

6 Conclusions

The reference goods

6.1. We are required by our terms of reference to investigate and report whether a monopoly situation exists in relation to the supply in the United Kingdom of marine radio navigation receivers which are compatible with the Decca Navigator System. It may be helpful to explain first what the reference goods are.

6.2. During the war the then Decca Record Co Ltd developed a hyperbolic radio navigation system, which was first used in the Normandy landings in June 1944. After the war this system was made available for civilian use as the Decca Navigator System (DNS). In 1980 the Decca Group was taken over by Racal Electronics PLC. The various companies in the Racal Group involved with the DNS since then (see paragraph 1.5), together with their predecessors in the Decca Group, are for simplicity usually referred to in this chapter as 'Racal'.

6.3. The DNS employs groups of transmitting stations, each group containing one master and, usually, three slave stations, which may be 50 to 100 miles apart. Each such group is known as a Decca chain. A DNS receiver aboard ship (or, very much less frequently and outside our terms of reference, on an aircraft or land vehicle) fixes its position from the continuous signals received from a Decca chain. This position is represented by figures (decometer readings), which can be plotted on specially overprinted charts. Some models of receivers display position directly in latitude and longitude, while others provide both facilities. The accuracy and range of the DNS are affected by seasonal and weather conditions, but its predicted accuracy at some 240 nautical miles range can be as high as within 50 metres by day and 200 metres by night.

6.4. The DNS is the only hyperbolic navigation aid transmitted from the United Kingdom. There are a number of other hyperbolic radio navigation systems, mostly American, but receivers made for one system are not compatible with another.¹

6.5. The reference goods are therefore all marine (ie shipborne) receivers supplied in the United Kingdom and capable of using DNS transmissions. All such receivers were until relatively recently supplied by Racal.

The Market

6.6. Starting in 1946, some two dozen DNS chains were established covering Western Europe from Norway to Spain, the Baltic and several other areas of the world. With the exception of the Danish and West German stations, chains built abroad are the property of the state concerned, or of an appropriate authority, and Racal is paid for whatever operational, maintenance or management services it renders. The six United Kingdom chains, however, remain the property of Racal.

6.7. The United Kingdom has therefore been unique (apart from the slightly different situation in Denmark and the Federal Republic of Germany) in leaving the provision of the DNS as a service to the national and international maritime communities in the hands of, and as the responsibility of, a commercial concern.

¹ There are a few hybrid or multisensor sets, but these are in effect receivers for two or more systems housed within one case. Hyperbolic systems may be largely superseded in the next decade by transmissions from the Global Positioning System, a satellite system (see paragraphs 2.6 and 2.7).

Racal has until recently operated the United Kingdom chains under the terms of the 1956 agreement with the then Ministry of Transport and Civil Aviation; an agreement which left the financing of the system entirely to Racal.

6.8. Racal's policy (inherited from Decca) has been to rent the receivers it supplied to commercial users in this country, rather than sell them. Racal argued that this was necessary in order to generate an annual income to meet the costs of developing the DNS and of building, maintaining and operating the United Kingdom chains. It believed that its rental only policy was also a means by which the commercial user would not be obliged to meet the high capital cost of outright purchase. Another advantage of the policy was that repair was simplified, as hired sets—which remained Racal's property—could be swiftly replaced when faults made this necessary.

6.9. The DNS has come to be highly regarded as a navigational aid. We were told that about 90 per cent of merchant ships entering United Kingdom ports now use the system, although initially the take-up was slow. Racal said that it was about 20 years before the system generated a good return; that is until the mid-1960s, when commercial fishermen began to appreciate the benefits of 'repeatability', ie the ability to return to a favoured fishing spot by reference to its previously noted decometer readings. As the demand from fishermen grew this led to the second and most profitable phase in the marketing of the DNS which, Racal said, peaked in the late 1970s when the number of merchant ships and commercial fishing vessels was already in decline.

6.10. Between 1984 and 1986 an average at any one time of about 4,000 commercial receivers were supplied by Racal on hire in the United Kingdom. In addition, some sets were sold, principally those supplied to various navies, including the Royal Navy.

