

Protection of Nuclear Facilities Against Aircraft Crash Legal Aspects Concerning Licensing and Supervision Currently Under Discussion in Germany

by Ulrike Feldmann*

I. Introduction

The German Atomic Energy Act (*Atomgesetz* – AtG)¹ demonstrates that there was awareness of the possibility of sabotage, malevolent acts and other illegal interference by third parties in relation to nuclear facilities long before 11 September 2001, insofar as a licence:

- for the storage of nuclear fuel [Section 6 AtG];
- for erection, operation or otherwise holding of a stationary nuclear installation [Section 7 AtG]; or
- for the treatment, processing and other utilisation of nuclear fuel outside installations requiring a licence [Section 9 AtG];

may only be granted if – besides the fulfilment of other licensing requirements:

- the necessary precautions have been taken in the light of the state of the art in science and technology to prevent damage resulting from the storage or utilisation of nuclear fuel, or from the erection and operation of the installation [Section 6(2)(2); Section 7(2)(3); Section 9(2)(3) AtG]; and if
- the necessary protection has been provided against disruptive action or other interference by third parties [Section 6(2)(4); Section 7(2)(5); Section 9(2)(5) AtG].

According to German law the term “necessary precautions” (also called “prevention of damage” – *Schadensvorsorge*) means – as interpreted by the Federal Constitutional Court and the Federal Administrative Court – protection against danger (*Gefahrenabwehr*) and precaution against risks (*Risikovorsorge*).

The licensee must take every precautionary measure against danger (*Gefahrenabwehr*) with no regard to costs. The licensee must also take precautionary measures against risks (*Risikovorsorge*), but the measures, especially the costs, must be proportional to the risk which they prevent (Principle of proportionality). If it seems virtually impossible that damage could occur, the licensee is not obliged

* Ulrike Feldmann is Legal Adviser at the Wirtschaftsverband Kernbrennstoff-Kreislauf e.V. – the German Association for the Nuclear Fuel Cycle. The facts mentioned and the opinions expressed are the responsibility of the author alone.

1. The 2002 consolidated text of this act is reproduced in the Supplement to NLB 70.

by the Atomic Energy Law to take any measures at all. According to the ruling of the Federal Constitutional Law Court,² uncertainties beyond the level of practical common sense are based on the limitation of ability of human perception and have to be regarded as part of everyday “life-risks”, which have to be tolerated by everybody. This remaining risk is referred to in German law as *Restrisiko*, which might be translated as “residual risk”.

This categorisation of risks has decisive implications on the legal means available to the licensing and supervisory authorities after having granted the licence. The licensing authority may only impose obligations or revoke licences or approvals under Section 17 AtG if the necessary precaution against risk has not been taken, and not simply because there remains a residual risk. The same applies to the legal means available to the supervisory authority.

Being regarded as highly unlikely before 11 September 2001, aircraft crashes were mostly seen as subject to the provisions on necessary precautions [Section 6(2)(4) AtG and Section 7(2)(3) AtG] rather than those concerning the necessary protection against disruptive action etc. [Section 6(4)(2) and Section 7(2)(5)].

The question of whether the wording “the necessary precautions have been taken in the light of the state of the art in science and technology to prevent damage resulting from the erection and operation of the installation” has to be interpreted in the sense that the necessary precautions include precautions against the crash of an aircraft was thoroughly discussed during licensing procedures for nuclear power plants and other nuclear installations in Germany before 11 September 2001. However, the evaluations were based on the premise that such a crash would be accidental. Before 11 September the opinion broadly shared by German lawyers was that the probability of an accidental aircraft crash seemed so small that no requirements were necessary in the sense of “necessary precautions”. At that time nobody could imagine that a civil aircraft could be deliberately crashed, and terrorist attacks were not thought to fall under the scope of the Atomic Energy Act.

