

TOWARDS THE HOVERCRAFT MUSEUM

BY

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SUMMARY

It will be apparent from the papers presented at this Silver Jubilee seminar, that very significant development of hovercraft has taken place, in SES, amphibious hovercraft, military and civil application areas. Several hundred craft have been built, world-wide usage publicised, innovative roles demonstrated, many books and papers written, films and videos produced, and yet there is no museum dedicated to the hovercraft story. However, a group of enthusiasts are working to overcome this omission, and over a number of years have collected suitable display material, including a number of craft. Restoration work has been undertaken, a search for a permanent site continues, fund raising has been addressed and archival material used to assist researchers and TV companies. Whilst a lot has been achieved, the future of the Hovercraft Museum Project holds many challenges.

1. INTRODUCTION

Anniversaries, such as the Silver Jubilee of the Hovercraft Society, are times when reflection is appropriate. The seminar to celebrate this event clearly illustrates the progress that has been made in the types of hovercraft built and their development, and the roles they have performed. However, these twenty five years only cover the more recent portion of the hovercraft story.

The philosophies of reducing the friction between a ship's hull and the water through which it is travelling, and the reduction of the wake generated by this passage, have been around for many years. Theoretical concepts have been outlined, and some practical designs attempted, but generally the available technology was not at a stage to achieve practical realisation.

As far as the United Kingdom was concerned, it was not until the mid 1950s that there was an opportunity to move from theory to a practical demonstration. This was achieved by the work of Christopher Cockerell (later knighted for his efforts), initially in Norfolk, and later on the South Coast of England. He first demonstrated his ideas in the famous 'coffee tin' experiments, with the use of a hair dryer, kitchen scales and some modified tins. The next step was a small balsa wood model, powered by a model plane engine.

Reaching this stage must have seemed increasingly easy as he tried to interest various Government Departments and Agencies, in helping in the development of his ideas. Because it was neither ship nor plane, those involved in these areas saw the hovercraft as being outside their remit. Eventually however, that man of great insight, the late Earl Mountbatten, saw the potential advantages and used his influence to get the first UK man-carrying hovercraft, financed and built. This was the SRN1 (Figure 1), which was built at Saunders Roe Ltd, at Cowes on the Isle of Wight, and launched on 11 June 1959.

Preliminary trials took place in the Solent and one month later the craft successfully completed a Channel crossing from Calais to Dover. This was achieved with Sir Christopher and two others onboard, on the fiftieth anniversary of that of Bleriot in his aeroplane. The hovercraft crossing was no mean achievement, for a completely new form of transport, and the first vehicle of this type.

The rest, as they say, is history, as the initial interest in the SRN1 fuelled development of experimental, and eventually, craft that could perform useful roles. These ranged from single seat fun craft to large passenger and vehicle carrying vessels, large military programmes and diversification into civil engineering roles with hover-pallets and hover trailers. Further knowledge may be gained from References 1 and 2.

Some ten years ago, some members of the Hovercraft Society recognised that a lot of early hovercraft, on reaching the end of their useful life, were likely to be scrapped. If this happened, important material that illustrated the early development would be irretrievably lost. Also at this time, a number of agencies and organisations were ceasing involvement in hovercraft activities and disposing of archival material, such as records, reports, photographs and films. Thus, if a hovercraft museum was to be set up, action had to be taken.

2. POTENTIAL DISPLAY MATERIAL

a. Hovercraft

As suggested in the introduction, interest in a Hovercraft Museum, was fuelled by a number of hovercraft reaching the end of their useful life and being offered for disposal. Inevitably this meant for scrap and usually a quick decision was required.

The first two craft acquired in this way was a British Hovercraft Corporation (BHC) SRN5 and the Hovercraft Development Ltd (HDL) HD2. The SRN5 was initially obtained from BHC, when they vacated their Osborne Works at East Cowes. Temporary storage was offered by Air Vehicles at their West Cowes factory, but eventually the craft was moved into storage at Fort Cumberland. The centre section was moved into one of the wooden huts, using a scheme thought up by David Woods. This scheme used a wooden "railway line" and the last portion of roller tracking from Vosper Thornycroft VT2. The railway was laid outside the hut doors and into the interior. With roller track under the front landing pads and the stern of the craft suspended from a crane, it was an easy matter to move the centre section into the hut.

