II

(Acts whose publication is not obligatory)

COMMISSION

COMMISSION DECISION

of 3 July 2001

declaring a concentration to be incompatible with the common market and the EEA Agreement

Case COMP/M.2220 — General Electric/Honeywell

(notified under document number C(2001) 1746)

(Only the English text is authentic)

(Text with EEA relevance)

(2004/134/EC)

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THE COMMISSION OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Community,

Having regard to the Agreement on the European Economic Area, and in particular Article 57 thereof,

Having regard to Council Regulation (EEC) No 4064/89 of 21 December 1989 on the control of concentrations between undertakings [1], as last amended by Regulation (EC) No 1310/97 [2], and in particular Article 8(3) thereof,

Having regard to the Commission's decision of 1 March 2001 to initiate proceedings in this case,

Having given the undertakings concerned the opportunity to make known their views on the objections raised by the Commission,

Having regard to the opinion of the Advisory Committee on Concentrations [3],

whereas:

(1) On 5 February 2001, the Commission received the notification of a proposed concentration pursuant to Article 4 of Regulation (EEC) No 4064/89 (hereinafter referred to as 'the Merger Regulation') by which the General Electric Company (GE) of the United States of America has agreed to acquire the entire share capital of Honeywell International Inc. (Honeywell) of the United States of America.

(2) On 1 March 2001, the Commission decided in accordance with Article 6(1)(c) of the Merger Regulation and Article 47 of the EEA Agreement to initiate proceedings in this case.

I. THE PARTIES

(3) GE is a diversified industrial corporation active in fields including aircraft engines, appliances, information services, power systems, lighting, industrial systems, medical systems, plastics, broadcasting (through the NBC media channel), financial services and transportation systems.

(4) Honeywell is an advanced technology and manufacturing company serving customers worldwide with aerospace products and services, automotive products, electronic materials, speciality chemicals, performance polymers, transportation and power systems as well as home, building and industrial controls.

II. THE OPERATION

(5) On 22 October 2000, GE and Honeywell entered into an agreement under which 'General Electric 2000 Merger Sub, Inc.', a wholly owned subsidiary of GE, will be merged with Honeywell. As a result, Honeywell will become a wholly owned subsidiary of GE.

III. CONCENTRATION

(6) Pursuant to the Agreement between GE and Honeywell, GE will exchange shares of GE stock for each outstanding share of Honeywell stock. All shares of Honeywell common stock will be cancelled, retired and cease to exist. As a result of this acquisition, GE will acquire sole control of Honeywell, giving rise to a concentration within the meaning of Article 3(1)(b) of the Merger Regulation.

IV. COMMUNITY DIMENSION

(7) The undertakings concerned have a combined aggregate worldwide turnover of more than EUR 5 000 million [4] (for the full year 1999, EUR [...]* (*) for GE and [...]* for Honeywell). Both GE and Honeywell have a Communitywide turnover in excess of EUR 250 million (for the full year 1999, [...]* for GE and [...]* for Honeywell), but they do not achieve more than two-thirds of their aggregate Communitywide turnover within one and the same Member State. The notified operation therefore has a Community dimension.

V. COMPATIBILITY WITH THE COMMON MARKET

A. *INTRODUCTION*

(8) The product markets that are affected by the combination of the GE and Honeywell businesses are part of the aerospace and power systems industries. In these sectors, the transaction brings about significant horizontal, vertical and conglomerate effects.

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[1] OJ L 395, 30.12.1989, p. 1; as corrected by OJ L 257, 21.9.1990, p. 13.
[2] OJ L 180, 9.7.1997, p. 1.
[3] OJ C 42, 18.2.2004.

(*) Parts of this text have been edited to ensure that confidential information is not disclosed; those parts are enclosed in square brackets and marked with an asterisk.

[4] Turnover calculated in accordance with Article 5(1) of the Merger Regulation and the Commission Notice on the calculation of turnover (OJ C 66, 2.3.1998, p. 25). To the extent that figures include turnover for the period before 1 January 1999, they are calculated on the basis of average ECU exchange rates and translated into EUR on a one-for-one basis.

B. *AEROSPACE MARKETS*

1. AIRCRAFT ENGINES AND RELATED MARKETS

1.A. ***Relevant markets***

1.A.1. **Product markets**

1) *Structure of the markets*

(9) Jet engines are the propulsion system of jet aircraft. Competition in the jet engines markets takes place at two different levels. First, engines compete in order to be certified in a given airframe platform under development and second when airlines buying the aircraft platform select one of the available certified engines or when airlines decide on the acquisition of aircraft with different engines (whether or not the aircraft offers an engine choice). In the first case, engines compete in technical and commercial terms to power the specific platform; in the second, they compete also on technical and commercial grounds to be selected by the airline. Indeed, the demand for engines derives from the demand for jet aircraft. In this sense, an engine is a complementary product to the aircraft, the sale of the one being of no value without the sale of the other. As a consequence, in defining the relevant jet engines product markets one needs to take into account also competition between the end-use applications, that is, between the types of aircraft that final buyers consider suitable.

(10) In previous cases [5], the Commission has defined three distinct markets for jet aircraft on the basis of the aircraft mission profile, that is, the purpose for which the aircraft is purchased, which is in turn determined by its seating capacity, its flying range and its economics (i.e. price and operational cost). These are the markets for large commercial aircraft (i.e. aircraft with more than 100 seats, a range of greater than 2 000 nautical miles and a cost in excess of USD 35 million), regional jet aircraft (i.e. aircraft with around 30 to 90+ seats, a range of less than 2 000 nautical miles and a cost of up to USD 30 million) and corporate jet aircraft (i.e. aircraft designed for corporate activities and with a cost generally in the region of USD 3 million to USD 35 million).

(11) The demand of jet engines stems from two categories of buyers, namely airframe manufacturers, on the one hand and end-users, on the other hand. Airframe manufacturers are not the same across the distinct aircraft markets. For instance, Airbus Industrie (Airbus) and The Boeing Company (Boeing) only manufacture large commercial aircraft. Embraer, Bombardier, Fairchild Dornier and British Aerospace manufacture regional jet aircraft. Finally, several others, such as Cessna, Gulfstream, Raytheon, Bombardier and Dassault, manufacture corporate jets. Similarly, end-users of aircraft also differ from one aircraft market to another. For instance, large commercial aircraft and regional jets are purchased by airlines and leasing companies, whereas corporate jets are purchased by individuals or corporations and increasingly by airlines.

(12) When they develop a new aircraft platform, airframe manufacturers select the engines that will power the aircraft. For this selection, they usually take into account, *inter alia* the technical capability of the engine and the prospective demand of the final customers. In particular, airline companies may have preferences for specific makes of engines that can maximise their fleet and engine commonality benefits. Airframe manufacturers of large commercial aircraft often select more than one make of engine per platform. In doing so, they offer the purchaser of the aircraft the opportunity to choose among more than one makes of engines when it places the aircraft order. In some other cases, airframe manufacturers select only one make of engine (referred to hereafter as engine exclusivity or sole-source engine) and end-users have no choice but to purchase the aircraft/engine couple. In addition to several large commercial aircraft platforms, engine exclusivity is the norm in regional and corporate jet aircraft.

(13) In light of the above and for the purposes of the assessment of the notified concentration, there exist three broad categories of jet engines i.e. jet engines for large commercial aircraft, jet engines for regional aircraft and jet engines for corporate aircraft.

2) *Jet engines for large commercial aircraft*

(14) Large commercial aircraft can carry generally more than 100 passengers across long distances ranging from 2 000 to 8 000 nautical miles. This type of aircraft forms the largest part of commercial airlines' fleets and is generally divided between narrow-body and wide-body aircraft [6]. Narrow-body or single-aisle aircraft have around 100 to 200 seats and are generally used to move passengers across medium distances (2 000 to 4 000 nautical miles) as well as to move passengers from 'spokes' or 'feeder' airports to larger airports (hubs) in the case of flight connections. Narrow bodies are currently manufactured by either Airbus (A318 and the A320 family) or Boeing (B717, B737 and B757). Most of the flights within the Community are made with narrow-body aircraft. Wide bodies or double-aisle air-

[5] See in particular Commission Decision 91/619/EEC in Case No IV/M.53, Alenia/De Havilland, OJ L 334, 5.12.1991, p. 42; Commission Decision 97/816/EC in Case No IV/M.877, Boeing/McDonnell Douglas, OJ L 336, 8.12.1997, p. 16; Commission Decision 2001/417/EC in Case No COMP/M.1601, AlliedSignal/Honeywell, OJ L 152, 7.6.2001, p. 1; and Commission Decision of 10.05.1999 declaring a concentration to be compatible with the common market (Case No COMP/M.1506, Singapore Airlines/Rolls-Royce).

[6] See Case IV/M.877, Boeing/McDonnell Douglas.

craft are larger and can fly longer routes. They typically carry 200 to 400+ passengers and may fly distances ranging from 4 000 to 8 000 nautical miles. In the case of flight connections, hub airports use this type of aircraft to move passengers who have flown in from spokes to more remote, usually transcontinental, destinations. Airbus and Boeing are also the only producers of wide-body aircraft (for Airbus, the A300, A310, A330, A340 and A380 and their respective derivatives; for Boeing, the B767, B777 and B747 and their respective derivatives).

(15) There are currently three independent suppliers of engines for large commercial aircraft: GE, Rolls-Royce (RR) and Pratt & Whitney (P&W). These engine manufacturers have established joint ventures either among themselves or with other aerospace companies to manufacture and market engines for generic or specific applications. The most notable joint ventures are CFMI (a 50/50 joint venture between GE and SNECMA of France) and International Aero Engines (IAE) ([7]). The three independent engine manufacturers and suppliers are present, although at differing degrees of penetration, across the whole of the large commercial aircraft range.

(16) Table 1 shows the types of large commercial aircraft still in production or under development, as well as their certified engines.

([7]) IAE is a joint venture between P&W, RR, MTU and Japanese Aero Engines Corp. that manufactures the V2500 engine for narrow-bodies. With 32 % each, P&W and RR are the controlling partners.

Table 1

Large Commercial Aircraft and Engines

AIRBUS	(engines)	BOEING	(engines)
Narrow-body		Narrow-body	
A318	PW6000 CFM56-5	B717	BR715 (*)
A319	CFM56-5 IAE V2500	B737NG	CFM56-5 (**)
A320	CFM56-5 IAE V2500	B757	PW2000 RR RB211
A321	CFM56-5 IAE V2500		
Wide-body		Wide-body	
A310	GE CF6 PW4000	B767	GE CF6 PW4000
A300-600	GE CF6 PW4000		
A330	GE CF6 PW4000 RR Trent	B777 200-300 (classic B777)	GE90 PW4000 RR Trent
A340 200-300 (***)	CFM56-5C (**)	B777 LR/ER (B777X)	GE90 (**)
A340 500-600 (***)	RR Trent (*)		
A380 (***)	RR Trent GE/PW GP7200	B747 400 (***)	GE CF6 PW4000 RR RB211

(*) Indicates a single-source engine configuration (i.e. only one engine certified so far).
(**) Indicates a contractual exclusivity (i.e. no other engine can be certified).
(***) Indicates a four-engine aircraft configuration.

(17) Airlines usually have mixed fleets composed of both narrow- and wide-body aircraft, although in varying proportions depending on both their size and the routes they serve ([8]). Whether or not there exist separate product markets for jet engines for narrow- or wide-body aircraft would not materially change the competitive assessment of the notified operation.

(18) Of the Parties to the concentration, only GE is a manufacturer of jet engines for large commercial engines. The notified operation does not create any horizontal overlap in this market.

3) *Jet engines for regional aircraft*

(19) The development of regional jets came as a response to the evolving conditions of air transport over the last 10 to 15 years. The growing demand for air travel and the increase in the number of smaller, regional airports created the need for a type of aircraft that could, in a more economic way than is possible with narrow-body aircraft, transport lower numbers of passengers (generally under 100) over relatively short distances (up to 1 500 to 2 000 nautical miles). Regional jets grew in number and importance in response to the fact that the majority of air traffic would consist of more frequent flights over shorter distances. As opposed to narrow-bodies, which have a longer flight range, a bigger seating capacity, higher landing fees and a lower turnaround rate ([9]), regional jets were conceived to carry fewer passengers, on a more frequent basis over short distances.

(20) Two distinct classes of regional jets can be distinguished, namely small regional jets (30 to 50 passengers) and large regional jets (70 to 90+ passengers). Owing to their different seating capacity, size, flying range and the resulting operating cost (i.e. seat-mile cost) these two types of regional jets serve distinct mission profiles and are not substitutable with one another. For an airline to fly 80 passengers from point A to point B there is no economically meaningful alternative between the use of two small or one large regional jet. Equally, to fly 45 passengers the use of a large regional jet is an uneconomical option. From a historical point of view, the first regional jets developed and put in the market were small regional aircraft, generally with less than 50 seats. However, the prospect of growing regional traffic coupled with technological advances enabled airframe and engine manufacturers to build longer airframes and more powerful engines, thereby responding to the current demand of airlines for larger rather than for small regional jets. In fact, large regional jets constituted 14 % of the overall European fleet in 1992 and 33 % in 1998.

([8]) Large airlines, which have a significant transcontinental activity, are more likely to have more wide-body in their fleet than smaller or regional airlines.

([9]) Flight turnaround indicates the number of back-and-forth trips that an aircraft may economically perform in one calendar day.

(21) Embraer, Fairchild Dornier, Bombardier and BAe Systems are the manufacturers of large regional jets, and GE, Honeywell, RR and P&W are the manufacturers of engines that can power regional jets. GE, RR, P&W, but not Honeywell, are active on the market for small regional jet engines, whereas GE and Honeywell are the only engine manufacturers for large regional jets. The proposed concentration creates a horizontal overlap only in relation to large regional jet aircraft. Honeywell is the engine supplier to the first large regional jet put on the market, namely BAe Systems' Avro and BAe 146 jet. GE is the engine supplier to the three most recent and only available alternative large regional jets that Embraer, Fairchild Dornier, and Bombardier have recently developed. Table 2 indicates these types of aircraft and their corresponding engines.

Table 2

Large Regional Jet Aircraft and Engines

Airframe manufacturer	Model type	Engine
BAe Systems	BAe 146	HON
BAe Systems	Avro RJ-100 (*)	HON
BAe Systems	Avro RJ-85	HON
BAe Systems	Avro RJ-70	HON
Fairchild Dornier	728JET	GE
Fairchild Dornier	928JET	GE
Embraer	ERJ-170	GE
Embraer	ERJ-190/100 (*)	GE
Embraer	ERJ-190/200 (*)	GE
Bombardier	CRJ-700	GE
Bombardier	CRJ-900 (*)	GE

(*) Indicates aircraft not yet in service.

(22) As Table 2 indicates, the merged entity will be the only available engine supplier to the large regional jet market. Until a new large regional jet platform is launched, competing engine manufacturers will not have the possibility to compete in this market.

(23) The Parties have raised two objections to the above considerations. Firstly, they contested the existence of a horizontal overlap in large regional jets, arguing that the BAe System type of aircraft is not a full-fledged competitor in this market. Secondly, they argued that such a market should also include the small Airbus and Boeing narrow-bodies, namely the A318, the B717.

(24) As far as the first objection is concerned, the Parties claimed that the Avro has special niche characteristics that make it unlikely to compete fully with the remaining three, GE-powered, regional jets and that, given the low number of orders placed for the Avro, the transaction could not materially and adversely affect post-merger competition. The Parties based their argument on the fact that the Avro has an exceptional short take-off and landing (STOL) airfield performance, which makes it particularly useful in airports at high altitude or with very steep approach or climb-out profiles, or combinations of both (such as London City Airport, Lugano and Stockholm Bromma).

(25) The market investigation did not support these views. Despite its special STOL capabilities, airlines do not necessarily limit the Avro to any particular niche use but operate it as a mainstream large regional jet. For instance, Belgium's Sabena, which has the largest fleet of Avros in the Community, flies this type of aircraft to destinations that do not display any niche characteristics, such as Frankfurt, Toulouse, Edinburgh, Hamburg and so forth, whilst flying turboprops to London City airport. The same applies to German airlines, which are also among the largest operators of Avros, which operate this type of aircraft in environments that do not correspond to the niche characteristics which the Parties have described. The market investigation has suggested that, although airlines may appreciate the special capabilities of the Avro, they in fact operate the Avro in the same manner as any other large regional aircraft and do not limit its flight operability to niche environments alone. In this sense, the Honeywell-powered Avro is an existing competing alternative to the other GE-powered large regional jets. Furthermore, although the low order backlog of the Avro may be an indication of the relative marketing performance of the various sellers ([10]), it cannot constitute a criterion for the purposes of product market definition. Although the sales forecasts are not optimistic, this disparity in the order backlog is to a large degree due to the recent substantial orders that GE Capital Aviation Services (GECAS, the aircraft leasing arm of GE) has placed for the Embraer, Fairchild Dornier, Bombardier large regional jets after GE secured the engine exclusivity on these platforms and, as such, does not necessarily reflect any typical demand pattern of airlines for large regional aircraft.

(26) As far as the second objection is concerned, the Parties argued that the small narrow-bodies of Boeing and Airbus should also be included in the market for large regional jets. These are the B717 (a 106 to 115-seat aircraft) powered by the BR715 engine ([11]) and the A318 (a 107 to 117-seat aircraft) powered by the PW6000 or the CFM56 engines.

(27) The market investigation did not confirm this view. Even if it is true that the seating capacity of those two narrow-bodies is close to that of a large regional jet, there are several reasons why airlines do not consider them as alternative choices for the mission profiles of large regional jets. Both the A318 and B717 are more costly than other large regional jets, both in terms of acquisition price and operating costs. The average acquisition price for the B717 and A318 is around USD 35 million, whereas the equivalent for large regional jets is USD 28 million. In addition, the operating costs of the two types of aircraft differ considerably. Their heavier airframe and the resulting higher fuel burn per seat make the two narrow-bodies more expensive to operate on a regional mission profile. Indeed, greater weight results in disproportionately higher landing fees when an aircraft is used on a frequent flight schedule which is typical of the regional jet aircraft market. It is quite characteristic that one of the parties' strategic analyses of the regional aircraft jet market states that 'regional jets (are) distinguished by lower weights relative to narrow body jets' and that 'regional jets offer much lower trip fuel burn and competitive per seat fuel burn relative to narrow body jets'.

(28) The purchase behaviour of airlines confirms that the B717 and A318 correspond better to the profile of narrow bodies than to that of large regional jets. The first launch customer of the B717, the Scandinavian airline SAS, cancelled its initial B717 orders and placed orders for B737 aircraft instead, i.e. the most typical narrow-body large commercial aircraft. Other airlines' commercial choices indicate that the B717 and the A318 are regarded as interchangeable with mainstream narrow-bodies, such as the B737. Frontier Airlines, for instance, purchased a small fleet of B717s and A318s to replace its B737s. Such behaviour by customers shows that the B717 and A318 are operated by airlines as narrow bodies rather than as large regional feeder jets.

(29) On the basis of the above, it can be concluded that there exists a separate demand for large regional jet aircraft which is distinct from that for small regional jet aircraft and for small narrow bodies, such as the A318 and B717.

([10]) So far, the Avros have secured [...]* % of the orders for large regional jets in service and not yet in service.

([11]) The BR715 engine is manufactured by RR Deutschland (a joint venture with BMW). The engines, which are fitted in the tail wing of the aircraft, have been especially conceived for the B717 and cannot be used in any other aircraft. B717 is a rename for McDonnell Douglas' last launch, the MD95. Following the acquisition of the company by Boeing, all of the McDonnell Douglas' aircraft platforms in production were immediately discontinued, with the exception of the MD95, which had just been launched [comments on the sales prospects, considered by RR as containing confidential information]*.

4) *Jet engines for corporate aircraft*

(30) Corporate jets are considerably smaller than regional jets, serve different mission profiles and have different engine needs. Such aircraft are purchased by corporations or individuals and increasingly by airlines, fly less frequently, carry fewer passengers and are not dedicated to specific routes, as are commercial passenger aircraft. There are fewer of these corporate aircraft in operation than there are commercial passenger aircraft.

(31) There are several manufacturers of corporate jets such as Bombardier (Learjet, Challenger), Cessna (Excel, Sovereign), Dassault (Falcon), and Raytheon (Hawker, Horizon). The manufacturers of engines for corporate jets comprise GE, Honeywell, RR/Allison and P&W Canada.

(32) Depending on their size and range, jets fall into three classes: heavy, medium and light corporate jets. These three classes appear to constitute distinct markets owing to their limited supply and demand-side substitutability. Indeed, not all the manufacturers are active in all categories (Falcon is a medium corporate jet manufacturer, not active in the light or heavy classes; Gulfstream manufactures only heavy corporate jets, and so forth). Moreover, from the demand-side, the three classes of aircraft cannot be substituted for one another. This is due to the difference in price and operating cost as well as to the different mission profiles that each class may serve. For instance, heavy corporate jets are more expensive, can carry more passengers and have transcontinental capability (that is, they have airworthiness certification to cross the ocean), which is not the case for medium and light jets. Conversely, light jets are smaller, can carry fewer passengers and have a more restricted flying range. However, for the purposes of this Decision, there is no need to take a final position on this issue since the competitive assessment of the proposed transaction will not be materially affected.

(33) Table 3 indicates the models of the three classes of corporate jets that are still in production, as well as their respective engine supplier.

Table 3

Light corporate jets	Medium corporate jets	Heavy corporate jets
Diamond (P&W) Citation Bravo (P&W) Citation (P&W)	HS 125 (HON) Citation Excel (P&W) Learjet (HON) Learjet 45 (HON) Citation VII (HON) Astra (HON) Lear 60 (P&W) Galaxy (P&W) Falcon 2000 (GE/HON) Falcon 505 (HON) Falcon 900 (HON) Falcon 900 EX (HON) Citation X (RR) CL 604 (GE)	G IV (P&W) Global Express (P&W) Gulfstream V (P&W)

(34) A distinct market for jet engines for corporate aircraft is defined for the purposes of the assessment of the notified concentration that results in a horizontal overlap (in particular in the medium segment).

5) *Maintenance, repair and overhaul*

(35) Jet engines are subject to intense wear-off and need to be serviced and reviewed according to specific maintenance and repair procedures. Adjacent to the market for jet engines there exists an aftermarket for the maintenance, repair and overhaul services (MRO) and the supply of spare parts for jet engines. Airlines and owners of corporate jets may have recourse to the MRO services of either the original engine manufacturers, the various airlines' maintenance departments or the independent service shops. These three categories of MRO suppliers are to a large extent substitutable both from the demand and the supply point of view. There is, therefore, a market for the provision of MRO services to airlines and other aircraft buyers.

1.A.2. **Geographic Market**

(36) As already stated in previous Commission decisions ([12]), all aircraft engine manufacturers market, sell and support their engines on a worldwide basis under similar conditions of competition. The transportation costs of delivery are negligible. The Commission therefore considers that the relevant geographic markets for the supply of jet engines for large commercial aircraft, regional jet aircraft and corporate jet is worldwide. For the purposes of this Decision, the related markets for MRO and spare parts need not be finally defined from a geographical point of view.

1.B. ***Competitive assessment***

1.B.1. **Functioning of the market**

(37) The relevant engines markets are composed of engine manufacturers, on the supply side, and airframe manufacturers and final purchasers (airlines, leasing companies and corporations), on the demand side. Engine manufacturers may compete to sell engines to airlines in those cases where the purchased aircraft is offered with an engine choice, that is the case in most of the large commercial aircraft platforms or in cases where there is no engine choice and the airline must select between different aircraft powered by different engines for the

([12]) See footnote 5.

same mission profile. Engine manufacturers also compete in order to be selected and certified in those platforms, typically for the entire life cycle of the platform ([13]). As a result, engine suppliers compete at two levels, first, in order to place their engine on offer in a given aircraft platform and second in order to have their engine or aircraft/engine combination selected by the final purchaser of the aircraft. Such sales are influenced to varying degrees by the airlines' preferences stemming from engine and fleet commonality considerations.

1.B.2. **Market shares**

1) *Introduction*

(38) In previous decisions concerning the aerospace industry ([14]) the Commission has considered that market shares should be calculated on the basis of the installed base and firm orders to date (which includes all deliveries to date and orders placed but not yet delivered) for aircraft that are currently manufactured (as opposed to aircraft that are no longer in production). This measure disregards aircraft that remain in-service, but are no longer manufactured, because such aircraft have little or no bearing on the market position of relevant engine manufacturers since airlines can no longer place orders for these aircraft.

(39) The Parties contest this methodology in that it gives only a static snapshot of the current situation and ignores the dynamics of past and future competition in a market which, they argue, has the characteristics of a bidding market. Moreover, they argue that the exclusion of aircraft no longer in production disregards the potential revenue benefits that engine suppliers may extract and that they may use to invest in future platforms. Overall, they submit that such an analysis of the installed base is of no value in predicting which engine manufacturers are going to be tomorrow's winners and losers.

(40) The Parties also suggested that the Commission look at how past competition has evolved over the history of the jet engines markets. The Commission, however, considers that an examination of past competition over the 40-year old history of the jet engines market is not a relevant indicator of the present and likely future market position of the existing engine suppliers. This is so because the recent past, the current and the forecast future business environment differ significantly from that prevailing in former times as the patterns of past platform competitions may and indeed have not been reproduced in the current market place and can hardly be illustrative of the way competition in the jet engines market will evolve in a post-merger situation.

(41) The Commission has come to the conclusion that the installed base and the order backlog of aircraft still in production is the best proxy to measure and to interpret the position of competitors in this industry. In this respect, due account has been taken of the fact that incumbency plays a role in the decisions of customers (that is, airlines) concerning their future buys. As the cost curve of an airline is in part influenced by fleet and engine commonality, engine suppliers expect to increase their market penetration more or less proportionately to their current degree of incumbency within an airline. Incumbency can be beneficial to an engine supplier when airlines wish to extend their existing fleet of aircraft. In such a case, airlines can only buy aircraft that are still in production. On the contrary, incumbency may not play any significant role when airlines wish to replace their fleet of ageing aircraft that are no longer in production. When aiming at fleet commonality, such airlines will streamline their purchases of new aircraft (and engines) to the remaining, newer aircraft in their fleet or part of it (sub-fleet). The incumbent engine suppliers with regard to these newer aircraft are therefore more likely to benefit from such fleet extension or replacement.

(42) Moreover, aircraft no longer in production constitute a less significant source of revenue for engine suppliers than aircraft still in production. The profitability of the engine business stems mostly from earnings achieved by the engine suppliers in the aftermarkets. Aftermarket revenue streams are used to finance future engine developments and innovation expenditure that will in turn determine the future competitive position of the respective engine manufacturers. Engines placed on aircraft no longer in production stop generating this source of revenue when such aircraft are retired from airline fleets. In particular, older engines and aircraft are currently under regulatory and environmental pressure

([13]) There may be exception to this situation. For instance, the A318 was originally conceived to be powered only by the PW6000 engine; however, after its launch and following the demand of a major potential purchaser, Air France, a CFM-56 engine was certified and is now available on this platform.

([14]) See in particular Commission Decision 91/619/EEC in Case No IV/M.53, Alenia/De Havilland, OJ L 334, 5.12.1991, p. 42; Commission Decision 97/816/EC in Case No IV/M.877, Boeing/McDonnell Douglas, OJ L 336, 8.12.1997, p. 16.

and are being increasingly replaced. Moreover, for as long as aircraft no longer in production remain in service, the generated aftermarket revenues steadily decrease. In fact, as the technology of an engine becomes older and therefore more accessible, maintenance and spare parts tend to become cheaper as customers can source non-OEM (original equipment manufacturer) certified parts and services (that is to say, the older the engine, the lower the patent protection on spare parts and maintenance procedures). In addition, the technology of older engines is much simpler than that of the current generation of engines. Accordingly, they requiring less servicing and spare parts and therefore generate less aftermarket revenues. Consequently, the revenues stemming from engines on aircraft no longer in production cannot be compared to those generated by engines on newer aircraft. This situation helps to explain why the intrinsic value of an engine manufacturer's overall installed base, and therefore its ability to fund its activities to compete in the future, can only be assessed by measuring the net present value of the income it expects from its installed base. Failing to measure the significance of the overall installed base of engines through this means would result in a significantly flawed competitive assessment.

(43) Finally, the Commission has also considered the relative success of different engine manufacturers over the last 10 years in achieving engine exclusivity on aircraft platforms.

(44) For these reasons, the Commission considers that the main indicators for the assessment of future competition in this industry are the installed base and the order backlog of engines on aircraft that are still in production. This analysis will be supplemented with the net present value calculation of the future income stream generated by the aftermarkets of the engines that constitute today's overall installed base (that is, the aircraft both still in production and no longer in production) to assess the future revenue streams accruing to the different engine manufacturers and with an analysis of recent platform competitions and by an analysis of the engine exclusivity competitions over the last ten years.

2) *Engines for large commercial aircraft*

a) Introduction

(45) GE, P&W and RR are the three engine manufacturers acting as independent prime contractors in the market for jet engines for large commercial aircraft. In addition, there exist a number of joint ventures and alliances involving these three independent prime contractors and other subcontractors. The most important of those are CFMI and IAE. For the purposes of market share calculation, where appropriate, the market shares of these joint ventures have been attributed to one or the other of the three prime competitors. The Parties however do not agree with this approach and have argued that such attribution of market shares does not reflect the economic/commercial reality and the legal situation of those joint ventures. The merging Parties stated so in particular in relation to the CFMI joint venture.

b) The treatment of joint ventures

(46) In its assessment of dominance, the Commission considers that it is justified from both a legal and an economic point of view to aggregate the market shares of CFMI and GE. Similarly, the market shares of IAE are aggregated equally between RR and P&W, that is, between the two independent prime contractors, as opposed to the other joint venture partners, MTU and Japanese Aero Engines Corporation. This assessment is in line with the consistent practice of the Commission ([15]).

(47) In its decision of 1 March 2001 opening an in-depth investigation, the Commission stated that CFMI's market share should be attributed to GE for a series of reasons. First, through its control over CFMI, GE can exercise decisive influence over its commercial policy. In addition, CFMI engines are not sold in competition with those of GE and SNECMA does not compete independently in this market since it is not a prime contractor for commercial aircraft engines. Finally, SNECMA would, in all probability, not object were the merged entity to strengthen its position on the aircraft engine market, as it would also benefit from joint profit maximisation. It was also noted that the market share of IAE had been split equally between RR and P&W since they both are independent prime contractors on the relevant markets, as opposed to their other two joint venture partners.

([15]) See Commission Decision of 29 September 1999 in Case M.1383, Exxon/Mobil, Commission Decision 1999/458/EC in Case IV/M.1157, Skanska/Scancem, OJ L 183, 16.7.1999, p. 1; Commission Decision of 10 January 1994 in Case IV/M.390, Akzo/Nobel and Commission Decision of 3 June 1991 in Case IV/M.92, RVI/VBC/Heuliez.

(48) The Parties argued, however, that CFMI's and GE's sales could not be aggregated for several reasons. Apart from some notable exceptions, SNECMA has sole responsibility for selling CFMI engines in Europe, and the commercial terms of any sales made by GE in this market must be approved by SNECMA. Moreover, SNECMA has production responsibility for 54 % of the content of the new engines whereas GE only has responsibility for the remaining 46 %. The Parties also argue that CFMI's President and CEO is always a SNECMA employee and that, in assessing the IAE joint venture between RR and P&W, the Commission split the joint venture's share equally between them. In sum, the Parties are in effect claiming that both the joint venture partners, GE and SNECMA, and the joint venture itself are competing prime contractors and suppliers of engines for large commercial aircraft and have to be assessed separately in a competitive analysis.

(49) For the reasons set out below, GE, SNECMA or CFMI cannot be seen as independent competing undertakings, in the light of the commercial and marketplace realities, and the market share of GE and CFMI should be aggregated for the purposes of the assessment in the present case. They also explain why SNECMA is not likely to restrain GE's post-merger commercial practices that aim at increasing the market power stemming from the sales of GE and CFMI engines to large commercial aircraft manufacturers.

Neither SNECMA nor CFMI compete with GE in civil jet engines

(50) Within CFMI, the parent companies do not compete against each other or against their joint venture in the market for large commercial aircraft engines. Firstly, as a matter of fact, SNECMA is not currently an independent supplier of commercial jet engines in general. The market investigation indicated that SNECMA has never competed independently in this market and has never certified or sold any jet engines for commercial aircraft outside CFMI. This finding was also confirmed by SNECMA itself at the Oral Hearing. Secondly, as a matter of law, for as long as CFMI functions as a joint venture, a series of non-compete clauses will prevent SNECMA from competing with either GE or CFMI itself ([16]).

([16]) In addition to the main non-compete clause contained in the original joint venture agreement, 20 years of joint partnership have created a body of non-compete provisions having the effect that neither party, and more particularly SNECMA, can easily withdraw from the CFMI engine programmes for the purpose of developing a competitive engine.

(51) To the extent that GE and SNECMA have not competed in the past and may not compete in the future in any bidding situation for large commercial aircraft and insofar as none of GE's engines produced outside the joint venture competes with any CFMI engine, it is appropriate to consider CFMI and GE as an economic entity whose market shares should be aggregated for the purposes of the competitive assessment of the proposed concentration on the market for large commercial aircraft engines. In addition, to the extent that SNECMA has not sold any commercial jet engines so as to account for a share of the relevant markets, only GE's and CFMI's market shares can be aggregated.

(52) Quite apart from those reasons, there are several other factors to suggest that SNECMA is not likely to oppose GE's future use of CFMI in its commercial strategy, for the purposes of the present analysis.

Technological and financial split within CFMI

(53) The Parties have argued that CFMI is a partnership between equals. For instance, they indicated that SNECMA has production responsibility for 54 % of the content of CFMI engines whereas GE only has responsibility for the remaining 46 %. However, the factual results of the market investigation, which were not contested by the Parties, indicated that GE has control over the high technology parts of the CFMI engine programme. In terms of a strict division of labour, SNECMA is responsible for the engine components and spare parts for the low spool (which includes the fan, low-pressure compressor, and low-pressure turbine) plus the main accessory gearbox and engine installation (mounts, thrust reverser, etc.), while GE is responsible for the engine components and spares for the core engine (which includes the high-pressure compressor, combustor, and high-pressure turbine), the main engine control, and overall system integration. GE and SNECMA provide maintenance and repair support services independently of CFMI. The core engine is the part of the engine where most of the critical technology lies. The lack of proprietary technological know-how in the core engine acts as a significant deterrent for prospective new entrants into the jet engines market. This explains the limited number of prime contractors able to act as independent and stand-alone engine suppliers (namely, GE, RR and P&W) and the need for subcontractors (such as SNECMA, MTU, Volvo, etc.) to become joint venture partners alongside such prime contractors. GE is thus the main commercial engine manufacturer and provider of all high-pressure, high temperature technology in CFMI, that is, of most of what constitutes the key technology of jet engines.

(54) Even outside the core engine, the fan design of CFMI engines is based on GE technology, since it is derived from GE's CF6 engine. SNECMA's initial fan design had a relatively poor efficiency and GE improved it in the subsequent engine models. The result is that both the core and fan design heritage is largely based on GE technology and experience.

