MAINTENANCE AND REPAIR OF HARBOUR CRAFT

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by

COMMANDER (E) J. H. ROUGHTON, R.N.
Craft and Amphibious Material Department

PART II

In Volume 2, No. 4, of this Journal the development of naval servicing craft (N.S.C.) maintenance in the United Kingdom was traced from the earliest stages of the European phase of Second World War until its termination on V.E. Day. In this article the problem of N.S.C. maintenance in the East Indies and British Pacific Station is considered.

Since a large N.S.C. requirement would exist in the further prosecution of the War in the East Indies Station and the area within the administration of Commander-in-Chief, British Pacific Fleet, full advantage was taken of the organizations in existence and of the experience already gained. In order that the material requirements of the craft in this area should receive timely and adequate consideration, the organization provided by Director of Small Vessels Pool (D.S.V.P.) was supplemented by a full-scale co-ordination on the material side.

The measures taken in pursuance of this policy and their effect on the operation and maintenance of the craft themselves are briefly mentioned. A brief reference is also made to the post-war organization which is the outcome of experience gained under war conditions.

As the writer of this article was directly involved in the technical administration of N.S.C. in the East Indies Station, he will perhaps be excused for appearing to lay more stress on affairs in this area. In extenuation it is however generally considered that the problems involved were more numerous and complex than those expected in the British Pacific Fleet Command.

CO-ORDINATION OF REQUIREMENTS FOR NAVAL SERVICING CRAFT MAINTENANCE AND REPAIR

It was evident from the outset that the supply position would give rise to the employment of a large variety of craft and would involve a very large number of different makes and types of engines. Although the number of engine types employed in the East Indies and the Pacific was not as large as that employed in Home Waters in the earlier part of the War, it was much greater than the number hitherto coming under consideration in any one operational unit.

For this reason it was decided to vest in the Director of Combined Operations Material (D.C.O.M.) the added commitment of co-ordination of maintenance and repair requirements for naval servicing craft (then known under the title " Harbour Service Craft ") in the Far East. D.C.O.M. was not concerned with N.S.C. in any other area of operations.

To this end, D.C.O.M. in co-operation with other Admiralty Departments conducted a close investigation into the details of the craft and their mechanical equipment that could be expected to be put into service. At the same time the numbers and distribution of the craft was closely studied as plans for the prosecution of the War developed.

The estimates of base requirements for maintenance and repair were calculated on a basis of 24 static ports, 4 captured ports and 4 advance bases. D.C.O.M. also gave consideration to the docking requirements for these craft for co-ordination with those for other small vessels by the " Small Floating Docks Sub-Committee."

ADMINISTRATION OF NAVAL SERVICING CRAFT BY COMMANDERS-IN-CHIEF

In the course of the investigations it became increasingly evident that officers for administrative staff would be required on the stations concerned to handle allocation and maintenance problems on behalf of Commanders-in-Chief if the measures under consideration in the Admiralty were to have any chance of success, and approval was given for the following appointment of officers solely for these duties :—

East Indies Station	...	One Captain R.N.R.—S.O. (H.S.C.) Two Lieutenants R.N.V.R. (Later one Commander R.N.V.R.) One Commander (E) R.N.—S.E.O. One Lieutenant Commander (E) R.N.V.R. One Lieutenant (E) R.N.V.R. One Lieutenant (Sp.) R.N.V.R.
British Pacific Fleet (V.A. (Q) B.P.F.)		One Commander R.N.V.R.—S.O. (H.S.C.) One Lieutenant (E) R.N.V.R.

These did not include the requirement for officers to supervize maintenance bases or for duties on subordinate administrative levels.

In the Australian area the harbour craft administration formed part of the Fleet maintenance organization under the Vice-Admiral (Q) which was located in Melbourne until after the close of hostilities when the main headquarters of V.A.(Q) transferred to Sydney.

A GENERAL SURVEY OF NAVAL SERVICING CRAFT OPERATION IN THE EASTERN THEATRE

The area contained within its boundaries a very wide range of natural characteristics, racial, geographical, and climatic to mention a few. The localities wherein the craft were expected to operate, ranged from large seaports such as Sydney or Bombay to practically uncut jungle and virgin coastline. Local racial development varied from a high standard of civilization, as in Australia, through the grades of Eastern culture to some of the lowest primitive levels of human development. These factors had a direct bearing on the operation, administration, and maintenance of naval servicing craft in the area under consideration.

The simplicity of the layout of naval servicing craft generally and the absence of secret equipment renders them imminently suited to the employment of non-Service personnel both as crews and for maintenance work. Thus in tropical areas, especially where little commercial development had taken place, the employment of local Asiatics in this way is a practical solution to problems of accommodation, acclimatization, and amenities. Against these advantages must be set a lack of organized discipline and *esprit de corps*, some natural characteristics of dishonesty and laziness, and to a less extent disaffection. Religion and language give rise to certain problems that must be overcome with understanding and sympathy. These crews are, of course, immobile and will seldom accept separation from their families ; granted this and a regular supply of food little serious trouble was experienced.

