

**List of those who provided evidence**

We received evidence from organisations, associations, companies and individuals; they included those listed below. An asterisk indicates attendance at a hearing.

- \*Association of Scientific, Technical & Managerial Staffs
- The Baltic Exchange
- Mr Mervyn Beecham
- \*Bowker King Ltd
- Brookes & Gatehouse Ltd
- \*British Motor Ship Owners Association
- \*Burmah Oil Tankers Ltd
- Civil Aviation Authority
- Clyde Fishermen's Association
- \*Crescent Shipping
- Cruising Association
- Crystal Trawlers Ltd
- \*Department of Trade & Industry
- \*Department of Transport
- Electrical & Underwater Services (Abersoch)
- Eurotronica SA
- \*General Council of British Shipping
- Hudson Marine Electronics
- Hudson Steamship Co Ltd
- \*International Association of Lighthouse Authorities
- \*International Chamber of Shipping
- International Data Communications Ltd
- Mr R J Jehan
- Mr H M Jenkins
- \*Kelvin Hughes Ltd
- Little Ship Club
- Lovanger Elektronik AB
- Marconi International Marine Co Ltd
- Martin & Co
- Measurement Devices Ltd
- Ministry of Agriculture, Fisheries and Food
- Ministry of Defence
- \*Mobil Shipping Co Ltd
- Mr D J Morl
- \*Motor Barge Owners Association
- Mylor Marine Electronics Ltd
- \*National Federation of Fishermen's Organisations
- \*National Union of Marine, Aviation & Shipping Transport Officers
- Nautical Electronics Service Ltd
- Northern Ireland Fish Producers' Organisation Ltd
- \*Northern Lighthouse Board
- Ocean Cruising Club
- Office of Fair Trading
- Orkney Fisheries Association
- Paddadakis & Co Ltd
- \*Polytechnic Electronics plc
- Preston Electronics
- \*Racal<sup>1</sup>
- Radio & Electronic Services
- \*Rauff & Sørensen A/S

---

<sup>1</sup> A collective name for Racal Electronics PLC and its subsidiary companies associated with the reference; see paragraph 1.5 and Appendix 1.

APPENDIX 2 *contd*  
(referred to in paragraph 1.8)

**List of those who provided evidence**

Regis Marine Electronics  
Royal Naval Sailing Association  
\*Royal Yachting Association  
Sealion Shipping Ltd  
Scot-Caught Sea Fishing Ltd  
Scottish Federation of Fishermen's Co-operatives Ltd  
Sea-Com Electronics Ltd  
Sea Fish Industry Authority  
Mr Christopher Shaw  
Ship & Boat Builders National Federation  
\*Shipmate Navigator Ltd  
Smith Rea Energy Associates Ltd  
\*Stephenson Clarke Shipping Ltd  
Mr Bill Stone  
Technical Administrative and Supervisory Section (TASS)  
Thames Communications  
\*Trinity House Lighthouse Service  
\*United Kingdom Pilots' Association  
Venturers Search and Rescue  
Weston Shipping  
Westronics (Maunder & Hayman Ltd)  
Whitehurst Engineering Ltd  
Mr John O Widdowson  
Mr Mark Wynter  
Yachting World

**The General Lighthouse Authorities (Beacons: Hyperbolic Systems)  
Order 1986**

---

STATUTORY INSTRUMENTS

---

1986 No. 2285

**MERCHANT SHIPPING**

**The General Lighthouse Authorities (Beacons: Hyperbolic Systems)  
Order 1986**

*Laid before Parliament in draft*

<i>Made</i> - - - -	19th December 1986
<i>Coming into Operation</i>	1st January 1987

The Secretary of State for Transport, in exercise of the powers conferred on him by section 34(3) of the Merchant Shipping Act 1979(a) and of all other powers enabling him in that behalf, hereby makes the following Order:

1. This Order may be cited as the General Lighthouse Authorities (Beacons: Hyperbolic Systems) Order 1986 and shall come into operation on 1st January 1987.