(55) The core engine also constitutes the high value portion of the CFMI engine programmes. Although in principle each parent is to make an equal contribution to the joint venture, participate equally in all its operational activities (design, manufacturing, marketing, sales and support) and share equally in the revenues (but not the profits) ([17]) received by it, each parent is also responsible for the costs it incurred in designing, developing and producing its share of the final product. The low-pressure system is the most expensive part of an engine as it needs to be continually upgraded to keep pace with the changes in technology and the demands of the market. The core engine, on the other hand, once developed, does not need to be modified continuously, although the amount of friction it generates requires frequent maintenance and repair. As such it constitutes the main source of after-sales revenue (spare parts and maintenance/repair support services).

GE's role in the corporate governance of CFMI

(56) The Parties argued that SNECMA has a major role to play in CFMI as can be, for instance, illustrated by the fact that the President and Chief Executive Officer (CEO) of CFMI is traditionally seconded by SNECMA. However, the fact that SNECMA always seconds the president and CEO of CFMI is not embodied in any formal agreement and this practice could thus easily change. In addition, GE is in a statutory position to exert influence on which SNECMA employee will be filling this post at any one time.

Sales and Marketing

(57) The Parties also drew the Commission's attention to the fact that, with some notable exceptions, SNECMA personnel assigned to CFMI have the sole responsibility for CFMI engine sales and marketing in Europe and the commercial terms of any sales made by GE personnel in this market must be approved by them. However sales and support functions are not split equally between GE and SNECMA. GE has reserved the right to sell and market CFMI engines to such European airlines as British Airways, Lufthansa and KLM, the largest and most important customers on the European market. Furthermore, sales and marketing by SNECMA outside Europe has been restricted to the Middle East (with the exception of Saudi Arabia, which GE has reserved for itself), Russia, Africa, Pakistan and India, effectively the stagnant markets. GE, on the other hand, sells and markets CFMI engines to the lucrative and growing markets of South America, south-east Asia and the Pacific ([18]). Potential customer accounts are also split along these lines. As a result of this, by year-end 2000 GE was responsible for 65 % of the sales and marketing of installed CFM engines and 72 % of orders.

(58) In principle, the personnel of the parents are utilised for their respective sales on behalf of CFMI and, when interfacing with CFM56 customers, each parent should represent CFMI, not SNECMA or GE. GE, however, markets CFM56 engines as its own. For instance, GE Aircraft Engines (GEAE) markets the CFM56 as part of its engine range ([19]). The CFM56 is also often sold by GEAE sales people who also sell the rest of the GE engine range. In addition, airlines which purchase the CFM56 and other GE engines can be supported by the same GEAE field service representative on the aftermarket.

([17]) See the CFM Newsletter (Issue 2, 2000). The principles of cooperation signed by GE and SNECMA on 24 January 1974 stated that the venture would be revenue sharing, rather than profit sharing. Thus each parent's profit is a function of its own efficiency.

([18]) According to industry figures, North-American airlines are now operating 39 % (4 800 units) of the worldwide fleet and are expected to need some 7 400 aircraft by 2019. Although Asia/Pacific airlines are currently operating only 18 % of the world's fleet, they are expected to operate around 5 900 aircraft by 2019 because of their high traffic growth. Some 57 % of total world deliveries for large commercial aircraft are therefore forecast to go to them. European airlines should increase their fleet from 3 300 units in 1999 to around 6 900 units in 2019.

([19]) See http://www.geae.com/geenginecenter/service_commavi.html.

SNECMA is not a potential competitor in large commercial aircraft engines

(59) Furthermore, the market share of CFMI can be meaningfully aggregated only with that of GE. SNECMA is not an independent competitor, current or potential, in the large commercial aircraft engine market and has sold no engine so as to account for a share of the market. The Parties have consistently claimed that the merger does not create any horizontal overlap in the market for jet engines for large commercial aircraft, to the extent that Honeywell, a supplier of civil jet engines for regional and corporate jet aircraft, cannot be reasonably considered as a potential entrant in the large commercial aircraft market, owing to the high barriers to entry (in terms of technology and reputation building) prevailing in this industry. The Commission has tested and accepted their argument. However, the same argument also applies to SNECMA. The market investigation confirmed that SNECMA is not a prime contractor for aircraft engines and has never competed in the commercial jet engine market. Thus, unlike GE, SNECMA has no independent capability in the large commercial aircraft engine market. SNECMA has primarily low spool capabilities in design, development, and production for commercial application. Any commercial hot section core work (combustor, high-pressure turbine, etc.) would be new territory for SNECMA. It is a partner in CFMI with a subsidiary role and no separate identity or presence in this industry ([20]). It has never certified or sold any jet engines for commercial aircraft on its own. Even if it were to develop such engines it would be a lengthy and expensive exercise with very uncertain market acceptance, since SNECMA would have to build up the required credibility and reputation with commercial airlines and commercial airframe manufacturers.

(60) By SNECMA's own admission, its strategy for the development and production of future aircraft engines is no more than the following: to continue to provide CFM56 engine models or future enhanced models/derivatives through CFMI, to participate as a risk sharing partner on the GE90, and to try to be ready to access the small commercial engine market with or without cooperation ([21]).

(61) GE and CFMI thus do not compete with each other. There is indeed no evidence to suggest that these two entities have competed against each other in any bidding situation in engine procurement. In fact, none of GE's engines produced outside the joint venture compete with any CFMI engine. This finding was also confirmed by SNECMA's representative at the oral hearing.

SNECMA and GE are likely to act as joint profit maiximisers in the post-merger situation

(62) The Parties have also contested the aggregation of CFMI's and GE's share claiming that SNECMA would have no interest in aligning its behaviour as a partner of CFMI on the merged entity's profit maximising commercial behaviour. On the contrary, the Commission considers that SNECMA would have no incentive to object to a common profit maximisation strategy. SNECMA has indeed significant financial stakes in all the GE engines for large commercial aircraft. Table 4 shows SNECMA's participations in GE programmes.

Table 4

GE engine programme	SNECMA's participation	Platforms powered
CF6-50	6 %	A300B4-100, A300B4-200, A300B4-100F, A300B4-200F, A300-B2, B747-200B-EUD, B747-200B-EUD-SCD, B747-200B-SCD, B747-200C, B747-200F, MD-10-30F, DC-10-30, DC-10-30F, DC-10-15
CF6-80C2	10 %	A300B4-600, A300B4-600R, A300B4-600ST Beluga, A300C4/F4-600R, A310-200, A310-300, A310-300F, B747-300, B747-300SCD, B 747-400F, B747-200B, B747-400, B767-200, B767-200B, B767-300, B767-300F/ER, B767-200ER, B767-300ER, B767-400ER, MD11, MD11F/C/CF
CF6-80A	11 %	A310-200C, A310-200F
CF6-80E1	20 %	A300-300, A300-200
GE90	24 %	B777
GE90-15	24 %	B777X
GP7000	11 %	A380

([20]) SNECMA has no independent commercial engine business outside CFMI and has a significantly lesser sales and technology presence in the venture.

([21]) Although they could not do it on their own because of the lack of technology, they have already unsuccessfully tried to access the small engine market in collaboration with P&W through the SPWI joint venture (offering the SPW14/16 engine family).

(63) Moreover, SNECMA and GE participate on a 50/50 basis in a joint venture active in parts manufacturing (FAMAT France) and carbon composites fan blades for the GE90 engine (CFAN Texas). Those structural links with GE are particularly important in understanding and assessing SNECMA's incentives not to oppose the merged entity's profit maximisation strategies that are likely, post-merger, to stem from GE's vertical integration or to include product bundling. Indeed, if such strategies were to be profitable to the merged entity, they would also benefit SNECMA, owing to its financial participations in CFMI and in GE's various engine programmes and the fact that none of these programmes is in competition with the engines supplied by CFMI.

(64) Additional evidence of the economic integration between GE and SNECMA is found in the commercial behaviour of GE's aircraft leasing company, GECAS. GECAS has a stated policy to favour purchases of new aircraft powered by GE engines (so-called 'GE-only' policy). This policy is also extended to CFMI engines and has the effect of substantially increasing the market penetration of GE and CFMI engines to the detriment of competing engine manufacturers. GE has combined GECAS's services and purchases with a view to increasing its overall level of sales, even though a percentage of the revenues derived from those sales would accrue to SNECMA. There is thus no reason to believe that SNECMA would object to a bundling of CFMI engines with GE and/or Honeywell products and/or services to increase CFMI's market penetration in the future.

The perception of CFMI by GE and the market place

(65) GE also aggregates CFMI's market share with its own. It has done so in its annual reports each year since 1995 [22], as well as in at least one internal presentation to market investors (in May 1999) that the Commission was made aware of. Similarly, leading financial analysts also aggregate all engine sales of CFMI and GE [23]. In sum, the view of GE as expressed in its annual reports and by the financial analysts that GE and CFMI should be viewed as a single entity for both commercial and competitive purposes is supported by the objective realities of CFMI and in the marketplace.

(66) It is thus appropriate to attribute all of CFMI's market share to GE when assessing GE's dominance on the relevant markets.

The treatment of IAE

(67) RR and P&W are independent prime contractors in the jet engines markets for large commercial aircraft. The Commission has treated IAE in the same manner as CFMI, in that IAE's market share has been aggregated, on an equal basis, with the market shares of those partners which are independent jet engines suppliers, but not with these of MTU and Japanese Aero Engines Corp., which as subcontractors cannot be attributed any share of the relevant markets.

c) Market shares

(68) The assessment of the three engine manufacturers' market positions will be mainly based on the installed base of aircraft still in production and the order backlog.

(69) The Commission sought extensive market data from various sources, including the Parties and their competitors in the jet engine markets. Owing to certain contradictions in the supplied data, the Commission has decided to use the figures submitted by the Parties, while noting that these figures appear to underestimate their position.

[22] Examples are: the 1995 Annual Report, page 8: 'We also continued our worldwide leadership as GE and CFM International, our joint company with SNECMA of France, again won more than half of the world's large commercial engine orders'; the 1998 Annual Report, page 8: 'Consistent with our industry leadership during the 1990's, GE Aircraft Engines and CFM International, our 50/50 joint company with SNECMA of France, again won the majority of the world's large commercial engine orders'; the 2000 Annual Report, page 11: 'Again in 2000, GE Aircraft Engines and CFM International, our 50/50 joint company with SNECMA of France, together won more large commercial engine orders than any other engine manufacturer'.

[23] For example: Nick Heymann, Prudential Securities, 4 October 2000: 'Of all engines ordered so far in 2000, GEAE's market share is roughly 63 %. In each market, GEAE's market share has improved over its estimated market share during 1990 to 1999 (most notably, in wide-bodies where its market share was 49 % during 1990 to 1999)'; Jennifer Murphy, Morgan Stanley Dean Witte, 4 January 1999: 'The heavy equipment businesses continue to take share and to dominate their new equipment markets (Power Gen, 60 % share; Medical — 50 %; Aircraft Engines — 60 %, Transportation — 70 %), GEAE's 60 % share of large-engine orders in the 1990s should turn into a tremendous and growing annuity for the next ten years'; John Inch and Al Sipzener, Bear Stearns and Co. Inc, 9 February 2001: 66 % of aircraft engine orders are attributed to GE/CFM according to a pie chart.

Installed base of engines on aircraft still in production

(70) As far as large commercial aircraft are concerned, a distinction can be made between narrow-body and wide-body aircraft. Table 5 shows the installed base of engines on narrow-body and wide-body large commercial aircraft still in production, at the end of the year 2000.

Table 5

Installed base of engines on large commercial aircraft in service on 31 December 2000

(Aircraft still in production)

Model	GE/CFMI	P&W/IAE	RR/IAE
Narrow-body	51 %	22 %	27 %
Wide-body	54 %	31 %	15 %
Overall	52,5 %	26,5 %	21 %

Source: Parties' data.

(71) The total volume of the installed base of engines for narrow-body aircraft still in production is 6 106. GE/CFMI accounts for over half the market with a share of 51 %, followed by P&W and RR accounting for 22 % and 27 % of the installed engine base, respectively. The market shares of GE and CFMI have been aggregated, while IAE's share has been split equally between P&W and RR.

(72) The total volume of the installed base of engines for wide-body aircraft still in production amounts to 5 898. GE/CFMI has a share of 54 %, followed by P&W and RR with 31 % and 15 %, respectively ([24]).

(73) It can be concluded from Table 5 that GE is by far the leading supplier of jet engines to large commercial aircraft, both narrow-body and wide-body, that are still in production. GE has, therefore, the best incumbent position with airlines, since its engines are placed on the largest part of the most recent aircraft platforms in service.

Evolution of the installed base

(74) The preceding market share analysis may appear relatively static in that it reflects the current market position of jet engine suppliers on the basis of past competition. In order to give a more dynamic view of past competition, it is appropriate to look at the evolution of the installed base over the last five years. During that period, GE has not only succeeded in maintaining its leading supplier position, but has also displayed the highest market share growth rate.

(75) It has to be mentioned, as recognised by the Parties, that the five-year period preceding the notified merger is a meaningful benchmark for the assessment of the second level of engine competition, that is sales to airlines. A longer period bears the risks of presenting a market situation characterised by different competitive and market conditions from those now prevailing . A longer reference period may therefore be misleading in the assessment of the notified operation ([25]). Moreover, in the assessment of the first level of engine competition, namely for the selection of engines in a new platform, a period of ten years is considered in line with the Parties' argument that competition at this level must be considered over a longer period.

(76) The graph in the Annex shows the evolution of the installed base of engines on large commercial aircraft still in production in the period from the end of 1995 to the end of 2000 and represents the incremental market positions of the various suppliers over that period. It can be seen that GE has increased its share of the engine installed base at a rate which competitors have not been able to match. In absolute numbers, during that period, GE increased its installed base from 2 462 to 6 248 engines, as opposed to P&W which passed from 2 889 to 3 170 engines and RR which passed from 1 371 to 2 586 engines. Overall, GE has displayed the highest total growth rate during this period, and has increased the gap with its competitors.

Firm orders to date (Backlog)

(77) The examination of the backlog (firm orders to date) can give a better indication of the suppliers' future competitiveness, as it reflects the preference of purchasers in their recent orders and can determine the future market positioning of engine suppliers. The figures in Table 6 concern aircraft in service still in production. It goes without saying that an aircraft that is out of production can no longer be ordered ([26]).

([24]) IAE does not manufacture engines for wide-body aircraft.

([25]) In addition, in the same period GECAS became GE's leasing arm and has contributed substantially to increasing GE's market penetration.

([26]) There is only one exception in so far as there are six outstanding orders for Boeing's MD11. They all concern a GE engine.

Table 6

Engine backlog on aircraft still in production

(Orders to be delivered as of 01 January 2001)

Model	GE/CFMI	P&W	RR
Wide-bodies	660	344	234
%	53 %	28 %	19 %
Narrow-bodies	2 882	543	803
%	68 %	13 %	19 %
Total LCA	3 542	887	1 037
%	65 %	16 %	19 %

Source: Parties' data.

(78) The total volume of engines for large commercial aircraft in production that has been ordered as of 1 January 2001 is 5 466. Of those orders, GE has secured 65 %, compared to 35 % for its competitors, P&W (16 %) and RR (19 %). This is another indication of the way and the trend in which GE's share in new aircraft is growing. GE is already the market leader for aircraft still in production (52 % of the installed base) and has laid the ground for sustaining and increasing that leadership by securing 65 % of the current order backlog of customers.

Spare parts income stream

(79) The Parties have contested the Commission's use of the installed base and order backlog of aircraft still in production, arguing that the exclusion of aircraft no longer in production overestimates GE's market shares and conceals the past success of its competitors, notably P&W, on platforms that are no longer in production. The Commission considers that aircraft no longer in production cannot have any impact whatsoever on the future increase of the engine suppliers' market share, to the extent that no additional units of such aircraft can be sold to customers in future. However, the Commission recognises that such aircraft may still generate aftermarket revenues, which in turn may determine to some extent an engine supplier's ability to compete in the future. Aftermarket revenues constitute the main source of the cash flow that will finance the development and marketing of new engines, as well as the innovation efforts for the next generations of engines, and hence the suppliers' likely future competition position. In sum, the higher the aftermarket revenues, the more likely a supplier is to remain competitive in the future. As a consequence, in assessing such revenue streams, the Commission has considered the overall installed base of engines on aircraft both in production and out of production.

(80) GE has the highest share of the engines installed on new aircraft models. To the extent that such models will not to be replaced in the near future, GE's share will result in an accrued source of aftermarket revenues, larger than that of its competitors.

(81) P&W has a large share of aircraft that are out of production, which is due to P&W's earlier entry into the jet engines market. Although such aircraft may also constitute a source of aftermarket revenues, it can reasonably be expected that this revenue will diminish in accordance with the rate of withdrawal and replacement of such aircraft in the airlines' fleets ([27]). Therefore, the revenues that P&W can generate from its existing installed base of engines are not comparable to those that GE may expect to generate. This disparity in cash flow generation will also determine the way competition between these two engine manufacturers will evolve in the future. In addition, GE is likely to benefit from such withdrawals and replacements more than its competitors. Not only is its better incumbency position likely to determine the airlines' choice of engines, but the additional advantages derived from GE's vertical integration militate strongly in favour of this likelihood materialising.

(82) Contrary to the static view of the overall installed base expressed in units of engines, the outcome of the net present value calculation of the future spare parts income is more indicative of what the competitors' respective true market positions are. The Commission's calculations confirmed that, because of the very nature and characteristics of the manufacturers' respective installed bases, GE is again much better placed than P&W when it comes to the assessment of its ability to compete in the future. In this respect, the Parties have argued that it would be inappropriate to aggregate the aftermarket revenues stemming from the installed base

([27]) The airframes concerned are all McDonnell Douglas aircraft (e.g. DC8, DC10 and MD11 in the wide-body segment; DC9, MD80 and MD90 in the narrow-body segment). The DC10 and MD11 wide-bodies are likely to be replaced by B777X's (GE engine) or A340's (RR engine). The narrow-body DC9, MD80, or MD90 are likely to be replaced by B737's (CFM56 engine) or by the A320 family (CFM56 or IAE V2500).

of CFMI and GE engines and that only a proportion of those should be attributed to GE, with the rest accruing to SNECMA. However, the Commission considers that such revenues accrue to CFMI as a joint venture and that the parent companies are likely to reinvest such revenue in the financing of future CFMI engines. The same applies to RR and P&W, which, as parents of IAE, are likely to reinvest the revenue derived by IAE engines in the development of IAE engines.

d) Conclusion on GE's market position in large commercial aircraft engines

(83) It can accordingly be concluded that GE enjoys a strong position, indicative of dominance, in the supply of jet engines for large commercial aircraft. Indeed, GE displays several of the features of a dominant undertaking. In particular, GE has the highest current market share, well ahead of that of its competitors. Moreover, it has managed to increase this market share steadily over the last years and, most importantly, at a higher annual growth rate than its competitors have. In addition, in view of its large order backlog, GE has better prospects than its competitors of maintaining and improving its market penetration. Finally, GE expects to generate far more revenues from its overall installed base than its competitors and thus to be better able to compete in the future. The fact that GE's market shares have been not only high but steadily increasing over time both at the expense of P&W and RR is as such indicative of dominance. This market position is, according to the Commission's market investigation, the result of a combination of factors including GE's vertical integration into financial services, aircraft purchasing and leasing as well as into aftermarket services and the existence of significant commonality effects.

3) *Large regional jet aircraft*

(84) GE and Honeywell are the only engine suppliers whose engines have been certified for large regional jets that are still in service. The merger creates a horizontal overlap that amounts to a 100 % market share. This market share remains unaffected by the inclusion in the picture of aircraft that are no longer produced. Table 7 shows the market positions of the engine suppliers in the large regional jet market, in terms of the installed base of aircraft still in production as well as in terms of the overall installed base (including aircraft out of production on 31 December 2000).

Table 7

Engine installed base of	GE	HON	GE/HON	RR	P&W
Aircraft in production	[60 %-70 %]*	[30 %-40 %]*	100 %	0 %	0 %
Overall installed base	[40 %-50 %]*	[40 %-50 %]*	90 %-100 %	0 %-10 %	0 %

Source: Parties' data.

(85) Table 8 shows the platforms that will come in service in the immediate future as well as their most recent order backlog.

Table 8

Engine order backlog on large regional jets not yet in service

(To be delivered from 01 January 2001)

Models	GE	HON	RR	P&W
CRJ-900	X	—	—	—
ERJ-170	X	—	—	—
ERJ-190	X	—	—	—
728JET	X	—	—	—
928JET	X	—	—	—
Avro RJX	—	X	—	—
Total	X	X	0	0
%	[90 %-100 %]*	[0 %-10 %]*	0 %	0 %

Source: Parties' data.

(86) Prior to the transaction, GE was already dominant on this market. The merged entity will have a monopoly position in large regional jets that will come in service in the immediate future.

(87) Accordingly, GE can be considered as dominant.

4) *Corporate jet aircraft*

(88) The merger creates a horizontal overlap in the market for corporate jet engines and in particular in the segment for engines for medium jets. Tables 9 and 10 give the market positions of the engine manufacturers in terms of the installed base of corporate jets as well as of medium corporate jets that are still in production.

Table 9

Engine installed base on corporate jets

(As of 31 December 2000)

Engine installed base of	GE	HON	GE/HON	P&W	RR
Aircraft still in production	[0 %-10 %]*	[40 %-50 %]*	[40 %-50 %]*	[30 %-40 %]*	[10 %-20 %]*
Aircraft no longer in production	[10 %-20 %]*	[40 %-50 %]*	[50 %-60 %]*	[30 %-40 %]*	[0 %-10 %]*
Overall engine installed base	[10 %-20 %]*	[40 %-50 %]*	[50 %-60 %]*	[30 %-40 %]*	[10 %-20 %]*

Source: Parties' data.

Table 10

Engine installed base on medium corporate jets

(As of 31 December 2000)

Engine installed base of	GE	HON	GE/HON	P&W	RR
Aircraft still in production	[10 %-20 %]*	[60 %-70 %]*	[80 %-90 %]*	[10 %-20 %]*	[0 %-10 %]*

Source: Parties' data.

(89) Honeywell can, therefore, be considered the leading engine supplier on this market.

5) *Maintenance, repair and overhaul*

a) Spare parts

(90) According to the Parties, proprietary parts sold by an aircraft engine manufacturer face competition from a number of sources, including: (i) the secondary channel, (ii) parts manufacture approval (PMA) sources, and (iii) non-OEM designated repairs (DERs). In addition, the Parties claim that non OEM's have the potential to make every single part provided that they invest in reverse engineering, designing (and if necessary designing around any valid and enforceable OEM intellectual property right), certifying and manufacturing the part.

(91) Replacement parts made by non-OEM suppliers must receive a approval from the relevant regulatory authorities, the PMA. An applicant for PMA can meet this burden in one of three ways. He may show that his part is identical to the design of the type-certified part it will replace, or that he obtained the part design from the type-certificate holder (e.g. through a licensing agreement) or lastly that his part is airworthy by tests and computations. According to the market investigation, meeting the PMA regulations is lengthy and costly. OEMs control the technology necessary to develop a part under PMA and charge high licensing fees, if they agree to license the technology at all. Without a licence agreement, the investment in developing an identical part and proving airworthiness through reverse engineering and extensive testing is significant.

(92) The market investigation examined whether or not PMA spare parts can exercise any competitive pressure on spare parts available from the OEM. It showed that, at least as far as engines still in production are concerned, on average 90 to 95 % of spare parts are only manufactured by OEMs and that there are no non-OEM replacement parts for many of the most expensive parts of the engine. Moreover, it showed that some customers remain reluctant to use PMA parts or are not authorised to use them on the basis of their contractual arrangements with the OEM. As a result, OEMs maintain an overwhelming share of the market for replacement parts and face no competition for many of the spare parts.

(93) Furthermore, as with PMA parts, spare parts supplied by OEM or non-OEM designated repairs are not always considered real substitutes on technical and warranty aspects for spare parts supplied by OEM and represent only a small part of the market (2 to 3 % for the air transport segment according to GE, 10 to 15 % for the regional segment and around 10 to 15 % for the corporate segment according to Honeywell).

(94) Finally, the Commission's investigation showed that the surplus market (that is to say, the secondary channel), in particular with respect to modern engine types, is very limited.

b) MRO services

(95) According to the Parties, the margins obtained through sales of original equipment are decreasing in the aerospace industry and OEMs try more and more to recoup their investment through the after-market. As an illustration, over a 25-year lifespan of an aircraft, airlines would pay around 200 % the price of the engine in MRO. Repair and overhaul service contracts may be entered into at the time the engine is purchased, or subsequently, often when the warranty period is about to expire. In both cases, the customer will typically invite bids from a number of engine repair and overhaul shops before entering into the contract. There are a significant number of players on the MRO market.

(96) Nevertheless, the market investigation established that OEMs can leverage their OEM status to effectively control the after-market, through the control of, firstly, the technical information and intellectual property required for many MRO services and, secondly, the price and supply of spare parts. In addition, the market investigation showed that in doing so OEMs reinforce their position also in the markets for spare parts.

(97) OEMs have a dominant share of the market (around 95 %) for spare parts and there is no competition for the majority of spare parts. The market investigation established that this position gives comparative advantages to OEMs and particularly to GE on the market for the maintenance and overhaul of engines.

(98) Independent MRO providers and airlines claim that when there is no competition on markets for spare parts, prices are above the competitive level and that OEMs which provide MRO services have access to spare parts at a comparatively lower cost. This renders package prices of MRO services and OEM spare parts lower than those of their competitors. This is to the latter's disadvantage since spare parts account on average for 70 % of an MRO invoice.

(99) Moreover, independent MRO providers and airlines claim that when there is no competition on markets for spare parts their prices increase more over time than the consumer price index and that constitutes a difficulty for them to commit to long term fixed price contracts. Indeed, there is an increasing trend for airlines which out-source their maintenance to request a 'fleet-hour-agreement' also called a 'power-by-the-hour' contract. The customer contracts, on a long-term basis, to pay the service provider an agreed sum per engine flying hour to have all necessary service performed on the engine. These contracts generally cover both the spare parts and services and typically prices are fixed, subject to escalations, for the duration of the agreement. Independent MRO service providers cannot offer this type of contract without taking the risk of bearing the unexpected increased cost of spare parts supplied by OEMs.

(100) In addition, according to the market investigation, OEMs tend to withhold high-tech repairs on engines for their own MRO units. They restrict the release and use of technical data and technical support (making it difficult to obtain certification as an OEM-approved maintenance facility for each individual engine and access to the respective OEM technical data). Moreover, if there is a shortage of spare parts, OEMs supply their shop first. Finally, OEMs use the same inventory parts, both in the manufacturing process and in its MRO activities. This reduces inventory costs, handling fees, etc. For all these reasons, airlines and independent MRO suppliers are not in a position to compete on equal terms with the OEMs who offer MRO services on their own products.

(101) Finally, the presence of OEMs in the market for MRO allow them to increase their sales of spare parts. Indeed airlines try to privilege the repair option rather than the replace part option, which is more expensive for the customer in general. This shrinks OEMs' spare parts market shares. When doing MRO services, OEMs favour the replace option more than airlines do given their access to spare parts at a higher price.

(102) GE is particularly strong on the market for MRO of engines and has tremendously strengthened its position over recent years. P&W and GE are the two largest supplier of MRO services for all large commercial aircraft engines with a turnover of USD [...]* and USD [...]* respectively. RR is the third competitor with a USD [...]* turnover. Lufthansa is the fourth competitor with a USD [...]* turnover. Honeywell is also present on this market with a USD [...]* turnover.

(103) GE's presence has increased sharply over the last 10 years. GE's total turnover in the engines market for large commercial aircraft has increased nearly fourfold over the last 10 years and has more than doubled over the last five years. While RR has mirrored that increase, P&W's total turnover has only increased by 30 % over the same period of time.

(104) In addition, GE has started to provide MRO services for engines on all its competitors' products (RR, P&W and IAE). For example, the total turnover of GE in the MRO services for its competitors' engines evolved from USD 215 million in 1991 to USD 588 million in 2000 in the large commercial aircraft market. As a comparison, the turnover of P&W in the MRO services for competitors' engines in 2000 was [...]* that of GE. Moreover, RR has predominantly concentrated on its own products within the MRO aftermarket and its support on competitor products represents [...]* of the global services market.

(105) Finally, GE's total revenues evolved from a split of 57 % of sales of original equipment and 43 % of after market in 1990 to 45 and 55 % respectively in 1995, and finally to 33 and 67 % respectively in 2000.

(106) GE's position on the MRO market, coupled with the acquisition of Honeywell's product range, is likely to give the merged entity a significant financial and commercial advantage after the completion of the merger.

1.B.3. **Factors contributing to GE's dominance in engines**

1) *GE capital*

(107) GE is the world's largest company in terms of market capitalisation ([28]). In the aerospace sector, GE offers a unique combination of complementary products and services to customers. Indeed, as acknowledged in its own documents, GE is not only a leading industrial conglomerate active in many areas including aerospace and power systems, but also a major financial organisation through GE Capital. GE's financial arm contributes around half of the GE Corporation consolidated revenues and manages over USD 370 billion, more than 80 % of GE's total assets. If GE Capital were an independent company, it would, on its own, rank in the top 20 of the Fortune 500 largest corporations.

(108) In addition to having enormous financial means available in-house, GE's unmatchable balance sheet size offers other major advantages to GE businesses. Indeed, unlike any other company, and in particular other engine manufacturers, as acknowledged in its own documents, GE is able to take more risk in product development programmes than any of its competitors. This ability to absorb product failures without jeopardising its future ability to compete and develop new products in an industry characterised by long term investments is critical ([29]).

(109) In its recent coverage of GE, Bear Stearns, the independent equity research firm, describes GE Capital as one of the largest financial companies in the world. Bear Stearns also underlines that 'GE Capital Services is able to assume higher risks within its portfolio than the average of its peers' ([30]). Bear Stearns further describes GE Capital as a 'global financial powerhouse' and underlines the competitive advantage GE enjoys over its competitors through GE Capital by stating that 'GE's ownership of GE Capital Services is, in our opinion, its most significant advantage over its industrial rivals. [...]*. GE's industrial businesses are predominantly leaders in their fields, and GE Capital is no different. Overall, we believe that GE Capital's tremendous size and product breadth produce key sustainable advantages' ([31]).

(110) Because this industry is characterised by long lead times, that is to say significant gaps between the investment made on new projects and the return on the investment, firms in this industry need to rely heavily on their own internal cash flow generation to fund development and innovation. GE's financial strength through GE Capital therefore clearly represents a significant competitive advantage over RR and P&W. In particular this financial strength allows GE to absorb potential product failure and strategic mistakes. The importance of financial strength in this industry can be illustrated by RR's exit from the market in the 1970s when it could not survive the failure of one of its leading R & D projects.

([28]) Market capitalisation of USD 480 billion as of 1 June 2001 (far greater than any other company active in the commercial aircraft market such as Boeing with around USD 56 billion, UTC with USD 39 billion and RR with USD 5 billion).

([29]) GE indeed appreciates the competitive advantage size offers. GE explains that size allows it to invest hundreds of millions of dollars in extremely ambitious programmes like the GE90, the world's highest-thrust jet aircraft engine, and the 'H' turbine, the world's highest-efficiency turbine generator. Size also allows GE to introduce at least one new product in every segment every year or to continue to invest in a business during a down cycle, or to make over 100 acquisitions a year, year after year. Finally, GE claims that, far from inhibiting innovation, its size actually allows it to 'take more and bigger swings'. Although GE rightly recognises that it cannot succeed in every project, GE makes the point that 'size allows GE to miss a few without missing a beat' (as indicated in GE's 2000 Annual Report, pages 4 and 5).

([30]) As indicated in Bear Stearns' research on GE dated 9 February 2001, page 5.

([31]) As indicated in Bear Stearns' research on GE dated 9 February 2001, page 7.

(111) GE has taken advantage of the importance of financial strength in this industry by relying heavily on discounts on the catalogue price of the engines. These heavy discounting practices actually resulted in moving the break-even point of an engine project further away from the commercial launch of a platform. Given its enormous balance sheet, GE has been in a position to increase rivals' funding cost by delaying the inception of cash flows and consequently increasing the need to resort to external financial means further raising their leverage (debt/equity ratio) and resulting borrowing costs ([32]). By doing this GE has managed to make its competitors very much vulnerable to any down cycle or strategic mistake.

(112) In that respect, GE's strategy of granting discounts on the catalogue price of the engine must not be confused with an actual price reduction to the customer and therefore cannot be used as an indication of lack of dominance. Indeed, lower prices on the initial engine sales result not in net lower prices to the customer but in the weakening of engine competitors and ultimately in foreclosing them from current and future platforms and airlines competitions.

(113) Contrary to what the Parties submit, heavily discounted original engine sales do not mean lower costs for the final customers. Indeed, the Commission's investigation has established that in order to assess the net cost of an engine to an operator, maintenance and spare parts expenditures ([33]) have to be added to the initial purchase price of the engine. The results of this adjusted calculation show that the total average cost of an engine has actually increased between 10 and 30 % in real terms over the last 10 years. This is of course due to the offsetting effect of the significant price increases applied annually on all original spare parts ([34]) manufactured by the original engine supplier.

(114) In addition, GE can, thanks to its financial strength and incumbency advantages as an engine supplier, afford to provide significant financial support to airframe manufacturers in the form of platform programme development assistance that competitors have not been historically in a position to replicate. GE uses this direct financial support to arrange/obtain engine exclusivity on those airframes that it financially assists (GE has secured a total of ten exclusive positions out of the last twelve that were granted by airframe manufacturers) thus depriving competitors of access to exclusive platforms. [segments quoted from the Procurement Agreement between an airframe manufacturer and GE, considered by GE as containing confidential information]* ([35]).

(115) Exclusivity arrangements can have significant effects on the aircraft engine market ([36]) since they guarantee significant penetration of an airline's fleet and subsequent incumbency benefits. Exclusivity further benefits the engine manufacturer because exclusive engine supply positions eliminate direct price competition (that is, competition within the same platform) at the level of the airlines.

(116) As the final step in its foreclosure strategy and in order to protect and grow this very lucrative part of its engine business, GE has used its financial strength to invest very large amounts of money for several years into the aftermarket through the purchase of a significant number of repair shops all over the world. This strategy applies not only to the servicing of GE's own engines but also to the engines of its competitors which as a result end up deprived of the critical aftermarket revenues needed to justify both past investments and future product developments.

(117) Quite apart from GE's ability to influence airframe manufacturers, GE also uses its financial strength to influence airlines in their purchasing behaviour by injecting capital into their activities at critical times as explained in the following extract from one of the 'key feature articles' by GE's Chairman and CEO entitled 'GE Capital: Jack Welch's Secret Weapon' ([37]):

([32]) One illustration of the significant competitive advantage enjoyed by GE over its industrial rivals resides in its AAA credit rating which extends to all its subsidiaries and enables them to raise finance cheaper and quicker than competitors.

([33]) The Commission's market investigation has shown that the costs for the maintenance and spare parts over the lifetime of an engine average around 200 % of its initial net purchase price, in real terms (above inflation).

([34]) Between 4 to 5 % of annual increase in real terms.

([35]) [See above]*.

([36]) The exclusively GE-powered B737 accounts for 993 out of a total 2 885 aircraft on order from Boeing and Airbus where an engine selection has been made (34 % of total aircraft order backlog) as of 31 December 2000.

