



Ministry
of Defence

de&s

Recycling of **Ex-HMS Ark Royal R07** Disposal Services Authority



Defence Equipment & Support

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*Cover Photograph

The Royal Navy's mighty HMS Ark Royal visits HM Naval Base Clyde in Scotland for the last time.

Executive Summary

The former Royal Navy Aircraft Carrier HMS Ark Royal R07 ceased operational service on the 31 March 2011.

Following an open competition against strict criteria (including environmentally sound management) for the recycling of the former HMS Ark Royal, the Disposal Services Authority awarded preferred bidder status to the Turkish company LEYAL Ship Recycling Ltd whose formal proposal was to conduct the recycling of Ex-HMS Ark Royal at their dedicated ship dismantling facility in Aliaga Turkey.

The vessel was towed independently and departed from HMNB Portsmouth under commercial tow on the 20 May 2013 and arrived in Turkey on the 10 June 2013.

On the 21 November 2013 LEYAL Ship Recycling Ltd reported that Ex-HMS Ark Royal had been completely dismantled and recycled in accordance with the relevant EU Waste Management Legislation and the UK's Ship Recycling Strategy in just 6 months demonstrating the value of an experienced workforce familiar in the complex art of ship recycling. Out of all the materials that are required to build a ship of this type 94% of the material was recovered and recycled.



Background

General Particulars

Date and Place of Build	Laid Down: 1978, Swan Hunters Wallsend UK Completed: 1981
Ships Identification Number (IMO Number)	8949575
Hull Number	03
Date ceased service	31 March 2011
Type of Vessel:	CVS - Carrier Vertical Strike (Light aircraft carrier)
Displacements and tonnage in Tonnes	Current displacement: 19000 Lightweight: 16000
Draughts	5.2m fwd. 5.8m Mid. 5.8m aft. Ship upright.
Length OA	OA 210m. W/L 193m
Beam	Extreme 36m. Ex walkways 32m. W/L 27.53m
OA height Mast-head to keel	46m (estimated, at current draught)
Last Docking	Feb-May 2009 Portsmouth
Last Refit	Full Refit 1998-2001
Historical Interest	<p>IHMS Ark Royal was a light aircraft carrier and former flagship of the Royal Navy. She was the third and final vessel of Invincible-class and was named by Queen Elizabeth The Queen Mother. She followed sister ships HMS Invincible and HMS Illustrious into service in 1985 and was affectionately known as 'The Mighty Ark', and was the fifth Royal Navy ship to have borne the name of the 1587 flagship that defeated the Spanish Armada in 1588.</p> <p>In the early 1990s HMS Ark Royal was a major force during the Balkans conflict; based mainly in the Adriatic Sea. In 2003 the ship played a significant role in the Gulf War and gained a battle honor before regenerating as a commando carrier. On completion of duties in that role, the HMS Ark Royal undertook various exercises around the world. In 2009, the ship was regenerated as the UK's very high readiness strike carrier, assuming the title of Fleet Flagship ready to deploy globally at short notice.</p> <p>HMS Ark Royal celebrated its 25th anniversary year in 2010 and formally left service with the Royal Navy in early 2011.</p>

Background on the Disposal Services Authority (DSA)

- The DSA has delegated authority to dispose of all UK MOD surplus equipment in the UK and overseas..
- The DSA's role is to dispose of surplus assets identified by the owner for release into the commercial market.
- The DSA is the only Government Organisation offering a completely managed service for the Re-use, Recycling and ultimately disposal of surplus government assets.

The DSA's primary aim is to sell surplus ships to other governments for further military use and this approach was explored for HMS Ark Royal but no governments expressed an interest and therefore it was decided that the ship should be sold commercially.

Introduction

The DSA conducted a tender exercise for Ark Royal in March 2011 for recycling and further use and the vessel was sold on an 'as seen as lying' basis for recycling within the organisation for Economic Co-Operation (OECD) and in full compliance with

the principles of the Basel Convention and all other associated EU & UK legislation including Regulation (EC) No 1013/2006 of the European Parliament and the Council of 14th June 2006 on Shipments of Waste.

Ark Royal departed from HMNB Portsmouth under commercial tow on the 20 May 2013 towed by Tug Christos XXIII

Tug Christos XXIII took over the tow and Ark Royal was accompanied by a spontaneous flotilla of all the boats that happened to be in the harbour at the time.



Competition

Information and Requirements

The preparation for HM Vessels is carried out by the MOD's Disposal Reserve Ship Organisation (DRSO) in Portsmouth who play a vital part in the process producing an Inventory of hazardous materials (IHM) highlighting the hazardous material on board along with a Type 2 Asbestos Survey. Both of which were included as part of the tender documents. The activity conducted by DRSO demonstrated to ship owners the value in investing in the preparation of vessels for disposal which is of enormous benefit to the UK MOD as it continues to set standards for the dismantling of Government owned vessels.

DRSO played an important part in supporting the towing preparations on deck and contributed to the successful sale and departure of this vessel whose disposal preparations can take many months of hard work to complete.