Local manning was extensively used at Colombo and Trincomalee, in Bombay, and at Singapore (Keppel Harbour) after the re-occupation, where the natural bent of the local population was toward maritime and mechanical pursuits ; this included the employment of locals on maintenance and repair work.

It was anticipated that craft would be in service in about eight ports in India and three major ports in Australia plus an intermediate base at Manus. The Fleet Train attached to the British Pacific Fleet possessed its own N.S.C. pool and would supply craft for service at Manus. In the area under the C.-in-C. B.P.F., naval servicing craft were both manned and maintained by naval personnel, the employment of local civilians being impracticable. A main N.S.C. base at Blackwattle Bay attended to the 130 odd craft at Sydney. The workshops here were never entirely completed, but much useful work was done in the temporary shops, erected and manned by naval personnel. Heavier repairs in the Australian area were put out to contract and in Sydney some fourteen firms employing a total of 11 slipways handled the commitment.

As regards Ceylon and India, the boat yards at Trincomalee and Colombo were planned to handle maintenance and repair of all craft in Ceylon though neither reached the full development planned. The craft scattered round the main ports in India were maintained by whatever facilities could be made available. Heavy repair was put out to contract by the Director-General Ship Repair's organization, and was ranged for priority with warships and merchant ship work. The standard of local workmanship varied with the district. In some places, such as Bombay, it had been possible to organise a certain amount of maintenance on a contract basis employing local personnel under general naval supervision. Where a landing craft base existed, maintenance of N.S.C. was sometimes taken on by arrangement, but additional to the normal work of the base. Shortage of both officers and ratings made the administration and supervision of N.S.C. an almost impossible task. It must be realised that in places like Bombay or Calcutta berthing and kindred factors resulted in a wide scattering of craft ; slipways, and maintenance bases were

often eight to ten miles from the naval headquarters. It was difficult, therefore, to arrange for adequate supervision by technical officers already burdened with other commitments of higher operational priority.

For exactly similar reasons it was difficult for C.-in-C.'s staff officers at Colombo to appreciate the situation in the ports and bases under Senior Officer Royal Naval Establishments India (S.O.R.N.E.I.), and it was to endeavour to improve these conditions that much thought and effort was directed.

From this brief survey it will be seen that the maintenance of craft actually in use in Indian ports constituted a serious problem, but to this must be added the commitments arising from craft earmarked for operational bases in forward areas which were off-loaded in these ports for care and maintenance and overhaul prior to onward routing to assembly ports. Furthermore, convoys of M.F.V. began to arrive, many of which needed work done on them to prepare them for duty either in rear bases or forward areas. Thus by May or June of 1945 the N.S.C. situation in India was reaching crisis pitch.

Similar problems arose 15 months earlier in the Australian ports, and a need for a proper co-ordination of allocation and maintenance requirements was making itself felt. In addition to the upkeep of the craft in service and awaiting service a considerable building programme was being carried out in Australia which called for technical administration. New construction capacity in Australia was allocated by the Small Craft Construction Directory, while overseeing was carried out in New South Wales by the staff of the R.N. Repair Base, Wooloomooloo, in others by the Royal Australian Navy or by the Australian Military Authorities. Some 600 craft in all were so built and put into Service in the Eastern Theatre.

TYPES OF NAVAL SERVICING CRAFT IN SERVICE IN THE EASTERN THEATRE

While a wide variety of types of craft and main machinery were used in the U.K. for naval servicing, in the Far East, if we exclude local requisitioned boats, the craft in service were on fairly regularised lines.

Four types of M.F.V., three of which were portrayed in the Part I, were in general use. Being of very recent construction the usual troubles arising from the use of unseasoned timber and inexpert workmanship were experienced with these craft.

A large number of types of hard chine fast motor-boats were supplied, both Admiralty and R.A.F. types with twin or triple screw. The open launch type was represented by the 45 ft P.L.(D) and a large number of 36 ft H.L.(P), 32 ft, 30 ft and 27 ft Motor Cutters.

In addition, in the B.P.F. Area a number of 40 ft Cadillac, petrol-engined open launches and the Australian built dory were very extensively used and the latter in the 26 ft size was a very useful craft.

Another successful type was the Canadian-built Ramped Cargo Lighter (R.C.L.), a prefabricated craft built entirely of wood on the lines of the L.C.M. Mk. I. It was fitted with 2 Chrysler Crown or Gray R.C.L. 330 petrol engines.

A number of types of sectionalized wood and steel lighters were also supplied for use in this area. The majority of the craft were built of wood ; steel construction was, however, used in the *Empire*, *Tanac* and *Tusa* tugs which with the *Tid* were used for berthing and craft tug duties. A number of Lease-Lend engines were used in these craft, and most of the smaller craft were petrol-driven.

ROUTEING AND FREIGHTAGE OF CRAFT IN THE EASTERN THEATRE

As many as possible of the craft were sent to the Far East in convoys, while those too small for ocean passage were sent as freight. In several cases it was possible to send 75 ft M.F.V. and 61½ ft M.F.V. in special heavy-lift ships, but as these had to be carried as deck cargo they had to be off-loaded before access to the holds could be obtained. When the freighters' derricks were not capable of lifting the craft they had to be discharged wherever cranage was available.