6.11. About the time that Racal took over the DNS in 1980 it became apparent that the growing number of yachtsmen would constitute a third market. With modern technology it is not difficult for an electronics company to produce a receiver compatible with the DNS and this new leisure market was first tapped in 1981 by a Danish company, whose sets were sold outright, not hired. Racal decided to meet the new demand with a simpler receiver than its commercial models, with fewer features. It considered that it would be impracticable to rent these new receivers due to the administrative burden that this would represent, and because of the difficulty of making satisfactory maintenance arrangements. Accordingly, Racal produced its own Decca Yacht Navigator (DYN) in 1982 and placed it on sale through appointed distributors direct to yachtsmen. In the following year, Racal negotiated a licence with the Danish company specifying the features the licensed receiver could incorporate.

6.12. In order to reinforce the distinction between commercial and pleasure boat receivers Racal then replaced both the Danish model and its own DYN with a new model made in Denmark by the licensee. The terms of sale confined use of this DYN II to 'pleasure boats'. Title remained with Racal, in order to prevent commercial users—particularly fishermen—from buying these cheaper and simpler sets and thus reducing Racal's annual income from rentals. The DYN II excluded some features which might have made it attractive to commercial fishermen and was marketed through distributors in the United Kingdom under Racal's name. A licence was also negotiated between Racal and a British company which had previously manufactured DNS receivers for both commercial and pleasure boat users. Under the terms of this licence the company thereafter restricted its production to the leisure category. In succeeding years further, improved, DYN models were marketed in this country by Racal but they continued to be manufactured by the Danish licensee. In the two financial years 1984-1986 Racal sold about 4,000 such sets in the United Kingdom.

6.13. Licence negotiations between Racal and a second Danish manufacturer were not successful, nor with a Swedish company. This second Danish manufacturer became the main source of competing DNS receivers in the United Kingdom—which Racal regarded as ‘pirate’ receivers, in the sense that their sale made no contribution to DNS costs.

6.14. Although, as will be seen from Tables 3.2 and 3.3, the DNS business was still profitable in 1983–84, Racal became aware about this time that there was a substantial risk that changes taking place in the market would cause these profits to decline. A number of the complaints brought to our attention arose from steps taken by Racal to protect its position. Racal also issued litigation both in the United Kingdom and in other countries in connection with the supply of ‘pirate’ receivers. Complaints were also made to the European Commission about certain aspects of Racal’s policy and practices. Our inquiry was necessarily confined to our own terms of reference.

6.15. It appears that Racal’s licensing policy was specifically designed to create separate commercial and pleasure boat markets, although our inquiry covers both types of receiver. Racal expressed to us its willingness to negotiate licences for manufacture of commercial DNS receivers, but none was in fact ever agreed for supply in the United Kingdom. Despite the growth of competition, both licensed and unlicensed, there is no doubt that Racal to date remains the dominant supplier of all DNS receivers. It has not been possible to calculate exact figures, but it seems certain (see Tables 4.6 and 4.7) that in 1984 and 1985 Racal supplied by way of sale or hire some 90 per cent of all DNS commercial receivers supplied in the United Kingdom; and in the same years about two-thirds of the pleasure boat receivers.

The monopoly situation

6.16. Under section 6(1)(b) of the Fair Trading Act 1973 a monopoly situation shall be taken to exist where at least one-quarter of the supply of the relevant goods in the United Kingdom is supplied by members of one and the same group of interconnected bodies corporate. We therefore conclude that such a situation exists by reason of Racal’s share of the United Kingdom market for marine radio navigation receivers which are compatible with the DNS. Racal accepted this conclusion.

Complaints about Racal’s policy and practices

6.17. When the Director General of Fair Trading made the reference he identified several main areas of concern: Racal’s policy of supplying receivers on rental only terms to commercial users; the terms on which it would license other manufacturers to produce DNS compatible receivers—terms which were alleged to be unreasonable; its refusal to allow its distributors to supply receivers made by unlicensed manufacturers; and the making of technical changes in its DNS transmissions which were alleged to affect the performance of such receivers.

6.18. In the course of our inquiry we received evidence on all these matters. There were also complaints that Racal refused to allow its distributors to sell competing pleasure boat receivers manufactured under licence from Racal. In addition, complaints were made to us on other aspects of Racal’s policy and practices: that these exploited and abused its monopoly; inhibited technological improvement; restricted the availability of peripheral facilities in DNS receivers and frustrated competition; that rentals charged were too high; and that technical changes Racal made in the DNS, by affecting the performance of unlicensed receivers, endangered safety at sea.