It was always hoped that craft would be donated to the Museum Project, but this was not always possible. HD2 had ended up at the Aircraft Museum of Wales, who were having to rationalise their exhibits. Because it was the first craft to use the HDL loop and segment skirt, the Museum Trustees felt the purchase of this craft worthwhile. The intention to move the HD2 into another hut at the Fort was thwarted by the difficulties encountered in removing the two propellers and pylons.

Both these amphibious hovercraft were transported by lorry, albeit via a vehicle ferry in the case of the SRN5, and with a police escort in the case of the HD2. One of the next major acquisitions - an HM 218 - was towed by sea. This journey was from Hovermarine International's premises at Woolston to Vosper Thornycroft's pier at Hardway, Gosport. Unlike Fort Cumberland, this resting place proved less than secure. One cold and windy day, the craft was reported as sinking. A party of able-bodied men was rounded up and with much physical effort the craft was moved nearer the shore. At a later date, the local vandals turned their attention on the craft and broke every piece of glass they could find - windows, instrument glasses, etc. The craft was eventually moved to buoys in the locality, and later moved to Vosper Thornycroft's at Portchester, where it was eventually lifted out of the water.

Once the existence of the Hovercraft Museum Project became more widely known, several more hovercraft were offered and taken into storage. These ranged from the Hover Midget - a single seat craft intended for children to the Fleet Air Arm Museum's Cushioncraft CC7 and a Skima 12. Other acquisitions included inflatable Skima 4s and a sidewall craft built by Kip McCollum, which had crossed the Channel. A number of these craft have been "farmed" out to individuals or organisations to refurbish. This has the double advantage of the various craft being prepared for display and reduces the storage requirements, albeit for a limited time.

Until recently, only the Hover Midget and Grant Whittington's GP (Guinea Pig) 2 were able to operate. Other craft with the potential to be restored to an operable state are the Skima 4s, and possibly the Skima 12. However, it is the two Hoverair designs - the Hover Lark and the Hover Hawk that offer the greatest potential in this respect. The Project has a number of these craft being refurbished in various locations spread around the south of England. The major advantage of these designs is that they are relatively small and the engineering involved does not require highly skilled engineers. Thus, refurbishment is within the scope of many and is not an overwhelming task. A large number of Hover Hawks were built and Sir Ranulph Fiennes used two on an expedition to the source of the River Nile.

The largest hovercraft in the Museum's collection is the BH7, which is 23.9 m long and weighs over 50 tonnes. This craft was used by the Interservice Hovercraft Trials Unit on a wide range of tasks, including cold weather trials in Sweden and the Gulf of Bothnia. A visit was also paid to the east coast of the USA, and helped convince the US military to support hovercraft development. Finally, after being used as a Mine Counter Measures demonstrator, the craft was acquired by Hoverspeed, who removed all components compatible with the SRN4s. The BH7 was subsequently offered to the Museum.

After a period at Cowes, the craft had to be moved to another site. Fortunately, the Captain of HMS DAEDALUS said it could be stored at the air station, but how to get it there? The craft had no engines, and there was no crane on the Isle of Wight with sufficient lifting capacity. With the skirt system intact, there was scope to generate an air cushion by use of external air blowers. The lift fan intake was blocked off, with four holes left for the air inlet pipes. By this means, the craft was moved onto Cowes Harbour, moored up overnight and towed across to the mainland on the following day. With the blowers re-connected, the BH7 was eventually hauled up the slipway and into its resting place on the airfield.

As well as hovercraft built by commercial firms the Museum has been happy to take craft built by amateurs and schools. This is for two main reasons: a number of interesting innovations have started from this point, and it was always intended to illustrate all aspects of hovercraft development.

b. Models

As well as full size craft, the Museum has acquired a number of models. These fall into three main categories: research models, including those used in towing tanks and wind tunnels; publicity and display models and conceptual models.