M.F.V. destined for convoy were assembled in U.K. in South Coast ports and the local naval authority was made responsible for the final fitting out, storing, and supply of passage and on-board spare gear. Careful staff work was necessary to ensure that the correct spare gear was despatched to assembly ports, since this was produced by firms all over the country and despatched in accordance with latest available information as to the whereabouts of the craft for which it was intended ; as circumstances sometimes involved changes of programme it was a work of art to ensure that all craft left with their proper outfit. In addition to this, errors in transport sometimes resulted in the disappearance of a given consignment of spares until unearthed too late in some unexpected quarter ; this necessitated the re-allocation of outfits to replace those temporarily mislaid. It was intended to establish a " pipe line " of these craft to Indian and Australian ports, so that actual time on passage would be of less consequence. This steady stream of M.F.V. caused some embarrassment at Port Said and Aden, especially at the latter since it was necessary to ensure that craft were fit for the ocean passage ahead of them.

Small craft were sent with their outfits of spares and stores as ordinary freight and were unaccompanied by naval personnel. Numerous cases occurred where gear placed on board in U.K. failed to arrive with the craft, and boxes of spare gear were found to have been broken open and rifled. Damage also was done to the craft themselves by heavy bousing down necessitated by bad weather and by failure to protect them from the tropical sun.

Many of the craft arriving from U.K. were frequently an embarrassment to authorities at the arrival ports and were a commitment for repair before they could be considered fit for service.

OUTLINE OF PRINCIPLES ADOPTED

After consideration of existing facilities in the light of information available, and of craft actually in Service and likely to be in service in the two areas involved, the following principles were adopted as a basis for planning :—

(i) to plan for maintenance of craft and major overhaul of engines,

(ii) to extend existing naval facilities to cope with N.S.C. by the supply of further equipment and personnel,

(iii) to consign spare gear to Spare Gear Distributing Centres (S.P.D.Cs.), Veyangoda (Ceylon) and Sydney, to be re-distributed as required by local officers,

(iv) to allow maintenance personnel to agreed scales for distribution on the stations by Commanders-in-Chief where required,

(v) to assume the maximum use of local potential for maintenance and repair and to estimate requirements in terms of naval personnel,

(vi) to provide mobile maintenance equipment for captured ports and forward areas in the early stages of offensive operations,

(vii) to make provision for officer personnel for administration and technical supervision for allocation by Commanders-in-Chief. This included requirements of suitable officers to train local Asiatic personnel, in particular the Burma R.N.V.R.

(viii) to allow N.S.C. staff officers fullest possible scope to act through their respective Commanders-in-Chief to meet commitments in the light of their detailed knowledge of local requirements,

(ix) to keep Commanders-in-Chief fully informed of all action taken at headquarters, qualifying this action by any requirements or proposals put forward by them.

ACTION TO IMPLEMENT PRINCIPLES ADOPTED

It will be seen that full advantage was to be taken of the services of N.S.C. officers on the Stations and to suit action to the requirements of the moment. It would be impossible in the scope of this article to touch on all the detailed action taken to implement the policy just stated, or to do justice to the amount of work involved in framing these proposals. A few words, however, must be given to each of the headings where elaboration is required.

(i) Proposals here were based on the requirements of minor landing craft and worked out in close collaboration with the Engineer-in-Chief. Due allowance was made for the fundamentally different operating conditions under which naval servicing craft worked, as regard hours running, inferior handling (by Asiatic crews) and similar factors.

(ii) The actual proposals to implement the extension of Landing Craft and Coastal Force Bases where these existed were left to Commanders-in-Chief, but equipment was earmarked for the purpose.

(iii) The S.P.D.Cs. at Veyangoda in Ceylon, and in Sydney, already had a nucleus staff, and although still in process of development were capable of handling small consignments of the lighter types of spares. Although this policy involved re-despatching and consequent delay, it was decided that it would be safer, especially in the case of supplies for Indian ports, to consign to Colombo where a proper receipt organization was in existence rather than risk loss due to misunderstood consignment instructions ; it was important to ensure that gear for the Royal Navy was not confused with that for the Royal Indian Navy. Any material specifically required in Bombay was consigned to Landing Craft Material Supply Officer (L.C.M.S.O.), Bombay, and reported to Commander-in-Chief, East Indies on receipt.

(iv) and (v) The intention in allocating repair and maintenance personnel was in general to send these to the Fleet Pool at Colombo, H.M.S. *Highflyer* for re-drafting as required. Drafting action, however, would not be taken until specific requirements were received from Commander-in-Chief, East Indies.

(vi) Negotiations were set on foot to transfer certain L.C.T.(E) then surplus to Combined Operations requirements to the control of D.C.O.M. and to modify them for naval servicing craft maintenance requirements. It was estimated that twelve would be required and in order to make up this number the conversion of further L.C.T. III was embarked upon. Craft required for this purpose were re-designated N.S.C.(L). (These craft are now known as N.S.C.(E).) A further note on these craft will be found at the end of this section.

