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The Royal Fleet Auxiliary and Post-War Change

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ABSTRACT
In 1945 the Admiralty owned a large number of Royal Fleet Auxiliaries, most of which were oil tankers with the larger freighting tankers transporting oil to naval bases, and the smaller attendant tankers issuing it to the Royal Navy in harbour or at sheltered anchorages. During the war a new requirement had emerged for replenishment at sea, and in the post-war period this became the main activity for the Royal Fleet Auxiliary (RFA). This article describes how the post-war RFA met that demand by changing its ships and organisation away from its mainstream British Merchant Navy roots towards the Royal Navy it supports.

Introduction

Figure 1: RFA Resource – Off South Africa 1971.[1]

While no firm definition exists, it is generally accepted that a fleet or naval auxiliary is a government owned ship which supports combatant warships. A typical 1970s British

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[1]Author's own photograph taken from RFA Resurgent.

Royal Fleet Auxiliary (RFA) is shown above. The term fleet or naval auxiliary is not normally applied to small vessels, such as harbour launches, tugs, and barges operating within and around naval ports.

In 1905 the Admiralty designated four of its existing auxiliaries as RFAs although they continued to operate them with civilian crews as though they were a part of the British Merchant Navy.[2] That practice continued virtually unaltered until 1945 but after that 'the RFA' began to emerge as a distinct entity within the Merchant Navy. In the post-war period the RFA has increasingly moved away from that Merchant Navy model towards one with a very close alignment to the Royal Navy. As of April 2022, the UK Ministry of Defence states that 'the RFA' is one of five organisations that make up the Naval Service: the Surface Fleet; the Fleet Air Arm; the Submarine Service; the Royal Marines; and the RFA.[3] Further noting that, 'The RFA is the largest UK employer of British merchant seamen and in June 2020, had 1,625 trained personnel, comprising 561 Officers, 244 Chief or Petty Officers and 820 Ratings, with a further 86 Officers and 131 Ratings under training.'[4] The RFA was then about 5% of the size of the Royal Navy in personnel terms, and operated eleven ships, two of which were in reserve.

This article briefly considers the history of British fleet auxiliaries up to the end of the Second World War before examining why and how the RFA undertook its post-war journey.[5]

The Royal Navy: Coal, Oil & Tankers

The emergence of the steam engine as source of warship propulsion made coal essential for the defence of the United Kingdom. During the 1850s the Admiralty began buying Steam Coal from new mines in South Wales. This was the optimum type of coal for marine boilers, and in 1904 alone the Admiralty bought 1.25 million tons of it.[6] By 1900 the South Wales coalfields had sufficient reserves to meet the Admiralty's requirements for 200 years.[7] With a secure domestic supply, and access to a commercially sophisticated, and largely British owned global coal supply chain, the

[2]In 1920 King George V granted the term Merchant Navy to recognise British commercial shipping companies' service and losses during the First World War. The term was in use before 1920 , as was Mercantile Marine, for what was, and remains, a disaggregated entity without any formal structure.

[3]https://www.royalnavy.mod.uk. Accessed 6 April 2022. 'Our organisation.'

[4]https://www.royalnavy.mod.uk. Accessed 25 November 2021. Since updated.

[5]This article is not intended to be a post-1945 RFA history as such, for a complete history see sources in Appendix 1.

[6]Warwick Michael Brown, Unpublished PhD Thesis: *The Royal Navy's Fuel Supplies, 1898-1939; The Transition From Coal to Oil,* (London: King's College, 2003), p. 23.

[7]Ibid., p. 26.

Admiralty neither needed to own coal mines, nor own railways and colliers. The Admiralty's Fleet Coaling Service (FCS) could contract on the open market for coal delivery to worldwide FCS stockpiles.

When oil emerged as a superior marine fuel it altered this status quo and in time oil would replace coal, although it was a slow process. In 1905 the Admiralty bought 10,000 tons of oil, less than 1% of the coal it had bought in 1904.[8] The story of the Admiralty securing oil supplies from Burma and Persia is well known, but less obvious are differences in the coal and oil supply chains of that period. Whereas the coal supply chain was disaggregated with numerous mine, railway and ship owners in economic competition, there were fewer oil companies, and they preferred vertically integrated businesses. With control over all stages of their supply chain from well to customer they could and did control oil supply, transport, and prices.

Faced with this situation, the Admiralty needed more than access to oil supplies, it also needed to own freighting tankers to protect it from the oil companies' dominant transport position.

The Early Years

The first reference to a naval stores function can be found in the Tudor period, and by the late Victorian period this had evolved into the Royal Navy Supply and Transport Service (RNSTS), a civil service organisation within the Admiralty that reported to the Fourth Sea Lord. This late Victorian RNSTS sourced and organised the transport of the Royal Navy's food, coal, naval stores, ammunition, and spare parts. Around 1900 the Fleet Coaling Service (FCS) was created within the RNSTS to buy and arrange the transport of coal to naval stockpiles for FCS supply to the Royal Navy. The FCS operated 10 civilian crewed harbour tugs, 5 floating coal depots, 2 coal hulks, 20 miscellaneous vessels, and 224 coal barges and lighters. During the First World War the FCS became the Fleet Fuelling Service (FFS) to reflect the Royal Navy's increasing use of oil.[9] This period has not been well researched, with one expert on the RFA's history noting it remains 'a subject that has floated in uncertain waters for nearly a century.'[10]

At the same time the Admiralty was also seeking to differentiate commissioned warships, with Royal Navy crews, flying the White Ensign, and subject to the Naval Discipline Acts, from the Admiralty's numerous civilian crewed auxiliaries, flying a Blue

[8]Ibid., p. 54.
[9]Ibid., p. 33.
[10]http://www.rfaa-london.org.uk/app/wp-content/uploads/2018/10/RFA-history-09-origins-of-the-RFA.pdf. Accessed 22 December 2021. See an article by Tom Adams MBE, at one time RFA Advisor to the Royal Navy Historical Branch.

Ensign, and subject to the Merchant Navy Acts. In 1900 the first attempt failed to satisfy the requirements of the 1894 Merchant Shipping Act. A partial solution came in 1905 when four Admiralty owned auxiliaries were identified as RFAs, and those under contract from commercial owners recognised as Mercantile Fleet Auxiliaries (MFAs).[11] The residual legal issues were resolved in 1907 and 1911 although none of this legal activity introduced the concept of an RFA organisation - the entire focus was on the registration and operation of ships.[12]

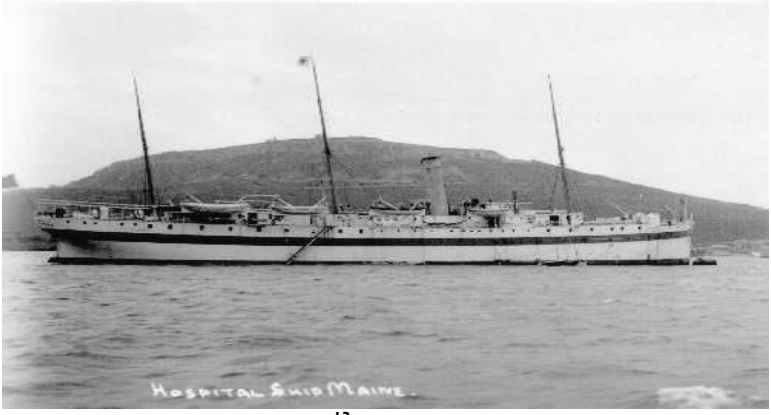

Figure 2: RFA Maine: 2,780 GRT.[13]

The four Admiralty designated RFAs, were a hospital ship, the *RFA Maine,* generally recognised as the first RFA, the *RFA Petroleum*, an oceangoing oil tanker, and the *RFA Kharki*, a large collier, bought for conversion to a tanker. At a time when the Royal Navy depended on coal the Admiralty only owned only one large collier, the *RFA Mercede*s, and showing how much the Admiralty relied on Britain's position in the global coal supply chain.

