors the tables that they themselves used.

[15] The Commission would add that the investigation has not provided any specific clarification regarding whether rapid tables resulted in more cases of decompression sickness. This is partly because factors other than the speeds indicated in the tables must be taken into consideration."

84. In a letter of 21 June 1984 to the Diving Medical Advisory Committee, the Petroleum Directorate stated:

"Even when taking into consideration the different approaches to establishing a decompression profile based on different attitudes to the effect of time, PO2 and other factors on gas elimination during decompression, we find the difference between the slowest and fastest table disturbing.

The difference in decompression time from 1000 feet is close to a week when comparing the fastest and slowest table. In fact the fastest table we have considered is faster than the Duke Emergency Decompression profile from a saturation dive ...This Duke table is in other companies used as the dive profile for aborted dives in serious emergencies ... and it looks more like a modified USN 5 treatment table than anything else."

85. In a report of February 1986 prepared for the Norwegian Petroleum Directorate, Mr H.V. Hempleman stated, *inter alia*, that ensuring the safety of divers during the decompression phase of a saturation dive involved the examination of a very wide range of techniques and practices. He explained that there was a lack of knowledge which had led to an uneasy feeling amongst many people closely connected with diving work that perhaps the current procedures could be causing long-term damage to sensitive tissues, particularly the nervous system. The situation was not helped by persistent rumours that divers had suffered serious and permanent memory impairment and personality changes as a result of their employment as divers. Deciding whether such psychological changes had occurred and if so whether they were attributable to diving activities was a task of great complexity, and it would undoubtedly take many more years of intensive effort to establish an agreed answer. He then pointed out:

"Even more time will be required to ascertain whether the decompression phase of the dive, which is the subject of this report, is responsible for any of these long-term problems. Therefore, to minimise the possibility of the decompression phase being involved in any short-term or long-term tissue damage a very cautious approach is essential until the necessary research has been completed."

86. Mr Hempleman highlighted the various factors explaining the lack of hard data in this area. Nearly all relevant knowledge concerning saturation diving had been obtained using human volunteers; a saturation dive was defined as a dive where at least twenty-four hours had been spent at depth before decompression commenced, the costs of mounting a series of definitive experimental saturation dives were huge, each experiment requiring a large pressure chamber facility, and it was useless to expect any statistically significant results from fewer than ten trials with three men per trial; one single experiment would occupy the whole chamber complex for at least a year to settle just one point. He added:

"If someone were to suggest that the result would be quite the same at a different pressure, or using a different oxygen partial pressure in the breathing mixture, then the whole experiment would need to be repeated taking these additional factors into account. This would require at least a further four years' intensive work, employing the services of many fit young volunteers (not readily obtainable), small teams of skilled people prepared to work all hours of the day and night, specialist medical advisers available throughout the experimental period, large and expensive gas systems, and so on. If the procedures need to be tested at sea before being released for general use then a suitable ship, plus crew of course, with most of the workforce engaged in shore-based experiments, will attempt to repeat the procedures. If all goes well a typical sea trial would be contemplated in a few weeks, at a cost which is worrying to contemplate.

From what has just been stated it will be quite obvious that the necessary experimentation to enable a satisfactory number of definite quantitative statements to be made would require resources of NASA-like magnitude. The alternative is that some person of unusual intelligence and insight provides an explanation of what is occurring during decompression, and that this answer is sufficiently comprehensive to [be] acceptable without too many exploratory tests of its effectiveness. Neither large sums of money nor the arrival of a comprehensive aetiology of decompression sickness are immediately likely possibilities, so it must be assumed that, as in the last several decades, there will be slowly improving levels of understanding, often based upon the outcome of routines used by working divers."

87. Under the heading "Data collection and analysis", Mr Hempleman pointed out that because diving was a relatively safe practice the number of decompression sickness incidents in any tests would be small, and errors in small numbers could be seriously misleading. After explaining further the difficulties involved, he stated:

"Finally a philosophical point needs to be stated ... [N]o one fully understands the basic physical and physiological mechanisms that cause decompression sickness, and therefore it would be safest to assume that the worst possible situation applied. This means that the relevant tissue (or tissues) always possesses separated gas in some form ... In this philosophy no decompressions are free of gas, it is merely that some

> decompressions may yield more separated gas than others. Although it is possible that there is a critical volume of gas required to cause decompression sickness, there can be no critical pressure change that cause its formation or significantly increases the likelihood of this occurring. All divers are equal in this respect, and so are all decompression schedules."

88. The report moreover gave an analysis of the particular features of the "Hyperbaric Environment", a presentation of "Units of Measurement", as well as series of detailed "Safety Recommendations" and concluded:

> "Confinement inside a pressure chamber, breathing high-pressure synthetic gas mixtures for days or even weeks at a time must have unavoidable effects upon the saturation diver, but it is essential that the decompression procedures do not add to his difficulties and are proved not to be detrimental to his short-term or long-term physical and mental health. This will eventually require much more detailed information than is sought in this report, but it is hoped that the suggestions made there represent a significant start to realising this aim."

89. In 1990, the Petroleum Directorate initiated a programme of standardisation of compression- and decompression routines. The standardised diving tables that were introduced in 1991 used as a basis the most conservative diving tables that existed in the industry, on the assumption that this would optimise the safety of divers.

90. In a report of January 1991 comparing the saturation diving tables and assessing the preparation of conditions for standardisation, the Petroleum Directorate stated that a common framework of diving tables would significantly optimise divers' safety, provided that a common and simple system of reporting injuries and illnesses sustained in saturation diving was developed in parallel.

91. After the introduction of standardised tables, decompression sickness became a rare occurrence.

92. As can be deduced by interpreting the columns illustrating the annual occurrence (from 1978 to 2002) of decompression sickness, in a statistical table prepared by the Petroleum Directorate (dated 5 November 2003), there were almost fifty-five incidents in 1979, forty in 1979, fifteen in 1980, nine in 1981, twelve in 1982, eleven in 1983, ten in 1984, three in 1985, 1986 and 1997, almost eight in 1988 and nine in 1989, one in 1990, none in 1991 and 1992, three in 1993, none from 1994 to 2001, and one in 2002.

(c) Supervision

93. The Labour Inspection Authority, which was responsible for supervising diving activity in the North Sea until 1978, had one employee specifically entrusted with the task of supervising the entire petroleum industry inshore and offshore. He was educated as a civil engineer and had many years' experience as an inshore construction diver before he carried out inspections in the North Sea. The inspections conducted were directed at technical devices rather than diving methods and routines.

94. The Lossius Report included the following observation (on page 76):

> "It is uncertain but not very likely that the Labour Inspectorate was familiar with the significant occurrence of decompression sickness. Interviews with pioneer divers and diving medical experts have revealed that the work environment in the North Sea, both before and after 1978, accepted decompression sickness as part of diving, a disadvantage that one tried to avoid, but nevertheless something that went together with diving. The illness was treated with recompression and considered recovered from. The Labour Inspectorate seemed familiar with, but nevertheless unengaged in, the problem of time pressure during bounce diving and many divers' sense of insecurity in the work situation – the risk of being put onshore."

95. In a letter to Statoil dated 23 March 1990 the Petroleum Directorate observed:

> "There is reason to believe that there was insufficient supervision of the diving industry in the period from the early 60s until the Norwegian Petroleum Directorate issued temporary regulations for the Norwegian continental shelf."

96. With regard to the Labour Inspectorate supervision of diving, the Lossius Commission stated (section 5.7.5, penultimate paragraph):

> "Time pressure during bounce diving and the lack of security in many divers' working situation – the risk of being put onshore – was a problem the Labour Inspectorate appears to have become familiar with, but did not treat with any particular concern."

97. As regards the supervision of the use of diving tables, the Lossius Commission made the observations in section 5.7.4 quoted in paragraph 83 above, notably in the penultimate paragraph ("[14]") of the quote.

98. Pioneer divers were critical of the Labour Inspection's competence and supervision. The Lossius Commission confirms their criticism to some degree, stating that:

> "In accordance with [the supervision of] onshore industry, he [the person responsible for diving supervision] focused on fire safety, strength of cranes, cables and other materials ... Less focus was placed on diving methods and routines, and attitudes of divers and the diving management... One might question whether his qualifications were satisfactory, and this must have been known to his superiors." (Lossius Report, page 76, Section 5.7.5, right side, second paragraph)."

99. An additional staff member was hired during the last period of the Labour Inspectorate's supervision of North Sea diving, before the Norwegian Petroleum Directorate took over the responsibility and supervision in 1978, starting with five staff members.

(d) Professional training

100. The applicants pointed out that in addition to having satisfactory knowledge and equipment to stay under water, professional divers needed to perform numerous duties such as welding, localisation, installation, dismantling and guiding of equipment, and so on. (Lossius Report, section 4.3.2, pp. 56 and 57).

101. Despite the varied and demanding work, the Lossius Report stated that there was no organised training of North Sea divers in the first years of the petroleum industry. The Labour Inspection Authority's only requirement for professional divers was an approved medical certificate (Lossius Report, section 4.3.3, first paragraph, p. 57).

102. The first diving certificate requirements entered into force in 1979, and in 1980 the State opened a diving school.

(e) Reporting practices and investigations of accidents and near-accidents

103. According to the applicants, a culture of under-reporting of accidents and near accidents prevailed in North Sea diving. The Government took no adequate steps to address the under-reporting, and accepted that accidents and near accidents were not investigated. Therefore, oil companies and diving companies did not suffer any consequences as a result of malpractice. They were not compelled to address the cause of accidents and near accidents. On this matter the Lossius Commission stated (section 5.11, p. 89 of the report):

> "The weak supervision regime may also indicate that the directorate lacked understanding of the risk of harm which working in the North Sea involved, in particular for divers. Lack of comprehension of the risk of harm may be related to the fact that the Directorate most likely did not have a realistic perception of the extent of the damage, partly because of the lack of reporting from oil companies and contractors, but also partly because of the directorate's lack of involvement."

(f) Protection of North Sea divers from chemicals in water and air

104. The applicants submitted that divers had been exposed to dangerous chemicals that existed in, for instance, drilling mud and breathing gas, as well as bacterial growth in decompression chambers. For nearly forty years the matter had not been the subject of any scientific research, and only in 2006 was a study produced. The study, known as the 'Thelma Report', concluded that divers had been exposed to organic pollution and that the diving bell was the most polluted system. Whilst the testing and monitoring of chemical exposure had not complied with applicable procedures laid down by the industry itself and its contractors, it had not been possible to calculate the full level of pollution and health risk in hyperbaric activities. This should be a priority in the future.

105. Furthermore, the report stated that no survey was available of the amount of activities that had taken place in polluted areas and that increased knowledge of seabed pollution would facilitate the estimation of risk and level of health-damaging pollution in the diving bell (possibly because divers carry mud with them from the seabed into the diving bell). Consequently, necessary preventive measures could be implemented prior to an operation or the use of the diving bell.

106. The Thelma Report concluded that there was a lack of knowledge relating to the effects of divers' exposure to chemicals. However, North Sea divers continued to live with those effects, and with the uncertainty as to which chemicals had caused them.

3. Particulars on test diving

107. The applicants explained that test diving could be divided into two categories, depending on the objective of the dive. The primary objective of *experimental* diving had been research, namely to explore and develop new equipment, technical processes, operational procedures and diving tables, and to learn about human reactions to hyperbaric exposure. The objective of *verification* diving had been to confirm whether certain dives were safe or not. Petroleum and diving companies had carried out verification dives primarily in order to establish and document that work operations were possible at ever greater depths.

108. Test diving had primarily been carried out at the *Norsk Undervannsinstitutt AS* (NUI) and at its successor NUTEC (mentioned in paragraph 14 above), in Bergen and in the Norwegian fjords. Onshore test diving had taken place in the NUI/NUTEC facilities, which had enabled diving under similar pressure and conditions to those of North Sea diving. NUI had been established in 1976 by the State body *NTNF* (*Norges Naturvitenskapelig Forskningsråd*, "the Norwegian Scientific Research Council") and *Det norske Veritas* (an independent foundation providing risk management services). The other owners were the oil companies Statoil, Norsk Hydro and Saga Petroleum. In 1985, NUI was transformed into a private limited liability company with the name NUTEC AS, with Statoil, Norsk Hydro and Saga Petroleum as owners.

109. The applicant, Mr Muledal to some extent, and more particularly the applicant, Mr Lindahl, and also to a certain degree the applicant, Mr Sigurdur P. Hafsteinsson, provided detailed accounts of their individual experiences of test dives which had caused them pain, suffering and injuries. This related, *inter alia*, to Mr Lindahl's participation in the Deep Ex I dive in 1980 (300 metres) and the Deep Ex II dive in 1981 (504 metres); Mr Hafsteinsson's participation in the Troll dive in 1985 (down to 450 metres) and Mr Muledal's participation in the OTS I, II and III dives in 1986 (the latter down to 360 metres). Their account was given in Chapters 6, 8 and 9 of *Nordsjødykkerne* ('The North Sea Divers'), by Kristin Øye Gjerde and Helge Ryggvik, 2009. These applicants also adduced various further documents, notably (a) a NUTEC Presentation for divers of 25 August (1985); (b) an "Instruction for Training Programme for Onshore Manned Verification dive" by Stolt-Nielsen Seaway Contracting A/S and A/S Norske Shell, dated 9 August 1985; (c) Mr Bjørn Gjerdes' account of the Troll dive, dated 21 November 2002; (d) a letter from NUI to the Ethical Committee, dated 25 April 1983; (e) a letter from the Ethical

Committee to NUI, dated 27 November 1980, enclosing a form for ethical assessment with a recommendation for approval signed on 26 September 1980.

110. Item (a) above, under the heading 'Excursions/Decompression', stated, *inter alia*:

> "In order to enable divers to work at one depth and live at another, excursion tables have been developed. These have been developed by the US Navy down to depths of 300 msw. When testing these tables during the Deep Ex dives, it was found that excursions of 50 msw produced gas bubbles in the arterial part of the circulation without any signs of decompression sickness. In this dive the excursions are limited to 30 msw, and the divers are closely monitored using doppler techniques so that recompression can be performed if any arterial bubbles are detected."

Under the heading 'Monitoring' it affirmed:

> All procedures have been used previously during dives at NUTEC and at other centres, and we have never observed any injuries or adverse health effects from these procedures."

Under the sub-title 'Long-term health effects' it stated:

> "We know little about the health hazards associated with diving. Articles in which possible health effects are discussed (Appendix 3) are enclosed. Two of them describe the general effects of diving, and the third describes possible neurological consequences. Because it is of importance to determine if possible health hazards exist and to ensure that the divers' health is monitored, an extensive medical programme has been initiated, with testing of all major organ systems pre-dive and post-dive."

111. The applicants explained that item (d) related to the dive known as the Comex dive and that item (e) concerned the Deep Ex I dive.

112. The applicants in addition referred to a report of 3 August 1986 by Dr. A.O. Brubak to the Labour Inspection Authority and the Ethical Committee, commenting on the Troll dive in 1985:

> "The most important medical finding was without doubt that five out of six divers showed signs of focal central nervous dysfunction immediately after the dive. Even though these findings were only temporary, such findings are very disturbing and must have consequences for our approach to this diving activity.
>
> It was previously presumed that diving conducted according to accepted procedures, and where accidents did not occur, was not associated with health risks. Even though diving deeper than 180 m gives rise to certain central nervous symptoms, it has been assumed that these do not have long-term effects. The decompression procedures that we are currently using are considered acceptable if there are no serious clinical symptoms. These assumptions can no longer he considered safe ..."

C. Proceedings before the City Court

113. On 25 February 2005 Mr Vilnes instituted proceedings against the State before the Oslo City Court (*tingrett*), claiming additional

compensation on the grounds of negligence (*subjektivt erstatningsansvar*), violations of Norway's obligations under international human rights instruments, notably Articles 2, 3, 8 and 14 of the Convention, and strict liability (*objektivt ansvar*).

114. On 30 December 2005 Mr Muledal, together with Mr J. and Mr K. and twenty-eight other North Sea divers, also brought compensation proceedings raising similar claims.

115. On 31 March 2006 Mr Engebretsen and Mr Eng, who have also lodged an application with a number of other claimants (no. 24329/09), lodged compensation proceedings against the State before the City Court.