FIG. 1.—N.S.C.(E). MAIN GENERATORS AND WORKSHOP ARE IN FORWARD TANK DECK. RACKS FOR SHEET METAL AND TUBING ARE STOWED ON TOP OF AFTER DECK HOUSE

(vii) and (viii) Having obtained approval for the appointment of officers on Commanders-in-Chief's staffs to supervize N.S.C. affairs in the two commands it was necessary to ensure that these officers had the necessary assistance to enable them to travel about their areas and so that pressure of routine work would not chain them to their offices at headquarters. Consultations with the officers concerned before they left U.K. led to the earmarking of engineer officers for maintenance duties and training duties in the East Indies areas generally as well as those specifically picked as assistants to the Staff Engineer Officer for N.S.C. It was fully appreciated that unless senior staff officers for N.S.C. could be quite free to move round and to leave their headquarters at short notice, it would be impossible for them to take prompt action to put the operation and maintenance of craft on a satisfactory footing since this involved an appreciation of the requirements of each locality which could only be obtained by personal visit. It was also important that the Commander-in-Chief was not left without an officer upon whom he could rely for meeting unexpected emergencies. It was for these reasons that a larger number of assistants was provided in the East Indies organization than in the Australian area where the craft were concentrated in four localities. In the Australian area it was expected that a large percentage of the craft in service and all those for forward areas would come under the extremely efficient administration of the Fleet Train, and headquarters would probably deal only with replacements and major repair.

It was agreed that D.C.O.M. should be kept apprised of requirements and any modifications of proposed action considered necessary in the light of the detailed local knowledge which it was hoped that N.S.C. staff officers would gain.

L.C.T.(E) and N.S.C.(E)

Since L.C.T.(E) and N.S.C.(E) are being retained in the post-war Fleet for N.S.C. and L.C. maintenance purposes a few notes on outstanding features may be of interest.

(i) Basic hull design is that of the L.C.T. Mk. III in all cases, chosen for its strength and hold capacity. The original bow door has been replaced by a 10 foot ramp of light construction. Jib extensions on each side of ramp to take 6 tons each are fitted, and a load of 12 tons can be hoisted by means of a spreader.

(ii) Three 50 or 60 kW dynamos (Dorman or Ruston) are fitted immediately abaft the workshops, to take the workshop and electric galley load. Two 15 kW generators in the engine-room are retained for steaming and harbour loads, these are independent of the other generators and cannot be paralleled with them.

(iii) The tank deck has been covered in and fitted with small lathes and drills, woodworking machinery, and necessary equipment for maintenance and light repair. Electric welding plant, injector testing and battery charging, and blacksmith and coppersmith equipment has been supplied.

(iv) An extra 70 ton pump for salvage and a 27 ton Salvo Diesel-driven pump and two Johnson 50 galls/min. portable pumps are supplied additional to the basic equipment.

(v) Accommodation has been arranged for 6 officers, 26 P.O. ratings and 26 ratings.

(vi) Mobile welding and air compressor equipment is supplied.

ADMINISTRATION OF NAVAL SERVICING CRAFT IN EASTERN THEATRE

East Indies Station

The Staff Officer for Naval Servicing Craft (S.O.(H.S.C.))—a Captain R.N.R.—was responsible on the East Indies Station to the Assistant Chief of Staff (Material) (A/C.O.S.(M)), in whose province naval servicing craft operation and maintenance was included. The Staff Engineer Officer for N.S.C. was officially an extra assistant to the Fleet Engineer Officer, but arrangements were made for him to work alongside the S.O.(H.S.C.) and most of his activities were carried out in conjunction with the A/C.O.S.(M) and S.O.(H.S.C). All letter and signal action was approved and authorized by the A/C.O.S.(M) and issued as from Commander-in-Chief.

All bases and ports in Ceylon were administered by Flag Officer Ceylon and in India by S.O.R.N.E.I. as previously mentioned. In out-ports such as Aden, Kilindini, and Chittagong the N.O.I.C. was responsible direct to Commander-in-Chief East Indies. Thus all proposals regarding Ceylon and India had to be raised by the authorities mentioned and such procedure was only short circuited in case of great urgency.

Thanks to the efficiency of the Naval and R.A.F. Air Transport arrangements all ports on Ceylon and India were readily and speedily reached by air, passages being booked at very short notice. Thus it was possible to visit important bases such as Bombay and consult with the officers on the staff of S.O.R.N.E.I. when any doubtful matters arose. A similar situation obtained as regard Singapore after the rehabilitation although the traffic was such that high priority was required for passage.

Previous to the arrival of the new staff the allocation and co-ordination of N.S.C. was handled by A/C.O.S.(M) assisted by a Commander R.N.V.R., while maintenance and repair was dealt with by the S.E.O. on the staff of R.A.(Q). Under the new regime the full commitment for N.S.C., *i.e.*, procurement, allocation, maintenance and repair was brought under unified control.

British Pacific Station

On the Pacific Station the harbour craft administration formed an additional section of the Fleet Maintenance Organisation under Vice-Admiral (Q) B.P.F. to whom his S.O.(H.S.C.)—a Commander R.N.V.R.—was directly responsible.