[11]An MFA is today called a 'Ship Taken Up From Trade' (STUFT) and would be shipowner operated.

[12]Thomas Adams & James Smith, *The Royal Fleet Auxiliary – A Century of Service,* (London: Chatham Publishing, 2005), pp. 9-12 for more details.

[13]http://historicalrfa.org/ships-starting-with-m/1895-rfa-maine-1.%20Accessed%2015%20February%202021. Accessed 6 April 2022; see Appendix 1 for definitions.

Year	Freighting Tankers	Attendant Tankers	Others	RFA Total
1905	2	0	2	4
1914	1	5	10	16
1918	26	81	20	127
1939	18	36	3	57
1945	37	64	26	127

Figure 3: RFA Fleet Analysis[14]

It can be seen that: before 1945 most RFAs were Attendant Tankers, that made coastal freighting voyages or in the manner of the FCS, bunkered the Royal Navy within ports or at sheltered anchorages. The centrality of oil tankers to the pre-1945 RFA is apparent.

The Admiralty's numerous small support vessels, such as harbour tugs, barges and passenger craft never became a part of the RFA, they remained within the FCS/FFS and the Admiralty Yard Craft Service, or its successor the Royal Maritime Auxiliary Service. This role was outsourced to Serco in 2008 under a Private Finance Initiative.

Before 1945 the RFAs were operated in accordance with Merchant Navy practice since that was the most attractive commercial and operational model for what were in all respects merchant ships. These RFAs were designed to Merchant Navy standards, were built in British shipyards, were registered in the UK, were subject to UK legislation, were inspected and certified by Lloyds Register, and their Merchant Navy crews were subject to the UK's Merchant Shipping Acts. How the RFA's crews were sourced will be discussed later, but here it is sufficient to say that also followed contemporary practice. It is worth noting that RFA crews were not, and even now are not, subject to the Naval Discipline Acts that regulate the Royal Navy.

The Development of Replenishment at Sea (RAS)

The full story of the Anglo-American development of afloat support in the period 1900-1953 has been well documented by Peter Nash.[15] This history is not replicated here but a brief outline of the relevant events and techniques is included to aid understanding of their influence on the transformation of the post-war RFA.

[14]Compiled and interpreted from sources in Appendix 1.

[15]Peter Nash, *The Development of Mobile Logistic Support in Anglo-American Naval Policy, 1900-1953,* (University of Florida Press: Gainsville Fl., 2009), pp. 9-11. See also http://www.ibiblio.org/hyperwar/USN/GSBO/GSBO-01.html. Accessed 6 April 2022. *Gray Steel and Black Oil - Fast Tankers and Replenishment at Sea in the US Navy 1912-1992,* is an excellent resource.

Although the Royal Navy had carried out coal and oil RAS trials in the early 1900s the outcomes were poor and were ultimately unimportant to a Royal Navy with numerous naval bases. For the United States Navy (USN), bounded by the Atlantic and Pacific Oceans, RAS had a higher priority.[16]

Two techniques for refuelling at sea were in use before 1939, the astern method and the trough method.

Figure 4: Astern RAS 1940s.[17]

The astern method is relatively simple and requires the tanker to stream a hose astern and then maintain a steady course. The receiving ship picks up the hose and brings it inboard for supply to start.

[16]The Four Power Agreement of 1921 and the 1922 Washington Naval Treaty specifically prohibited the USA from building forward bases in the Philippines.
[17]Geoff Puddefoot, *Ready For Anything - The Royal Fleet Auxiliary 1905-1950*, (Barnsley: Seaforth Publishing, 2010), Plate IX, Crown Copyright TNA.

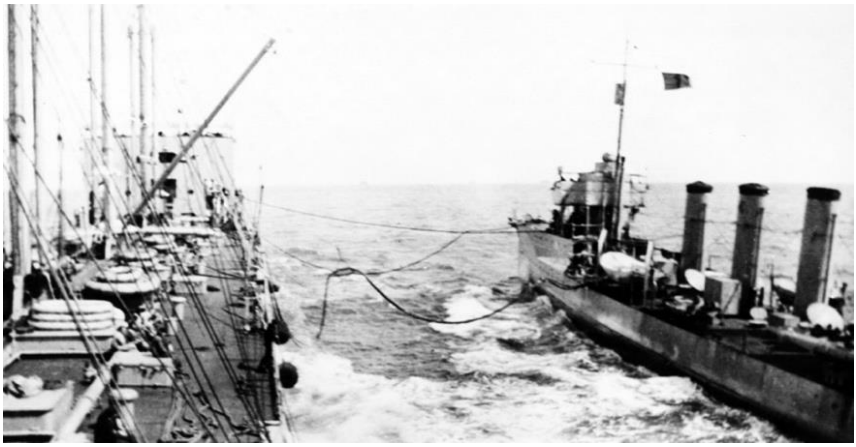

Figure 5: Trough RAS - USS Maumee & USS McCall 1917.[18]

The trough method requires specialised equipment on the tanker and greater ship handling skills than does the astern method. Before 1940/1 its use was restricted to naval vessels.

While these two early techniques were in use before 1939 it was only after they had been proven were they adopted by the RFA. By 1942 *Ranger* class RFAs were routinely refuelling Atlantic and Arctic convoy escorts, three at a time, and they supported 21 of the 25 Arctic Convoys. Nineteen RFAs were lost during the war including *Aldersdale* on the 1942 Arctic Convoy PQ17, and *Grey Ranger* on the return convoy QP14.[19]

Although the Admiralty's RFAs were undertaking RAS in the early years of the Second World War, by 1939 the USN already had superior RAS techniques, equipment and purpose-built tankers. The 29 *Cimarron* class tankers of 1939 onwards were not only large at 16,000 DWT but were also well-armed, and capable of 18 knots.[20] With the single exception of the *RFA Olna* of 1946, the RFA had nothing like the *Cimmarons* until

[18]https://www.history.navy.mil/research/histories/ship-histories/danfs/m/maumee-ii.html. Accessed 22 December 2021. The first operational use of the trough method, by Lt. Chester Nimitz.

[19]http://www.historicalrfa.org/rfa-war-losses. Accessed 22 December 2021. The small 3,950 DWT *Ranger* class tankers made 13 knots. Six of the 1944 and onwards 11,900 DWT *Wave* class made 13 to 15 knots. Data from Adams & Smith, p. 60, p. 63 & p. 83.

[20]Nash, *Logistic Support,* p. 19, some *Cimarrons* served until the early 1970s. See Appendix 1 for a definition of Deadweight Tons (DWT) and Gross Registered Tons (GRT).

the *Tides* of the mid-1950s.[21] The technical maturity and effectiveness of American techniques were demonstrated in 1942 when the *USS Cimarron* and *Sabine* provided the 'reach' needed for the 'Doolittle Raid' on Japan. The aircraft carrier *USS Hornet* left San Francisco on 2 April and after two mid-Pacific RASs proceeded directly, over a distance of more than 6,000 kms, to a position 1,000 kms from Japan where the bombers were launched on 18 April.