2. All references to a beacon in Part XI of the Merchant Shipping Act 1984(b) shall be construed as including equipment provided for broadcasts in the frequency range 70kHz-130kHz from the North British, North Scottish, Hebridean, Northumbrian, English and South West British transmitter chains of the Racal-Decca Marine Navigation Limited's hyperbolic electronic position-fixing system, known as the Decca Navigator System, together with the support facilities provided by that company for those chains, in the circumstances that, for so long as, those chains operated in accordance with any contract in that behalf between that Company and the General Lighthouse Authorities.

*John Moore,*  
Secretary of State for Transport.

19th December 1986.

- 
- (a) 1979 c. 39.  
(b) 1894 c. 60.

**EXPLANATORY NOTE**

*(This Note is not part of the Order.)*

The Order provides for the references to a beacon in Part XI of the Merchant Shipping Act 1894 to include certain Navigator transmitter chains in the British Isles for as long as they are operated by Racal-Decca Marine Navigation Ltd under any contract with the General Lighthouse Authorities. The chains thus become subject to the superintendence and management of the General Lighthouse Authorities for this period.

**The Jersey (Navigator Hyperbolic System) Order 1987**

---

STATUTORY INSTRUMENTS

---

1987 No. 171

**MERCHANT SHIPPING**

**The Jersey (Navigator Hyperbolic System) Order 1987**

<i>Made</i> - - - -	10th February 1987
<i>Laid before Parliament</i> -	18th February 1987
<i>Coming into force</i>	11th March 1987

At the Court at Buckingham Palace, the 10th day of February 1987

Present  
The Queen's Most Excellent Majesty in Council

Her Majesty, in exercise of the powers conferred upon Her by section 669 of the Merchant Shipping Act 1894(a) and of all other powers enabling Her in that behalf, is pleased, by and with the advice of Her Privy Council, to order, and it is hereby ordered, as follows:—

1. This Order may be cited as the Jersey (Navigator Hyperbolic System) Order 1987, and shall come into force on 11th March 1987.

2. The powers of the Trinity House under Part XI of the Merchant Shipping Act 1894 with respect to lighthouses, buoys and beacons may be exercised by the Trinity House to the extent of enabling them to superintend and manage the operation by Racal-Decca Marine Navigation Limited of the Jersey Red Slave Station at position 49° 15'N 2° 05'W which is a part of the South West British Chain of the Decca Navigator System.

*G. I. de Doney,*  
Clerk of the Privy Council.

---

EXPLANATORY NOTE

(This Note is not part of the Order.)

Under section 669 of the Merchant Shipping Act 1894, the Trinity House may not exercise their powers with respect to lighthouses, buoys and beacons in the island of Jersey without the consent of Her Majesty in Council. This Order gives consent to the exercise of their powers by the Trinity House, in contributing to the operating cost of the Jersey Red Slave Station, part of the South West British chain of the Decca Navigator System. The equipment constituting such chain is construed as being included in the term "beacon" in Part XI of the Merchant Shipping Act 1894, by virtue of the General Lighthouse Authorities (Beacons: Hyperbolic Systems) Order 1986 (S.I. No. 1986/2285).

---

(a) 1894 c. 60.

**Technical differences between DNS commercial  
and pleasure boat receivers**

Racal told us that the following were the technical differences between commercial and pleasure boat receivers:

