EN

Case No COMP/M.2781 - NORTHROP GRUMMAN / TRW

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REGULATION (EEC) No 4064/89 MERGER PROCEDURE

Article 6(1)(b) NON-OPPOSITION
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PUBLIC VERSION

MERGER PROCEDURE
ARTICLE 6(1)(b) DECISION

To the notifying party

Dear Sir/Madam,

Subject: Case No COMP/M.2781 – Northrop Grumman/TRW
Notification of 13 September 2002 pursuant to Article 4 of Council Regulation No 4064/89[1]

1. On 13 September 2002, the Commission received a notification of a proposed concentration pursuant to Article 4 of Council Regulation No 4064/89 (the "Merger Regulation") by which Northrop Grumman Corporation ("Northrop Grumman") acquires within the meaning of article 3(1)b of the Merger Regulation sole control of the whole of TRW Inc. ("TRW") by way of purchase of shares.

2. After examination of the notification, the Commission has concluded that the notified operation falls within the scope of the Merger Regulation and does not raise serious doubts as to its compatibility with the common market and with the EEA Agreement.

I. THE PARTIES

3. Northrop Grumman is a global aerospace and defence company with world-wide headquarters in Los Angeles, USA. It provides products, services and solutions especially in defence and commercial electronics. It serves the U.S. and international military, government and commercial customers.

4. TRW is a US corporation that provides advanced technology products and services. It is principally active in the manufacture and sale of products and the performance of systems in the automotive and space, defence and information systems sectors.

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[1] OJ L 395, 30.12.1989 p. 1; corrigendum OJ L 257 of 21.9.1990, p. 13; Regulation as last amended by Regulation (EC) No 1310/97 (OJ L 180, 9. 7. 1997, p. 1, corrigendum OJ L 40, 13.2.1998, p. 17).

II. THE OPERATION

5. Northrop Grumman and TRW entered into a Merger Agreement on 30 June 2002. According to this agreement Northrop Grumman acquires TRW through a merger of Richmond Acquisition Corp., which is a wholly-owned subsidiary of Northrop Grumman, with and into TRW.

6. After completion of its acquisition of TRW, Northrop Grumman expects to divest TRW's automotive business, which accounted for approximately 62% of TRW's revenues in 2001. Furthermore, TRW has already on 18 June 2002 entered into a definitive agreement with Goodrich Corporation for the sale of TRW's aeronautical systems business, which accounted for 7% of TRW revenues in 2001. This transaction was cleared by the Commission on 23 August 2002[2]. The sale is expected to be closed by the end of year 2002. Subject to these two intended transactions, TRW is anticipated to continue its current business and operations, as a wholly-owned subsidiary of Northrop Grumman.

III. COMMUNITY DIMENSION

7. The undertakings concerned have a combined aggregate world-wide turnover of more than EUR 5 billion[3] […]. Each of Northrop Grumman and TRW also have a Community-wide turnover in excess of […], but they do not achieve more than two-thirds of their aggregate Community-wide turnover within one and the same Member State. The notified operation therefore has a Community dimension.

IV. COMPETITIVE ASSESSMENT

8. TRW has entered into a definitive agreement with Goodrich Corporation for the sale of TRW's aeronautical systems business. The sale of TRW's Aeronautical Systems business to Goodrich Corporation (Goodrich) was completed on 2 October 2002. Regarding TRW's automotive business, there is no relationship with the businesses of Northrop Grumman. Consequently, the Commission did not investigate in detail TRW's automotive business and this decision will not refer to this sector any further.

A. Relevant product markets

Products concerned

9. The economic sectors involved in the proposed transaction are the provision of high technology military and commercial products and information technology and technical services.

10. The Parties submit that overlaps between the Parties' activities overall are limited as they specialise in different product segments. This is reflected by the fact that there are

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2 Case COMP/M.2892 – Goodrich/TRW Aeronautical Systems Group

3 Turnover calculated in accordance with Article 5(1) of the Merger Regulation and the Commission Notice on the calculation of turnover (OJ C66, 2.3.1998, p25). To the extent that figures include turnover for the period before 1.1.1999, they are calculated on the basis of average ECU exchange rates and translated into EUR on a one-for-one basis.

hardly any programmes in Europe where either Party has competed against each other or teamed with the other even as subcontractors.

11. The Parties have not identified any horizontally affected markets. In addition, even though some potential vertical linkages exist between the Parties' activities, they submit that these linkages would not give rise to competition concerns.

12. The Commission has carried out a market investigation on those product groups for which minimal horizontal overlaps or potential vertical linkages exist in order to verify that these would not lead to competition problems. The product groups which have been examined in more detail are the following: supply of military aircraft and systems for military aircraft, satellite systems, military command and control systems, miscellaneous parts and information technology.