([37]) As published by John Curran of *Fortune* on 10 November 1997 and posted on GE's website at http://www.ge.com/news/welch/articles/f1197.htm.

'And what does [GE]* Capital give GE? Valuable customers, for one thing: [GE]* Capital provides financing for the customers of GE divisions like Aircraft, Power Systems, and Automotive, which helps smooth the way for those divisions to land large contracts. One of the more notable instances of a possible link came when Continental Airlines was struggling in bankruptcy in 1993. Loans from GE Capital helped put Continental back in the air. Next came a big order from Continental for new planes, most with GE engines. Says consultant Tichy: "[GE]* Capital is part of the arsenal for GE's industrial side to beat the competition."' ([38])

(118) This transaction took place during Continental's bankruptcy reorganisation in 1993. GE Capital is said to have injected up to USD 1 billion into the airline in the form of debt financing as well as the acquisition of an equity stake. One of the conditions appears to have been that all aircraft purchases by Continental should be GE-powered (whenever available).

(119) Today, Continental Airlines' fleet of large commercial aircraft is composed of 16 GE-powered B777-200ER (P&W and RR engines were also available on that aircraft), 21 GE-powered DC10 (a P&W engine was also available on that aircraft), 11 GE-powered B767 (P&W and RR engines were also available on that aircraft), 41 RR-powered B757 (no GE engine available on that aircraft), 58 GE/CFM-powered B737-800 (GE/CFM exclusivity on that aircraft), 65 P&W-powered MD80 (no GE engine available on that aircraft), 36 GE/CMF-powered B737-700 (GE/CFM exclusivity on that aircraft), 65 GE/CMF-powered B737-300 (GE/CFM exclusivity on that aircraft), and 66 GE/CMF-powered B737-500 (GE/CFM exclusivity on that aircraft). In other words, when Continental had a choice of engine available, the airline chose GE engines every time.

(120) As far as Continental's outstanding orders are concerned, the same applies: all engines are GE even when competing engines are on offer.

2) *GECAS*

(121) Another factor contributing to its dominance is GE's vertical integration into aircraft purchasing, financing and leasing activities through GE Capital Aviation Services (GECAS).

(122) With around 10 % of the total purchases of aircraft, GECAS is the largest purchaser of new aircraft, ahead of any individual airline. It has the largest single fleet of aircraft with 1 040 units valued at USD 22,1 billion ([39]). GECAS is twice as big as ILFC, its direct competitor, in terms of aircraft fleet. GECAS is also the market leader in terms of jet aircraft on order and options with a total backlog of 796 jet aircraft at the end of 2000 (535 for ILFC).

(123) In addition to being the largest purchaser of aircraft, GECAS is one of the two leading leasing companies buying aircraft on a speculative basis with around 40 % of the market for large commercial aircraft and 100 % of the market for large regional jet aircraft.

(124) The Parties contention that GECAS's influence over airframe manufacturers is limited because it purchases less than 10 % of new aircraft fails to take into account the fact that GECAS's market influence derives not from a 'share' of aircraft purchases, but from its actual incentive and ability to exercise economic influence at the critical point in the competitive process and therefore foreclose rivals from that process.

(125) While it is true that GECAS accounts for only about 10 % of aircraft purchases, and that 'share' figure is smaller than is usually associated with traditional notions of 'market power', GECAS's share of aircraft purchases is not a good measure of its ability to exert influence over the engine market and foreclose GEAE's rivals. GECAS's real influence in the marketplace extends beyond its 10 % share as a result of its ability to 'seed' smaller airlines with GE-powered aircraft, creating, maintaining and enhancing fleet commonality considerations that will influence these airlines to select similar equipment in the future, whether acquiring them from GECAS or elsewhere.

(126) The results of the Commission's investigation confirmed that, because of both GECAS's demonstrated purchasing bias and its ability to place huge aircraft orders, its 10 % share of aircraft purchases significantly under-represents its influence over the aircraft engines and systems selection process. GECAS's influence actually derives from its ability to create an unmatchable economic incentive for airframe manufacturers to favour GE products. This incentive is indeed created from either the relatively limited commercial risk that an airframe manufacturer faces when granting GE exclusive positions for its products, or the compensation it can get from other GE business units such as GE Capital and

([38]) As indicated on GE's website, http://www.ge.com/news/welch/articles/f1197.htm.

([39]) As a comparison, GECAS's main competitor on the market for aircraft leasing, International Lease Finance Corporation (ILFC), has a fleet of [400 to 500]* aircraft (February 2001).

GECAS, in particular through sizeable aircraft sales prospects. In those circumstances, it does not necessarily matter that GECAS represents 'only' a 10 % share of aircraft sales.

(127) There is evidence that airframe manufacturers have been influenced by GE's powerful combination of GECAS aircraft order prospects and financial contribution from GE Capital to select GE engines for their new airframes. GEAE's competitors are not in a position to replicate such packages.

(128) By way of illustration of its importance to the airframe manufacturers, GECAS has also been the single largest purchaser of jet aircraft in recent years with total orders of 588 aircraft ([40]). In comparison, the largest purchases from the airlines remained below 300 aircraft over that same period.

(129) As far as large commercial aircraft are concerned, although there are more Boeing than Airbus aircraft in the GECAS portfolio, GECAS is of broadly the same importance to both airframe manufacturers in terms of orders. In its reply dated 26 February 2001 to the Commission's investigation, Boeing indicated that GECAS accounted for a little over 10 % of Boeing's order book with 135 aircraft on order. The figure was equivalent for Airbus with a total GECAS backlog of some 138 aircraft. ILFC has a backlog with Airbus and Boeing of [200 to 300]* and [200 to 300]* aircraft respectively. Southwest Airlines is reported to have the largest backlog of all individual airlines with a total of 144 large commercial aircraft. The next largest order backlog from an airline is that of Delta with 108 aircraft on order. Far from representing a fraction of the orders for large commercial aircraft as the Parties suggest, the leasing companies' influence and importance with Boeing and Airbus have been growing in line with their share of the large commercial aircraft order backlog which was reported to account for over 30 % as of the end of 2000 as confirmed by Mr N. Forgeard, the CEO of Airbus, in an article from the *Financial Times* ([41]), with the following statements: 'The group [Airbus] expressed concern at the growing share of new orders being accounted for by leasing companies rather than by direct orders from Airlines. "We are at the upper limit of what can be accepted, there is a danger of losing control of distribution" said Noël Forgeard, Airbus's chief executive'.

(130) GECAS appears to be also very important to the airframe manufacturers of regional jet aircraft, Fairchild Dornier, Bombardier and Embraer, accounting for around 24, 11 and 9 % of their order backlogs respectively as of the end of September 2000. [Quotes from internal GECAS documents about GECAS's Regional Jets Marketing Plan, considered by GE as containing confidential information]* ([42]).

(131) GECAS's recent orders include, among others, 50 firm orders and 100 options placed with Embraer, the Brazilian regional aircraft manufacturer, for its ERJ-170 and ERJ-190 (70 and 90-seat aircraft) as well as large orders for the CRJ-700 (70-seat aircraft) and CRJ-900 (90-seat aircraft) from Bombardier. In addition, its (50 firm and 100 option) order from Fairchild Dornier for its 728JET and 928JET aircraft accounts for three years of production of that particular regional airframe manufacturer. These aircraft are exclusively available with GE engines.

(132) Unlike independent leasing companies such as ILFC, GECAS does not select aircraft equipment on the aircraft that it purchases in accordance with market demand. As a result of GECAS's policy of only selecting GE engines when purchasing new aircraft, 99 % of the large commercial aircraft ordered by GECAS are GE-powered ([43]).

(133) GECAS has the incentive and the ability to enhance GE's Aircraft Engine division (GEAE) market position and resulting profits through several means. GECAS is one of the two leasing companies that operate as launch customers since they can order multiple aircraft at one time, and wait the extra time for delivery of a new airframe (see below the discussion about the B777X). As a launch customer, GECAS can influence the aircraft equipment selection by the airframe manufacturers and therefore constitute, in combination with other GE features, the element that can tilt the balance in favour of GE as equipment and service supplier. GEAE's competitors are unable to guarantee these purchases and therefore to offer launch or boost orders to airframe manufacturers. GECAS's role as a launch or boost customer has proven particularly effective in obtaining access/exclusivity to new aircraft platforms.

([40]) From Fleet Database from Back Associates, data through 6 December, 2000. Orders include cancelled orders and those where engine selection is 'To Be Determined'.

([41]) See the article entitled 'Airbus chief predicts falling aircraft sales in 2001' in the *Financial Times*, 30 January 2001.

([42]) [See above]*.

([43]) The remainder is accounted for by eight Boeing 757s for which GE has no engine on offer.

(134) In addition, GECAS has also proved a very effective tool in strengthening GE's position with airlines on those platforms where there is engine choice.

(135) Indeed, GECAS offers a variety of fleet and financial solutions enabling airlines to acquire aircraft such as aircraft financing, leasing and fleet management including straight aircraft purchase, aviation consulting, engine financing, finance leases, operating leases, pilot training, sales and leaseback as well as aircraft trading. As part of its strategy of being the world's premier aviation solution provider, GECAS also provides equity-like financing to ease the introduction of GE-powered jets into leading carriers and helps airlines standardise their fleet around GE-powered aircraft as confirmed in GE's 1999 Annual Report:

'In 1999, we [GECAS] made significant progress on our commitment to help our customers meet their fleet and balance sheet objectives. For example, at China Eastern, one of the largest Chinese airlines, GECAS helped the airline reduce its short-term capacity, standardise its fleet around CFM-powered Airbus narrowbodies and generate hard currency.' ([44])

(136) The market investigation has further underlined that GECAS has the ability to standardise fleets around GE-powered aircraft and convince an airline that would not otherwise have leased a GE-powered aircraft to accept such an aircraft by offering far more than leasing services and being able to take advantage of the aviation and financial resources within the GE family ([45]). Finally, GECAS's ability to shift market shares by seeding airlines with GE-powered aircraft has, given the existence of commonality, a multiplying effect in that those airlines will continue to purchase its engines in the future, therefore magnifying GE's engine sales. Contrary to the Parties' contention in their reply to the statement of objections and at the oral hearing, GECAS has indeed been able to significantly increase GE's position without GECAS's increased purchases of GE engines having been offset by purchases of non-GE engines by airlines or other leasing companies. Consequently, through GECAS's bias in favour of GE engines and its influence over airlines, GE has been able to increase GE's market shares of engines.

(137) Quite apart from the fact that the Parties fail to explain why other leasing companies or airlines, which are in any event not affiliated with any engine or component manufacturer, should counter-react to GECAS's bias, ILFC's purchasing behaviour confirms that it leaves the engine selection on the vast majority of its recent orders 'to be determined' and thus allows its future airline customers to participate in engine selection.

(138) A comparison of GE's market position pre-GECAS (from 1988 to 1995) with the post-GECAS situation (1996 to 2000) shows that while GE's engine sales with leasing companies, including GECAS, increased by over 20 share points (or over 60 %), the direct purchases of GE engines by the airlines only dropped by less than 5 share points (or less than 10 %). The fact that other leasing companies and airlines simply have not compensated for GECAS's biased purchases results in a net shift of engine market shares to GE.

(139) The vertical integration of GE also extends to other aerospace business segments. Indeed, through its GE Engine Services (GEES) subsidiary, GEAE also has a global network of maintenance, repair and overhaul (MRO) shops servicing its own large commercial engines as well as those of other original equipment manufacturers (OEM) on a worldwide basis. GEAE also sells turboprop and turboshaft engines and related replacement parts for use in military and civilian aircraft. Finally, GE's aircraft engines are also used as the basis of derivatives for industrial and marine gas turbines.

3) *Non-replicability of GE capital/GECAS*

(140) The Parties have contested GECAS's influence in GE's dominance and argued that in any case competitors can respond by setting-up of their own aircraft leasing subsidiaries. Their argument is that GECAS can be replicated easily and rapidly and thus be neutralised in its alleged influence over GE's dominance.

(141) The Commission cannot accept this argument. There are three main reasons why a leasing subsidiary of the size and importance of GECAS cannot be easily and quickly replicated.

([44]) GE's 1999 Annual Report, page 23.

([45]) [Example of GECAS' involvement in commercial agreements with airlines, considered by GE as confidential information]*.

(142) First, for both P&W and RR the creation of such a leasing company would require entry into a new business activity. Indeed, as GECAS is financially supported by GE Capital's strong balance sheet, any attempt by competitors to create a competing GECAS would first require them to make a significant entry into the financial market industry. While GE Capital, which amounts to around half of the GE Corporation, is a true financial company of its own, UTC is an industrial conglomerate and RR a pure aerospace company, not financial institutions. Moreover, the creation of a leasing company with the size, scope and AAA credit rating of GECAS cannot be reasonably envisaged without the established strong financial backing of a parent company like GE Capital, which as a part of the GE conglomerate and unlike other major financial institutions is still only subject to limited scrutiny by financial regulators, as already explained by the Commission in its statement of objections of 8 May 2001.

(143) Second, even if competing engine manufacturers decided to enter the financial business by setting up a leasing company, it would take them a considerable amount of time and money to reach the level of operability and efficiency of GECAS. It took for instance around 30 years for ILFC to reach its current level of leasing activity. GECAS's rather rapid growth should however not be confused with a potential for easy replicability. Indeed, while it took GECAS only five years following its acquisition of GPA to become what it is today ([46]), reaching this position was only possible thanks to the available financial means of GE Capital acting as GE's internal bank. Without such strong financial resources, neither UTC nor RR could invest in a fleet of aircraft worth over USD 20 billion like that of GECAS. Furthermore, prior to making this significant step into acquiring its aircraft leasing business, GE Capital had been able to accumulate industry know-how through its decade-long involvement in the leasing business of other equipment such as railcars, medical units and appliances. It is therefore the combination of an extensive know-how with financial strength that made GECAS grow so rapidly. Engine competitors lack comparable financial resources and know-how to reach GECAS's level even over a longer period of time.

(144) Finally, both competing engine suppliers lack the necessary installed base of engines to be able to implement a RR-only or P&W-only policy for the purposes of replicating GE's seeding practices. They would indeed simply not be able to propose interesting solutions to airlines, as these would have to forego the commonality advantages linked to their GE installed base. Because of this lack of market liquidity for such P&W or RR-only aircraft, trying to flood the airlines with such products would not be commercially credible and would automatically result in a significant drop in the residual financial value of such products. Consequently, making the investment in a leasing company that would have to implement such a commercial policy is unlikely to be supported by those investors that would have to supply the funds as it would be much too risky to undertake. In that respect, history is a reliable proof that no engine competitor has been able to replicate the advantages that GE engines enjoy through GE Capital and GECAS ([47]).

(145) For these reasons, the Commission considers that GECAS' replicability is not an option to competing engine suppliers and therefore such a possibility cannot constrain GE's dominance in the engines markets.

4) *Commonality*

(146) Commonality across engine types also contributes to GE's dominance. Indeed, the fact that airlines using an aircraft powered by a particular type of engine generally tend to purchase incremental engines from that same engine manufacturer puts GE, as the incumbent engine supplier, in a very favourable position when an airline decides to buy a particular engine for a specific type of aircraft since it will generally prefer to purchase the same type of engines in the future owing to the benefits of fleet/engine commonality ([48]).

(147) The results of the Commission's investigation show that there can be very substantial economies of scale related to the standardisation of an airline's fleet or part of it (sub-fleet). This is particularly, although not exclusively, relevant for engine maintenance. The investigation has also revealed that although commonality is directly related to the level of market shares achieved by engine manufactures over the past, commonality benefits can be overruled by offsetting practices that GE, through the use of GE Capital and in particular GECAS, appears to be the only company to have the ability to effectively

([46]) GPA had a fleet of approximately 500 aircraft at the moment of its acquisition by GE.

([47]) RR's 50 % participation in the Pembroke leasing company is in no way comparable to what GE Capital has achieved through GECAS since Pembroke is one tenth of the size of GECAS and commercially unable to reproduce GECAS's biased behaviour.

([48]) In that respect, GE's position with European airlines is quite favourable. Indeed, GE is the incumbent engine supplier (that is the supplier with over 70 % of the engine installed base) with all European national flag carriers except for the United Kingdom and Luxembourg.

and successfully implement ([49]). The investigation also confirmed that those airlines that operate mixed fleets on a given mission profile and consequently do not enjoy particularly high commonality benefits at a given time are usually operators undergoing fleet rationalisation or in the middle of a fleet renewal programme.

(148) While engine commonality is only one factor that aircraft operators take into account when purchasing aircraft, the Commission's investigation has indicated that the organisation of the airline's maintenance activities is an important element that will influence an airline when making engine purchase decisions.

(149) There are two distinct types of maintenance. Line or support maintenance is carried out by the airlines (or their subcontractors) at the airports, while heavy maintenance or MRO involves more substantial intervention on the aircraft such as removing an engine from the wing and overhauling it at special locations. In the case of MRO, spare engines will be needed to replace those off-wing for servicing. Spare engines usually represent between [...]* and [...]* % in value of the operational engine fleet of an average airline. With regard to MRO, airlines have the choice to either perform it in-house by their own team and with their own equipment or outsource it to an external repair shop.

(150) Airlines with in-house MRO capabilities (such as Delta, KLM, Air France, and others) are usually, although not always, large airlines with large enough fleets to achieve commonality gains. Contrary to the Parties' argument that commonality has a limited effect on those airlines that perform in-house MRO, the Commission's investigation indicates that the heavy initial investments, both tangible and intangible, and recurring costs in own repair facilities, spare parts inventories, tooling, staff training, working procedures and manuals that are acquired to perform proper maintenance represent strong incentives, in the form of significant switching costs, for airlines to standardise their engine fleets to take advantage of economies of scale (that is, to reduce marginal costs of maintenance).

(151) While most of the replies from the airlines consulted for the purpose of the investigation revealed that costs associated with switching from one engine type to another can only be quantified on a case-by-case basis, some airlines gave readily available figures for the costs of having to retrain a maintenance engineer as an illustration, not of the magnitude, but of the escalation one can expect according to the actual type of switch undertaken. For example, the typical order of magnitude when the new engine belongs to a family for which the engineer is already trained is about EUR 1 000 to 5 000. When the engine does not belong to a specific family but still comes from the same manufacturer, the cost will increase to around EUR 5 000 to 10 000. The cost associated with switching is clearly higher when the new engine comes from a different supplier as it could go up to EUR 20 000 per engineer since the commonality of this new engine with the previous ones will be limited.

(152) The switching costs associated with the conversion of a test bed to the specifications of a new engine are much more significant and typically range between EUR 1,2 million to EUR 4,5 million when the new engines come from a different manufacturer.

(153) As a result of the airlines' ever growing drive to cost efficiency, commonality benefits are increasingly valued by customers, especially at the level of engines since the engine price is of significant importance, representing on average 25 to 30 % of the total final purchase price of an aircraft. Moreover, the Commission's investigation revealed that the engine is such a major maintenance cost driver that the average total maintenance cost accumulated over the life cycle of an engine ranges between two and three times its acquisition price whereas the total accumulated maintenance cost of an entire aircraft roughly equals its purchase price. Engines, and their subsequent commonality, therefore matter a great deal with regard to the total cost of ownership of an aircraft.

(154) When considering the purchase of an aircraft type that is already in its fleet, an airline will thus gain a substantial advantage from buying aircraft and engines that are identical to those they already operate, relative to buying a different aircraft and engine combination that might play a similar role. This commonality effect is at its strongest within individual engine and aircraft types. For example, a large North American airline confirmed in its reply to the Commission's questionnaire that while aircraft fleet commonality on aircraft purchase is top priority, it values equally highly commonality on engines for new aircraft and, as a consequence, almost always elects to maintain commonality with an engine already in the fleet as long as it meets the mission profile requirements. Another North American airline further underlined in its reply to the Commission's questionnaire that commonality in engines often plays a major role as shown by its decision to purchase P&W-powered B747-200s in 1999. This decision was indeed predicated on its earlier purchase, in 1987, of other P&W-powered B747s (the 400 version).

([49]) [Example of GECAS' involvement in commercial agreements with airlines, considered by GE as confidential information]*.

(155) Furthermore, when considering the purchase of an aircraft type not yet represented in its fleet, the Commission's investigation established that a customer usually prefers to order an engine that will fit into the families of engines that already power its current fleet. Contrary to the Parties' contention that commonality does not apply across engine families, the investigation confirmed that, to the extent that engines within an engine family offer product similarities and share common components or design, an airline customer will indeed benefit from selecting an engine family to power various aircraft types and consequently enjoy benefits from commonality across this engine family. For example, during its negotiations with Airbus for the order of several A318s, a large European airline asked for an alternative solution (the CFM engine) to Airbus's first offer of a P&W engine (PW6000) because of the economies generated by the commonality with other engines in its fleet. Eventually, benefits such as training, commercial and support advantages, and so forth can also be extracted from an established relationship with a manufacturer that supplies an airline's engines across its different aircraft types.

(156) For those airlines which have chosen to outsource their MRO activities, the extent of the switching costs may vary according to both the relative importance of (in-house) line maintenance in their total maintenance cost and the transaction costs associated with the sending of the different engine types (such as GE, RR and/or P&W) to different specific repair shops. Higher transaction costs often materialise through the effects of exclusive long-term MRO contractual arrangements that in most cases constrain operators to either stick to the types of engines their chosen repair shops carry or find alternative repair shops for those new engines they contemplate purchasing. By having to do so, operators are likely to lose the scale economies benefits that an exclusive supplier might have been willing to share with its customers. In the event that a repair shop agrees to perform MRO on all engines regardless of their initial make, transaction costs for the airline may be lower because of the possibility for the shop to spread them over a greater number of engines, but will still be significant as diseconomies of scale will inevitably, to a certain extent, apply to the repair shop itself.

(157) In addition, the Parties' argument that most airlines operating mixed fleets (fleets where no incumbent engine supplier can be identified) comprising a number of aircraft and engines types demonstrates the lack of importance of commonality, does not hold. First, as shown from the following extract from Boeing's 'Quick Look' catalogue of aircraft, engine commonality generates benefits not only within a given type of aircraft but also across different aircraft types. This shows that mixed fleets do not prevent airlines from enjoying engine commonality advantages:

'Boeing — Quick Look: 747-400 Features: Commonality: All 747-400 and 767 advanced engine types are interchangeable.' ([50])

(158) In addition, the existence of mixed fleets for the same type of aircraft does not necessarily show the irrelevance of the commonality benefits since the existence of such mixed fleets can simply reflect the situation of an airline in the middle of a fleet renewal programme or the specific mission profile capabilities of certain aircraft that result in both aircraft and engine fleet differentiation. Furthermore, commonality gains are typically very high until the fleet or subfleet concerned achieves the critical size that, once reached, will only allow for limited increased commonality gains. Technological improvements also explain why engine switches might take place, generally within an engine family, and therefore diminish commonality within an engine family's generations. For example, one of the larger European airlines confirmed in its reply to the Commission's investigation that, in order to benefit from new technological developments, it recently ordered CFM56-5B engines for its new A320 while it had purchased CFM56-5A for its older A320 in 1988. In some cases, the fact that some aircraft offer no engine choice cannot be overcome by the airline that purchases a specific airframe with engines it would not otherwise have purchased. In those instances, the cost for the absence of choice and the resulting lack of commonality will have to be borne by the airline with the ensuing operational cost disadvantage.

(159) Regardless of any airline organisation consideration, significant additional engine commonality benefits have also been identified by the Commission's investigation at the level of an airline's utilisation of the aircraft since engine commonality reduces the number of different crew qualifications required and reduces the need for training courses and simulator time. Operators prefer to avoid such costs, although they are not readily quantifiable, in order to increase the airline's flexibility.

([50]) As indicated in the annex to Boeing's reply to the Commission's questionnaire on 19 February 2001.

(160) Finally, when the Parties argue that a large installed base does not ensure strong future orders and share by submitting that P&W's market share was 80 % in 1980 and declined to around 40 % at the end of 2000, they fail to take into account several critical elements that invalidate such arguments. First, P&W actually benefited, as an engine supplier, from commonality advantages that helped it build its installed base to the level it once reached. Moreover, P&W is still today the incumbent engine supplier with a series of airlines, which has actually prevented P&W from being more rapidly marginalised, at least on the market for large commercial aircraft engines. However, P&W engines power on average older aircraft than GE and therefore can only expect limited future sales potential [description of P&W's strategic decisions concerning the orientation of development efforts on large commercial aircraft engines, considered by UTC as containing confidential information]* ([51]). The B737 was and still is the most successful aircraft of civil aviation and [description of P&W's strategic decisions, considered by P&W as containing confidential information]*. GE managed to reproduce its exclusivity on the latest generation of that aircraft. The Parties' further argument that, by comparison with P&W (and RR), GE has been less successful in selling engines for the A380, A330 and the B777 is not indicative of the lack of importance of commonality. As already indicated above, the A380 example is not yet a relevant benchmark as a limited number of orders has been placed so far while Airbus actually expects around 1 000 units of this aircraft to be marketed. In addition, every time P&W could get a chance to power this aircraft, it will be with GE as a result of their engine alliance. GE's lower share of the low selling A330 platform was reported to be attributed to the technical inadequacy of GE's CF6-80E1 engine. In order to remedy this situation, GE has recently launched a new derivative of that engine, the CF6-80E1A3, and its share of engines for the A330 has, since then, started to rise rapidly. As far as the B777 is concerned, while GE was indeed lagging behind RR but closely trailing P&W in terms of engine orders for the classic version of this aircraft, GE remedied this potential commonality advantage limitation by securing the exclusive engine supply for the latest version of this aircraft (i.e. the 'B777X') and it expects to reverse the current position with an anticipated [...]* % average market share on all B777 models by 2008. More importantly, P&W's share of the installed base is constantly under attack by GE and not the reverse. Indeed, overcoming commonality hurdles by turning round airlines and introducing GE-powered aircraft as is done by GECAS is a possibility that is not easily replicable by P&W.

([51]) [See above]*.

(161) Apart from the fact that from an engine manufacturer's perspective commonality is desirable because it generally lowers development ([52]), manufacturing and product support costs, benefits from engine commonality arise from different levels of an airline's activities and as such constitute an undeniable factor that operators take into account when placing aircraft orders.

(162) As a result of its high share of the worldwide installed base of engines for both large commercial and regional aircraft, GE has a greater ability to exploit such commonality benefits on all coming tenders. In addition, GE has at its disposal a number of means to maintain and develop its leading market position, such as, in particular, its ability to leverage both GE Capital's financial power and GECAS's market access to overcome commonality barriers.

5) *GE's dominance*

(163) The Commission considers that the combination of all these elements makes GE's high market shares the right proxy for dominance. Indeed, the ability to put together its considerable financial strength, its ability to buy large quantities of aircraft, to enjoy the benefits of commonality and to offer comprehensive packaged solutions to airlines have given GE the ability to foreclose competition.

(164) Indeed, on 10 of the last 12 platforms for which airframe manufacturers offered exclusive positions ([53]), GE managed to place its products. The example of the B777X ([54]) is a telling illustration of how GE's vertical integration coupled with its financial strength enable GE to win exclusivity wherever it wishes ([55]).

([52]) For example, it generally costs less to develop a scaled version of an existing engine than to develop an entirely new engine.

([53]) 11 out of 13 if the recent CargoLifter example is included (that is, over 80 % of all exclusive platforms for which GE has either decided to bid or not deliberately withdrawn from the competition).

([54]) Based on information supplied by third parties, it can be argued that the GE exclusive B777X is a platform that is certainly capable of supporting more than one engine and for which there is airline demand for more than one engine. Therefore, it could be argued that in addition to securing the exclusive position on that platform, GE even managed to turn the stretched version of the multiple-source classic B777 platform into a single-source airframe.

([55]) It has to be noted that GE did not bid to power Bombardier's large regional jet, BRJX. In any event, although P&W in cooperation with SNECMA had developed a suitable engine, the development of the BRJX platform was eventually cancelled. GE won the competitions to power the remaining large regional jets of Bombardier.

(165) Indeed, GE's latest large commercial aircraft exclusive engine deal was achieved with the GE90-115B, the largest and probably most expensive engine ever developed to date. The initial version of the GE90 was, together with a P&W engine and a RR engine, available on the first version of the B777-200/300 (better known as the 'classic B777'). The B777-200/300 represents today some 5 % of the total market for large commercial aircraft as a whole. Although GE won a number of campaigns before entry into service, its market share barely went over 30 %. Currently, GE's share of the installed base as of 31 December 2000 on the B777-200/300 is 31 %, RR's is 35 % and P&W's is 34 %.

(166) GE managed to get this exclusivity thanks to a combination of factors that its competitors could not reproduce, despite the fact that they were technically capable of supplying the engine. [Internal GE documents describing the winning offer combination, considered by GE as containing confidential information]* ([56]).

(167) Moreover, GE obtained this exclusivity despite the fact that its GE 90 engine appeared to have been an inferior product to competing engines. *Forbes* magazine ([57]) attributes GE's exclusivity to the fact that GE has managed to redefine the business. It described the transaction in the following terms:

'Instead of selling engines, [Jack Welch] is selling power, since some clever financing helped GE win the business. The plane will be sold by Boeing as a package — aircraft and engines. This is a break with normal practice where airlines buy airplanes separately from the jet engines that power them. GE's twist on this deal is to offer airlines fixed-price off-wing maintenance of the GE 90 engines, including spare parts, at a preset cost of so many dollars per flight hour [...]* So critical was this carrot to Boeing that when Pratt & Whitney engineers came in with a last-ditch attempt to win the deal, Boeing told them that their much-improved offer was still hundreds of million of dollars below target. [...]* Thus GE is selling not pure engines but a blend of engines, maintenance and financing.'

(168) The ability of GE to offer engines across the whole range of the B777 aircraft is a significant advantage that no other engine manufacturer can enjoy. This exclusivity is consequently a powerful tool for GE to improve its position on the classic B777 as the B777X is expected to become the baseline, and therefore the most frequently purchased, model for the B777 series. This situation introduces a true bias in the selection of engines for an aircraft where engine choice nonetheless exists in the sense that it will lead to a rapid increase in the market penetration of the GE90, quickly overtaking the competition and marginalising those B777s powered by competitive engines. Indeed, with the problems associated with operating two engine types on the same airframe, the preference of B777 customers may be to switch to the GE90 sooner rather than later, thereby displacing the RR Trent and PW4000 on the B777-200ER and B777-300, accelerating the market penetration of the GE90 on the classic B77. Indeed, GE forecasts in its own internal documents that, following the introduction of its exclusive growth version, the GE90 market share will have doubled to [...]* % of the entire B777 platform over the short to medium term, while the RR Trent 800 and the PW4000 will both fall to around 20 % each.

(169) Alternative engine sources are typically available only on large commercial aircraft, where they enable customers to take advantage of competition between engine manufacturers so as to obtain bigger concessions from them in return for buying the aircraft. As this was not the case with the B777X, potential purchasers of that aircraft have been quoted in the industry press as being opposed to GE's exclusive engine supply position on that airframe. Major airlines such as American Airlines, United Airlines, British Airways, Cathay Pacific, and Malaysia Airlines stated that they were unhappy with the deal, which they described as unwelcome. They would indeed have preferred a choice of engines due to better pricing leverage, in addition to the fact that, at the time of the selection, the GE90 was not as good as the RR Trent for example. These major customers were therefore concerned that the deal could have an adverse impact on their own competitive position.

(170) As far as the only two RR sole-source positions are concerned, none of them are in any way an expression of GE's lack of dominance. [Description of the A340-500/600 bid process, considered by GE as confidential]*. [Description of the commercial agreement between RR and Airbus for the A340-500/600, considered by RR as containing confidential information]*. The other sole-source agreement of RR is the B717, which is the smallest large commercial aircraft for which GE did not bid ([58]).

([56]) [See above]*.

([57]) *Forbes*, 9 August 1999, 'Jack Welch, engine salesman — When GE wants to land an engine contract, it doesn't sell engines. It sells power', by Howard Banks.

([58]) GE did not have an existing engine for the B717 platform. The low sales prospects of that platform may have dissuaded GE from investing in a new engine. RR, on the other hand, had an existing engine on offer, which could power the platform.

(171) The other most significant instances where GE managed to be the exclusive engine supplier took place on the market for large regional jet aircraft engines. It is again a combination of, among others, financial contributions (USD [...]* in the case of [...]* as described above), aircraft orders by GECAS (150 aircraft for each of the three large regional jet manufacturers ([59])) and customer sales financing contributions that positioned GE as the exclusive supplier to these airframe manufacturers.

(172) By preventing the development of a large regional jet with a non-GE engine, GE eliminated the underpinnings for future competition and innovation in this market as well as price competition for the airlines. By comparison, on smaller regional jets, where competing airframes are available with different engines, airlines are still able to obtain concessions from the engine suppliers to help them decide between the competing airframes. No price competition will occur with respect to the Bombardier, Fairchild-Dornier and Embraer large regional jets since all will be equipped with the same GE engine [quote from a GECAS internal document on regional jets, considered by GE as containing confidential information]*. The only exception to the true monopoly of the 70 to 90+ seat regional jet airframes is BAe's Avro regional jet, which is powered by Honeywell engines. However, as a result of the merger, even that competition will cease to exist.

6) *No competitive constraint*

(173) Unlike any other engine manufacturer, GE can afford to encourage and systematically obtain exclusivity and capture aftermarket, leasing and financial revenues. From an airframe manufacturer's perspective, selecting GE allows the airframe manufacturer to access the largest customer base of airlines and secure either a significant launch order or a significant boost order for its aircraft from GECAS. No other engine competitor has the size, financial strength or vertical integration to replicate such offers.

7) *Lack of constraint from current competitors*

a) Pratt & Whitney (P&W)

(174) P&W is a division of UTC that also includes Otis elevators and escalators (Otis), Carrier heating and air-conditioning systems (Carrier), as well as Sikorsky helicopters and Hamilton Sundstrand aerospace systems (Flight Systems). The P&W and Flight Systems segments comprise UTC's aerospace business and produce commercial as well as government aerospace and defence products. More particularly, the P&W products include aircraft engines and spare parts as well as a full range of overhaul, repair and fleet management services.

(175) P&W achieved sales of USD 7,4 billion in 2000, which represent little over 25 % of UTC's consolidated revenues [description of the relative importance of the sales of large commercial aircraft engines for UTC's consolidated revenues, considered by UTC as containing confidential information]*. Support of the installed engines, spare parts and military activities are becoming so important to P&W that they represent the long-term stability in both its production and employment base as confirmed by M. Remez and B. Nagy in one of P&W's hometown newspapers:

'Connecticut's largest private employer, P&W, stands to win orders for thousands of its F119 engines [P&W's military engine that will compete with GE's F120 to power the Joint Strike Fighter] worth tens of billions of dollars and stabilise its workforce. But the Pentagon proposal is likely to change, and it could be killed altogether. If the programme is canceled — a real possibility, some analysts say — the blow to East-Hartford-based Pratt and its Connecticut workforce of 12,000 could be devastating.' ([60])

(176) The fact that the overall market share of P&W has been shrinking drastically over the last two decades, falling by roughly a half, has largely contributed to the situation described above. The market share decline has been most notable in the large end of the engine market where P&W went from a little less than 40 % of the engines for large commercial aircraft deliveries in 1990 to achieve only 16 % of those deliveries in 2000. If we exclude P&W's share of the A320 deliveries through the IAE consortium, this figure even goes down to as low as 10 %.