Whilst St Christopher's original operational model of the hovercraft is in the Science Museum, his original conceptual model, consisting of coffee tins is currently on display at the Chatham Historic Dockyard. This is as a component of the Science Museum travelling exhibition, currently on loan to the Museum Project. The earliest research model of the SRN1 has been restored to a working condition, supported by a Carnegie Grant.

Model testing is an established technique in the marine field, and has been used extensively in the development of hovercraft. The Museum has acquired a number of models in this category apart from that of the SRN1. Included in this category are a number of $\frac{1}{50}$ th scale models of the HD2 and one of the CC7. These models were aimed at establishing hydrodynamic characteristics, but aerodynamic qualities were as important. Wooden wind tunnel models, used to assess air flow conditions, are also part of the Museum's collection.

Models have been used for publicity and display purposes, and most companies produced them for those activities. Again, the Museum has been fortunate to be given a number of these, mainly representative of the BHC stable. These include the SRN2, SRN3, SRN4 and BH7 in a number of variants and role versions. As well as providing a useful record of the hovercraft story, they are easily transported to displays, shows and lectures, and form an attractive part of the display material already available.

The final element in the model element are conceptual models. These do not represent any special design, but were used to illustrate the potential of the hovercraft concept. Whilst appearing futuristic in layout - one from BHC bears a striking resemblance to a flying saucer - they do serve to illustrate some of the early thinking in hovercraft design.

c. Library

Whilst the Museum's collection of hovercraft, models and other material is of paramount importance in outlining hovercraft and component development, it is only a part of what is available. Over the same time frame as the acquisition of hardware, many organisations and Government agencies have been disposing of archival material. The Museum has been fortunate in acquiring a number of collections but has also been unfortunate to hear of material that has been disposed of in a less satisfactory manner.

The Hovercraft Society's Library contains a large number of books, papers and other material useful to both the casual reader and ardent researcher. This material has been augmented by photographs, transparencies, films and videos, plus additional material, via the auspices of the Museum. It is probable that the archival material currently held represents one of the largest collections.

Although the library has been used by a number of students and researchers, there is no doubt that further publicity would result in increased usage. However, the material has been drawn upon by a number of film and TV companies, that were either telling some part of the hovercraft story, or commemorating some anniversary. Some of the film has been transposed onto video and has proved useful in the various presentations given by the Museum Trustees and others. There is little doubt, that with a little effort, this could become "a nice little earner" for Museum funds.

The Library is currently housed at 15 St Marks Road, Gosport and may be accessed by contract the Hovercraft Society's Honorary Secretary - Warwick Jacobs.

3. SITES

a. Storage

The main initial objective of those involved in the Hovercraft Museum Project, was to save potential display material from being scrapped. For if this was allowed to happen, any museum covering hovercraft development would not be able to tell the full story.

Many of the hovercraft saved were relatively large vehicles, and consequently could not be stored in "someone's back garden". Thus, the search for a Museum site initially centred on one to store the continuously escalating number of hovercraft held. As hinted at earlier, just when needed an English Heritage site at Fort Cumberland was offered. The Fort had previously been used as a storage site for material from the Mary Rose, and its future was at that time uncertain. Additional storage was provided at HMS DAEDALUS for BH7 and Vosper Thornycroft for the HM2.

The site at Fort Cumberland was centred on three World War II vintage wooden huts, two weatherproof, the third somewhat dilapidated. As material was acquired, including many BH7 skirt components, not only were these huts filled, but the space between two of the huts was used for some of the smaller craft and large components.

Just prior to the announcement by the Heritage Minister - the Rt Hon David Mellor, to Parliament, that Local Authorities would be asked to take on English Heritage sites, the Trustees were informed that Fort Cumberland would have to be vacated. As the time scale for this was short, something approaching panic set in. This was because in earlier searches, virtually all the local potential had been explored and found wanting.

However, the local newspaper - The News of Portsmouth had always been supportive of the Museum's activities, and ran a front page story on the plight. The main thrust was that if an alternative site could not be found, an important part of his country's heritage would have to be destroyed. Fortunately, a favourable response ensued and the valuable collection was moved from the Fort, to an agricultural building at Wicor Farm, Portchester, Hants.