Despite RAS developments in the early part of the Second World War it remained a small part of the RFAs work and only 21 RFAs were RAS equipped. The remainder continued on freighting and attendant tanker duties. In contrast, by 1945 the USN had deployed a 100 ship plus Logistic Support Force (LSF) for its Pacific carrier operations and had also begun the transfer of stores and ammunition at sea. Interestingly, and despite this large, and demonstrably functional fleet train it considered its wartime logistics to have been effective rather than efficient and saw post war improvement as necessary.[22]

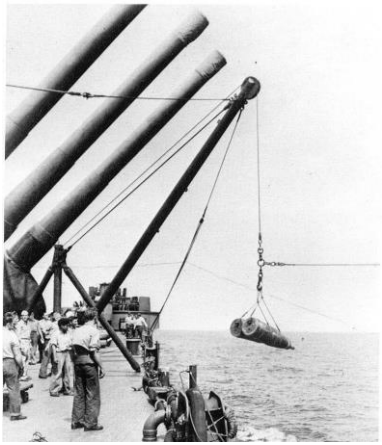

Figure 6: Battleship USS South Dakota receiving 16-inch shells – 1945.[23]

After 1945 the USN and Royal Navy improved methods for both fuel and stores transfer, and the highline or heavy jackstay system came into use. A wire rope is pulled across by the vessel being replenished and is secured in place. This wire is then kept

[21]Data from Adams & Smith, *Century of Service,* p. 93. The four *Early Tides of 18,000 DWT* made 17 knots fully loaded; and were the first purpose designed RFA tankers.
[22]Nash, *Logistic Support,* Chapter 4 describes post war efforts by both navies.
[23]https://mobile.twitter.com/HazeGreyHistory/status/1364579007589715969/photo/1 Accessed 12 September 2021. An explosion of 16-inch propellant charges in a later operation saw the loss of 11 lives.

taut by special winches on the auxiliary that compensate for the ships' relative movement.[24] Once the wire, or jackstay in British parlance, is taut it can support underslung hose catenaries or a travelling carriage for stores transfer. During a RAS the ships move ahead in a more or less straight line at around 10 to 15 knots. This is now the preferred method of RAS and the wire fixing points, hose connections, and signals are now compatible across NATO navies and auxiliaries.

Figure 7: HMS Yarmouth, RFA Tidereach, RNZS Royalist & HMS Belfast[25]

Figure 7 dates from 1963 and shows three RAS refuelling techniques. The trough method to the frigate HMS Yarmouth at the left; the heavy jackstay method to the cruiser HMNZS Royalist on the right; and the astern method to the cruiser HMS Belfast. It goes without saying that a purpose built RFA, and a very high degree of ship handling competence is needed for multi-ship operations of this type.

[24]Auto Tension Winches appeared in the 1950s, they made Abeam RAS methods safe and reliable.

[25]https://www.shipsnostalgia.com/media/rfa-tidereach.463892/. Accessed 6 April 2022.

The Royal Navy's Post War Search for Fleet Mobility

Recognising the advances made by the USN and the need to support British operations in the Pacific in 1945, the Admiralty started to look for ways to increase fleet mobility. That search began with the Admiralty requisition of the *SS Hyalina,* a tanker building for Shell.[26] Modified for the British Pacific Fleet (BPF) it was commissioned as *HMS Olna* in April 1945. Six weeks of RAS trials followed before it arrived in the Pacific in July. This 17-knot ship performed much better than could the BPF's *Wave* class RFAs and it was seen as comparable in capability to the *Cimmaron* class tankers. As *RFA Olna* from 1946 onwards, and with an RFA crew, it carried out further RAS trials and underwent additional modifications during a long and active RFA career ending in 1966. As *HMS Olna* it had a Royal Navy crew of 300 that reduced to 77 in RFA service, showing some of the cost advantage of operating an auxiliary as an RFA.[27]

Figure 8: RFA Olna - 17,520 DWT – early 1950s configuration.[28]

A second step came with the Royal Navy's 1945 acquisition of a war prize, the *Kriegsmarine* tanker/supply ship *Nordmark.* This had supported German surface raiders and submarines in the Atlantic in 1941/2, with one operation lasting more than eight

[26]Nash, *Logistic Support,* Chapters 4 and 5.

[27]Puddefoot, *Ready for Anything*, p. 150; http://www.historicalrfa.org/rfa-olna-ships-details. Accessed 6 April 2022.

[28]http://historicalrfa.org/rfa-olna-ships-details. 6 April 2022. See Adams & Smith, p. 85 for details of *RFA Olna*.

months.[29] Built in 1936 this capable vessel could carry 7,900 tons of fuel, 972 tons of ammunition, and 890 tons of stores and food in dry, chilled, and refrigerated storage rooms. The *Nordmark* was well armed, carried a floatplane, and at 21 knots was fast, even by USN standards. The *Nordmark* was also unusual in having a purpose designed internal layout, and an advanced hull form with twin inward turning propellers that produced hardly any wake, making it ideal for Astern RAS operations. Uniquely the *Nordmark* was a 'one stop ship' where a naval vessel could find fuel, ammunition, stores and food, this would become an interesting concept for the post-war Royal Navy and USN.[30]

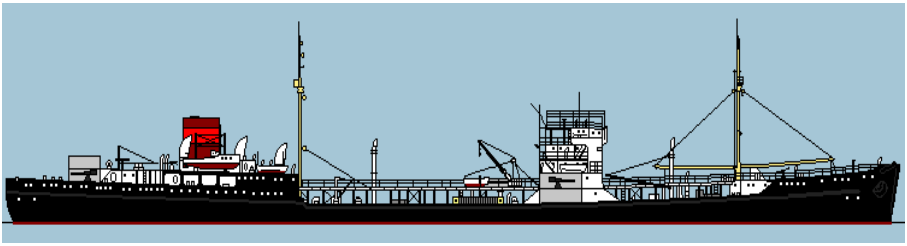

Figure 9: Kriegsmarine Troßschiff *Nordmark 22,500 GRT – HMS Bulawayo*[31]

In 1947 the *Nordmark* commissioned into the Royal Navy as *HMS Bulawayo* while her sister the *Dithsmarschen* became *USS Conecuh*. These ships proved to be, 'the indispensable cornerstone of early post-war replenishment trials.'[32] *HMS Bulawayo* was fitted with a 70-foot trough type rig that showed Abeam RAS was possible at a 1,200 tons/hour fuel transfer rate and at speeds up to 20 knots, and at lower speeds in Force 7 weather conditions.[33] The trials continued until 1950 when the *Nordmark* was laid up. Consideration was given to *Bulawayo* becoming an RFA, but by then it was in poor physical condition, was not compliant with UK Merchant Navy certification standards,

[29] http://www.german-navy.de/kriegsmarine/ships/auxships/nordmark/history.html. Accessed 6 April 2022. See also Geoffrey Jones, *Under Three Flags,* (London: Corgi, 1975), Jones served on HMS Buluwayo.

[30] A report from a USN Team that investigated wartime German naval logistics can be found at: http://www.dtic.mil/dtic/tr/fulltext/u2/617953. Accessed 6 April 2022. The USN team was dismissive of German RAS technology and operations, because refuelling only used the astern method, in calm weather only, and with the ships either stationary or near stationary. All stores and ammunition were transferred by boat.

[31] http://www.german-navy.de/kriegsmarine/ships/auxships/nordmark/history.html. Accessed 6 April 2022.

