
**Meeting of the States Parties to the Convention
on the Prohibition of the Use, Stockpiling,
Production and Transfer of Anti-Personnel
Mines and on Their Destruction**

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English only

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Item 10 of the provisional agenda

Consideration of the general status and operation of the Convention

**Declaration of completion of implementation of article 5
of the convention**

Submitted by Denmark*

1. Denmark ratified the Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on their Destruction on 8 June 1998. The Convention entered into force for Denmark on 1 March 1999. In its initial transparency report submitted on 27 August 1999, Denmark reported that there were areas in Denmark that were known and suspected to contain anti-personnel mines. In doing so, Denmark acknowledged that it had an obligation under Article 5 of the Convention to address these areas under its jurisdiction or control and to destroy or ensure the destruction of all anti-personnel mines contained in these areas as soon as possible and no later than 1 March 2009.

2. The landmine problem in Denmark originated from the Second World War when approximately 1.4 million mines were laid in Denmark, mostly along the coasts. Almost all of these landmines were removed over the period of 1945 – 1947. Demining stopped in 1947 due to major difficulties with the clearance and quality control of mainly dunes and salt marsh areas with the remaining contamination located in the southern part of western Jutland on the North Sea coast, on a 10 kilometres long peninsula named Skallingen. This area was fenced off and the social and economic impact of this remaining mined area was minimal with no accidents having been recorded in the area since post war clearance ended in 1947. Social implications included the fact that tourists could not walk to the south end of Skallingen, small boats from Esbjerg could not land and hunters could not hunt in the area concerned.

3. At the time of signing the Convention, Denmark did not have a structure suited for dealing with large scale mine clearance operations. The Danish Coastal Authority (KDI) under the Danish Ministry of Transport which owns the area was appointed to establish an organisation to plan and manage the clearance operations. The organisation was established in 2005 within the KDI consisting of a project manager, a quality manager and a GIS

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manager. KDI was also tasked with carrying out commercial tenders for the clearance operations and, when operations were ongoing, carrying out quality assurance and quality control with the aid of independent quality assurance companies. During the 2005 summer, an eight kilometre long International Mine Actions Standard (IMAS) compliant fence was erected to replace and compliment the old fence and sign postings.

4. At the time of signing the Convention, the remaining suspected area was estimated to be approximately 300 hectares which was fenced off from the public. A buffer zone was included due to inconsistencies in the available mapping information. Of the approximate 300 hectares, 95 hectares was beach, which was deemed to be mine contaminated due to the eroding coastline. However, once modern maps were compared with 1944 German mine reports, combined with reports from 1945-1947 clearance operations as well as old marking poles and fix points which could be identified on the ground, the suspected area was reduced to 186 hectares (which was later adjusted slightly up to 187.2 hectares). According to information obtained from the above mentioned mine reports, the remaining mines were laid in a random distribution and consisted of several types, including both anti-tank and anti-personnel mines.

5. The mines used in the minefield were the AT-mine types T-39, T-42, T-43, Holz-42 and the AP-mines were Schütz-42 and Stock-minen. In addition to the German manufactured Holz-42 and Schütz-42, locally produced variants named Holz Dänemark and Schütz Dänemark, were used. Except for the teller mines (T-39, T-42 and T-43) the other mines were mounted with the ZZ-42 fuse. The first mine clearance in 1945-47 was conducted under a very tight time schedule and with limited resourced. This is probably the reason why the non-explosive parts of the cleared mines were left in the minefield. Especially the Stock mine body and the ZZ-42 fuse have been found in thousands during the newly completed clearance. Without explosives or detonators, these items have just been scrap metal and have been registered as such.

