

Translated from the Icelandic

**Helicopter rescue services in Iceland
- Proposals for a future organization -**

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1. Introduction

At a meeting of the Icelandic cabinet on 24 March 2006, the Minister of Justice and Ecclesiastical Affairs, Björn Bjarnason, announced the measures to be taken to build up the Icelandic Coast Guard's helicopter unit in accordance with the government's decisions with regard to the departure of the helicopter squad of the (US-manned) Iceland Defence Force as of 1 October 2006. He explained that there was no alternative but to tackle the problem in two stages: first on a provisional basis, by leasing helicopters and collaborating closely with Iceland's neighbours, and then, on a permanent basis, by purchasing or hiring new helicopters.

The minister commissioned Stefán Eiríksson, a deputy permanent secretary in the Ministry of Justice and Ecclesiastical Affairs, to head the preparatory work on this issue on behalf of the ministry in collaboration with Georg Lárusson, Director of the Icelandic Coast Guard and his staff. An engineer, Leifur Magnússon, undertook to act as a consultant to the minister regarding the choice of helicopters and to attend discussions with both domestic and overseas parties. The aim was that proposals for a provisional solution should be ready within three weeks, with proposals for a future arrangement drawn up within two months.

Proposals for a provisional solution were submitted to the Minister of Justice and Ecclesiastical Affairs on 12 April 2006, and the cabinet approved his proposals on 18 April. This was that two helicopters, of the same type as are now in operation at the Coast Guard, be leased and that the staff of the Coast Guard be expanded so as to make it possible to operate more helicopters and to maintain two 24-hour helicopter shifts throughout the year. It was also agreed to install equipment for refuelling helicopters in the Coast Guard's vessels. Then, at its meeting of 23 May 2006, the cabinet agreed to enter into negotiations on the lease of the two helicopters referred to above (one Super Puma and one Dauphin) in addition to the two already operated by the Coast Guard. It was envisaged that contracts would be made covering the lease of these helicopters for one year, with an option to extend this by six months or one year. At the beginning of June, the Minister of Justice and Ecclesiastical Affairs signed a contract with representatives of the Norwegian company Airlift on the lease of a Super Puma helicopter as from 1 October 2006, and later in June a contract was signed with the company Heli One on the lease of a Dauphin rescue helicopter. A contract has also been signed with the company Norsk Helikopter on the lease of a fully-equipped Super Puma rescue helicopter as from 1 May 2007.

The present report contains proposals for the future arrangement of helicopter rescue services in Iceland. The main consideration on which they are based is that there should be a helicopter rescue unit in Iceland with the capability to carry out effective and professional rescue operations on land and at sea around Iceland in accordance with Iceland's international obligations.

2. The present situation

The Icelandic Coast Guard currently has two helicopters. One is an AS-332L1 Super Puma, with a maximum range of about 600 nautical miles; it is capable of flying about 235 nautical miles out to sea, hoisting up ten persons and flying back with an acceptable margin of reserve fuel. It is equipped with a dual hydraulic/electric rescue winch, emergency floats, de-icing equipment, a four-axis auto-pilot system (with Auto-Hover), a search-light and a thermal imager. Thus, it is defined as an A-SAR (All Weather Search and Rescue) craft. The other helicopter is an SA-365N Dauphin. This has a maximum flight range of 400 nautical miles; it can fly 150 nautical miles out to sea, carry out search and rescue operations and return with an acceptable margin of reserve fuel. It has a single rescue winch, emergency floats, a three-

axis autopilot system (without Auto-Hover), a search-light and a thermal imager. This model is defined as an L-SAR (Limited Search and Rescue) craft, as its capacity is limited in difficult weather conditions. There is also a considerable difference between these two helicopters regarding size and weight capacity. The Super Puma has a maximum take-off flight mass of 8,600 kg and can carry up to 20 passengers or 6-9 stretchers. The Dauphin has a maximum take-off flight mass of 4,000 kg and can carry up to 8 passengers or two stretchers. For search and rescue operations, helicopters normally carry crews of five: the flight captain, pilot, a rescue specialist to be lowered by winch, a winch operator and a doctor. As is mentioned in the Introduction, two helicopters (one Super Puma and one Dauphin) are to be added to the Coast Guard's fleet next autumn while the proposals for a future organization are being formed and put into practice. The larger of these two helicopters is defined as an L-SAR craft, since it has neither a four-axis autopilot system nor de-icing equipment. The smaller helicopter, on the other hand, has a four-axis autopilot system and its capacity for rescue work is therefore greater than that of the Coast Guard's Dauphin helicopter.