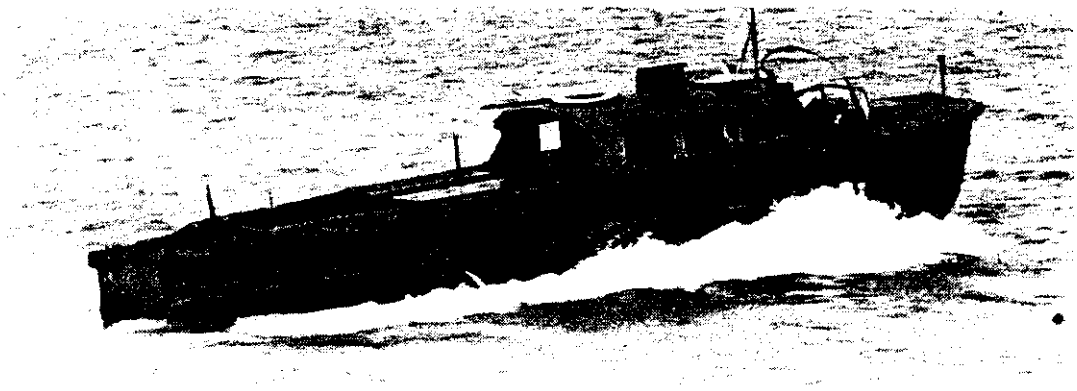

FIG. 2.—35 FT. F.M.B. OR AIRCRAFT TENDER (A.T.). MEADOWS, PERKINS OR VOSPER FORD ENGINES. TWIN SCREW. 16-18 KNOTS. 50 PASSENGERS MAX.

The Lieutenant (E) on S.O.(H.S.C.)'s staff was responsible to Staff Engineer Officer (Q). As the responsibility for maintenance and repair of craft was clear cut on this station the function of this Lieutenant (E) was mainly liaison between bases and technical administration of a clerical order such as the collection of state of craft reports, stores lists and *ad hoc* action when required ; such a statement does not, however, do justice to the multitudinous matters that may be classed as " assisting wherever possible."

MAINTENANCE AND REPAIR OF NAVAL SERVICING CRAFT

Had hostilities not ceased two months after the establishment of the new organization, it would have been possible to render a far more satisfactory and definite account of difficulties overcome and achievements won. As it happened, however, it had only been possible to reach the stage of proposing remedial measures where these were required and to lay the first foundations of a satisfactory and technical administration. Especially was this so in East Indies Command.

There were, nevertheless, certain more obvious respects in which similar difficulties were encountered in both Commands.

The biggest and most serious obstacle to efficient maintenance had been the shortage of spare parts for engines, electrical equipment and to a less extent for hull fittings. This was fully realized at headquarters and most strenuous efforts were made to get supplies out to the S.P.D.Cs. Owing to the lateness of the hour little benefit was obtained before the requirement lapsed.

Shortage of trained personnel was another common difficulty reflected both in manning and maintenance of the craft. Here again D.C.O.M. arranged for specialized training for crew and maintenance personnel to meet this requirement, and it was intended to draft these ratings specifically for these functions. This also never came into full effect.

In addition to these factors, common in any sphere of warfare, there arose others more peculiar to naval servicing craft. It has been described how a large number of these craft were shipped as ordinary freight to ports of assembly on both stations. In the course of such freightage loss of spares and stores, and severe deterioration to external parts of engines of open craft occurred. Thus instead of craft being in an optimum condition for service, it was necessary to carry out extensive repair and make further inroads on existing stocks of spares, already heavily depleted, in order to prepare these craft for transit to forward areas or wherever they are required. This extra load on repair potential was having a serious effect on the operation of the craft actually in service.

The unavoidable employment of raw personnel as crews and frequent changes reflected heavily on maintenance and repair in both Commands.

Individual Features of each Station

In the Australian and Pacific areas, all manning and maintenance was by Service personnel and organized on normal Service lines. The Engineer Officer-in-Charge of the boat-yard at Blackwattle Bay was responsible to the Boat Pool Officer. This boat-yard handled the requirements of the craft in service at Sydney and also the added commitment of repairing craft freighted there which had to be prepared for onward passage. The yard was never fully developed though equipment was ordered and an increase in contract work became necessary.

The remaining two main bases, Fremantle and Brisbane, were under R.A.N. administration though at the latter there were a number of R.N. personnel handling N.S.C. hull and engine repairs.

The Rear-Admiral Fleet Train operated a mobile boat pool for which maintenance and repair was carried out in one of the *Glen* ships, though it was intended that H.M.S. *Mull of Kintyre* should eventually take over this commitment. A staff officer and staff engineer officer for the naval servicing craft in this pool formed part of the Fleet Train administration.

It will be evident that with an organization manned by Service personnel with rear bases in Australia the difficulties from different races and tongues did not arise, and the position was more stereotyped.

In the East Indies Command we can exclude from consideration such outports as Aden and Kilindini on the western border of the Command, except in the case of Aden as a transit port, as these did not come actively into the N.S.C. picture. Singapore will be considered separately since at the inception of the new organization the situation in Ceylon and India were of immediate concern.