116. After a preliminary session on 7 August 2006 the City Court decided to join all the above cases. On 21 January 2007, after a change of lawyer by Mr Engebretsen and Mr Eng, it disjoined the action brought by them from those lodged by other claimants.

117. Pending the outcome of the proceedings, those brought by the above-mentioned group of twenty-eight litigants (including by the third to seventh applicants, Mr Lindahl, Mr Sigurdur P. Hafsteinsson, Mr Nygård, Mr Nesdal and Mr Jakobsen) were adjourned.

118. By a judgment of 10 August 2007 the Oslo City Court, sitting in a single-judge formation and after holding a hearing between 26 February and 29 March 2007, ordered the State to pay Mr Vilnes NOK 6,527,302 (approximately 859,000), plus NOK 4,880,479 in default interest (Mr Muledal was awarded NOK 3,123,420 (approximately 411,000) plus interest, Mr K. was awarded NOK 5,946,939, plus interest, whilst Mr J.'s claim was rejected). In reaching these conclusions, the City Court deducted from its estimates of past and future losses in earnings (plus interest) the amounts the plaintiffs had received under the special compensation schemes (plus interest). Since the City Court, as explained below, found the State liable on strict liability grounds, it was the latter's responsibility for the diving activities themselves which mattered. It was therefore unnecessary to point to which parts of the activity had led to unfortunate consequences for each plaintiff.

119. Taking account of the scope of the State's obligations under Article 2 § 1 of the Convention, as interpreted in the court's case-law, (see *L.C.B. v. the United Kingdom*, 9 June 1998, § 36, *Reports of Judgments and Decisions* 1998-III); *Osman v. the United Kingdom*, 28 October 1998, § 116, *Reports of Judgments and Decisions* 1998-VIII; and *Öneryıldız v. Turkey* [GC], no. 48939/99, § 71, ECHR 2004-XII), the City Court found that, during the period under consideration (from 1974 to 1989, when the plaintiffs had been professionally active) the authorities had taken measures that could reasonably be expected of them in order to keep divers' lives safe. Accordingly, there had been no violation of Article 2 of the Convention. The City Court also rejected the plaintiffs' argument that their right to protection of private life and health under Article 8 of the

Convention had been violated. Regard was had to the Court's case-law (in particular *López Ostra v. Spain*, 9 December 1994, Series A no. 303-C; *Fadeyeva v. Russia*, no. 55723/00, ECHR 2005-IV; and *Ledyayeva and Others v. Russia*, nos. 53157/99, 53247/99, 53695/00 and 56850/00, 26 October 2006).

120. As to the question whether the State was liable on strict liability grounds, the City Court considered, *inter alia*, that any right to compensation for divers could not be curtailed with reference to the argument that they had accepted the risks involved. A broader assessment had to be made, having regard to the interests of the parties to the case and to superior interests of a public character. A central question in any such assessment was to determine the entity which was the nearest to the risk that had triggered the damage and for that reason should be held liable. This was a question that ought to be based on a natural and reasonable weighing of interests, whether there was a need for strict liability in such matters, and whether strict liability would lead to a reasonable outcome.

121. In the present case, a group consisting of approximately 400 strong, healthy young men had taken on jobs as professional divers at the beginning of what ought to be described as Norway's oil adventure. Even though the divers earned very good salaries, the City Court found that many of them had paid an unexpected price in respect of their health. The City Court noted the observation in the Lossius Commission's report (NOU 2003:5 p. 102) that a disturbing number of divers were on disability pensions, and that relatively young people, even some who were in their forties, had been affected. This, together with the great number of cases of psychological damage, had suggested that many divers had carried a heavier burden than most people had to bear in their professional lives.

122. Whilst finding irrelevant as a starting point how much Norwegian society had benefitted from oil revenues, the result of the oil adventure, namely that Norway had become one of the world's richest nations, was relevant in the balancing of interests. Even though the State's links to diving activities would be stretched beyond what was clearly covered by judicial practice, the City Court found that, on the whole, making the State liable for the damage to divers' health would be reasonable and equitable. In view of these considerations, the City Court found the State liable on objective grounds. It was therefore not necessary to consider whether it was also liable on subjective grounds.

D. Appeal to the High Court

123. The State appealed against the City Court's judgment to the Borgarting High Court (*lagmannsrett*). Mr Vilnes and Mr Muledal lodged an appeal (as also did Mr J. and Mr K.) arguing that the amount of compensation awarded had been too low, and maintained their request for a

judgment holding that the Convention had been violated. The *Offshoredykkerunionen* (Offshore Divers' Union) and *IndustryEnergy* intervened in support of Mr Muledal and other plaintiffs (but not Mr Vilnes).

124. Between 12 August and 18 September 2008 the High Court held an oral hearing at which the parties with their representatives were heard, as were the interveners, forty-three witnesses, and several expert witnesses.

125. In a judgment of 28 November 2008 the High Court found for the State and dismissed the compensation claims brought by Mr Vilnes, Mr Muledal and the other plaintiffs, finding no basis for holding the State liable on (1) strict liability grounds, (2) on employer's liability grounds or (3) on grounds of human rights violations. The High Court's reasoning in respect of the second ground included, *inter alia*, the following considerations.

126. According to section 2-1 of the Damage Compensation Act 1969, the State could be held liable as an employer for damage caused with intent or negligence by an employee in the performance of his or her duties. It was not necessary to identify the employee who had committed the fault or to link the damage to a specific act. The liability covered the overall effect of individual acts, even though the effect of each act was not sufficient to establish liability. As a starting point, the liability also covered acts carried out in the exercise of public authority. However, Parliament's legislative and budgetary activities were not covered.

127. Nonetheless, a number of the matters raised by the divers could have been taken up in connection with the security assessment made by control and supervisory bodies prior to their authorising specific diving operations. For example, they could have set as a condition that slow diving tables be used with caution.

128. With the benefit of hindsight, the High Court could agree with the counter-appellants that it might seem as if the applicable rules had not always been implemented. In certain instances authorisation had been granted after the operations. A practice had been developed whereby dispensation had been granted on the basis of agreements between the operator, the divers, the divers' unions and the safety deputy. This practice had the drawback that the individual diver was thereby in a weak negotiating position, because of a risk under certain circumstances of being moved onshore when he was perceived as being difficult. Time-limits for applications and working hours had not always been respected. The High Court also agreed that under Article 3.4 (1) in conjunction with Article 3(k) of its Appendix of the 1978 Regulation (see paragraph 168 below), that the Petroleum Directorate could demand that the diving table used in a given diving operation be produced. Whether it was safe to use a table had been something that should have formed part of the basis for authorising a diving operation. It did not seem reassuring that tables had not

been reviewed because employees of the Petroleum Directorate had not understood them.

129. However, the assessment of what requirements could reasonably be imposed on the service and the activities had to be made in the light of the then prevailing perceptions of the risk involved in diving. The only way to remove all risk would have been to impose a total prohibition on diving. That had never been in question either in Norway or in any other countries. The prevailing view was that diving was justified even though diving led to fatal and other serious accidents. The question for a supervisory authority had therefore always been centred on the level of risk that was justifiable. Whether to grant authorisation for a given diving operation depended on a balancing of interests. Those of the divers weighed heavily, but were not the only ones. There was reason to display judicial restraint in reviewing this balancing exercise, especially after such a long lapse of time and changes in perceptions.

130. The High Court pointed out that assessment of what could be regarded as a justifiable risk ought to be based on the knowledge and perceptions of this matter at the time in question. That sudden changes in pressure could have a great impact on the organism and could in the worst case be life-threatening had been known for a long time. However, there had been less knowledge about the long-term effects. On the evidence the High Court found it established that it was widely believed that diving did not have serious long-term effects in the absence of decompression sickness. Where such illness had only involved temporary pain, notably after treatment in a compression chamber, the condition had also been regarded as relatively risk-free. It appeared that decompression sickness had been regarded as a part of diving, an inconvenience to be avoided but which had to be accepted when it occurred. It had been treated with recompression and recovery was then deemed to have taken place (see NOU 2003:5, p. 76).

131. Opinions about the long-term effects of diving had not been entirely unequivocal. A number of reports, scientific opinions, medical statements, articles and so on concerning the possible long-term effects had been adduced before the High Court, and the parties had relied on those of the opinions which supported their own views. The High Court observed that present-day knowledge was of no importance for the assessment of liability to pay compensation in respect of events that had occurred many years ago. It was not possible, nor necessary, for the High Court to take a stance on the disagreement between scientists and in the scientific milieu. It was sufficient to note that there existed a disagreement. The High Court found it established that in the context of the issue of liability to pay compensation there had been scientific support for the perceptions of the State as to the possibility of long-term effects. That there were other scientists who held other views could not be decisive.

132. The High Court found it established that the psychological effects of extreme, life-threatening and, especially, repeated incidents had been known. All the counter-appellants had described incidents that involved such a degree of stress that their condition could be regarded as PTSD. The High Court found it probable that Mr Muledal and Mr C had developed PTSD. Mr Vilnes had suffered minor brain damage and had in this connection developed an organic personality disorder. The High Court agreed with the divers that the State ought to have been aware of these aspects of diving activities and that a number of divers probably would suffer psychological damage. The Labour Inspection Authority expected that diving at ever greater depths might lead to psychological problems for divers. A stricter implementation of the requirement that diving should be safe would probably have contributed to reducing the stress level. Nevertheless, a certain level of danger and stress had to be accepted if diving was to take place. It had been impossible to say to what extent the burden of that stress could have been reduced and whether such a reduction would have been sufficient to prevent the counter-appellants from sustaining psychological damage. A certain level of stress had in any event been inevitable.

133. The High Court agreed with the counter-appellants that, according to present-day opinions, it might seem imprudent to have authorised diving operations involving the use of decompression tables that had previously led to accidents. However, those tables were in common use at the time, and not just in the Norwegian part of the North Sea. Apart from Norway, no country had introduced standard decompression tables. The accidents that had occurred had never given rise to legal proceedings against the State. While it might have been desirable for the supervisory authorities to have applied a stricter practice with regard to the authorisation of rapid decompression tables, in view of the conditions at the time the High Court did not consider that this could justify liability.

134. Nor did the High Court find that the way the authorities had handled licensing matters had disregarded safety in a manner giving rise to liability, even though from the divers' point of view it would have been desirable for their interests to have been better protected.

135. The State's ownership of the petroleum resources could not justify liability for accidents related to oil extraction. It had been the position that the licence holders had acquired ownership of the petroleum produced (section 3-3(3), second sentence, of the Petroleum Act), thereby absolving the State from liability as owner, and that State ownership had been limited to the oil resources under the sea floor.

136. Even though the supervisory authorities had committed certain errors, there was no support for the conclusion that divers' working environment on the Norwegian continental shelf had been regarded as worse

than that in other countries extracting oil in the same maritime area. The accident rates had not been significantly higher in the Norwegian area.

137. The High Court did not share Mr Vilnes's view that the State had been the actual wrongdoer. The wrongdoers had been those who had conducted the diving activities. In addition, the licence holders had been jointly and severally liable for the damage (section 10-9 of the Petroleum Act). The assertion that diving - especially North Sea diving in its earlier phase - involved extreme risks called for no further explanation. The purpose of putting in place supervision and a legal framework had been to reduce that risk. An alternative for the State would have been to avoid liability by doing nothing. It did not follow from the fact that the State by taking different measures had sought to reduce the risks involved in a lawful but dangerous activity, that the State had thereby taken on the responsibility for ensuring that adequate measures were in place at all times. The fact that the State had contributed significantly to a decrease in the accident rate over time did not mean that the previous situation had been unjustifiable.

138. Mr Vilnes had cited certain specific incidents, firstly at the diving vessel *Arctic Surveyor* in 1977, where he had been exposed to serious decompression sickness, and secondly at the diving vessel *Tender Comet* in 1983, relating to dispensation from the maximum length of the umbilical.

139. As regards his experience at the *Arctic Surveyor*, the High Court found that his decompression sickness in 1977 had most likely been caused by the facts that the diving company had used too rapid a decompression table and that there was no medical doctor who could assist him. This incident had probably been a strong contributory cause of Mr Vilnes's brain and spinal injuries. With hindsight there was plenty to contribute to the view that the diving operation should not have been authorised, and that Mr Vilnes should have received medical follow-up. Nonetheless, it was not possible to evaluate at the time of the High Court judgment whether the risk level had departed from what in 1977 had been considered justifiable in diving, in accordance with Article 121 of the Security Regulation, and the normal risk level in the North Sea. Mr Vilnes's injuries had only been diagnosed later. In the High Court's view there had been no basis for holding the State liable for authorising the diving operation in question.

140. As regards the diving operation from the *Tender Comet*, the High Court noted that Mr Vilnes's criticism had been upheld, and that in 1983 employees of the Petroleum Directorate had disagreed on whether the operation should have been authorised or stopped. However, if the Petroleum Directorate had committed faults, this did not necessarily mean that those requirements that could reasonably be set for their services had been ignored. In this regard, responsibility also lay with the operator and the diving company, and authorisation did not mean that the State had taken over financial responsibility for any faults imputable to the operator and the company. Even though it was established that the Petroleum Directorate

should not have authorised the operation, this would not suffice to make the State liable.

E. Appeal to the Supreme Court

141. Mr Vilnes appealed to the Supreme Court, complaining that the Norwegian authorities had given prior approval to diving operations carried out from the vessels (1) *Arctic Surveyor* and (2) *Tender Comet*, (3) had authorised dispensation from the requirements regarding the maximum length of the umbilical used in a diving operation from the *Tender Comet*, and (4) had failed to stop diving operations from the *Tender Comet*. He maintained that, regardless of whether there had been any negligence, the State was liable to pay him compensation on the ground that these acts or failure to act had been in breach of the applicable rules requiring that diving take place in a safe manner (Article 121 of the Royal Decree of 25 August 1967). As an alternative, he submitted that regardless of whether the said acts or failure to act had been unlawful, they had involved a failure on the part of the State to comply with its obligations under Articles 2, 3, 8, and 14 of the Convention. As a further alternative, Mr Vilnes argued that the legal framework as such had entailed a violation of the Convention. In a further submission he stated that the State had been liable as an employer under section 2-1 of the 1969 Damage Compensation Act. Also in this context he cited the Convention. Finally, he argued that the State had been responsible on grounds of strict liability for the damage he had sustained from the diving operations. In his grounds of appeal he put forward a number of arguments, including "lack of information from the State" while referring to the arguments he had put before the High Court.

142. Mr Muledal appealed against the High Court's assessment of the facts and application of the law. Amongst many other arguments, he submitted that the Norwegian authorities lacked competence to assess the companies' tables, and that they had not acquired such competence even though they were aware that the tables were a factor of competition.

1. Partial grant of leave to appeal

143. On 24 March 2009 the Appeals Leave Committee of the Supreme Court (a) refused the plaintiffs leave to appeal with respect to the assessment of the evidence regarding the question of liability whilst allowing them to adduce certain supplementary evidence and (b) refused Mr Vilnes leave with regard to his liability claims concerning points (1) to (4) above. As regards the remainder, the Appeals Leave Committee granted the plaintiffs leave to pursue their appeal. It further decided that the appeal proceedings should be limited to the issue of grounds for liability, and postponed the issues of causality and assessment of damages to a later stage.

2. Supreme Court judgment of 8 October 2009

144. By a judgment of 8 October 2009 the Supreme Court unanimously rejected their appeals.

(a) Question of strict liability

145. First, in considering whether the State could be held liable on the basis of the general principle on strict liability, the Supreme Court observed, *inter alia*, that the fact that diving was a risky activity ought to be the starting point for any assessment. Nonetheless, it had been clear that the risk to which the North Sea divers had been exposed exceeded what they had the right to expect. When the diving had taken place, uncertainty had prevailed as to the injuries that later materialised. The view that many deep-sea dives could lead to neurological injuries had emerged only gradually. Even when the Lossius Commission had produced its report at the end of 2002, it had concluded that well controlled research on delayed effects was missing (NOU 2003:5, p. 43). Under these circumstances, the divers could not be regarded as having accepted the risk of after-effects that were unknown to them.