[32] Nash, *Logistic Support,* pp.199-200 and Chapter 7 for trials histories; Puddefoot, *Ready for Anything*, p.151.

[33] Nash, *Logistic Support,* p. 200.

and needing a crew of more than 200 was considered too costly for RFA service.[34] The *Nordmark* was scrapped in 1955.[35]

In September 1947 Exercise Mainbrace saw the first North Atlantic deployment of an Anglo-American carrier strike fleet. It consisted of four USN fleet carriers, a battleship, two Royal Navy fleet carriers, and numerous cruisers, and destroyers. Eight auxiliaries, five USN and three RFA provided support. The post exercise report noted the USN auxiliaries had transferred fuel at higher rates than could the RFAs despite some having new RAS equipment. The critical operational limitation was the maximum 700 tons/hour fuel pumping rate of the wartime *Wave* class RFAs. The post exercise report observed it had been, 'a useful reminder for the Admiralty that more work and significant change was still necessary if they were going to get the most out of future joint exercises. Not least was the need for a proper *(British)* fleet train.'[36] More damningly the USN observed that 'while the British oilers gave an outstanding performance considering their limitations … the mobility of the support group was considerably reduced.'[37] The slow speed of all the auxiliaries, but principally the RFAs, was a tactical concern as during RAS, when only minor course corrections are possible, both ships were vulnerable to submarine and air attack. Additionally, the concept of an immense but slow Pacific LSF was impossible in the nuclear age. The only safe place for an auxiliary was with the carriers – and they operated at 20-30 knots.

However, this exercise did see the RFA refuelling in bad weather using the astern method when the USN could not operate at all with the trough method. The report noted, 'The Royal Navy and RFA persisted with Astern RAS as it might prove to be the only available option when using commercial tankers in an emergency, such as in the initial stages of a war.'[38] This proved to be a wise decision in 1982 when BP and Shell tankers were taken up from trade (STUFT) for the Falklands War. The minimal astern RAS equipment facilities built into them were ideal for a shuttle tanker role and top up the frontline RFA tankers.[39]

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[34]Author's correspondence with Mr T James OBE 18 May 2021.

[35]http://www.historicalrfa.org/rfa-stories/1111-one-stop-replenishment-is-history. Accessed 6 April 2022, has a description of the trials and shows what a capable ship this was by contemporary Royal Navy and USN standards.

[36]Nash, *Logistic Support,* pp. 194-198, p. 197; and p. 49 notes the USN abandoning Astern RAS in 1932. Author's italics.

[37]Ibid., p. 197; and TNA ADM 1/24039 Exercise Mainbrace Report.

[38]Ibid., p.197. Meaning after a nuclear war in what were termed 'brokenback' operations.

[39]John Johnson-Allen, *They couldn't have done it without us,* (Woodbridge: Seafarer Books, 2011), Chapter 4 'The tankers'.

In November 1952 the Royal Navy carried out an arctic exercise, Autumn Bear. This included a fleet carrier, *HMS Eagle,* a battleship, *HMS Vanguard,* 2 cruisers, 7 destroyers, and support from *Wave Premier*. The RFA Captain's post-exercise report noted that: the RFA crew was too small in numbers to sustain long multiple ship RAS operations, and low fuel transfer rates were also a problem. *Wave Premier* often had to reduce speed to 12 knots or less to maintain a steam supply to the heating coils in the tanks where the fuel oil was beginning to solidify. The Master also noted the constant dampness of the accommodation and an inability to heat it above 17°C.[40] Nevertheless, 17 RASs were carried out, 3 astern and 14 abeam in 10 days.

These exercises demonstrated that RFAs of an improved type were badly needed.

> Auxiliary ship design, for example, was highlighted as a cause when it was pointed out (not for the first time) that the US Navy built and manned their fleet oilers for fleet issue whereas the RFAs were designed as freighting tankers fitted out for replenishment at sea.[41]

The Korean War

In June 1950 North Korean forces began moving south and Royal Navy vessels already present in the Far East were quickly moved to the west of the Korean peninsula where they maintained a presence until the July 1953 ceasefire. Thirty-two Royal Navy vessels participated in operations, with a light fleet carrier, one or two cruisers and several destroyers on station for most of that period. They steamed over 2 million miles, consumed half a million tons of fuel, flew over 20,000 aircraft sorties, and carried out numerous shore bombardments, including one by *HMS Unicorn*, an aircraft carrier![42] RFAs were also there from the beginning, with 13 tankers including *Olna* and the wartime build *Rangers* and *Waves*. Food, stores and ammunition were issued by four 7,253 GRT *Fort* class ships. An RFA tanker was always on station off Korea because the British carriers required refuelling every five days or so. Another RFA tanker would be away topping up in Japan before rotating back to Korea on a month on/off basis.[43] Only a few ammunition RASs were attempted, with most ammunition and stores transferred by boat/lighter in harbour or at anchorages. The fourth and last hospital ship, *Maine,* also served off Korea. Fortunately, no RFA personnel or ships were lost.

[40]TNA ADM 1/24041 RFA Wave Premier Master's Report Exercise Autumn Bear 17-27 November 1952.
[41]Nash, *Logistic Support,* p. 196 writing on Exercise Mainbrace.
[42]Eric Groves, *Vanguard to Trident,* (London: Bodley Head, 1987), pp. 137-150.
[43]Geoff Puddefoot, *The Fourth Force – The Untold Story of the RFA since 1945,* (Barnsley: Seaforth Publishing, 2009), pp. 11-14.

Notable differences in oil transfer rates and RAS durations were again seen for the Royal Navy and USN. A modern, late wartime build Royal Navy destroyer could accept fuel at up to 300 tons/hour from a *Wave* class tanker using two hoses, although most destroyer captains would only work with one at 150 tons/hour. USN destroyers designed for the Pacific routinely took 350 tons/hour from a USN auxiliary using a single hose, partly because of higher pumping rates but also because the USN destroyers had a superior internal arrangement of fuel tanks and piping.[44] During the war 90,000 tons of fuel was supplied by RAS, with *Wave Chief* alone supplying 27,000 tons, and *Fort Rosalie* supplying no less than 9,000 tons of munitions over an 18-month period, although only a small part of that by RAS.[45]

Now largely forgotten, Korea showed what the RFA could do, even with outdated equipment.[46]

Post War RFA Fleet Renewal

Following the *Bulawayo* and *Olna* trials the Admiralty put considerable effort into identifying the requirements for new auxiliaries and even produced a specification for an 'Ideal RFA Tanker' and an 'Ideal RFA Store Ship'. But, looking at those sketches today both designs are for merchant ships with added RAS gear. Neither were purpose designed RAS vessels, and they both reflect the ongoing Merchant Navy mindset of RFA operation at the lowest possible cost.[47]

The first new vessels to actually see service emerged in the mid-1950s and were replacements for the increasingly inadequate wartime *Wave* class tankers which had all been built for freighting duty with some having RAS equipment added later. The first of the four *Early Tide* fast fleet replenishment tankers was launched in 1954, with two more *Improved Tides* following in 1962. The last of these, *RFA Tidespring,* went out of service in 1991, although *RFA Tidepool* was sold to the Chilean Navy in 1982 and was scrapped in 1997.

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[44]A Royal Canadian Navy destroyer, *HMCS Athabaskan*, set a new record for an Abeam RAS with *Wave Knight.* From taking up station it was ready to receive fuel within 84 seconds. Ibid., p.14

[45]Adams & Smith, *Century of Service,* p.90.