Ceylon Ports

The boat-yards at Colombo and Trincomalee were in an advanced state of development in June, 1945, and were turning out good work. Both yards were manned by local civilian workmen with a stiffening of Service personnel. At Trincomalee special repair (S.R.R.D.) ratings formed a large proportion of the skilled personnel.

The Colombo Yard was situated on Beira Lake ; this is a fresh water lake and hence craft could be berthed for extended periods without fear of worm attack. The Trincomalee Yard was situated at Cod Bay some distance from the Dockyard (of which it formed a part) and being on open water it was necessary to watch for the activities of worm attack in craft berthed afloat. The normal lay-out of machine shops and slipways was provided in both these boat-yards, extra equipment being supplied to Colombo Boat Yard to handle major engine overhaul for Ceylon.

In Ceylon, craft operating for local services were manned either by local civilians or Ceylon R.N.V.R. ratings. The efficiency of many of these crews left much to be desired and resulted in damage to craft and engines to an extent unheard of with normal Service craft. (By rendering a craft unserviceable it is possible to secure a quiet afternoon's sleep, which is sometimes preferable to having to keep sufficiently conscious to work the engine throttle at roughly the right moment and to avoid painful collisions with other craft. A sudden non-comprehension of the commonest English words also makes it a simple matter to befog any investigation that technical officers may attempt to carry

FIG. 3.—"VIC" LIGHTER. CROSSLEY D.R.6 DIESEL ENGINE. 150 H.P. SINGLE SCREW. 130 TONS CARGO OR AS WATER BOAT 84½ TONS WATER. STEEL BUILT

out, and to extend to the maximum the time taken to investigate and remedy defects.) Fire risks caused by smoking were an endless anxiety to base officers especially in petrol-driven craft ; it seemed impossible to impress some of these people with the fact that a harmless-looking liquid looking like water could transport them and their friends to Valhalla with accompanying pyrotechnics.

To offset these worries it was not uncommon to find the most unpromising-looking individual crouching over his engine urging it to further efforts by unconventional though often effective means. Local craftsmen in Ceylon, especially boat builders, were quite satisfactory, though indolence and the low physical standard often made work progress very slowly. The high percentage of unskilled men compulsorily engaged was a heavy drag on economics and the cause of much trouble. On the whole there was little active disaffection during the period of hostilities and immediately after.

Apart from the personnel element a difficulty not always fully appreciated which is common to India and Ceylon is the absence of good internal communications and the inefficiency of those that do exist. The concrete result of this is that it is inadvisable to send anything by road that can possibly be damaged by knocking about. New engines sent from Trincomalee to Colombo arrived with crankcases and exhaust manifolds cracked and external pipe work fractured. To use railways in either country was to invite almost certain loss and at the very best, months of delay in delivery. Since sea or air transport was not always possible it was essential to reduce the necessity for the transit of small quantities of items such as engines and spare gear generally to the very minimum. To attain this, bases should as far as possible be self-sufficient, and in other cases proper Service sea transport should be arranged for the conveyance of engines, components, and fragile stores. Possibly in the future air freightage will relieve this trouble. In the case of gear travelling to and from the S.P.D.C. under a properly sponsored Service organization the situation mentioned above does not arise.

The major problems at Colombo concerned the preparation of craft for the forward areas particularly as regard slipping and minor hull repairs. At Trincomalee the assembly of R.C.Ls. and arrangements for training Naval

Personnel in this work was a major concern. The boat-yards continued to receive fresh equipment according to previous plans and discussions on extending the facilities at Trincomalee continued until the close of hostilities.

Indian Ports

Whereas a standardized procedure for allocating all repair capacity in India was operated by the Directorate of Ship Repairs (D.G.S.R.), *i.e.*, the Director of Dockyards, of India, the work of maintenance and daily upkeep had to be arranged in whatever manner was possible to suit the peculiar features of each locality. Shortage of skilled personnel was acute, while the availability of officers to supervize the operation and maintenance of the craft was only maintained with the utmost difficulty. Thus actual maintenance (which includes routine slipping) was in some places done by local civilian labour as in Bombay, while at Calcutta naval personnel attached to the R.N.O. Calcutta used existing requisitioned and hired facilities. At Cochin the craft were maintained by the mobile base maintenance unit (M.B.M.U.) attached to the Naval Base, where adequate slipping and docking facilities were available. At these places and, in addition, Madras and Vizagapatam, craft were either routed or off-loaded for care and maintenance and necessary repairs prior to onward transit to the assembly ports. The commitment for craft in transit was in most places greater and far more difficult to solve than that of the craft in service in the ports ; the urgency for repair was greater and yet priority over other repair commitments handled by D.G.S.R. did not seem to arise. It was noteworthy that although D.G.S.R. would place an M.F.V. with a firm like Mazagon Dock at Bombay for, say, major engine overhaul and general hull repair, it was not part of his function (owing to lack of staff) to oversee the work in progress as to workmanship, neither was he associated with any trials on completion. The onus of this fell on the naval technical officers on the staff of S.O.R.N.E.I. in addition to their normal duties.