Relevant product market definitions

A.1 Military aircraft and systems for military aircraft

13. The notifying party has distinguished between a series of possible relevant markets in the military aircraft sector and in particular between military aircraft, avionics systems, airborne sensor systems and the sub-systems and components.

a) Military aircraft

14. Military aircraft can be segmented according to two main types of aircraft, which are manned military aircraft and unmanned aerial vehicles (UAVs). As regards manned military aircraft, the Commission has in a previous decision[4] considered that a distinction might be made between different types of manned military aircraft according to the operational role that they are designed to fulfil. The following two product markets have been suggested: multi-role combat aircraft and special mission aircraft (which could be further divided into bombers, tankers, airborne early warning, electronic warfare and maritime patrol aircraft). UAVs on the other hand are pilote-less aircraft capable of autonomous operation or operated remotely. The Commission has in a previous case[5] considered that a distinction could be made between tactical UAVs with a limited maximum range and flying capacity, and long-endurance UAVs with a wider range and flying capacity.

b) Avionics systems

15. Avionics systems for military aircraft comprise onboard equipment used inter alia for aircraft control and navigation. The Commission has in a previous decision[6] made a distinction between avionics systems according to demand segments that are defined by type of aircraft (for example general aviation and military). A further distinction has been made between avionics systems according to the function they perform onboard. The only avionics systems category which is relevant for the assessment of this case is

4 Case No COMP/M.1745 - EADS

5 Case No COMP/M.1309 – Matra/Aerospatiale

6 Case No IV/M.1601 – Allied Signal/Honeywell

the production of "Identification of Friend or Foe" (IFF) sub-systems, which are used only on military aircraft, in order to distinguish enemy targets. The Parties have considered that IFF could form a separate product market but that even on the basis of this narrow definition no competition concerns could be raised.

c) Airborne sensor systems

16. Military aircraft also incorporate several types of structures and systems. These are for example airborne sensor systems and sub-systems and components for airborne sensor systems. Airborne sensor systems are fitted to military aircraft to increase the war fighting capability or to provide intelligence gathering functions. They are onboard systems that include offensive, defensive and intelligence gathering electronic systems including radars and signals intelligence (SIGINT) systems. For example SIGINT systems locate, identify and exploit the intelligence value of enemy communications and electronic signals. The notifying party has submitted that each airborne sensor system category is likely to constitute a separate product market.

d) Sub-systems and components of airborne sensor systems

17. The sub-systems and components of airborne sensor systems vary according to the type of sensor system. The components having relevance for the examination of this case are "electronic warfare receivers" and "synthesizer and parameter encoder modules". Electronic warfare receivers are used in several different airborne sensor systems. They can for example create patterns surrounding an aircraft, which can detect and identify radio frequencies. Synthesizer and parameter encoder modules are components performing functions associated with the segregation of radio frequency signals detected by the electronic warfare receivers. The notifying party has submitted that for the purposes of this case, synthesizer and parameter encoders should be treated as one product market as well as electronic warfare receivers. As regards synthesizer and parameter encoders, TRW's products are custom-built and tailored for specific programmes, whereas Northrop Grumman does not supply them at all.

Conclusion

18. The results of the Commission's market investigation do not argue against the market categorisations presented above. However, for the purposes of this decision, it is not necessary to further delineate any relevant product markets for military aircraft, avionics systems, airborne sensor systems or for the sub-systems or components, as in all alternative market definitions considered, effective competition would not be significantly impeded in the EEA or any substantial part of it.

A.2 Satellite systems

19. Satellites comprise two basic elements: (i) a platform, or 'bus', which is the physical structure of the satellite and which ensures stability and thermal control, maintains orbit and supplies electrical energy, and (ii) a payload, which governs the main parameters of the platform and performs the particular tasks for which the satellite was put into orbit. In turn, both the bus and the payload comprise a number of sub-systems and components. The notifying party has therefore presented four areas for the competition assessment of the satellite systems markets: a) satellite prime contracting, which has to do with the satellite platform; b) satellite sub-systems and components, c) satellite payloads, and d) satellite payload sub-systems and components.

a) Satellite prime contracting

20. TRW is active as a prime contractor for satellite systems, but the notifying party submits that there is no overlap between the Parties' activities at the prime contractor level. The notifying party follows previous Commission's decisions[7]. Twelve markets can be identified, which corresponds to a distinction by types of customers (institutional customers[8], military customers and commercial customers) and by types of satellites (communication, navigation, observation or scientific). The following chart shows TRW's involvement in the satellite prime contracting markets, distinguishing satellite type and category of satellite customer (Northrop Grumman is not active in any of these markets).