[46]Nash, *Logistic Support ,0*p. 215 observes that Royal Navy vessels experienced less damage during RAS operations than loading at anchor – a testament to RFA professionalism.

[47]Ibid., pp.122-128.

Figure 10: RFA Tidereach - 16,848 DWT - an Early Tide.[48]

The six *Tides* were designed as fleet replenishment tankers and were a vast improvement on the *Waves* or for that matter the Ideal Tanker. They could simultaneously supply Furnace Fuel Oil (FFO), Diesel, Aviation Gasoline (Avgas) and Aviation Kerosene (Avcat) through five RAS stations, three on the port side intended for a fleet aircraft carrier, two to starboard for cruisers and destroyers, and two more for ships astern. A limited amount of drummed lubricating oil, motor gasoline, water, stores and food could also be supplied, although they were never intended to be a 'one stop ship'. At 17 knots they were a huge improvement on the 13 knot *Waves* and had modern accommodation for a crew of 90.

In 1961 slow RFAs had delayed the deployment of Royal Navy vessels from Singapore to Kuwait, with a later 1966 report examining the deployment of Indian Ocean task groups in more detail.[49] At that time fleet aircraft carriers like *HMS Eagle,* would sustain 20 knots on passage, but they could not operate jet aircraft for more than a few days without supplies of Avcat – jet kerosene. The Royal Navy and USN's wartime carriers had all been designed to operate piston engine aircraft which required much less fuel than did 1960/70s jets. With aviation fuel storage tanks too small for sustained jet operations regular RAS was vital, about every 2 to 3 days for *HMS Eagle* and *Ark Royal* in the 1960s, and with each RAS lasting 3 to 4 hours.

[48] http://historicalrfa.org/rfa-tidereach-ships-details. Accessed 17 March 2021. See Appendix 1 for a definition of Deadweight Tons (DWT) and Gross Registered Tons (GRT).

[49] TNA DEFE 48/714 Indian Ocean Operational Analysis 1966.

Next to arrive were the *Olwen* class Fast Fleet Tankers. Based on the *Improved Tides* and completed in 1965/6 they were capable of 21 knots and could stay with a fleet carrier. Pumping rates increased to a simultaneous 1500, 600 and 600 tons respectively – even higher than the *Tides.* The three *Olwens* served from 1965-2000 with two *Wave* tankers of an even more modern design coming into service after 2002, they are now held in reserve. In 2017 the first of four new design 22,100 DWT *Tides* came into service. Capable of 27 knots two of them took part in CSG21 – a global deployment of the new carrier *HMS Queen Elizabeth*.

Figure 11: RFA Green Rover - 6,931 DWT 1969.[50]

The small *Ranger* class tankers of the Second World War were ideal for refuelling destroyers and convoy escorts and their successors were 5 purpose designed Small Fleet Replenishment Tankers of the 19-knot *Rover* class. Serving from 1969 to 2000 they were described as, 'Comfortable, fast, and handle very well in a wide range of sea conditions.'[51]

[50] http://historicalrfa.org/rfa-green-rover-ships-details. Accessed 17 March 2021.
[51] Adams & Smith, *Century of Service,* p. 122.

Figure 12: RFA Brambleleaf - 21,650 DWT 2009.[52]

During the post war period the RFA continued operating freighting tankers, and *Brambleleaf* was typical of them in being commercially built and in 1980 bareboat chartered from its owners for the RFA. Fitted with a trough and astern RAS capability, it served until scrapped in 2009. It was the last of its type.

By the 1950s the existing stores and ammunition RFAs also needed replacement. The RFA had relied on the eight 7,200 GRT *Fort* class that were in essence Canadian built *Liberty* ships. Korea had shown that it was RAS capable floating warehouses the Royal Navy needed, not traditional cargo ships like these with open holds and flat hatch covers. Worse still the *Forts* were slow at 11 knots. As an interim measure three commercial cargo liners were purchased in the early 1950s and converted for RFA service. While initially adequate they were outdated by the early 1970s.[53] Purpose built replacements arrived with three *Ness* class Stores Support Ships, one of which is shown in Figure 13. This 21-knot class were designed to support fleet carriers and came into service in the mid-1960s. Designed as 'floating warehouses' they had large crews with *Lyness* having 100 RFA plus another 50 RNSTS to run the 'warehouse'. They were not required following the 1978 decommissioning of the carrier *HMS Ark Royal*. Two participated in the Falklands War, but by 1983 all three had been sold to the USN's MSC.[54]

[52] http://www.historicalrfa.org/rfa-brambleleaf. Accessed 22 December 2021.
[53] *Retainer* & *Resurgent* were Armament Support Ships, *Reliant* an Air Stores Support Ship.
[54] The US Military Sealift Command is a civilian manned organisation set up in 1949 to operate a number of former USN auxiliaries. The USN continues to commission its more complex auxiliaries.

Figure 13: RFA Stromness - 12,732 GRT Indian Ocean 1971.[55]

Another replacement for the wartime *Forts* were two 21-knot *Regent* class Fleet Replenishment Ships. Purpose designed to support fleet carriers they came into service in 1967.[56] Focussed on armament supply, including nuclear weapons, they had large crews of 125 RFA and 44 RNSTS. Their complex design was reflected in needing four years to build. *Regent* was sold for scrap in 1992, and *Resource* in 1997.

Two new 21-knot, and at 18,029 GRT, large *Fort* class Fleet Replenishment Ships came into service in 1978/9 and were purpose built to support the Royal Navy's three *Invincible* class Light Aircraft Carriers. Both served in the Falklands War and had busy careers before being laid up in 2018. Two larger and more sophisticated 22-knot 28,820 GRT 'one stop ships' came into service in 1993/4 with the now elderly *Fort Victoria* still in service in 2022 (Figure 14). Three new Fleet Solid Stores Ships (FSS) are planned but the tendering process is running late.

[55]Author's own photograph.
[56]See Figure 1 for *Resource*.

Figure 14: RFA Fort Victoria - 28,820 GRT.[57]

Despite the length of the previous two sections many other ships and ship types have been omitted in order to constrain the narrative, they include hospital ships, ocean going tugs, and salvage vessels etc. But one RFA role that cannot be overlooked is amphibious operation support. During the Second World War some *Dale* class freighting tankers were fitted with gantries to deploy landing craft, and from 1970 to the early 2000s the RFA operated the six *Round Table* class Landing Ship Logistics (LSLs). Now out of service they were replaced in the early 2000s by four large purpose-designed *Bay* class Landing Ship Dock Auxiliaries. These versatile ships often replace Royal Navy ships on duties such as Caribbean hurricane relief.

It can be seen in this brief description that the RFA is now operating specialised auxiliaries that differ greatly from present day merchant ships. In that sense the RFA although much diminished in ship numbers, meets the vision of those who in the 1950s and 1960s wanted a different RFA.

[57] https://www.royalnavy.mod.uk/our-organisation/the-fighting-arms/royal-fleet-auxiliary/stores/rfa-fort-victoria. Accessed 27 October 2022.