However, in cases foreseen for example in Section 7(2) AtG, where a licence “may” only be granted (and not “shall be granted” as in Section 6(2) AtG) the licensing authority is not obliged “automatically” – although all preconditions named in Section 7(2) AtG have been fulfilled – to grant the licence, because in these cases the licensing authority retains the “right of refusal” (*Versagungsermessen*). It goes without saying that the authority cannot arbitrarily dispose of this special right of refusal, but only by bringing forward serious reservations against the planned nuclear installation. Within its power of discretion the authority can oblige the licensee to take additional precautionary measures, i.e. measures against the residual risk (*Restrisiko*).

Due to this legal instrument, to precautionary measures voluntarily taken by licensees and to the multiple-barrier-protection-system, to which all nuclear power plants adhere, there already existed an extensive protection system against an aircraft crash before 11 September 2001. In addition, all nuclear power plants in respect of which the first partial construction licence was granted after 1973 were required to meet the criteria laid down in 1974 in the – classified – guidelines 19.1 on the crash of aircraft released by the Reactor Safety Commission (*Reaktorsicherheitskommission* – RSK).³ From 1979 onwards these guidelines foresaw the necessity of protection against the crash of a fast-flying military jet.

2. Order of 8 August 1978 (concerning the NPP Kalkar), BVerGE 49,89, p. 143; published in *Neue Juristische Wochenschrift* (NJW) 79, 359 (363).

3. RSK is an advisory body of the Federal Ministry for Environment, Nature Conservation and Nuclear Safety.

II. Developments after 11 September 2001

Following the terrorist attacks on 11 September 2001, the risk of aircraft impact has been under re-evaluation and the following questions are newly debated in Germany:

- whether aircraft crashes and especially deliberate ones fall within the scope of the Atomic Energy Act, and if so:
- whether deliberate aircraft crashes are still to be regarded as a residual risk, i.e. as part of the everyday life-risk (*Restrisiko*) or whether 11 September has led to a new security assessment which requires additional security measures according to Section 6(2)(2) AtG, or Section 7(2)(3) AtG;⁴ or
- whether aircraft crashes should be considered under Section 6(2)(4) AtG or Section 7(2)(5) AtG and whether the necessary protection has to be taken in the light of “the state of the art in science and technology” as foreseen in Sections 6(2)(2) and 7(2)(3) respectively.

Soon after 11 September 2001, discussions at administrative and industrial levels started to evaluate the risk of a deliberate crash of a large civil aircraft. The Federal Ministry for the Environment asked, among others, the Company for Reactor Safety (*Gesellschaft für Anlagen und Reaktorsicherheit mbH – GRS*)⁵ to re-evaluate the risk assessment for nuclear facilities regarding protection against deliberate crashes of civil aircraft. Furthermore, the Federal Ministry discussed this topic with the Federal Ministry for the Interior and the Ministries for the Interior of the German federal states (*Länder*) as well as with the supervisory bodies of the *Länder*.

The outcome of the legal discussions was, as could be expected, that it was impossible to reach a unanimous opinion on the legal categorisation.⁶ The owners of nuclear installations are of the opinion that terrorist attacks are comparable to acts of war, which undoubtedly do not fall within the scope of the Atomic Energy Act. This view is supported by the Law on Air Safety (*Luftsicherheitsgesetz*), which was recently signed by the president of the Federal Republic of Germany. This law allots responsibility of preventing aircraft attacks to the state and not to private bodies. Nevertheless, the nuclear industry offered to take additional organisational and structural measures on a voluntary basis.

In its answer to parliamentary questions from the fraction of the Free Democratic Party⁷ the federal government answered – in line with the concept of the Law on Air Safety – that combating terrorism is basically the responsibility of the state, but that the state alone cannot guarantee security. Therefore, the owner of a nuclear installation is responsible for the basic preventive security of the plant against the impacts of external dangers (e.g. structural security measures, surveillance of the plant or checking of external personnel). The prevention of specific dangers lies within the responsibility of the police, i.e. the state. In its answer to the above-mentioned parliamentary questions, the federal government also stated that it had agreed with the Ministries for the Interior and

4. In this context Section 9 is of no practical relevance.

5. GRS is a scientific-technical expert and research organisation.

6. The same applies to the discussion within the judicial literature, although it seems that the majority of legal experts dealing with this subject are of the opinion that terrorist attacks on nuclear installations do not fall within the scope of the Atomic Energy Act and, even if they would, such risks would have to be regarded as part of the everyday life-risk.