Prior to the move, new overhead lighting was installed, to facilitate refurbishment of exhibits outside of daylight hours. Although the building was relatively large, it was soon almost full. but at last, all material was undercover, in a situation that enabled work to be carried out as required. A situation that did not prevail at the Fort.

With the general collection safely housed at Wicor, with planning permission for a year, renewable for a further three years; the BH7 at HMS DAEDALUS until 1995 and the HM2 at Vosper Thornycroft, the immediate future looks relatively assured.

b. Permanent

Whilst this is an admirable situation, it does not satisfy the second main objective of putting the material on public display. Whilst it has been possible to have open days at Fort Cumberland, and BH7 has contributed to HMS DAEDALUS Air Days, these were isolated occasions, and general display remained an objective.

One of the first sites that appeared to have a potential to satisfy the need for a permanent site, was Gunboat Yard, at Haslar, Gosport. The impetus came from Gosport Borough Council, who were interested in creating a triumvirate of a Coastal Forces Museum, the Maritime Heritage Workshop and the Hovercraft Museum. There were a number of major advantages to this site, including: the ability to develop common infrastructure such as car parking, cafe, etc with the Submarine Museum; the use of a historic building designed by Isombard Brunnel; in the same location as other maritime heritage exhibits; potential to use a Portsmouth Harbour waterbus service; and a large enough site to house all the Museum's exhibits. However, ownership is vested in the Ministry of Defence (MOD) and until the site comes up for disposal, its future remains uncertain.

Most of the advantages quoted for the Gunboat Yard are also valid for Priddy's Hard , at Hardway, Gosport. But again, the site is MOD owned, although it may be released earlier. The future use also needs to be established, although housing development is a strong contender. HMS DAEDALUS is due to be vacated by the MOD by 1996, and has a strong claim for consideration, having been the home of the Interservice Hovercraft Trials Unit and later the Naval Hovercraft Trials Unit.

A number of other sites that have been considered, including the Hampshire Recreation Centre at Calshot, near the mouth of Southampton Water. Being an old flying boat base, there are buildings large enough to house the Museum's collection. However some of the currently available buildings would require significant investment to make them weatherproof and safe to use. At first sight, the location presents access difficulties, but the road network is being improved, and the waterside location lends itself to a waterbus service. This might be covered by a medium sized hovercraft service linking Calshot with Southampton and Portsmouth.

More recently, a potential site on the Isle of Wight has materialised, with interest being shown both by the site developer and the local authority. A waterside location gives the advantage mentioned for other sites. The Isle of Wight was, and to a certain extent still is, a major centre of the hovercraft industry, and for this reason would be a natural home for a Hovercraft Museum. Local tourism experts suggest that the Isle of Wight needs more major attractions. A potential difficulty is the sustaining of a winter visitor profile, once the holiday makers had gone home. However, school and other party visits might help to bridge any gap. Also, some time would have to be dedicated to refurbishment and display changes.

4. ORGANISATION

There are three main components to the organisation supporting the Hovercraft Museum Project - two formal and one less so. The two formal elements are the Trustees and Friends of the Hovercraft Museum.

a. Trust Deed and Trustees

The original enthusiasm for the Hovercraft Museum came from a few members of the Hovercraft Society. It soon became apparent that if progress was to be made particularly by way of recognition by appropriate agencies, a Trust Deed would have to be drawn up and approved and a Board of Trustees set up.

A great debt is owed to Walter Woodford, who drew up the draft Trust Deed, which was approved by the Hovercraft Society, and after minor modifications was accepted by the

Charity Commission. The initial trustees were Peter Habens, Warwick Jacobs, Mike Pinder, Walter Woodford and the Chairman of the Hovercraft Society - who at the time was the author. The Chairman was allocated a place on the Board to protect the interest of the Society, who were supportive of the Museum, by technical and financial involvement, and the use of the Society's Library. Later, Walter Woodford was replaced by David Wood and on election, Malcolm Cox took over the Society Chairman's position.

b. Friends of the Hovercraft Museum

Early on in the development of the Project, it was realised that a supportive organisation to the Board of Trustees was required. The author became coordinator of the Friends of the Hovercraft Museum (FOHM) on ceasing to be a Trustee.