A Need for Change

In 1950 there were 106 RFAs ranging from *Olna*, 8 RAS capable *Waves*, 29 *Wave* & *Dale* freighting tankers – some with astern RAS gear, 20 small attendant tankers, 6 *Fort* class ammunition/stores issuing ships and 3 others, 11 salvage vessels, 19 ocean going tugs, 2 Royal Research ships and a hospital ship.[58] In 1950 the Admiralty was managing about 10% of the entire British tanker fleet in tonnage terms.[59]

While impressive in numbers the RFA fleet consisted of 'wartime standard' ships with not a single one purpose built for RAS operations. But that was only half the problem. While new ships were needed, the Royal Navy also wanted change in how these RFAs operated,

> Although the RFA was now providing a replenishment-at-sea service for the Royal Navy on a routine basis, its crewing arrangements were clearly far from perfect, despite a gradual increase in contract officers, petty officers and ratings. A large number of ratings were still employed from The Merchant Navy Pool, often for a single voyage, although many were … certainly very regular visitors to RFAs.[60]

This is an example of the Admiralty operating the RFAs on Merchant Navy lines while the Royal Navy was beginning to want something else. In 1958, and on the same theme, a correspondent for The Naval Review, who had just returned from a trip on an RFA wrote:

> I would challenge any Merchant Navy captain to take on with equanimity the responsibility for refuelling at night, with their ships darkened, a Fleet carrier on one side, a destroyer on another and a frigate astern simultaneously in the Arctic, knowing that about 75% of his crew, he himself, his Chief Officer and Boatswain had joined only a week earlier. Most of the crew had no previous replenishment experience whatsoever.[61]

The National Archives hold a number of similar documents which show that the Admiralty understood the problem. An early example exists in a 1959 file from an Admiralty panel focussed on RFA salaries, working conditions and operating practices. It concluded that RFA pay and employment conditions were not as attractive as those offered by Shell and BP. An example given was a compulsory retirement age of 55 for Shell and BP officers but 60 for the RFA, and with Shell and BP offering more generous

[58]Puddefoot, *Ready for Anything,* pp.155-158.
[59]Nash, *Logistic Support,* p. 110; in 1948.
[60]Puddefoot, *The Fourth Force*, pp. 8-9.
[61]Ibid., p 9.

pension payments. Interestingly, we see the Admiralty's selection of two commercial tanker companies as benchmarks at a time when most RFAs were freighting or attendant tankers. The same report observed that the habitability of crew accommodation on austere wartime built RFAs compared very poorly to that available on modern commercial vessels. Such factors were recognised to be significant barriers to the RFA attracting and retaining British seafarers.[62]

Importantly, in the same file we find the panel's Royal Navy stakeholders wanting the separation of the RAS capable RFAs from the freighting tankers and other auxiliaries in order to prioritise their availability and improve their support to naval operations. The Royal Navy also wanted specific RFAs to be permanently allocated to specific groups of RN ships to ensure operational familiarity. A case was cited of an RFA completing a freighting trip late and then immediately having to undertake RAS work without having a RAS experienced crew aboard. The Admiralty's civil servants rejected most of the panel's recommendations arguing that pooling the larger RFA tankers for freight and RAS was the optimal economic solution at a time of financial stringency. Very apparent in that rejection is the Merchant Navy, low-cost model then in use for the RFAs, and the cost driven mindset of the Admiralty's civil servants.

The Royal Navy's Commander in Chief Far East Fleet also wanted an RFA code of discipline because 'the behaviour of British crews of RFAs on some occasions leaves a lot to be desired'; he also wanted RFA ratings to have and wear an RFA uniform. During the 1950s only Merchant Navy/RFA officers bought a uniform, and even then, its use was not commonplace on many merchant ships; while ratings and petty officers had no uniform and wore civilian working clothes. The RNSTS/FFS responded that the free issue of an RFA uniform to ratings would be costly although making it more widely available at 'reasonable prices' would be considered.[63] These are the first archival references to the Royal Navy seeking a 'navalisation' of the RFA.

A second example exists in an extensive 1964/5 'Report on the manning and management of the Royal Fleet Auxiliary Service and other marine auxiliary services of the Royal Navy.' It was produced by a panel of 7 Royal Navy officers and 2 Admiralty civil servants, and notably without a RFA officer as a panel member.[64] Tasked with looking at the current and future situation it had many conclusions, amongst which were:

[62]TNA ADM 1/27538 Royal Fleet Auxiliary Service – implementation of certain recommendations of the panel appointed to consider the manning of RFAs.
[63]Ibid., RNSTS DoS response to note from CinC Far East Fleet.
[64]TNA ADM 1/29064 RFA Working Party.

> The major civilian auxiliaries …. are in a class by themselves as our deliberations in Part 1 of the report will show …. and it is our conclusion that they will function best as a tight-knit organisation on their own.[65]
>
> The Royal Fleet Auxiliary Service consists of 35 foreign-going vessels of which 32 are equipped for front-line support.
>
> British Merchant Navy crews are, basically, not a disciplined force. They thus show themselves to best advantage in active ships which spend a large part of their time at sea; they will not tolerate lengthy periods in harbour which is foreign to their tradition and to commercial practice. … Merchant Navy crews are highly individualistic. They like to sign on and off ships as they feel inclined … and, on completion of a voyage are inclined to live like kings for a short period before signing on any ship which happens to be available. Given good leadership and employed on jobs which they understand, they can give very good service. If faced with long periods of inactivity in port their discipline and morale deteriorate.
>
> Because Merchant Navy manpower of the necessary calibre is strictly limited, the scope of the RFA Service should be limited to the front-line support of the Fleet which is its primary service.
>
> Each additional special to Navy equipment, procedure and practice required of an RFA vessel accentuates the difference between the RFA Service and the Merchant Navy and thus brings further manning and management penalties. This point needs to be carefully weighed …. because what is ultimately at stake is the whole concept of a Merchant type auxiliary service.[66]

Here we see more evidence of the Royal Navy wanting an RFA Service with an emphasis on RAS operations.

The report suggested that 'The management and operation of the other ocean going civilian manned vessels should be centralised under a separate organisation …. with conditions based on the present Admiralty Cable Service.'[67] Perversely, a 22 December 1964 memorandum in the same folder notes the extreme difficulties experienced in crewing the cable ships due to poor working conditions and low salaries! The report also contains a vigorous Admiralty Hydrographic Service defence of the status quo and a determination to continue the commissioning of survey ships.

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[65]Ibid.
[66]TNA 1/29064 RFA Working Party 1964. Findings.
[67]Ibid. Sheet 2.

By the mid-1960s there is considerable evidence of the Royal Navy wanting RFAs to have a primary role in front-line fleet support, and not freighting or attendant operations, with the RFA crews becoming more professional and practiced in RAS operations. At the same time the Admiralty staff controlling the RFA continued to prioritise operation on a minimum cost Merchant Navy model.

Figure 15: RFA Regent - 18,029 GRT at South Georgia 1982.[68]

A 1977 study considering task forces and NATO reinforcement convoys from the USA highlighted the vulnerability of large High Value Targets (HVTs) such as the ammunition and stores ship *Regent* (Figure 15). Under sustained Soviet air attack, the accompanying destroyers and cruisers might fire their entire missile inventory and then urgently need RAS from an RFA carrying the other half of the task force's missile stock. Furthermore, because of ship stability reasons, the endurance of modern frigates and destroyers might only be six days without a refuelling RAS.[69]

Sourcing & Retaining Crews

Traditionally RFA crews were recruited on the basis of minimising cost to the Admiralty. The UK's Merchant Shipping Acts require British registered merchant ships to have a British Master, Chief Officer and Chief Engineer, but that requirement does

[68] http://www.historicalrfa.org/rfa-regent. Accessed 17 March 2021.