	Communications	Navigation	Observation	Scientific
Military	TRW		TRW	
Institutional	TRW		TRW	TRW
Commercial				

Source: notifying party

21. For satellite sub-systems and components, satellite payloads and satellite payload sub-systems and components, the notifying party argues that the relevant market definitions mirror those for satellites. However, for the sake of completeness, these three categories are also presented here.

b) Satellite sub-systems and components

22. A satellite bus comprises various satellite sub-systems and components. The notifying party has identified the following products as relevant for the transaction: attitude and orbit control sub-systems (AOCS), telemetry, tracking and control sub-systems (TTCS), power supply sub-systems (SDA), propulsion sub-systems and satellite structures. Both TRW and Northrop Grumman manufacture sub-systems and components, which are used in the manufacture of the satellite bus. However, the notifying party argues that TRW and Northrop Grumman sell different types of sub-systems and components. It only identifies SDAs as a possible horizontal overlap.

c) Satellite payloads

23. Satellite payloads govern the parameters of the platform and perform particular tasks for which the satellite was put into orbit. Northrop Grumman provides observation payloads for satellites sold to US military and US institutional customers. But the notifying party argues that Northrop does not provide satellite payloads to customers in the EEA. TRW provides observation, scientific and communication payloads for satellites sold to

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7 Case IV. M/1185 Alcatel/Thomson CSF – SCS, Case COMP/M.1879 Boeing/Hughes, Case COMP/M. 1745 EADS

8 Institutional customers include civil, non-military bodies such as NASA or the European Space Agency (ESA)

military, institutional and commercial customers. TRW has not provided any satellite payloads to European customers to date, according to the notifying party.

d) Satellite payload sub-systems and components

24. Satellite payload sub-systems and components vary following to the type of payload, according to the notifying party. Northrop Grumman does not supply sub-systems or components for satellite payloads. TRW supplies various sub-systems and components for satellite payloads to third party payload manufacturers […]. The notifying party does not believe that the two firms are in competition for satellite payload sub-systems and components.

Conclusion

25. The results of the market investigation in the present case do not argue against the market definitions of previous Commission's decisions. However, for the purposes of this decision, it is not necessary to further delineate any relevant product markets for satellite prime contracting, satellite sub-systems and components, satellite payloads, and satellite payload sub-systems and components, as in all alternative market definitions considered, effective competition would not be significantly impeded in the EEA or any substantial part of it.

A.3 Military command and control systems

26. The notifying party has explained that military command and control systems (C2) comprise equipment and software located in military operation centres on land, in the air or at sea. Their function is to collate data rapidly on the location and activities of friendly and enemy forces, to depict the flow of logistics and other support activities, to provide analytical tools to plan military operations and to assist in the allocation of resources such as intelligence, communications and weaponry. C2 systems are basic command and control systems. When computers are added, they become known as C3 systems and when communications are added, they may be known as C4 systems. C4 systems have an added intelligence functionality.

27. The Parties both have military command and control activities. Northrop Grumman is involved in Europe through an air defence C2 system through a teaming up between its subsidiary Litton Data Systems and Alenia for the provision of the C2 ground based air defence system in Italy. TRW has been involved in a Lockheed Martin-led team competing for a NATO Extended Integrated Air Defence programme (feasibility study) and in the Integrated Ground Based Air Defence System (IGBAD) programme (NATO study). The notifying party therefore submit that the only command and control sub-systems with broadly similar functionalities which Northrop Grumman and TRW offer are in the ground based air defence segments.

28. In previous decisions[9], the Commission considered whether command and control systems for ground, airborne or naval applications constituted distinct relevant markets. In the present case, the market investigation did not bring conclusive evidence as regards market definitions. However, as even on the narrow market definition of ground based

9 Case COMP /M.1745 EADS, see above ; case COMP / M.2079 Raytheon/Thales/JV

air defence sub-systems and on any other possible definition, the proposed transaction does not raise competition concerns, the precise delimitation of the market can be left open.

A.4 Miscellaneous parts

29. Since both Northrop Grumman and TRW are active in the manufacture and supply of a number of parts that can be incorporated in defence and space related products, among others, the notifying party has identified several relevant markets where horizontal or vertical issues could potentially exist. The relevant components where one or both of the Parties are active are the following: a) slip rings, b) gallium arsenide based microwave components; c) indium phosphide based microwave components; d) lasers and e) laser crystal materials.

a) Slip rings

30. Slip rings are electromechanical interfaces for transmitting power and/or data from a stationary portion of a system to a rotary portion without disturbance. According to the notifying party, they are used in a variety of different electro-mechanical systems in aircraft, spacecraft, ground-based vehicles, ships, instrumentation, CCTV cameras, robotics, radar equipment and industrial and medical equipment. While Northrop Grumman produces slip rings, TRW does not. However, Northrop Grumman supplies a limited number of slip rings to TRW for use in classified satellites.