1. Design requirements of DNS receivers for commercial markets were far more stringent than those for the pleasure boat market. In general, commercial vessels (including fishing vessels) needed to operate to greater ranges from DNS chains and at all times and seasons and, in general, required higher fixing accuracy in certain places and more protection against ambiguity of signals.
2. For the pleasure boat market, the receiver must be relatively cheap, which became a possibility with the advent of the microchip and microprocessor. As a consequence, certain features of its design (some at least of which applied to competitor receivers compatible with the DNS as well as DYN receivers themselves) led to drawbacks which, in Racal's view, rendered it undesirable for commercial installations:
  - (a) DYN receivers in general had a significantly wider input bandwidth than commercial receivers, rendering them far more susceptible to atmospheric and radio frequency interference from other shipboard and land-based (broadcast) transmissions;
  - (b) with one exception (no longer on sale)<sup>1</sup> the position fix for navigation was based solely on the Multipulse Lane Identification transmissions of a Decca chain in contrast to the 'normal pattern' basis for fixing available on all commercial receivers. A DYN receiver could not therefore be relied upon to output exactly the same position as a commercial receiver in the same location;
  - (c) commercial receivers had been the object of much study over the years and fixed errors had been identified. Such fixed errors were published in Decca Marine Data Sheets for such receivers but they were not applicable to receivers which based their position fixing on anything other than normal pattern transmissions. Even if the user of a DYN receiver could evaluate his own fixed error for certain locations, such as his berth in port (where he could average his readings over a long period) he had no means of correcting the output of his receiver for it—and in any case it was unlikely he would know his position by other means to a sufficient accuracy to find a correction elsewhere. Accordingly, yacht receivers were not taken into account in respect of the general ground-referenced fixing grid for commercial receivers; and
  - (d) DYN receivers in general had a narrower temperature specification than commercial receivers—typically 0°C to 50°C compared with -15°C to +55°C—and were thus more liable to failure at the extremes of temperature met by commercial vessels from time to time. Moreover, commercial receivers were designed to meet a wide variety of national specifications for minimum performance, installation requirements etc that did not apply to installations on pleasure boats.

---

<sup>1</sup> The original DYN; see paragraph 4.7.

**Department of Transport's Merchant Shipping Notice No M 1158  
issued in November 1984**

THE USE OF RADAR AND ELECTRONIC AIDS TO NAVIGATION

**Notice to Owners, Masters, Officers and Crews of Merchant Ships and Fishing Vessels.**

1. GENERAL

1.1 This Notice gives information and guidance in the use of radar, ... and electronic aids to navigation ...

.....

4. THE USE OF THE DECCA NAVIGATION SYSTEM

**General**

4.1 Investigation of casualties by the Department has shown that in some cases the Decca Navigator equipment on board has not been used in a proper manner or that corrections and allowances for errors have not been applied.

4.2 When using the Decca Navigator System it is important that the mariner should appreciate the errors inherent in radio position-fixing systems and not accept the readings as being of absolute accuracy without first consulting the Decca data sheets which are available for every installation. It should be borne in mind that normal precautions should not be neglected when using the Decca Navigator System.

4.3 Errors of decimeter readings are generally quite small and may not be of practical significance in the best areas of chain coverage. Nevertheless it must be appreciated that errors are present and can assume significance. To avoid inaccuracies which might lead to dangerous situations the data sheets should always be consulted. There are two types of error to which the system is subject:

- (a) *Fixed Errors.* Fixed errors can be corrected by the applications of the pattern corrections indicated on the data sheets. In areas where there is no information about fixed errors the charted Decca lattices should be used with caution, especially near the coast and in restricted waters.
- (b) *Variable Errors.* Variable errors result in inaccuracies for which allowances should be made. As the name implies the magnitude of the error at a given location is not constant. Diagrams which give an indication of the accuracy of a fix are included in the data sheets and should always be consulted. The errors given in the tables based on a 68 per cent probability level are not likely to be exceeded on more than one occasion in three. In earlier editions of the data sheets the errors in the most and least accurate directions in the ellipse of error were tabulated for a number of points; contours showing average errors throughout the chain coverage are now provided instead. *The Admiralty List of Radio Signals, Volume V*, also provides diagrams indicating the accuracy coverage of Decca chains. The errors given in the diagrams are normally based on the 95 per cent probability level, so that errors quoted should not be exceeded on more than one occasion in twenty.