Racal’s contract with the General Lighthouse Authorities

6.19. We became aware in 1986 that Racal was conducting negotiations with the three General Lighthouse Authorities (GLAs), which between them cover the waters around the United Kingdom and the Republic of Ireland. We had established that the foundation of Racal’s policy and practices complained of was,

as Racal saw it, the financial responsibility it bore for maintaining and operating the United Kingdom chains. As the contract would, if successfully concluded, fundamentally alter the financial basis of the DNS, we thought it would be appropriate to await the outcome of the negotiations. We therefore sought and were granted a six-month extension to our inquiry.

6.20. In December 1986 and February 1987 secondary legislation was passed which enabled the completion in February 1987 of a contract between Racal and the GLAs. Under this contract Racal was to continue to operate the DNS transmitters in the United Kingdom, but under the superintendence of the GLAs and as a charge to the General Lighthouse Fund. Racal would thus no longer bear financial responsibility for the United Kingdom chains.

6.21. This contract fundamentally changed the emphasis of our inquiry. Most, perhaps all, of the main areas of concern were rooted in the old order. In answering the questions put to us in the reference, we might thus be reporting largely on what had happened in the past, although we considered it our duty still to report on that. (Section 54(2)(b) of the Fair Trading Act 1973 requires us to give 'such a survey of the general position with respect to the subject matter of the reference, and of the developments which have led to that position, as in [our] opinion are expedient for facilitating a proper understanding of those questions...')

6.22. Our primary concern under the new circumstances brought about by Racal's contract with the GLAs was to determine whether we could feel assured that Racal's policy and practices regarding the DNS would no longer give rise to such complaints as had been drawn to our attention.

**Racal's answer to
the complaints**
(a) Rental only terms

6.23. Many of the complaints received arose from Racal's policy (inherited from Decca) of supplying receivers on rental only terms to commercial users (the first of the Director General's main areas of concern; see paragraph 6.17). As has already been explained, Racal justified this policy primarily by the necessity it perceived of generating a steady income to finance the DNS.

6.24. The application by a monopolist of a rental only policy is generally an undesirable practice. It is possible that Racal's need to generate income to finance the operation of the United Kingdom chains could have been met by investing the proceeds of receiver sales. We do not accept that this would necessarily have led to an unacceptably high price for commercial receivers, since this price would still be a very small proportion of the capital expenditure of the average vessel using the DNS. On the other hand, we appreciate that there might have been the risk involved with such an investment policy that, in adverse circumstances, maintenance of the chains might have been put in jeopardy. For this reason we do not criticise Racal's rental only policy as such. However, a question of concern, and one to which we return later, is the level of Racal's past rental charges and the relation of the income they generated to the costs of operating the United Kingdom chains. Under the terms of the contract with the GLAs any need for a rental only policy for commercial receivers has been removed and Racal told us it now offers them for sale or hire.

*(b) Licensing of
manufacturers and
distributors*

6.25. The second area of concern to the Director General was the allegedly unreasonable terms upon which Racal would license the manufacture and sale of DNS receivers. It might seem understandable that Racal would not strive to grant licences to other manufacturers seeking to supply competing DNS receivers. Nevertheless, once the public interest in allowing an appropriate reward for innovation and investment has been met there are public benefits to be expected from introducing competition, on fair terms. Racal did license some receivers for the leisure market and it assured us it had been willing in principle to license commercial receivers. Although the licences granted for pleasure boat receivers imposed some limitations on the facilities to be offered and no agreement was ever

achieved in respect of commercial receivers, we have not been able to establish that the terms proposed by Racal were unreasonable. Racal assured us it does not now require any manufacturer of DNS receivers to be licensed, unless it is intended to use Racal's technology.

(c) Restrictions on distributors

6.26. The third matter of concern was Racal's refusal to allow its distributors to supply receivers made by unlicensed manufacturers. When Racal first established its distributorships there were no unlicensed receivers and as DYNs became established distributors were said to have been keen to be appointed by Racal. Inevitably, many of the better distributors would thus have become tied to Racal by the time unlicensed receivers appeared on the United Kingdom market. It is perhaps understandable that Racal did not feel obliged to assist the sale of competing products, whose selling prices did not include a contribution to maintaining the transmissions which those products exploited. Racal assured us that since the contract with the GLAs came into effect it no longer imposed such restrictions on its distributors.