31. The notifying party questions whether slip rings could constitute a separate market or whether other products could be used as substitutes, like rotary capacitors, rotary inductors and fibre optic rotary joints, since they also give the rotational freedom of multiple electrical connections with the circuit density and economy provided by a slip ring. In any case, since the proposed transaction does not raise competition concerns on any possible market definition, the exact delimitation of a possible slip rings market can be left open.

b) Gallium arsenide based microwave components

32. Both Northrop Grumman and TRW manufacture gallium arsenide based microwave components, which are used in a variety of communications equipment such as mobile phone handsets and fibre optics, as well as radars, electronic warfare systems and guided weapons. They are used for military and aerospace technology applications where silicon based components may not have the required performance characteristics and therefore are not effective. They also have applications in the automotive sector (collision avoidance systems, cruise control radars) and consumer electronics (cable TV tuners, video, computer workstations).

33. In a previous decision[10], the Commission found that the manufacture and sale of gallium arsenide based microwave components constituted a distinct market. The notifying party agrees with this definition and the investigation did not raise new elements indicating that they should not be treated as forming a distinct product market.

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10 Case IV/M.744 Thomson/Daimler Benz

c) Indium phosphide based microwave components

34. Indium phosphide based microwave components are similar to the gallium arsenide based microwave components. However, the use of indium phosphide as a semiconductor material in the manufacture of these components allow them to operate in an even higher frequency regime. They are also used in a variety of communications equipment such as mobile phone handset and fibre optics, as well as radars, electronic warfare systems and guided weapons and are often used for military and aerospace technology applications. TRW manufactures indium phosphide based microwave components, whilst Northrop Grumman does not. But TRW may be a supplier of this component to Northrop Grumman's downstream ground-based air defence sub-systems.

35. The notifying party submits that indium phosphide based microwave components may constitute a separate market. However, the exact market definition can be left open since no competition concerns would arise from the transaction.

d) Lasers

36. Lasers are devices which generate and amplify light energy in the ultraviolet to far-infrared wavelengths. According to the notifying party, lasers can be segmented into a number of narrow markets, depending upon the laser medium (gas, chemical, solid state, etc.), application and power. They refer in this to a Commission's previous decision in the context of an Article 81 investigation[11]. They also point out that lasers are used in three general capacities: (i) small, lower power lasers that are used in targeting, range finding/designating, infrared countermeasures, communications, surveying and medical applications such as surgery; (ii) high power lasers that are used in military applications, commercial photo-lithography and for industrial applications such as cutting and machining and (iii) very large high powered lasers that are used as weapons. Northrop Grumman is active in the first category of lasers, i.e. small lasers, while TRW lasers are in the second and third category and operate in different power regimes.

37. However, it is not necessary in the present case to determine the exact scope of the proposed transaction, as the market investigation showed that no competition concerns are raised in the laser sector.

e) Laser crystal materials

38. Laser crystal materials are used in the production of solid-state lasers. According to the notifying party, laser crystal material is 'mined' into two different principal forms: laser rods and laser slabs. Northup Grumman, through its division Poly Scientific produces laser crystal materials for laser systems used in medical applications. TRW does not produce laser crystal materials.

39. The notifying party submits that the relevant product market is the market for laser crystal materials used in the production of solid-state laser systems. However, it is not necessary in the present case to determine the exact scope of the proposed transaction, as the market investigation showed that no competition concerns are raised in this sector.

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11 Cases IV/32.800 and IV/33.335, 92/427/EEC, Quantel International – Continuum/Quantel

A.5 Information technology

40. Both parties are active in the provision of (i) information technology (IT) software and services and (ii) organisational support services to the US military. However, the Parties submit that there are no horizontal overlaps between them.

41. Regarding information technology software and services, the Commission has investigated these markets in previous cases[12]. However the exact market definition for this case can be left open, as the investigation did not show competition concerns.

42. The same applies to organisational support systems: the notifying party argues that organisation support comprises maintenance services, logistical systems and training and simulation. Neither of the Parties is active in the supply of training services and simulation systems to customers other than the US military. Regarding maintenance services and logistical systems, their services are provided primarily to US armed forces and exclusively to US forces based in Europe for services supplied in the EEA. For that reason, it is not necessary to define more specifically military organisational support systems.

