Draft

Chapter Twelve: Conclusions

It will have been clear from previous chapters that Pluto was by no means everybody's darling. That the idea was brilliant no one will deny. That the implementation of the idea involved a fine technical achievement is also unlikely to meet with much opposition. But viewed with hindsight it would seem that Pluto was oversold, and a great deal of time, money, effort and valuable materials would have been saved had the operation been mounted on a less lavish scale and had the difficulties of handling the shore ends been overcome beforehand.

Hindsight, however, does not win battles and with a gigantic operation such as 'Overlord', on which the fate of the world could be said to depend, the prime requirement was foresight, or at least a forecast of what might happen. That this may lead to preparations for an event which does not happen is of far less consequence than not being prepared for an event which does happen.

Certainly at the time 'Overlord' was being planned it would have been highly dangerous to assume that fuel supplies could be landed from tankers as eventually they were or that enemy air and sea activity would be so restricted that not one tanker would be lost in the invasion. Fuel for the armies was as vitally important as food and ammunition and a means of ensuring petrol supplies in a way which made it virtually impossible for the enemy to prevent them reaching the continent was obviously something the planners must have welcomed enthusiastically. Those same planners would not have been likely to lose any sleep at the thought that the enormous amount of effort necessary to produce this desirable result might not be necessary. Their reaction to the suggestion probably would have been 'All the better'.

In the event, it is now clear that Pluto did very little to further the success of the invasion. Tombola produced some useful supplies in the early stages but the site chosen was not really suitable for hauling out the pipelines and a rocky foreshore added to the delays and difficulties. All Tombola experiments and trials had been done on flat, sandy beaches. The fact that small coastal tankers were able to use the little harbour of Port en Bessin so early in the proceedings and did so with great dash and enthusiasm really overshadowed Tombola which at least did what was expected of it.

Bambi, the code name for the Isle of Wight terminal and for the laying operation between that point and Cherbourg had entailed an immense amount of work, material and careful organisation. The pipelines across the Solent connecting the mainland pipelines to the storage tanks at Sandown, the powerful pumps and the whole of the carefully camouflaged duplex installations represented works of considerable magnitude. The laying operations began too late and were to all intents and purposes a complete failure and the contribution of Bambi in terms of fuel delivered to France was negligible. On the other hand, valuable lessons were learnt by Force Pluto which, had it been necessary to lay more lines, might well have ensured reasonable success. As it was, the as yet untried crews were thrown in at the deep end with the task of laying the great heavy Hais cable and the strange and somewhat unpredictable Hamel pipes for a distance of more than sixty miles across the tides of the channel. Added to which the problem of joining up the shore end was still by no means certain of solution. It is significant that two or more of the major mishaps were due to common human error, rather than any faults in the system.

Throughout the period of Operation Pluto there were forces

at work which delayed or endeavoured to cancel the whole undertaking. It would seem that these forces were by no means confined to the authorities in Britain; for different reasons there was an anti-Pluto lobby on both sides of the Atlantic. The Americans had insisted that fuel for the forces should be shipped by tanker direct from the United States to the continent, with control of shipments vested in Washington. Whatever the basic reason for this, the fact that in Britain in 1944-45 oil stocks were low may have had some bearing on it.

The main value of Pluto must have been at the time of the break-out from the beach-heads when the proximity of the enemy would put supply ships and tankers at greatest risk. In fact, the delay to the start of the Pluto lays from Cherbourg meant that tankers were berthing in the port and providing fuel for the American forces before the pipeline from the Isle of Wight produced a drop. From that moment on, the future of Pluto must have been in doubt as it was much easier to lay larger bore pipelines on land than lay the 3 in Hais and Hamel lines. The original proposal was to lay ten Pluto lines to Cherbourg with a throughput of 3,500 tons a day. When the first four lines failed and the allied armies were advancing rapidly to the eastward the decision to proceed with Dumbo, the Dungeness-Boulogne pipelines must have been taken primarily because of the shortage of coastal tankers and the American requirement for more tankers in the Pacific. Certainly at this time deliveries of fuel by tankers totalled far more than the estimated military requirements.

But Dumbo did at least prove the practicability of the Hais and Hamel systems although the short life of the Hamel steel pipe and some of its perversities detracted from its

value.Dumbo also acted as an insurance against the possible closure of Antwerp which for some time was under heavy bombardment by V2 rockets, making it an unpleasant terminus for a tanker full of petrol.

Not un-naturally, evaluations of Pluto tend to concentrate on what did happen in the invasion and scarcely mention what might have happened. Major-General Sir Eustace Tickell, in an article in the Royal Engineers Journal, made the point that tankers were more successful and more flexible than Pluto and stressed their ability to work in damaged ports. This is beyond question but the problem of the planners was 'Will tanker losses by enemy action be such as to put the whole invasion in jeopardy?'. This is what gave birth to Pluto.