The main objectives of the FOHM are to provide an agency that caters for the interest that is being shown in the Project, to provide a pool of labour that can be recruited to undertake any task required and to raise funds to support the aims of the Trustees. The Trustees are members, and the remaining fifty-seven members are drawn from throughout the UK. Members receive an occasional Newsletter - which is usually published four or five times a year. Annual subscription is currently £10. In order to remain within the charitable status of the Museum, the FOHM does not have a formal constitution, but no problems have been encountered because of this situation.

With young people showing an interest, a Junior garde of membership has been created. Annual subscription is £5 and members get a joining pack containing hovercraft data sheets and other items. The expected response has not yet materialised, but there is little doubt that this is an area worthy of more attention. Had the problem with the BH7 bow ramp lowering and raising been resolved, school parties could have been accepted. The craft could be laid out with display material, including perhaps working models and video facilities. Visiting children would be given a questionnaire to complete, to increase the educational value of the visit. The excitement of the visit could be enhanced by providing refreshments from the galley.

c. Other Support

As well as the Trustees and FOHM, there are a number of firms, agencies and individuals that support the Project, or have expressed interest in its development.

Local authorities and Hampshire Council have been kept in touch with progress, and with the change in political make up that has recently occurred, interest has grown. The Project is affiliated to a number of museum organisations, including the Association of Museums for South East England. Much valuable advice has been received from these sources and they have afforded attendance at a number of useful seminars, covering various aspects of museum business. A number of firms have cooperated with the Project, providing advice and services, often at discounted prices.

Reference has been made previously to the support provided by the Hovercraft Society. there is little doubt that the Project would have had a much more difficult gestation without that support. The Hoverclub of Great Britain, particularly the Southern Branch has helped with what has so far achieved. In addition, Gordon Taylor of the North Western Branch has exhibited an early home built craft - Clarkcushion, at various events in the North of England.

The last area of support is by way of patronage. The Museum Project is fortunate to have as Patrons: Sir Christopher and Lady Margaret Cockerell and Lord Hotham, who was involved with Hoverair. Lord Romsey has been helpful in endorsing various requests. In addition, MOD officials have been kept informed of the Project's aims.

5. FUND RAISING

Like many similar organisations, the Hovercraft Museum has had to address the problems of fund raising. In the early days, finances had to be acquired quickly, to fund the moves of the medium and large sized hovercraft involved. For example, the move of BH7 cost around £7500.

Whilst donations from interested companies, and others providing services at cost covered some of the outlay, there was a significant shortfall. This was met by long term loans from the Hovercraft Society and others, and donations from individuals. The attraction of saving a particular vehicle seems to attract more support than giving to a general fund.

FOHM subscriptions, together with the sale of books, postcards, posters, pencils have been a major contributor to Museum funds. This is either via mail order, personal visits or attendance at shows, carnivals, etc. This is not always a success, as standing for hours on end to earn a few pounds is not a good use of supporters time. To date most of the hovercraft souvenirs for sale have been obtained from companies - mainly Hoverspeed. However, these sources are reducing, and there is a need to purchase specific Hovercraft Museum souvenirs, either individually or as a range. This will have to be approached carefully, because at this stage in its development, the Museum cannot afford to have significant financial resources tied up in stock.

As might be expected from enthusiasts interested in an environmentally friendly, fuel efficient vehicle, recycling features strongly in fund raising activities. Waste paper produced reasonable revenue in the early days of the Project, but the market is depressed and selective at the moment. However scrap metal - particularly aluminium cans have helped to maintain income in this area.

Because the Museum has not got a permanent home, application for grant aid from local authorities Museum or EC agencies is not yet possible. Once a site is available, there is little doubt the grant aid would be possible from these sources. This is because there are funds dedicated to the creation of new transport museums - for transport of exhibits and setting up the operation. There are grants available for restoration purposes, and a number of applications have been made. However a Carnegie grant was obtained to help with the restoration of the SRN1 research model. Museum agencies have also helped with funds to attend seminars on museum development and to help with Library documentation.