(177) Notes taken by a GE official at a Morgan Stanley conference on 22 September 1999 reflect the statement made by George David, UTC Chairman and CEO, clearly underlining the fact that P&W has been steadily losing market shares and that this has started to impact their activities:

([59]) [Example of GECAS' involvement in commercial agreements with airframe manufacturers, considered by GE as confidential information]*.

([60]) See 'Riding Fighter's Wing' in *The Hartford Courant*, 12 March 2001.

'P&W is seeing increased retirements of its engines (1,5 % of fleet each year — "bigger impact on us [P&W] than others in the industry").'

'450 parked aircraft in 1999, half of which are P&W-powered.'

'[Engine] Shop load dropping 30 % 1999/2000.' ([61])

(178) P&W's major engine products are indeed being phased out, facilitating and accelerating GE's dominance in jet engines. For example, P&W's large fleet of JT8D and JT9D engines installed on the successful airframes of the 1960s, 1970s, and 1980s are beginning to reach retirement age. According to the age distribution of the current commercial airliner fleet, P&W supplied the engines on the majority of the planes over 15 years old while GE/CFMI supplies the majority of planes less than 15 years old.

(179) As a result of GE's increased market penetration and P&W's smaller new share and growing retirements (accelerated by noise-regulated phase-outs of older stage II equipment), the installed base leadership has undergone a dramatic change.

(180) The obvious consequence of P&W's eroded share of the overall engine market is that P&W, and in particular its large commercial aircraft engine business, is more than ever relying on its past achievements. Instead of building up the stream of future cash flows that would enable it to offer competitive products and put it in a position to remain a major contender for future platform wins, P&W cannot currently do better than cashing in on the sale of spare parts and services to support its ever shrinking installed base of engines as confirmed by M. Remez and B. Nagy:

'P&W's share of the commercial engine market has eroded steadily over the past 15 years, making the military business the cornerstone of the company's new engine work. Without solid military orders, P&W slips closer to leaving the engine design and engine production business, and becoming simply a repair and maintenance shop.' ([62])

(181) P&W's situation is further illustrated by the comments made by the P&W management on the evolution of their performances over the recent years. They stated that the revenues generated by the high margin aftermarket activities helped P&W limit the level of its revenues degradation: 'P&W's revenues (1999 compared to 1998) decreased USD 202 million (3 %) in 1999. The decrease reflects fewer military and commercial engine shipments and lower commercial spare parts volumes, partially offset by increases in the commercial overhaul and repair business, military after-market and P&W Canada' ([63]).

(182) However, whether a manufacturer can afford to invest in new engine programmes today is heavily influenced by the ongoing success of mature engine programmes and the contribution of the revenue stream they generate year after year. A manufacturer can indeed invest in new programmes only if it has mature programmes that supply sustaining funds for the development phase to the break-even point of the new programmes (which can be well over 20 years) [description of the evolution of P&W's cash flows expected from the after-market, considered by UTC as containing confidential information]*.

(183) P&W appears to be refocusing its activities away from the large commercial aircraft engine businesses where it is no longer present independently and not expected to secure a stable position in the future, apart from its two alliances covering specific thrust ranges (IAE with RR and the Engine Alliance with GE). [Quote from a Honeywell internal e-mail message, describing P&W's position in the market, considered by Honeywell as containing confidential information]* ([64]).

(184) The efforts, although often unsuccessful, made by P&W in trying to increasingly play a major role in the markets for regional and business jet engines confirm the results of the Commission's market investigation that have revealed the perception amongst several players in the industry that P&W as an independent competitor is effectively in the process of slowly exiting from the large end of the market for engines for commercial aircraft.

(185) [Description of the non-compete clause included in the agreement of the IAE joint venture, considered by UTC as containing confidential information]* ([65]).

([61]) As indicated in GE's internal document 121-DOC-001618-1620.
([62]) See 'Riding Fighter's Wing' in *The Hartford Courant*, 12 March 2001.
([63]) UTC's 2000 Annual Report, page 6.
([64]) [See above]*.
([65]) [See above]*.

(186) As regards wide-body aircraft, P&W will supply the GP7000 engine to the very large aircraft (A380) in cooperation with GE (in the Engine Alliance). With the required development adjustments and regulatory approval extensions, this engine (or derivatives thereof) is technically capable of being applied to all wide-body aircraft. In that framework, GEAE and P&W are currently studying whether the Engine Alliance engine would be suitable for the B767-400 ERX that Boeing is contemplating.

(187) It therefore appears that P&W uses these joint ventures in the large commercial aircraft engine sector (IAE and the Engine Alliance) to refocus its independent business activities away from engines for large commercial aircraft. [P&W's future strategy in the large commercial aircraft engine sector, considered by UTC as containing confidential information]*.

(188) [P&W's comments as indicated in its reply to the Commission's investigation concerning P&W's recent R & D strategy, considered by UTC as containing confidential information]* ([66]).

(189) [P&W's future strategy for commercial engineering and development (E&D) spending on large commercial aircraft, as indicated in its reply to the Commission's investigation, considered by UTC as containing confidential information]* ([67]).

(190) Regardless of the strategies applied or announced by P&W in the different aircraft engine market segments, it must be recalled that, while P&W is part of a relatively large corporation (although UTC's market capitalisation is still less than one-tenth that of GE), it does not enjoy the financial backing that GEAE has with GE Capital. The total value of GECAS's current and ordered aircraft (around USD [...]*) gives a fair appreciation of GE's capacity for strategic use of GE Capital as a financial power. At the same time, this total only represents some [...]* % of the total value of GE Capital Services' assets (up from [...]* % at the end of 1995).

(191) Similarly, P&W does not have the opportunity to leverage its engine sales with a tool such as GECAS. GECAS is indeed the only leasing company fully owned by an incumbent engine manufacturer.

(192) As a result, P&W cannot be as influential over airlines as GE Capital/GECAS is through financing arrangements or incentives, such as offering to assist in placing used aircraft that may be surplus to an airline's requirements, that lead airlines to prefer GE's products over those of its competitors [extracts from an e-mail message from GEAE concerning the selection of GECAS and GEAE by an airline, considered by GE as containing confidential information]* ([68]).

(193) Furthermore, GECAS's policy of ordering only GE-powered aircraft together with its proven ability to act as launch and/or boost customer is another GE feature that puts GEAE ahead of P&W when it comes to marketing the original equipment. Unlike GE, P&W is indeed not in a position to offer airframe manufacturers the possibility of significant GECAS orders to induce them to choose GE equipment or grant GE exclusivity with the CF34.

(194) In the light of the foregoing, P&W appears to no longer be an effective direct independent competitor to GE for much of the market for engines for large commercial aircraft and for large regional jets.

(195) Eventually, since the majority of new aircraft programmes, at least in the near term, will be corporate aircraft, it is in this segment that P&W, through P&W Canada, RR, GE and Honeywell will directly compete. P&W's competitiveness and commercial success could therefore be assessed soon against the expectation that, thanks to GE Capital Corporate Aviation Group (GECCAG), GE's extension of GECAS and GE Capital into the corporate jet segment, GE will address each new opportunity with the same pattern of obtaining platform exclusivity in return for financial support and large orders.

b) Rolls-Royce (RR)

(196) As far as RR is concerned, given [description of RR's limitations, considered by RR as containing confidential information]* ([69]) and its lack of vertical integration into significant aircraft purchasing, it clearly cannot replicate GE's market strength. Although a very capable supplier from a technical perspective, RR can therefore not be considered as a credible bidder for all engines across all markets and in particular in winning engine exclusivity.

(197) RR is an international company with headquarters in the United Kingdom, businesses in seven European countries and joint programmes in a further three. RR's main business lines are civil aerospace, defence, marine systems and energy. RR was privatised by the British Government in 1987. RR achieved sales of GBP 5,8 billion in 2000 of which over 50 % were generated by its civil aerospace activities (GBP 3,2 billion).

([66]) [See above]*.
([67]) [See above]*.
([68]) [See above]*.
([69]) [See above]*.

(198) RR is the only engine manufacturer that does not have any structural relationships (joint ventures or technical alliances) in the field of civil aerospace with GEAE. The only programme on which RR and GE cooperate is the Joint Strike Fighter (JSF) aircraft in the field of military fighter engine. Following its acquisition of Allison in 1995, RR joined an already existing GEAE/Allison team to develop and produce the GE YF120 cruise engine as an alternate engine for the JSF. This limited teaming agreement obviously does not address the commercial aircraft market and confirms RR's position as the only economically unrelated competitor to GE in the commercial aircraft engine market.

(199) While RR is certainly technically capable of competing with GE on the various markets for commercial aircraft engines, it is however disadvantaged with respect to GE in several ways.

(200) Contrary to what the Parties argue, RR has only limited financial resources and strength. The market capitalisation of GE (around USD 485 billion as of June 2001) is around a hundred times larger than that of RR (around USD 5 billion). [comments made by the President of GECAS on RR's competitive position, considered by GE as containing confidential information]* ([70]).

(201) [independent market analysis on RR's financial performance, considered by GE as containing confidential information]*. As several independent market analysts indicate, much of RR's earnings come from payments by participants in RR's Risk and Revenue Sharing Partner (RRSP) programmes. RRSPs consist of government, financial investors and industrial partners (mainly parts suppliers) that pay RR money for a stake in an engine programme. The up-front cost of this equity stake is paid in cash to RR during the development phase of the engine programme and is used to offset the negative impact of R & D on RR. Once the engine enters production and deliveries start (assuming sales are successful), RR then pays out to these RRSP partners in proportion to their equity stake on the programme. The impact of the RRSP receipt on the earnings is a growing issue for concern as indicated by the following statement from Schroder Salomon Smith Barney: The value of these RRSPs has escalated in recent years. The net contribution after repayments was GBP 133 million in 1999 and GBP 212 million in 2000. [Following engine entry in production and delivery start]* RRSPs are expected to decline somewhat from 2001 onwards perhaps turning into net repayments [by RR]* by 2005 ([71]).

(202) Analysts further argue that these receipts should not be included in earnings, nor should they be treated as a generator of cash and that without RRSPs, RR's earnings would be less than half their forecast level in 2001. This is clearly illustrated by the following comments by Deutsche Bank: 'RR's results progress was overly dependent on the rise in net RRSPs, which accounted for 57 % of earnings before interests and taxes (EBIT) growth in 2000. Stripping these out, and the impact of the Vickers acquisition, there was no underlying EBIT progress' ([72]).

(203) Deutsche Bank concludes that it is a clear concern that around 60 % of the EBIT growth comes from a single source (the RRSPs) with limited predictability and that the expected change in RRSP flow patterns will place growing strain on RR's underlying business as RR's inflows are expected to decline after 2001: 'This significant swing will require the underlying RR businesses to generate an additional GBP 300 million of EBIT in 2005 in order to replace this "lost" profit. To put such a GBP 300 million improvement in context, this represents almost a doubling of the level of EBIT generated by RR in 2000, if RRSP flows are excluded from the reported EBIT figure' ([73]).

(204) An additional limitation to RR's true ability to compete with GE on equal footing is its limited access to external finances. The aerospace industry and in particular aircraft engine development require both heavy and long-term investments that in most cases can only be internally funded. Competition in the aircraft engine sector will only exist to the extent that manufacturers can finance engine developments for new aircraft applications. Given the high level of risk attached to such long-term projects, financial partners are unlikely to be willing to play a major role and wait a decade or more to measure the return of their investment. In that framework, access to funds is crucial and RR can only stretch its balance sheet up to a certain point as it does not enjoy the backing of an internal financial arm of the magnitude of GE Capital. [Quote from the comments made by the President of GECAS on RR's competitive position, considered by GE as containing confidential information]* ([74]).

([70]) [See above]*.
([71]) Schroder Salomon Smith Barney's research on RR, 5 March 2001.
([72]) Deutsche Bank's research on RR, 5 March 2001.
([73]) Deutsche Bank's research on RR, 5 March 2001.
([74]) [See above]*.

(205) This limited access to financing also prevents RR from replicating GE's practice of significantly funding airframe manufacturer's development costs in order to secure exclusivity of its products [quote from Honeywell's analysis assessing the advantages from systems offering through a partnership with GE or RR, considered by Honeywell as containing confidential information]* ([75]).

(206) GE's use of its financial power against RR can be illustrated by a recent example of GE's ability to couple its financial power with its power as a customer.

[Description of the GE win and RR's capability of competing with such offers, considered by RR as containing confidential information]*.

(207) [Quote from [...]* letter to RR stating the reasons for choosing GE over RR, considered by RR as containing confidential information]* ([76]).

(208) This linkage of the deal has also been highlighted in an article in *Flight International*:

'CargoLifter has selected the GE CT7-8 turboshaft to power its CL160 airship, despite earlier indications from sources close to the programme that the RR Turbomeca RTM 322 was the first choice engine for the huge "flying crane". The memorandum of understanding between CargoLifter and GE involves the engine manufacturer supplying and maintaining up to 50 engines — six CL160 ship-sets plus spares.' ([77])

(209) Apart from ancillary engine services for its original products and its 50 % shareholding in Pembroke, RR is not a vertically integrated company. RR does not solely own or control an aircraft leasing company of the size of GECAS. Pembroke is a medium-sized leasing company incorporated in Ireland and is a joint venture between RR and GATX (another aircraft leasing company). Pembroke owns 55 aircraft and has an additional 23 on order, while the GECAS fleet amounts to well over 1 000 aircraft. Unlike GECAS that follows a GE-only policy, Pembroke orders non-RR-powered aircraft (such as B737s) and 20 of Pembroke's fleet of B717s (powered by 2 RR BR715 engines) were ordered before RR became a shareholder in December 1998.

(210) [Quote from a GECAS executive on the competitive position of RR's affiliate Pembroke, considered by GE as containing confidential information]* ([78]).

(211) [RR's capacity utilisation, considered by RR as containing confidential information.]* ([79])

(212) [Investment cost and lead times required for RR to increase production, considered by RR as containing confidential information]* ([80]).

(213) [Capital investment in plant and equipment and lead times required for RR to increase production, considered by RR as containing confidential information]*.

(214) [RR's position to compete for all new engine contracts, considered by RR as containing confidential information]*.

(215) Although RR engines are used by more than 50 % of the world's top-35 airlines (measured in terms of aircraft purchases), the Commission's investigation confirmed that the number of airlines where RR is the incumbent engine supplier (i.e. with more than 60 % of the installed engine base of aircraft currently in production) is limited to around 15 % of those major airlines (airlines where RR is the incumbent engine supplier include British Airways, Cathay Pacific and Garuda Indonesia) ([81]).

(216) GE is the incumbent supplier to most of the other airlines and in particular to eight of the 12 major European airlines (Air France, Lufthansa, KLM, SAS, Swissair, Alitalia, Iberia and Virgin Atlantic Airways). GE is therefore significantly better placed than any other engine supplier to take advantage of commonality benefits to preserve its dominant incumbent position. As indicated above, in Europe RR enjoys such a position only with British Airways.

(217) The significant commonality and scale benefits that derive from incumbency enable a supplier to maintain or grow its share within an airline's fleet. The switching costs faced by an airline that is dependent on an engine supplier for a specific aircraft type and which is considering, for whatever reason, selecting another engine supplier are significant.

([75]) [See above]*.
([76]) [See above]*.
([77]) 'GE is surprise choice for airship' in *Flight International*, 27 March-2 April 2001, page 30.
([78]) [See above]*.
([79]) [See above]*.
([80]) [See above]*.
([81]) The 60 % threshold is used in this industry to define the incumbent position of an engine or aircraft supplier to airlines.

(218) [Quote from statements made by RR to the Commission concerning existence of incumbency barriers, considered by RR as containing confidential information]* ([82])

(219) GE recognises this disadvantage as one it still has to overcome, on some instances, by using the contributions of its different entities (GEAE, GECAS, GEES, and others) with airlines where P&W (or RR in a few cases) is still the incumbent supplier [extract from an e-mail message from GEAE concerning the importance of engine incumbency, considered by GE as containing confidential information]* ([83]).

(220) Finally, RR experiences limited partnership opportunities on the market for civil aircraft engine. Given the huge investments that are required to develop new aircraft engines, it is very important for an engine manufacturer to find partners to invest in their programmes and share the inherent risks.

(221) RRSPs for engines for large commercial aircraft are effectively limited to subsystem suppliers who can share technology acquisition and engine programme risk as well as carry out either component design and production, or the more major and extensive function of designing and developing an entire module of the engine. There are few competent designers which have appropriate financial resources and, accordingly, are likely to become RRSPs. They include Fiat, Ishikawajima-Harima (IHI), Kawasaki, Mitsubishi Heavy Industries (MHI), MTU, SNECMA and Volvo.

(222) MHI and MTU design and produce components for engines. Module design and development is effectively limited to MTU, SNECMA and Fiat. However, within module design and development, there is a clear distinction between the roles of Fiat, which is capable of involvement in only gearbox design, and SNECMA and MTU that are more broadly capable.

(223) On the basis of the foregoing, RR appears to be at a considerable disadvantage when competing with GE for future engine contracts. RR therefore appears to be unable to provide an effective competitive constraint on GE without taking risks that would jeopardise the very future of its aircraft engine activities.

([82]) [See above]*.
([83]) [See above]*.

1.B.4. **Lack of countervailing buyer power**

(224) The Parties have argued that GE's market position is constrained by the countervailing buyer power of customers.

(225) The Commission's investigation did not support this view. Customers, either airframe manufacturers or airlines, appear to have a strong preference for GE's products and services, as shown by the latter's growing market share on airframe platforms and in the airlines' fleet ([84]). The market investigation showed that in several instances GE has displayed independent behaviour vis-à-vis competitors and customers. Its ability to behave independently stems from its unique financial strength, vertical integration and positioning across the aerospace supply chain.

(226) GE has a strong foothold in the airlines' fleet. Airlines are small in terms of market share, since no individual airline accounts for more than 5 % of aircraft orders per year. Owing to the dispersed nature of demand, individual airlines on their own do not appear able to exercise any appreciable countervailing power.

(227) The expected patterns of the airlines' purchasing behaviour and GE's ability to influence it significantly suggest that GE will grow, its incumbency in these fleets and airlines will become more dependent on GE's product offering. As revealed by the market investigation, even large airlines that are large purchasers of GE's products are not likely or willing to exert significant buyer power. This is for instance the case of all the major airlines that provide MRO services to third party airlines (so-called 'Technics' departments). Their need to be able to provide such services on GE engines obligates them to maintain a specific commercial relationship with GE, in their quality as an OEM. The fact that such airlines will need access to spare parts, licences and repair processes and a high degree of know-how on GE's products puts GE in the position of an unavoidable trading partner. Under such circumstances, their buyer power is thus limited by the imbalance in the commercial relationship.

([84]) GE is the leading engine supplier to the majority of European airlines. For instance, it is the exclusive engine supplier to Aer Lingus, Alitalia, KLM, Olympic and TAP and the leading supplier to other airlines (the percentage indicates its share of engines within each airline): Air France (98 %), Austrian Airlines (81 %), Finnair (64 %), Iberia (72 %), Lufthansa (84 %), Sabena (81 %), SAS (79 %) and Swissair (72 %).

(228) As for airframe manufacturers, some of them are large (such as Boeing and Airbus) and some are smaller companies (such as regional and corporate jet manufacturers). However, they are all subject to the airlines' demand for aircraft and engines and cannot disregard such a demand. Moreover, they are in need of capital and financial assistance, which GE has appeared to have granted on several occasions in the past. Finally, they are under the considerable influence that GECAS may exercise when placing orders for aircraft. The market investigation showed that GE is in a position, and has already managed, to shift the airlines' demand for aircraft by influencing their demand for engines. As a consequence, GE is in a position to act on the ability of airframe manufacturers to sell their aircraft to airlines. This places airframe manufacturers in an unequal bargaining position vis-à-vis GE and as a result seriously affects their incentive to exercise countervailing power. Moreover, on several occasions GE has been found to influence airframe manufacturers' choices as a result of its ability to offer products and services that competitors could not match. This also acts as a disincentive to countervailing power.

1.B.5. **Conclusion**

(229) Given the nature of the jet engines market, characterised by high barriers to entry and to expansion, GE's incumbent position with many airlines, its incentive to use GE Capital's financial power with customers, its ability to leverage its vertical integration through GECAS, the limited countervailing power of customers and the weakening or marginalisation of its direct competitors, GE appears to be in a position to behave independently of its competitors, customers and ultimately consumers and can thus be characterised as a dominant undertaking on the markets for large commercial jet aircraft engines and for large regional jet aircraft engines.

2. AVIONICS AND NON-AVIONICS

2.A. ***Relevant markets***

2.A.1. **Relevant markets**

1) *Product markets*

a) General

(230) Honeywell manufactures, apart from engines, a range of aviation products referred to as avionics and non-avionics products, or in general as systems.

b) Avionics products

(231) Avionics products relate to the range of equipment used for the control of the aircraft, for navigation and communication as well as for the assessment of flying conditions. The avionics markets have already been analysed in previous Commission Decisions ([85]) and have been subdivided into large commercial aircraft (LCA) on the one hand and regional/corporate aircraft on the other hand. A distinction between these two segments of aircraft is justified on the basis of differences relating to the structure of supply and demand (regional/corporate aircraft have an integrated cockpit versus a federated cockpit for LCA), their price, size, capabilities and technical interdependency, and the nature of the customers. Such differences do not however arise between regional and corporate aircraft, nor between narrow-body jets and wide-body jets or small regional aircraft and large commercial aircraft.

(232) For large commercial aircraft, the customers are both airframe manufacturers (Airbus and Boeing) and the airlines. Generally, the avionics products are federated into an avionics cockpit suite by the aircraft manufacturers. This means that, as opposed to regional/corporate aircraft, some of these products can be chosen/changed by the airlines.

(233) For Regional and Corporate aircraft, the customers are the airframe manufacturers (such as Embraer, Fairchild Dornier, Bombardier, Raytheon, Gulfstream) and not the airlines. Most products are sold as part of an integrated cockpit, whereby the aircraft manufacturers rely on the system integration capabilities of the avionics suppliers and system integrators.

c) Non-avionics products

(234) Non-avionics products relate to a variety of (sub) systems such as, among others, auxiliary power units (APU), environmental control systems (ECS), electric power, wheels and brakes, landing gear and aircraft lighting, all of which are key to the operation of an aircraft.

(235) Those non-avionics products have been defined by the Commission in previous decisions ([86]), where it was not found relevant to make a further subdivision between large commercial aircraft, regional aircraft, corporate aircraft or any other aircraft segment.

([85]) Commission Decision 2001/417/EC in Case COMP/M.1601 — AlliedSignal/Honeywell (OJ L 152, 7.6.2001, p. 1).

([86]) Commission Decision of 25 May 1999 declaring a concentration to be compatible with the common market (Case No IV/M.1493 — United Technologies/Sundstrand) according to Council Regulation (EEC) No 4064/89 (OJ C 206, 21.7.1999, p. 19).

Buyer-furnished equipment versus supplier-furnished equipment

(236) For aircraft systems (avionics and non-avionics products), a distinction has to be made between buyer-furnished equipment (BFE) and supplier-furnished equipment (SFE). BFE equipment is purchased by the airlines, whilst for SFE equipment, the procurement responsibility is taken on by the airframe manufacturers. Standard avionics products (as opposed to integrated systems) are generally BFE whilst non-avionics products (with exception of highly consumable parts such as wheels and brakes) are SFE.

(237) BFE equipment is multi-sourced, and is selected by aircraft buyers (airlines or leasing companies) out of the two or three products certified by the airframe manufacturer. Aircraft buyers have an important influence in selecting what equipment will be proposed and with what priority the suppliers will be certified. For that purpose, airlines and leasing companies are represented in advisory committees. Leasing companies can pool and represent the interests of smaller airlines. Aircraft buyers that act as a launch customer have also an important influence on the selection of equipment made by aircraft manufacturer. For large commercial aircraft, ARINC ([87]) standards take on the role of an 'industry consensus' in defining technical requirements. Airframe OEMs, potential suppliers and aircraft purchasers are all involved in the development of ARINC characteristics. Technical requirements typically include interface definition, performance requirements, environmental requirements, and required certification levels. Once certified by the airframe manufacturer, the airline will negotiate and buy directly from the avionics supplier.

(238) SFE equipment is purchased by the aircraft manufacturer and not by the airlines. For SFE equipment, competition occurs at the design or development phase of an aircraft platform. The airframe manufacturer defines the technical requirements after considering factors such as customer desires, systems integration, regulatory issues, and safety. In the case of SFE products, launch customers and important buyers such as leasing companies, through the advisory committees, can influence the selection process of the aircraft manufacturer. Typically, suppliers for SFE equipment are selected by the airframe manufacturer on the basis of cost, schedule and risk. There is often a 'down select' process until the qualified competitors offer a final proposal/submittal from which the airframe manufacturer chooses a winner.

(239) SFE can either be SFE-standard or SFE-option. The former is single-sourced, whilst for SFE option, the airframe manufacturer will obtain certification for more than one (generally two) substitutable products for that aircraft type and will leave it to the buyer of that aircraft to make the selection.

2) *Geographic market*

(240) As indicated by the Commission in prior decisions relating to civil aircraft equipment ([88]), the relevant geographic market for avionics and non-avionics products is worldwide.

2.B. ***Competitive assessment***

2.B.1. **Honeywell is a leading supplier of aerospace equipment**

1) *Introduction*

(241) Honeywell is the largest worldwide supplier of aerospace equipment other than engines with sales of EUR [...]*. BF Goodrich is the second largest (with EUR [...]*) although it is mainly competing on other segments of the market. Hamilton Sundstrand, which is part of UTC, is third with EUR [...]* and Rockwell Collins fourth with EUR [...]*. Following the Smiths/TI/Dowty merger, Smiths is the fifth largest aerospace equipment supplier with EUR [...]*. The current Honeywell is the result of a consolidation drive among avionics and non-avionics manufacturers initiated in the 1980's which culminated in 1999 when Honeywell, the leading avionics system provider merged with AlliedSignal, a very important component provider for both stand-alone avionics products and non-avionics products.

([87]) 'ARINC' is Aeronautical Radio, Inc., a corporation owned by the major airlines and whose charter is to create a common operating environment for the airline community. Within ARINC is a committee called the Airline Electrical Engineering Committee (AEEC), whose function is to foster freedom of choice among airlines by providing a standard form, fit, and function for BFE avionics. Standardised interfaces allow the airline to select avionics from multiple providers.

([88]) See Case IV/M. 697 — Lockheed Martin/Loral Corporation, Commission decision of 27 March 1996, Case IV/M.290 — Sextant/BGTVDO, Commission decision of 21 December 1992.

(242) In avionics generally ([89]), Honeywell has around [50 to 60 %]* of the market and its main competitors are Rockwell Collins [(20 to 30 %)]* Thales, formerly known as Sextant [(10 to 20 %)]* and Smiths Industries [(0 to 10 %)]*. These four players thus account for around [90 to 100 %]* of the market whilst the 35 remaining players have around [0 to 10 %]* of the market. The latter can be considered as niche players with single, unique products that sometimes team with each other and with major players to obtain access to the airframe manufacturer and the airlines in exchange for technology.

(243) Honeywell is also a leading supplier of non-avionics products. Its main competitor on the non-avionics markets is UTC, through its Hamilton Sundstrand subsidiary. Others such as BF Goodrich, SNECMA (with its affiliates Messier-Dowty and Messier-Bugatti) and Liebherr have a less extended product range.

2) *Avionics*

a) Introduction

(244) Avionics account for around 5 % of the purchase cost of an aircraft ([90]). The market shares ([91]) on the individual product groups previously defined as separate markets are as follows.

b) BFE products ([92])

(245) Weather Radar displays rainfall, turbulence and, in certain models, wind shear. Honeywell's only competitor is Rockwell Collins (except for Thales' limited presence in the regional/corporate segment). The total volume of this market (Forward fit only) is EUR [...]* per year. The breakdown is set out in Table 11.

Table 11

Weather radar	Large commercial	Regional/ Corporate
Honeywell	[40 %-50 %]*	[50 %-60 %]*
Rockwell Collins	[50 %-60 %]*	[30 %-40 %]*
Thales	—	[10 %-20 %]*

(246) Com/Nav — VHF/VOR (Comunication/Navigation) transmits and receives pilot voice and other communications to/from ground or airborne operation centers. Honeywell's only competitors are Rockwell Collins and Thales. The total volume of this market (Forward fit only) is EUR [...]* per year. The breakdown is set out in Table 12.

Table 12

Comm/Nav	Large commercial	Regional/ Corporate
Honeywell	[30 %-40 %]*	[40 %-50 %]*
Rockwell Collins	[50 %-60 %]*	[50 %-60 %]*
Thales	[10 %-20 %]*	[10 %-20 %]*

(247) SatCom (Satellite Communications) sends and receives data and voice telephony to the ground via satellite. Honeywell competes in this market with Rockwell Collins. Thales, who recently acquired RACAL, could potentially enter the large commercial aircraft market for SatCom, since RACAL is Honeywell's partner for the production of SatCom. However, [description of Honeywell's strategic teaming agreement with RACAL, considered by Honeywell as containing confidential information]* ([93]). Total volume of this market (Forward fit only) is EUR [...]* per year. The breakdown is set out in Table 13.

([89]) Each avionics product, however, constitutes a market in itself.

([90]) These figures do not reflect the net present value of future cash flows and thus the net cost to airlines. It is estimated that avionics represent 20 to 25 % of the total operating cost of an aircraft.

([91]) The market data in this section are generally based on the parties' best estimates by sales value (year 2000) and corrected by the information supplied by third parties. An evaluation on the basis of orders placed, is considered by the market as less accurate given the importance of rebates, incentives and the fact that orders are sometimes reduced at a later stage of the procurement process.

([92]) The distinction between BFE and SFE is only relevant for large commercial aircraft. With few exceptions, all avionics and non-avionics products for regional/business aircraft are sold on an SFE basis.

([93]) [Description of Honeywell's strategic teaming agreement with RACAL, considered by Honeywell as containing confidential information]*.

Table 13

SatComm	Large commercial	Regional/ Corporate
Honeywell	[50 %-60 %]*	[60 %-70 %]*
Rockwell Collins	[40 %-50 %]*	[20 %-30 %]*
Thales	—	[0 %-10 %]*
Others	—	[0 %-10 %]*

(248) MMR (Multi-mode receiver) provides precision approach guidance to airports that have traditional ground-based instrument landing systems (ILS) and satellite-based non-precision approach guidance using a built-in global positioning system (GPS). Honeywell's competitors are Rockwell Collins and Thales. Rockwell Collins is however dependent on Smiths for supplying the FMS for integration into Rockwell's MMR product. Although Honeywell is also an important supplier of GPS stand-alone products, GPS stand alone is becoming less important in the LCA market as this functionality is integrated in the MMR. Total volume of this market (Forward fit only) is EUR [...]* per year. The breakdown is set out in Tables 14 and 15.

Table 14

MMR/GPS	Large commercial	Regional/ Corporate
Honeywell	[20 %-30 %]*	[30 %-40 %]*
Rockwell Collins	[50 %-60 %]*	[40 %-50 %]*
Thales	[30 %-40 %]*	—
Others	—	[30 %-40 %]*

Table 15

GPS Stand-alone	Large commercial	Regional/ Corporate
Honeywell	[40 %-50 %]*	[30 %-40 %]*
Litton	[50 %-60 %]*	—
Universal Avionics	—	[30 %-40 %]*
Rockwell Collins	—	[20 %-30 %]*
Thales	—	—
Trimble Avionics	—	[0 %-10 %]*

(249) Recorders record flight data information and cockpit voice. Total volume of this market (Forward fit only) is EUR [...]* per year. Honeywell is the leading supplier before L3 Communications. The breakdown is set out in Table 16.

Table 16

Recorders	Large commercial	Regional/ Corporate
Honeywell	[40 %-50 %]*	[20 %-30 %]*
Rockwell Collins	—	—
Thales	—	—
L3	[30 %-40 %]*	[40 %-50 %]*
Others	[10 %-20 %]*	[40 %-50 %]*

(250) CMU/ACARS (communication management unit/aircraft communication addressing and reporting system) manages the two-way text and data communication link between an aircraft and ground control centers. Honeywell is the most important supplier for Boeing aircraft, followed by Rockwell Collins and Teledyne. Honeywell is also the only effective supplier of an integrated CMU, as its AIMS ([94]) system is currently the only certified and installed system (on the B777) ([95]). CMU is not available on Airbus aircraft where ATSU, supplied by Airbus aerospatiale itself, provides the same functionality as CMU on Boeing aircraft. The CMU market for regional aircraft is near non-existent. Total volume of this market (Forward fit only) is EUR [...]* per year. The breakdown is set out in Table 17.

([94]) Aircraft information and management system (AIMS).

([95]) Several European firms (including Thales and BAe) initiated, approximately three years ago, a project to design an integrated cockpit system for the A380 that includes CMU functions, but this project has not led to any material products as yet.

Table 17

CMU/ACARS	Large commercial	Regional/ Corporate
Honeywell	[50 %-60 %]*	[60 %-70 %]*
Rockwell Collins	[40 %-50 %]*	[40 %-50 %]*
Thales	—	—
Teledyne	[0 %-10 %]*	—

Table 18

ACAS/TCAS	Large commercial	Regional/ Corporate
Honeywell	[40 %-50 %]*	[50 %-60 %]*
Rockwell Collins	[20 %-30 %]*	[10 %-20 %]*
Thales	—	—
L3	[30 %-40 %]*	[30 %-40 %]*

(251) ACAS processor (airborne collision avoidance system)/ TCAS ([96]) helps prevent collisions by identifying and displaying the location of surrounding aircraft providing audible warnings and manoeuvring instructions (advanced versions). Mode S transponders function together with ACAS processors for the identification of other planes and their bearing, as well as determining the appropriate response to a threat of collision. On this market Honeywell faces competition from Rockwell Collins and L3 (who acquired the Honeywell business that was divested as a condition of the AlliedSignal/Honeywell merger). The Parties submit that L3, being a limited range avionics product company has increased its sales in the ACAS market whilst Honeywell has lost market share. However, the growth of L3 is directly linked to the ACAS business that L3 bought from Honeywell as a condition for the approval of the AlliedSignal/Honeywell merger. As such, Honeywell needed to divest its more technologically advanced product whilst retaining the older technology based AlliedSignal product. During the 2000 to 2001 period, L3 had the possibility to rely on a number of supporting transitory measures following the ACAS acquisition from Honeywell. The market share of Rockwell Collins has significantly declined in the past years. Total volume of this market (Forward fit only) is EUR [...]* per year. The breakdown is set out in Table 18.

(252) EGPWS/GPWS/TAWS TAWS (terrain avoidance warning system) is a system that provides the flight crew with a map-like display of nearby terrain and sounds an audible alert about a minute's flight time or more away from the terrain (such as the ground, a mountain, and so forth). Honeywell is the near dominant supplier of certified TAWS, with its EGPWS (enhanced ground proximity warning system). The predecessor of EGPWS is the GPWS (ground proximity warning system). Honeywell has near to 100 % of the market. Total volume of this market (Forward fit only) is EUR [...]* million per year.

(253) According to the Parties, there is no market where Honeywell is dominant as even in EGPWS/GPWS, the market is more competitive than it was at the time of the AlliedSignal/Honeywell merger. Indeed, the Parties claim that Thales has developed and introduced a TAWS device, that other companies, such as BF Goodrich and UPS Technologies, have announced systems and that Universal Avionics has already won a bid (teaming with Rockwell) for the airline Airborne on their B767 fleet.