Of particular interest is an account of Pluto written by Ensign Rufus J. Moore of the US Navy and published in the journal of the US Navy Institute in June 1956. Ensign Moore mentions that the US Army had a plan to weld six mile lengths of 6 in (152mm) steel pipe which were to be connected by 'grasshopper' joints and positioned by radar. The plan was abandoned in favour of Pluto in December 1943 - six months before D-day! The Ensign did not say how six mile lengths of 6m ID pipe were to be moved on to the sea bed!

The author's description of events coincides closely with official reports in the majority of instances. His figures for the total deliveries of fuel to the continent seem to favour Pluto in that out of 2,352,875 long tons he credits Pluto with having pumped one third. In the official publication 'Oil', D.J.Payton Smith only allows Pluto one eighth of the total which appears to be more realistic. In fact, precise figures must have been difficult to determine and it is likely that all the Tombola

deliveries and possibly all the tanker deliveries at Port en Bessin were credited to Pluto. Even so, these would hardly have made up the difference of nearly half a million tons between the two figures.

However, Ensign Moore was obviously impressed with Pluto and said it was a revolutionary means of transferring fuel across the channel, also that it was virtually proof against enemy action. Although this certainly applied to the pipelines the pumping installations and tankage were still to some extent vulnerable.

Admiral Lord Louis Mountbatten, whose vital contribution to Pluto has already been discussed, has related a number of anecdotes which emphasise the considerable differences of opinion held by high ranking authorities and indeed tend to suggest that Captain Hutchings viewed Pluto in the same light as the shoemaker who insisted that there was nothing like leather.

Admiral Mountbatten recalled that when Admiral Ramsay was viewing the invasion beaches from ~~Cyril~~ Douglas-Pennant's ship he said, 'A lot of people have criticised Dickie Mountbatten for diverting men and materials to Combined Operations but we could never have landed here without the splendid work they put in on landing craft and invasion devices". But as for that blasted Pluto and the Mulberries, I wish someone had sunk the lot. It would have made my job much easier'.

In his own notes, Captain Hutchings recorded a remark by Admiral Ramsay that Pluto was the one outfit which never caused him any trouble but he was convinced that Admiral Creasy

was strongly - and mistakenly - anti-Pluto.

Once it was clear that fuel was being landed safely and satisfactorily by tankers it is understandable that the large and varied Pluto fleet was considered an unnecessary burden to the naval staff and the crews could have been more usefully employed elsewhere. Under its dynamic commander, Force Pluto was run very much as a private navy and private navies have never been popular with the higher authorities. It is almost certain that Pluto would have ceased to function had not Generals Gale and Bedell Smith appealed to General Eisenhower to back its continuance, which he did. He later spoke highly of the contribution Pluto made in the supply of fuel to the armies.

The decision to go ahead and lay pipelines from Dungeness to Boulogne may well have been influenced by the suggestion that it would be a pity to waste all that valuable material, for the need to transfer tankers to the Pacific was by no means generally accepted, although some vessels were released. On the other hand how much easier it would have been to recover the many miles of lead piping from the Hais cable if it had not had to be ~~recovered~~ wired from the ocean bed first. By the time the lead was recovered its value had risen astonishingly and it was even rumoured that its sale covered the whole cost of the operation. This is very much open to doubt.

The Hamel lines were recovered out to the 14 fathom line but presumably had little scrap value. The rest was apparently left to rust away where it lay.

The records contain some interesting papers on the question of legal responsibility for damage caused by pipelines on the sea bed in French territorial waters. At first it was suggested that the French should do the

recovery and clearance work on their side, which they agreed to do providing Britain paid the cost. The offer was not accepted.

The design, manufacture and arrangements for laying the Hais cable were all remarkably successful. Siemens, Henleys and all the other cable makers responded splendidly to the call for maximum effort. There may have been some element of commercial acumen involved, since even in war time they had to make money, but this does not detract from their efforts and efficiency. Unfortunately the records also disclose the fact that Union methods and procedure ~~was~~ were not affected by the fact that the nation was making an all out bid to remove tyranny. Welding jobs and the loading of ships with Hais cable were both held up at times because of Union demands. The naval ratings working alongside and for a fraction of the pay must have wondered what sort of war they were involved in.

The failure of the two 63 mile Hais lines from Cherbourg to Sandown bay in the Isle of Wight was clearly due to human error rather than any fault in the equipment. The failure of the two Hamel lines also laid was due to the one and only welding fault (out of some 200,000 welds) discovered and lack of experience in towing Conundrums across wind and tide. Under certain conditions the drum took a pronounced sheer and followed the towing vessel at a considerable angle, the after tug apparently being unable to correct this. The effect was that the pipe came off the drum at an angle and over the top of the flange, thereby creating stresses which had not been envisaged. It would seem that this fault was overcome for the Dumbo lays as it did not occur again. In fact the steel pipe, which most people would have considered inflexible, behaved with astonishing docility up to a point. Its two

major drawbacks for the work in hand were its 'panting' under pumping pressure which caused a periodic movement and ~~caused~~ chafing on hard portions of the sea bed and its rigid objection to being pulled at right-angles to the main direction of the lay. This meant that expending excess pipe at the end of the lay by running parallel to the beach caused grave problems. When an attempt was made to haul the end ashore, the pipe 'strangled itself' by turning over at the bend. This disability was eventually overcome by attaching a length of Hais cable at each end of the Hamel pipe. It was somewhat late in the day when this solution was found.