The Coast Guard also has a Fokker F-27 aircraft which is specially equipped for search purposes and can also be used for dropping rescue equipment. Its main function in search and rescue operations is to precede a helicopter, and it seeks out the correct flight altitude in terms of wind and icing, guarantees telecommunication contact, locates the position of the helicopter if it has to make an emergency landing, etc. In accordance with the proposals of the Minister of Justice and Ecclesiastical Affairs and the decision by the cabinet, an invitation to tender for the supply of a new aircraft for the Coast Guard is now being prepared.

At all times, i.e. 24 hours a day, all year round, a five-man helicopter crew is on stand-by, with a maximum response time of 60 minutes. The current shift system is based on an exemption granted by the Civil Aviation Authority from the Regulation No. 782/2001 on air crews' maximum flying hours, working hours and their rest periods. A four-man crew is on daytime shift for the Fokker aircraft.

The Iceland Defence Force at Keflavík Airport has from two to five A-SAR helicopters which can be sent for search and rescue operations up to 230 nautical miles from land. They are fitted with special equipment to refuel in flight from a Hercules aircraft and could therefore travel much further from land if an urgent need arose and a fuel carrier aircraft were available. This situation appears not to have arisen in Iceland in recent years. The IDF's helicopter squad is on shift 24 hours a day all year round, with a response time of 1-2 hours. The squad's main role has been to carry out search and rescue operations for the IDF and NATO, but it has also played an extremely important role in general search and rescue operations, including being on the alert when the Coast Guard's Super Puma helicopter flies more than 150 nautical miles from land, in addition to which the helicopter squad responds to call-outs when the Coast Guard's helicopters are engaged on other tasks, or are not available for use due to other reasons or when Coast Guard personnel have been working for long periods.

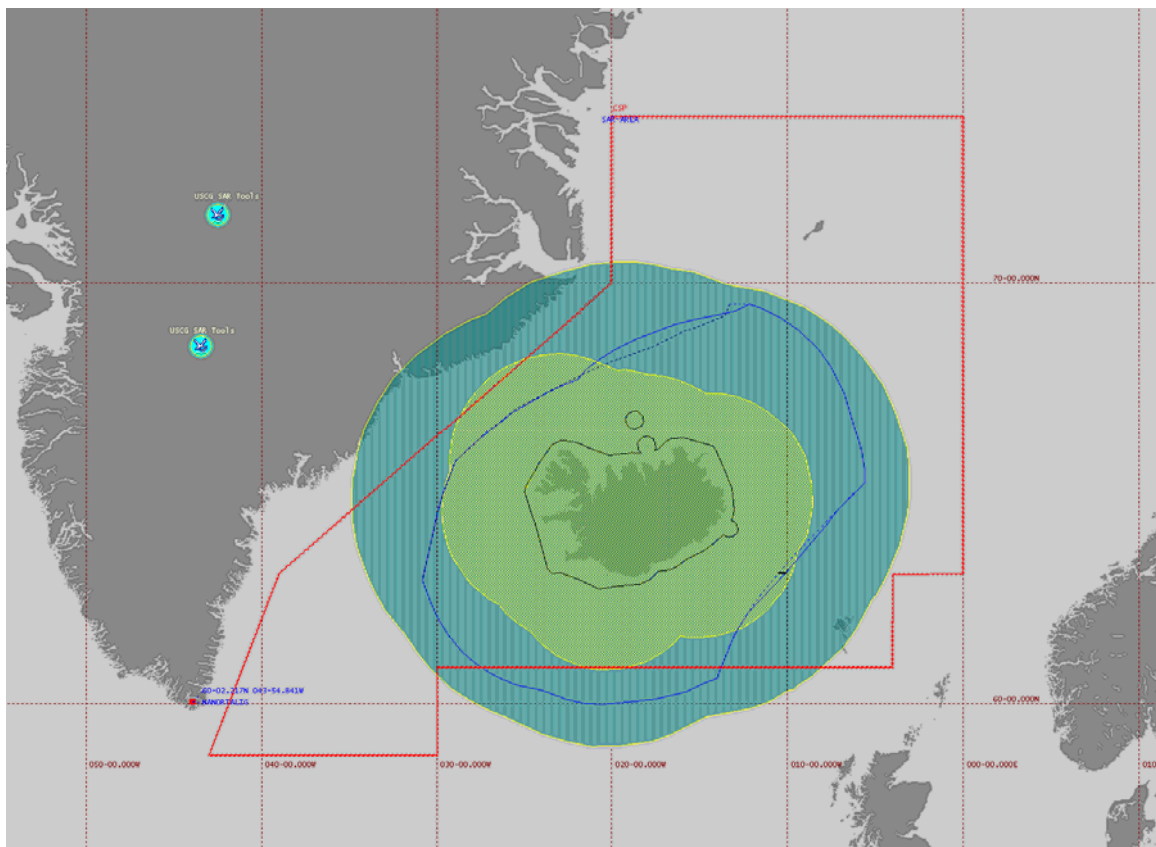
The current capacity of the Coast Guard and IDF helicopter rescue squads in Iceland means that helicopter search and rescue operations can be guaranteed inside the country's 200-nautical-mile economic zone, and in fact further out to sea if the occasion arises. Furthermore, the safety of the helicopter crews is guaranteed as well as possible in view of the fact that when one helicopter is engaged on operations that take it long distances from the coast, another is ready on alert. Furthermore, it has been observed as a rule in recent years that helicopters are not to go more than 150 nautical miles from land without an accompanying aircraft; this role has been taken either by the Coast Guard's aircraft, an aircraft from the Civil Aviation Authority or foreign military aircraft. This means shorter flying times and search times by the helicopters, and more time is available for the rescue operation.