(d) DNS transmission changes

6.27. The fourth and last matter specifically referred to by the Director General concerned technical changes made in DNS transmissions which were alleged to affect the performance of unlicensed receivers. Racal showed us a history of changes in transmissions which it said were made to improve their quality or to incorporate advances in technology. We accept that Racal has made commendable efforts over the years to improve DNS transmissions. Nevertheless, there is little doubt that some of these changes adversely affected the performance of unlicensed receivers. Racal knew that this might be the case and it told us that, in addition to the notification in Admiralty Notices to Mariners, it advised main distributors of unlicensed receivers that these changes were to be made, in order that they might advise their users not to rely upon their receivers. Racal said that 'not unnaturally' it declined to provide unlicensed manufacturers with the necessary technical information to adapt their receivers. It seems to us that this is consistent with the situation in which, in Racal's view, it was subject to competition from receiver manufacturers making no contribution to the cost of the DNS.

6.28. Complaints were made to us that Racal's own receivers malfunctioned as a result of some of the transmission changes. Racal told us that, following laboratory tests, it was certain its own receivers had not been affected and we accept this.

6.29. There are, however, two further aspects of this matter which cannot be considered only in terms of commercial practice. The first of these is the belief held by some that Racal deliberately made changes in its transmissions with the intention of causing the receivers of unlicensed competitors to malfunction. The possibility that this might be the case seems to have been accepted by a Government department (see paragraph 5.67). Racal told us that it did not accept the interpretation we have quoted of the reason for these changes.

Safety

6.30. The other aspect of the changes made in DNS transmissions which transcends commercial considerations is that such changes, whether made for good technical reasons or in order to make unlicensed receivers malfunction, could be a danger to safety at sea if they had any adverse effect on any DNS receiver being relied upon for navigational purposes.

6.31. We were told that unlicensed receivers malfunctioned as a result of some transmission changes (the details of which had been withheld from unlicensed manufacturers) until such time as appropriate modifications could be incorporated. This seemed to us inherently probable, as the characteristics of such receivers would not necessarily be known to Racal when it was considering making transmission changes. We received no evidence that any such malfunction actually resulted in a hazard at sea, but it seems irrefutable that in such circumstances there must have been a potential danger to safety. Racal told us that jeopardy to safety at sea arose from the actions of the manufacturers, distributors

and users of unlicensed DNS receivers. Whatever the commercial problem, however, we consider that knowingly to make a transmission change which might in any way involve risk to mariners—a risk which could have been avoided by the timely provision of appropriate technical data—must be condemned as unacceptable.

6.32. Under the terms of the contract with the GLAs, a Joint Controlling Body (JCB) is responsible for ensuring that Racal takes whatever action is necessary to eliminate any loss of accuracy or reliability caused to any DNS receivers by transmission changes. The GLAs told us that such changes will in future be restricted to those necessary to maintain or improve the signal. Before changing the frequency or transmission format Racal is required to obtain the approval of the JCB, who will ensure that these changes appear in Notices to Mariners. Full details of changes will then be available free of charge from the GLAs. We were glad to receive this information, which should mean that any malfunction in DNS receivers ought not in future to arise because of changes in transmissions.

6.33. Racal pointed out to us, however, that under the terms of the contract it will no longer have any incentive to introduce improvements in transmissions. Moreover, Racal explained, there might in future be a multiplicity of receivers appearing on the market, with unknown or even inferior characteristics, the reaction of which to transmission changes could not necessarily be foreseen. We suggest therefore that there may be some virtue in the JCB authorising future changes to DNS transmissions only when these represent material improvements in the accuracy or reliability of the DNS or, provided the accuracy of the signals is not degraded, to improve the economy of its operation.

6.34. We also suggest that in the interests of safety at sea it might be desirable to institute type approval for all DNS receivers (possibly on the lines of the past approval of Racal receivers provided for in the 1956 agreement—see paragraph 5.83).

Other complaints

6.35. As noted in paragraph 6.18, we received during the course of our inquiry a number of complaints other than those encompassed by the four main areas of concern described above. Racal agreed that the effect of the distributor agreements between itself and the Danish manufacturer of the DYN II/III had been to prevent Racal's distributors from selling the pleasure boat receivers produced under licence by a British company. Even before the contract with the GLAs had been signed Racal demonstrated that it had ended this restriction upon its distributors.

6.36. We were told that Racal's policy and practices in respect of the DNS exploited and abused its monopoly. Racal's response was that this had never been the reason for its actions; its sole purpose had been to generate sufficient annual income to sustain the DNS.