[69] TNA ADM 219/713 Tactical Reliance on RFAs 1977; and TNA DEFE 24/1373 Future Support Concepts 1979. New gas turbine powered frigates and destroyers could not take seawater ballast into empty fuel tanks without risking fuel contamination.

not apply to the rest of the crew. It has therefore been long-term practice for British shipping companies to employ lower-cost non-British crews. The RFA was no exception, with non-British RFA ratings and petty officers routinely recruited from Hong Kong, Malta, the Seychelles etc. In 1979 more than 700 Hong Kong Chinese (HKC) ratings crewed a third of the RFAs, and during the 1982 Falklands War 9 of the 22 RFAs deployed had HKC crews.[70]

Until the mid-1960s the Admiralty continued this practice with the British officers and ratings sourced from the Merchant Navy's own labour system. Operated on behalf of British shipowners by The Shipping Federation it was colloquially known as 'The Pool'. Simplifying and summarising greatly, the Pool acted as a labour exchange that put shipowners and seafarers in contact, and with the seafarer guaranteed at least the minimum wage agreed annually between the National Union of Seamen and the shipowner funded and controlled Shipping Federation. The seafarer was offered a limited choice of ships and would 'sign on' to a ship's industry standard employment contract – known as a Ship's Articles. The seafarer contractually committed to work for either a specific voyage or a specific term, and for many years were not paid until that commitment was complete. Seafarers could however give 48 hours' notice to leave a ship at the next port. They did not receive sick pay, paid leave or any other benefits, so it was an ideal system for shipowners seeking to minimise labour costs and not pay for crews when their ships were not in service.

Until the early-1960s many RFA officers, most petty officers, and all British ratings were employed via the Pool. Beginning in the mid-1930s some senior RFA officers, mainly Masters, were offered two/three-year employment contracts, a trend that continued, with longer terms, until it was the norm for RFA officers by the late 1960s. After 1947 selected RFA Petty Officers were also offered employment contracts, and some Ratings after 1989.[71] Today all RFA officers, petty officers and ratings are salaried RFA employees. Many are also members of the Royal Maritime Reserve.

For the Admiralty a major disadvantage of the Pool system was retention, particularly for skilled officers and petty officers. After 1938 Merchant Navy officers could participate in the Merchant Navy Officers Pension Fund (MNOPF) which was independent of the shipping companies. Together, the Pool and MNOPF, gave officers

[70]Adams & Smith, *Century of Service,* p.142; TNA DEFE 69/765 paper dated 3 December 1982 lists RFAs *Stromness*, *Pearleaf, Plumleaf* and six LSLs with HKC crews.

[71]Richard Woodman, *Fiddlers Green – A History of the Merchant Navy Volume 5,* (Cheltenham: The History Press, 2010), Kindle Version location 507 of 617; notes that in 1980 the Merchant Navy had 31,000 British ratings at sea, by 2005 there were 9,000 and most of those were in RFAs or in Ro-Ro Ferries to European ports - an enormous decline; Puddefoot, *The Fourth Force,* p. 141.

an opportunity to seek the best employment and working conditions, so only a few officers, and even fewer petty officers and ratings had any ties to a particular shipping company – including the RFA. As noted earlier, the post-war commercial tanker operators, such as Shell and BP, offered better pay, long-term employment contracts, and superior accommodation on newer ships.

Since the early 1900s UK legislation has required a British registered merchant ship to have a minimum number of British officers holding Maritime and Coastguard Agency Certificates of Competency. Commonly known as 'tickets' there are various grades, and they can only be gained after periods of qualifying sea service and then successfully passing written and oral examinations.[72] Until relatively recently RFA officer and crew training, and career development, followed the Merchant Navy model towards gaining tickets.

In 1982, and before the six *Round Table* LSLs left Ascension Island for the Falklands some unrest occurred within their HKC crews. This was resolved by: assuring them the LSLs would not be used in an opposed beach landing role; and by increasing their pay to that of a British RFA rating.[73] Most of the HKC ratings continued on to the Falklands but after such a mood shift a decision was taken in London to replace the HKC with British ratings although the war ended before that could happen. All six LSLs came under air attack at San Carlos Water with one hit by a bomb that did not explode, and two LSLs were temporarily abandoned there. Two LSLs came under air attack again at Fitzroy, where both were set on fire and abandoned, one was later sunk as a war grave. A post war report noted,

> The consensus of opinion of Masters on the spot was that the HKC were very good seamen in normal circumstances. They are clean, reliable and not prone to disciplinary or alcoholic problems. In war conditions, however, they showed themselves liable to panic, displayed insufficient resolve, and were often willing to do only the minimum required. In short they had to be driven rather than led. In cases of battle damage or fire they could not be relied upon to apply their full energies to counteracting the damage, thus further endangering both themselves and UK officers. This view of experience under fire has been confirmed by all Masters on their return from the South Atlantic.[74]

Interestingly of the three Falklands War George Medal awards one went to an RFA Engineer Officer and a second to a HKC Sailor, both from *Sir Galahad* for actions in damage control at Fitzroy.

[72] https://www.edumaritime.net/uk-mca. Accessed 22 December 2021.
[73] TNA DEFE 69/765 memo of December 1982.
[74] Ibid.

The transition to all British RFA crews was politically sensitive in Hong Kong and was not achieved until 1989.

The Falklands War

Puddefoot comprehensively covers the RFA during the Falklands war so there is no need for repetition here.[75] It is though relevant to record that 22 RFAs and 60 MFA/STUFTs took part. The liners *Canberra, Queen Elizabeth 2* and *Uganda* were the centre of press attention but excellent service was also provided by the less glamorous tanker and Ro-Ro MFAs from BP, Shell, Norland and many others. One RFA, *Sir Galahad*, and one MFA/STUFT, *Atlantic Conveyor,* were lost, as were 8 RFA personnel. All of the MFA/STUFTS had a small RFA and Royal Navy detachment aboard to assist with RAS operations and telecommunications. This was an important contribution by the RFA and remains generally unrecognised.

The Ministry of Defence's rapid assembly of an ad hoc 'fleet train' was a remarkable achievement, and the creation of this 12,700 km long supply chain from the United Kingdom to the Falklands via a temporary base at Ascension Island, and without any prior warning, shows just how far the Admiralty had come since its BPF problems in 1945. The RFA achieved remarkable things during the Falklands War including notable events such as Operation Insomnia when, on 16 April, *Fort Austin* began a 48 hour long continuous RAS with over 600 loads transferred to various ships.[76]

Nevertheless, everything did not go perfectly. Numerous problems were encountered with RFA equipment and training and

> Although much was made in the media at the time about the phenomenal success of the logistics effort, the supply system and its underlying organisation had been severely stressed and it was certainly starting to unravel by the early weeks of June.[77]

In retrospect, although the RFA achieved much during the Falklands War, it also marked a watershed by highlighting ongoing problems with organisation and equipment, and identifying a need for further change. While the origin of the route to alignment with the Royal Navy can be found with the BPF in 1944/5, the Falklands War led to a step change in scope and pace, and most notably, in a decline in freighting and other duties which by 2009 had disappeared completely.

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[75]Geoff Puddefoot, *No Sea Too Rough – the RFA in the Falklands War,* (London: Chatham Publishing, 2007).
[76]Puddefoot, *The Fourth Force*, p.107.
[77]Ibid., p. 130.