The Coast Guard collaborates closely with the Danish Navy, which has ships passing through the waters around Iceland. Danish helicopters from these ships have come in as replacements or auxiliary craft in rescue operations when the need has arisen.

3. Analysis of requirements

To guarantee an effective helicopter rescue service in Iceland, it is natural to reckon with a rescue capacity at least equivalent to the present capacity, i.e. that it should be possible to undertake search and rescue operations by helicopter on land and at sea within the country's 200-nautical-mile economic zone in difficult weather conditions and to bring as many as 10 persons to safety on board a helicopter at the limit of this range. Furthermore, the safety of the helicopter crews should be ensured as far as possible, and one helicopter should always be ready and on the alert when another flies long distances out to sea.

Under its international obligations in the field of both aviation and shipping, Iceland is responsible for a specific search and rescue region around the country which extends over a far greater area than the country's economic zone. It would be natural to think in terms of Iceland's being able to shoulder its responsibility over this region in the most effective way possible. The region for which the Icelandic government is currently responsible is delineated with a red line on this picture:



Clearly, it is not possible to mount helicopter rescue operations throughout this entire region. Nevertheless, the capacity towards this goal will increase after the Coast Guard vessels have been fitted with equipment for refuelling helicopters.

4. Types of helicopter, operational framework, organization and collaboration

The necessary degree of security can only be achieved by having at least two long-range A-SAR helicopters available and capable of being flown at all times. This necessitates having at least three such helicopters in operation. This section of these proposals deals with the requirements to be made regarding such helicopters and what form the operation of such a helicopter unit could take.

4.1 Types of helicopter

Most of the helicopters currently used for search and rescue operations over the open sea are relatively old. One of the most common types, the Sikorsky S-61 Sea King, for example, flew for the first time in March 1959, and even though various improvements have been made to the design over the years, it is for the most part based on the technical level of that period, which is now for the most part regarded as outdated. In Norway, for example, 12 helicopters of this type are used for the search and rescue operations for which the Norwegian Ministry of Justice is responsible, though the actual operation of the helicopters is in the hands of the Norwegian Air Force. Most of the Norwegian Sea King helicopters were originally put into commission in 1973. A few years ago, the Norwegian government announced its policy of replacing these Sea King helicopters with new rescue helicopters not later than 2010.