146. The salient point in the assessment was whether there was a sufficient link between the State and the harmful activity. Since the point of departure in Norwegian law was that only the owner or proprietor of the relevant activity could be held liable, and since in this case the State was not the owner or proprietor of the diving businesses, the decisive matter would be whether other sufficient links existed. In this context the Supreme Court thoroughly examined in turn the various arguments advanced by the claimants to establish the existence of such a link, observing notably the following:

(a) While section 2 (1) of the Continental Shelf Act provided that the right to submarine natural resources was vested in the State, the provision was intended to clarify or confirm Norwegian jurisdiction over the continental shelf and had little weight in the context of the law of torts. The State had not elected to carry out petroleum activities on its own, but had left this task to others, under State control. When petroleum was extracted from the seabed, the ownership of the oil and gas passed to the licensee. The operations took place on behalf of the oil companies, who bore the risks attached, and not of the State. The fact that the State was the original licensee was thus of lesser importance.

(b) The State's wide-ranging control over oil activities had limited weight in an assessment related to the law of torts. The State had not carried out test drilling for oil, had not carried out petroleum production under its own auspices, and had not directly been an employer or a principal in the diving activities. Its general control thus gave little guidance as regards the question of liability for this activity. If viewed independently, the control

argument would otherwise lead to the State being held strictly liable for all damages in connection with oil activities in the North Sea; case-law provided no basis for such a broad conclusion.

(c) Even though the legislative history of the Taxation of Subsea Deposits Act referred to the State's ownership right to the resources, the State's powers to impose taxes and fees in the petroleum sector were not different in principle from those it exercised in other areas of society. It could not make a difference whether the State's revenues in this area were high, or whether special types of fees had been stipulated for the Continental Shelf. Such special features did not alter the principle that the State collected taxes and fees from the whole of Norwegian society. Nor did the tax revenues, etc. from the North Sea create any special connection to that part of the oil activities that related to the diving activity.

(d) For similar reasons, the arguments concerning the State's business operations or financial involvement could not be upheld either. While it was certainly true that the State had secured substantial ownership interests in important fields for Statoil and *"SDØE"* (*Statens direkte økonomiske engasjement* – Direct Financial Participation by the State), Statoil was a separate legal entity, different from the State. This ought to be the decisive factor.

The Supreme Court concluded that the circumstances adduced, whether considered on their own or together, did not involve a sufficiently close connection between the State and the harmful activity to justify holding the State liable on the basis of the general principle of strict liability. While it was true that the State had been actively involved in the oil sector, there was no difference of principle between this and a number of other areas. As regards deep-sea diving, the State's role had been limited to supervision and control. This was not something which created a close connection and could not be distinguished from other instances of public supervision and control.

(b) Question of employer's liability

147. Nor did the Supreme Court find that the State was liable as an employer for negligence, under section 2-1 of the Damage Compensation Act 1969, notably on account of the activities performed by the Labour Inspectorate and the Petroleum Directorate. The Supreme Court had regard to the development of the relevant regulations aimed at safeguarding security, the manner of organising the control and implementation of the safety rules, the practice of giving dispensations, inspections, training, diving equipment. The Supreme Court found no basis for holding that either of the above instances had been passive. Its assessment comprised the following reasons:

(a) Whilst it had been assumed in the legislative history of the 1969 Act that a more lenient standard of care applied to certain forms of public control, assistance and service enterprises compared with that which

followed from the general rules for employer's liability, those more lenient standards had not been applied in the case-law. It ought to be determined what demands could reasonably be placed on the enterprise concerned. Relevant criteria included the general risk of harm in the area concerned, the financial resources at the disposal of the authorities, the nature of the interests that had suffered harm, and the opportunities the injured party had to insure against harm and omissions; while actions and omissions ought to be distinguished from each other.

(b) Thus, there was no basis for applying a more lenient standard of care in relation to the Norwegian Labour Inspection Authority's and subsequently the Norwegian Petroleum Directorate's issuing of permits to carry out diving. Under the *applicable regulations*, in order to obtain authorisation, first from the Labour Inspection Authority and later from the Petroleum Directorate, the diving companies had to submit a plan for a diving operation. Since it was the responsibility of the authorities to consider whether the diving could be carried out safely, they had been actively involved in the matter and could prevent a given diving operation from taking place.

(c) At the same time, regard ought to be had to the *knowledge* possessed at the material time[1]. Norway had no previous experience with petroleum activities. As emphasised by the Lossius Commission, at the beginning it had been foreign players who possessed the technical knowledge about deep-sea diving, and the medical and technical research which existed in this field at the time was rather sparse (NOU 2003:5, p. 51). To acquire knowledge and experience would obviously take time (pp. 50-55). The authorities' supervision was naturally also in line with this. Thus, the manner of application of the general duty of care ought not to be based on hindsight. Also, diving was in itself a risky activity, especially deep-sea diving related to the development of oilfields.

(d) Concerning the *regulatory framework* that had been in place at the relevant time[2], regard was first had to the rules contained in the Royal Decrees of 15 May 1964, 9 April 1965 and 25 August 1967 and the Circular of 25 March 1971 communicated by the Labour Inspection Authority. Thus far in the development, no factors had been pointed to that could give rise to liability. The rules had been issued early, their contents was prudent and, together with the Circular, showed that the authorities had taken steps to prevent injury. Although it might be the case that the 1978 regulations should have been adopted earlier, and that the diver organisations' viewpoints should have been reflected to a greater degree, such a general criticism of the rules - which seemed to underlie parts of the divers' arguments - could clearly not lead to liability. Like the High Court,

[1] Mr Vilnes performed diving between 1976 and 1978 and in 1983 and Mr Muledal between 1978 and 1989.
[2] Ibidem.

the Supreme Court placed emphasis on the fact that Norway was the first country after the United Kingdom to introduce rules for diving at sea, while the USA adopted rules in 1981 and Denmark in 1995. The High Court has also found that the regulations that were in force prior to the adoption of the 1978 Regulations were not worse than in other countries.

(e) From 1979, the Petroleum Directorate had revised the regulations. This had led to the introduction in 1980 of diver certificates and new competency requirements, maximum limits for the time a diver could spend in saturation, in the water and in diving bells, as well as stricter requirements for reporting accidents. Among other changes, it could be mentioned the issuance of safety reports from April 1980, which provided information on incidents or problems that the sector should be aware of. In the fall of 1990, the Petroleum Directorate had taken the initiative for a project to standardise the compression and decompression tables, which resulted in recommendations that were still in use when the Lossius Commission submitted its study (NOU 2003:5, pp. 81-82). These factors showed that the Petroleum Directorate did not display passivity but on the contrary that it took active steps to improve the rules relating to divers' safety.

(f) Publicly funded *supervision* of diving activities had been established – carried out primarily by one full-time technical officer of the Labour Inspection Authority until 1 April 1978 and thereafter by five officers of the Petroleum Directorate, had not been done irresponsibly. Although from time to time the work pressure under which the Labour Inspection Authority operated had been too great to enable it to carry out as many inspections as desirable, additional assistance was hired in depending on the circumstances, though it was not the task of the judiciary to review budgetary considerations. The Lossius Commission had also emphasised that no personal criticism was attributable to the responsible party in the Labour Inspection Authority (NOU 2003:5, pp. 70-71). Supervision had become more efficient after the Petroleum Directorate's team of five officers led by an educated and experienced diver had taken over (pp. 79 and 82).

(g) As regards the *implementation* of the rules, the authorities had in the main been aware of the North Sea divers' *working conditions* and demands for improvements. As observed by the High Court in the main the State had been aware of the conditions in the North Sea, including divers' working conditions. However, because of deficient reporting they had probably not had a complete picture of the extent of near-accidents and other undesirable occurrences. The State had also been aware of divers' demands for improvements.

(h) As to the *effects of diving*, it had been known that sudden changes in pressure could have a great impact on the body (and, as pointed out by the High Court, could in the worst cases be life-threatening) but there had been

less knowledge at the time about the long-term effects. In 1983 the Norwegian authorities had taken the initiative to hold a conference in Stavanger in order to discuss the existence of undesirable medical consequences of deep sea diving. American, British and French specialists in diving medicine had held that diving in accordance with the regulations was safe, whilst others, including Norwegian researchers, had not been convinced of this. At a consensus conference held ten years later in Godøysund the position had been largely the same, with a leaning towards the possibility that it might cause neurological and psychiatric after-effects. In 2002 the Lossius Commission had concluded that there was no clear evidence that could answer the question. On the evidence, the High Court had found it established that it was widely believed that diving did not have serious long-term effects in the absence of decompression sickness. Where such illness had only involved temporary pain, notably after treatment in a compression chamber, the condition had also been regarded as relatively risk-free. It appeared that decompression sickness had been regarded as a part of diving, an inconvenience to be avoided but one which had to be accepted. It had been treated with recompression and this treatment had been regarded as all that was necessary (NOU 2003:5, p. 76).

(i) Knowledge about the psychological effects of extreme, life-threatening situations, especially repeated experiences of this kind, in the form of PTSD, was possibly of more recent date.

(j) As regards the administrative *dispensation* practices concerning the applicable saturation time and length of the umbilical (see paragraphs 77 and 78 above), the relatively strict rules combined with a lenient attitude to the issue of dispensations had been based on a balancing of interests, hence the view that it would lead to better control than under more liberal rules. Even though dispensations had been granted regularly, this did not appear to have been negligent. According to the regulations, all applications for dispensation had to include a statement from the divers' representative and diving physician that the proposal had been considered and found to be in order. The documentation presented to the Supreme Court showed that this practice was followed strictly. Emphasis was also placed on the divers giving their consent. It was otherwise of interest to note that the United Kingdom had still more liberal regulations (maximum saturation time of twenty-eight days and no specific umbilical restriction). On the whole the arrangement did not appear to have been irresponsible and no information concerning specific dispensations pertaining to the appellants suggested a different assessment.

(k) In this context, the Supreme Court examined the question of *decompression tables*:

> "110. An important issue in the case has been which diving tables were accepted as regards how the regulations were put into practice. Decompression tables that were too fast could, as mentioned, lead to decompression sickness. The appellants have

argued that here the Petroleum Directorate's control was too lax, which led to injury, and they refer to the fact that standard tables were subsequently introduced.

111. When the companies applied for consent to dive that was based on rapid ascent they normally had the divers' consent. The problem was that the diving companies regarded the decompression tables as confidential for competitive reasons, since companies with fast tables were often preferred when assignments were awarded. When drilling for oil in the North Sea started, bounce diving tables developed by the US Navy were utilised. The Norwegian Labour Inspection Authority did not have access to tables for saturation diving, and in late 1972 took the initiative to develop their own, Norwegian tables. A German research institution was contacted, but the work was difficult, see in more detail NOU 2003:5, pages 74-76. In 1984, the Petroleum Directorate expressed concern regarding the variations in the tables and announced a revision. Standardised tables were not achieved until 1990, following a project financed by the Petroleum Directorate. Since then, decompression sickness has been extremely rare.

112. The assessment of why the supervisory authority allowed the diving companies to use decompression tables that could lead to decompression sickness must be carried out in light of the knowledge and attitudes that prevailed at the time in question. The authorities did not have knowledge about which tables would eliminate decompression sickness. As previously noted, there was widespread uncertainty concerning the harmful effects, and in the industry there was a perception that decompression sickness was an inconvenience one attempted to avoid, but that was regarded as being part of the work. It has been stated that other countries still do not have standardised tables.

113. ... The reasons why the divers generally did not speak up seem to have been a sort of professional pride, but also the experience of pressure from the diving companies. In some companies, 'difficult' divers could be sent to land. As mentioned, the Petroleum Directorate was aware of this. In a newspaper interview, the head of the Petroleum Directorate's diving section encouraged the divers to speak up about blameworthy conditions. Whether or not this had any effect is unclear. In any event, the lack of reporting had to have an impact on the effectiveness of the supervision."

(l) On the basis of an overall assessment, the authorities' practices could not be characterised as negligent. In this connection regard had been had to the appellants' arguments concerning the absence of a physician on the diving vessel and that the pressure chamber had not been easily accessible. The companies had had diving doctors whom they could consult. First and foremost, it had been for the diving companies and the oil companies to ensure that operations at their account and risk be carried out in accordance with the regulatory requirements that diving should take place in a prudent manner. This was not altered by the fact that medical experts generally indicated a need for more knowledge about diving-related medicine and greater pressure chamber capacity.

(m) As regards the applicants' general criticism of the *inspections*, those carried out by the Labour Inspection Authority had been fewer than those by the Petroleum Directorate, which could mainly be explained by the resources at their disposal.

(n) There was no information to the effect that other divers' lack of *professional qualifications* had created situations that had endangered Mr Vilnes and Mr Muledal.

(o) The rules imposed on the diving companies contained detailed safety requirements regarding diving *equipment*. There was little information about episodes concerning the appellants, and no blameworthy passivity on the part of the authorities had been documented. An illustration of active steps taken had been the Petroleum Directorate's inspection of *Tender Comet* in 1983.

(p) The issue of *hyperbaric evacuation* (concerning the case of Mr Muledal, see paragraphs 43 and 44 above) was addressed in the 1978 Regulations. No passivity had been displayed by the Labour Inspection Authority or the Petroleum Directorate, nor could it be assumed that the problem had had any consequences for the appellants.

148. To the above, the Supreme Court added that many of the factors pointed out by the divers, such as too-rapid decompression tables or equipment defects, might very well have caused considerable additional strain for many divers. However, this could not imply any liability on the part of the Labour Inspection Authority or the Norwegian Petroleum Directorate, as long as they did what could reasonably be expected of them in carrying out their supervision.

149. Finally, the Supreme Court examined the complaint made, *inter alia*, by Mr Muledal regarding *test diving* in relation to his participation in the OTS III dive, which had lasted for twenty-seven days from 6 November 1986, and in which the deepest dive had gone down to 360 metres. It noted that test dives had taken place at a research institution, NUTEC, which was an independent legal subject, separate from the State (see paragraph 108 above) and that, accordingly, any compensation claim ought to be directed at NUTEC. The test dives had not been commissioned by the State, but had been initiated and primarily financed by the oil companies. The appellants' suggestion that by contributing to making feasible work (the laying of pipelines and oil production) at great depths the test dives had served the interests of the State could not result in the State being held liable

150. Any such liability would have to be founded on the authorities' responsibility for supervision of test dives. The Supreme Court noted that the test dives had raised complicated medical and technical diving questions. In view of the procedures in place, the thorough examination by the competent bodies before the test dives were authorised, as well as the advance information provided to the divers (that it was voluntary and that they could withdraw) and the supervision by medical doctors, it found no basis for holding the Labour Inspection Authority liable for negligence in its authorisation and supervision thereof. To the extent that the agreed procedures had not been adhered to during or immediately after each dive,

any claim for damages would have to be addressed to the companies or institutions that had implemented the dive, not against the State's supervisory authorities.

(c) Question of liability on grounds of human rights violations

151. Lastly, the Supreme Court considered whether there had been a violation of the Convention.

152. As regards the plaintiffs' complaint under Article 2 of the Convention, the Supreme Court observed that this provision was applicable not only in the event of loss of life but also when in the circumstances there was a threat to physical integrity (see *Budayeva and Others v. Russia*, nos. 15339/02, 21166/02, 20058/02, 11673/02 and 15343/02, § 146, ECHR 2008(extracts)). This provision further obliged States to refrain from deprivation of life and to take appropriate steps to safeguard lives. This obligation to safeguard lives entailed above all a primary duty on the State to put in place a legislative and administrative framework designed to provide effective deterrence against threats to the right to life. This applied in the context of any activity, whether public or not, in which the right to life was at stake (ibid., §§ 128-31, a case which concerned a landslide). The Supreme Court also took note of *Guerra and Others v. Italy* (emission of poisonous gases) (19 February 1998, *Reports of Judgments and Decisions* 1998-I.); *L.C.B.*, cited above, (health hazards from atomic explosions); and *Öneryıldız*, cited above, (methane gas explosion at a rubbish heap). The Supreme Court observed that none of these cases had concerned threats to life occasioned by professional risk. On the latter subject, as far as the Supreme Court was aware, there were no judgments delivered by the European Court, though its statements of principles had been formulated in such a general way that it could not be excluded that it would at least to some degree apply Article 2 on such matters. It was not necessary to go further into this, since there had in any event been no breach of this provision in the present case.