In view of the difficulty at Bombay of allocating priority in the bigger Yards, D.G.S.R. allocated capacity at Sewri. It was interesting to notice the organization for maintaining local craft which was set up there some miles out from the city in a small yard leased from Trinity House. A Russian (ex-Imperial Russian Naval Officer) was placed in charge of a gang of Indian workmen who worked in the craft berthed at rickety jetties and on the mud. No power for tools was available at this Yard. Apart from being a competent engineer this Russian was well acquainted with the bazaars of the city and was able to " acquire " spare parts frequently unobtainable through Service channels. Although still hampered by shortage of suitable spare parts this Yard, with a minimum of naval supervision did good work in keeping craft in operation.

Since it was already late in the day to propose palliative measures it was essential to adapt the plans to the existing arrangements so as to avoid any danger of dislocation which might result in holding up maintenance work already in hand. In the interests of achieving early results the best possible use also had to be made of Landing Craft and Coastal Force facilities already in being. The first opportunity was taken to visit Bombay with this end in view and useful discussions were had with D.G.S.R., with M.C.D. and M.E.D. in the Dockyard (R.I.N.) and with officers of the L.C. Base and C.F. Base (H.M.S. *Cheetah*, *Trombay*). Everywhere the cry was the same, " We could do it if we had the spares." Data was collected concerning details of spares most urgently required and later signalled to Admiralty.

These preliminary conversations were scarcely complete before hostilities came to an end and attention was shifted to the re-occupation of enemy occupied territory and to the disposal of surplus craft.

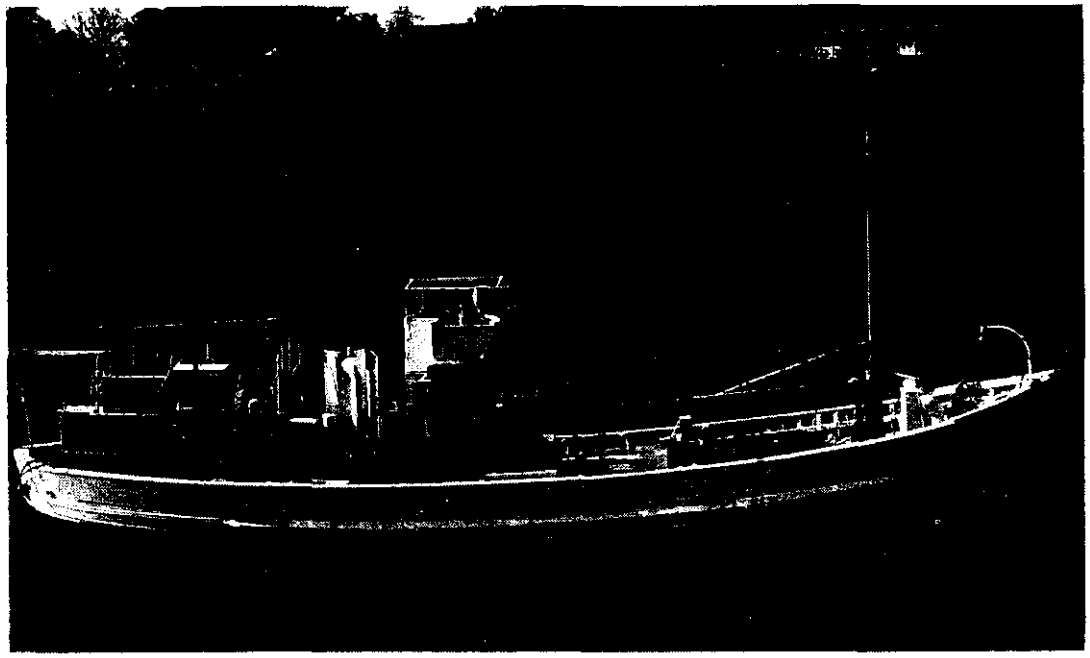

FIG. 4.—90 FT. M.F.V. CROSSLEY H.R. TWO-STROKE. 240 H.P. DIESEL ENGINE. SINGLE SCREW. 80 TONS CARGO OR 300 PASSENGERS. 9 KNOTS. AS SHOWN IS FITTED AS A FIRE-FLOAT WITH THREE 50-TON PUMPS

From investigations carried out by personal visits, it was clear that neither was the requirement for maintenance of harbour craft in service envisaged in the original plans of bases in India nor was the extent of the repair commitment occasioned by craft in transit expected to be of the proportions it turned out to be. Whether or not it is intended to use local potential for maintenance and repair of N.S.C. it is essential for nucleus plans to be in existence at the earliest stages so as to avoid the difficulties and delays attendant on grafting a new organisation on to an existing administrative structure.

From these investigations and from those in connection with the disposal of craft in various ports elsewhere in the Command in the period immediately following the close of hostilities the value of personal liaison with headquarters was clearly demonstrated.

In the hot enervating climate of India and Burma the mental effect of misunderstood signals to headquarters or the receipt of instructions that cannot be carried out is extremely detrimental to morale in personnel in distant outports. It was to combat this that the administrative organization for N.S.C. in Colombo was designed and planned.