This time frame has proved to be unrealistic. Consequently, the Norwegian government has recently decided to extend the service lifetime of the Sea King helicopters to as late as 2015, which will give it sufficient time to come to a conclusion regarding the best type of helicopter to use in the future.

Sea King helicopters are relatively slow in flight, and their flying range and carrying capacity are not satisfactory in terms of the present demands. Furthermore, they do not have de-icing equipment, and their mechanical and other equipment is not in accordance with modern requirements. The same applies in part to the most common types of the Eurocopter Super Puma, some of which have been used for search and rescue operations. The technology on which the Super Puma is based dates from 1965, when the Aérospatiale SA330 Puma made its first flight. A more developed model, the SA 332 Super Puma, flew for the first time in 1978. The newest, and substantially improved model, the Eurocopter EC225, flew for the first time at the end of 2000. Amongst other things, it is fitted with a modern cockpit with EFIS display screens for all flight data. Japan and China are among the countries that have recently chosen the EC225 for use in search and rescue operations.

Sikorsky offers a new helicopter in this size and capacity range: the S-92, which is intended for search and rescue operations, amongst other purposes. It has been chosen for operations of this type in Britain, Ireland, Canada and Taiwan. Work is now in progress at the Sikorsky factories on the final design of an improved model, the S-92B, which will have substantially greater flying range and load capacity in search and rescue operations.

AgustaWestland offers the EH101, which is somewhat larger than the EC225 and the S-92, carrying 30 passengers and fitted with three engines. Denmark and Portugal have both chosen the EH101 for their search and rescue operations. New helicopters of the NH90 type are also under construction; these have been chosen by the Finnish, Norwegian and Swedish air forces. However, as the NH90 is not available with civil aviation certification (EASA, JAA, FAA), it cannot be considered for the Icelandic Coast Guard, since all aircraft in Iceland, including those used by the Coast Guard, are on the civil aircraft register of the Civil Aviation Authority.

New rescue helicopters are not available “off the shelf” from their manufacturers, as they are specially custom built. Consequently, the choice of such helicopters, the drawing up of

contracts, design and manufacture require considerable periods of time; the normal requirement is considered to be at least three years. Besides the special equipment (a double rescue winch, emergency floats, four-axis auto-pilot system (with Auto-Hover), night-vision imaging system, search-lights, medical equipment, etc.), particular attention must be given to the design and size of the fuel system. These requirements are paramount when the helicopters are intended to play a key role in search and rescue operations in difficult conditions and in long-range flights, as is the case in countries such as Iceland or Norway.

In choosing a new and developed type of rescue helicopter which is to remain in use for a long time, it is extremely important to have at least two types under consideration so as to promote active competition between manufacturers regarding quality and price.

In the light of the foregoing, it is not reasonable to expect that it will be possible to obtain three new, specially fitted helicopters for the Iceland Coast Guard until some time in the period 2010-15. The choice would lie first and foremost between the **Eurocopter EC225** and the **Sikorsky 92B**. The **AgustaWestland EH101** could also be considered, though most parties consider it too large for the traditional tasks of the Coast Guard.

The final purchase price of such new and developed rescue helicopters will depend on the demands made of them and on competition between the manufacturers. Earlier this year it was reported in the Norwegian media that the price of each helicopter of this type could be in the region of NOK 150 million, or about USD 24 million, i.e., the equivalent of slightly over ISK 1,800 million.

The Norwegian Ministry of Justice has compiled a very detailed report describing, both in general terms and in detail, the demands to be made of new search and rescue helicopters. Among these is the demand that the helicopters be capable of flying 300 nautical miles out to sea, lifting 25 persons on board and flying back and still having reserve fuel for 30 minutes' flying. Demands of this type can only be met by a helicopter that is designed and built for rescue purposes from the outset. The Norwegian government has adopted the policy that proposed new rescue helicopters intended for basic services in this sphere are to be purchased and operated by the state. Two exceptions have been made from this: helicopter services on Svalbard and in the new rescue centre on Florö are to be tendered out.