7. *Bundestags-Drucksache* 15/2829 of 31.03.2004, p. 4.

the supervisory bodies of the *Länder* on certain – classified – technical, personnel and organisational security measures at nuclear sites but also at airports and in aircraft. One of these measures taken by the competent authorities, for example, was to install a no-flying zone around every nuclear

Until today, a unanimous opinion has not been provided on the legal categorisation of nuclear measures foreseen under level 4 – either through licensing decisions, case law, or in the legal literature. It seems that in the legal literature, many authors dealing with the subject of terrorist attacks on nuclear installations, if not the majority, are still of the opinion that terrorist attacks are comparable to acts of war and that therefore these incidents do not fall within the scope of the Atomic Energy Act. But even when assuming that these incidents fall within the scope of the Atomic Energy Act, these authors refuse to recognise an obligation of the licensee to take precautionary measures, because these incidents seem highly unlikely and are to be regarded as remaining residual risks.¹⁰ Furthermore, it is pointed out that even if an aircraft crash should be considered under Section 7(2)(5) AtG, the principle of proportionality, which undoubtedly is an unwritten fundamental principle, has to be observed. Therefore back-fitting measures against the crash of a large modern civil aircraft could not be imposed on the licensee because these measures would be disproportionate.¹¹

1. Impact of the legal discussions on licensing procedures

Whenever an operator now applies for authorisation under Sections 6 or 7 AtG, the question of whether and how the respective nuclear installation meets the requirements to ensure protection against aircraft impact plays a key role in the licensing procedure. Licences issued under Sections 6 and 7 AtG will in future specifically state that the nuclear installation in question meets the requirements against aircraft impact.

Interim storage facilities

This was, for instance, the case, when the Federal Office for Radiation Protection (*Bundesamt für Strahlenschutz – BfS*), which is – among others – responsible for licensing the storage of nuclear fuel, granted the operation licence for the interim on-site storage facility at the nuclear power plant in Lingen on 7 November 2002. In the licence, BfS emphasised that the extreme scenario of a deliberate crash of a large aircraft had been investigated. The experts, consulted by the BfS, confirmed that even in this case no inadmissible radiological consequences were to be feared. This expertise was also confirmed by BfS for other interim on-site storage facilities.¹² BfS stated expressly that acts of terrorism and sabotage must be considered under Section 6(2)(4) AtG.

Transportation casks and storage casks

In connection with the licensing procedures for the on-site interim storage facilities, the Reactor Safety Commission stated on 11 July 2002 that the different types of licensed transportation casks and

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10. See for example: Leidinger, *Die Verantwortung des Betreibers für den Schutz vor Einwirkungen Dritter*, *Deutsches Verwaltungsblatt (DVBl)* 2004, 95-103; Ossenbühl, *Terroristische Angriffe auf Kernkraftwerke – aus rechtlicher Sicht*, *Neue Zeitschrift für Verwaltungsrecht (NVwZ)* 2002, 290-297; Böwing, *Die Vorsorge gegen äußerst seltene, auslegungüberschreitende Vorfälle im Atomrecht – die Sicht der Betreiber*, lecture given on 12. *Deutsches Atomrechtssymposium in Köln*, 7 Oct. 2003.
 11. See in this respect Sendler, Former President of the Federal Administrative Court, in *Neue Zeitschrift für Verwaltungsrecht (NVwZ)*, 2002, p. 681.
 12. See www.bfs.de/transport/publika/flab18062003/printversion.

storage casks guarantee, due to their specific construction, the safe enclosure of the radioactive substances even in the event of a forced crash of a common type of large aircraft.¹³

Nuclear fuel assembly plant

The Ministry for the Environment of Lower Saxony issued a licence for alteration of fabrication of the nuclear fuel assembly plant (Advanced Nuclear Fuel GmbH) in Lingen on 21 March 2002. In contrast to BfS, the Ministry of Lower Saxony classified rare incidents like the crash of a fast military jet or a deliberate crash of a civil aircraft as “residual risk”, against which the applicant is not obliged by Section 7(2)(5) to take “necessary precautionary measures”. The Ministry of Lower Saxony based its opinion on the actual status report by the Ministry for the Interior, according to which no specific risk of a deliberate aircraft crash existed for the fuel element fabrication at the time the approval was granted. The Ministry added that meanwhile – since 11 September 2001 – special measures to ensure flight security and supervision of air traffic had been taken, minimising even further the abstract “residual risk”¹⁴ existing.