Even with this modification the Hamel system continued to present problems, mostly due to the difficulties of mooring up the Conundrums and connecting to the shore at the Dungeness end. As almost the whole of the Dumbo operation was carried out in typical winter weather, positioning the huge Conundrums close off a lee shore involved some very unpleasant exercises in practical seamanship and no doubt led to some further criticism of the wisdom of proceeding with the lays.

The Hais cable ships, being self-propelled, albeit single screw vessels, did not pose quite the same problems but occasionally even these ably commanded units had some mishaps. The reports show that these were almost certainly due to human error somewhere along the line and in view of the brief training period this is not surprising.

Once more it must be stressed that most of the delays and disappointments were due to the difficulties experienced in dealing with the shore ends of the Hais cables or Hamel pipelines and the fact that the best of navigators could not be expected to arrive at the dropping position with the end of the pipe or cable disappearing over the stern. Usually there was still some, possibly quite a lot, still

left on board and disposing of this added further complications. Indeed, on several occasions this fact led to quite long delays in making the connexion to the shore installation so that this problem was virtually unsolved at the closing down of the operation at the end of July, 1945. All of this, plus the difficulties of working off a lee shore in the channel in winter, must emphasise the dedication and determination of the men of Force Pluto ~~and their indefatigable leader~~.

To consider some of the lessons learned, it may fairly be suggested that more thought might have been given to the siting of the starting, and possibly to the finishing positions, which undoubtedly caused problems. More trials and training in the shore end techniques would also have prevented a lot of trouble on the day. But Pluto was a late starter, not always popular, and though he did not accept the situation gracefully, Captain Hutchings no doubt had to accept the fact that something was better than nothing. The well-known British predilection for compromise does not always produce the best results.

Had it been possible to start Dumbo in reasonably sheltered waters or even, perhaps, had the lay been carried out in the other direction as with Bambi, many of the difficulties ~~would~~ might not have occurred. There may have been over-riding reasons why laying could not start from the Boulogne end.

The drawback of having to dispose of excess cable or pipe at the end of the lay might possibly have been overcome by the use of a cutting device but this would have been extremely difficult to design and fit. One of the main problems would have been how to mark the end of the line for the connecting barge to pick up. It would have been even more difficult, if not impossible, to fit such

a device to the Conundrums. With both Hais and Hamel it was absolutely essential to keep the cable or pipe leading aft. If either even reached the up and down position it was likely to cause kinking and to run back on the line spelt disaster.

Apparently there were no pumping difficulties and by VE day the Hais lines were functioning at something like 100% efficiency. When recovered after the operation they were reported to be 'as good as new'. The designers and makers could hardly be given higher praise.

Hamel, of course, had a more chequered career but it still remains an astonishing and brilliant solution of the problem posed by the impossibility of producing enough Hais cable, even with American help. Its short life in service was foreseen as being about six weeks, which was considered long enough for its purpose. In fact it averaged rather longer than this. The illustrations of the big American continuous pipe layers show that the Hamel idea was by no means a wild one.

North sea oil has brought underwater pipelaying very much in the news but the techniques and difficulties have not received as much publicity as might be expected, other than when there has been loss of life or a near disaster. Here, of course, large pipes up to 32 in (813 mm) in diameter have been laid on the ocean bed from specially designed barges and protected by a cover of concrete, the whole operation involving the use of highly skilled divers and highly sophisticated submarine craft. In America, continuous pipelaying from special vessels which may be considered successors to HMS Pesephone has been used successfully for some years. In one method the 8 in (200 mm) pipes were

welded into 7½ mile lengths as they were fed onto a horizontal reel on the laying vessel. The pipe was laid in depths of from 220 to 270 feet (67-82m). A 10 in (254mm) pipeline was also laid successfully in 1000 feet (305m) in the Gulf of Mexico by the horizontal reel barge Chuckasaw. This pipeline was subsequently recovered and tested, the results no doubt making a major contribution to subsea pipeline technology.

So Operation Pluto, though sometimes given credit for having made a greater contibution to 'Overlord' than in fact it did, may yet be said to have earned a place in maritime history if only to ensure a suitable tribute to all the men and women who strove with brains, bravery and dogged determination to bring the fuel to the fighting armies. That the value of their efforts was less than anticipated does not detract from them nor from the technical achievements which produced the means to carry out the original brilliant idea.