153. The Supreme Court observed that from the European Court's case-law it followed that in the event that there was a real and immediate danger to life, and this danger was or ought to have been known to the authorities, the latter might be required to take special measures. In the assessment of what steps ought to be taken, the State would in principle have a margin of appreciation. An impossible or disproportionate burden could not be imposed, since the State had to make operational choices in terms of priorities and resources (see *Budayeva and Others*, cited above, §§ 134 and 135; see also *L.C.B.*, cited above, § 38; and *Öneryıldız*, cited above, §§ 100-101).

154. However, in the instant case, the State had in accordance with the law adopted extensive regulations on diving activities. An administrative framework had been set up, and supervision of it had been entrusted to the

Labour Inspection Authority and the Petroleum Directorate. Moreover, funding had been allocated to their activities according to priorities and in the light of available resources. There had been nothing to suggest that the supervisory bodies in question had been passive when they had become aware that transgressions of the rules involving risk had occurred. The measures taken had been based on what they knew at the material time. Therefore, it did not appear that Article 2 of the Convention had been violated.

155. As regards the plaintiffs' complaint of violation of Article 8 of the Convention, the Supreme Court took note of their argument based on the European Court's case-law in relation to search and seizure of documents on professional premises, notably *Niemietz v. Germany*, 16 December 1992, Series A no. 251-B). However, the subject matter of such cases had been so different from that at issue in the present case that the Supreme Court could not rely on it.

156. The plaintiffs had also prayed in aid case-law concerning health risks caused by pollution. However, in this regard the Supreme Court observed that Article 8 had come into play mainly because private and family life was enjoyed in the home. On this point the Supreme Court quoted the following passage from *Giacomelli v. Italy*, no. 59909/00, § 76, ECHR 2006-XII:

> "Article 8 of the Convention protects the individual's right to respect for his private and family life, his home and his correspondence. A home will usually be the place, the physically defined area, where private and family life develops. The individual has a right to respect for his home, meaning not just the right to the actual physical area, but also to the quiet enjoyment of that area. Breaches of the right to respect for the home are not confined to concrete or physical breaches, such as unauthorised entry into a person's home, but also include those that are not concrete or physical, such as noise, emissions, smells or other forms of interference. A serious breach may result in the breach of a person's right to respect for his home if it prevents him from enjoying the amenities of his home."

157. Thus, also the European Court's case-law regarding damage to health resulting from pollution was not immediately comparable to the present case.

158. The Supreme Court noted that *Roche v. the United Kingdom* [GC] (no. 32555/96, §§ 155-169, ECHR 2005-X) was the only judgment cited by the parties that had concerned possible damage to health sustained in connection with professional activities. The applicant in that case had served in the British Army and had for a period voluntarily participated in experiments on mustard gas and nerve gas. He had claimed that this had caused him injuries and demanded access to the case documents. The European Court had found Article 8 applicable and that this provision had been violated on account of the refusal to grant the applicant access to the documents in question. This judgment gave support to the view that test diving was covered by Article 8 but not risky diving in general. However, it

was not necessary to determine this question, since any obligation to take safety measures that might follow from Article 8 had in any event been complied with. In this connection, reference was made to the discussion above under Article 2.

159. Also, there could be no question that the conditions pertaining to diving generally, as alleged by Mr Vilnes, could amount to inhuman and degrading treatment in the sense of Article 3.

160. As regards the test dives carried out at NUTEC, in which Mr Muledal and Mr C had participated, the Supreme Court observed that under Article 7 of the 1966 International Covenant on Civil and Political Rights, no one should be subjected without his free consent to medical or scientific experimentation. A similar protection probably followed from Article 3 of the European Convention. In the present case, it was clear that the divers had been informed about the test dives beforehand. A written guide had been produced, and there was nothing to indicate that the test dives in question had been carried out otherwise than planned. The test dives had been approved in accordance with the Helsinki Declaration prepared by the World Association of Doctors in 1964, NUTEC practice and the guidelines of the Ministry of Social Affairs of 8 June 1984 on the mandate of regional committees on the ethics of medical research. There was no support for holding that the delayed injuries sustained by Mr Muledal and Mr K. were attributable to these test dives. The tests had been carried out in the light of the information available at the time, from which it had appeared that test dives involving far greater depths had been carried out in the USA, the United Kingdom, France and Switzerland. Accordingly, there had been no breach of Articles 3 or 8 of the Convention or of Article 7 of the International Covenant.

161. Nor did the Supreme Court find any support for Mr Vilnes's complaint of violation of Article 14 of the Convention on the ground that the protection level for diving in the oil sector had been lower than for work in other sectors. This provision only applied to differential treatment that was deemed unjustified in relation to rights that were protected by the Convention. His complaint was of a general nature and did not specify which rights that he – or possibly other divers – had been deprived of. To the extent that he could be considered to complain that divers for a period did not fall within the 1977 Working Environment Act (*arbeidsmiljøloven*), his argument could not succeed.

II. RELEVANT DOMESTIC LAW

162. At the Court's request, the Government submitted numerous particulars of legal instruments adopted with a view to protecting the safety of divers. In the light of the factual circumstances complained of in the instant case, the following legal texts appear particularly noteworthy.

163. From the Royal Decree of 15 May 1964, laid down pursuant to the Continental Shelf Act of 21 June 1963 (*kontinentalsokkelloven*), it followed that exploration on the Shelf had to be carried out "in a prudent manner". This was continued in the Royal Decree of 9 April 1965, with a view to exploration for and exploitation of petroleum deposits, while emphasising that the relevant ministry could issue more specific safety rules (Article 37) and appoint inspectors (Article 45).

164. The first independent safety regulations relating to exploration and drilling (not production), laid down in the Royal Decree of 25 August 1967, maintained the requirement that exploration and drilling should take place in a prudent manner in accordance with good and reasonable practices (Article 4), and in Article 121 contained special rules regarding diving:

> "A plan shall be submitted for approval, to the Ministry or anyone authorised by it on how diving operations are to be conducted before the work is commenced. The plan shall contain details concerning the equipment to be used and what safety precautions will be taken to protect the life and health of the diver.
>
> Unless the diver has an approved Norwegian diver's certificate, permission must be obtained in advance from the Ministry or anyone authorised by it before diving operations can commence.
>
> Diving operations must be carried out in a safe manner according to the regulations in force at any time."

165. Authority under this provision was delegated to the Norwegian Labour Inspection Authority, which on 26 March 1971 sent a circular to 'All diving operators ... on the Norwegian Continental Shelf'. The circular included, *inter alia*, an English translation of Article 121, together with a requirement that diving bells were always to be used under certain specific circumstances.

166. On 1 July 1978 the Petroleum Directorate adopted with immediate effect a Temporary Regulation on Diving on the Norwegian Continental Shelf, a comprehensive set of rules setting out specific safety requirements for diving operations, including supervision of decompression, divers, diving contractors, diving supervisors, diving equipment, breathing gas, evacuation under pressure, fire protection, and log booking. The latter was to contain, *inter alia*, the maximum depth reached on each dive, the bottom time on each dive, the type of equipment and breathing mixtures used, the work done by the diver on each occasion, the decompression procedure followed by the diver on each occasion (including the designation of the decompression tables used and possible deviations from these), any decompression sickness, other illness, discomfort or injury suffered by the diver, any other factors relevant to the safety and health of the diver, and any dangerous occurrences or irregularities.

167. The 1978 Regulation also set specific requirements as regards the medical fitness and qualifications of divers, the safety of the divers'

environment (temperature, humidity, noise and sanitary conditions and heating systems), and breathing mixture, amongst others. It further provided that the diving contractor was to have a liaison agreement with a medical doctor experienced in hyperbaric medicine and approved by the Directorate of Health. That doctor was to work out instructions and follow up the diving operations and the diving tables by assessment of reports with regard to medical matters referred to in the diving operations logbook, within a reasonable time and not later than six weeks after the dive, so that necessary improvements with respect to plant, equipment and procedures could be made. The above-mentioned assessments should always be available to the Petroleum Directorate.

168. Article 3.4 ("Approval procedure") of the Regulation provided:

> "No diving operation shall start before the Petroleum Directorate have approved the diving rules in accordance with Appendix 1 and details about the equipment which will be used during the operations.
>
> The above-mentioned documents shall be submitted to the Petroleum Directorate at least twenty-one days prior to commencement of the diving operations."

Article 3(k) of the Appendix listed "compression and decompression tables" among the elements defined as procedures during diving.

Pursuant to Article 5.3 ("Accessibility to the diving rules") of the Regulation, "[a]ny person engaged in or likely to be engaged in diving operations, shall have access to a copy of the diving rules or a document setting out the effect of the rules as far as they concern that person."

169. In 1980 the Directorate issued a revised version of the 1978 Regulation introducing for instance diving licence requirements, new competency requirements, time limitations on the periods during which a diver could be kept in saturation, in water and in a diving bell, and stricter requirements for reporting accidents.

170. The Government also submitted copies of Regulations of 1980 and 1984 on diving systems control, of four Royal Decrees of 28 June 1985, on safety supervision, internal control, internal control for ship owners and supervision of safety measures, which had been issued following the adoption of the Petroleum Activities Act 1985 (*petroleumsloven*). In addition they submitted a series of more recent regulations issued in 1990, 2001 and 2003, as well as several royal decrees and regulations from 2010. The Government drew attention to a legislative amendment of 8 March 1995 whereby the 1977 Working Environment Act was made fully applicable to offshore activities.

THE LAW

I. ALLEGED VIOLATION OF ARTICLES 2 AND 8 OF THE CONVENTION

171. The applicants complained that they had sustained damage to their health after working in diving operations in the North Sea and, as regards the second, third and fourth applicants, also following their participation in certain test dives. This had resulted from the failure of the Norwegian authorities to protect their rights under Articles 2 and 8 of the Convention which, in so far as is relevant, read:

Article 2

"1. Everyone's right to life shall be protected by law. No one shall be deprived of his life intentionally save in the execution of a sentence of a court following his conviction of a crime for which this penalty is provided by law..."

Article 8

"1. Everyone has the right to respect for his private ... life ...

2. There shall be no interference by a public authority with the exercise of this right except such as is in accordance with the law and is necessary in a democratic society in the interests of ... the economic well-being of the country..., for the protection of health ... , or for the protection of the rights and freedoms of others."

172. The Government contested that argument.

A. Admissibility

173. In their written pleadings to the Court the Government conceded that Mr Vilnes and Mr Muledal had exhausted domestic remedies but argued that, in the absence of any information to the contrary, Mr Lindahl, Mr Sigurdur P. Hafsteinsson, Mr Nygård, Mr Nesdal and Mr Jakobsen had not. However, they refrained from pursuing the argument at the oral hearing before the Court.

174. The Government also affirmed that they would not challenge the applicants' victim status within the meaning of Article 34 on account of the various amounts paid to them in compensation in acknowledgment of political and moral responsibility.

175. On the other hand, the Government invited the Court to declare the complaints of all seven applicants inadmissible as incompatible

ratione materiae with the provisions of the Convention, or in any event as manifestly ill-founded, in accordance with Article 35 §§ 3 and 4.

176. The applicants asked the Court to reject the Government's invitation to declare their complaints inadmissible on substantive grounds.

177. As regards the issue of exhaustion of domestic remedies, the third to seventh applicants pointed out that with the agreement of the Government the judicial proceedings concerning these applicants had been adjourned pending the outcome of, inter alia, Mr Vilnes and Mr Muledal's case (see paragraphs 114 to 117 above). From the Supreme Court's judgment of 8 October 2009 it was clear that the third to seventh applicants would have had no prospects of success if they had pursued their case before the domestic courts (see paragraphs 144 to 159 above).

178. The Court, having regard to the parties' submissions, is satisfied that both the first and second applicants have exhausted domestic remedies as required by Article 35 § 1 of the Convention with respect to their complaints under Articles 2 and 8 of the Convention. Moreover, in view of the reasoning and outcome of the proceedings pursued by them and which ended in the Supreme Court's judgment of 8 October 2009 (see paragraphs 143 to 159 above), the Court accepts that there were special circumstances which absolved the third to seventh applicants from their normal obligation to exhaust domestic remedies with respect to their complaints under the same provisions (see *Akdivar and Others v. Turkey*, 16 September 1996, § 67, Reports of Judgments and Decisions 1996 IV, and *Van Oosterwijck v. Belgium*, 6 November 1980, §§ 36 to 40, Series A no. 40). The Court further observes that the said complaints are not manifestly ill-founded within the meaning of Article 35 § 3 (a) of the Convention nor inadmissible on any other grounds. The applicants' complaints under Articles 2 and 8 must therefore be declared admissible.

B. Merits

1. The applicants' submissions

179. The applicants complained generally, with reference to Article 2, that the respondent State had failed to take necessary measures to prevent the divers' lives from being put at risk that was avoidable; in particular, they had failed to ensure that a legal framework of safety regulations was in place to protect the divers, had automatically and widely granted exemptions from safety regulations, had failed to carry out adequate supervision in order to identify and take corrective measures in respect of defects endangering human lives, and had made it possible for the diving companies to use too-rapid decompression tables, despite the frequent occurrence of decompression sickness among divers. Adequate measures would have included the harmonising of decompression tables, the

provision of on-the-spot medical assistance during diving operations, requirements for diving competence and other professional competence and technical expertise, the availability of real means of evacuation, proper maintenance of equipment, fewer dispensations being given and further legislative and licensing measures being taken. As early as the 1970s it ought to have been possible for the State to take such measures, many of which could have been taken without any additional funding and legislation being needed. The applicants prayed in aid the following judgments by the Court: *L.C.B.*, cited above, §§ 36-41 and 46; *Öneryıldız*, cited above, § 71; *Budayeva and Others*, cited above, §§ 130 and 175; and *Öçkan and Others v. Turkey* (no. 46771/99, §§ 40-50 and 57, 28 March 2006). The applicants emphasised that Article 2 covered the workplace (see *Pereira Henriques v. Luxembourg*, no. 60255/00, §§ 59-63, 9 May 2006) and the State's duty to take appropriate steps to safeguard citizens from being avoidably put at risk applied to all dangerous activities, in particular industrial risks (see *Budayeva*, cited above, §§ 130 and 175).

180. More specifically on the subject of decompression tables, the applicants submitted that, according to information provided by diving companies, decompression sickness had occurred at a rate of five per cent. It followed that a diver would contract the illness after every twentieth decompression. If on average four divers took part in every diving operation, decompression would occur every fifth operation. Accordingly, most divers would contract the illness in the course of their career.

181. The State had been aware that the rapid decompression tables had been a central factor in competition between diving companies, a factor that the State could have eliminated even during the pioneer period by requiring, *inter alia*, the standardising of tables and/or the setting of conditions for the approval of individual diving operations. Decompression sickness had been practically eradicated in 1990 after the introduction, on the initiative of diving companies, of standard requirements for diving tables. All the companies had been positive about this. As a consequence, diving tables were no longer a competitive factor.

182. The applicants argued that the State ought to have ensured that the diving tables used were among the most conservative ones, that the tables formed part of the basis for authorising diving operations, and that the choice of tables be eliminated as a competitive factor. It ought to have been possible for the State to impose transparency about and the harmonising of tables. Leaving this matter to the diving companies and/or the operators had been irresponsible, since these were in competition and the non-disclosure of rapid tables had increased their opportunity to obtain contracts.

183. The respondent State had failed in its duty to provide information (see *Öneryıldız*, cited above). It would not have been difficult for the State – in its capacity as a legislative and executive authority and as an authority granting authorisations – to require openness about tables and the

harmonisation of tables. The applicants had not been sufficiently informed about the risk to which they had exposed themselves when accepting diving assignments in the North Sea.

184. On the contrary, Mr Vilnes stressed, he had been informed that the dives had been authorised by the State, that decompression sickness would not lead to lasting disabilities (except for bone necrosis) and that such illness could be safely treated if done according to available tables. He had not been informed that by accepting diving assignments he risked permanent damage to his brain, bone marrow, nerves, and hearing, and extensive psychological damage after diving, even after using the tables. Mr Vilnes argued that he had never been given any insight into the tables. The principles of the tables had not only been recognised as confidential but had also been incomprehensible to those concerned.

185. Similarly, the other six applicants complained that not only had the Norwegian authorities refrained from abolishing dangerous diving tables but also that, because of their confidentiality, the divers had not known whether or not they were agreeing to work with the use of dangerous diving tables when they agreed to work for a diving company.

A further aspect of the matter had been that when diving sickness occurred, the divers had not benefitted from any medical advice on the spot, but critical treatment had been carried out "by colleagues, according to a table booklet which they had been given at the time."