Enrichment plant

More recently, on 14 February 2005, another nuclear licence was granted. The Ministry for Traffic, Energy and Land Planning of Northrhine-Westphalia (*Ministerium für Verkehr, Energie und Landesplanung von Nordrhein-Westfalen – MVEL*) granted Urenco Germany permission for the final extension of the enrichment plant in Gronau and the construction of a storage facility. Of course, aircraft impact was addressed in the licensing process. The Northrhine-Westphalian Ministry stated that the deliberate crash of an aircraft does not belong to those incidents against which precautionary measures have to be taken according to the special security guidelines. Therefore special radiation protection dose limits do not exist for such an incident and have not to be established. Nevertheless, the Northrhine-Westphalian Ministry categorised measures against accidental and deliberate aircraft impact as “necessary precautions” in the sense of Section 7(2)(5) AtG, in light of which additional construction measures have to be taken. On the other hand, the Ministry emphasised that only an integrated security concept will be able to guarantee the necessary protection and that this concept must include security measures taken by the state, the licensees and other institutions or persons concerned according to responsibility and possibility of action.

Nuclear power plants

The issue of terrorist attacks on nuclear installations not only plays a key role in the licensing procedures but is also an important topic for the Federal Ministry for Environment and its advisory body, the Federal Office for Radiological Protection. As the present German government favours the phasing-out of nuclear energy, the subject of terrorist attacks has been used to re-evaluate existing licences.

After a licence has been granted, the authorities can only impose subsequent requirements (back-fitting measures) under certain conditions named under Section 17(1) AtG. Similarly, once

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13. RSK-Report, *Sicherheit deutscher Zwischenlager für bestrahlte Brennelemente in Lagerbehältern bei gezieltem Absturz von Großflugzeugen*, www.rskonline.de (Stellungnahme/FLABZWILAG).
 14. Approval for alteration of the fabrication of nuclear fuel elements issued by the Ministry for the Environment of Lower Saxony on 21 March 2002, p. 20-21.

granted, licences and approvals can only be revoked under the conditions foreseen under Section 17(1). Of special interest in this connection is Section 17(5) AtG:

“Licences or general approvals shall be revoked if such revocation is necessary to avoid substantial hazards to the personnel, third parties or the general public and if subsequently imposed obligations cannot remedy the situation within a reasonable period of time”.

2. *Court decisions dealing with terrorist attacks*

Federal Administrative Court

The fundamental court decision in which the question of terrorist attacks and aircraft crashes played a decisive role was the decision of the Federal Administrative Court (*Bundesverwaltungsgericht*) on 19 January 1987 concerning the nuclear power plant in Neckarwestheim. In connection with the question as to whether or not the authority could oblige the licensee to equip the on-site security service with guns, the Federal Court held that the level of necessary precaution under Section 7(2)(5) AtG depends on the state of the art in science and technology as in Section 7(2)(3) AtG and that incidents such as an aircraft crash fall within the scope of Section 7(2)(5) AtG.¹⁵ Further, the Federal Court held that the authorities can oblige the licensee to take structural-technical measures to prevent damage for a certain period of time (about half an hour) until the arrival of the police.

Supreme Administrative Courts

In its decision of 28 May 1997, the Higher Administrative Court of the Land of Berlin (*Oberverwaltungsgericht Berlin*) stated that the possibility of a crash of an aircraft or a helicopter on a nuclear reactor has to be regarded as a residual risk (*Restrisiko*)¹⁶ because of the extremely low probability of the risk-determining event of the crash of a fast flying military jet.