**APPENDIX 7**  
*(referred to in paragraph 5.77)*

**Resolution passed by the International Maritime Organization  
at its 14th Assembly in London, November 1985**

**RECOMMENDATION OF THE OPERATIONAL STATUS  
OF ELECTRONIC POSITION-FIXING SYSTEM**

**THE ASSEMBLY,**

**RECALLING** Article 15(j) of the Convention on the International Maritime Organization concerning the functions of the Assembly in relation to regulations and guidelines concerning maritime safety,

**RECOGNIZING** that changes in the transmissions of electronic position-fixing systems should be avoided,

**HAVING CONSIDERED** the recommendation made by the Maritime Safety Committee at its fiftieth session,

- 1. ADOPTS** the recommendation on the operational status of electronic position-fixing systems, set out in the Annex to the present resolution;
- 2. RECOMMENDS** Member Governments to ensure that electronic position-fixing systems are operated in accordance with the annexed recommendation.

**ANNEX**

**RECOMMENDATION ON THE OPERATIONAL STATUS  
OF ELECTRONIC POSITION-FIXING SYSTEMS**

The authorities or companies responsible for the operation of a selected system, or of any of its constituent parts, should at all times make available to navigators appropriate information on the operational status of such systems or parts of the system. Changes in transmission of electronic position-fixing systems which could adversely affect the performance of receivers fitted in ships should, as far as possible, be avoided and only be effected after due consideration by the appropriate authorities responsible for the safety of navigation in the area concerned and after adequate notice has been promulgated.

**Extract from the Racal/GLAs agreement**

**15.0 Frequencies, transmission formats and interference**

15.1 The frequencies and transmission formats of the Chains as at the Effective Date are set out in Schedule VI hereto. The GLAs will take all reasonable action through the appropriate authorities to assist RDMNL in safeguarding the frequency bands on which the Chains operate. RDMNL will give the earliest possible notice to the Joint Controlling Body of any plans which might necessitate the allocation of other frequencies.

15.2 RDMNL undertakes that it will not change the frequencies or transmission format for any Chain without the prior approval in writing of the Joint Controlling Body, such approval not to be unreasonably withheld. For avoidance of doubt, it shall not be unreasonable for the Joint Controlling Body to refuse its approval where any such change would have the effect of reducing the accuracy or reliability of the information obtained by operators of any DNS Receivers, whether manufactured by a company belonging to the same group of companies as RDMNL or not. In the event that where such a change has been implemented, that change proves subsequently to have such an effect, the Joint Controlling Body may require RDMNL to take such action as is necessary to eliminate that effect.

15.3 RDMNL and the GLAs will use their respective best endeavours to ensure that transmissions from stations to which this Agreement does not apply do not have the effect of reducing the accuracy of information obtained from the Chains within the GLAs' area of responsibility and RDMNL undertakes to notify the Joint Controlling Body as soon as practicable of any such effect.

15.4 Each of the GLAs and RDMNL will afford to the other all reasonable assistance in preventing and, where it occurs, removing interference by other radio transmissions. RDMNL will give the Joint Controlling Body all relevant information as expeditiously as possible.