The Helicopter Museum, based at Western Super Mare, hold an annual display, over a weekend in late July/early August. The main activity is centred on static helicopter displays, flying displays, helicopter rides and various stalls. For the last two years the Museum has participated with a stall and hovercraft rides. The shallow water and exposed sand at low tide make the beach ideal hovercraft country. With good weather and reasonable crowd, a single hovercraft can keep going all day. Obviously, with two or more craft, or a larger one, revenue from Helidays could be significantly increased.

In the lead up to obtaining a permanent site, a valuable asset would be the ability to give hovercraft rides. This would not be on a permanent basis as many have already gone down that road and not achieved profitability. However, where crowds are attracted to events, rides could be a lucrative venture at the right location. More research should be conducted in this area, particularly as more funds will be required in the future, and a number of hovercraft owners have volunteered their services.

Finally, another activity that could generate funds is the giving of talks. There are a multitude of local organisations that organise their programmes around talks on various topics. Hovercraft in general and the Museum in particular have attracted great interest in this direction. Revenue can come from two sources - a donation from the organisers and the sale of Museum items. Further efforts need to be devoted to this activity, perhaps starting by advertising the willingness to provide speakers.

6. THE FUTURE

Fund raising also needs to be addressed - the provision of new souvenirs, locations for hovercraft rides and an increase in the giving of talks are all areas that should be investigated.

A great debt is owed to those who had the foresight, had the willingness and were prepared to devote time and effort to the realisation of the Hovercraft Museum Project. Some have been named in this appear, but many have not. The achievements of collecting potential display material and its movement, have been achieved with minimal resources, and are remarkable.

Activities that need to continue are craft restoration and the improvement of the service to FOHM. In this context, the Junior section is worthy of development and liaison with local schools should be looked into.

However, these activities need to be carefully planned, for it would be easy to get into an overload situation, as the number of key players involved is limited. Indeed, the majority carry out demanding functions for the Hovercraft Society, in addition to their involvement with the Museum.

The search for a permanent site continues, but there are discussions going on about the potential site on the Isle of Wight. In the short term this is the only one likely to be offered, as the others remain under MOD control, or tied up for other purposes.

The problems of acquiring, storing and looking after the acquired hovercraft, difficult though they were and are, will pale into insignificance if an offer from Hoverspeed materialises. This is for an SRN4 Mk2. Currently the two remaining craft are out of service, but could have all their systems installed. The Captain of HMS DAEDALUS has kindly agreed to the craft being stored there - thus solving one major problem. The craft could be towed from Dover to Lee-on-Solent, or driven under its own power, but preparation costs would be significant.

Acquisition of an SRN4 opens up a number of possibilities. It would obviously be the star exhibit and have significance in attracting the public. It could be configured with display material on the car deck and in some of the passenger cabins. With the internal arrangements intact, there would be scope to install a souvenir shop, refreshment bar and video facilities. An area of the craft could be set aside to tell the Hoverspeed story, with perhaps a couple of cars tied down on the car deck.

There were prospects that a craft would be offered in September of this year, but perhaps fortunately, this did not occur. Fortunately, because the necessary finances were not in place, and enthusiasm

might have swamped reason. However, with the breathing space provided by the delay of acquiring an SRN4, a chance is available to prepare properly and completely. Help with these preparations has been forthcoming from an unexpected source. As part of their degree studies, a group of Portsmouth University students are preparing two Business Plans. The first is for the Museum Project in general and the second is for the configuration of an SRN4 as the Museum. Details of the latter proposal may be found in Reference 3. However, the unexpectedness is probably explained by the author being one of the students!

In conclusion, a lot has been achieved towards the Hovercraft Museum, with limited resources. There are a number of areas of weakness that need to be addressed. However, the enthusiasm of the participants remains undaunted, even with what remains to be achieved. With the possibilities of obtaining an SRN4 Mk2 and the prospect of a permanent site, exciting times await the Hovercraft Museum Project.