Tenders were limited to bidders from within the Organisation for Economic Co-Operation and Development (OECD) – as recommended by the UK Ship Recycling Strategy (SRS).

Over 25 companies visited the ship and over 120 enquiries were received from companies and individuals with options to turn her into a hotel, casino, museum and visitor attraction, floating helipad and an artificial reef off the Devonshire coast.

The DSA received 17 offers to purchase the ship, 10 for recycling and 7 for further use. Bids received for further use were either not feasible or appropriate, or carried too much risk.

When ships are no longer seaworthy and only suitable for recycling its objectives are to ensure that the vessel is recycled in a safe and environmentally sound manner, and in compliance with its legal responsibilities as a producer of waste.

The recycling of ships is covered by a range of UK and EU legislation for which Department for Environment, Food and Rural Affairs (DEFRA) is the lead department in the UK. This Legislation includes but is not limited to:

- The Waste Shipments Regulation (EC)
- No 1013/2006 of the European Parliament and of the Council of 14 June 2006
- Parts of the Radioactive Substances Act 1993
- Environmental Protection (Duty of Care)
- Regulations 1991 SI 2839
- Hazardous Waste (England and Wales)
- Regulations 2005 SI 894
- Health & Safety at Work etc 1974
- Control of Asbestos at Work Regulations 2006

Ship Recycling Evaluation

Following the recommendations of the SRS, the DSA once more convened a Ship Recycling Evaluation Committee, involving representatives from Defra, Maritime Coastal Agency (MCA), DRSO and the DSA to assess the tender responses against set criteria called for in the Strategy. Prospective purchasers were required to produce a detailed Ship Recycling Plan, demonstrating their understanding of all the requirements involved in Ship Dismantling against each of the following

- Facilities & dismantling methodology
- Health & Safety
- Environmental plans
- Operations, sub-contractors
- Licences & permits
- Media and Trans-Frontier Shipment of Waste (TFS)

The Ship Recycling Plan is paramount to the consideration of offers to purchase and should provide evidence to enable the Evaluation Committee to score against.

Award of Preferred Bidder Status

The DSA awarded preferred bidder status to LEYAL Ship Recycling and a formal contract was awarded in November 2012 once the appropriate consents were obtained, in accordance with the provision of the EC Waste Shipments Regulation 10313/2006.

Recycling of Ex- HMS Ark Royal

LEYAL Ship Recycling Ltd was required to provide a monthly breakdown of the outturn of metals and waste during the recycling programme.

Audits were conducted by DSA staff during the life of the project which involved a physical inspection of the yard in Aliaga Turkey, together with an audit of weighbridge tickets, licences and consignment notes which were checked against the reported outturn.

Photographic evidence was provided at key stages of the dismantling process, which ensured that

the DSA could be confident on the method and manner in which the Vessels were dismantled and recycled in accordance with the aims of the SRS.

In addition to these checks, LEYAL Ship Recycling Ltd was also subjected to audits and inspections from the UK Environmental Agency, ensuring that LEYAL Ship Recycling Ltd were adhering to all current H&S and Environmental Legislation and the terms of their waste management permit.