(254) It is true that Thales has developed a competing product (called 'GCAS') for EGPWS, but up to now it has not been retained by any airline. Although announced more than a year ago, no sales have yet been made. According to Thales, the lack of reputation with an established TAWS product has proved to be a major barrier to entry.

(255) BF Goodrich has also announced its market entry, but with a TAWS product that is only suited to installation on a small number of corporate aircraft.

([96]) Traffic alert and collision avoidance system (TCAS) is the US term for ACAS.

(256) Universal avionics developed and certified a TAWS system and indeed won one sale in January 2001 for Airborne's B767 fleet. The Parties have submitted that Universal was able to win the bid by teaming up with Rockwell Collins. The latter has however rejected this statement by saying that there is no agreement of any kind between the two companies.

(257) Honeywell's leading position with regard to TAWS is however not limited to stand-alone products. Honeywell also a has considerable market share for products that must interoperate with TAWS (GPS, FMC, Flight Controls and displays) and benefits from the fact that it is supplying a number of products which need to interoperate with the EGPWS (such as the ACAS). As a result of the AlliedSignal/Honeywell undertaking, Honeywell has committed to maintain open standards and to sell EGPWS modules and future TAWS products to third parties on non-discriminatory terms

(258) Honeywell is thus in a position to offer broader commercial packages to its customers than any other supplier. By contrast, a company like Universal Avionics, which only has one other product in large commercial aircraft (retrofit FMS), will find its access to the market restrained and its possibility to offer the same (financial and other) incentives based on package deals will be limited. IRS/AHRS (inertial reference system/attitude-heading reference system) are airframe motion sensors and navigation sensors which are used by other navigation systems. Honeywell has a market share of 80 to 90 %(due to exclusivity on Boeing). Litton has the remaining 10 to 20 %. For regional/corporate aircraft, Honeywell has around 80 to 90 %, with the remainder for Litton. For AHRS, which can function as a less costly alternative to IRS in the regional market, both Thales and Collins have a strong position. Total volume of the IRS/AHRS market (Forward fit only) is EUR [...]* per year.

(259) The Parties have claimed that Honeywell's strong position on IRS is not relevant as most airlines switched over the last 10 years from stand-alone IRS/AHRS to hybrid ADIRS. In any case, Honeywell has a leading position in both categories of products.

(260) In addition, the Parties have submitted that in the regional/corporate jet market, Litton's sales of IRS grew at Honeywell's expense over the past five years (Litton [200 %+]*compared to [50 to 60 %]* for Honeywell). Litton has strongly rejected this assumption, indicating that it sold [100-150]* IRS units (for [30-40 aircraft]*) in 1995 and that its sales remained flat before a downturn to [100-120]* units in 2000. Litton's presence on this market is thus limited.

c) SFE products

(261) FMS (flight management system) helps flight crews compute the most efficient flight profile and automatically navigates the aircraft. FMS is a growing market (about 8,5 % growth per year) and for large commercial aircraft, Smiths Industries has acquired a significant position. Honeywell, however, remains the leading supplier. Thales is entering the market (SFE option on Airbus as soon as the product will be certified). Total volume of this market (Forward fit only) is EUR [...]* per year. The breakdown is set out in Table 19.

Table 19

FMS	Large commercial	Regional/ Corporate
Honeywell	[60 %-70 %]*	[30 %-40 %]*
Smiths	[30 %-40 %]*	—
Universal Avionics	—	[40 %-50 %]*
Rockwell Collins	—	[10 %-20 %]*
Thales	—	Entering
Trimble Avionics	—	[0 %-10 %]*

(262) In the Regional/Corporate segment, small players such as Trimble Navigation, Chelton Avionics and Universal (with a retrofit product on corporate jets) have obtained significant positions.

(263) Flight Controls are autopilot systems. Honeywell faces competition from Rockwell Collins and Thales. Honeywell's position will in future decrease as the next generation of flight controls relies on fly-by-wire technology where Collins and Thales have a strong position. Total volume of this market (Forward fit only) is EUR [...]* per year. The breakdown is set out in Table 20.

Table 20

Flight controls	Large commercial	Regional/ Corporate
Honeywell	[30 %-40 %]*	[30 %-40 %]*
Rockwell Collins	[20 %-30 %]*	[40 %-50 %]*
Thales	[40 %-50 %]*	[0 %-10 %]*
Others	—	[20 %-30 %]*

(264) Air data computers guage an aircraft's 'true' airspeed, altitude and vertical speed. Honeywell has a very strong position which is uncontested by the major avionics suppliers. However, air data computers are less frequently sold on a stand alone basis (increasingly as part of the combined air data inertial reference unit). Smiths is also present in this market for retrofit sales. The breakdown is set out in Table 21.

Table 21

Air data	Large commercial	Regional/ Corporate
Honeywell	[90 %-100 %]*	[20 %-30 %]*
Rockwell Collins	—	[20 %-30 %]*
Thales	—	—
Others	[0 %-10 %]*	[50 %-60 %]*

(265) Displays are electronic instrument systems that display information from avionics subsystems. Thales is the clear leader in displays (in sole source position for Airbus) whilst Honeywell is the leading supplier for the smaller regional market. Total volume of this market (Forward fit only) is EUR [...]* per year. The breakdown is set out in Table 22.

Table 22

Displays	Large commercial	Regional
Honeywell	[30 %-40 %]*	[50 %-60 %]*
Rockwell Collins	[20 %-30 %]*	[30 %-40 %]*
Thales	[40 %-50 %]*	[0 %-10 %]*
Others	—	[0 %-10 %]*

(266) ADIRS/ADIRU (air data inertial reference system/unit) is a device that combines the functions of the air data computer and the inertial reference system. Honeywell is the most important supplier with around [80 to 90 %]* of the market, with Litton accounting for the remainder.

(267) Flight information systems are only relevant for regional/corporate market. Honeywell is the leading supplier with [80 %-90 %]*. Universal weather accounts for the remainder.

3) *Non-avionics*

(268) Non-avionics products account for 3-5 % of the purchase cost of the aircraft ([97]). For a number of non-avionics products, Honeywell has a particularly strong position.

(269) APUs (auxiliary power units) are small gas turbine engines located in a plane's tail section which are used to provide electrical power and airflow to the aircraft cabin and to supply air to pneumatic starters while the plane is on the ground (they do not provide propulsion). Honeywell is the leading supplier with [70 to 80 %]* of the market. UTC (Hamilton Sundstrand and P&W Canada) accounts for the remainder. UTC's range of products currently lacks an APU for the 200 to 400 passengers segment. The Parties have submitted that RR Deutschland, Microturbo (SNECMA) and TRW Lucas also manufacture and sell APU's. However, Microturbo, who describes itself as 'predominantly involved in repair and overhaul of gas turbines', indicates that it has no such activities. RR Deutschland and TRW Lucas have never developed APU's for LCA and have only a *de minimis* experience for other aircraft. Concerning APU's for LCA, the barriers to entry for the above mentioned companies would be as important as for 'de novo' entry.

([97]) These figures do not reflect the net present value of future cash flows and thus the net cost to airlines. It is estimated that non-avionics represent 20 to 25 % of the total operating cost of an aircraft.

(270) ECS (environment control systems) include many types of products which perform different functions in the aircraft, namely: (i) air-conditioning systems to provide passengers with heated/cooled conditioned air; (ii) bleed air systems to control the distribution of the air taken from the engine and provide it to the air-conditioning, anti-ice and engine starting systems; (iii) cabin pressure control systems to maintain comfortable pressure in the cabin as the aircraft changes altitude; and (iv) anti-ice systems to use hot air taken from the engine and deliver it to the wings and engine inlet surfaces to prevent ice from forming. Honeywell has around [30 to 40 %]* of the market, Liebherr has [20 to 30 %]*, UTC [30 to 40 %]*, Parker [0 to 10 %]*. Others such as Smiths account for the remainder.

(271) UTC is the market leader for electrical power generators with around [40 to 50 %.]* Honeywell has [10 to 15 %]* of the market, Smiths and TRW/Lucas have around [20 to 30 %]* each. For the APU, ECS and electric power markets, systems integration will increasingly become a major competitive discriminator for future opportunities.

(272) On wheels and brakes, Honeywell has around [30 to 40 %]*, BF Goodrich around [30 to 40 %]*, ABS [10 to 20 %]*, and SNECMA [0 to 10 %]*. Recently, Honeywell has concentrated its activities on the LCA market and is no longer present on the Regional/Corporate Jet market [description of Honeywell's Strategic Alliance agreement with a third party for the provision of integrated landing gear systems, considered by Honeywell as containing confidential information]*.

(273) On aircraft lighting, Honeywell is the leading supplier with [40 to 50 %]*. Competitors in this market are Hella [(10 to 20 %)]*, Diehl [(0 to 10 %)]* and Teleflex [(0 to 10 %)]*. A number of niche players (Bruce, Luminator) and BF Goodrich account for the remainder.

(274) For weight and balance, only used on LCA, Honeywell has 100 % of the market.

(275) Honeywell currently has no presence in the market for in flight entertainment (IFE) where Collins is the market leader [(50 to 60 %)]* before Thales [(20 to 30 %)]* and Matsushita [(30 to 40 %)]*. [comments on Honeywell's strategy for the provision of IFE, considered by Honeywell as containing confidential information]*.

2.B.2. **Honeywell's unique product range**

(276) Honeywell has the possibility, unlike its competitors, to offer a complete range of avionics equipment. Third parties have indeed confirmed Honeywell's product range position by indicating that they are not aware of any significant avionics or non-avionics system (apart from engines for large commercial aircraft) necessary to the operation of aircraft that Honeywell would not be able to provide.

(277) In their reply to the statement of objections (SO), the Parties have submitted that no company can supply all systems that go on an aircraft, and that competing avionics providers produce some high value products (such as IFE) that Honeywell does not. However, the fact that Collins and Thales are the leading suppliers of IFE does not affect Honeywell's leading position. First of all, IFE is not a system that is essential for the functioning of an aircraft as is the case for the avionics and non-avionics such as APU's, landing gear, ECS and others. Secondly, for IFE, the preference of the airlines is important, in contrast with those other systems where the airlines are relatively indifferent as to the selection of the systems. Thirdly, [Honeywell's strategy for the IFE market, considered by Honeywell as containing confidential information]*.

(278) The Parties have also argued that Honeywell largest avionics and non-avionics customers are generally airframe manufacturers, not airlines. This is correct since [the majority]* of Honeywell's sales are for SFE products and thus to airframe manufacturers. However, as far as avionics are concerned, Honeywell is the only supplier with a balanced offer of both BFE and SFE products. Honeywell's important access to airframe manufacturers is not only important for SFE products (which, once selected, are usually sole source for the lifetime of the aircraft platforms and sometimes its derivatives) but is also a major advantage for BFE products. Since BFE products have to be certified by the airframe manufacturer and since the first product certified usually captures between 50 and 70 % of the market, Honeywell is in a unique position to secure sales for both SFE and BFE products.

(279) According to the Parties, Honeywell's full scale of products is not unique since teaming among competitors fills the gaps in their range of products. However, the market investigation has shown that teaming is an unsatisfactory business arrangement that does not allow competitors to replicate Honeywell's range of products. In addition, the Parties have failed to define and correctly apply the concept of teaming as most of the so-called teaming examples that the Parties have put forward relate to simple vendor/purchaser relationships that are clearly insufficient to act as an alternative to Honeywell's unique range and integration capacity.

(280) Honeywell is clearly the only equipment manufacturer that holds all the avionics subsystems in each segment, without facing significant gaps. Rockwell Collins, its major challenger, lacks some capabilities, in particular for inertial reference systems (which it has to buy from Litton), EGPWS and air data sensors. Thales, the third player, is strongly focused on Airbus and is weak in the radio and surveillance area.

(281) In the large commercial aircraft market, having a full range has allowed Honeywell to take a lead in proposing advanced solutions to customers. For instance, Honeywell was in a position to propose the AIMS cabinet for the B777 since it integrated its in-house developed strengths in FMS, displays and maintenance functions, whilst Rockwell Collins was not in a position to match the proposal since it has no market presence in large commercial aircraft flight management.

(282) Covering all avionics areas is a major advantage when taking on integration projects in the regional aircraft/corporate jets segment. As the aircraft's design complexity increases and the airframe manufacturers' design capacity decreases, all customers (but especially the regional and corporate airframe manufacturers) have to work with system subcontractors. In this context the supplier who can provide a larger range of products has a competitive advantage.

2.B.3. **Honeywell's strength in services**

1) *Maintenance, repair and overhaul for avionics and non-avionics*

(283) The after-markets for aviation represent an annual turnover of USD [...]* and grow at a 5 to 10 % annual rate. The after-markets can be split into different segments: conversions/modifications, line maintenance (LRU: line replaceable unit), heavy maintenance, engine maintenance and equipment maintenance. Line maintenance accounts for 20 % of the total MRO expenditure, engines for 26 %, the airframe for 17 %, modification of the systems for 15 % and components or equipment maintenance for 23 %.

(284) Avionics and non-avionics competitors are generally only active in providing maintenance for their own products. On the general after-market segment, the major players are airlines (65 %), followed by the OEM's (30 %) and independents ([98]) (5 %).

(285) Due to the speed of technological development, avionics are not usually repaired but rather replaced or upgraded in the aftermarket. Upgrades are a constant source of revenue and the supplier with the largest installed base is likely to win the eventual upgrade contract.

(286) Honeywell describes the importance of the aftermarket as follows: [quote from a Honeywell internal document, considered by Honeywell as containing confidential information]* ([99]). For Honeywell, the OEM revenue share amounts to 30 to 40 % of total revenues with margins of around [...]*. The aftermarket share accounts for 40 to 50 % of total revenues with margins of around [...]* ([100]).

(287) Honeywell is an important player in the aftermarket, where it has USD [...]* worth of MCPH (maintenance-cost-per-hour) programmes, covering [30 to 40 %]* of avionics, [70 to 80 %]* of turbofans, [40 to 50 %]* of APUs and [20 to 30 %]* of wheels and brakes. Honeywell's total aftermarket amounts to USD [...]* of which [50 to 60 %]* is represented by the sale of parts to third parties.

2) *Nose-to-tail services*

(288) Honeywell is the only OEM supplier that can provide nose-to-tail integrated solutions (avionics, non-avionics and in some cases also engines) apart from a number of independent maintenance companies that need to rely on sub-contractors for most of the subsystems work.

2.B.4. **Honeywell's strength in products integration**

(289) Integration refers to the design of a group of products that naturally interface with each other into an integrated system. Honeywell is in a strong position to integrate across the entire aircraft. Firstly, Honeywell has an integration know-how that matches or surpasses that of the airframe manufacturers. Secondly, Honeywell has a complete range of products. Thirdly, airframe manufacturers are increasingly relying on the integration capabilities of suppliers.

([98]) The major independent players on the market are Timco, Haeco, Bedek Aviation, FLS Aerospace and to a certain extent also companies as Sogerma and BF Goodrich Services.

([99]) [See above]*.

([100]) [As indicated in Honeywell's confidential internal document]*.

(290) In their reply to the SO, the Parties have submitted that airframe manufacturers do not overwhelmingly prefer integrated systems, and that on a number of occasions, airframe manufacturers have rejected integration to safeguard individual selection of systems. However, the market investigation has shown that for the airframe manufacturers, integration is essential insofar as this leads to material benefits such as reduced weight, increased reliability, lower maintenance costs and a reduced number of suppliers. Because of competition between airframe manufacturers, it is clear that such cost reductions or other competitive discriminators cannot be ignored. In any case, even if on certain occasions airframe manufacturers have halted further integration, the fact remains that Honeywell has manifested the incentive to maximise the selection of its systems by integrating them and that, post merger, the value of equipment that the merged entity will be able to offer and integrate will exceed 50 % of the lifetime value generated by the aircraft.

(291) The Parties have also argued that the main engine rarely interfaces with avionics and non-avionics systems and that as such Honeywell's integration capacity is irrelevant since it will not be affected by the transaction. The Commission agrees that explicit integration of the engine and systems has not occurred yet, although such integration is likely to take place in the near future (see the More Electric Aircraft Engine project) and spin-off developments of this project could materialise in future aircraft platforms. In general however, the fact remains that post merger, Honeywell, as a supplier of avionic, non-avionics, engine controls and utilities will have direct access to GE's engine development and that this will complement Honeywell's position as a leading integrator of avionics and non-avionics.

(292) Basically, systems integration should either produce fundamentally lower aircraft costs and/or provide real aircraft differentiation that airlines will pay a premium for. There are three integration levels: a first level is the basic systems integration whereby the supplier integrates a number of parts (for instance the integrated [integration project, considered by Honeywell as containing confidential information]* or IHAS ([101])). On a second level, systems (such as avionics and utility controls) become integrated. Examples of this are [integration project, considered by Honeywell as containing confidential information]* ([102]), Honeywell's Primus Epic or Rockwell's Proline ([103]). On a third level, systems become fully integrated and only interact with each other. This is the level where the supplier becomes the solutions partner. This level of integration has not materialised for LCA as yet, although Honeywell has offered this solution to Raytheon and Bombardier (such as the nose to tail EPIC development).

2.B.5. **Honeywell's strength in packaged deals**

(293) In addition to pursuing an integration strategy, Honeywell is well positioned to pursue a strategy of packaging its products in different forms including bundling. Bundling is a simple business arrangement whereby a number of products are combined in a package and sold for a single price.

(294) Bundling takes place on three levels. The first level is that of the aircraft platform when the selection of SFE equipment takes place. As this equipment will be on each aircraft during its operational life, this competition is very important, especially for regional aircraft, where all equipment is SFE and single sourced. The second level is that of the airlines or leasing companies who select the BFE equipment. The third level is that of modifications, upgrades and retrofits following, for instance, the need to equip an aircraft with a new piece of mandatory avionics.

(295) Bundling of avionics and non-avionics products to the airlines takes place on the second level. Such bundling is not limited to the purchase of the products, but also to spare parts and maintenance costs over the lifetime of the aircraft. In addition, for Airbus aircraft, the negotiations between the avionics supplier and the

([101]) The surveillance system IHAS (integrated hazard awareness or avoidance system) combines a number of components. Through IHAS, products such as TCAS and weather radar equipment, for which there is competition, can be tied to EGPWS for which Honeywell has an uncontested position. In addition, any competitor that would want to offer IHAS will be dependent on Honeywell as the latter has all three products that are part of the IHAS-system. Rockwell Collins is the only company that has two out of three products in-house; Thales is still lacking all three. Honeywell is also the leading system integrator capable of further developing IHAS [potential future application, considered by Honeywell as containing confidential information]*.

([102]) [Description of the concept, considered by Honeywell as containing confidential information]*.

([103]) Honeywell has a strong position [(40 to 50 %)]* on integrated avionics suites. Primus Epic, which includes all major functions of an avionics suite and replaces several stand-alone systems, is the centrepiece of this controls integration expertise and can be found on the Raytheon Hawker Horizon, the Embraer ERJ-170 and the Fairchild Dornier 728JET. A Full Epic development nose-to-tail bid (the first in the market) was presented to Raytheon for the PD 375/PD 383 on 2 November 2000. For this aircraft platform, Honeywell won both the Engines and the full EPIC avionics suite development bid. Collins is the other supplier [(40 to 50 %)]* with the Proline 4 series suite mainly for Bombardier.

airlines cover not only BFE equipment, but also SFE-option equipment since airlines receive extra incentives (discounts over the complete package, extended warranty, discounts on the supply of future spare parts, merchandise credit, offering of products for free) if a package is taken (purchased in the case of BFE and chosen in the case of SFE-option). Additional discounts or concessions take the form of merchandise credits, free test equipment, free training, free of charge replacement units, extended warranties or discounts on spare units. A typical approach is to provide small incentives for individual products and build a 'the more you buy, the better the incentive' pyramid. Another approach is to propose that the pricing of products purchased at one point in time is affected by products purchased at a later point in time (such as fidelity rebates).

(296) In their reply to the SO, the Parties have argued that bundling practices have not taken place in the industry and that, if they have, it could only have been at the request of the customers. The Commission's market investigation has, however shown that this industry is prone to bundling both from the demand and the supply sides. There are indeed numerous instances that were confirmed at the Oral Hearing showing that bundling happens on a regular basis. The Parties did not deny such instances but re-qualified them as 'multi-products bids' and further underlined that such practices account for around [20 to 30 %]* of Honeywell's turnover.

(297) The Parties have also argued that bids including avionics and non-avionics products continue to be rare and that products are selected on technical capability. The market investigation however has shown that, although the implementation of the recent Allied Signal/Honeywell merger has taken time to have its effect on the market, the number of offers in which Honeywell has bundled avionics and non-avionics has increased over the past six months.

2.C. ***Competitors***

(298) Rockwell Collins, Thales and Hamilton Sunstrand (UTC) are the three major competitors to Honeywell. These players account for more than 85 % of the avionics and non-avionics markets, and this concentrated market structure has been consistent over time.

Rockwell Collins

b) Introduction

(299) The top-3 avionics suppliers account for around 95 % of the market ([104]). Together with Honeywell and Thales, Rockwell Collins is one of these three players.

(300) Collins is part of Rockwell International Corporation. Apart from avionics, Collins' parent company is also involved in industrial automation equipment. Other than for the large commercial aircraft and regional/corporate markets, Collins designs and manufactures a variety of electronic products, including avionics, for military applications.

(301) Rockwell International Corporation has publicly announced its intention, for strategic and financial reasons, to spin-off the ownership of Collins to its shareholders, as they have done in the past for many other Rockwell businesses. As a result of this operation, Collins will be an independent, publicly held company separately quoted on the stock exchange.

c) Limited financial strength

(302) Rockwell's plan to spin off its avionics manufacturing division will have a significant impact on Collins's financial situation and [description of strategy, considered by Collins as containing confidential information]*.

(303) While Collins's parent company with a market capitalisation of around USD 8 billion (as of April 2001) is already substantially smaller than GE or Honeywell, once spun off (in all likelihood around mid-2001), the stand-alone Collins company will only represent a fragment of its main direct competitor.

([104]) Litton, Smiths, Teledyne, L3 Communications are niche players with technically advanced products who sometimes generate the majority of their revenues in other markets (such as naval construction for Litton). These players usually sell their products to the three majors who have established positions with the airframe manufacturers and airlines as well as the worldwide service network to support these positions. Mostly, products such as Litton's IRS or Smith's FMS are integrated in solutions by Thales or Collins. For a number of products, players such as L3 Communications, Teledyne or Universal have established positions in less technology driven products such as recorders, printers, instruments and displays.

(304) Consequently, while Collins could in the past benefit from the larger financial surface of its parent company, its exit from the Rockwell group of companies will deprive it of the stronger financial support it enjoyed as a subsidiary of Rockwell, contrary to Honeywell which will enjoy the influence of GE Capital's financial strength. [Description of the impact on Collins, considered by Collins as containing confidential information]*.

d) Limited product range

(305) Although Collins is Honeywell's main challenger in the regional and business segments, Collins is not in a position to replicate Honeywell's product offering since it lacks a number of key products such as the inertial reference system (IRS), EGPWS and air data sensors.

(306) Furthermore, unlike Honeywell, Collins does not have any products for which it qualifies as unique supplier. Obviously, contrary to Honeywell and in addition to its reduced avionics product range, Collins does not manufacture non-avionics equipment or aircraft engines.

e) No vertical integration

(307) Similarly to GEAE's engine competitors but in contrast to Honeywell's post-merger situation, Collins does not enjoy the opportunity to leverage the sales of its avionics products with an integrated leasing arm such as GECAS. Indeed, Collins cannot influence airlines over their choice of equipment, nor has it the ability to offer airframe manufacturers the possibility of significant GECAS orders in order to obtain exclusivity or select its SFE equipment and components.

f) Immediate exposure

(308) The Parties have submitted that, despite Honeywell's position, competitors keep growing at the expense of Honeywell and that over the past five years Collins, in particular, has outperformed Honeywell.

(309) The analysis of the respective positions and products of Collins and Honeywell shows that this contention is not only inaccurate but, if there is any substance in it at all, that is likely to disappear if the proposed transaction goes ahead.

(310) As far as large commercial aircraft platforms are concerned, Honeywell provides the majority content on several of the new and derivative platforms introduced during the past five years. The platforms certified during that period include: Boeing's B717-200, B737NG, B757-300, B767-400ER, B767-300F/ER, B777-200ER, B777-300, and Airbus's A300BY-600ST-Beluga, A319-100, A321-200, A330-200 and A318. While Honeywell reproduces its average leading market position on the other Boeing platforms, it won the exclusive avionics position on the [type of large commercial aircraft, considered by Honeywell as containing confidential information]* and controls a significant majority of content value on both the [type of large commercial aircraft, considered by Honeywell as containing confidential information]* and the [type of large commercial aircraft, considered by Honeywell as containing confidential information]*. Similarly, Collins only takes a minor position on the Airbus aircraft where together with Thales, Honeywell captures the majority of content value. Furthermore, those aircraft that were certified during the past five years and on which Honeywell is the exclusive or majority avionics content provider are also among the best-selling platforms.

(311) Similarly, while Honeywell won competitions to supply avionics for eight out of the 12 regional aircraft platforms introduced for delivery over the past five years, Collins managed to capture the avionics supply for only two of these. More particularly, Collins's wins are limited to one manufacturer, [airframe manufacturer, considered by Honeywell as containing confidential information]*, while Honeywell's eight platform wins span three aircraft manufacturers (three at [airframe manufacturer, considered by Honeywell as containing confidential information]*, four at [airframe manufacturer, considered by Honeywell as containing confidential information]* and one with [airframe manufacturer, considered by Honeywell as containing confidential information]*).

(312) Furthermore, the bulk of Collins' large commercial aircraft business consists of the sale of BFE avionics, for which it currently competes head-to-head against Honeywell. As such, Collins will be very much dependent on the willingness of airlines not to behave in an economically rational way (by purchasing the merged entity's bundled product offers) and to keep selecting Collins' equipment.

g) Conclusion

(313) As a result of those different factors, Collins is undoubtedly one of Honeywell's competitors that will be adversely affected by the proposed merger. [Statement by Collins at the oral hearing, considered by Collins as containing confidential information]*.

Thales

h) Introduction

(314) Thales (formerly known as Thomson-CSF) is a French company active in the field of professional electronics and engineering for related commercial and defence markets. Thales Avionics (formerly known as Sextant Avionique) is Thales's subsidiary active in the supply of civil and military avionics. In 1999, [the majority]* of all sales were generated by civil avionics, with the remainder being defence related (essentially military aircraft, missiles and helicopters).

i) Limited product range

(315) The majority of Thales's activities are on SFE (option) products. Thales only recently entered the BFE market, where its market share is significantly lower than that of its competitors. Thales has a limited range of products on offer and is lacking key products such as ADIRS, weather radar and EGPWS. Like Collins but in contrast to the merged entity, Thales does not have the ability to bundle avionics products with other aircraft equipment such as engines, APU, ECS, electrical power, etc.

(316) Thales Avionics is the third player in the avionics markets. Overall, Thales has a modest range of products and lacks a number of key products in the radio and surveillance area in order to be in a position to challenge Honeywell's overall leading position on the avionics markets.

(317) Moreover, Thales is particularly dependent on a number of products (such as FMS, weather radar, IRS, TCAS, TAWS, communication/navigation) that it has to purchase from competitors (including Honeywell) in order to be able to provide integrated systems and try to compete with its competitors' much wider breadth of products. For instance, Thales needs to rely on some avionics equipment from Honeywell to be able to provide a complete avionics suite for the Bombardier DASH 8-400, for which it was selected as the avionics integrator.

j) No vertical integration

(318) Like Collins, but in contrast to Honeywell, if the latter is integrated into GE, Thales does not enjoy leverage opportunities for its avionics products with the activities and services of a leasing company such as GECAS. In addition to its limited financial capacity ([105]), Thales will therefore not be in a position to replicate the merged entity's comprehensive offerings and market its avionics products on the same basis as Honeywell as a part of GE.

k) Conclusion

(319) While it is undeniable that Thales has been successful with some of its products on some of the platforms and more particularly on the Airbus families, Thales remains highly dependent on a limited number of relatively strong positions on a few platforms. This concentrated position combined with its lack of ability to reproduce the financial strength of GE Capital, the influence of GECAS and the bundled offers of Honeywell in any shape or form significantly reduce Thales's capacity to compete on the merits.

Hamilton sundstrand

l) Introduction

(320) The market for non-avionics products is more fragmented, leaving Hamilton Sundstrand as the most important competitor to Honeywell with a range of products. Hamilton Sundstrand is, like P&W, one of the divisions of the UTC Corporation. Hamilton Sundstrand was only recently acquired by UTC (June 1999) and, with around USD 2,5 billion, accounts for less than 15 % of UTC's annual consolidated sales.

m) Limited product range

(321) While Hamilton Sundstrand is the only competitor to have a comparable non-avionics product range to that of Honeywell ([106]), its position in the market is weakened by its complete absence from the avionics markets.

(322) Moreover, while Hamilton Sundstrand can offer a certain number of the non-avionics range of products, apart from electrical power generators, it does not enjoy a leading position on the markets where it is present. Honeywell or others are always ahead of Hamilton Sundstrand. Furthermore, there are market segments for which Hamilton Sundstrand has no product on offer. For instance, Hamilton Sundstrand does not manufacture APUs for aircraft that can seat from 200 to 400 passengers.

([105]) By way of comparison, the market capitalisation of Thales and all its subsidiaries, including Thales Avionics, is around USD 8 billion, less than that of GE and Honeywell.

([106]) As already described above, Hamilton Sundstrand's main aerospace products include APUs, ECS, electrical power, engine components, hydraulic power and a minor presence in flight controls.

n) Limited financial strength

(323) Like its sister company P&W, Hamilton Sundstrand does not enjoy the financial capabilities that will be extended from GE, and in particular GE Capital, to Honeywell as a result of the proposed transaction.

(324) The preceding paragraphs have abundantly illustrated how GE's extensive financial resources can tip the scale in a competition. These practices will obviously apply to Honeywell's activities once it is part of GE. GE's overall financial support will help Honeywell's business to remain ahead of its competitors whenever needed and consequently further strengthen its leading positions not only against Hamilton Sundstrand in the market for non-avionics products but also against Collins and Thales in the field of avionics.

o) No vertical integration

(325) Like Honeywell's avionics competitors and GEAE's engine competitors, Hamilton Sundstrand does not have the opportunity to leverage its non-avionics sales with a tool such as GECAS. Following the proposed transaction, Honeywell will be the only non-avionics supplier integrated with a leasing company.

(326) As a result, Hamilton Sundstrand's inability to influence the airlines when it comes to marketing the original equipment through financing incentives or service agreements such as those offered by GECAS to airlines will further prevent Hamilton Sundstrand from challenging Honeywell's offering on the merits.

(327) In addition, GECAS's policy of selecting aircraft with GE products combined with its ability and incentive to place launch or boost orders to induce airframe manufacturers to choose GE equipment or grant exclusivity to GE constitute another GE feature for which Hamilton Sundstrand, contrary to Honeywell, will not be in a position to benefit nor replicate.

p) Conclusion

(328) As a result of the combination of the above factors, it appears that Hamilton Sundstrand's non-avionics manufacturing activities are among the candidate suppliers that are most likely to suffer rapidly and intensively from the foreclosure effects of the proposed merger.

Other competitors

(329) In their reply to the statement of objections, the Parties have argued that all potential suppliers, no matter what their current market position, have an incentive to innovate and as such exert competitive pressure upon Honeywell. Avionics competitors other than the big three are niche players with strong innovation skills but limited access to customers (airframe manufacturers or airlines). Those smaller competitors have indicated that they are increasingly facing pressure from Honeywell's enhanced bundling capacity and that this will be significantly exacerbated after the GE/Honeywell merger.

2.D. ***Conclusion***

(330) In the light of the foregoing, it can be concluded that Honeywell is the leading supplier of a range of avionics and non-avionics products and that no competitor is independently able to replicate its extensive range of products.

3. ENGINE CONTROLS (ENGINE STARTERS)

3.A. ***Relevant markets***

3.A.1. **Introduction**

(331) Honeywell has important market positions in a number of engine accessories and controls that constitute essential input to jet engines. Although GE is not active in those markets, the merger creates a vertical relationship. Indeed, GE has a dominant position in the downstream market for jet engines and Honeywell is the leading supplier in the upstream market for engine controls, in particular engine starters.

3.A.2. **Relevant product market**

(332) Engine controls enable the engine to interact with the commands of the cockpit and include the following products: Air turbine Starters; FADEC (electronic engine control, fuel control, engine generator, fuel metering, alternators); thrust reverser actuation; valves (bleed valves, control valves, anti-ice valves, solenoid valves); coolers (heat exchangers, inlet and outlet ducts to heat exchangers including regulating valves); sensors (pressure, temperature, fire and vibration sensors, ignition systems); filters; and miscellaneous components (brackets, pulleys, levers, engine monitoring, old hydromech and electronic units, etc.).

(333) The market investigation has suggested that, owing to the absence of demand- and supply-side substitutability, those individual products should be considered to constitute separate markets. From the demand point of view, it is clear that each product has a distinct role in the functioning of a jet engine and cannot be substituted for another. From the supply point of view, suppliers do not produce all of these products and as a consequence they have varying market positions in one or the other product. For instance, Honeywell does not supply sensors, filters and other miscellaneous products. Engine control products display high barriers to entry. These stem from the significant technological requirements that suppliers have to meet and from the high costs for engine manufacturers to switch suppliers. As a result, a price increase in one product would be profitable, since it would not, readily and easily, induce the supplier of another product to enter the market where the price increase has occurred.

(334) The Commission's market investigation has confirmed the contention of the Parties that it would not be appropriate to identify separate markets according to the different jet aircraft engines (for large commercial aircraft, regional aircraft, and corporate aircraft). Although there is a difference in the degree of complexity across the different types of engines (for instance, engine controls for large commercial aircraft tend to be more complex than for regional or corporate aircraft), engine controls are either similar or have the same design approach across those different jet aircraft engines. Where this is not the case, they are adapted, scaled up or down, to fit into the specific engine type. As a result, suppliers are able to manufacture and supply engine control for all the jet aircraft engines.

(335) Honeywell is the leading supplier of one specific engine control product, namely engine starters.

3.A.3. **Relevant geographic market**

(336) In line with prior Commission decisions relating to the equipment for civil aircraft ([107]), the relevant geographic market for engine starters is worldwide.

3.B. ***Market shares***

(337) The most important competitors for engine controls are UTC (Hamilton Sundstrand), Parker, Woodward, Dunlop, Sumitomo, BAe systems and TRW/Lucas. Honeywell's market shares, and those of its competitors, are listed in Table 21. As detailed market share data is not generally available, the assessment is based on the Parties' year-2000 worldwide figures, which have been broadly confirmed by the market investigation. It can be seen that, as opposed to its competitors, Honeywell is present in all the various product markets and is the leading supplier in engine starters.

([107]) See Case No IV/M.697 — Lockheed Martin/Loral Corporation, Commission decision of 27 March 1996 or Case No IV/M.290 — Sextant/BGTVDO, Commission decision of 21 December 1992.