B. Relevant geographic markets

43. The Parties have submitted that in the sectors concerned, their activities in Europe are very limited. [Less than 10%] of Northrop Grumman's world-wide market share is generated in the EU. TRW's Space & Electronics and Systems divisions' turnover in the EU accounts for [less than 10%] of its world-wide turnover. As most of Northrop Grumman's as well as TRW's revenues are generated from their sales and services to US Government agency programmes, the Parties consider that the impact of the proposed transaction on European markets is very limited.

44. As regards the geographic scope of the markets, the Parties have furthermore submitted that in relation to military and space products, they face barriers to entry to European markets due to a) the preference of European military and space customers (for example Ministries of Defence) for European suppliers and b) the effect of the US International Traffic in Arms Regulation (ITAR) which makes exportation of products developed under programmes for the US Government more difficult[13]. It should, however, be noted that according to the Commission's market investigation carried out for the purposes of this case, third parties seem to consider that European military customers are usually willing to purchase from US sources and for many products the existence of the US ITAR Regulation is not believed to create an important barrier to entry into the EEA.

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12 Cases COMP/ M. 2496 IBM/PwC Consulting, COMP/M.2478 IBM Italia/Business Solutions/JV, COMP/M.2365 Schlumberger/Sema

13 Pursuant to the Arms Export Control Act and the International Traffic in the Arms Regulation (ITAR), all exports of items on the United States Munitions List – i.e. defence articles, associated technical data and defence services/assistance- require a licence from the US Department of State, Office of Defence Trade Control, unless they fall within one of the narrow exemptions. According to the notifying party, obtaining an ITAR licence can take 6 months, depending upon the technology involved, destination, end-use/end-user, and the overall complexity of the proposed transaction, but can be longer. All approvals will generally have limitation aimed at ensuring (i) that the controlled defence articles are not used by or resold to anyone other than the authorised recipient, (ii) are used for certain specific purposes and (iii) cannot be upgraded to include certain capacities.

B.1 Military aircraft and systems for military aircraft

45. *Military aircraft* can be procured through programmes or catalogue purchases. The Commission has in previous cases[14] considered that where a domestic supplier exists, the market for military aircraft would be national in scope. Where no domestic supplier exists, but subject to other barriers to entry, competition would take place world-wide. For catalogue sales the international market has been considered to be global.[15] A similar reasoning has been suggested for *avionics systems*, implying that the geographic scope would generally be international for catalogue sales and national or regional for programme sales.[16] For *UAVs* the Commission has suggested that the market would tend to be national in scope in some Member States despite increased use of competitive bidding procedures open to non-nationals companies.[17]

46. For military *airborne sensor systems* the notifying party has submitted that the geographic scope of the market would be international for catalogue sales and national or regional for programme sales (such as the sales of SIGINT systems which are typically sold through programmes). Similarly, the notifying party has considered that the markets for *synthesizer and parameter encoder modules and electronic warfare receivers* are not wider than EEA-wide. However, even on a wider basis, the proposed transaction would not raise competition concerns.

47. The results of the Commission's market investigation do not argue against the definitions presented above. For the purposes of this decision, it is, however, not necessary to further delineate the relevant geographic markets for military aircraft, avionics systems, airborne sensor systems or for the sub-systems or components, as in all alternative market definitions considered, effective competition would not be significantly impeded in the EEA or any substantial part of it.

B.2 Satellite systems

48. In previous decisions[18], the Commission suggested that the market for institutional satellites is national or European-wide and that the market for military satellites is national where Member States procure satellites from domestic contractors. The notifying party therefore submits that the scope of the military satellite market is national or at most EEA-wide. It furthermore argues that TRW's military satellite technology and equipment is currently controlled for export under category XV of the U.S. Munitions List and exports to Europe are subject to ITAR licensing requirements and that exports from the US may therefore be impossible for TRW, or that it may be difficult to compete actively in Europe due to the administrative burden of obtaining an export licence.

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14 Case No IV/M.1198 – BAE/SAAB

15 Case No COMP/M.1745 - EADS

16 Case No COMP/M.2308 – Northrop Grumman/Litton

17 Case No COMP/M.1745 - EADS

18 case IV/M.1636, MMS/DASA/Astrium, Commission decision of 21 March 2000; case IV/M.1309 – Matra/Aérospatiale, Commission decision of 28 April 1999

49. The results of the Commission's market investigation do not argue against the proposed geographic market definition. On the other hand, as already indicated above, the investigation did not confirm that export restrictions were convincing barriers to trade, so that there would be no possibility for TRW to compete in Europe. For instance, the Spanish Government has ordered military telecoms satellites from a US player (SSL) and the British Government has allowed US players to submit offer to its military telecom systems (Skynet 5). But regarding institutional satellites, it appears that the European Space Agency (ESA) has a specific policy of "juste retour"[19], which constitutes a barrier to entry to non-European players.