**Towing Preparations 20 May 2013
HMNB Portsmouth**



Photographic Evidence

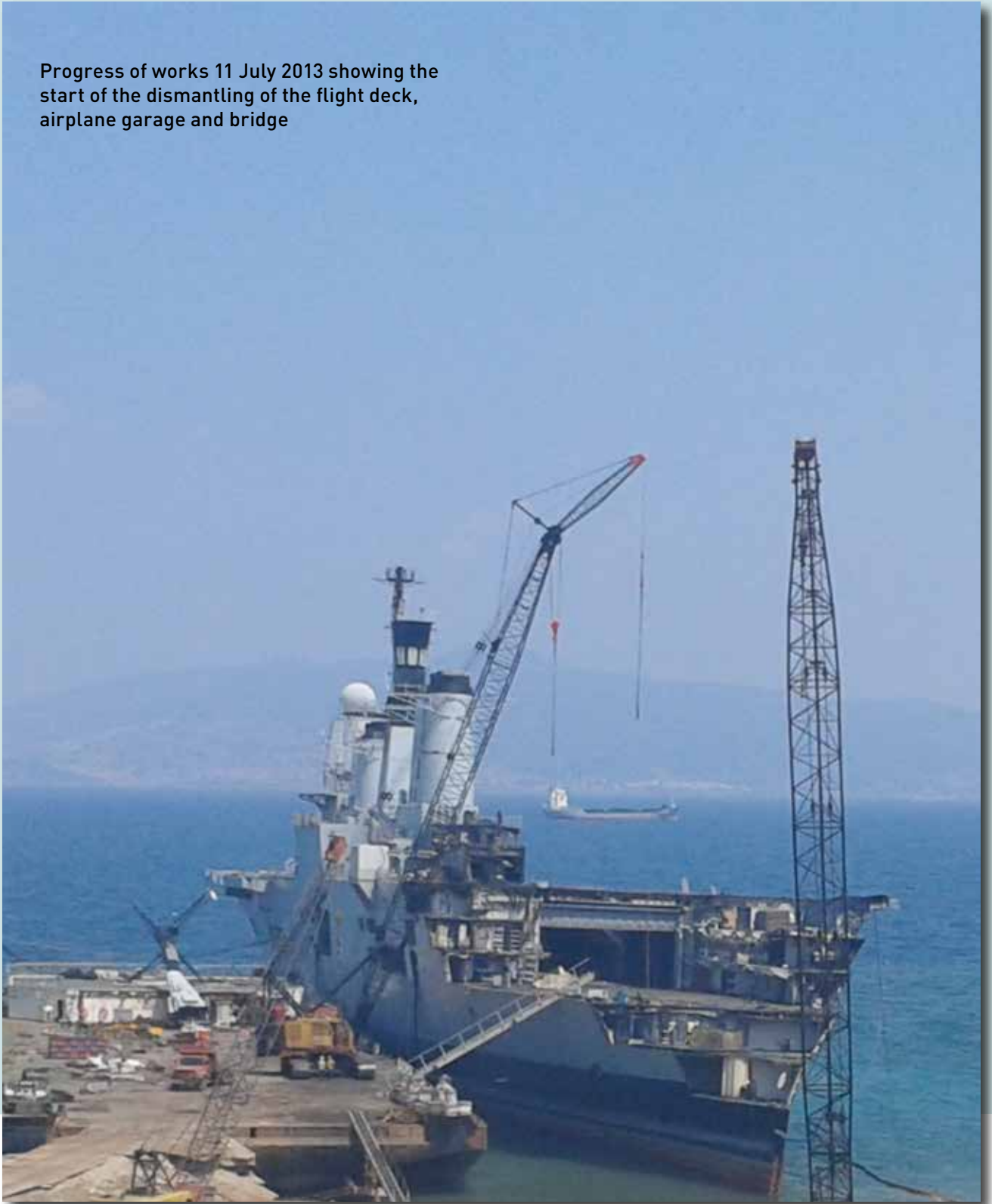
The photographic evidence shows the dismantling progress and this coincides with the Demo Schedule and the sales progress reports supplied by LEYAL on a monthly basis.



Progress of works 3 July 2013
showing dismantling of
superstructure & flight deck

Photographic Evidence

Progress of works 11 July 2013 showing the start of the dismantling of the flight deck, airplane garage and bridge





Progress of works
6 September 2013



Progress of works
30 October 2013
Superstructure
dismantling complete

Final Outturn

At the start of the project DRSO produce an Inventory of Hazardous Materials (IHM), the purpose of this was to identify what hazards were contained in the vessel which is then compared with the final outturn figures reported to the DSA by LEYAL Ship Recycling.

A detailed outturn of materials (ferrous, non-ferrous, plastics, asbestos, oils etc) is recorded by the company and this information is communicated to the DSA on a monthly basis, with hard copies available for inspection during the regular visits by DSA personnel.

(All figures in Tonnes)	Expected	Actual	Destination
Ferrous Metals	10,000	10,757.050	Recycled
Non-Ferrous Metals	450	552.580	Recycled
Cables	500	142.440	Recycled
Other Products	200	357.120	Sale/Recycled
Waste	850	771.25	Disposed
Total	12,000	12,580.44	

Final Destination	Tonnes	%age of Total
Sold or Recycled	11,809.19	94%
Disposed	771.25	6%
Totals	12,580.44	100%

93% of the material was recovered and recycled from Ex-HMS Invincible with a final outturn figure of 11,683 tonnes. The difference of 897.44 tonnes from Ark Royal compared to Invincible was to be expected as Invincible once decommissioned had continuous removals and cannibalisation to support both Ark Royal and HMS Illustrious still in service.

Items from the ship sold on for further use are purchased by specialist buyers who come and visit the ship at the start of the disposal process. Equipment such as washing machines, ships chains, doors and machinery is also sold on for further use.

Conclusion

Ex-HMS Ark Royal was completely recycled on the 21 November 2013.

Ex-HMS Ark Royal is now the 17th Ex-MOD vessel successfully recycled which has complied with all international agreements and principles concerning environmentally sound management of waste.

Since 2008 LEYAL Ship Recycling has won 15 MoD recycling projects and along with Ex-HMS Invincible recycled in 2012, Ex-HMS Ark Royal is the second aircraft carrier to be successfully recycled at their dedicated ship dismantling facility in Aliaga, Turkey

As with Ex-HMS Invincible LEYAL received a great deal of media interest in this vessel as well as enquiries from former sailors who received, with the compliments of the company and in recognition of the strong attachment that Ark Royal had with those who served on her, a memento in the shape of a small piece of the hull suitably engraved.

The report will be sent out to senior internal stakeholders and a growing number of other foreign Governments as they view the UK MOD as the lead when it comes to recycling warships.

The report will be uploaded on to the DSA website

<https://www.gov.uk/government/organisations/ministry-of-defence/about/procurement#disposals-services-authority>

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Royal Navy aircraft carrier R07 HMS Ark Royal leaves Portsmouth harbour to lead Britains largest taskforce since the Falklands War in 1982.



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of Defence



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