186. The applicants submitted that, despite the frequent occurrence of decompression sickness among divers, the authorities had allowed the companies to keep decompression tables secret, whilst being aware that decompression speed was a competition factor between the diving companies, and that regard for divers' health thus ran counter to strong commercial interests. An illustration of this was the Petroleum Directorate's letter of 21 June 1984 to the Diving Medical Advisory Committee in 1984 (see paragraph 84 above). There could be no doubt that the Norwegian authorities had been aware of the risks involved in North Sea diving operations. They had a duty to take appropriate, effective measures. To share the information with those at risk would often be the easiest accessible and most rudimentary measure to safeguard Convention rights laid down in Articles 2 and 8 of the Convention. According to the Court's case-law, the respondent State had a duty to provide effective protection for the applicants, with a particular emphasis on the duty to provide information about the risks involved in diving operations and rapid tables.

187. In North Sea diving operations the word was that diving was prudent and state-approved, which also followed from the statutory regulations. Without the objective facts about the disturbing differences between tables, and the high occurrence and consequences of decompression sickness related to the tables in use, divers had no opportunity to make a meaningful assessment of the risks involved in the

operations. Therefore, the Norwegian authorities had a duty to provide divers with the information necessary to assess the real risk level, including the escalation of risk connected to table competition. The State should in the least have made the risks involved in the diving tables known to the applicants by requiring disclosure of the tables, by providing the divers with a risk assessment of the use of the tables on operations without doctors available for treatment, and by providing information about the conditions on which the authorities approved the tables - or rather the absence of any such conditions.

188. Mr Vilnes had never consented to or acted in a way that could be taken to mean that he had consented to the use of rapid tables, nor had any of the other applicants given such consent. Their health had been adversely affected by the use of rapid decompression tables, as they had had immediate and prolonged symptoms of decompression sickness as well as long-term illnesses causing occupational disability. As the High Court had found, Mr Vilnes' brain and spinal cord damage had probably been caused wholly or in part by a combination of a too-rapid table and the absence of a medical doctor for treatment. The applicants submitted that their respective cases of brain, nerve, and lung damage had been caused by the tables in question, as had Mr Lindahl's hearing impairment.

189. The Government had provided no reasonable explanation to justify why for twenty-five years they had not obliged the diving companies to disclose their decompression tables or to comply with the most conservative tables and their own standard of due care. Notwithstanding the standard of due care applicable to diving procedures pursuant to Article 121 of the Royal Decree of 1967 (see paragraph 164 above), the Labour Inspection Authority had approved the procedures regardless of the diving tables, and in most cases without even having access to them (Lossius Report page 74).

190. Had they been given access to all the diving tables, the applicants might have been able to compare the tables and to assess the risks themselves. They might have been alarmed by the great differences in decompression times and might have opted to work elsewhere. The disclosure of the tables ought to have been combined with a risk assessment by the authorities, in order to give the divers sufficient knowledge to assess the risks involved.

191. Moreover, the disclosure of the tables would have generated public pressure on the diving companies, fear on their part of being unable to obtain contracts and to recruit divers, and might conceivably have compelled them to use the most conservative tables. Had the authorities in addition discontinued or improved their own practice of pre-approving tables regardless of whether they were safe, there would clearly have been a significant effect on the diving companies' use of rapid tables.

192. The Norwegian Labour Inspection Authority's letter to the University of Zurich of 16 April 1973 (see paragraph 83 [5] above) showed

that even at the very beginning of the applicants' careers in the North Sea, the State considered that the disclosure of decompression tables would result in harmonisation of the decompression tables, focusing on the divers' health and lives, not only on the financial benefits of rapid decompression.

193. Mr Vilnes in addition complained that four specific acts or omissions highlighted in his appeal to the Supreme Court (the prior authorisations of the diving operations from (i) *Arctic Surveyor* (ii) *Tender Comet*; (iii) the dispensation given from the requirement as to the maximum length of umbilical used and (iv) the failure to stop the *Tender Comet* diving operation) constituted a failure on the part of the authorities of the respondent State to protect his right to life under Article 2 of the Convention.

194. Mr Muledal, Mr Lindahl and Mr Sigurdur P. Hafsteinsson added to their complaint certain grievances related to their experiences of *test diving* (see paragraphs 44, 50, 57, and 109 to 112 above). They alleged that the State should not have permitted such experiments on human beings for the sole purpose of boosting economic prosperity, but should rather have allocated resources to the development of technical means of solving the issue of maintenance of deep-water pipes. The test diving had endangered the lives of divers who had been unable to withdraw voluntarily, in violation of their right to protection of life and with reference to the Helsinki declaration.

195. The State had been one of the owners of the NUI facilities until 1985, and had laid down the conditions for petroleum exploitation in the North Sea, obliging the oil companies to prove that it was possible to install and maintain pipes down to 400 metres, thus obliging test dives to take place. The State also had observers at the test site. Several medical experts had publicly expressed worries that health concerns had been pushed aside. On site, the authorities observed that dives were not aborted: even when divers lost consciousness or demanded an "all stop" there was no intervention. Although aware of the ongoing activities and the risks and damage to health involved, the State had not intervened to set any limits on test diving.

196. In the NUTEC preparation of the Troll dive in 1985, down to 450 metres, and in which Mr Sigurdur P. Hafsteinsson had participated, the divers were informed that the relevant diving tables had previously been used during the Deep Ex dives, in which there had been no signs of decompression sickness. However, the divers who had participated in the Deep Ex dives had experienced serious signs of decompression sickness.

197. The participant divers also received an Instruction for Training Programme for Onshore Manned Verification from their employer. The Instruction advised the test divers that doppler ultrasound technique would be used to monitor the presence or absence of gas emboli in the carotid artery. Moreover, they were informed that this procedure had been

used previously on two deep dives at NUTEC with satisfactory results. However, when the same procedure was used during the Deep Ex I and II dives, it revealed that gas bubbles were entering the divers' heads during decompression but disturbingly never exited their heads. Those who were still alive were questioning the long-term effects of these cerebral bubbles. Whilst all the test divers who had taken part in the Deep Ex dives had been injured, the information given by the employers to the Troll test divers, namely that the procedure had been used previously with satisfactory results, was therefore misleading and not in compliance with the Helsinki declaration requirements of an informed consent.

198. On several occasions the Ethical Committee had approved test dives which had already taken place, thereby revealing that the ethical control of the dive and the protection of the divers were illusory. For instance, the Comex test dive down to 350 metres had commenced before it was approved by the Ethical Committee. On 27 November 1980 the Ethical Committee had approved the Deep Ex I dive, which had in fact taken place from 4 to 23 November 1980, thus prior to the approval. Given the fact that NUI/NUTEC could carry out experimental diving without seeking the prior consent of the Ethical Committee, it was clear that the experimental dive would be approved under any circumstances. The State had in fact not documented a single incident where a dive had not been approved. The review of experimental diving by the Ethical Committee thereby gave the divers a false sense of protection against dangerous and unethical experimental activity.

2. The Government's submissions

199. The Government invited the Court to rely on the assessment of facts made by the Supreme Court and, concurring with the reasoning of the latter (see paragraphs 146 to 160 above) requested the Court to find no violation of Articles 2 and 8 of the Convention in the present case.

200. An important consideration was that the applicants had of their own volition and in return for considerable sums in remuneration entered into the activities in respect of which they now complained of having been victims of Convention violations.

201. Article 2 was inapplicable since, as the Court held in *Makaratzis v. Greece* ([GC], no. 50385/99, § 50, ECHR 2004-XI), "it [was] only in exceptional circumstances that physical ill-treatment ... which [did] not result in death [might] disclose a violation of Article 2 of the Convention." In the present case, the Government stressed, the applicants were alive; the fact that other divers operating in the North Sea in the same period as the applicants had died from a variety of causes should not influence the Court's assessment of whether the applicants' rights under Article 2 had been breached.

202. In any event, the Government were of the firm view that the respondent State had satisfied its duty to put in place a legislative and administrative framework designed to provide effective deterrence against threats to the applicants' right to life and enjoyed a margin of appreciation in its choice of particular measures (see *Budayeva and Others*, cited above, § 134). Were the Court to find a violation in the instant case it would entail placing an impossible or disproportionate burden on the Norwegian authorities (see *Budayava and Others*, cited above, § 135). There were no examples in the Court's case-law where occupational hazards and the element of voluntary participation in dangerous activities had played a significant role in the Court's assessment of whether the positive obligations under Article 2 had been complied with.

203. Nor were the matters complained of covered by the applicants' right to respect for "private life" within the meaning of Article 8. Whilst the applicants, relying on *Roche (*cited above), claimed that Article 8 applied to the working environment, it should be noted however that in the aforementioned case the Court had found Article 8 applicable because it concerned a complaint about access to essential information which related to the particular source of risk at issue in that case (ibid., § 155). The Court had taken a similar approach in *McGinley and Egan v. the United Kingdom*, 9 June 1998, §§ 96 and 97, *Reports of Judgments and Decisions* 1998-III) where, stressing the particular circumstances at issue there, it had found Article 8 applicable because the applicants had experienced anxiety and uncertainty – feelings that impacted on their "private life" – as a combined result of their exposure to extremely hazardous and intangible dangers *and* their inability to procure essential information about the same dangers.

204. In so far as the Government were aware, the Court had not applied Article 8 in cases regarding occupational risk where the State's obligation to protect workers from injuries had been cited. They invited the Court to adopt the same approach as in *Bykov v. Ukraine* (no. 26675/07 (dec.) 16 April 2009), where it found the applicants' complaints under Article 8 inadmissible as incompatible *ratione materiae* in so far as they cited the right to respect for private life.

205. The Government moreover asked the Court to reject the applicants' submission that the fact that during saturation diving they had remained in diving chambers had brought their right to respect for "home" into play.

206. Further, on the specific issue whether the authorities of the respondent State had a duty to provide the applicants with information regarding the risks involved in diving operations, in particular those related to the use of rapid decompression tables, the Government argued as follows. The case under consideration differed significantly from previous cases concerning the existence of a duty on the part of the State to provide information. Whilst *McGinley and Egan* and *Roche* (both cited above), had concerned the duty to provide information after the occurrence of health

hazards, the instant case concerned a claim that the information should have been provided to individuals prior to their agreeing to carry out the professional activities in question. A further distinguishing feature was that the State's involvement in the relevant activities had been confined to being a regulator and supervisor on the Norwegian Continental Shelf. The divers had not been in the employment of the Norwegian Government but had been employed, or had engaged themselves, in private ventures. To establish a duty for the authorities to actively ensure that an occupational group, prior to undertaking its work tasks, be informed about factors that could be relevant for assessing the health risks potentially involved in their private enterprise, would be to stretch the extent of positive obligations under the Convention way too far. The existing standard on access to information enunciated in *Roche* (cited above, § 160), requiring the establishment of "an effective and accessible procedure" enabling the persons concerned "to seek all relevant and appropriate information" had clearly been complied with in the applicants' case.

207. The authorities had indeed required the diving companies to impart information regarding their tables, and the latter had submitted information regarding diving procedures to the former. This arrangement had already been provided for in Article 121 of the 1967 Norwegian Diving Regulations, and had subsequently been confirmed in the 1978 Temporary Diving Regulations.

208. It was also a fact that the applicants, as individuals who had performed the dives according to the tables, had access to the tables used in their own dives. According to Article 5.3 of the 1978 Temporary Diving Regulations (see paragraph 168 above), the divers were obliged to "be familiar" with the operational procedures to be used. Moreover, since many divers were not permanently employed by just one company but were engaged by different companies for different operations, they had also had access to the tables used by their respective employers. The applicants undoubtedly had access to the various tables today. Also, information relating to the comparison of tables had been available in a report on that subject prepared by the Petroleum Directorate in 1991. Even when the dives had been undertaken the divers had been acquainted with the challenges posed by the use of rapid tables, as specifically stated in section 5.7.4 of the Lossius Report (see paragraph 83 above).

209. More generally, by virtue of the Freedom of Information Act, whatever information was available to the authorities was in principle also accessible to the applicants. The fact that the companies regarded the tables as confidential business information might have prevented the applicants from gaining access. Whether that would have been the case could not be known, since the divers did not pursue such legal avenues.

210. The basic requirements under the positive obligations doctrine were twofold, firstly that the authorities in fact knew or ought to have known the

risks involved, and secondly that on the basis of such knowledge they failed to act reasonably in accordance with it. Relying on the Supreme Court's reasoning as summarised in paragraph 147 (e) and (f) above, the Government maintained that the Norwegian authorities did not fail in this regard.

211. As to what the authorities knew or ought to have known, the Government stressed that there was a broad-based opinion that diving did not have serious long-term effects if there was no decompression sickness. Decompression sickness in itself was not considered to be particularly dangerous. At the same time, it was established that the harmful mental effects of extreme life-threatening situations were known. This was essential information. The authorities did not deny that deep-sea diving could have adverse effects on the health of divers. However, there could only be certainty that those hazardous effects would occur in the event of extreme and life-threatening situations. The Norwegian authorities' responsibility must be measured against what was known at the time the applicants conducted their dives. In this respect, it ought to be recognised that awareness of possible health hazards related to deep dives had come gradually for all parties involved, in accordance with evolving experience, scientific development and new studies. This had been emphasised in the consensus statement from the 1993 Godøysund conference. The point that awareness had developed gradually for all parties concerned, had again been made in the report from the follow-up consensus conference in Bergen in 2005.

212. As to what the Norwegian authorities in fact did in response to what was known at the time, it ought to be observed in the first place that they took active steps to ensure that the tables in use did not constitute health risks. This was for instance the case in 1984, when some diving companies had submitted new tables for saturation diving. The Petroleum Directorate had that year initiated a project which in 1986 resulted in what became the Hempleman Report.

213. Moreover, as was shown in a table prepared by the Petroleum Directorate, from as early as 1980 there had been a dramatic reduction in the number of incidents of decompression sickness. This reduction indicated that the joint efforts of Norwegian authorities and the diving industry was already proving effective at that early stage.

214. The concept of "harmonising" of tables ought not to be confused, as the applicants apparently did, with two other forms of effort undertaken by the authorities: on the one hand, their general work on collecting information and experience regarding tables to enable them to evaluate (as exemplified by the Hempleman Report from 1986, see paragraphs 85 to 88 above) the tables disclosed by the companies, and, on the other hand, their effort to develop specific national tables in the early 1970s (mentioned in section 5.7.4 of the Lossius Report, (see paragraph 83 above).

215. The Government further submitted that as early as 1990, when the work on harmonisation was initiated, there were "only small differences" between the companies' decompression tables, as evidenced by the Petroleum Directorate's Report of 1991. Thus, the harmonising of tables, which was completed in 1991, was a supplement, or rather a complement, to what had already been accomplished with regard to divers' safety. Harmonisation was in itself not crucial for the reduction of decompression sickness.

216. In this connection, it should be borne in mind that, to the Government's knowledge, no other country has yet introduced standardised tables for saturation dives.

217. Ever since operations on the Norwegian Continental Shelf began in the 1960s the Norwegian authorities had been active in reducing the risks involved in offshore diving. The extent to which they had been involved in North Sea activities through regulatory and supervisory measures had been demonstrated in detail before the Court. To this it could be added that, in order to find a scientific basis for decompression procedures and tables that would safeguard divers' health, they pushed research and development, allocating over time an estimated EUR 125,000,000 for these purposes (see section 4.2 of the Lossius Report and the Kromberg Report).

218. Finally, the Government pointed out that the applicants had not provided the Court with sufficiently precise details to enable the Court to ascertain that there was a link of causality between the alleged violations committed by the Norwegian authorities and their individual health problems. In particular, it would not be possible for the Court to hold, on the evidence of the present case, that it was in fact omissions on the part of Norwegian authorities which had prevented the divers from assessing the health risks involved in rapid tables that had been the cause of their health problems. In the absence of the requisite details submitted by the applicants, there might be a whole range of other possible reasons why the applicants' health had deteriorated.

3. The Court's assessment

(a) Introduction

219. The Court is unable to accept the Government's argument, based on *Makaratzis*, that Article 2 was inapplicable. That case concerned, *inter alia*, the use of force by police officers in a hot-pursuit operation which had not in the event been lethal. Irrespective of whether the police had actually intended to kill him, the applicant was found to be the victim of conduct which by its very nature had put his life at risk, even though he survived. The Court found there that Article 2 was applicable and sees no reason for arriving at a different conclusion in the present case.