50. However, for the purposes of this decision, it is not necessary to further delineate the relevant geographic markets for satellite prime contracting, satellite sub-systems and components, satellite payloads, and satellite payload sub-systems and components, as in all alternative market definitions considered, effective competition would not be significantly impeded in the EEA or any substantial part of it.

B.3 Military command and control systems

51. In a number of cases[20], the Commission has suggested that where a national supplier for military command and control sub-systems exists, the relevant geographic market is national. Where no such supplier exists, the Commission considered in previous cases[21] that the relevant market would be world-wide. The notifying party argues however that the market may be limited to Western Europe, due to the presence of export restrictions or barriers connected to U.S. national security.

52. However, it is not necessary to further delineate the relevant geographic markets for military command and control systems because, in all alternative geographic market definitions considered, effective competition would not be significantly impeded in the EEA or any substantial part of that area.

B.4 Miscellaneous parts

a) Slip rings

53. The notifying party did not try to define a relevant geographic market and the market investigation did not bring sufficient elements to precisely define the market. In any case, no matter the geographic scope, the proposed transaction does not raise any competitive concerns, so that it is not necessary to further delineate the relevant geographic markets for slip rings for the purpose of this decision.

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19 the principle that the proportion of contracts under a particular awarded to firms from a given country is in proportion to the funding that this country has contributed to the programme

20 cas COMP.1745 EADS, see above ; case IV/M.1309 Matra/ Aérospatiale

21 See case COMP/M.2079 Raytheon/Thales/JV

b) Gallium arsenide based microwave components

54. In a previous decision[22], the Commission considered that the market for gallium arsenide based microwave components is at least EEA-wide and possibly worldwide, due to relatively low transportation costs, to the lack of structural barriers to entry and of import tariffs. The investigation did not raise new elements. In any case, it is not necessary to further delineate the relevant geographic market in the present case because, in all alternative geographic market definitions considered, effective competition would not be significantly impeded in the EEA or any substantial part of that area.

c) Indium phosphide based microwave components

55. The notifying party submits that the relevant geographic market for indium phosphide based microwave components is the same as for gallium arsenide based microwave components. However, the exact market definition can be left open since no competition concerns would arise from the transaction.

d) Lasers

56. The notifying party considers the geographic market for laser systems used in military applications (such as targeting and missile destruction) as regional or national due to the national security considerations of purchasers and export restrictions. For laser systems used in commercial applications it considers the geographic market to be worldwide.

57. The investigation indicated that some national security considerations may apply on laser products, but was not conclusive as to whether this may constitute an important barrier to trade. However, it is not necessary in the present case to determine the exact scope of the proposed transaction, since no competition concerns would arise from the transaction.

e) Laser crystal materials.

58. The notifying party submits that the relevant geographic market is worldwide for laser crystal materials. However, it is not necessary in the present case to determine the exact scope of the proposed transaction, as the market investigation showed it did not raise competition concerns in this sector.

B.5 Information technology

59. The notifying party supports the view that the markets for IT software are EEA-wide; and indicates that this is illustrated from the fact that both Northrop Grumman and TRW have substantial businesses in the US but have only a very limited presence in the EEA. It also views IT services as EEA-wide. However, it is not necessary in the present case to determine the exact scope of these markets, since no competition concerns would arise from the transaction. The same applies to organisational support systems.

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C. Assessment

60. At present Northrop Grumman is the third largest US defence contractor whilst TRW is the eighth largest US defence contractor. The merged entity would therefore become the second largest US defence supplier. The Parties submit that this would enhance competition for US Government defence contracts, as there are currently only two major US competitors (Lockheed-Martin and Boeing) with the capabilities to provide integrated solutions across the spectrum of military requirements.

61. According to the results of the Commission's market investigation, third parties believe that the merged entity could constitute a new competitor for European industrial players on the military market at several levels. European competitors expect the new entity to become an organisation with strong vertical integration. They estimate that the merged entity will be able to use sub-systems and lower-tier products from its own range. However, as US and European competition already exists in the EEA for the markets concerned, and as the merging Parties' presence in Europe is currently relatively minimal, they do not believe that the competitive situation could be strongly impacted due to the proposed transaction. As regards the European customers of military products, they do not see the proposed transaction as having any impact on their purchasing policy or on their prime contracting of military programmes.

62. The Commission's market investigation and examination focused on assessing those potential horizontal overlaps and vertical linkages, which have been presented above.