Arming RFAs

During the world wars most British merchant ships and RFAs had some defensive armament, and the peacetime, defensive arming of a UK registered merchant ship remains legally permissible. However, legal opinion has it that problems would arise following use, and because of such concerns the arming of RFAs outside war zones was never routine before 1985.[78] Indeed, the Royal Navy position in 1955 was, 'Guns mounted in afloat support ships have been more for morale purposes than with a view to contributing to any effective anti-aircraft defence.[79] That view ignored British merchant ships destroying both enemy submarines and aircraft during the Second World War, and the RFA claiming to have downed two Argentine aircraft in 1982.

A significant change came in the 1960s with the arrival of the new RFAs. Faced with the Soviet submarine threat the Admiralty had these RFAs built with facilities for the larger anti-submarine helicopters that could not be carried on contemporary frigates and destroyers. When the tanker *Tidespring* sailed for the Falklands in 1982 it embarked three such helicopters and had the swimming pool in use as a magazine for AS-12 Air to Surface missiles.[80] Those same helicopters airlifted elements of 45 Commando Royal Marines and Special Forces for the recapture of South Georgia. At that time was *Tidespring* acting as a warship or as an auxiliary?

A debate on permanent arming followed, and the outcome has been the routine arming of RFAs. To deal with the legal issues a decision was taken in 1985 that RFAs would no longer be registered as British merchant ships, although they do comply with most of the remaining legislation applicable to merchant shipping, such as trade union recognition, officer qualification, and Lloyds Register certification.

Things went a step further in 1994 with *Fort Victoria,* it now routinely carries up to four large *Merlin* helicopters and has a permanent fit of 2 Phalanx and 2 x 20mm Bofors guns. It was also built for, but not fitted with, a 15 cell Vertical Launch System for the Sea Wolf missile.

Operational Control

Within the Merchant Navy the larger companies, like Cunard, Shell and BP, designate a senior Captain as Commodore - in effect a recognition of that person as *primus inter pares*. The Commodore is normally a seagoing officer, with some companies also designating a Commodore Chief Engineer.

[78]TNA FCO 46/4258 Arming & Legal Status 1984.
[79]Puddefoot, *No Sea Too Rough,* p. 26. Director of Gunnery Division, Naval Staff.
[80]Ibid.; p. 5.

A 1948 note considering the creation of an RFA Commodore states, the 'award of this distinction would be governed by good service and continuing general efficiency' and 'the general intention is that the Commodore should hold the rank for the last two years or so before retirement.'[81] Characteristically for the Admiralty of that time it observed that the Commodore would be selected from a Captain within the freighting tanker fleet. A 1948 Treasury note in this same archive folder voiced reluctance at the additional £10/month expense - when Shell was paying their Commodores an additional £20/month. The first Commodore RFA was appointed in 1951 and the first Commodore Chief Engineer RFA in 1960.

Civil servants within the Admiralty/MoD continued to control the RFA until 1993 when operational control passed to the Royal Navy. The Commodore RFA is now a shore based, One Star position, responsible to the Royal Navy's CinC Fleet - a very different role to that proposed in 1948.

Royal Navy Alignment

Figure 16: Commodore RFA Handover aboard HMS Victory 2020.[82]

Taken in Nelson's cabin aboard *HMS Victory*, Figure 16 is indicative of how much the RFA has changed since 1945. Indeed, the RFA of 2022 shares many Royal Navy trappings: from 1962 RFAs have had ships crests like those for naval vessels; in 1969

[81]TNA ADM 1/2304 RFA Commodores: Memo dated 24 May 1948.
[82]https://www.royalnavy.mod.uk/-/media/royal-navy-responsive/images/news/new/20201030-new-head-of-rfa/commodore-david-eagles-left-with-commodore-duncan-lamb-in-hms-victorys-great-cabin.jpg. Accessed 17 March 2021. Commodore Lamb (left) to Commodore Eagles, 30 October 2020.

the RFA was granted a distinctive Blue Ensign with a vertical gold anchor to distinguish it from other users of the Admiralty's Blue Ensign; in 2001 an RFA Long Service Medal was introduced; in 2006 Prince Edward was appointed Honorary Royal Commodore RFA; and in 2008, and unusually for what is a civilian organisation, the RFA was granted a Queen's Colour, the first ever awarded to a nominally non-combatant service. RFA uniforms and badges are now closely aligned with those of the Royal Navy although some differences remain such as gold diamonds above an RFA officer's cuff stripes instead of the Royal Navy's curl.

The training of RFA officers has slowly been aligned with that of Royal Navy officers with aspiring RFA officers now trained at the Britannia Royal Navy College alongside their RN colleagues. Their training and career path is now very different to that taken by aspiring post-war Merchant Navy officers.

In 1961 an RFA navigating officer attended the Royal Navy Command course and since 1982 it has become the norm for all RFA officers under consideration for command. RFA officers now routinely take part in specialised Royal Navy training and career development courses, with mid/senior-career officers also attending the Defence Academy at Shrivenham.[83] Commodore Lamb (Commodore RFA 2015-20) served aboard a Royal Navy ship as a Principal Warfare Officer in addition to his commanding a number of RFAs.

These may seem minor changes but taken together reflect the RFA's progressive journey away from its Merchant Navy roots towards shared values, standards, and training that is aligned with the Royal Navy.

Summary

In 1905 the Admiralty identified selected government ships as RFAs. Their numbers increased during the World Wars and with a dominant emphasis on freighting and attendant tankers operated on a Merchant Navy model.

Before 1939 British RAS technology and practice lagged behind the USN and its purpose-built auxiliaries and more mature RAS techniques. Nevertheless, the USN, Royal Navy, and RFA all continued refining RAS after 1945. From 1941 the Royal Navy increasingly looked to the RFA for RAS, initially for escort ships in the Atlantic and Arctic, and by 1945 for the BPF. In the post war period as bases were lost the Royal Navy became more dependent on RAS and the RFA.

By the 1960s the Royal Navy wanted an RFA focused on front line fleet support, with the traditional freighting and attendant tanker duties moved to a separate civilian

[83]Puddefoot, *The Fourth Force,* p.40

organisation. Initial resistance to changing the RFA's low-cost Merchant Navy model was eventually overcome with the 1982 Falklands War providing additional impetus.

It was the Royal Navy's post-war demand for fleet mobility that resulted in the emergence of an RFA Service which today has purpose-built ships operated on a unique crewing model, with a new legal status, and RFA operational control fully integrated into the Royal Navy it supports.

Appendix 1: Bibliography

With two exceptions these lack academic or official provenance. However, they were written by, and/or have received significant input from, serving and ex members of the RFA and the Admiralty/MoD. They provide a reliable, although anecdotal RFA record.

A considerable number of Admiralty/MoD files on the RFA are held in the UK National Archives and elsewhere. Most are commercial and administrative records but some provide insight into why and how the RFA evolved, they have been the principal source for this article.

The author acknowledges the kind assistance provided by Mr Tom Adams MBE in identifying sources.[84]

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Appendix 2: Tonnage Definitions

Merchant ships are measured in Gross Registered Tons (GRT). This is derived from the internal volume of a ship with 1 GRT = 1000 cubic feet. GRT is used for cargo ships, passenger liners etc.

Net Registered Tons (NRT) are GRT with engine rooms and accommodation etc. omitted. It is a measure of cargo capacity.

Oil tankers are measured in Deadweight Tons (DWT) – meaning how much oil they can carry. For auxiliaries DWT misleads because auxiliaries carry less oil than commercial tankers of a similar size.

Warships are measured in Displacement tons – of water.