Table 23

Accessories and controls	HON	Parker	Hamilton Sundstrand	Serck	TRW/ Lucas	BAe Systems/ Wood-ward	Dunlop	Others
Engine Starters	[50 %-60 %]*	—	[40 %-50 %]* ([108])	—	—	—	—	[0 %-10 %]*
Electrical Engine Controls	[10 %-20 %]*	—	[20 %-30 %]*	—	[20 %-30 %]*	[30 %-40 %]*	—	[0 %-10 %]*
Fuel Controls	[30 %-40 %]*	—	[0 %-10 %]*	—	[10 %-20 %]*	[0 %-10 %]*	—	[20 %-30 %]*
Coolers / Heaters	[30 %-40 %]*	—	—	[10 %-20 %]*	—	—	—	[40 %-50 %]*
Thrust Reverser Actuation	[10 %-20 %]*	[0 %-10 %]*	—	—	[10 %-20 %]*	—	—	[50 %-60 %]*
Engine Valves (all types)	[20 %-30 %]*	[10 %-20 %]*	[10 %-20 %]*	—	—	—	[10 %-20 %]*	[40 %-50 %]*

(338) As far as engine starters are concerned, the two main manufacturers, namely Honeywell and Hamilton Sundstrand, account for more than 90 % of the total market. However, the market investigation has shown that Hamilton Sundstrand should not be considered a competitor of Honeywell in the engine starters market. This is because its engine starters are placed only in P&W's engines ([109]) and thus are not made available to the market. In this sense, Table 21 reflects production volume and not sales in the market. According to Hamilton Sundstrand, a small but significant, non-transitory price increase in engines starters would not induce it to sell to the free market. If Hamilton Sundstrand decides to sell to the free market, this will benefit RR, that is a competitor of P&W in the downstream market for engines. However, the expected profits in the upstream market, stemming from selling engine starters to RR, could not outweigh the profit loss that P&W might face in the downstream market for engines. This is due to the price and profit margin differential between engines starters and engines. Should Hamilton Sundstrand's captive sales of engine starters be excluded from the free market, Honeywell would be the only large independent supplier of engine starters.

(339) The Parties have submitted that market shares are not indicative of market power since competition among suppliers takes place whilst the engine is under development. The size and strength of suppliers, their ability to invest in engine programmes (characterised by high up-front investments and a very long period before cash flows turn positive), a strong technology capability and in-service support ability are key elements in the aviation business. As a detailed knowledge of the engine and airframe systems that interface with the component/subsystem are fundamental in this business, a sound track record in applying the technology in aerospace jet engine applications is a key discriminator for being selected as an engine starter supplier. Market share is therefore a measure of the experience of suppliers and, provided that sufficient resources are attributed to R & D, market share is a direct indicator of market power. It can therefore be concluded that high market shares give significant competitive advantage during the bidding process due to the need to demonstrate product liability and track record.

(340) As it will be seen in the following paragraphs, the merger will lead to vertical foreclosure effects, stemming from the elimination of Honeywell as an independent supplier of engine controls to jet engine manufacturers competing with GE.

([108]) It is to be noted that Hamilton Sunstrand considers its market share to be between 30 and 40 % and that of Honeywell to be between 60 and 70 %.

([109]) Hamilton Sundstrand is owned by United Technology Corporation (UTC) and is thus a sister company of P&W.

4. EFFECTS ON COMPETITION

4.A. *Introduction*

(341) The proposed merger will bring about anti-competitive effects as a result of horizontal overlaps and the vertical and conglomerate integration of the merging Parties activities. GE has dominant positions in the markets for large commercial aircraft engines and large regional jet aircraft engines. The transaction will strengthen GE's position on the markets for large commercial aircraft engines and for large regional jet aircraft engines and will create a dominant position on the markets for corporate jet engines. Honeywell already enjoys significant leading positions on the markets for avionics and non-avionics as well as in engine starters. Following the transaction Honeywell will become dominant in the BFE, SFE and SFE-option avionics markets.

4.B. *SFE avionics and non-avionics*

4.B.1. **Creation of a dominant position**

1) *Foreclosure through the vertical integration of Honeywell with GE*

(342) The main effect of the proposed transaction on the markets for SFE avionics and non-avionics products would be the combination of Honeywell's activities with GE's financial strength and vertical integration into financial services, aircraft purchasing and leasing, as well as into aftermarket services.

(343) SFE are products selected on an exclusive basis by the airframe manufacturer and supplied as standard equipment for the life cycle of an aircraft. Consequently, for a supplier of SFE the initial selection of its products on a platform can guarantee a long-term source of revenues. In this sense, SFE products bear a strong similarity with engines supplied on an exclusive basis (such as in the Boeing 737 or 777X). The ability of GE to obtain engine exclusivity on platforms was discussed in the previous paragraphs, where it was seen that in order to benefit from such a long-term revenue stream, GE used its considerable financial resources and vertical integration to induce the relevant airframe manufacturer to grant an engine exclusivity. As a consequence of its financial capabilities and vertical integration into aircraft purchasing, GE has managed to win all the major competitions to obtain engine exclusivity.

(344) Following the proposed merger, Honeywell will immediately benefit from GE Capital's ability to secure the exclusive selection of its SFE products on new platforms. By leveraging its financial power and vertical integration on the launch of new platforms (for example, through financing and/or through orders placed by GECAS), the merged entity will be able to promote the selection of Honeywell's SFE products, thereby denying competitors the possibility to place their products on such new platforms. That would delay the cash inception of Honeywell's competitors and deprive them of the necessary return to fund future investments and innovation. Honeywell's products will, in particular, benefit from GECAS's role as a significant purchaser of aircraft. Post-merger, GECAS will extend its GE-only policy to Honeywell products to the detriment of competitors such as Collins, Thales and Hamilton Sundstrand and ultimately of customers. Indeed, given the relative indifference of airlines towards component selection, the benefits of a non-GE offer for airframe manufacturers would become less significant than the benefits they could achieve in the form of additional aircraft purchase by GECAS.

(345) Furthermore, owing to GE's strong generation of cash flows resulting from the conglomerate's leading positions on several markets, Honeywell will, following the merger, be in a position to benefit from GE's financing surface and ability to cross-subsidise its different business segments.

(346) Accordingly, GE's strategic use of GECAS's market access and GE Capital's financial strength to favour Honeywell's products will position Honeywell as the dominant supplier on the markets for SFE avionics and non-avionics products where it already enjoys leading positions.

(347) The effect on rival avionics and non-avionics manufacturers will be to deprive them of the future revenue streams generated by the sales of the original equipment and spare parts. Future revenues are needed to fund development expenditure for future products, foster innovation and allow for a potential leapfrogging effect. By being progressively marginalised as a result of the integration of Honeywell into GE, Honeywell's competitors will be deprived of a vital source of revenue and see their ability to invest for the future and develop the next generation of aircraft systems eventually eliminated.

(348) Indeed, given the fact that Honeywell's avionics and non-avionics competitors are unable to reproduce GE's financial strength and vertical integration to any appreciable degree (see above on the assessment of large commercial aircraft), their limited size and financial strength would probably lead to a reduction of their competitive strength in those markets where the extension of GE's business practices to Honeywell's products would reduce seriously their chances to win future competitions.

2) *Foreclosure through packaged offers of GE and Honeywell products and services*

(349) As described below, this situation will be compounded by the new entity's ability to offer product packages to the airframe manufacturers. The complementary nature of the GE and Honeywell product offerings coupled with their respective existing market positions will give the merged entity the ability and the economically rational incentive to engage in bundled offers or cross-subsidisation across product sales to both categories of customers (see below on BFE).

4.C. ***BFE (and SFE-option) avionics and non-avionics***

4.C.1. **Creation of a dominant position**

1) *Foreclosure through packaged offers of GE and Honeywell products and services*

(350) In the post-merger market structure, the merged entity will be able to offer a package of products that has never been put together on the market prior to the merger and that cannot be challenged by any other competitor on its own. The effects of the proposed merger on BFE and SFE-option avionics and non-avionics products will thus be felt in terms of the merged entity's ability to sell packages of complementary products, in particular BFE and SFE-option avionics and non-avionics and engines. Sales of BFE and SFE-option products are made to airlines on a regular basis, in particular each time an airline replaces or complements its fleet of aircraft. On each of these occasions, the merged entity may promote the selection of Honeywell's BFE and SFE-option products by selling them as part of a broader package comprising engines and GE's ancillary services such as maintenance, leasing, finance, training, and so forth.

(351) The sale of complementary products through packaged deals may take several forms. It may include, for instance, mixed bundling whereby complementary products are sold together at a price which, owing to the discounts that apply across the product range, is lower than the price charged when they are sold separately. It may also take the form of pure bundling whereby the entity sells only the bundle but does not make the individual components available on a stand-alone basis. Pure bundling may also take the form of technical bundling, whereby the individual components only function effectively as part of the bundled system, and cannot be used alongside components from other suppliers, that is to say, they are made incompatible with the latter components.

(352) The practice of selling packages of products and services has been confirmed throughout the market investigation. Indeed, the Commission's investigation has shown that such practices have repeatedly occurred in this industry. Moreover, the Commission has evaluated the theoretical premises of mixed bundling as presented to it in the economic analyses submitted by the Parties and third parties. The various economic analyses have been subject to theoretical controversy, in particular as far as the economic model of mixed bundling, prepared by one of the third parties, is concerned. However, the Commission does not consider the reliance on one or the other model necessary for the conclusion that the packaged deals that the merged entity will be in a position to offer will foreclose competitors from the engines and avionics/non-avionics markets.

(353) As a result of the proposed merger, the merged entity will be able to price its packaged deals in such a way as to induce customers to buy GE engines and Honeywell BFE and SFE-option products over those of competitors, thus increasing the combined share of GE and Honeywell on both markets. This will occur as a result of the financial ability of the merged entity to cross-subsidise discounts across the products composing the packaged deal. The Commission's market investigation has indicated that both airframe manufacturers and airlines are price-sensitive customers.

(354) The incentives for the merged entity to sell bundles of products may change over the short to medium term, for instance when new generations of aircraft platforms and aircraft equipment are developed. Instead of proposing, for example, product bundles at a better price than stand-alone products, while leaving the customer the choice to buy individual products among the bundle or to only offer a bundle of products, the merged entity can also be expected to engage in technical bundling, that is, to make its products available only as an integrated system that is incompatible with competing individual components. This can potentially reduce the profitability of competitors to a greater degree than in the case of mixed bundling and thus increase the likelihood of market foreclosure. Competitors will find it more difficult to place their products on the market, since technical bundling restricts the market share available to them. Overall, technical bundling will adversely affect competitors' incentives to compete and under such circumstances, they are not likely to be a constraining factor to the independent behaviour of the merged entity. Indeed, non-integrated competitors are not in a position to duplicate technical bundling. As a result of these commercial practices, the merged entity is expected to gain additional market shares. Competitors are expected to lose market shares and see their profits shrink, in some cases, significantly. In the medium term, competitors will have to take decisions as to whether, in view of their anticipated reduced market share and profitability, they are able and willing to continue competing in the markets where the merged entity is active.

(355) The merger will, in the short term, affect suppliers of BFE and SFE-option products. As BFE products are sold and purchased on a regular basis, the merged entity's packaged offers will manifest their effects after the merger goes through. Because of their lack of ability to match the bundle offer, these component suppliers will lose market shares to the benefit of the merged entity and experience an immediate damaging profit shrinkage. As a result, the merger is likely to lead to market foreclosure on those existing aircraft platforms and subsequently to the elimination of competition in these areas.

2) *The Parties arguments in relation to packaged offers*

a) Introduction

(356) The notifying Parties contest the feasibility of product bundling or packaged deals in this case.

b) The Parties lack dominance on their respective markets

(357) The Parties argue that neither party is dominant in its respective market and that lacking dominance in at least one market, the merged entity will not have the power to impose product bundling.

(358) The Commission's market investigation has shown that GE is indeed already dominant on the markets for large commercial and large regional jet aircraft engines and that Honeywell has a leading position, in some cases a monopoly position, on its own product markets.

c) Customers keep control of prices of individual components

(359) The Parties argue that customers are not ready to accept a uniform bundling price since they prefer to assess the different prices broken down product by product. In addition, they claim that as a result of this, bundling offer has not occurred and will not occur in this industry.

(360) The Commission's market investigation has however shown that the Parties can offer, inter alia, mixed and technical bundling. The merged entity may, indeed, offer the same product at two different prices depending on whether or not the product is included in the bundle, the lower price being of course applied in cases where the bundle is purchased. The merged entity will, in that way, be in a position to economically induce customers to purchase its products and services through bundled offers rather than on a stand-alone basis. As such, customers will still be able to know the price of the individual products and make a rational decision as to whether it is economically profitable to purchase the items through a bundled offer.

d) Bundling does take place in this industry

(361) The Parties have submitted that there is no historical evidence that previous portfolio expanding mergers have caused entities to switch to bundled offers as a means of increasing complementarity. Prior to the merger, Honeywell was already in a position to offer both engines and components on corporate jets. UTC could also bundle engines to controls such as APUs, ECS and electrical power. But, still according to the Parties, there is no evidence that Honeywell or UTC have substantially reduced their engine price to promote sales of other components or substantially lowered its component prices to promote engine sales. The Commission does not agree with the statement that bundling has not taken place in the past. The following paragraphs contain some indicative examples of past instances where bundling took place. Moreover, the Commission considers that the proposed merger will create further opportunities and incentives for such practices, given the unprecedented range of products and services that will be put at the disposal of the merged entity.

(362) [example of a bid, considered by Honeywell as containing confidential information]* ([110])

([110]) [See above]*.

(363) Honeywell has also maximised equipment selection through technical tying, for instance, when Honeywell used proprietary interfaces on the AIMS cabinet (exclusive on the Boeing 777) which rendered other supplier's solutions unusable.

(364) Honeywell offered [Airline, name of which is considered by Honeywell to be confidential]* a [...]* % discount on future supply of spare parts for individual SFE equipment (including FMS and ADIRU), a [...]* % discount on the TCAS system and [...]* % discount on the SATCOM system. The offer further provided that, in case [Airline, name of which is considered by Honeywell to be confidential]* selected all of these products from Honeywell, additional discounts would be granted: [...]* % for spare SFE products, [...]* % for TCAS and [...]* % for the SATCOM system ([111]).

(365) Furthermore, in a [Airline, name of which is considered by Honeywell to be confidential]* bid (of [date considered by Honeywell to be confidential]*) ([112]) to provide CMU and voice data recorder (VDR) equipment retrofit for approximately [...]* aircraft, AlliedSignal (now Honeywell) offered to extend the warranty on all, including previously sold, equipment with [Airline, name of which is considered by Honeywell to be confidential]* to a [duration considered by Honeywell to be confidential]* if [Airline, name of which is considered by Honeywell to be confidential]* bought both the CMU and the VDR from them. This represented an increase in warranty [duration considered by Honeywell to be confidential]* depending on the equipment type. The warranty offered for the stand-alone products was limited to [duration considered by Honeywell to be confidential]* depending on the equipment.

(366) Concerning bundling as a result of range-enhancing mergers, the Commission looked at the formation of UTC (combining P&W and Hamilton Sundstrand in June 1999) and the current Honeywell. Although the reference period is short, Honeywell was first able to package engines, engine service and avionics in early 2000 ([113]) and successfully won the competition for the [aircraft platform, considered by Honeywell to be confidential]* in the fall of 2000 as described below. The Commission can therefore not rely on this argument to dismiss the likelihood of bundling.

([111]) As indicated in Honeywell internal documents.
([112]) As indicated in Honeywell internal documents.
([113]) See Case COMP/M.1601 — AlliedSignal/Honeywell, Decision of 1 December 1999.

(367) Following the AlliedSignal/Honeywell merger, competitions were held for two platforms where Honeywell could offer the majority of the systems, including engines [competition for an aircraft platform as described in Honeywell's internal documents, considered by Honeywell to contain confidential information]* ([114]).

(368) The second competition was for the [type of aircraft platform, considered by Honeywell to be confidential]*, where Honeywell's bundled bid for engines and avionics was retained. The [type of aircraft platform, considered by Honeywell to be confidential]* ([115]) is illustrative of the bundling strength that Honeywell acquired since its merger with AlliedSignal. [competition for an aircraft platform as described in Honeywell's internal documents, considered by Honeywell to contain confidential information]*.

(369) As to UTC, unlike GE and Honeywell, its subsidiary P&W appears to have neither market power nor dominance in any product. Additionally, P&W does not enjoy a financial backing comparable to that of GE Capital nor is it a sizeable buyer of aircraft nor a significant supplier of leasing and ancillary services to airlines. In any case, Honeywell itself has identified three instances where UTC was 'sacrificing systems' in order to win the engine competition [description of UTC's commercial strategy in Honeywell's internal documents, considered by Honeywell to contain confidential information]*. The most striking example was [description in Honeywell's internal documents of UTC's commercial strategy for an aircraft platform, considered by Honeywell to contain confidential information]* ([116]).

(370) Examples of cross-subsidisation were also found during the market investigation. For instance, Honeywell has already engaged in such bundling vis-à-vis a number of airlines, for instance, description of bid examples for airlines.

e) The equipment selection timeline does not allow for bundling

(371) The Parties have further argued that bundling is unlikely to occur in relation to new platforms, as the selection of equipment is made in a timeline that may last over several years. The Parties submit for instance that the time difference between the selection of the engine and that of the avionics or non-avionics product may be as long as two to four years for a large commercial aircraft platform and as long as three years for a regional jet platform. The Parties further argue that the selection process for the different products is carried out by different teams. The Parties eventually conclude that the long procurement timeline and the involvement of different counterparts may break the momentum that product bundling requires.

(372) The Commission's market investigation has not supported this argument as the timing of the selection process can be adjusted on a case by case basis according to the business opportunities that arise in the course of a selection process. Recent examples indeed show that for the [aircraft, type of which is considered by Honeywell to be confidential]*, the [aircraft, type of which is considered by Honeywell to be confidential]* and the [aircraft, type of which is considered by Honeywell to be confidential]*, the aircraft systems were selected at about the same time as the engines. Furthermore, in the case of the [aircraft, type of which is considered by Honeywell to be confidential]*, engine selection and avionics selection announcements were made at the same time [date, considered by Honeywell to be confidential]*. On the large commercial aircraft engine market, engines for the [large commercial aircraft, type of which is considered by Honeywell to be confidential]* were selected at the same time as the APU and the ECS [date, considered by Honeywell to be confidential]* while avionics were selected only three months later.

(373) In the light of the foregoing, it cannot therefore be contended that the systems selection process cannot be adapted to a timeline enabling bundling to take place. Furthermore, even in the event of stretched procurement timelines, contractual arrangements can always make bundling possible. Product bundles need indeed not to be put together simultaneously as there are no technical obstacles in putting together a deferred product bundling. In practice, this means that the merged entity will offer retroactive discounts that will grow proportionately to the number of products that customers will ultimately source from them. Customers will thus have the possibility to make their component selection at different points in time, while having the incentive to choose products of the merged entity to the extent that their choice will reduce their overall purchase cost. Such a practice will have exactly the same effects as a bundled offer negotiated at a specific point in time. Therefore, there can be no technical obstacles preventing suppliers from bundling several aerospace components in their offer to airframe manufacturers.

f) The cournot effect of bundling

(374) The Parties also argued that their incentives to reduce the prices of their respective products are low in that the demand for aircraft is relatively inelastic to the price of engines and components and also that the overall price of an aircraft is only one of many factors going into an airline's decision whether to purchase additional aircraft.

([114]) [See above]*.
([115]) [See above]*.
([116]) [See above]*.

(375) The Commission does not consider that the demand for aircraft equipment and components is completely inelastic. Indeed, airlines appear to have substantial flexibility as to when they purchase or replace aircraft, as to when they purchase avionics and non-avionics products and as to how many aircraft they want to hold in their fleets. It can, therefore, be reasonably expected that the airlines' purchasing decisions will be affected to a certain extent by price variations. Even more so, taking into consideration that the merged entity is expected to supply products and services accounting for over half of the expected free cash flows of an aircraft, a price increase or decrease in the products and services it will be able to supply after the merger can be expected to influence the purchasers' demand.

(376) In any event, the Parties' argument on the inelasticity of the demand does not take into account the fact that the individual entities' demand is indeed elastic. Therefore, even if the demand for aircraft at the industry level were inelastic, i.e. even in the face of a price reduction by all entities for the product bundle, it did not increase sufficiently to render price reduction profitable the Commission's investigation has indicated that a price reduction of the bundled system by the merged entity is likely to shift customers' demand away from competitors to the merged entity's bundled product. Indeed, even if bundling were not to affect the aggregated volume of the demand for aircraft or engines and components, bundling would lead to a reallocation and therefore to a shift of market shares in favour of the merged entity.

g) Competitors can offer counter-bundles and/or can leapfrog

(377) The Parties have insisted that competitors have the ability to offer competing bundles of products, thus constraining the merged entity's ability to profitably engage in bundling. The Parties further submit that competitors could do so even in the absence of a counter-merger, simply by teaming up in order to offer complementary products that could rival those of the merged entity.

(378) The Commission cannot agree with this argument. Indeed, even if competing bundles through teaming were to be regarded by customers as attractive as those of the merged entity, customers will then make purchasing decisions on the basis of the respective prices of these bundles. As explained above, in the absence of economic integration among competing suppliers, the prices of their bundles cannot be expected to be lower than those of the merged entity. Consequently, the merged entity is likely to attract more customers than its competitors.

(379) Teaming has therefore to be disqualified as a viable alternative to the merged entity's ability to profitably bundle products and services from its extensive product range. Teaming is indeed a fragile and uncertain exercise as it involves complex coordination among different entities and can lead to conflicts of interest within the team when the choice of technology, the positioning of the products and the allocation of the revenues and profits need to be decided. Unlike a single supplier, which has the ability to cross-subsidise components in order to strategically price its bundle ([117]), each partner in a teaming arrangement wishes to maximise its own profits and is therefore hesitant to sacrifice its own margins for the benefit of the remainder of the team.

(380) Furthermore, teaming is not always desirable from the perspective of the customer as teaming can generate substantial additional administrative and management costs, such as managing a group of suppliers, that may offset the financial benefit of the teamed offer. One other point that should not be underestimated is that, in any competitive bidding process, a single entity is much better positioned to address the requests of customers. A single-management entity is indeed always able to make quick decisions to enhance the value of a transaction by offering price concessions, and other long term incentives, such as better warranty and payment terms, free spares, enhanced product support, and so forth.

(381) The Commission's investigation has identified several instances where different suppliers attempted to team up, although with limited success, and has shown that most of the instances referred to by the Parties as examples of teaming have either not taken place or were unsuccessful. A few of these cases are described below to illustrate that teaming is not an answer to the merged entity's incentive and ability to bundle products and services in a manner that is not replicable by its competitors.

(382) Contrary to what the Parties have submitted, there is no teaming agreement between Litton and Thales concerning the design and development of an integrated air data/IRS product (ADIRS/ADIRU). Since both Thales and Litton were unable on their own to propose the complete package for the A380 programme ([118]) , they each answered separately with their products and each wrote to Airbus confirming their ability to work together if necessary.

([117]) [...]*.
([118]) [...]*.

(383) The [aircraft, type of which is considered by Honeywell to be confidential]* example illustrates that teaming is an uncertain proposition that may lead to conflicts of interests with respect to future business opportunities.

(384) The Parties further submit that competitors can leapfrog ([119]) by introducing technological improvements to their products and win the next competition over the incumbent supplier on the platform. However, in order to be in a position to leapfrog, a competitor needs to invest heavily in R & D and therefore needs platform wins to generate the necessary cash flows that will fund its future R & D expenditure. One of the effects of the proposed merger will be to foreclose competitors, thus making it increasingly difficult, if not impossible, for them to win new platforms and so preventing them from generating sufficient revenues to engage in leapfrogging.

(385) Because of the substantial time lag between competitions, losing a major one results in being deprived of significant future cash flows that are needed to invest in technological R & D. If a supplier incurs major platform losses with some of its products, its ability to reinvest might be seriously hampered. Contrary to the merged entity, the financial ability of GE's competitors to absorb such losses while continuing to invest in innovation is significantly more limited. In addition, leapfrogging is bound to fail if the leapfrogging company is unable to match the conditions and range of products offered by the merged entity.

(386) Finally, the Parties suggested that the More Electrical Engine/Aircraft could still be developed despite Honeywell's acquisition by GE because UTC could team Hamilton Sundstrand up with RR or with TRW/LUCAS or Smiths. The Commission considers that this alternative is not viable as TRW/Lucas has never acted as a Revenue and Risk Sharing Partner in the past and could hardly take over the role of Honeywell in that project. Hamilton Sundstrand is vertically integrated with RR' competitor, P&W, and is part of the Engine Alliance with GE. In addition, post merger, not only will GE have the possibility to decide at what moment it ceases to participate in the project, but it will also have direct access to the engine data since the electrical generator needs to interact with the engine.

([119]) Leapfrogging means that a supplier replaces the incumbent as a result of new technological development.

h) Bundling vis-a-vis airlines cannot take place

(387) The Parties have claimed that when airlines have a choice of engines, GE lacks the necessary dominance to foreclose rival component suppliers and that GE is contractually bound to offer its engines at specified list prices. As a result, the Parties argue that while GE can offer package discounts it cannot actually impose tying. The Parties further submit that on platforms where there is no choice of engine, GE lacks the mechanism with which to tie and cannot therefore prevent a customer from choosing GE's engine together with a rival's components.

(388) As indicated in the preceding paragraphs, whenever there is an engine choice, airlines first choose the type of aircraft they wish to acquire and subsequently the type of engine that will power the aircraft. The choice of engine by the airline is then primarily driven by total cost considerations, to the extent that certified engines available for choice on a given platform are expected to offer equivalent technical performances. In this particular case, the airline puts in competition the certified engines in order to achieve better pricing and overall financial incentives to select the engine. In order to differentiate themselves from other suppliers, engine manufacturers will offer product and service bundles including the original engines, spare engines, MRO services, spare parts credits, financial services, training as well as many other related services, and offer their engines at significantly lower prices than those indicated in their price lists. Therefore airlines already today purchase both their engines at prices lower than the price list and bundles of products and services.

(389) As a result of the proposed merger, the scope of these packaged offers will be significantly expanded and will place the merged entity in a position to offer larger and more diversified bundles that other competitors will not be able to match. The bundles could, for example, include engines, avionics and non-avionics products, true nose-to-tail MRO services, GE Capital financial solutions, GECAS leasing products, and so forth.

(390) The Parties have also argued that bundling cannot take place on aircraft where there is engine exclusivity because the engine price is not determined by the engine supplier but by the airframe manufacturer [example provided by the Parties, considered by Honeywell to contain confidential information]*.

(391) The Commission's market investigation has shown that, even in cases where the price of the engine is set and is no longer subject to negotiations between the engine manufacturer and the airframe manufacturer, the merged entity will be able to offer price concessions either on the engine itself or on the other components of its bundle and induce the customer to select the bundle. According to a major European airline, whenever Boeing prices a B737, GE steps in with attractive offers on ancillary engine products and services, spare parts, financial assistance and other GE items in order to convince the airline to go for the GE-powered aircraft.

i) CFMI engines are not candidates for bundling

(392) The Parties have submitted that GE and CFMI should be treated as two independent companies when it comes to the assessment of product bundling and that CFMI engines cannot be taken into account for bundling purposes because SNECMA will not allow the merged entity to make such bundled offers.

(393) As already indicated above, the Commission considers that SNECMA does not have an incentive to object to use of CFMI engines for bundling purposes. Indeed, provided bundling strengthens the market penetration of CFMI engines, there is no reason why SNECMA, who does not compete with GE as an independent engine manufacturer, should not favour this course of action. As mentioned above, bundling is likely both to increase GE/ SNECMA profits and sales volumes and decrease those of RR and P&W. In addition, SNECMA has financial interests in all other GE engines and can therefore also benefit from GE's profit maximising strategies. Finally, GE may decide to subsidise the bundle out of its own share of CFMI profits.

(394) The Parties none the less argue that SNECMA is unlikely to accept the inclusion of Honeywell's wheels and brakes in the bundle since it also supplies those products in competition with Honeywell. In this respect the Commission notes that SNECMA's wheels and brakes do not currently compete against those supplied by Honeywell on platforms where a CFMI engine is selected. On the A320 family, airlines can choose between ABS and SNECMA, since Honeywell's products are not certified. Similarly, on the B737 family, airlines can only choose between BF Goodrich and Honeywell, since SNECMA's wheels and brakes are not certified. Post-merger, the combined entity and SNECMA will both operate on the wheels and brakes market and will jointly control CFMI. Their combined market share on this market will be around 50 to 60 %. They will thus have an interest in coordinating their behavior in order to increase both their sales of engines and their sales of wheels and brakes. They could achieve that either by deciding not to include wheels and brakes in the bundle or by offering their respective wheels and brakes only in their own areas of sales responsibilities. There is thus no reason why SNECMA's position as a supplier of wheels and brakes would represent an obstacle to carry out such bundling practices. In addition, SNECMA has an incentive to facilitate these bundling practices in order to go on benefiting from GECAS' ability to increase CFMI's engine market penetration.

(395) For those reasons, the Commission has come to the conclusion that CFMI engines are relevant for the analysis of product bundling.

j) The agreement between Honeywell and GECAS

(396) The Parties have argued that the proposed merger will not bring about any change compared to the situation prior to it. They point out that there exists an agreement dating from 1996 between GE and Honeywell (then AlliedSignal), according to which [description of commercial agreement, considered by Honeywell to contain confidential information]*. As a result, the Parties argue that the proposed merger is not likely to change the purchasing behaviour of GECAS to any material extent and therefore product bundling should not constitute a competition concern.

(397) The Commission disagrees with that argument. Firstly, the fact that a merger internalises an agreement, which may or may not be considered to be restrictive of competition prior to the merger, is not a reason not to object to a merger. Such an agreement does not bring any structural change in the marketplace as a merger does. In addition, the agreement has [description of commercial agreement, considered by Honeywell to contain confidential information]*. The incentives to engage in product bundle are not, therefore, the same as in the case of full economic integration of the Parties to the agreement. Finally, [description of commercial agreement, considered by Honeywell to contain confidential information]*.

3) *Effects of packaged deals on competitors*

(398) The ability of the merged entity to cross-subsidise its various complementary activities and to engage in profitable forms of packaged sales will have an adverse effect on the profitability of competing producers of avionics and non avionics products, as a result of market share erosion. This is likely to lead to market exit of existing competitors and market foreclosure both over

the short term, insofar as price is below average variable cost, and over the longer term, insofar as competitors would be unable to cover their fixed costs if they were to remain active and to proceed with the new investment in R & D so as to compete viably and in the future.

(399) While this longer-term foreclosure impact on the profits of competitors would not be linear but instead is expected to occur in a step-by-step fashion, the effect on competitors' ability to invest in R & D and focus on new product developments for future competitions will materialise as soon as the cash flow expected to be generated internally could not support the necessary capital expenditure for product development and innovation.

(400) The erosion of the market shares of GE and Honeywell's competitors resulting from the merger will impact the future strategic choices of the latter. Significant reductions in profits will lead to substantial decrease of profitability ratios such as return on capital (ROC). When compared to the rate of return required by investors (i.e. the financial markets), decreased ROC will result in companies experiencing strong difficulties in attracting new funds and spending on R & D. This will in turn seriously threaten the ability of GE and Honeywell's competitors to invest for the future so as to safeguard their market position and viability.

(401) Therefore, due to steep decreases in their ROC, some of the avionics and non-avionics competitors will see their viability threatened over the short-term, whereas some others will gradually lose their ability and incentive to compete vigorously, insofar as the returns they can achieve from a shrunk customer base are severely reduced.

(402) In sum, the potential effects of bundling by the merged entity may vary over time. A short-term elimination of the incentives to compete is likely if competitors are unable to cover ongoing costs of production. Similarly, if competitors can still achieve sufficient profitability levels to remain on the market, the effects of bundling by the merged entity are likely to make them unable to engage in long-term investments and other capital expenditure which would give them a chance to succeed in the future and remain viable over the medium-term.

(403) Engine and components suppliers compete on innovation for future products on the basis of R & D expenditure that has to be financed by current and expected cash flows. In industries such as that under examination in this case, such expenditure is conditioned by the large sunk costs incurred by firms, the long lead times before investment returns materialise, the high risk as well as the asymmetric information. Since companies are expected, in such circumstances, to use retained earnings, rather than raise or borrow capital, any significant reduction in the current profits will seriously hamper their ability to invest in the future. This in turn will reduce their incentives to invest due to lower than expected future profits. Moreover, those effects would be further exacerbated were the merged entity to engage in pure (technical) bundling, which is likely to be the case in relation to future platforms. Pure bundling will further reduce the future market available to competitors and consequently will lower their incentives to strategically invest in this market. Companies' incentives to engage in R & D activities depend on the volume of their output in the market to the extent that R & D costs are largely sunk. Any significant reduction of this output, stemming from a reduction of the market available to competing firms, will reduce expected future profits and therefore current R & D expenditure.

(404) Bundling will result in the foreclosure of suppliers of BFE products since no other supplier or team of suppliers will be able to replicate the bundled offer by the merged entity. As a result, competitors on the markets for BFE avionics and non-avionics products are expected to be affected in their ability and incentive to compete and innovate following likely significant immediate market share and revenue losses. Consequently, in the light of their inability to compete on the merits, exposed competitors will have to reconsider their activities and withdraw from those markets dominated by the Honeywell BFE avionics and non-avionics products, which will ultimately negatively impact competition

4) *Foreclosure through the vertical integration of Honeywell with GE*

(405) In addition to the implementation of bundling on the markets for BFE avionics and non-avionics products, the combination of Honeywell with GE's financial strength and vertical integration in financial services, aircraft purchasing and leasing, as well as in aftermarket services, will contribute to the foreclosure effect already described for SFE avionics and non-avionics.

(406) Following the proposed merger, Honeywell's BFE product range will benefit from GE Capital's ability to secure exclusive positions for its products with airlines (see the Continental Airlines example) and GECAS's instrumental leverage ability to foster the placement of GE products through the extension of its GE-only policy to Honeywell products.

(407) Honeywell's BFE products will also benefit from GE's range of products and services ([120]) to target competitors' components on the occasion of replacements, upgrades and retrofits through GECAS's ability to favour GE products vis-à-vis airlines.

(408) Furthermore, GE will also have the incentive to accelerate the on-going trend of airframe manufacturers to change BFE products into SFE products since it could later target those products and achieve exclusive positions by deploying the set of business practices described in the previous paragraphs.

(409) GE's strategic use of GECAS and GE Capital's financial strength will thus position Honeywell as the dominant supplier of BFE avionics and non-avionics products where it already enjoys leading positions. In the light of their inability to reproduce GE's financial strength and integration to any significant degree, the effect on rival BFE manufacturers will be to lead them to progressively reconsider their strategy and not to compete fiercely in those markets dominated by the merged entity.

(410) The Parties have argued that insofar as customers have the ability and the incentive to maintain a competitive supplier base they will not accept at any cost bundling practices or the effects of vertical integration. However, the market investigation has shown, first, that airlines are relatively indifferent as to the choice of SFE avionics and non-avionics. Second, when selecting the SFE equipment that will remain on the aircraft for its lifetime, airframe manufacturers cannot ignore the importance of GECAS as an aircraft buyer since selling one or two additional aircraft is likely to offset all financial incentives that Honeywell's competitors can offer. As far as BFE equipment is concerned, although commonality and customer preferences exist, the airlines are, due to their limited profit margins, not in a position to reject commercial offers that represent short-term cost savings. For airlines, short-term cost reduction outweighs the possibility of longer-term reduction in competition. In addition, it cannot be expected that an individual airline will put itself at a competitively disadvantaged position by rejecting package offers in order to preserve competition in the market.