C.1 Military aircraft and systems for military aircraft

63. The Parties do not compete as prime contractors for *manned military aircraft*. While Northrop Grumman has acted as a prime contractor for several types of special mission manned military aircraft (mainly for the US Government), TRW is not active in the design and production of manned military aircraft. The only manned military aircraft sector in which both Parties are active is SIGINT aircraft as both undertakings are involved in the sales of special mission aircraft using SIGINT technology, through military programmes in the US. TRW's role in these programmes is, however, limited to the integration of TRW SIGINT systems on pre-existing aircraft. In Europe the Parties' activities do not overlap. TRW does not perform an integrator role on any European aircraft.

64. The Parties do not compete in any of the *UAV markets*. Compared to Northrop Grumman's long-endurance UAV (the Global Hawk), TRW has in the past been involved in only a tactical UAV (the Hunter), which is no longer in production. Consequently, there is no horizontal overlap between the Parties' activities in these product markets. Overall, Northrop Grumman estimates that it is only one of several companies participating in the UAV market and that its world-wide share of sales is [less than 10%].

65. In *avionics systems*, Northrop Grumman's production includes IFF sub-system whereas TRW does not offer stand-alone IFF systems. TRW is, however, currently developing integrated Communication, Navigation and Identification (CNI) systems that may include also IFF functionality. The Parties submit that these systems are not in direct competition with each other as each procurement and prime contracting situation is unique. Sometimes an integrated CNI system is specified and in other cases individual components are specified. If an integrated CNI system is selected, a separate sub-system

is not used. In any event, Northrop Grumman submits that it only offers a small part of its IFF products in Europe on a catalogue basis. It estimates its share to be [less than 10%] in the EEA and [less than 10%] world-wide, whereas TRW does not currently have any sales of its CNI systems anywhere in the world. A clear market leader both in the EEA and world-wide is considered to be BAE Systems. As Northrop Grumman does not purchase integrated CNI systems for its military aircraft, there is no vertical relationship between the Parties' activities for this product.

66. In *airborne sensor systems* the Parties' activities are complementary and no horizontal issues may be identified. The investigation confirmed that TRW has not sold any SIGINT systems in Europe over the last five years and that it is not currently pursuing sales of SIGINT systems to any European customers. The vertical relationship between the Parties' activities has been further examined in the Commission's market investigation. TRW currently provides SIGINT payloads only for manned military aircraft; such SIGINT payloads are unsuitable for incorporation onto UAVs as they are too large relative to the overall size of UAVs. […]. Based on the Commission' examination, the proposed transaction could not be considered to lead to foreclosure in the supplies of SIGINT systems for prime contractors of manned military aircraft in the EEA. Similarly, it could not be considered that manufacturers of SIGINT systems would suffer foreclosure of demand. Northrop Grumman does not act as prime contractor in Europe for military aircraft and TRW is not currently pursuing sales of SIGINT systems to European customers. On the basis of sales over the last 5 years, TRW has a world-wide market share of less than 25% and a market share of 0% in Europe for SIGINT systems for manned military aircraft. There are also a large number of non-US SIGINT suppliers including Thales, IAI, Electronica, Indra and Mitsubishi. Therefore, no vertically affected market exists in the sales of SIGINT for manned military aircraft.

67. According to the Commission's examination the proposed transaction would not result in foreclosure of supplies of *SIGINT systems for UAV prime contractors* either, or vice versa. Northrop Grumman has no sales of UAVs in Europe and TRW does not currently provide any SIGINT systems, which could be incorporated into a UAV. […]. There are also several European SIGINT system manufacturers who have already developed capabilities to supply SIGINT systems for UAVs, such as EADS, BAE Systems and Thales. Some of these companies also manufacture UAVs themselves and are therefore vertically integrated. In addition, there are a number of non-European suppliers of SIGINT systems for UAVs.

68. As regards *sub-systems and components for airborne sensor systems*, there is no horizontal overlap for the manufacture of synthesizer and parameter encoders, as Northrop Grumman does not produce them. Both Parties do, however, provide electronic warfare receivers to third parties, but TRW only supplies them in the US where it has an estimated market share of [less than 10%]. Northrop Grumman has a market share of [less than 20%] in the EEA and an equivalent market share in the remaining world market. The Parties' combined market share would not exceed 15% in any geographic market. Market leaders with considerably higher market shares in the EEA are considered to be BAE, Electronica/EADS and Thales.