A simple form of availability report was devised and instituted so that the Commander-in-Chief could be kept informed of the state of craft in service and awaiting onward routeing in all ports in the Command. No further administrative reforms could be brought in due to the reductions of personnel consequent upon the close of hostilities which would have rendered the making of any more reports and returns an intolerable burden on the diminished staffs.

Naval Servicing Craft at Singapore

At the rehabilitation of Singapore, however, it was possible to incorporate an adequate administrative organization for the craft in the framework of the main naval headquarters.

As regards technical officers for naval servicing craft administration, two engineer officers originally intended as assistants to the staff E.O./N.S.C. in

Colombo were detailed for Singapore. Very wisely, however, a special appointment was made in the case of the Staff Officer/N.S.C. for Singapore, an officer whose experience well suited him for the office ; this included a knowledge of Malay and familiarity with the customs of the country.

Thanks to this groundwork, it was possible to operate up to 100 craft of various types in the Keppel Harbour area with facilities of the most meagre description. In the preliminary stages the assistance of a few ratings from a ship was obtained, but in a short time native labour flowed back and finally some 60 or 70 Malay and Chinese workmen were employed on the maintenance and general repair of the craft. Major engine overhauls and extensive hull repair was carried out with the aid of one workshop lorry and a few old machines in a shop on Blakang Mati.

Provided their requirements were treated with sympathy and understanding very little trouble was experienced with either crews or maintenance personnel. This is not suggesting, however, that the administration of this undisciplined group of various nationalities was a simple matter ; on the contrary, it was a matter needing unceasing vigilance, patience, and firmness. Theft was endless and occasionally quite cunningly planned. The removal of fittings and equipment from craft regardless of the consequences necessitated security guards who themselves were often " in the game." One incident is worth recalling. Two L.C.T. IV recently refitted and overhauled for a commitment were berthed together at a buoy in the harbour. It so happened that after supper the crew of one craft went on board the other craft for a friendly social, leaving their own with possibly one rating on deck. A native boat slid out of the darkness alongside the deserted L.C.T. and in a trice two or three men had slipped into the engine-room, removed both main circulating water inlet valves and decamped into the night. The horror of the returning ship's company to find their craft sinking rapidly may be imagined, and some time elapsed before the cause could be discovered. By then, pursuit was out of the question.

In December, 1945, the facilities were augmented by the transfer of L.C.T.(E) 306 from Cochin to Singapore. The accommodation in this craft was fitted for Asiatic personnel and she became the Base workshop for all craft in the Keppel Harbour area.

POST-WAR DEVELOPMENTS IN ADMINISTRATION AND MAINTENANCE

As a result of the experiences just recounted in broadest outline two important facts emerge, namely :—

(i) That craft procurement and allocation must be on a co-ordinated basis with one central authority in Admiralty for all types of craft.

(ii) That the maintenance and repair requirements for these craft must be planned as part of the logistic structure, whether for a major assault operation or the establishment of a minor port.

It is unfortunate that space does not permit the consideration of the organizational or " executive " side of N.S.C. administration in these articles, but it must be mentioned that in dealing with craft of this type the closest possible co-operation between the organizational and technical sides of the administration is essential at all administrative levels if the operation of the craft is to be satisfactory. Especially is this the case in times of expansion and under conditions of operational stress. For this reason it is desired strongly to negative any impression that may have been given by this rather one-sided account, that the executive side is too simple or too unimportant to merit mention. The two sides are strictly complementary and the more thoroughly and conscientiously each function is prosecuted the better it will be for the

other. Although axiomatic in all administration, naval servicing craft by their very nature demand the exercise of these principles to the maximum extent to secure good service and reasonable economy in men and material.

In order that these facts should not be lost sight of, the functions of D.S.V.P. and D.C.O.M. have been placed on a permanent basis and are performed at present by Deputy Director Movements/N.S.C. under the Director of Movements and by the Director of Craft and Amphibious Material respectively.

The centralized form of administration as employed in the East Indies and British Pacific Fleet is now applicable to all Commands to an extent determined by the characteristics of the Command. In the Home Ports a good nucleus organization on these lines is in force. Admiralty policy on the subject has been promulgated in A.F.O. 3574/48.

It has also been decided to centralize the maintenance of the craft in Shore Commands as far as manpower and local facilities permit, in order to gain experience and to form nucleus organisations which will expand if required in an emergency ; A.F.O. 2606/48 sets out approved policy in this respect. Effective centralization or semi-centralization of maintenance is in existence in Home Ports and in the Forth and Clyde areas, though abroad the policy cannot be applied to the same extent.

It is necessary to qualify these last two paragraphs by stating that they apply only to those N.S.C. under naval administration (Servicing Craft Fleet in A.F.O. 3574/48) and not to those operated by Dockyards and Civil Establishments.

Action is also being taken to rationalize and standardize types of craft and engines throughout the Admiralty service and to consider them on an inter-Service basis.

By the establishment of a rationalized system of procurement and allocation of craft and by the appointment of a Department to co-ordinate their material requirements, it should be possible, in any further emergency, to appreciate (if not to make full provision for), the full implications of naval servicing.