In its decision of 7 October 2004, the Higher Administrative Court of the Land of Bavaria (*Bayerischer Verwaltungsgerichtshof*) dismissed the suit taken by a neighbour against the third partial construction licence for the research reactor FRM II in Munich.¹⁷ The main reasoning was as follows:

the fact that the amendment of the Atomic Energy Act of 22 April 2002 has not forbidden the licensing of research reactors shows that, in principle, such licences can be granted. The claimants had not proved a gap in the necessary protection against disruptive action by third parties or terrorist attacks. The risk-examination and the risk-evaluation by the licensing authority gave no cause for complaint. The licensing authority has prescribed precaution measures against a deliberate aircraft crash as well as precaution measures against terrorist acts from within the nuclear installation.

The Higher Administrative Court did not deal with the crash of an Airbus-380, because this type of an aircraft was not in operation at the time the licence was granted.

Nonetheless, the Supreme Court did not deny in principle that subsequent requirements (for example structural-technical measures) might be imposed on the licensee.

15. BVerwGE 81, 185, published in “*Neue Zeitschrift für Verwaltungsrecht*” (NVwZ) 89, 864 (866).

16. OVG Berlin, file reference number: OVG 2 A 2.91, decision (copy), page 36.

17. www.vgh.bayern.de (Entscheidungen/File reference number: 22 A 03.40036).

The Higher Administrative Court of the Land of Northrhine-Westphalia (*Oberverwaltungsgericht Nordrhein-Westfalen*) heard a claim that the central interim-storage facility in Ahaus had no protection against the forced crash of a large civil aircraft with a full tank.¹⁸ In its decision of 2 September 2004, the Higher Administrative Court had doubts whether the scenario of a crash of a large civil aircraft could be of any relevance for the interim storage facility in Ahaus, which in the opinion of the Court did not seem very likely as an aim for terrorist attacks. However, the Court could leave this question open as the claim against the storage licence (granted under Section 6 AtG) had been filed before 11 September 2001 and as the claimants had applied to withdraw the licence and not to oblige the licensee to take back-fitting measures.

Civil Court

In its decision of 27 October 2004, the Civil Court of First Instance in Hannover (*Landgericht Hannover*) ruled on a claim for compensation against a German tourist office concerning injuries suffered by a German tourist following the terrorist attack in front of a synagogue in Djerba on 11 April 2002. The Court rejected the claim. In its findings the Court stated that terrorist acts, which are not based on riots similar to civil war, are part of the everyday-life risk and therefore have to be tolerated by everybody.¹⁹

Several legal proceedings are still pending. Actions have been filed against the interim storage facilities on the sites of the nuclear power plants in Grafenrheinfeld, Gundremmingen and Niederaichbach. The precautionary measures against terrorist attacks play a key role in these proceedings.

Actions have also been filed against some of the nuclear power plants in Germany. The plaintiffs argue that 11 September 2001 has led to a new risk assessment and that therefore the necessary protection against disruptive action or other interference by third parties under Section 7(2)(5) AtG (i.e. measures against the forced crash of a large civil airliner with a full loaded fuel tank) is not assured.

Conclusion

The central legal question of whether a deliberate aircraft crash has to be regarded as part of everyday-risk or as an event against which the licensee is obliged by law to take precautionary measures still remains unsolved.²⁰ A broad consensus exists since 11 September 2001 between all parties involved that, despite the very high security standard of nuclear facilities in Germany, additional measures against such terrorist attacks should be taken.

18. Decisions of the Supreme Administrative Court of Northrhine-Westphalia are published on its homepage www.justiz.nrw.de/RB/nrwe; File reference number: 20 D 13/98.AK.

19. www.landgericht-hannover.niedersachsen.de/master/C6614037_N6258025_L20_DO_14800694.html (Entscheidungen/File reference number: 13 O 114/04)

20. Another disputed issue is whether the owner of a nuclear installation is entitled to compensation (according to Section 18 para 3 AtG) in cases where he is obliged by the authority to take back-fitting measures.