6. Mine clearance of the remaining area in Denmark initiated in 2005. For operation purposes, the area was divided into three sub areas: Area 1 (19 hectares), Area 2 (47 hectares) and Area 3 (120 hectares). Clearance in the sand dunes was carried out by first establishing the level of the surface in 1944 when the mines were laid by taking old aerial photographs and transforming them into 3-D models. The uncertainty of this model gave a "danger-volume" around the model 1944 surface. This volume was excavated by armoured excavators and sifted through a Power Screen allowing the sand to run through and collecting all items larger than a fuse attached with a detonator. The piles of removed items were then examined by an EOD- operator who removed all mine parts. Afterwards the dunes were re-established in keeping with environmental standards. In the beach, a maximum depth was defined on the basis of studies of how beach sand changes its position in an environment like Skallingen. Clearance was conducted by data-logging metal detection followed up with point target excavation of potential mines identified from the data log. After finishing a defined area, the upper sand level was removed to a depth corresponding with the metal-detectors capacity, and the whole drill was repeated until the correct level was reached in the beach.

7. Area 1 was addressed in 2006 by the British contractor Europe Land Solutions, releasing 19 hectares of beach and dunes and resulting in the clearance of 14 anti-personnel mines, 21 anti-tank mines, 21 mine parts (parts which clearly represents uncleared mines, such as detonators or explosives) and 11 items of unexploded ordnance (UXO) (British WWII smoke bombs and parts of incendiary bombs). Area 2 was addressed by the Danish consortium Minegruppen from May 2007 to April 2008, releasing an area of 47 hectares of sensitive and highly protected nature composed of beach and dunes and resulting in the clearance of 13 anti-personnel mines, 5 anti-tank mines, 129 mine parts and 2 items of UXO (76 mm projectiles still in their canister). Clearance of Area 1 and Area 2 was carried

out utilizing metal detection with various deep search instruments by point target excavation and/or sifting. All explosive items were destroyed as they were found or collected in a central demolition site at Skallingen. It should also be noted that in the years from 1947 to 2005 the Danish military had removed probably more than a thousand mines from the coastline at Skallingen. As the coastline steadily moved eastwards and as the dunes eroded, the mines came out onto the beach where they were collected. Unfortunately, the number of mines cleared in this manner was not registered.

8. By mid 2008, it became apparent to Denmark that it would not be in a position to fulfil its Article 5 obligations by its deadline of 1 March 2009 and, therefore, Denmark would need to request an extension. Several elements contributed to Denmark's inability to meet its Article 5 obligations in its initial 10 years, including the following:

(a) Environmental Considerations: Area 3 is part of the internationally famous Waddensee-area, which is designated as a special protected nature and wildlife area under both the RAMSAR Convention, and the European Union's Bird and Habitats Directives. Therefore the area has the strongest international and national legal protection against activities which may disturb or deteriorate the environment. In light of this, Area 3 required an Environmental Impact Assessment for acceptance from the environmental authority and a separate permission from the environmental authorities for technical survey. Based on an impact analysis, the environmental authorities in Denmark had approved the mine clearance project of Area 1 and Area 2; provided that a number of restrictions and recommendations were followed concerning the reestablishment of dunes, precautions to prevent sand loss from the beach, measure to keep dune and beach sand separated, restrictions on the use of access roads, etc.

(b) Access restrictions: Environmental restrictions included access and operational restrictions. The most serious measure of the operational planning consisted of a ban on vehicles and the use of explosives in the southern part of the area, from 1 April to 1 August to avoid disturbance of colonies of protected rare breeding birds. These months were, unfortunately, the most productive mine clearance months due to the weather conditions and because a large part of the area is under water in the remaining part of the year. So, besides reducing the working year to 8 months, the effective use of the resources were significantly reduced. In addition to these restrictions, one to two months could be expected as stand-down due to weather conditions. Yearly demobilisation and remobilisation furthermore increased the project costs and impeded personnel continuity. Furthermore, there was the concern that the salt meadows would be impossible to demine without deteriorating them strongly, which would not be compatible with the rules of the Habitats Directives and RAMSAR Convention.

(c) Lack of information: The release of Area 3 required further investigation of the area, including the determination of the conditions of the mines and depth in which they could be found as well as the environmental influence in the area. The existing information on Area 3 was not sufficient to confirm the extent of mine contamination due to the fact that the mines were laid in a random distribution and that after the war partial but undocumented clearance took place.