The Norwegian Ministry of Justice has offered to collaborate with the Icelandic Ministry of Justice and Ecclesiastical Affairs and the Icelandic Coast Guard on these issues; ideas include a possible joint call for tender by both nations for the supply of new rescue helicopters. Representatives of the Ministry of Justice and Ecclesiastical Affairs, the Coast Guard and the State Trading Centre (Ríkiskaup) have travelled to Norway for talks with the Norwegian Ministry of Justice, and the justice ministers of the two countries have also discussed the matter between themselves. Allowance is being made for the purchase of 8-10 new helicopters in Norway, and according to the proposals in the present report, three such helicopters could provide a satisfactory level of service in the future in Iceland. A joint invitation to tender for the supply of 11-13 rescue helicopters could result in a more attractive price than would otherwise be the case, and more advantageous agreements in general, in addition to which this collaboration could result in advantages of many types in the operation of the helicopters.

The purchase of new, custom-built helicopters will mean that the Icelandic Coast Guard will have to bridge a period of between three and eight years running from autumn 2007, when the first lease period of the additional Super Puma and Dauphin helicopters expires. The best interim solution during this period would, without any doubt, be to lease additional AS332L1 Super Puma helicopters that are specially equipped for search and rescue operations.

4.2. Operational framework and structure of helicopter rescue services

4.2.1 Operational framework of the helicopter unit

Various options exist regarding the purchase of helicopters and the operational framework of the helicopter rescue service. In Norway, a private operator, Airlift, provides all helicopter rescue services on Svalbard for the local district commissioner; this operator has also entered into a contract with the coast guard. In Sweden, helicopter rescue services along the coast are in the hands of a private operator, engaged by an open tender, while the Swedish Maritime institute is the public body officially responsible for these services. The responsible public bodies define the needs, including the rescue capacity and the response time, but the services themselves are provided entirely by private operators under their supervision. Airborne ambulance services in Iceland for the Ministry of Health and Social Security are provided in this way.

Mixed operational frameworks of the types described here have produced good results. In Norway, the greater part of helicopter rescue services are, however, under the operation of the state.

While it would be possible to tender out helicopter rescue services in Iceland, this would not be desirable, as security in operations during the times of change and development that lie ahead will best be guaranteed if these services are in the hands of the Icelandic Coast Guard. It is of fundamental importance that the Icelandic government should be in full control of these vital security interests at all times. Under the new Icelandic Coast Guard Act, No. 52/2006, the flight operations, vessel operations or technical services of the Coast Guard may be tendered out or run by special limited company established for the purpose subject to conditions set by the minister after submission of the proposals of the Coast Guard. Thus, the Coast Guard's flight operations, in part or in their entirety, could be converted into a limited company; this could be of great significance both from the point of view of financial operations and also when it comes to replacing aircraft and equipment.

4.2.2. The fourth helicopter

Three large rescue helicopters is the basic requirement for the Icelandic Coast Guard's helicopter rescue unit in the light of the considerations discussed above. Experience shows, however, that unexpected circumstances tend to arise in this sphere. In the light of this fact, it is proposed that the Coast Guard continue to own and operate its Dauphin helicopter, TF-SIF. The Dauphin costs round about half as much to operate compared with the Coast Guard's larger helicopter. It is very well suited for many types of search and rescue operation in which there is no need for a larger helicopter. It is also light and agile, which makes it suitable for monitoring tasks of many types.

4.2.3. Location

From the point of view of efficiency and security, it is necessary that the helicopter rescue unit be based in a single location and that this should be in contact with the headquarters of the Icelandic Coast Guard, which are now on Skógarhlíð in Reykjavík. In the short time since the headquarters were moved to Skógarhlíð and the functions of the Coast Guard began to be adapted to the roles of coordination, supervision and rescue work in that location, the results have been extremely good.

The main part of the helicopter unit's rescue work consists of bringing injured persons to hospital in Reykjavík. Weather conditions in Reykjavík are favourable for the unit.

4.2.4. Varied tasks

An increase in the number of helicopters available to the Icelandic Coast Guard will enable it to undertake a more varied range of tasks than it has done hitherto. It will be necessary to ensure that the helicopter pilots and crews have the appropriate training and skills, and the number of hours of helicopter flying time in connection with training and practice will have to be almost doubled when the changes are made in autumn 2006. The capacity of the helicopter rescue unit will increase correspondingly. The Coast Guard will have to give this matter special attention, and also revise its response schedule and partnership ventures in collaboration with the police, the scout rescue teams, the customs authorities and other parties.