## Index

- Association of Scientific, Technical and Managerial Staffs  
evidence, 5.30
- Beecham, Mervyn  
evidence, 5.30
- Commercial receivers  
hiring: profits generated, 3.10; viability of, 5.5–5.17  
licensing, 4.4–4.6
- Commercial vessel  
definition, 4.5
- Competition  
licensing agreements, 4.22–4.25
- Complaints received  
background, 5.22–5.24  
Decca Navigator System transmission changes: background, 5.73–5.74; evidence submitted, 5.56–5.62; Racal's response, 5.63–5.65, safety, 5.77  
distribution policy: competing licensed receivers, 5.54–5.55; unlicensed manufacturers, 5.51–5.53  
from associations, companies and individuals, 5.25–5.62  
general, 5.25–5.29  
main areas of concern, 6.17–6.18  
Racal Electronics PLC replies, 6.23–6.38  
rental only policy, 5.31–5.42  
safety, 5.83–5.84  
unreasonable licensing terms, 5.43–5.50
- Cruising Association  
complaints: Decca Navigator System transmission changes, 5.58
- Crystal Trawlers Ltd  
complaints: Decca Navigator System transmission changes, 5.62;  
rental only policy, 5.31
- Decca Navigator System  
background, 2.18  
commercial viability, 5.5–5.17  
definition, 1.1  
development, 2.31–2.35  
errors: fixed, 2.25–2.26, 2.28, 4.7–4.9, 4.14; variable, 2.25, 2.27–2.28  
operating costs, 3.13–3.17  
position fixing: method, 2.20–2.22; presentation, 2.23–2.24;  
repeatability, 2.29–2.30  
transmission changes, 5.56–5.82, 6.27–6.29  
transmitter chains, 2.19
- Decca Navigator System receivers  
availability, 4.30–4.31  
commercial marine users, 5.4  
competition: licensing agreements, 4.22–4.25  
demand: future trends, 4.61–4.67; past trends, 4.58–4.60  
differences between commercial and pleasure boat receivers, 4.6,  
Appendix 5  
distribution, 4.28–4.29  
hirings, 4.33–4.34  
life span, 4.21  
numbers deployed: United Kingdom, 4.15–4.19; worldwide, 4.20  
pleasure boat users, 5.4  
pricing, 4.31–4.32  
sales, 4.33–4.35  
servicing: background, 4.48–4.49; overseas commercial market, 4.54–4.55; UK commercial market, 4.50–4.53; UK pleasure boat market, 4.56–4.57  
usage: pleasure boats, 4.16, 4.19–4.20
- Decca Navigator System transmission changes  
Joint Controlling Body approval required, 5.79, Appendix 8  
safety, 5.77–5.82, 6.30–6.34, Appendix 7
- Decca Record Co Ltd  
development of a hyperbolic radio navigation system, 6.2
- DNS  
See Decca Navigator System
- Department of Transport  
consultative document: *Marine navigational aids for coastal waters of the British Isles*, 2.14, 4.67  
*Merchant shipping notice no. M1158*, 4.9, Appendix 4
- European Commission  
Competition Directorate: inquiry, 1.13
- Eurotronica SA (of Madrid)  
complaints: Decca Navigator System transmission changes, 5.58
- Evidence  
invited, 1.4  
sources, 1.7–1.8, 1.14–1.15, Appendix 2  
support for Racal's policies, 5.30
- GCBS  
See General Council of British Shipping
- General Council of British Shipping  
complaints: Decca Navigator System transmission changes, 5.58,  
5.61; rental only policy, 5.31
- General Lighthouse Authorities  
contract with Racal Electronics PLC, 5.18–5.21  
financial responsibility: Decca Navigator System transmitter chains,  
3.18–3.20; UK chains, 6.19–6.20  
Joint Controlling Body, 6.32–6.33  
secondary legislation, 1.11, Appendix 3, Appendix 4
- GLAs  
See General Lighthouse Authorities
- Global Positioning system, 2.6–2.7
- GPS  
See Global Positioning System
- Hiring  
commercial receivers: viability, 5.5–5.17  
Decca Navigator System receivers: Racal's policy, 5.5–5.17  
pleasure boat receivers: viability, 5.5–5.17
- Hudson Marine Electronics  
evidence, 5.30
- Hudson Steamship Co Ltd  
complaints: Decca Navigator System transmission changes, 5.19,  
5.61; rental only policy, 5.31
- Hyperbolic navigation systems  
Decca Navigator System, 2.18–2.35  
Loran, 2.11–2.14  
Omega, 2.15–2.16  
Rana, 2.17  
Toran, 2.17
- IALA  
See International Association of Lighthouse Authorities
- ICS  
See International Chamber of Shipping
- International Association of Lighthouse Authorities  
complaints: Decca Navigator System transmission changes, 5.58,  
5.61–5.62; rental only policy, 5.31, 5.36
- International Chamber of Shipping  
complaints: Decca Navigator System transmission changes, 5.58;  
monopoly abuse, 5.25–5.26, rental only policy, 5.31
- International Maritime Organisation  
safety: resolution passed, 5.77, Appendix 7
- JCB  
See Joint Controlling Body
- Jehan, R J  
complaints: Decca Navigator System transmission changes, 5.62
- Kelvin Hughes Ltd  
complaints: Decca Navigator System transmission changes, 5.58;  
distribution policy, 5.54
- LEAB  
See Lovanger Elektronik AB
- Licensing  
commercial receivers, 4.4–4.6  
negotiations between Racal Electronics PLC and Danish  
manufacturers, 6.11–6.15  
pleasure boat receivers, 4.4–4.6  
Racal Electronics PLC: licensed and unlicensed competition,  
4.22–4.25