220. In applying this provision to the instant case, the Court will have regard to the general principles stated in *Öneryıldız* and further elaborated in *Budayeva and Others*, both cited above, as summarised in *Kolyadenko and Others v. Russia*, nos. 17423/05, 20534/05, 20678/05, 23263/05, 24283/05 and 35673/05, §§ 157-161, 28 February 2012:

> "157. The Court reiterates that the positive obligation to take all appropriate steps to safeguard life for the purposes of Article 2 (see paragraph 151 above) entails above all a primary duty on the State to put in place a legislative and administrative framework designed to provide effective deterrence against threats to the right to life (see *Öneryıldız*, cited above, § 89, and *Budayeva and Others*, cited above, § 129).
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> 158. The Court considers that this obligation must be construed as applying in the context of any activity, whether public or not, in which the right to life may be at stake, and *a fortiori* in the case of industrial activities, which by their very nature are dangerous. In the particular context of dangerous activities special emphasis must be placed on regulations geared to the special features of the activity in question, particularly with regard to the level of the potential risk to human lives. They must govern the licensing, setting up, operation, security and supervision of the activity and must make it compulsory for all those concerned to take practical measures to ensure the effective protection of citizens whose lives might be endangered by the inherent risks (see *Öneryıldız*, cited above, §§ 71 and 90).
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> 159. Among these preventive measures particular emphasis should be placed on the public's right to information, as established in the case-law of the Convention institutions. The relevant regulations must also provide for appropriate procedures, taking into account the technical aspects of the activity in question, for identifying shortcomings in the processes concerned and any errors committed by those responsible at different levels (see *Öneryıldız*, cited above, §§ 89- 90, and *Budayeva and Others*, cited above, § 132).
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> 160. As to the choice of particular practical measures, the Court has consistently held that where the State is required to take positive measures, the choice of means is in principle a matter that falls within the Contracting State's margin of appreciation. There are different avenues to ensure Convention rights, and even if the State has failed to apply one particular measure provided by domestic law, it may still fulfil its positive duty by other means. In this respect an impossible or disproportionate burden must not be imposed on the authorities without consideration being given, in particular, to the operational choices which they must make in terms of priorities and resources; this results from the wide margin of appreciation States enjoy, as the Court has previously held, in difficult social and technical spheres (see *Budayeva and Others*, cited above, §§ 134-35).
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> 161. In assessing whether the respondent State complied with its positive obligation, the Court must consider the particular circumstances of the case, regard being had, among other elements, to the domestic legality of the authorities' acts or omissions, the domestic decision-making process, including the appropriate investigations and studies, and the complexity of the issue, especially where conflicting Convention interests are involved. The scope of the positive obligations imputable to the State in the particular circumstances would depend on the origin of the threat and the extent to which one or the other risk is susceptible to mitigation (see *Budayeva and Others*, cited above, §§ 136-37)."

221. The Court cannot but note that, apart from the seriousness of the applicants' allegations under the Convention, the present case is characterised by a high degree of complexity and the presence of a number of imponderable factors. Not only are the facts complained of extensive and dating far back in time, the grievances alleged by the applicants also concern a wide range of alleged failures by the authorities of the respondent State to protect them against occupational injuries raising issues of a highly technical nature.

222. The Supreme Court pointed out that diving was a *risky activity* and that this ought to be the starting point for the assessment. Nonetheless, the Supreme Court continued, it had been clear that the risk to which the North Sea divers had been exposed exceeded what they had the right to expect. When the diving had taken place, uncertainty had prevailed as to the injuries that later materialised. The view that many deep sea dives could lead to neurological injuries had emerged gradually. Even when the Lossius Commission had produced its report at the end of 2002, it concluded that well controlled research on later and delayed effects was missing (NOU 2003:5, p. 43). Under these circumstances, the divers could not be regarded as having accepted the risk of after-effects that were unknown to them. (see paragraph 145 above). The Supreme Court also stated that since under the applicable regulations it had been the task of the authorities to consider whether the diving could be carried out in a safe manner, they had been actively involved in the matter and had been in a position to prevent a given diving operation from taking place (see paragraph 147 (b) above). At the same time, regard ought to be had to the *knowledge* possessed at the material time – an assessment of liability ought not to be based on hindsight – and the fact that, as already mentioned, diving was in itself a risky activity, especially deep-sea diving related to the development of oilfields (see paragraph 147 (c) above).

223. The Court will take the above-mentioned considerations as a starting point for its own examination of the case under the Convention. Unlike the national courts, who examined the matter from the angle of national compensation law (see the summary of the Supreme Court judgment at paragraph 146), it sees no need to consider in detail the degree of involvement of the respondent State in the hazardous activity in question, since the Convention obligation applies to "any activity, whether public or not" (see *Kolyadenko and Others*, cited above, § 158).

(b) As regards the applicants' general grievances

224. Having regard to the careful and thorough review carried out by the national courts at three levels of jurisdiction, notably in their examination of the questions of liability under domestic compensation law, the Court would be cautious about substituting its own assessment of the facts for theirs (see, *mutatis mutandis*, *Klaas v. Germany*, 22 September 1993, §§ 29 and 30,

Series A no. 269); it sees no reason to call into doubt the following assessments made by the Supreme Court and also the High Court (the latter especially on some points not admitted for review by the Supreme Court):

(i) That the *regulatory framework* in place at the relevant time showed that the authorities had sought to protect divers' safety responsibly and to actively improve the protection of their safety (see paragraph 147 (d) above);

(ii) That the publicly funded *supervision* had not been organised in an irresponsible manner (see paragraph 147 (f) above);

(iii) That the authorities had in the main been aware of the North Sea divers' *working conditions* and demands for improvements but, because of deficient reporting, had probably not had a complete picture of accidents and other undesirable occurrences (see paragraph 147 (g) above);

(iv) As regards the *knowledge* possessed at the time of the effects, including long-term ones, of diving, and of the psychological effects of extreme and life-threatening situations (see paragraphs 147 (h)-(i) above);

(v) That the administrative *dispensation* practices regarding the applicable saturation time and length of the umbilical, and the relatively strict rules combined with a lenient attitude to the issue of dispensations had been based on a balancing of interests, hence the view that such practices would lead to better control than under more liberal rules (see paragraph 147 (j) above);

(vi) That, as regards the applicants' general criticism of the *inspections*, those carried out by the Labour Inspection Authority had been fewer in number than those by the Petroleum Directorate, which could mainly be explained by the resources at their disposal (see paragraph 147 (m) above);

(vii) That there was no information to the effect that a lack of *professional qualifications* on the part of other divers had created situations that had endangered Mr Vilnes and Mr Muledal (see paragraph 147 (n) above);

(viii) That the rules imposed on the diving companies contained detailed safety requirements regarding diving *equipment,* that there was little information about episodes concerning the appellants and that no blameworthy passivity on the part of the authorities had been documented (see paragraphs 147 (o) above).

(ix) That the issue of *hyperbaric evacuation* (re. case of Mr Muledal) had been addressed in the 1978 Regulations, and that no passivity on the part of the Labour Inspection Authority or the Petroleum Directorate had been shown, nor could it be assumed that the problem had had any consequences for the appellants (see paragraph 147 (p) above).

(c) As regards grievances related to test diving

225. The Court also notes that, after a detailed assessment of, *inter alia,* Mr Muledal's complaints regarding the *test diving,* the Supreme Court

found no basis for holding the Labour Inspection Authority liable on account of negligence in respect of its authorisation and supervision thereof (see paragraphs 149 and 150 above) nor did it find the authorities responsible for any breach of Articles 3 or 8 of the Convention (see paragraph 160 above). The divers had been informed about the test dives beforehand, the test dives had been approved by the competent bodies after a thorough examination according to relevant medical and ethical norms and guidelines and in the light of information available at the relevant time. There was no support for holding that the delayed injuries sustained by Mr Muledal were attributable to these test dives. The Court finds no grounds to arrive at a different conclusion. Nor does it find any grounds to regard differently the complaints made by Mr Lindahl and Mr Sigurdur P. Hafsteinsson in respect of the test dives in which they had participated (see paragraph 109 above). The suggestion that the Deep Ex I dive had been implemented before approval by the ethics committee is not borne out by the documents presented to the Court, from which it appears that the recommendation of approval pre-dated rather than post-dated the beginning of the dive (see paragraph 109 above, item (e)).

226. The Court is equally not persuaded by their argument that the experiences in the Deep Ex I and II dives had been presented as trouble-free to those who had later participated in the Troll dive (see paragraph 110 above) or that the authorities were responsible for any misleading information being given about those experiences by the employers to the divers on the latter occasion.

227. In the Court's view, it was in the nature of things that test dives, whether they were experimental diving or verification diving (see paragraph 107 above), involved certain risks which made it difficult to compare that kind of activity with North Sea diving operations generally.

(d) Other incidents complained of

228. As regards Mr Vilnes' complaints about what he described as the authorities' four acts or failures to act in relation to certain incidents at *Arctic Surveyor* in 1977 and at *Tender Comet* in 1983 (in respect of which he was denied leave to appeal by the Supreme Court) (see paragraph 143 above), the Court observes that his submissions that on the former occasion he had been exposed to serious decompression sickness owing to excessively rapid decompressions were quite specific and reasonably clear, as was his allegation regarding decompression tables used on the latter occasion. The Court will return to these matters below.

229. On the other hand, most or all of Mr Vilnes' remaining submissions concerning other incidents at the *Arctic Surveyor* in 1977 were too vague as to what he considered had caused them and, in particular, to what extent they had been imputable to any of the specific shortcomings for which he criticised the State, to enable the Court to pronounce any view on the

matter. This was the case, for instance, in respect of his account of the umbilical being pinned under a cement block; his being pulled by the umbilical as the vessel moved in a drift; the gas cut; and the vessel being damaged in a hurricane while he was undergoing saturation (see paragraphs 24 and 25 above). Nor is it clear to what extent Mr Vilnes had been personally affected by the various other deficiencies at the *Tender Comet* which he criticised in a general way (see paragraphs 31 to 37 above) and which the High Court noted (see paragraph 140 above) had been upheld. However, when viewed from the angle of the State's positive obligations under Articles 2 and 8 of the Convention, the Court considers that Mr Vilnes' grievances under these headings are unfounded.

(e) Partial conclusion

230. Thus far, the Court sees no reason for disagreeing with the findings of the national High Court and the Supreme Court in respect of Mr Vilnes and Mr Muledal (see paragraphs 129 to 140 and 146 to 160 above), which it finds equally valid for those five applicants who were awaiting the outcome of those proceedings.

231. What is more, when considering the regulatory framework referred to above, it ought to be relevant that it was possible under national law to establish liability to pay compensation, that Mr Vilnes and Mr Muledal had the merits of their compensation claims heard by the City Court, the High Court and the Supreme Court, and that this opportunity was also available to the remaining five applicants. Furthermore, regardless of the national law on compensation, the respondent State and Statoil had set up special compensation schemes under which divers were eligible to apply for substantial amounts of compensation, which all seven applicants did successfully (see paragraphs 17 to 19 above).

232. Having regard to all of the above considerations, the Court finds it established that the authorities of the respondent State went to some lengths in their efforts to secure the protection of the divers' safety and health by taking a wide range of measures, and that in so doing they acted in a manner that was consistent with their positive obligations not only under Article 2 but also Article 8 of the Convention.

(f) As regards the issue of information on decompression tables

233. It remains, however, that the Court is less convinced that, as argued by the Government, the respondent State bore no responsibility for the fact that diving companies continued to use rapid decompression tables for as long as they did. It observes that the High Court found that Mr Vilnes' decompression sickness in 1977 had most likely been caused by the facts that the diving company had used too rapid a decompression table and there was no medical doctor who could assist him. This incident had probably been a strong contributory cause of his brain and spinal injuries (see

paragraph 139 above). Mr Muledal, Mr Lindahl, Mr Sigurdur P. Hafsteinsson, Mr Nesdal and Mr Jakobsen all submitted specialist medical statements indicating that they had suffered from various forms of bends (see paragraphs 39, 40, 43, 48, 51, 65 And 71 above). Mr Nygård, whose grievances mainly focussed on accidents and near-accidents, as did the relevant medical expert statement, also described experiences of decompression sickness when seeking compensation at the national level (see paragraph 62 above), and the Court accepts his account. All seven applicants furnished evidence of disability, including medical evidence and the grant of disability pensions (see paragraphs 41, 46, 51, 53, 57, 62, 68, 70, 75 above). The Court, having regard to the parties' arguments in the light of the material submitted, finds a strong likelihood that the applicants' health had significantly deteriorated as a result of decompression sickness, amongst other factors. This state of affairs had presumably been caused by the use of too-rapid decompression tables. In this regard it cannot but note that, as observed by the Supreme Court, standardised tables had not been achieved until 1990, following a project financed by the Petroleum Directorate, and that decompression sickness had since then become an extremely rare occurrence. Thus, with hindsight at least, it seems probable that had the authorities intervened to forestall the use of rapid decompression tables earlier, they would have succeeded in removing more rapidly what appears to have been a major cause of excessive risk to the applicants' safety and health in the present case.

234. A preliminary question is whether it would be appropriate to review such an omission under Article 2 of the Convention. From the findings stated in paragraphs 224 to 230 above it follows that the applicants were not personally exposed to life-threatening experiences as a result of any shortcomings on the part of the respondent State. Since the core problem relates to the long-term effects on human health of the use of excessively rapid tables, not to sudden changes in pressure that could have lethal effects, it would seem more appropriate to deal with the matter from the angle of the State's positive obligations under Article 8 of the Convention.

235. In this regard, the Court reiterates that since *Guerra and Others*, cited above, §§ 57-60; developing *López Ostra*, cited above, § 55; see moreover *McGinley and Egan*, cited above, §§ 98-104; and *Roche*, cited above, §§ 157-69), the Court has affirmed a positive obligation for States, in relation to Article 8, to provide *access* to essential information enabling individuals to assess risks to their health and lives. In the Court's view, this obligation may in certain circumstances also encompass a duty to *provide* such information, as can be inferred from the concluding paragraph 60 (concerning Article 8) in *Guerra and Others*, (cited above) and the affirmation of the "public's right to information" with reference to the latter in the context of Article 2 (see *Öneryıldız*, cited above, § 90, and *Budayeva and Others*, cited above, § 132). It does not follow from the foregoing that

this right ought to be confined, as suggested by the Government, to information concerning risks that have already materialised. In relation to Article 2 the Court has held that "among [the] *preventive* measures [to be taken] particular emphasis should be placed on the public's right to information" (emphasis added here) (see *Kolyadenko and Others*, cited above, § 159, quoted at paragraph 220 above), and the position in relation to Article 8 can hardly be different. Nor does it follow that the right in question should not apply to occupational risks, another argument advanced by the Government which is not supported by the decision they cited (see paragraph 204 above).

236. In applying the above principles to the present case, the Court considers that the decompression tables used in diving operations may suitably be viewed as carriers of information which is essential in enabling the divers to assess the health risks involved, in the sense that diving carried out in accordance with the tables would be assumed to be relatively safe, whilst diving which did not respect minimum decompression standards would be deemed unsafe, a perception likely to be reinforced by diving operations being subject to prior administrative authorisation. Thus, the question arises whether, in view of the practices related to the use of rapid decompression tables, the divers received the essential information needed to be able to assess the risk to their health (see *Guerra and Others*, cited above, §§ 57 to 60, *Öneryıldız,* cited above, § 90, and *Budayeva and Others*, cited above, § 132) and whether they had given informed consent to the taking of such risks. This question, it is noted in passing, was among a very broad range of other issues raised in substance before the national courts, albeit without featuring at the centre of the national pleadings, unlike in the Convention proceedings.