4.2.5 Personnel

Development of the helicopter unit will call for an expansion of personnel at the Coast Guard. In accordance with the proposals by Björn Bjarnason, Minister of Justice and Ecclesiastical Affairs, for a provisional arrangement, which have been approved by the cabinet, staff numbers at the Coast Guard have already been increased so as to cope with the operation of four rescue helicopters. The plan is that this increase will be fully achieved next year. The proposals presented in this report will not entail a further increase in the Coast Guard personnel over and above the levels already agreed.

5. Cost analysis

According to the detailed cost analysis which has already been made in connection with the expansion of the helicopter unit, and which the Minister of Justice and Ecclesiastical Affairs has presented to the cabinet, the permanent increase in operating expenses due to the increase in staff is estimated at ISK 100-150 million per year. The staff level will be sufficient next year to implement the proposals made here.

The cost of hiring one helicopter of a size comparable with the Coast Guard's larger helicopter is c. ISK 150-180 million per year. The cost of operating one such helicopter are estimated at about ISK 55 million per year.

It can be assumed that long-term lease of three large and fully-equipped rescue helicopters could be ISK 450-600 million per year, with operating costs for three such helicopters in the range ISK 100-150 million per year. As is discussed in Section 4.1 above, the purchase of three new helicopters would call for an investment running to billions of krónur.

6. Points of interpretation regarding public purchases

In connection with the work described above, special attention has been given to the rules applying in Iceland under domestic legislation and under the EEA Agreement regarding public purchases. The committee approached Skúli Magnússon, a district court judge and expert in this area, who delivered an opinion on the matter. Broadly, his conclusion is that the purchase or lease of helicopters for the Coast Guard falls under the scope of the Icelandic rules on public purchases (*cf.* the Act No. 94/2000), and therefore under the EEA Agreement. In his opinion, in the light of the situation that developed following the departure of the Iceland Defence Force and the urgent need to take action that arose at the time, it is possible to lease helicopters on a temporary basis under supply contracts without prior publication under item *d* of Article 20 of the Act No. 94/2001 and item *d* of the third paragraph of Article 6 of Council Directive 93/36/EEC coordinating procedures for the award of public supply contracts. An expert working at the State Trading Centre came to the same conclusion.

For the purchase or lease of helicopters on a long-term future basis, on the other hand, it is clear that compliance with the Public Purchasing Act will be necessary, and that tenders will have to be invited, whether purchase or lease is involved. Particular attention was given to the question of whether it would be possible to arrange these purchases by means of a special partnership agreement with the US Department of Defence; ideas about this were discussed in particular in connection with the departure of the Iceland Defence Force and changes in the defence arrangement between the two countries. In the opinion of the expert named above, authorisation for this in law is limited: it would either have to be related directly with the Defence Agreement and the presence of the Iceland Defence Force in Iceland or entail a solution that was evidently substantially more advantageous than the solutions available on the basis of a public tender.

7. Proposals

In the light of the foregoing, the following proposals are made regarding the future arrangement of helicopter rescue services in Iceland:

1. Helicopter rescue services should be provided by the Icelandic Coast Guard.
2. The Coast Guard's future helicopter unit should consist of three new, large, long-range rescue helicopters in addition to the Dauphin helicopter that it already possesses (TF-SIF).
3. The purchase of three helicopters meeting demands that are defined in detail should be tendered out in accordance with the Public Purchasing Act. The Coast Guard's Super Puma helicopter (TF-LIF) should be sold.
4. Until the new helicopters are purchased, sufficient operational capacity of the rescue helicopter unit should be ensured by means of leased helicopters.
5. The helicopter unit's response schedule should be revised and greater flexibility introduced into its operation.
6. Movements of the Coast Guard vessels should be planned with supplies of helicopter fuel for use in helicopter rescue operations in mind.
7. Talks should be held with the Norwegian government regarding collaboration on the purchase of large, new, specially-designed rescue helicopters. The intention should be to publish an invitation to tender as soon as possible.
8. Work should proceed on establishing close collaboration between countries in the North Atlantic area on cooperation in search and rescue operations at sea, including the pooling of helicopter resources.

Reykjavík 6 July 2006

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