(References are to paragraph numbers, not page numbers)

- Licensing—continued**  
specification, 4.6  
unreasonable terms, 5.43–5.50, 6.25
- Loran—A**, 2.11
- Loran—C**, 2.12–2.14
- Lovanger Elektronik AB**  
complaints: Decca Navigator System transmission changes, 5.58, 5.61; monopoly abuse, 5.25; unreasonable licensing terms, 5.44
- Marconi International Marine Co Ltd**  
complaints: monopoly abuse, 5.25; unreasonable licensing terms, 5.46
- Marine navigation aids**  
consultative document: *Marine navigational aids for coastal waters of the British Isles*, 2.14, 4.67  
general, 2.1  
hyperbolic systems: background, 2.8–2.10, Decca Navigator System, 2.18–2.35; Loran, 2.11–2.14; navigation, 2.8–2.10; Omega, 2.15–2.16; Rana, 2.17; Toran, 2.17  
radar, 2.2  
radio direction finding, 2.3  
satellite systems, 2.4–2.7
- Market**  
background, 4.1–4.3, 6.6–6.8  
demand, 4.58–4.67, 6.9–6.11  
structure, 4.1–4.39
- Martin and Co (of Antwerp)**  
complaints: Decca Navigator System transmission changes, 5.58, 5.60
- Measurement Devices Ltd**  
complaints: unreasonable licensing terms, 5.47–5.48
- MMC**  
*See Monopolies and Mergers Commission*
- Monopolies and Mergers Commission**  
conclusions, 6.44–6.47  
recommendations, 6.33–6.34  
scale monopoly situation: conclusions, 1.10, 6.45  
terms of reference, 1.1–1.2, 6.1, 6.39–6.43
- Monopoly situation**  
existence, 4.39, 6.1, 6.16, 6.39  
scale: conclusions of the report, 1.10
- Morl, D J**  
complaints, Decca Navigator System transmission changes, 5.58, 5.60–5.61
- Mylor Marine Electronics Ltd**  
complaints: monopoly abuse, 5.28; unreasonable licensing terms, 5.48
- National Federation of Fishermen's Organisations**  
complaints: Decca Navigator System transmission changes, 5.58, 5.62; rental only policy, 5.31, 5.35–5.36
- National Union of Marine, Aviation and Shipping Transport Officers**  
complaints: monopoly abuse, 5.25, 5.27; rental only policy, 5.36; unreasonable licensing terms, 5.48
- Nautical Electronics Service Ltd**  
evidence, 5.30
- Navigation**  
hyperbolic systems, 2.8–2.10
- NFFO**  
*See National Federation of Fishermen's Organisations*
- Northern Ireland Fish Producer's Organisation Ltd**  
complaints: rental only policy, 5.31
- Northern Lighthouse Board**  
evidence, 5.30
- NUMAST**  
*See National Union of Marine, Aviation and Shipping Transport Officers*
- Ocean Cruising Club**  
complaints: Decca Navigator System transmission changes, 5.58
- Office of Fair Trading**  
complaints received, 1.6  
Racal Electronics PLC policy: main areas of concern, 5.24
- OFT**  
*See Office of Fair Trading*
- Omega**, 2.15–2.16
- PE**  
*See Polytechnic Electronics of Daventry*
- Pleasure boat**  
definition, 4.4
- Pleasure boat receivers**  
definition, 4.5  
hiring: viability of, 5.5–5.17  
licensing, 4.4–4.6, 4.14  
owners needs, 4.11
- Polytechnic Electronics of Daventry**  
complaints: distribution policy, 5.54; monopoly abuse, 5.25; unreasonable licensing terms, 5.48
- Preston Electronics**  
evidence, 5.30
- Public interest**  
conclusions of the report, 6.43
- Racal**  
*See Racal Electronics PLC*
- Racal—Decca Marine Navigation Ltd**  
total business results 1981–1986, 3.7–3.9
- Racal Electronics PLC**  
answers complaints: Decca Navigator System transmission changes, 6.27–6.29; distribution policy, 6.26; rental only policy, 6.23–6.24; safety, 6.30–6.34; unreasonable licensing terms, 6.25  
competition: licensed, 4.23, 4.25; licensing agreements, 4.22–4.25; unlicensed, 4.24–4.25  
contract with the General Lighthouse Authorities, 5.18–5.21, 6.19–6.22  
corporate policy: background, 5.1; history, 5.2–5.4  
Decca Navigator System: operating costs, 3.13–3.17  
Decca Navigator System receivers: availability, 4.31; commercial marine users, 5.4; commercial viability, 5.5–5.17; demand, 4.58–4.67; distribution, 4.28; hiring and selling policy, 5.5–5.17; hirings, 4.34; market share, 4.36–4.39; pleasure boat users, 5.4; pricings, 4.31–4.32; production, 4.26–4.27; profitability, 6.14; sales, 4.34; servicing, 4.48–4.57; supply, 4.26–4.27  
financial responsibility for UK chains, 6.19–6.20  
hirings and sales: revised allocation of overheads, 3.11  
Joint Controlling Body, 6.32–6.33  
rental only policy, 6.8  
structure: corporate, 1.5, 3.2–3.6, Appendix 1
- Radar**, 2.2
- Radio direction finding**, 2.3
- Rana**, 2.17
- Rauff and Sørensen A/S**  
complaints: Decca Navigator System transmission changes, 5.58, 5.60–5.61; monopoly abuse, 5.25; unreasonable licensing terms, 5.44–5.45
- RDF**  
*See Radio direction finding*
- RDMNL**  
*See Racal—Decca Marine Navigation Ltd*
- Reference goods**  
description, 6.1–6.5  
profitability, 3.7–3.12
- Reference market**  
definition, 1.1, 4.1
- Rental only policy**  
complaints, 5.31–5.42, 6.8
- Royal Yachting Association**  
complaints: Decca Navigator System transmission changes, 5.58; unreasonable licensing terms, 5.48
- RS**  
*See Rauff and Sørensen A/S*
- RYA**  
*See Royal Yachting Association*
- Safety**  
Decca Navigator System: standards, 5.83–5.84; transmission changes, 5.77–5.82, 6.30–6.34  
International Maritime Organisation: resolution passed, 5.77, Appendix 7  
Monopolies and Mergers Commission recommendations, 6.33–6.34