237. The Court is not persuaded, as suggested by the Government, that by virtue of Article 121 of the 1967 Diving Regulation the authorities had already required the diving companies to provide information about the diving tables to be used, and that the companies had complied. As observed by the Supreme Court (while making reference to pp. 74-76 (section 5.7.4) of the Lossius Report), "the Labour Inspection Authority did not have access to tables for saturation diving and in late 1972 took the initiative to develop their own Norwegian tables" (see paragraph 147 (h) above). Moreover, in section 5.7.4 of the said report it was stated that "the Norwegian authorities *gradually* gained access to decompression tables for saturation diving [emphasis added]" (see paragraph 83 [14] above). The High Court noted that under certain provisions of the 1978 Regulation (Article 3.4 (1) in conjunction with Article 3(k) of its Appendix), the Petroleum Directorate could demand the production of the diving table used in a given diving operation (see paragraphs 128 and 168 above). The High Court commented in response to this that whether it was safe to use a table should have formed part of the basis for authorising a diving

operation, and that it did not seem reassuring that tables had not been reviewed because employees of the Petroleum Directorate had not understood them (see paragraph 128 above).

238. It rather appears therefore that neither the Labour Inspection Authority nor the Petroleum Directorate required the diving companies to produce the diving tables in order to assess their safety before granting them authorisation to carry out individual diving operations. It seems that the diving companies were left with little accountability *vis-à-vis* the authorities, and were allowed to deal with the tables as their business secrets and thus enjoyed for a considerable period a wide latitude in opting for decompression tables that offered competitive advantages serving their own business interests. According to the Lossius Report (section 5.7.4), regard for divers' health thus ran counter to strong commercial interests, and this issue was well known to the oil companies, the diving companies, divers themselves, diving doctors and the Norwegian authorities (see paragraphs 83 above). The relevant supervisory authorities were aware that the diving companies kept the tables confidential for competitive reasons (see paragraphs 111 to 112 of the Supreme Court judgment quoted at paragraph 147 (k) above).

239. In this connection the Court agrees with the view of the High Court, endorsed by the Supreme Court, that the assessment of what could be regarded as a justifiable risk ought to be based on the knowledge and perceptions of this matter at the time in question (see paragraphs 129 to 130 and 147 (c) above). As regards the *effects of diving*, the Supreme Court reiterated that it had been known that sudden changes in pressure could have a great impact on the body (and, as pointed out by the High Court, those effects could in the worst cases be life-threatening) but there had been less knowledge about the long-term effects. At a consensus conference in Stavanger in 1983, American, British and French specialists in diving medicine had held that diving in accordance with the regulations had been safe. Others, including Norwegian researchers, had not been convinced of this (see paragraph 147 (f) above). At the consensus conference held ten years later at Godøysund the position was largely the same, with a leaning towards the possibility that diving under these conditions might have neurological and psychiatric after-effects. In 2002 the Lossius Commission had concluded that there was no clear evidence that could answer the question (ibid.). The Supreme Court noted that on the evidence the High Court had found it established that it was widely believed that diving did not have serious long-term effects in the absence of decompression sickness. Where such illness only involved temporary pain, notably after treatment in a compression chamber, the condition had also been regarded as relatively risk-free. It appeared that decompression sickness had been regarded as a part of diving, an inconvenience to be avoided but one which had to be accepted. It had been treated with recompression and this treatment had

been regarded as final (NOU 2003:5, p. 76) (ibid.). The Court sees no reason to call this assessment into doubt. In similar vein, it appreciates that scientific research into the matter not only required considerable investment but was also very complex and time-consuming (see paragraphs 85 to 88 above).

240. At the same time, the Court finds it equally unquestionable that the prevailing view was also that decompression tables contained information that was essential for the assessment of risk to personal health involved in a given diving operation. That this was the *raison d'etre* of such tables was well illustrated, for example, by the letter of 10 July 1969 from the University of Newcastle-upon-Tyne to the Norwegian Labour Inspection Authority (see paragraph 81 above) and by the letter of 21 June 1984 from the Petroleum Directorate to the Diving Medical Advisory Committee (see paragraph 84 above).

241. In the last-mentioned document it was stated that the Petroleum Directorate had recently gone through most of the diving tables available and at that time used in the North Sea, and had found "the difference between the slowest and the fastest table disturbing. The difference in decompression time from 1,000 feet [was] close to a week when comparing the fastest and the slowest table. In fact, the fastest table ... considered [was] faster than the Duke Emergency Decompression profile from saturation dive. This Duke table [was] in other companies used as the dive profile for aborted dives in serious emergencies. ... The ... Directorate [was] concerned about these differences and problems as they [were] considered to relate directly to the health and safety of divers" (see paragraph 84 above).

242. However, it does not appear that the authorities took any measures with a view to bringing to the attention of the applicants, or to other divers like them, information enabling them to appreciate whether a table used in a diving operation was comparatively fast or whether it was conservative. As already mentioned above, a considerable period elapsed without the authorities requiring the diving companies to assume full openness about the tables. Nor does it seem that the authorities informed the applicants and other divers of their concerns about the differences between tables and the problems this posed with regard to divers' health and safety.

243. The Court has taken note of the Government's argument that a diver would normally be acquainted with the table he would use in carrying out a diving operation for a given company, and might also be in a position to compare tables when working for other companies. However, whilst it cannot be excluded that some comparative information regarding decompression tables could have reached the applicants in this way, this would only have been at random and could hardly be regarded as sufficient for the purpose of enlightening them about the risks and to enable them to give an informed consent to the taking of such risks.

244. Having regard to all of the above-mentioned considerations, in particular the authorities' role in authorising diving operations and in protecting the safety of such operations as well as the lack of scientific consensus at the time regarding the long-term effects of decompression sickness and the uncertainty about these matters which existed at the time (see paragraph 147 (h) above), in order to minimise the possibility of damage a very cautious approach was called for (see paragraph 85 above). In the Court's view it would therefore have been reasonable for the authorities to take the precaution of ensuring that the companies observe full transparency about the diving tables used and that the applicants, and other divers like them, receive information on the differences between tables, as well as on their concerns for the divers' safety and health, which constituted essential information that they needed to be able to assess the risk to their health and to give informed consent to the risks involved. This the authorities could have done when, for example, granting authorisation of diving operations and upon inspections. Had they done so they might conceivably have helped to eliminate sooner the use of rapid tables as a means for companies to promote their own commercial interests, potentially adding to the risks to divers' health and safety. By failing to do so the respondent State did not fulfil its obligation to secure the applicants' right to respect for their private life, in violation of Article 8 of the Convention. There has accordingly been a violation of this provision.

(g) Recapitulation

245. In sum, the Court concludes that there has been a violation of Article 8 of the Convention on account of the failure of the respondent State to ensure that the applicants received essential information regarding decompression tables enabling them to assess the risks to their health and safety. Having reached this conclusion, the Court considers that no separate issue arises under Article 2 and sees no need for it to consider whether there has also been a violation of the latter in this respect.

II. ALLEGED VIOLATION OF ARTICLE 3 OF THE CONVENTION

246. The first to fourth applicants complained of a violation of Article 3 of the Convention, which in so far as is relevant provides:

> "No one shall be subjected ... to inhuman or degrading treatment ... ."

247. The Government contested that argument.

A. Admissibility

248. Referring to its reasoning at paragraph 178 above, the Court does not find this complaint inadmissible on the ground of failure to exhaust

domestic remedies under Article 35 § 1. It further finds that the complaint is not manifestly ill-founded within the meaning of Article 35 § 3 of the Convention nor inadmissible on any other grounds. Accordingly, the first to fourth applicants' complaints under Article 3 must therefore be declared admissible.

B. Merits

1. The applicants' submissions

249. Mr Vilnes maintained that in violation of Article 3 of the Convention the State had failed to protect him against inhuman and degrading treatment. He had been exposed to life-threatening risks, considerable pain resulting from decompression in accordance with tables "approved" by the State, continuously to noises, gases, internal humidity levels in decompression chambers reaching 90-100%, and pollution from oil and slag. He had not been offered adequate medical treatment after serious spinal decompression sickness and had been exposed to such stress levels that he had been diagnosed as suffering from PTSD (see paragraphs 39 to 41 above). In this connection the applicant referred to the various alternative measures the State could have taken to protect him, mentioned above in relation to his Article 2 complaint.

250. Mr Muledal, Mr Lindahl and Mr Sigurdur P. Hafsteinsson complained that by failing to prevent the test diving in which they had participated from taking place (see paragraphs 109 to 112 above) and/or also by failing to establish an effective supervisory mechanism and/or stop the test diving when the divers had demanded withdrawal, the State had violated their right to protection against inhuman treatment under Article 3 of the Convention. They had not been adequately informed about the experiments and its consequences of the test diving, nor had this been carried out in accordance with their prior consent.

2. The Government's submissions

251. The Government endorsed the Supreme Court's findings (see paragraphs 159 and 160 above) that there had been no violation of Article 3 of the Convention. They did not deny that the applicants had suffered as a result of their diving, and that they had consequently found or were still finding themselves in unfortunate circumstances. They might also feel that they had been treated unfairly and unjustly by the Norwegian authorities in that they had not succeeded domestically with their Convention complaints. However, their situation could not sensibly be viewed as inhuman or degrading treatment as understood in the Court's case-law. Whilst any "suffering or humiliation involved must ... go beyond that inevitable

element of suffering or humiliation connected with a given form of legitimate treatment (see *Kudła v. Poland* [GC], no. 30210/96, § 92, ECHR 2000-XI), the applicants had engaged in diving activities voluntarily and their employment ought to be regarded as "legitimate" for the purposes of the Court's assessment.

252. In the event that Article 3 were to come into play, the Government were of the firm opinion that Norwegian authorities had established "a framework of law" that "provides adequate protection", and, further, that the authorities did take "reasonable steps to avoid a risk of ill-treatment" (see *Mahmut Kaya v. Turkey*, no. 22535/93, § 115, ECHR 2000-III) having regard to what the authorities knew and ought to have known.

3. The Court's assessment

253. As far as Mr Vilnes' complaint is concerned, the Court refers to its findings above under Article 8 that the respondent State's shortcomings were confined to a failure to provide access to information regarding risks involved in the use of rapid decompression tables (see paragraphs 244 and 245 above). In the light of the nature of this omission and the limited extent to which there was knowledge about the long-term effects of decompression sickness (see paragraph 239 above), the Court does not find that the respondent State can be held liable for inhuman and degrading treatment in respect of Mr Vilnes in breach of Article 3.

254. As regards the complaint under Article 3 of Mr Muledal, Mr Lindahl and Mr Sigurdur P. Hafsteinsson, the Court notes that they relate to the same facts (concerning test diving) as those considered above in the context of Articles 2 and 8 above (see paragraphs 225 to 227) and, referring to its reasoning and conclusion above, it finds no violation of Article 3 in their case.

255. Accordingly, there has been no violation of Article 3 of the Convention.

III. MISCELLANEOUS ALLEGATIONS BY MR VILNES OF VIOLATIONS

256. Mr Vilnes further alleged a breach of Article 14 of the Convention, arguing that as a diver he had not enjoyed the protection of the safety rules under the Employment Environment Act, unlike workers performing the same type of jobs onshore. This omission had put his life in danger. He also cited the procedural limb of Article 2, complaining that a police investigation, which had been hindered by the Petroleum Directorate, had not been completed. Later in the proceedings he also cited Articles 6, 11 and 13, arguing that the joinder in the national proceedings of his case to that of others, including Mr Muledal, had resulted in his being compelled to

associate with them, being denied a fair hearing, and that no effective remedy had been available to him in this regard.

257. In respect of the Article 14 complaint, the Government disputed that Mr Vilnes had been subjected to any differential treatment or that any such could not be regarded as objectively justified (legitimate aim, proportionality) bearing in mind the respondent State's margin of appreciation. His situation had been too loosely identified for it to be encompassed by the Court's approach to the term "other status" (see *Clift v. the United Kingdom*, no. 7205/07, §§ 56-59, 13 July 2010). The Government offered no comment on the complaints under Articles 6, 11 and 13.

258. The Court, agreeing with the findings of the Supreme Court (see paragraph 161 above), observes that Mr Vilnes' Article 14 complaint is not sufficiently substantiated to warrant an examination on the merits and should therefore be rejected as being manifestly ill-founded.

259. As regards Mr Vilnes' procedural complaint under Article 2, it does not appear that he raised this either expressly or in substance before the Supreme Court, for which reason he failed to exhaust domestic remedies. His complaints under Articles 6 and 13 were raised in substance only in his comments of 29 January 2012 to the Government's observations, more than six months after the impugned joinder and the final national decision in his case.

260. It therefore follows that these complaints are inadmissible under Article 35 §§ 1 and 4 of the Convention.

IV. APPLICATION OF ARTICLE 41 OF THE CONVENTION

261. Article 41 of the Convention provides:

> "If the Court finds that there has been a violation of the Convention or the Protocols thereto, and if the internal law of the High Contracting Party concerned allows only partial reparation to be made, the Court shall, if necessary, afford just satisfaction to the injured party."

A. Damage

1. Pecuniary damage

(a) The applicants' claims

262. The applicants claimed the following sums in respect of pecuniary damage:

1) Mr Vilnes: 30,278,358 Norwegian kroner (NOK) (approximately 3,984,000 euros (EUR));

2) Mr Muledal: NOK 9,048,599 (approximately EUR 1,191,000);
3) Mr Lindahl: NOK 7,848,430 (approximately EUR 1,033,000);
4) Mr Sigurdur P. Hafsteinsson: NOK 9,018,538 (approximately 1,187,000 EUR);
5) Mr Nygård: NOK 8,792,178 (approximately EUR 1,157,000);
6) Mr Nesdal: NOK 7,409,777 (approximately EUR 975,000);
7) Mr Jakobsen: NOK 10,241,492 (approximately EUR 1,348,000).

263. Mr Vilnes's claim represented his loss of earnings per year, with interest, for twenty-eight years, up to the retirement age of 67 (using his income of NOK 265,500 for 1978 as a starting point and increasing the annual figure in accordance with nominal wage growth). This was a hypothetical income based on his probable natural career without the injuries. He agreed that deduction should be made of the NOK 3,613,657 (approximately EUR 476,000) he had received under the various special compensation schemes (see paragraph 41 above).

264. Mr Muledal, Mr Lindahl, Mr Sigurdur P. Hafsteinsson, Mr Nygård, Mr Nesdal and Mr Jakobsen explained that the above-mentioned amounts had been calculated on the basis of deduction being made of the amounts that they had received in compensation under the said compensation schemes, except that the NOK 200,000 received in *ex-gratia* compensation ought not be taken into account (see paragraph 47, 52, 58, 63, 69, and 76 above). As a result of diving in the North Sea they had sustained injuries and health damages. Some had been able to do other work for some years until their health problems had manifested themselves in an occupational disability, while others had never worked again. However, all of them had suffered major loss of income compared to what they would have earned had they stayed healthy and continued diving in the North-Sea until the age of 55. Thereafter they would have continued in other petroleum-related occupations, such as for example as diving supervisor or superintendent, a common career path, until the regular retirement age of 67. Any benefits provided by the State, such as sickness and disability benefits, had been deducted from their claims. In addition they claimed interests.

(b) The Government's submissions

265. The Government pointed out that the general tenor of the applicants' view was that they had sustained injuries and damage to their health as a result of diving in the North Sea. That was not the same, however, as demonstrating to the Court's satisfaction that their health issues were the result of a violation of the Convention.

266. The Government maintained that the applicants had not furnished the Court with requisite evidence that there was indeed a causal link between the financial loss for which compensation was now being sought and the alleged breaches by the Norwegian authorities. Their health problems might be the result of their diving activities carried out on the

Norwegian Shelf not involving rapid tables, or of activities as divers outside the jurisdiction of the Norwegian authorities, or they could be the result of the applicants' taking risks which Norwegian authorities could not sensibly have been able to forestall.

267. On this basis the Government asked the Court to reject the applicants' pecuniary damage claims.

268. In any event, the sums received by the applicants in *ex gratia* compensation from the Norwegian authorities and from Statoil ought to be deducted if the Court made an award under Article 41, and the sums claimed were excessive.

(c) The Court's assessment

269. The Court reiterates that the well-established principle underlying the provision of just satisfaction is that the applicant should, as far as possible, be put in the position he or she would have enjoyed had the violation of the Convention not occurred (see, *mutatis mutandis*, *Kingsley v. the United Kingdom* [GC], no. 35605/97, § 40, ECHR 2002-IV, and *Muñoz Díaz v. Spain*, no. 49151/07, § 85, ECHR 2009). Furthermore, the indispensable condition for making an award in respect of pecuniary damage is the existence of a causal link between the damage alleged and the violation found (see *Nikolova v. Bulgaria* [GC], no. 31195/96, § 73, ECHR 1999-II, and *Muñoz Díaz*, cited above).