9. Given the challenges highlighted above, Denmark submitted an extension request in 2008 which was granted by the Ninth Meeting of the States Parties. Denmark requested a period of 22 months in order to carry out technical survey, an Environmental Impact Assessment of Area 3, hold public consultations and develop a release plan for Area 3 and proceed with the tendering process in order to undertake all necessary survey and other preparations and submit a concrete Article 5 implementation plan to the States Parties in 2010 for consideration at the Tenth Meeting of the States Parties.

10. Shortly before the request was submitted in 2008 the Danish government gave permission to conduct technical survey in Area 3 in order to map the extent of the problem and to establish release procedures for the area taking into account all the technical and environmental aspects. In 2008 and 2009 the Danish Coastal Authority conducted technical survey of the mine problem in Area 3 of Skallingen which consisted of a number of activities which, together with the experience from the clearance of Area 1 and Area 2 offered the basis of the threats assessment which formulate the clearance criteria. Area 3, for technical reasons was considered as consisting of five different terrain types, each of which provided different conditions for the mines and hence required different clearance methods and different sets of clearance criteria. The technical survey of Area 3 concentrated on the marsh land and focused on establishing the condition of the different mine types in this terrain, including how deep they were. The expectation was that the lower the ground was, the more often it was flooded, the poorer the condition of the mines would be. This was confirmed. Besides the decay of the mine bodies, it was found that all the detonators which had been exposed to salt water for a longer period were unable to function. This would leave only the Teller mines as a threat in the low marsh.

Area Category	Amount of Area	Clearance Criteria		Clearance Method
		Items	Depth	
Dike/Dune	9.2 hectares	All explosive items which are larger or the same size as a detonator mounted on a ZZ-42 fuse	0-200cm below surface	Sifting
Marshland covered with dunes	6.6 hectares	All explosive items which are larger or the same size as a detonator mounted on a ZZ-42 fuse	Danger layer of 90cm above the estimated 1944 surface to 80cm under the estimated 1944 surfaces	Sifting
Low marshland	68.3 hectares	Teller mines	0-50 cm	Metal detection with geo-mapping and data-logging
High marshland	29.1 hectares	All mines, UXO and parts of mines and UXO containing metal (all metal indications must be investigated and removed for QC reasons)	0-20cm	Metal detection
Beach	8.0 hectares	Teller mines	0-130cm	Metal detection with geo-mapping and data logging

Table 1: Clearance criteria as presented prior to clearance of Area 3

11. Similar to the environmental restrictions of Area 1 and Area 2, and based on an impact analysis carried out during the initial extension period, the environmental authority approved the mine clearance project provided that a number of restrictions and

recommendations were followed. Similar to Area 1 and Area 2, these include the reestablishment of dunes, precautions to prevent sand loss from the beach, measures to keep dune and beach sand separated restrictions in use of access roads, among other. The most serious challenge to the operational planning consisted of a ban on vehicles and use of explosives, in the southern part of the area of operations from 1 April to 1 August each year which meant that if the contractor experienced delays in areas which were under this restriction this could have significantly impacted the completion date (e.g. a few weeks behind schedule could have meant six months delay in completion of the work). Additionally, the weather conditions had a large influence on the operational progress with flooding blocking the access road to the site and preventing operations in the low marshlands.

12. In June 2010, Denmark submitted a final extension request which indicated that through a tender process the Danish Consortium Damasec J. Jensen Group, consisting of two companies Damasec and J. Jensen, had been selected to carry out the project. The time frame for clearance given to the contractors was July 2010- December 2011 with quality control and buffer time to absorb delays from January 2012 to June 2012 with completion schedules for July 2012.

13. The Dunes in Area 3 presented a real challenge with the initial clearance process of the dunes proving to be inadequate. Given this, the clearance process was redefined which expanded the processed volume in the dunes considerably and caused a delay to the initial time schedule. Also the high marsh areas were challenging, mainly due to the high number of scrap metal pieces.