6.37. Complaints were also made to us that Racal's monopolistic marketing and licensing practices inhibited technological development of receivers available in the United Kingdom, and denied yachtsmen the peripheral facilities that Racal excluded from licensed DYNs. While there is clearly a danger that obsolescence-inducing innovations may be resisted by a monopolist, especially one pursuing a rental only policy, Racal responded with details of successive models of updated commercial and pleasure boat receivers which it had introduced over the years. It believed moreover that there was a very limited demand in the leisure market for more sophisticated peripherals which, it said, most yachtsmen would not have the space to employ afloat. Racal considered in most cases any disadvantage to yachtsmen was outweighed by the lower price at which it was able to offer its simpler DYNs.

6.38. We were also told that Racal's rentals were too high. Information supplied by Racal shows that the hiring of commercial receivers had been a profitable business, although a downward trend set in after 1983-84. There is uncertainty about Racal's allocation of overhead expenses between hirings and sales; but it does seem likely that before the downturn in the profitability of the hirings business, rentals were set at a higher level than was necessary to cover costs incurred by Racal in operating the DNS transmissions and to show a reasonable return.

Terms of reference 6.39. Our terms of reference (see paragraph 1.1) require us to report whether a monopoly situation exists in relation to the supply in the United Kingdom of the reference goods. We have found that it does (see paragraph 6.16).

6.40. The terms of reference then ask five questions. First, by which provision of section 6 of the Fair Trading Act 1973 is that situation to be taken to exist? We find that it exists by virtue of section 6(1)(b), that is to say that the goods are supplied by members of one and the same group of interconnected bodies corporate. The second question asks in favour of what person or persons that situation exists. We find that it exists in favour of those several subsidiaries of Racal Electronics PLC¹ which we have in this chapter, for convenience, merely called Racal.

6.41. The third question asks us whether any steps are being taken by that person or those persons for the purpose of exploiting or maintaining the monopoly situation. The question is in the present tense. Our answer therefore must be 'No', if we accept Racal's statements indicating that, since the conclusion of the contract with the GLAs, practices which might fall under this heading have been discontinued. Racal told us it would not be bound by these statements in the event of the contract with the GLAs terminating wholly or in part, and in the absence of other arrangements whereby DNS chain costs were fully covered (see paragraph 5.21). Noting this caveat, we accept Racal's statements that we have recorded in this report.

6.42. The fourth question asks whether any action or omission on the part of that person or those persons is attributable to the monopoly situation. Again, as the question is in the present tense and in the light of Racal's statements referred to above, our answer is 'No'.

6.43. Finally, we are asked whether any facts we have found operate or may be expected to operate against the public interest. Under the present circumstances our answer is 'No'. We do, however, wish to comment that if our inquiry had been concluded before the contract with the GLAs came into effect, and before Racal had assured us that its policy and practices complained of had ceased, we would have considered the implications for the public interest of the various complaints made to us, and particularly of the possible effects on unlicensed receivers of some of the changes made by Racal in DNS transmissions. In the event we are glad to note the assurance given us by the GLAs regarding future transmission changes.

Conclusion 6.44. The development by Decca, Racal's predecessor, of the DNS constituted a service to this country at a crucial stage of the 1939-45 war and the system has, since then, contributed to the safety of navigation at sea in many parts of the world. In the United Kingdom, however, the company was left to operate the DNS as a commercial concern; a possible anomaly which, until 1986, neither the company nor the Government seems to have tried seriously to resolve.

6.45. When Racal took over Decca in 1980 it therefore inherited a policy, and practices, which had grown out of the need to finance the operation of the transmitter chains in the United Kingdom from the revenue generated by the supply of receivers. These chains have the same public service and natural monopoly characteristics as do, say, lighthouses. It is as if the BBC had been left

¹ The companies are named in paragraph 1.5.

to finance itself by the monopoly supply of television sets. In this situation Racal felt obliged to attempt to perpetuate a monopoly of supply in a market where, in more usual circumstances, full and effective competition would have been possible; although there is some evidence (see paragraph 6.38) that receiver rentals were in the past higher than might have been justified.

6.46. It was this past policy and its associated practices which gave rise to the four main areas of concern identified by the Director General of Fair Trading, and to a number of other complaints we received during the course of our inquiry. The agreement between Racal and the GLAs has, in Racal's view, removed the need for the practices complained of and we were assured that by the time of our report they had all ceased. We do not commend all Racal's past practices in connection with the DNS, although in the special circumstances obtaining we recognise that they were consistent with Racal's view of its situation. There is, however, one point on which we have recorded concern (see paragraph 6.31)—any action that might be prejudicial to safety at sea must be condemned.