(411) It can accordingly be concluded that the proposed transaction will create a dominant position on the markets for SFE and BFE avionics and non-avionics.

4.D. *Engines for large commercial aircraft*

4.D.1. **Strengthening of a dominant position**

1) *Foreclosure through packaged offers of GE and Honeywell products and services*

(412) Given the complementary nature of the products and services of GE and Honeywell and the dominant or leading market positions one or other of them currently holds, the merged entity will have the ability to engage in packaged offers of engines, avionics and non-avionics products as well as related services towards airlines. On the market for engines, the proposed merger will therefore have the effect of strengthening GE's existing dominance. The effectiveness of GE's comprehensive packaged offers can indeed be expected to be increased and GE is expected to maintain its existing customers and moreover gain new ones. The combination of GE's large commercial aircraft engines and Honeywell's avionics and non-avionics products can be expected to raise the costs of rivals of the merged entity. In order to compete against the packaged deals of such complementary products, competitors will have to respond by either reducing their prices or by teaming up, in which case their costs are likely to rise.

(413) As far as current customers of GE are concerned, the proposed merger will have the effect of increasing GE's ability to keep them by bundling engines with avionics and non avionics products. GE is therefore not expected to lose existing customers.

(414) As far as current customers of P&W are concerned, GE will have better chances than RR to gain them. P&W engines mainly power an aircraft which is no longer in production and is expected to be replaced in the near future. That aircraft is expected to be replaced by aircraft powered by GE or RR. In such replacement instances, customers are more likely to chose GE engines, given RR's inability to replicate, either independently or through teaming, the bundled packages that will be offered to airlines by the merged entity.

([120]) Such as the GE Engine Service (GEES) network.

(415) As far as customers of RR are concerned, GE can also be expected to gain them, given its ability to leverage its leading positions for certain avionics and non-avionics products into the market for large commercial aircraft engines. Indeed, as described above, the merged entity will have more than 75 % market share in products such as inertial reference systems (IRS), enhanced ground proximity warning system (EGPWS), and APU's. For example, the merged entity will have the ability to render the sale of products where Honeywell has 100 % market share (such as EGPWS), conditional on the sale of its engine. In order to obtain such products, airlines will have no other choice than to buy the engine offered by the merged entity.

(416) In addition, GE may strengthen its dominant position through package offers or tying vis-à-vis airframers. The foreclosure of GE's competitors through their inability to counter GE's success in getting platform exclusivity is therefore expected to increase and occur as early as when the next platform is launched.

2) *Elimination of Honeywell as a potential innovation partner*

(417) Finally, the existing dominant position of GE in engines for large commercial aircraft will be strengthened as a result of the elimination of Honeywell as a partner in the development of the More Electrical Engine Aircraft. By depriving its engine competitors of cooperation with Honeywell, GE will be the only engine manufacturer able to develop innovation in that project. As that project is expected to be determinant for future competition in this market, GE's will be able to be the first, if not the only one, to obtain the benefits of innovation.

(418) This further weakening of competing engine manufacturers will therefore strengthen GE's dominant position and ultimately harm competition on the market for large commercial aircraft engines.

3) *Foreclosure through the vertical integration with Honeywell engine starters*

(419) Quite apart from the effects of product package offers, the proposed merger will strengthen GE's dominant position on the market for large commercial aircraft engines as a result of the vertical foreclosure of the competing engine manufacturers that will result from the vertical relationship between GE's as an engine manufacturer and Honeywell as a supplier of engine starters to GE and its competitors.

(420) Honeywell is a key supplier of engine controls to engine manufacturers ([121]). In addition, Honeywell is the leading, if not the only, independent supplier of engine starters. Following the proposed merger, the merged entity would have an incentive to delay or disrupt the supply of Honeywell engine starters to competing engine manufacturers, which would result in damaging supply, distribution, profitability and competitiveness of GE's engine competitors. Likewise, the merged entity could increase the prices of engine starters or their spares, thereby increasing rival engine manufacturers' costs and reducing even further their ability to compete against the merged entity.

(421) P&W manufactures engine starters mainly ([122]) for its own captive use. However, if the merged entity increases its prices or limits the supply of engine starters to GE's competitors, P&W could not be expected to make its own engine starters available to the free market in order to constrain the merged entity. A price increase in this specific product would not be a sufficient economic incentive for P&W to increase its production capacity, since that would benefit RR, which is the only competitor, post-merger, to buy engine starters on the free market. The benefits of P&W's sales of engine starters to the free market could not outweigh a possible loss in the market for engines, owing to the relative low value of engine starters compared to the value of the engine.

(422) In their reply to the statement of objections, the Parties have argued that several capable starter competitors can replace GE/Honeywell should the latter behave strategically. The Parties have mentioned Urenco, Microturbo, Hamilton Sunstrand, Parker and Sumitomo. The market investigation has not confirmed this. [Description of Honeywell's commercial relation with a third party, considered by Honeywell to contain confidential information]*. Concerning Microturbo, other than its limited technical capacity (predominantly involved in repair and overhaul of gas turbines), this SNECMA affiliate would not have any incentive to go against a vertical foreclosure move that would be in line with its profit maximisation strategy. Parker and Sumitomo have only a limited presence in this market for second source supply of starters and like Urenco, do not sell starters to the engine manufacturer (under licence from Hamilton

([121]) Large commercial aircraft engines equipped with Honeywell engine systems and accessories are, among others, [...]* information considered by Honeywell as confidential.

([122]) Hamilton Sunstrand is the second source starter supplier for a number of mature engine programmes such as [...]*. These starter developments date from Hamilton Sunstrand's activity prior to being integrated with P&W. Likewise, P&W depends on Honeywell for starters on a number of mature engine platforms.

Sunstrand). Hamilton Sunstrand is part of UTC and cannot therefore be considered as an independent supplier.

(423) Barriers to entry for new competitors are significant due to the sophistication of engine starters, the high associated R & D requirements, the cost of obtaining product certification and the need to have a strong technology capability as well as a worldwide product support network ([123]). Furthermore, any potential market entry of an alternative engine starters supplier would not be readily available owing to the high switching costs for users since the market investigation has shown that switching engine starters, and control systems in general, on a single engine type is undesirable from both the point of view of the engine manufacturer and the operator of the aircraft ([124]).

(424) The Parties have indicated that contractual obligations prevent Honeywell from discontinuing the supply of starters used in existing non-GE engines. The Commission's investigation indeed confirmed that this agreement stipulates that Honeywell is to accept all orders placed for them. Should Honeywell fail to satisfy the order, or materially breach the agreement, it is required to grant a licence to a third party to manufacture the component and Honeywell must also provide the licensee with all proprietary data necessary to enable manufacture. It remains however clear that such a move by Honeywell to cease supplying starters would create a significant amount of disturbance and cost to GE's engine competitors. In addition, such tight contractual controls limiting the possibility of either party to foreclose without just reason are typical for recent engine programmes while older programmes do not include contractual arrangements that can prevent Honeywell from abstaining to satisfy orders. Honeywell has a particular strong presence in mature engine programmes.

(425) In their reply to the statement of objections, the Parties have submitted that foreclosure has not taken place despite Honeywell's existing share of air turbine starters. Although Honeywell is already a small engines competitor to P&W Canada and RR Allison, it has continued to supply starters to both. However, it is to be noted that small engines are sole-sourced and that such engine competition does not include the incentives to foreclose competitors that the merged entity would have for LCA aircraft platforms that can be multi-sourced.

(426) The Parties also submit that engine starters can also be supplied to airframe manufacturers directly and that any refusal to supply engine manufacturers would result in airframe manufacturers ordering starters directly. The market investigation has however indicated that this is not always the case as starters for most engines are sold to the engine supplier for inclusion in engine packages delivered to the airframe manufacturer. The Parties further submit that half of its starter supplies were made directly to airlines. It seems however that these supplies generally concern spare starter supplies since they are delivered directly to airlines.

(427) It can accordingly be concluded that the merged entity's incentive and ability to profitably raise the price or limit the output of engine starters as a result of the vertical relationship between GE's engines activities and Honeywell's supply of engine starters, will increase the costs of rival engine manufacturers and therefore contribute to their further foreclosure from the market for large commercial aircraft engines, thus strengthening GE's dominant position.

4.E. *Engines for large regional jet aircraft*

4.E.1. **Strengthening of a dominant position**

a) Horizontal overlap on existing platforms

(428) The first effect of the proposed transaction on the market for large regional jet aircraft engines is to create a horizontal overlap between GE's and Honeywell's products that will lead to the strengthening of GE's already dominant position on that market. Indeed, following the proposed merger, through the elimination of Honeywell as an independent supplier, the merged entity will control 100 % of the jet engine supply on large regional aircraft platforms not yet in service and 90 to 100 % of the overall engine installed base on the existing large regional jet platforms.

([123]) Since the starter interfaces with the engine, the supplier will need to present a track record in applying the technology in aerospace jet engine applications as well as an appropriate product liability and service.

([124]) On top of significant switching costs that relate to the modification process, certification, flight testing and airframe manufacturer charges for every aircraft platform for which the engine is selected, GE acknowledges the difficulty of re-sourcing engine control components in an internal document analysing Honeywell's strengths. GE further concludes that 'it is likely that P&W and RR engines will not move [to other suppliers]* due to high certification costs'.

(429) With regard to competition between existing platforms in production, although the increase in market share resulting from the merger is rather small (around 10 to 20 % on the basis of the orders backlog), the combination of GE and Honeywell as the only engine suppliers currently on the market for large regional jet aircraft will prevent customers from enjoying the benefits of price competition (such as in the form of discounts) between suppliers.

(430) The notifying Parties have argued that their monopoly position is a static phenomenon, since it reflects the fact they have won the competitions for these four platforms in the past and that since regional jets are always equipped with a single engine source, their selection will not affect competitive positions in the future. However, this argument disregards the fact that this market position will bring about a considerable source of revenues to the merged entity, which will have a bearing on the development of engines for future competitions. In addition, it disregards the fact that their position confers a unique incumbency advantage for such future platforms. Furthermore, GE has managed to secure three out of the four large regional jets platforms, and Honeywell the fourth, owing, at least in part, to the influence that GE Capital/GECAS was able to exert over the airframe manufacturers.

(431) The large regional jets market is a growing market. GE forecasts that more than 4 000 aircraft will be sold over the next ten to twenty years. Airlines are increasingly introducing this type of aircraft in their fleets to cope with the new market conditions of air travelling. The market position that the merged entity enjoys in this market will give it a comfortable access to the airlines' fleets. In other terms, airlines will become more and more dependent on the merged entity's engines and other products, since the proportion of large regional jets will grow in the airlines' fleets.

b) Effects on future platform competitions

(432) Like the market for large commercial aircraft engines, the market for large regional jet aircraft engines will be affected by the proposed merger through the implementation of package offers or cross-subsidisation by the merged entity. Again, given the complementarity of GE and Honeywell products and services and the dominant or leading market positions one or other of them currently holds, the merged entity will have both the economically rational incentive and the ability to engage in package offers of engines, avionics and non-avionics products as well as related services towards customers ([125]).

(433) As a result of their inability to put together competing bundled offers to those proposed by the merged entity, either independently or with other component manufacturers, P&W and RR will see a further decline in their chances of placing their engines on the future large regional jet airframes. Notwithstanding the fact that the current platforms are already all powered by either GE or Honeywell, foreclosure through the inability of the other engine manufacturers to counter GE's success in obtaining platform exclusivity is expected to be repeated as soon as future large regional jet platforms are developed, including all future BAe Avro derivatives, since GE's financial strength and vertical integration will be extended to Honeywell's engines. Furthermore, GE's already unmatchable ability to win platform competitions will be strengthened by the ability to bundle a wide range of products either on a commercial or a technical basis.

(434) As a direct consequence of the proposed merger and the implementation of mixed bundling by the merged entity, the level of foreclosure of P&W ([126]) and RR from the market for large regional jet aircraft engines will be exacerbated. Those companies and their shareholders will therefore most probably be forced to reassess the opportunity, both in commercial and financial terms, for them to continue competing and investing on that specific market. Following their inability to compete on the merits with the merged entity and in the absence of any financial return from that market, the most likely outcome will be for GE's competitors to withdraw from the manufacturing and marketing of engines for large regional jet aircraft, with the ultimate negative effect on competition on that market.

4.F. *Engines for corporate jet aircraft*

4.F.1. **Creation of a dominant position**

1) *Horizontal overlap*

(435) The immediate effect of the proposed merger on the market for corporate jet aircraft engines is to create a horizontal overlap that will lead to the creation of a dominant position. The combined entity will account for 50 to 60 % (GE: 10 to 20 %; Honeywell: 40 to 50 %) of the overall installed base of corporate aircraft and for 80 to 90 % (GE: 10 to 20 %; Honeywell: 70 to 80 %) of the installed base of engines on medium corporate aircraft.

([125]) The market for large regional jet aircraft engines is, like that for engines for large commercial aircraft, subject to technical bundling and its resulting effects from the part of the merged entity.

([126]) [Commercial performance of a P&W engine, considered by P&W to contain confidential information]*. As a result of the application of GE's dominance toolkit on that market, P&W has been unable to place that engine on that market to date.

(436) Honeywell is already the leading player in this market and the proposed transaction will strengthen Honeywell's leading position in the corporate jets market. The significant combined position of the merged entity and the relatively lower market shares of competitors are already indicative of market power. The Parties have argued that despite this high market position, the merged entity is not in a position to exercise any sort of market power, since in general their respective engines have not been in competition in the past, except for a few platforms. Airframe manufacturers call upon engine manufacturers to submit offers, whenever a new platform has been developed and needs to be powered by a jet engine. The Parties have mentioned that on very few occasions did GE and Honeywell submit an offer for the same platform. The argument of the Parties relies, thus, on competition on a platform by platform basis. However, this is not the way product markets have been defined in the case of corporate jets since this is not consistent with market definition principles, in so far as it disregards supply and demand-side substitutability.

(437) The proposed merger is in any event, quite independently from this horizontal overlap, likely to create a dominant position on the market for corporate jet engines.

2) *Foreclosure through the vertical integration of Honeywell with GE*

(438) Together with the creation of the horizontal overlap, the proposed combination of GE and Honeywell will have the effect of immediately extending the benefit of GE's financial strength and vertical integration into financial services, aircraft purchasing and leasing, as well as into aftermarket services to Honeywell's activities as an engine supplier for corporate jet aircraft. Following the proposed merger, Honeywell will benefit from GE's incentive and ability to have its products selected.

(439) In addition, as a result of the proposed merger, Honeywell's engines and related services will also benefit from GE's aircraft leasing and purchasing practices to promote GE's products and services as well as from its instrumental leverage ability to secure marketing and placement of the GE products. The proposed merger will bring together the leading engine supplier, Honeywell, with GE's corporate jet aircraft leasing company GE Capital Corporate Aviation Group (GECCAG).

(440) GECCAG was set up by GE to operate as a leasing company in the corporate jets market by offering financing and leasing for both new and used aircraft. Like GECAS on the markets for large commercial and regional jet aircraft engines, GECCAG will probably have a significant influence on competition to equip future corporate jet aircraft platforms. The way GE, through its leasing and purchasing activities, influenced the choice of equipment on the markets for large commercial and regional jet aircraft engines can be expected to be reproduced on the market for corporate jet aircraft engines.

(441) Accordingly, GE's likely reproduction of its strategic use of GECAS with GECCAG together with GE Capital's financial strength to favour Honeywell's products will position the merged entity as the dominant supplier on the market for corporate jet aircraft engines where Honeywell already enjoys a leading position.

(442) The effect on rival corporate jet engine manufacturers can be expected to be in the range of what has already taken place, by the effect of GE alone, on the market for large regional jet aircraft engines. The integration of Honeywell with GE is likely to lead to full foreclosure and the elimination of competitors' ability to invest in the development of the next generation of corporate jet aircraft engines. Since Honeywell's corporate jet aircraft engine competitors are unable to reproduce GE's financial strength and vertical integration, they will ultimately have to reconsider their presence on that market and eventually withdraw since their chances of winning a competition on the merits will be significantly reduced.

3) *Foreclosure through bundling of GE and Honeywell products and services*

(443) That foreclosure effect on the market for corporate jet aircraft is likely to be increased by the implementation of bundling by the merged entity. On this particular market, the merged entity will have the incentive and ability to engage in bundling of engines, avionics and non-avionics products, as well as related services such as maintenance ([127]).

(444) Following their inability to replicate under any form or shape the bundle offered by the merged entity, RR and P&W will progressively lose their capacity to secure platform exclusivity for their engines and will be foreclosed from that market as future platforms are developed. As their cash flows dry out and financial return drop, the shareholders of those suppliers will have to make the rational decision to stop investing and competing on the market for corporate jet aircraft engines.

([127]) The market for corporate jet aircraft engines is, like the other jet engine markets in question, susceptible to technical bundling the merged entity, with its resulting effects.

4.G. ***Countervailing power of customers***

(445) The Parties have argued that any form of product tying in this industry will be constrained by the countervailing power of customers.

(446) The Commission's investigation did not support this view. It first indicated that customers, whether airframe manufacturers or airlines, appear to have no economic incentive to exercise countervailing power vis-à-vis GE. It showed that, as a result of the proposed merger, it can be expected that customers will continue to have a rather limited interest in exercising whatever countervailing power they may have vis-à-vis the merged entity's bundled offers. Indeed, the historical evidence of instances where products have been purchased as part of a bundle suggests that customers are willing to consider favourably this pattern of purchasing. Moreover, countervailing power may be irrelevant in the case of packaged offers, since it would mean that customers refuse to accept lower prices. Indeed, countervailing power may act as a factor constraining a price increase, not a price decrease.

(447) The Parties further indicate that powerful customers such as airframe manufacturers and aircraft operators will not tolerate tying and that customers would retaliate in the event of unwanted bundling. Furthermore, GE would put itself at a significant competitive disadvantage were it to require the airframe manufacturers to take various Honeywell equipment that they would not otherwise have found attractive.

(448) The fact that airframe manufacturers are both large companies with significant financial strength is not sufficient to prevent the merged entity from bundling. Airframe manufacturers would like to see competition preserved over the longer term, since that will give them lower input costs. However in the event that an airframe manufacturer favours a less integrated weaker competitor in order to safeguard competition, it will support higher procurement costs and therefore place itself at a competitive disadvantage vis-à-vis the other airframe manufacturers. Competing airframe manufacturers would like the others to favour the less integrated bidder, whilst continuing to buy from the stronger bidder. As a result, they will all have a strong economic interest to select the stronger bidder at the expense of the preservation of competition. Moreover, their incentive to preserve competition is further reduced by the fact that if costs rise equally for all of them, it is likely that they will largely be able to pass the increase on to the final customers, the airlines, and bear little of the impact themselves.

(449) Airlines generally welcome the financial incentives that come with bundled offers. Given the very nature of their competitive environment, airlines are under great pressure in the short-term to keep their costs under control. Therefore, while airlines are likely to understand that their long-term interests would be better served through the preservation of competition among suppliers, each individual airline also has, and is likely to pursue, a short-term interest in achieving costs savings through the acceptance of bundled offerings. As a result, airlines will have a very limited incentive to exert countervailing buying power since they cannot really afford to deny themselves short-term benefits even if they are associated with adverse consequences in the foreseeable future, for instance as soon as they have to make purchase decisions for the next platform to be developed.

(450) Airframe manufacturers cannot disregard airlines' demand for engines as well as for avionics/non-avionics products. This derived demand for the combination of GE engines and Honeywell components is expected to increase following the proposed merger and therefore airframe manufacturers will have stronger incentives, in the medium term, to select GE engines and Honeywell components than they had prior to the merger.

(451) The proposed merger will extend GE's incentive and ability to influence airframe manufacturers to select GE engines to Honeywell systems, and thereby foreclose Honeywell's competitors while strengthening its position on the engine markets. The merged entity's ability to offer packaged deals, GECAS's demonstrated and rational purchasing bias ([128]), the relative indifference of other aircraft customers regarding systems selection and GECAS's ability to place huge aircraft orders are among the main factors that will enable the merged entity to effectively and successfully place Honeywell products and bundle them with GE products when appropriate.

(452) Following GECAS's GE-only purchasing bias, and its inevitable extension to include Honeywell systems, airframe manufacturers will know that if they do not select the merged entity's bundle of products and systems, they will be less likely to sell aircraft to GECAS. The fact that Honeywell products have been selected so frequently in the past indicates that Honeywell is able to produce systems of satisfactory quality, which diminishes the risk for an airframe manufacturer of selecting a Honeywell system. GECAS's ability to influence the selection of Honeywell systems is therefore facilitated by Honeywell's already leading positions in its most important aerospace product markets.

([128]) See above GECAS's 'GE-only' policy.

(453) As a result, since airframe manufacturers know that most of their customers are indifferent as to systems selection, as long as the product works properly, they have great flexibility to select systems without the risk of losing aircraft sales to customers other than GECAS. Under these circumstances, a large customer with a very strong manufacturer preference can affect the outcome of systems selection on an entire aircraft platform. GECAS's likely future purchases represent a huge volume of sales and profits that it will be able to shift among airframe manufacturers based on their selection of components from the merged entity. Therefore, GECAS, which alone could add significant profitability to an airframe programme, can be expected to substantially reduce its purchases of the airframe if non-GE or non-Honeywell systems are selected. GECAS's significant volume of purchases indeed makes it more difficult for rivals to develop effective counter-strategies since the profit on even a handful of additional aircraft sales would outweigh the additional profits from even dramatic price cuts on APUs or other systems by the merged entity's rivals. However, airframe manufacturers and other system suppliers know that GECAS does not represent just one or two additional unit sales, but a large number of aircraft potentially amounting to significant additional net revenues for an airframe manufacturer selecting GE and Honeywell products.

(454) This situation will therefore enable GECAS to influence airframe manufacturers to favour Honeywell and GE products in their selection decisions, which will in turn foreclose the merged entity's rivals from opportunities to placing their products on new airframes.

(455) Furthermore, GE's track record in linking 'risk sharing' payments to obtain engine exclusivity will be extended to Honeywell, which itself has already provided a comprehensive, bundled offer to [airframe manufacturer, name of which is considered by Honeywell to be confidential]* to secure a sole-source position as suggested from the following direct quote from an internal Honeywell e-mail to prepare a meeting with [airframe manufacturer, name of which is considered by Honeywell to be confidential]*:

[direct quote from an internal Honeywell e-mail, considered by Honeywell to contain confidential information]* ([129])

(456) In conclusion, both airlines and airframe manufacturers are unlikely to prevent the foreclosure effects arising out of the proposed transaction.

(457) The Parties have argued that in recent decisions ([130]), the Commission considered that customers do have countervailing power and that a finding in the present case that customers' countervailing power is limited is in contradiction with such precedents. The Commission considers that the assessment of countervailing power in the two previous cases cannot be compared to the present assessment. As far as the Allied Signal/Honeywell decision is concerned, the Commission assessed the relationship between customers and a merged entity active in avionics and non-avionics. This relationship has now to be reconsidered in view of the addition of GE's products, services and financial strength to the entity that will result from the proposed transaction. Customers are not in the same negotiating position vis-à-vis Honeywell and/or GE as they were prior to the proposed merger. Moreover, as far the Engine Alliance Decision is concerned, it has to be noted that again the weight of the Engine Alliance, a joint venture between GE and P&W, is not the same as that held by GE/Honeywell. The merged entity's complementary products will account for over half the value of an aircraft. This will tilt significantly the negotiating balance in favour of the merged entity to a greater extent than in the case of the Engine Alliance. Therefore, the present assessment of countervailing power is not in contradiction with recent precedents, to the extent that the effects of the proposed merger are not comparable to the effects of the previous transactions.

4.H. ***Conclusion***

(458) As a result of the foregoing analysis, it can be concluded that the merger will result in the creation/strengthening of a dominant position on the markets for large commercial aircraft engines, large regional jet aircraft engines and corporate jet aircraft engines, as well as on the markets for avionics and non-avionics products.

C. *POWER SYSTEMS*

1.A. ***Relevant markets***

1.A.1. **Introduction**

(459) Although GE and Honeywell are both active in the field of power systems, the Parties submit that they do not compete, since GE focuses on gas turbines at or above 5 MW while Honeywell's products (sold through the Vericor JV with MTU) have an output of no more than 4 MW.

([129]) [See above]*.

([130]) Allied Signal/Honeywell and Engine Alliance.

1.A.2. **Product markets**

(460) The Parties submit that the relevant product market is the market for small gas turbines in the 0,5 to 10 MW range, which could in turn be further segmented into gas turbines for industrial and marine applications based on the development origin of the gas turbine. Indeed, marine gas turbines would be aeroderivative based and industrial gas turbines would be non-aeroderivative based.

(461) In previous cases ([131]) the Commission has examined the market for gas turbines and has made a subdivision between gas turbines up to 10 MW (small gas turbines) and gas turbines above 10 MW (large gas turbines). Gas turbines burn natural gas or fuel oil to power the turbine and are generally used when natural gas is readily available. In a more recent decision ([132]) it was analysed whether the dividing line between the small industrial gas turbines and the large heavy duty gas turbines could have gone up from 10 MW to 13 MW, however, no final decision on this issue was taken. Small gas turbines are used in a wide variety of industrial applications and can power marine vessels (both military and commercial), although previous decisions have not concluded whether it would be adequate to identify separate markets for each application.

(462) The market investigation has indicated that a distinction between industrial and marine gas turbines is indeed adequate. Industrial and marine versions of a gas turbine product are clearly not substitutes from the demand side. Small marine gas turbines are well suited for applications that require high speed and specialised mission capability and where space is at a premium and power density must be maximised. Small industrial gas turbines are used for co-generation, mechanical drive and auxiliary power generation. As to supply-side differences, marine units employ improved corrosion resistant materials for certain components, combustion systems are different depending on the fuel used and in naval applications the engine must be capable of withstanding exceptional shock loadings, a requirement not imposed on industrial designs.

(463) In previous cases the Commission also examined the substitutability between non-aeroderivative gas turbines and aeroderivative gas turbines, but did not take a definitive view as to whether they constitute separate markets. The market investigation in the present case has indeed indicated that a distinction can be made on the basis of demand side considerations. Marine gas turbines are generally aeroderivative ([133]) (due to small size and limited requirements) whilst industrial gas turbines are non-aeroderivative (heavier but also less expensive). From the supply side, however, the situation is less clear as a number of industrial and marine gas turbines are based on a common aeroderivative engine platform (as is the case for Honeywell's products). The Parties have indicated that such common platform gas turbines have only a limited possibility to compete with industrial turbines as aeroderivative gas turbines are significantly more expensive than the non-aeroderivative products that are used for industrial applications.

(464) Most competitors for industrial turbines offer non-aeroderivative products and sales of aeroderivative turbines for industrial applications are very limited.

(465) It can therefore be concluded that there are two separate small gas turbine markets, one for industrial and another for marine applications. The distinction largely depends on whether the gas turbine design is aeroderivative or not. The possibilities of converting an industrial turbine into a marine turbine and vice versa are limited and costly, both in terms of time and money (USD 15 to 25 million).

(466) The market investigation has also confirmed that reciprocating engines, both gas burning and diesel fuel burning, are not generally substitutable with gas turbines in industrial and marine markets since key characteristics such as cost, performance, maintenance are significantly different for the different power sources. The decision to use a turbine rather than a diesel engine is taken very early in the development of, for instance, a vessel since the supporting infrastructure will be designed around this choice. As this infrastructure is very different between the two engine types, the initial decision cannot be changed afterwards.

1.A.3. **Geographic market**

(467) In previous decisions ([134]) with regard to gas turbines the Commission has concluded that the relevant geographic market is at least the EEA and most likely worldwide. The assessment in this Decision will be made on the basis of a worldwide market.

([131]) See Case No IV/M.440 — GE/ENI/Nuovo Pignone (II) and Case IV/M.1623 — AlliedSignal/MTU.

([132]) See Case No IV/M.1484 — ALSTOM/ABB.

([133]) Aeroderivative gas turbines combine an established aircraft engine with a power turbine to convert energy from the engine exhaust into rotational shaft power.

([134]) See footnote 131.

1.B. ***Competitive assessment***

1.B.1. **Introduction**

(468) The small marine gas turbine market is a niche market that accounts for less than 10 % of the small gas turbine volume. Demand is lumpy and cyclical with a downward trend. Customers are either fleet owners or Ministries for defence. On the other hand, the supply side is concentrated, since marine turbines are derived from aerospace engines, and is composed of P&W Canada, RR/Allison, Honeywell and GE.

(469) The Parties have refrained from providing market share data on their position in the market, although they have been invited to do so on several occasions, indicating that they do not have access to total market value figures. Although it is true that it is difficult to estimate market shares for these products because companies' sales tend to vary significantly from year to year as a result of individual projects, Honeywell and GE clearly have important market positions that have been consistent over the years.

(470) The bulk of the demand for small marine gas turbines is for units below 5 MW, since there are only very few sales of 5 to 10 MW units. If a separate marine market were to be defined for units below 5 MW, then Honeywell's market share is forecast to be [70 to 80 %]*, with GE's share around [10 to 20 %]* ([135]). Based on a market for small gas turbines in the 0,5 to 10 MW range, the direct competitors to Honeywell have estimated Honeywell's position in the market at between 40 and 50 % and that of GE at between 25 and 30 %.

(471) Honeywell leads this market through its TF40/TF40B/TF50 gas turbines (power output between 3 MW and 4,5 MW) which are all based on the Honeywell T55 turboshaft. Honeywell's 0,5 MW gas turbines are based on the TPE331-6 turboprop and LT101 helicopter engine. GE's 4,5 MW output LM 500 gas turbine is based on the TF34, a military engine designed to comply with strict military requirements.

(472) The Parties argue that the proposed merger will not lead to an overlap, since the only small marine turbine that GE produces (the 4,5 MW LM 500) has not been sold in the EEA market since 1980 (with last delivery in 1994). Worldwide, however, GE received its last order in 1999 while deliveries are foreseen up to 2002.

([135]) In their reply to the statement of objections, the Parties have submitted that on the basis of a market for marine gas turbines below 5 MW, and for the past five years, Honeywell had [50 to 60 %]* of the market, GE [0 to 10 %]*, RR [40 to 50 %]* and P&W [0 to 10 %]*.

(473) The Parties also submit that the LM 500 does not compete with Honeywell's products, since it is larger, heavier, and more expensive it and requires a number of peripherals. Those differences result from the military origin of GE's LM 500. However, the market investigation has clearly shown that both GE and HWL compete in the market as defined above. The market investigation has not indicated that the differences between GE's and HWL's small (below 10 MW) marine gas turbines are sufficiently relevant to distinguish different product markets. In addition, both GE and Honeywell are active in the military and commercial market with products that overlap in power output. Although the Parties consider that GE's and HWL's products do not compete, GE has participated in competitions against HWL, RR and in some cases also P&W Canada.

(474) Although the Parties argue that GE's product can only compete for military applications, the market investigation has shown that GE has successfully sold the LM 500 for commercial purposes in the past. Indeed, GE's LM 500 has in 34 cases been sold for military applications and in six cases for commercial vessels. Honeywell's small marine gas turbines also target both the military and commercial applications.

(475) RR/Allison is GE/Honeywell's main competitor (between 20 to 30 % market share) with their 501/601 models. P&W Canada is the second competitor (between a 0 to 10 % market share) with the ST30 (3,3 MW) and theST40 (4 MW) models and is, according to the Parties, expected to increase sales of its new small marine gas turbine.

1.B.2. **Creation of a dominant position**

1) *Horizontal overlap*

(476) Following the proposed merger, the merged entity will have a share of between 65 and 80 % of the market for small marine gas turbines, combining the two strongest closest players in the market and creating an entity four to five times larger than the second player.

(477) The merged entity would thus be by far the largest player in the small gas turbine marine market. The Parties have extensively argued that gas turbines have a very high development cost and that these are derived from aircraft engines. As such, 'de novo' entry in this market can be excluded. The Parties have also put emphasis on the fact that migration of industrial small gas turbines is, even though not impossible, a very expensive and economically unviable initiative. As such, it is very unlikely that existing industrial small gas turbine players will enter this market. Solar, an important competitor in the industrial market, has a

non-aeroderivative solution for marine applications. However, as the Parties have argued in their reply to the Commission's decision to initiate proceedings in the present case, Solar has made some sales of non-aeroderivatives for marine applications but those sales are believed to be very limited.

2) *Foreclosure through the vertical integration of Honeywell with GE*

(478) In addition to the horizontal overlap, Honeywell's leading position in this market will be strengthened by its combination with GE's financial strength and vertical integration in financial services and aftermarket services.

(479) Honeywell will immediately benefit both from GE Capital's willingness and ability to secure exclusive supply positions for its products and GE's ability to cross-subsidise its different business segments thanks to its strong cash flow generation. Indeed, as explained in the analysis of the markets for avionics and non-avionics, GE's financial strength could be used to boost the merged firm's R & D efforts in those areas where competition proves intense and ultimately discourage rivals to compete and innovate.

(480) In the light of the foregoing, GE's use of GE Capital's financial might to favour Honeywell's products will contribute to positioning the merged entity as the dominant supplier on the markets for small marine gas turbine where Honeywell already enjoys a leading position.

(481) As a result of the integration of Honeywell into GE, rivals will be deprived of future revenues generated by the sales of the original equipment and spares parts and therefore end up progressively marginalised and unable to fund innovation expenditure and to leapfrog the merged entity by any means. The progressive foreclosure from future applications will lead the merged entity's competitors to reassess the rationale for their presence on the market for small marine gas turbines and make the economically rational decision to withdraw from those competitions where the addition of GE to Honeywell products would leave them with no realistic chance of winning.

(482) The Parties have replied that Honeywell has already agreed with [supplier, name of which is considered by Honeywell to be confidential]* to continue its commitment to [project, name of which is considered by Honeywell to be confidential]*. However, and regardless the value of such agreements, [supplier, name of which is considered by Honeywell to be confidential]* acceptance clearly underlines the value that Honeywell represents as a Risk and Revenue sharing partner for this innovative project which cannot readily be replaced.

3) *Foreclosure through the vertical integration with Honeywell electronics and controls*

(483) Finally, since Honeywell is a supplier of key components ([136]) to [project, name of which is considered by Honeywell to be confidential]* and GE is in direct competition to [project, name of which is considered by Honeywell to be confidential]* ([137]), the proposed transaction will give GE direct control over the supply of such key components to the [project, name of which is considered by Honeywell to be confidential]*. In addition, serious concerns about technology leakage to GE could arise. Since other sources of supply for the [part, specification of which is considered by Honeywell to be confidential]* are limited and since there is currently no alternative source of supply for the [part, specification of which is considered by Honeywell to be confidential]* other than Honeywell, the merged entity will have an important stronghold further up the supply chain line. As is the case with aircraft engine applications, GE will, following the proposed merger, also have the means to prevent the [project, name of which is considered by Honeywell to be confidential]* from being launched and foreclose its competitors.

(484) On that basis, the merger will lead to the creation of a dominant position in the market for small marine gas turbines.