270. However, bearing in mind its findings above, regarding notably the prevailing perceptions and lack of precise knowledge at the material time about the possible long-term effects of decompression sickness, the Court is not able to speculate on what the applicants' position would have been had the violation found of Article 8 of the Convention not occurred. The evidence before it does not show a sufficient causal link between the respondent State's failings as described in paragraph 244 above and the applicants' losses in past and future earnings. In any event, even assuming that parts of the losses claimed are attributable to decompression sickness, the state of the evidence is not such as would enable the Court to make an equitable award under the Convention that exceeds the amounts that they have already received under the various national compensation schemes and which would have to be deducted from any such award. It therefore rejects the applicants' claims under this heading.

2. Non-pecuniary damage

(a) The applicants' claims

271. In respect of non-pecuniary damage Mr Vilnes claimed NOK 5,000,000 (approximately EUR 658,000) and the other six applicants each claimed NOK 64,000 (approximately EUR 8,400), the latter referring

to *Roche* (cited above, § 179) where the Court had awarded EUR 8,000 in comparable circumstances. The applicants maintained that they had suffered feelings of frustration, uncertainty and anxiety.

(b) The Government's submissions

272. The Government asked the Court to reject the applicants' claim for compensation for non-pecuniary damage. The latter had not furnished the Court with any documentary evidence that they had suffered feelings of frustration, uncertainty and anxiety as a result of any breach of the Convention by the Norwegian authorities. The amount claimed by Mr Vilnes, in particular, was clearly excessive. In any event, having regard to the amounts already granted to the applicants by way of compensation under the special compensation schemes, a finding of violation by the Court would constitute adequate just satisfaction for the purposes of Article 41.

(c) The Court's assessment

273. The Court considers that the applicants must all have experienced psychological problems on account of anguish and distress as a result of the violation found of the Convention and that this finding will not suffice as "just satisfaction" for the purposes of Article 41. The Court notes that an amount of NOK 200,000 (approximately EUR 26,000) had already been granted to each of the applicants in *ex gratia* compensation for non-pecuniary damage by Parliament or the Special Compensation Board (see paragraphs 42, 47, 52, 58, 63, 69, and 76 above). Deciding on an equitable basis, it awards each applicant EUR 8,000 under this heading, plus any tax that may be chargeable on that amount.

B. Costs and expenses

274. Mr Vilnes claimed reimbursement of legal costs and expenses totalling NOK 664,128 (approximately EUR 87,000), in respect of the following items:

(a) NOK 526,190 for his lawyers' work in the proceedings before the Court (mostly at the rate of NOK 1,300 per hour);

(b) NOK 131,547 for value-added tax ("VAT") in respect of the above;

(c) NOK 6,391 for expenses incurred for travel and accommodation in connection with the oral hearing before the Court;

275. The remaining six applicants sought reimbursement of legal costs and expenses totalling NOK 1,280,868 (approximately EUR 169,000) in respect of the following items (all inclusive of VAT):

(d) NOK 815,816 for the lawyers' work (538 hours) before the Court until 4 October 2010;

(e) NOK 120,000 for their remaining work thereafter, of sixty-five hours before the Court;

(f) NOK 345,052 incurred by the Offshore Divers' Union before the national courts.

276. The Government argued that the applicants' claims for reimbursement for legal costs were considerable and excessive, not least having regard to the fact that the very same claims of Convention breaches had been made before domestic courts, including the Supreme Court, and also to the fact that the individual plaintiffs in the domestic proceedings had been granted free legal aid. The amounts now sought before the Court were neither reasonable nor necessarily incurred.

277. The Court reiterates that, according to its case-law, an applicant is entitled to reimbursement of costs and expenses only in so far as it has been shown that these have been actually and necessarily incurred and are reasonable as to quantum.

278. In the present case, regard being had to the documents in its possession and the above criteria, the Court first notes that only part of the costs was necessarily incurred in order to obtain redress for the matter found to constitute a violation of the Convention.

279. Accordingly, as regards Mr Vilnes' claim, the Court considers that items (a) and (b) should only be reimbursed in part, whilst item (c) should be refunded in its entirety. Making an assessment on an equitable basis, the Court awards him EUR 40,000, plus any tax that may be chargeable on that amount.

280. Likewise, as regards the other six applicants, items (d) and (e) should be reimbursed only in part. The Court rejects item (f) since it does not concern a party to these proceedings nor costs that appear to have been actually and necessarily incurred by the applicants in order to obtain redress for the violation before the domestic courts. Making an assessment on an equitable basis, the Court awards the other six applicants jointly EUR 50,000 in respect of items (d) and (e), plus any tax that may be chargeable on that amount

C. Default interest

281. The Court considers it appropriate that the default interest rate should be based on the marginal lending rate of the European Central Bank, to which should be added three percentage points.

FOR THESE REASONS, THE COURT

1. *Declares* unanimously the complaints concerning Articles 2, 3 and 8 of the Convention admissible and the remainder of the applications inadmissible;

2. *Holds* by five votes to two that there has been a violation of Article 8 of the Convention on account of the failure of the respondent State to ensure that the applicants received essential information enabling them to assess the risks to their health and lives;

3. *Holds* unanimously that no separate issue arises under Article 2 of the Convention in respect of the above-mentioned failure;

4. *Holds* unanimously that there has been no violation of Articles 2 or 8 of the Convention with respect to the remainder of the applicants' complaints under these provisions;

5. *Holds* unanimously that there has been no violation of Article 3 of the Convention;

6. *Holds* by five votes to two
(a) that the respondent State is to pay the applicants, within three months from the date on which the judgment becomes final in accordance with Article 44 § 2 of the Convention, the following amounts, to be converted into the currency of the respondent State at the rate applicable at the date of settlement:
(i) EUR 8,000 (eight thousand euros) to each applicant, plus any tax that may be chargeable, in respect of non-pecuniary damage;
(ii) EUR 40,000 (forty thousand euros), plus any tax that may be chargeable to Mr Vilnes, in respect of costs and expenses;
(iii) EUR 50,000 (fifty thousand euros) to Mr Muledal, Mr Lindahl, Mr Sigurdur P. Hafsteinsson, Mr Nygård, Mr Nesdal and Mr Jakobsen jointly, plus any tax that may be chargeable to them, in respect of costs and expenses;
(b) that from the expiry of the above-mentioned three months until settlement simple interest shall be payable on the above amounts at a rate equal to the marginal lending rate of the European Central Bank during the default period plus three percentage points;

7. *Dismisses* unanimously the remainder of the applicants' claim for just satisfaction."

Done in English, and notified in writing on 5 December 2013, pursuant to Rule 77 §§ 2 and 3 of the Rules of Court.

Søren Nielsen	Nina Vajić
Registrar	President

In accordance with Article 45 § 2 of the Convention and Rule 74 § 2 of the Rules of Court, the partly dissenting opinions of Judges Lorenzen and Nordén are annexed to this judgment:

N.A.V.
S.N.

PARTLY DISSENTING OPINION OF JUDGE LORENZEN

I entirely share what is said in the partly dissenting opinion of Judge Nordén, which I have joined. I would just like to add that, taking into account the careful and detailed assessment by the Norwegian Supreme Court of the difficult facts dating back many years, as well as of the connected legal issues, the principle of subsidiarity – which is one of the most important principles determining the scope of the Court's jurisdiction – should also have led the Court to respect that assessment and find no violation of Article 8 of the Convention.

PARTLY DISSENTING OPINION OF JUDGE NORDÉN, JOINED BY JUDGE LORENZEN

The majority of the Court has found a violation of Article 8 of the Convention on account of a failure by the respondent State to ensure that the applicants received essential information regarding decompression tables.

I agree with the majority that it is most appropriate to deal with the matter from the angle of the State's positive obligations under Article 8, the core problem being the long-term effects on the applicants' health (see paragraph 234 of the judgment). I regret, however, that I am unable to share the majority's view that there has been a violation of Article 8 in this respect. My reasons may be outlined as follows.

It is common ground that a right of access to information enabling individuals to assess risks to their life or health may follow from Article 8 of the Convention based on the assumption that access to such information might have an impact on their private lives. However, when cases are decided by the application of broadly worded general principles to a set of concrete circumstances with little use of general guidelines to serve as building blocks, a careful scrutiny of the circumstances of the given case is called for in order to assess the relevance of previous judgments.

According to my perception, the issue of access to information in the judgments referred to by the majority in paragraph 235 arose in different contexts. In my opinion none of those judgments support the finding of a violation of Article 8 in the present case.

In *Roche v. the United Kingdom* ([GC], no. 32555/96, ECHR 2005-X), the applicant had been denied access to information relating to his participation during military service in the testing of nerve gas and mustard gas on military personnel. The anxiety and stress caused by the uncertainty as to what he had been exposed to had such an impact on his present private life that Article 8 was applicable. A violation of the procedural aspect of that provision was found as the State had failed to provide an effective and accessible procedure enabling him to have access to all relevant and appropriate information which would allow him to assess any risk to which he had been exposed (ibid., §§ 161 to 162). The issues at stake in *McGinley and Egan v. the United Kingdom* (9 June 1998, Reports of Judgments and Decisions 1998-III), concerning participation in nuclear tests, were essentially the same. In that case a violation was not found, however, as an effective procedure was accessible to the applicants.

The present applicants have not been denied access to any information relating to their career as divers. When the issue of possible delayed injuries arose, the authorities actively contributed to the investigation, foremost by appointing the Lossius Commission and financing research (see paragraph 15). In this respect, the present case is clearly distinguishable both from *Roche* and from *McGinley and Egan*.

In *Öneryıldız v. Turkey* ([GC], no. 48939/99, § 71, ECHR 2004-XII), *Budayeva and Others v. Russia* (nos. 15339/02, 21166/02, 20058/02, 11673/02 and 15343/02, ECHR 2008), and *Kolyadenko and Others v. Russia* (nos. 17423/05, 20534/05, 20678/05, 23263/05, 24283/05 and 35673/05, §§ 157-161, 28 February 2012), the issue of access to information arose in a different context. It follows from the case-law of the Court that when the authorities know or ought to have known of a real and immediate risk to life, they have a positive obligation under Article 2 of the Convention to take such preventive measures as are necessary and sufficient to protect those individuals whose lives are endangered (see, among other authorities, *Öneryıldız*, cited above, § 101). In a number of judgments the term "real and immediate risk" is used when considering the scope of the State's obligations under Article 2 in different circumstances (see, among other authorities, *Osman v. United Kingdom,* 28 October 1998, § 116 *in fine*; *Mastromatteo v. Italy* [GC], no. 37703/97, § 68, ECHR 2002-VIII; and *Makaratzis v. Greece* [GC], no. 50385/99, § 71, ECHR 2004-XI).

In the context of dangerous activities the scope of positive obligations under Article 2 largely overlaps with those under Article 8 (see *Kolyadenko and Others*, § 212, and *Budayeva and Others,* § 133, both cited above).

As set out in paragraph 220 of the judgment with reference to the general principles stated in *Öneryıldız* and further elaborated in *Budayeva and Others* and *Kolyadenko and Others*, among the preventive measures available to the State particular emphasis should be placed on the public's right to information. The circumstances in those cases were similar in that they concerned disastrous events; a methane gas explosion on a waste collection site, a mudslide and a flood, respectively. As a common denominator the authorities had remained passive and failed to do anything to protect exposed individuals, not even to inform them about the imminent risk to their lives. In all those cases it was evident from the assessments made of the authorities' passivity that they had been aware of the inherent risks and that they were much to blame.

The assessment may be more complicated in the context of long-term effects of a continuing situation, as in the present case, than when considering a single hazardous event. In this connection, case-law concerning environmental hazards such as the judgment in *Guerra and Others v. Italy* (19 February 1998, Reports 1998-I), as discussed in paragraphs 235 to 236, may provide more guidance. In my opinion, the present case is, however, distinguishable from *Guerra.* In brief, that case concerned the operation of a chemical factory classified by the authorities as "high risk" according to the criteria set out in the "Seveso" directive. In the course of its production cycle, the factory had released large amounts of flammable gas and other toxic substances, including arsenic trioxide. The emissions had often been channelled towards the applicants' village nearby. Moreover, in 1976 150 people had been hospitalised on account of acute

arsenic poisoning caused by an explosion in the factory (ibid., § 57). The direct effect of the toxic emissions on the applicants' right to respect for their private and family life meant that Article 8 was applicable and a violation was found. The Court in particular emphasised that "the applicants waited, right up until the production of fertilisers ceased in 1994, for essential information that would have enabled them to assess the risks they and their families might run if they continued to live at Manfredonia, a town particularly exposed to danger in the event of an accident in the factory" (ibid., § 60).

In *Guerra*, the account of the circumstances given in the judgment leaves no doubt as to the authorities' knowledge of the adverse health effects and dangers to the local population mentioned above. Moreover, the authorities had failed to comply with a statutory obligation to provide the local inhabitants with such information (ibid., §§ 25-27). The domestic legality of the authorities' acts or omissions should be taken into account in assessing whether the respondent State has complied with its positive obligation (see paragraph 220 of the judgment).

Bearing in mind the overall assessment by the unanimous Court in paragraph 232 and its adherence to the assessments made by the national courts in paragraph 224, I fail to see that the circumstances in the present case bear a resemblance to any previous case in which a violation of the Convention has been found. The differences are striking. The framework of this opinion does not allow any detailed assessment, but I would briefly mention the following significant points.

In my opinion, the extent to which the use of rapid decompression tables did in fact contribute to the applicants' subsequent medical problems is far from clear. These are complex and difficult scientific questions that this Court is not particularly well suited to deal with (see the English summary of the Lossius report, p. 134, section 3.4.5, and the quotation of section 7.4 of the report in paragraph 83 of the judgment). In any case I do not find the causality issue to be decisive here. I emphasise that an unrealistic burden should not be imposed on the authorities and that their conduct should not be evaluated with the wisdom of hindsight.

As a starting point, I subscribe to the assessments made by the majority in paragraph 239 regarding the prevailing view at the relevant time as to the possible long-term effects of deep-sea diving.

The statistics mentioned in paragraph 92 indicate that the frequency of decompression sickness was decreasing during the years prior to the adoption of standardised tables in 1990 and that it had been a relatively rare occurrence. As a result of under-reporting, the authorities probably did not, however, have the complete picture (see paragraph 224 (iii)).

There was an uneasy feeling among many people connected with diving that perhaps the current procedures could be causing long-term damage to sensitive tissue like the central nervous system. In my opinion, the

authorities' approach in general was appropriate. They showed engagement in order to obtain enhanced knowledge about possible long-term effects (see paragraphs 85 to 88). The conferences in Stavanger in 1983 and in Godøysund in 1993 were manifestations of this engagement. The process seems to have been transparent. It is not asserted that the divers or their organisations were denied access to significant information.

The decompression tables used by the diving companies could be said to provide information of significance for the divers' health (see paragraph 236). The information contained in the tables was, however, rather incomprehensible. Even experts in diving medicine had difficulties in achieving a clear understanding of them. Access to the tables therefore would probably have been of limited use for the divers (see in this respect paragraph 184). The question arises, however, whether the authorities should have done more to ensure that the applicants received essential information regarding decompression tables for the purpose of enlightening them about possible risks.

In retrospect, one could wish that the authorities had pursued the objective of achieving standardised decompression tables with more energy than they appear to have done, at least in the relevant periods. It is conceivable that decompression sickness in that case might have been eliminated sooner, thus improving the safety of the divers and reducing the risk of such long-term injuries as those at issue in the present case. Whilst I do not rule out the possibility that access to information regarding decompression tables for divers at an earlier stage could have contributed to this development, I find the question somewhat hypothetical. In the light of the undisputed information submitted to the Court showing that Norway is so far the only country to have adopted standardised tables, one should not be too critical.

In sum, I fail to see how the fact of omitting to provide the applicants with information regarding the decompression tables sooner than the Norwegian authorities actually did can justify a finding of a violation of Article 8 of the Convention or, still less, of Article 2. When applying the general principles relating to the right of access to information established in the case-law to the concrete circumstances of the present case, to assign liability would entail a significant expansion of a State's positive obligation under Article 8 in this respect.

Since my conclusion is that there has been no violation of the Convention by the respondent State, I also find that the applicants' economic claims should be rejected entirely.