6.47. We welcome the contract with the GLAs, and in paragraphs 6.33 and 6.34 we make two suggestions which should contribute to the safe use of the Decca Navigator System.

H H HUNT (*Chairman*)

J G ACKERS

D G GOYDER

G D GWILT

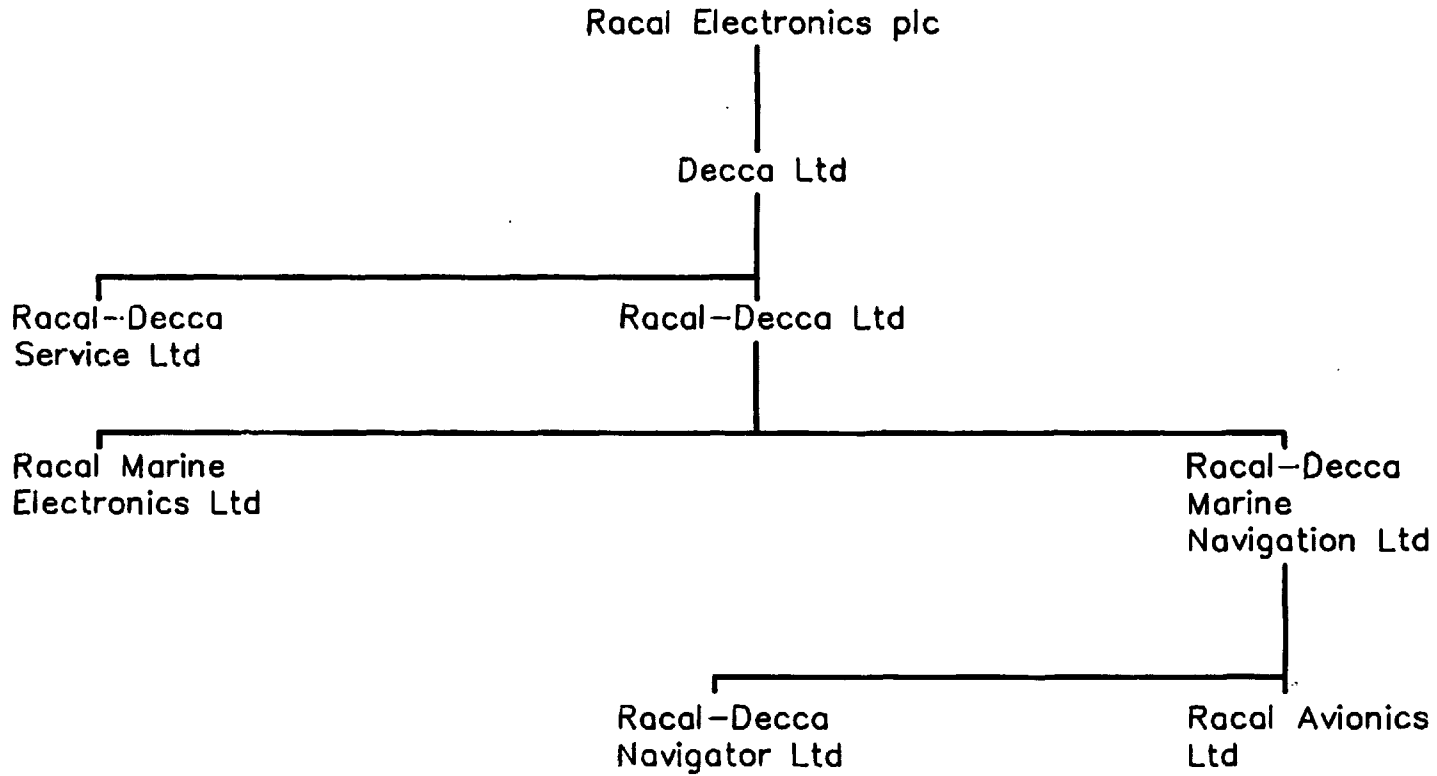
R REES

S WAINWRIGHT

S N BURBRIDGE (*Secretary*)

5 June 1987

Source: Racal.



NOTE: The above represents the position at the time of our report. During the course of our inquiry the names and activities of some of these companies were changed; see paragraph 1.5.

Racal companies associated with the reference

APPENDIX 1
(referred to in paragraph 1.5)