REFERENCES

1. **Hover Craft by Angela Croome.**
2. **The History of the Interservice Hovercraft Trials Unit by Brian J Russell.**
3. **Introduction to Thursday Learning Support Group (LSG) Project for 1993/94 - the Use of an SRN4 Hovercraft as a Hovercraft Museum by Brian J Russell.**

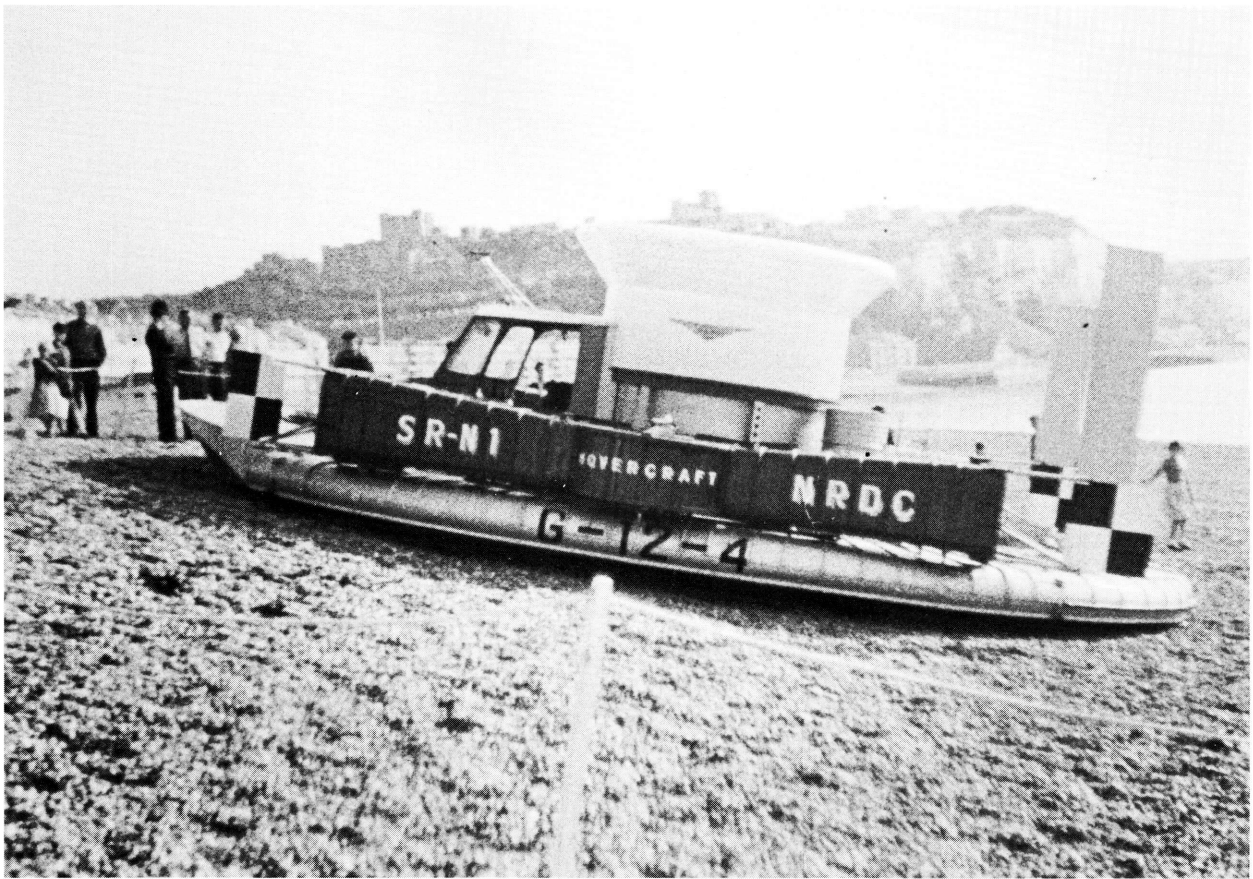


Figure 1. The SRN1



Figure 2. The Hovercraft Museum's HM2



Figure 3. The Hovercraft Museum's BH7 being recovered up the Slipway at HMS DAEDALUS