D. *UNDERTAKINGS SUBMITTED BY THE PARTIES*

1. INTRODUCTION

(485) On 14 June 2001, GE submitted a proposal for a package of undertakings to address the competition concerns identified by the Commission in its statement of objections of 8 May 2001. The proposal comprised structural undertakings relating to avionics- and non-avionics products, engine starters, small marine gas turbines, large regional jet engines and behavioural undertakings concerning corporate jet engines, the commitment not to engage in bundling practices and GECAS.

([136]) [Description of the components, considered by Honeywell to contain confidential information]*.

([137]) GE is the principal competitor to the [project, name of which is considered by Honeywell to be confidential]* and has been actively trying to displace the [project, name of which is considered by Honeywell to be confidential]* with [GE engine, name of which is considered by Honeywell to be confidential]*.

(486) The undertakings submitted by the Parties are considered to be insufficient to eliminate the major competition problems identified on engines for large commercial aircraft, avionics and non-avionics. Following the submission of the undertakings proposal, the Commission proceeded however with a technical verification of the structural undertakings to test whether they would meet the criteria with regard to the viability and the stand-alone nature of the assets. The result of the technical verification indicates that, quite apart from the overall insufficiency to address the competition concerns raised by the transaction, the proposed structural undertakings do not meet the basic criteria regarding the viability of the businesses to be divested.

2. DESCRIPTION OF THE UNDERTAKINGS

2.A. ***Avionics and non-avionics products***

(487) As far as the avionics and non-avionics products are concerned, the Parties proposed undertakings for avionics and non-avionics products sold on both a BFE (buyer furnished equipment) and SFE or SFE-option (supplier furnished equipment) basis.

2.A.1. **Avionics**

1) *BFE avionics products*

(488) The Parties' proposal is focused on BFE avionics equipment [details of which is considered by Honeywell to be confidential]*. The package, referred to as the [name of which is considered by Honeywell to be confidential]*, includes the following products: weather radar for large commercial aircraft (LCA); Communication/Navigation (LCA); recorders and data management systems for both LCA and regional/corporate aircraft; CMU/ACARS (communication management unit/aircraft communication addressing and reporting system); EGPWS (enhanced ground proximity warning system); TCAS (terrain collision avoidance system); GPS/MMR, which provides precision approach guidance to airports.

(489) The Parties have also proposed to divest the aeronautical satellite communications ('Satcom') business [...]*.

2) *SFE avionics products*

(490) The Parties' proposal concerning avionics is focused on the commercial inertial navigation business. That business includes products such as IRS, ADIRS, AHRS, air data computer and SAARU ([138]), which are airframe motion and navigation sensing devices used by all navigation systems.

A P U s

(491) Apart from avionics, the Parties have also submitted an undertaking for auxiliary power unit (APUs). The Parties have proposed to divest [description, which is considered by Honeywell to be confidential]*. The divestment thus relates to APUs for corporate and regional aircraft but not APU's for LCA. The Parties have also proposed to divest Honeywell's commercial repair and overhaul business in Raunheim, Germany. The MRO related activities conducted at Raunheim include amongst other things MRO for APU's, ground units, turboprop engines and turbofan engines.

E C S

(492) With regard to environmental control systems, which is SFE equipment, the Parties have proposed to divest Honeywell's European ECS center which focuses on the regional/corporate aircraft segment.

2.B. ***Engine starters***

(493) In order to resolve the competition problem resulting from the vertical relationship between GE's as an engine manufacturer and Honeywell as a supplier of engine starters, the Parties have proposed to divest Honeywell's engine starter business.

2.C. ***Small marine gas turbines***

(494) The proposed merger will result in a horizontal overlap between GE and Honeywell's activities in the market for small marine gas turbines. The Parties have proposed to divest Honeywell's 50 % stake in Vericor, which is the 50/50 joint venture company through which Honeywell markets its small marine gas turbines, and in which MTU holds the remaining 50 %.

([138]) ADIRS/ADIRU is a device that combines the functions of the air data computer and the inertial reference system (IRS). AHRS is a less costly alternative to IRS in the regional market. SAARU is a back-up system for ADIRS and is only used on the Boeing 777.

2.D. ***Large regional jet engines***

(495) The proposed merger will result in a horizontal overlap in the market for engines for large regional jet aircraft. In order to resolve the competition problem, the Parties have proposed to divest the AS900-series engine that will power the new Avro jet under development, as well as the existing ALF502/LF507 engines that power the current versions of the Avro jet.

2.E. ***Other undertakings***

(496) In addition to those structural undertakings, the Parties have proposed a number of behavioural commitments relating to the market for Corporate Jet Engines, GECAS and abstaining from bundling avionics, non-avionics or aircraft engine products or services.

2.E.1. **Corporate jet engines**

(497) In addition to creating a horizontal overlap in the market for engines for corporate jet aircraft, the proposed merger would extend the benefit of GE's financial strength and vertical integration into financial services, aircraft purchasing and leasing, as well as into aftermarket services to Honeywell's engines for corporate jet aircraft. To counter that, the Parties submitted a non-compete agreement with the purchaser of the ALF502/LF507 engine series according to which GE (including GECAS and GE Capital Corporate Aviation Group (GECCAG)) will abstain from purchasing corporate jet aircraft on a speculative basis for operating leasing purposes.

2.E.2. **GECAS**

(498) The Parties have also proposed to maintain GECAS as a separate legal entity and to conduct its dealings with Honeywell on an arm's length basis. Compliance would be monitored by an independent expert. The Parties propose that GECAS would not participate in working groups of airframe manufacturers that select avionics and non-avionics equipment. They further propose that GECAS, acting as a speculative buyer of aircraft, would not condition its purchases on the incorporation of Honeywell avionics and non-avionics equipment and that GE Capital will not finance purchasers or operators of aircraft for the inclusion of Honeywell avionics and non-avionics equipment. Finally, they propose that GECAS would not influence the selection of avionics and non-avionics equipment by its customers and that it would also select its competitors' avionics and non-avionics products when it purchases aircraft for leasing purposes.

2.E.3. **No bundling of avionics, non-avionics or aircraft engine products or services**

(499) The Parties commit that they will not bundle any GE products with any Honeywell products when they make offers to customers, unless a competitor, acting either alone or as a team, has bundled similar products or when the customer has requested a bundled offer by GE in writing. In order to ensure compliance with those undertakings, the Parties propose to set up an arbitration scheme, whereby any affected interested third party may initiate arbitration. The Parties undertake to comply with any arbitration decision within [...]*.

3. ASSESSMENT OF THE UNDERTAKINGS

3.A. ***BFE products***

(500) The Parties' proposal constitutes a partial divestiture of Honeywell's range of BFE products. Such proposal would however still leave leading positions on the products not comprised in the divestiture package (instruments, displays, and the regional and corporate jet versions of those products, see below under SFE). Such addition of Honeywell's products to the combined entity's packaged offers will result in the foreclosure of other competing suppliers in these product lines.

(501) In addition, the feed-back from the technical verification has stressed that the A&AP Business does not represent Honeywell's entire business in the relevant product lines but rather a collection of mature technology products generally at the end of their life cycle. The respondents indicate that Honeywell would retain a business which has the new technology necessary to be competitive. Indeed, the technical verification has indicated that the next generation of avionics products is being developed by Honeywell in other plants and research centers. This is the case for [certain avionics products, specification of which is considered by Honeywell to be confidential]* where the products that are scheduled to replace [certain avionics products, specification of which is considered by Honeywell to be confidential]* are under development in [Honeywell facility, name of which is considered by Honeywell to be confidential]*. The new generation products are either integrated solutions or use different technology and are as such not included in the proposed undertaking.

(502) Even if a purchaser for the [Honeywell business, name of which is considered by Honeywell to be confidential]* business with such limited viability could be found, it would need to make significant R & D investments in order to catch up with Honeywell's new technology developments for the products which the Parties have not proposed to divest and for which they will continue to compete in the market. The buyer of the [Honeywell business, name of which is considered by Honeywell to be confidential]* business would not be able to achieve competitiveness unless new product developments to replace those mature positions are included in the divestment package.

(503) Regarding Satcom, it is to be noted that [...]*.

3.B. ***SFE products***

(504) First of all, inertial navigation is a product family that represents only part of the avionics products that Honeywell can offer on an SFE basis, and as such, its range of SFE products would remain very significant. Indeed, for the other main SFE products such as flight management systems (for which Honeywell has a [60 to 70 %]* market share) and flight controls (autopilot), Honeywell's strength remains unchanged.

(505) Secondly, the undertaking does not address Honeywell's integrated solutions for LCA or product families where the integration and engineering capacity of Honeywell is a major competitive discriminator. As indicated before, the main strength of Honeywell is its integration capacity which has materialised in integrated avionics suites for regional and corporate aircraft (the Primus Epic integrated avionics suite). This avionics integration capability is expected to become important also on LCA (as discussed in the paragraphs regarding Honeywell's integration capacity).

(506) Thirdly, even with regard to the divested IRS product line, the undertaking leaves Honeywell's integration expertise unaffected. Integrated IRS systems will gradually replace the stand-alone IRS products, and as such, as in the case of BFE products, the Parties offer to divest products that have a limited life ahead.

(507) In addition, the Parties are not willing to divest the core technology for inertial navigation, that is the ring laser gyroscopes, base sensors and accelerometers. The feedback from the technical verification has confirmed that these are critical components in the inertial navigation business without which the buyer cannot develop a stand-alone and viable business. For the purchaser of the inertial navigation business (IRS), buying these products on the market is not considered a viable alternative since it would render the buyer reliant on GE/Honeywell , which would entail additional costs and other competitive disadvantages. The Parties' proposal to supply the purchasers with these products on the basis of a 'fully allocated cost of production' would leave the buyer dependent on a competitor for timely supply and service and availability of product. Also, the buyer of the IRS business would not be able to verify the fully allocated cost of production as Honeywell produces [comments on Honeywell's production organisation, considered by Honeywell to contain confidential information]*. In addition, the undertaking does not commit GE to sell any technological improvements that GE might develop for these components. Future generation ring laser gyro's, air data sensors and accelometers are not included in the supply commitment.

3.C. ***APUs***

(508) The Commission considers that the proposal on APUs is inadequate since the undertaking does not address the merged entity's position on LCA. Indeed, on the high volume selling large commercial aircraft (such as the B737 and A320 families), APU's are buyer selectable equipment that are also sold to airlines on a dual-sourced basis. As such, the proposal does not address the merged entity's ability to package APU's with BFE products, the importance of which was underlined by the market investigation.

(509) Other than the unduly narrow scope of the divestment, the feedback from the technical verification has highlighted significant issues critical to the viability of the divested businesses.

(510) First of all, the respondents have qualified the most important APU model as being based on old design and technology (20 years old) which would limit, notwithstanding its existing applications, its competitiveness for future applications. Other APUs offered concern newer products, but with a limited number of applications. The APU's to be divested can, according to the technical verification, not be upgraded to grow into applications other than corporate and regional aircraft. The impact on competition is therefore limited.

(511) Secondly, Honeywell's small engine business (corporate and business jet engines and helicopter engines), and APU business (large and small) are housed in the same facility in [Honeywell facility, name of which is considered by Honeywell to be confidential]*. The helicopter engines part of this facility is already scheduled to be sold and relocated as part of GE's agreement with the US Department of Justice. Divesting small APU's would require a further division of this facility for the purchaser(s) of the large regional jet engines and the small APUs. This may subsequently lead to significant logistical complications, such as splitting up the common pool of employees, production lines, tools and testing facilities between these businesses. In addition, the purchaser of the divested APU business would need to secure alternative suppliers for parts that Honeywell currently produces in-house.

(512) Thirdly, other than the MRO business in Raunheim, the proposed divestiture does not include Honeywell's associated aftermarket business. Without this, the purchaser cannot viably compete in this business since APU sales have low margins. The commitment is not accompanied by a non-compete provision regarding the relevant APU MRO business.

(513) Concerning Raunheim, the Parties will retain the existing MRO agreements performed at more than one location using Honeywell products. Income from such contracts accounts for [...]* % of the divested activities conducted at Raunheim. In addition, it can be noted that for [...]* out of the [...]* most important multi-location customers, the turnover attributable to the Raunheim plant accounts for more than [...]* % of total turnover. The scope of this undertaking is thus very limited and cannot constitute a viable business.

3.D. ***ECS***

(514) Since this undertaking does not address Honeywell's position on LCA, the same reservations apply as for APUs.

(515) In the light of the foregoing, the proposed undertakings on BFE and SFE avionics and non-avionics products are not sufficient to eliminate the dominant positions which the proposed merger will create or strengthen on the markets for large commercial engines, avionics and non-avionics products.

3.E. ***Engine starters***

(516) Although the undertaking regarding engine starters appears clear-cut, the technical verification has indicated that the divested air turbine starter business does not include air starter valves. Although those valves are not directly physically connected (they are connected with a short length of pipe), the two parts are technically heavily interrelated and designed to match each other, for example in terms of air flow characteristic. For that reason, the two components are purchased as a complete air starter system from a single source. Since the commitment does not include any reference to air starter valves, the competition concern stemming from the vertical relationship is not adequately resolved.

(517) The divested business could only function as a stand-alone business if the current activities are re-located from within certain dispersed Honeywell buildings to one central building. This is not been committed to and neither have the Parties committed to grant the Purchaser a controlled and independent access to the test cells, which are an essential facility for the purpose of the engine starter business. Finally, there are also some non-divested MRO service facilities that currently provide these services to the business and for which no express commitment regarding even a transitional service agreement has been given.

3.F. ***Small marine gas turbines***

(518) The acceptability of the undertaking regarding small marine gas turbines depends on the resolution of a number of practical issues that GE has not been in a position to address satisfactorily. They relate to the necessity for a Purchaser to be cleared by the US Government with respect to export control rules. Since the commitment is 'subject to all necessary approvals' and since the nature of the rules has not been indicated (whether or not it is discretionary or not), a refusal by the US Government would signify that no divestiture will occur but that the Parties have respected their commitment. Another problem relates to the expected increase of input costs for the divested business if the purchaser does not produce helicopter engines. This is all the more relevant as MTU, the other shareholder in Vericor, does not produce such engines. Accordingly there is no commitment to attain a specific result, whose failure to meet would give rise to certain penalties.

3.G. ***Large regional jet engines***

(519) On the face of it, the proposed undertaking would appear to be sufficient to remove the competition problem. However, in reality it would be difficult to put it into practice. The manufacturer of the Avro jet, BAe Systems, has drawn the Commission's attention to various facts. Firstly, it believes that there are no interested potential buyers. Secondly, even assuming that an interested buyer were to be found, the disposal of the engines would, it is claimed, seriously affect the viability of the Avro jet. Since both the new Avro and its AS900-series engines are under development, the divestiture of the engine to a third party would lead to significant uncertainty as to the timetable of the development as well as to the sales prospects of the aircraft.

(520) [Comments of airframe manufacturer, name of which is considered by Honeywell to be confidential], it is uncertain whether the proposed remedy is indeed capable of eliminating the competition problem identified. In this respect, it can be noted that the commitment does not provide for an alternative divestiture.

(521) The respondents to the technical verification have unanimously indicated that, if a divestiture was to be at all possible, both the AS 900 engine and the 502/507 engines would need to go to one single purchaser since the AS 900 engine family is the continuation of the latter and because of the commonality of the customer base. Whilst the Parties have indicated that the two engine families have no parts or designs in common, the argument as to commonality remain valid.

(522) The following further issues are not appropriately dealt with in the commitment: the commitment to transfer to the Purchaser an engineering team as considered necessary by the Purchaser to fully support the pre- and post-certification programs; access to Honeywell supplied inputs (that are not divested) at current valid terms for a period sufficient to allow the Purchaser to manufacture the parts itself or to find alternative third party suppliers; no effective commitment to have the proprietary Honeywell design and analysis models 'translated' into the Purchaser's models; no effective commitment with respect to any possible disputes about the allocation of personnel to the divested business stemming from the fact that some personnel may be working partly on the military helicopter business which is to be divested, partly on the Honeywell business which is retained and partly on the large regional jet engines business.

4. TECHNICAL VERIFICATION

(523) In addition to the substantive failure of the proposed package of undertakings to eliminate the competition problems identified, the Commission has indicated a number of general shortcomings in the commitments concerning the viability of the proposed divestitures relating to the timeframe for transferring the business and the extent of access to intellectual property rights (IPR), personnel, facilities, customers and supplies. Most of those matters have also been referred to by respondents to the technical verification. In addition, it can be noted that the proposed trustee has no right to impose any measures necessary to that the Parties comply with their commitments and that the trustee's power to sell the divested business at no minimum price is constrained, which may call into question the mechanism whereby the trustee can ensure that the business will be divested in the appropriate time frame.

(524) The technical verification has stressed the logistical complications in transferring the various businesses and has shown that a [...]* time-frame may not always be sufficient. Those doubts have been reinforced by L3's difficulties in transferring the divested TCAS product line following the Allied Signal merger within [...]* provided for in the Commission Decision ([139]).

(525) With respect to access to personnel, the access to sales and marketing people is conditional on 'mutual agreement' between the Parties and the purchaser. The purchaser is thus not given any right other than not to agree to purchase the business. Furthermore, the parties' proposal to limit the transferability of technical personnel to those who have had [degree of involvement with the business to be divested, specification of which is considered by Honeywell to be confidential]* was considered to be too strict. In addition, no mechanism is foreseen to ensure that personnel who had previously worked for the businesses to be divested and had access to sensitive information are restricted from using the information acquired there in the retained business. Finally, the Parties have not committed to any additional incentives in order to ensure that key employees agree to transfer to the purchaser.

(526) Concerning access to Honeywell produced input (when it is impossible to resource from other producers in view of non-recurring costs and certification implications), [duration, specification of which is considered by Honeywell to be confidential]* supply agreement is considered inadequate to control the future cost growth. Whilst the Parties have, in addition, given a general commitment to

([139]) See footnote 5.

enter into the necessary transitional agreements with any purchaser, such a transitional agreement may not always allow the purchaser to avoid becoming structurally dependent on the merged entity.

(527) The proposal of the Parties for the buyer to license intellectual property rights (IPR) from GE has been strongly rejected by the technical feed-back. In order for the buyer to operate viably, he should be able to acquire all IPR that is only used in the divested business and an exclusive licence to all shared IPR for the field of use of the divested business. Instead, the Parties will only transfer IPR that is currently exclusively used in the divested business and is also not capable of being used in a Honeywell Product in future. As to the shared IPR, the Parties would retain the IPR for the field of use of the divested business, thereby considerably facilitating a re-entry into the business after the end of the non-compete period.

(528) Finally, the fact that the merged entity thus retains potential access to most of the divested know-how and that the proposed non-compete period is [duration, specification of which is considered by Honeywell to be confidential]* would make it relatively easy for the merged entity to re-enter the market. In addition, the commitment allows the Parties to acquire joint control in a competing business immediately.

5. OTHER UNDERTAKINGS

5.A. ***Corporate jet engines***

(529) Apart from the fact that the commitment relating to corporate jet engines is purely behavioural, it cannot be accepted since it would be tantamount to a reduction of output and would thus reduce supply to the detriment of customers. The commitment is thus not equivalent to the typical non-compete clause generally associated with the sale of a business which will continue to be operated by a third party on the market for the acquisition and leasing of aircraft. Moreover, it may be difficult for any approved Trustee or Arbitrator to make the distinction between so-called speculative purchases and financing in the form of purchases. The dominant position of the combined entity will thus remain on the market for corporate jet engines.

5.B. ***GECAS/Commitment not to engage in bundling practices***

(530) The undertakings not to engage in bundling practices are submitted in relation to the concerns on the use by the merged entity of its vertical integration and financial strength and its ability to engage in product bundling. However, they are purely behavioural and as such cannot constitute the basis for a clear elimination of the said concerns.

(531) The legal separation of GECAS does not affect its management and thus its control remains in the hands of GE. It cannot be expected that such separation will prevent GECAS from exercising the commercial strategy of GE. For the rest, the undertaking on GECAS remains a pure promise not to act in a certain manner. Such a promise is in contrast with the Commission's stated policy on remedies and with the purpose of the Merger Regulation itself. Moreover, the presence of an independent expert does not represent any guarantee about GECAS's conduct, since any intervention or control by that Expert will occur *ex post*. The same is true for the undertaking on product bundling, whereby the Parties only promise not to bundle their respective products. Apart from the fact that they reserve the right to bundle under certain circumstances, their commitment can only be policed *ex post*, that is after it has taken place. The market investigation has suggested that product bundling is not characterised by any formality and that by the time competitors can detect it, and therefore report it to the monitoring mechanisms proposed by the Parties, it has already taken place. Moreover, the proposed undertakings can be expected to require a significant amount of monitoring work on the part of the Commission. The arbitration mechanism will give rise to endless litigation in which the Commission will have to participate in its capacity as the recipient of the undertakings.

(532) Overall, the proposed undertakings on GECAS and bundling do not eliminate the relevant competition problems identified. Their effect would be that the Parties would become dominant or strengthen their dominant position but promise not to abuse it. In addition to being complex in their implementation and in their monitoring, the undertakings cannot be considered capable of effectively removing the competition problems identified.

(533) On the basis of the foregoing, and since the proposed package is both unviable and insufficient to address the competition concerns raised by the proposed merger, it cannot form the basis for an authorisation decision.

E. *NEW SET OF UNDERTAKINGS SUBMITTED BY THE PARTIES ON 28 JUNE 2001*

1. INTRODUCTION

(534) At a very late stage in the procedure, on 28 June 2001, the Parties withdrew the package of undertakings submitted on 14 June 2001 and proposed a new and substantially modified set of undertakings. The new proposal relates to the sale of a minority interest in GECAS to third parties selected by GE combined with the behavioural commitments already submitted concerning GECAS's conduct in its dealings with Honeywell. In parallel, the Parties reduce their proposed divestitures of Honeywell aerospace products.

2. DESCRIPTION

2.A. ***GECAS***

2.A.1. **Sale of a minority interest in GECAS to independent third parties**

(535) GE proposes to create a new class B common stock representing 19,9 % of the voting power of GECAS. Those non-traded shares will subsequently be sold, through a private placement as opposed to a public offering, to one or more independent entities selected by GE within six months following the Commission's decision. The investors that are targeted by GE consist of financial institutions such as banks or management funds. GE will in addition retain a veto right on any future sale and disposal of those shares. The owners of the class B shares will be granted the right to elect one of the five GECAS directors, who must be independent of GE (not an employee, director or supplier to GE).

(536) The independent director will receive advance notice of any purchase of new aircraft for leasing purposes that involves the acquisition of Honeywell products as well as GECAS's compliance with the behavioural undertakings described below. GE will maintain its right to prefer GE engines when it buys aircraft, but will not reserve any ability to prefer Honeywell products when it buys such aircraft.

2.A.2. **Behavioural commitments on GECAS**

(537) The Parties also retain all provisions relating to GECAS as proposed in the undertaking submitted on 14 June 2001 and described above in sections 2.E.3 and 2.E.4.

2.B. ***BFE/SFE avionics and non-avionics products***

(538) In addition, the Parties have proposed the divestiture of certain avionics products. Compared to the original set of undertakings submitted on 14 June 2001, the scope of the divestment has been significantly reduced. The divestment no longer includes SFE products or non-avionics products (except for a maintenance, repair and overhaul facility that services, *inter alia*, APUs). In addition, the number of BFE product lines to be divested has been reduced from seven to two. The rationale for reducing the divestment package is, according to the Parties, that a divestment of SFE products is no longer necessary due to the proposed solution on GECAS and that the reduction of scope of the BFE package ought to compensate for the cost accounted by the divestment of a minority interest in GECAS.

(539) Divesting a limited number of BFE avionics product lines will, according to the Parties, suffice to meet the Commission's concerns regarding bundling of BFE avionics, non-avionics products and engines.

(540) The proposed divestments cover Communication/Navigation ([Honeywell business, name of which is considered by Honeywell to be confidential]*), which includes all products for transmitting and receiving pilot voice and other communications to/from ground or airborne operation centers for LCA, but does not include SatCom (which sends and receives data and voice telephony to the ground via satellite).

(541) They also cover recorders (which record flight data information and cockpit voice) and data management systems (aircraft condition monitoring systems), referred to as the 'RDMS Business', for both LCA and regional/corporate aircraft.

(542) In addition, the Parties maintain their proposal to divest Honeywell's commercial repair and overhaul business in Raunheim as described above.

2.C. ***Engine starters***

(543) In order to resolve the competition problems resulting from the vertical relationship between GE as an engine manufacturer and Honeywell as a supplier of engine starters, the Parties maintain their proposal to divest Honeywell's engine starter business as described in the original set of undertakings submitted on 14 June 2001.

2.D. ***Small marine gas turbines***

(544) In order to resolve the competition problems, resulting from the horizontal overlap between the activities of GE and of Honeywell in the market for small marine gas turbines, the Parties maintain their proposal to divest Honeywell's 50 % stake in Vericor as described in the original set of undertakings submitted on 14 June 2001.

2.E. ***Large regional jet engines***

(545) In order to resolve the competition problem, resulting from the horizontal overlap in the market for engines for large regional jet aircraft, the Parties have maintained their proposal to divest the AS900-series engine as well as the existing ALF502/LF507 engines as described in the original set of undertakings submitted on 14 June 2001.

3. EVALUATION

3.A. ***Introduction***

(546) In making the evaluation of this late proposal of undertakings, account must be taken of the requirements set out in the Merger Regulation and the Commission's Notice on remedies acceptable under Council Regulation (EEC) No 4364/89 and under Community Regulation (EC) No 447/98 ([140]) which apply to this kind of post-deadline submission.

(547) Article 18(2) of Commission Regulation (EC) No 447/98 of 1 March 1998 on the notifications, time limits and hearings provided for in Council Regulation (EEC) No 4064/89 on the control of concentrations between undertakings ([141]) provides that commitments intended by the Parties to form the basis of a decision of compatibility pursuant to Article 8(2) of the Merger Regulation are to be submitted to the Commission within three months of the decision to open proceedings, although the Commission may, in exceptional circumstances, extend that period. The Parties did not put forward any reasons which could be regarded as constituting such exceptional circumstances. The last day for submitting proposed commitments in this case was 14 June 2001 and the Parties' new proposal was submitted on 28 June 2001. In the Commission's view, there was nothing in the new proposal which the Parties could not have included in an undertaking submitted within the three-month time limit.

(548) Moreover, paragraph 43 of the Commission Notice on remedies states that where the Parties subsequently modify the proposed commitments, the Commission may only accept modified commitments where it can clearly determine, on the basis of its assessment of information already received in the course of the investigation, including the results of prior market testing, and without the need for any other market test, that such commitments, once implemented, solve the competition problems identified and allow sufficient time for proper consultation of Member States.

(549) In the present case the proposed undertakings are insufficient, they do not allow sufficient time for consultation and in any event they do not solve the competition problems identified.

3.B. ***GECAS***

(550) The new undertakings regarding GECAS are submitted in relation to the concerns on the use by the merged entity of its vertical integration and financial strength. Although a structural component was added to the undertaking (namely the divestiture of 19,9 % of the voting rights in GECAS), the undertaking regarding GECAS remains purely behavioural in nature and as such cannot constitute the basis for a clear elimination of the said concerns. In addition, its scope is limited essentially to BFE products excluding engines.

3.B.1. **Sale of a Minority Interest in GECAS to Independent Third Parties**

(551) The proposal from GE to create a new class of shares (referred to as class B shares, that is apparently a type of shares with voting rights but no financial interests attached to them) representing 19,9 % of the voting power of GECAS and subsequently to sell them to one or more entities selected by GE through a private placing, does not solve the issue of the change, if only partial, in control of GECAS so as to result in a modification of GECAS's purchasing policy, which is biased towards GE products.

([140]) OJ C 68, 2.3.2001, p. 3.
([141]) OJ L 61, 2.3.1998, p. 1.

(552) The proposal to grant the owners of the class B shares the right to elect one of the five GECAS directors does not address the issue of control since the owners of the class B shares will be designated by GE and most probably be chosen among institutional financial investors with no involvement in the relevant markets. Furthermore, those 19,9 % would not be traded and any subsequent sale and resulting change in the ownership of those 19,9 % voting rights in GECAS would be subject to GE's approval and selection. In any event, GE would retain control of GECAS.

(553) The structure of the proposal therefore does not address the minimum requirements concerning GECAS, namely: that it be floated to market participants so as to be directly subject to applicable Stock Exchange regulations and knowledgeable industrial players with an interest in preserving GECAS's neutrality policy; that GECAS's by-laws should enshrine the change in purchasing policy to a market-oriented market approach; and that the necessary veto rights should be laid down to allow proper *ex ante* control over that aspect of GECAS's commercial policy.

(554) The inadequacy of the new proposal regarding GECAS is further strengthened by the provision maintaining GE's right to prefer GE or GE joint venture engines when GECAS purchases aircraft. In other words, the proposed undertaking does not affect the creation or strengthening of dominant positions by the merged entity on all the jet engine markets. Finally, the undertaking does not appear to affect GECAS's bias effect on the selection of SFE products.

(555) The proposed divestiture of 19,9 % of GECAS by GE without genuine change in GE's ability to exercise control over GECAS to favour GE products will therefore result in GE's incentives to influence airframe manufacturers being unaltered.

3.B.2. **Behavioural commitments**

(556) GE has proposed to retain all of its previously proposed behavioural provisions submitted on 14 June 2001 and described in the preceding paragraphs.

3.C. ***BFE/SFE avionics and non-avionics products***

(557) The assessment of the avionics and non-avionics products has already been addressed above and is also relevant for the product lines that are retained in the new proposal. It can be summarised as follows. First of all, the proposal does not address the leading positions that Honeywell has in the avionics and non-avionics markets and does not limit the merged entity's bundling capacity for products that are sold to airlines. Secondly, the proposed package does not include Honeywell's technologically most advanced products that represent both growth markets and essential parts for future integrated solutions. Thirdly, the few proposed product lines only concern LCA and do not address avionics and non-avionics on regional/corporate aircraft. Fourthly, communication/navigation avionics, the most important product line covered by the proposal, concerns a collection of mature technology products that are at the end of their life cycle and Honeywell has thus excluded the next generation product line from the divestment proposal. Fifthly, SatCom, an essential communication/navigation avionics product is not included in the package. The proposal would thus not reduce the merged entity's ability to bundle products and services.

(558) In addition, since the new proposal no longer envisages divestment of an entire avionics plant [Honeywell facility, name of which is considered by Honeywell to be confidential]* facility as proposed in the original undertakings), product lines will need to be carved out, which will subsequently lead to significant logistical complications such as splitting up the common pool of employees, production lines, tools and testing facilities.

(559) Concerning the Raunheim plant, it is clear that divesting an MRO facility does not affect the merged entity's leading position for APU's (which can be bundled with avionics and engines). In addition, and as found in the analysis of the first package of undertakings, the divestment proposal excludes the contracts with multi-location customers serviced by Honeywell that currently account for [...]* % of the Raunheim plant's total turnover. Accordingly, this undertaking cannot constitute a viable business.

3.D. ***Engine starters***

(560) Since the proposed undertaking in relation to engine starters has not been modified, the analysis in respect of the first package remains valid.

3.E. ***Small marine gas turbines***

(561) Since the proposed undertaking in relation to small marine gas turbines has not been modified, the analysis in respect of the first package remains valid.

3.F. *Large regional jet engines*

(562) Since the proposed undertaking in relation to large regional jet engines has not been modified, the analysis in respect of the first package remains valid.

4. TECHNICAL VERIFICATION OF ALL DIVESTITURE PROPOSALS

(563) Since the structural undertakings retained from the 14 June 2001 undertakings proposal have not been modified in order to cure the general shortcomings (relating to the timeframe for transferring the business, the extent of access to intellectual property rights (IPR), personnel, facilities, customers, supplies) the analysis remains valid

5. PROCEDURE

(564) With respect to the procedural aspect of the undertakings proposal of 27 June 2001, the Parties did not set forth exceptional circumstances although they claim that the nature of their new proposal for undertakings regarding GECAS has been complemented with a structural dimension that was not previously included.

(565) In any event, paragraph 43 of the Commission Notice on remedies states that such commitments should allow sufficient time for proper consultation of Member States and need no further market test. The fact that the new package, for the reason set out above, does not fully and unambiguously, that is in a straightforward manner, address the competition concerns identified by the investigation, means that the undertakings proposal of 27 June 2001 fails to comply with the requirements of the Merger Regulation.

6. CONCLUSION ON THE UNDERTAKINGS

(566) For the foregoing reasons, it should be concluded that the proposed undertakings do not remove the identified competition concerns and cannot form the basis for an authorisation decision.

VI. **OVERALL CONCLUSION**

(567) For all those reasons, it should be concluded that the proposed merger would lead to the creation or strengthening of a dominant position on the markets for large commercial jet aircraft engines, large regional jet aircraft engines, corporate jet aircraft engines, avionics and non-avionics products, as well as small marine gas turbine, as a result of which effective competition in the common market would be significantly impeded. The proposed merger should therefore be declared incompatible with the common market pursuant to Article 8(3) of the Merger Regulation,

HAS ADOPTED THIS DECISION

Article 1

The concentration by which General Electric Company acquires control of the undertaking Honeywell International Inc. is declared incompatible with the common market and with the EEA Agreement.

Article 2

This Decision is addressed to:

General Electric Company
3135 Easton Turnpike
Fairfield
Connecticut 06431
USA

Done at Brussels, 3 July 2001.

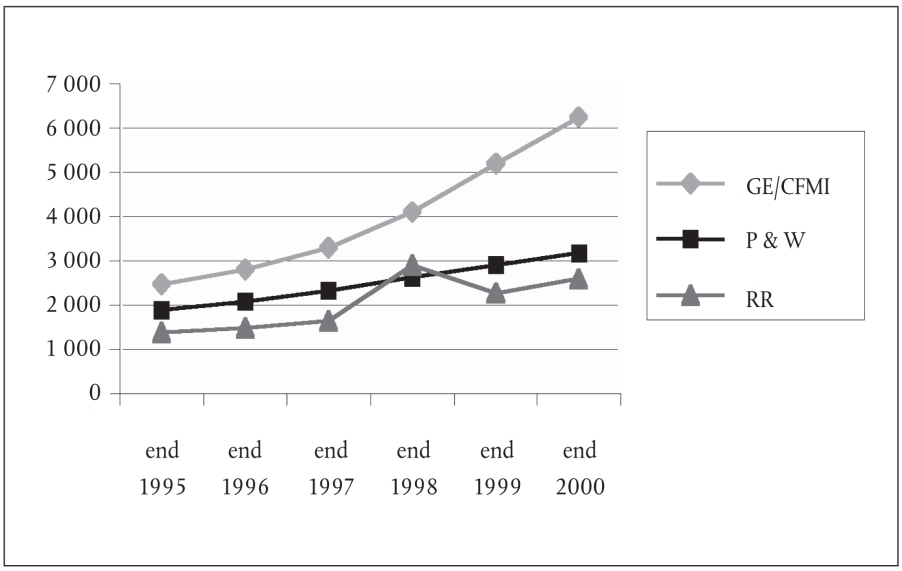
For the Commission

Mario MONTI

Member of the Commission

ANNEX

Evolution of the installed base of engines on large commercial aircraft still in production (1995 to 2000)



Source: on the notifying Parties' data.