14. By November 2011 Damasec J. Jensen Group completed the task and the KDI had completed the quality assurance and quality control procedures of approximately 91 hectares of beach, low marsh and dunes which were all found to be in accordance with the required quality and accepted for release. At this time the Danish Coastal Authority was conducting quality control of the remaining 29 hectares which were categorized as "high marsh area" with the quality control being conducted by the NGO Danish Church Aid. During this quality check, 3 anti-personnel mine were found as well as a large number of metal pieces which raised doubts concerning the clearance quality in this area. In December the KDI requested re-clearance of 28 hectares of marshland areas.

15. The re-clearance commenced in March 2012 and was completed by 22nd June, 8 days before Denmark's deadline of July 1st 2012. During the re-clearance, the Contractor cleared 51 mines, of which 11 were found deeper than the clearance criteria of 20 cm. The KDI carried out a Quality Control Clearance of 8% of the re-cleared area and found no mines. In total the clearance of area 3 resulted in 233 AT-mines, 3071 AP-mines, 46 UXO and 3197 mine parts. The majority of the mine parts were most likely left behind from the first clearance in 1945-47. However 343 of these were single detonators, which are difficult to explain.

16. The financing of clearance of Area 1, Area 2 and Area 3 was all provided by the Danish Government. In total the cost of the clearance of Skallingen, including surveys, running costs of the project organisation etc. is 195 million DKK.

17. Denmark developed standards for clearance in Skallingen based on the International Mine Action Standards (IMAS). The mine clearance standards for the two first areas were adapted to the environment in which the clearance took place. Based on the experience from Area 1, the standards were altered slightly for Area 2. Prior to the clearance of Area 3, the standards were reviewed and reformulated to address the situation in Area 3 while remaining IMAS compliant. The mine clearance was subject to an extensive quality management system which assured that the work was conducted within the framework of IMAS, the project's specific technical guidelines and in accordance with Danish legislation.

This included final quality control samples carried out of completed areas. In order to ensure the quality of the process undertaken, the KDI outlined in the tender documents the demand for quality management which was required from the contractors. KDI contracted quality auditors (Orbicon in Area 1 and Bureau Veritas in Area 2 and 3), which in co-operation with KDI quality manager, made an organisational accreditation of the contractors based on proposals and standard operating procedures. KDI and the external auditors monitored the mine clearance and checked the extensive amount of recorded data following from this type of mine clearance. Furthermore, the contractor's equipment was accredited when proven in tests at Skallingen.

18. As a result of efforts undertaken since Denmark submitted its initial transparency report, Denmark declares that it has fulfilled its obligations under Article 5 of the Convention by having determined that there are no longer areas under the jurisdiction or control of Denmark in which anti-personnel mines are known or suspected to be emplaced. Upon declaring completion, 3 mined areas were addressed representing a total of 1.86 million square meters of area in which antipersonnel mines were known or suspected to be emplaced has been released through survey and clearance. This work has culminated in the destruction of 3,098 antipersonnel mines, 259 antitank mines, and 59 UXO. In addition 493 vital mine parts (explosives or detonators) were cleared and destroyed.

19. In the event that previously unknown mined areas are discovered after this date, Denmark will:

- (a) report such mined areas in accordance with its obligations under Article 7 and share such information through any other informal means such as the Intercessional Work Programme;
- (b) ensure the effective exclusion of civilians in accordance with Article 5 and;
- (c) Destroy or ensure the destruction of all anti-personnel mines in these mined areas as a matter of urgent priority, making its need for assistance known to other States Parties, as appropriate.

Annex I**Mined Areas on the Skallingen Peninsula**

<i>Area</i>	<i>Size of area</i>	<i>AP Mines</i>	<i>AT Mines</i>	<i>Other items (fuses / UXO detonators / Explosives)</i>	<i>Date of release</i>
AREA 1	19 hectares	14	21	32	4 January 2007
AREA 2	47 hectares	13	5	131	11 April 2008
AREA 3	120 hectares	3071	233	389	30 June 2012