(References are to paragraph numbers, not page numbers)

**Sales**

Decca Navigator System receivers: Racal's policy, 5.5-5.17

**Satellite Navigation Systems**

background, 2.4

Global Positioning System, 2.6-2.7

US Navy Navigation Satellite System, 2.5

**Satnav**

See US Navy Navigation Satellite System

**Scale monopoly**

See Monopoly situation

**Sea-Com Electronics Ltd**

complaints: rental only policy, 5.31

**Shipmate Navigator Ltd**

complaints: Decca Navigator System transmission changes, 5.57,

5.62; monopoly abuse, 5.25; rental only policy, 5.31, 5.35-5.36;

unreasonable licensing terms, 5.44, 5.48

evidence, 1.8

**SN**

See Shipmate Navigator Ltd

Terms of reference, 1.1-1.2, 6.1, 6.39-6.43

Toran, 2.17

**Transit**

See US Navy Navigation Satellite System

**United Kingdom chain**

financial responsibility, 6.19-6.20

US Navy Navigation Satellite System, 2.5, 2.16

**Wynter, M T**

complaints: Decca Navigator System transmission changes, 5.58, 5.60

**Yachting World**

complaints: Decca Navigator System transmission changes, 5.58

---

*(References are to paragraph numbers, not page numbers)*