69. A vertical relationship exists between the Parties as TRW currently supplies synthesizer and parameter encoders for a particular aircraft manufactured by Northrop Grumman (model EA-6B). These are, however, only in the initial operation testing and evaluation phase. In addition, this aircraft is not sold outside of the US. The Parties estimate that

even if TRW supplied all synthesizer and parameter encoder modules used in EA-6B aircraft, this would represent significantly [less than 10%] of the world-wide market and 0% of the European market. There are also a range of other manufacturers for both components, such as BAE Systems, Electronica, Indra, Raytheon and SAAB Avionics.

C.2 Satellite systems

Horizontal issues

70. Regarding satellite buses, the notifying party submits that there is no horizontal overlap between the Parties' activities in any of the satellite markets in which TRW competes as a prime contractor, in either the commercial, institutional or military sectors. In the commercial sector TRW is not a prime contractor […]. As regards satellites sold to institutional customers, TRW is a prime contractor for some space agencies elsewhere in the world, but has never been a prime contractor for any European agency. In the military sector TRW's activities have been limited to the provision of satellite platforms to the US military and it is not involved as a prime contractor for any European military satellites. Regarding Northrop Grumman, it is not at all active as a prime contractor for any type of satellite anywhere in the world.

71. The market investigation confirmed that there was neither overlap nor potential competition for satellite systems. After the operation, the Parties will still be confronted with a number of competitors. At the level of prime contracting, TRW's worldwide market share (including all markets) is estimated at [less than 5%] against approximately 18% for Boeing, 12% for Alcatel Space, 8% for Astrium, 7% for Space Systems/Loral and 7% for Lockheed Martin. And TRW would face competition in all types of markets, for institutional and military customers as well as for observation, scientific and communication purpose.

72. Regarding satellite sub-systems and payloads, some respondents to the Commission's questionnaires argued that there may be some overlaps or potential competition issues.

73. The notifying party has indicated that both TRW and Northrop Grumman do indeed manufacture and sell to third parties sub-systems and components, which are used in the manufacture of the satellite bus. However, these are different types of sub-systems and components, which do not compete with one another. The only limited horizontal overlap, which does not give rise to a horizontally affected market, is in the power supply sub-systems, where Northrop Grumman has no sales in Europe and a [less than 20%] market share world-wide, whereas TRW's European and world-wide market share is [less than 10%].

74. Regarding payloads, according to past bids submitted in this market, neither Northrop Grumman nor TRW has ever provided satellite payloads of any type in Europe. Both Parties do have activities outside Europe in military observation payloads. […]. There is therefore currently no horizontal overlap in the EEA in respect of satellite payloads.

75. In any case, on the basis of the Commission's market investigation it may be concluded that these possible overlaps would not raise horizontal competition issues. The investigation confirmed also that the Parties' involvement in Europe is very limited, and that there are some barriers to entry for the institutional satellite market. The Parties would in any event still face some competition after the operation, from companies like Alcatel or Astrium.

Vertical issues

76. Given the respective capabilities of the Parties in the satellite sector, vertical issues were also examined during the investigation. The Parties have identified three potential vertical relationships for satellites: (i) the integration of sub-systems and components into the satellite bus; (ii) the integration of satellite payloads into satellite buses and (iii) the integration of sub-systems and components into the satellite payload. They argue that the transaction does not raise competition concerns for these vertical relationships. Some competitors to the parties argued that the merged entity might have incentives to foreclose them to compete at the prime contracting level by excluding them from access to payloads supplied by Northrop Grumman. However, the Commission found that Northrop Grumman's payloads were not presently supplied in the EEA and that European manufacturers, like Alcatel Space and Astrium produce their own payloads or alternatively procure them from smaller payload suppliers. It is, therefore, unlikely that the merged entity would have the ability or incentive to foreclose its competitors in the EEA. In addition, several market participants explained that the operation did not change the market structure in the EEA, since US competition was present already before the operation, however limited. In other words, the investigation showed that the operation may lead to the constitution of a stronger US player in the sector, but that this would not affect competition negatively in the EEA satellite market.

77. In conclusion, the proposed operation does not raise competition concerns in the satellite markets in the EEA.

C.3 Military command and control systems

78. The notifying party argues that the proposed transaction will have no effect on the structure of competition in the EEA for command and control sub-systems. It only identifies one overlap related to ground based air defence sub-systems and points out that neither of the Parties has been a prime contractor of these sub-systems in Europe.

79. The investigation confirmed that some market participants considered Northrop Grumman and TRW as active in the military command and control systems market. For instance, the investigation identified that TRW and Northrop Grumman had both competed for the NATO Theatre Missile Defence Programme. According to the parties, TRW had been part of a team lead by Lockheed Martin for the award of feasibility study for this NATO programme. The Feasibility Study Contracts were awarded in July 2001 to two consortia: the one led by Lockheed Martin and one led by Science Applications International Corporation (*SAIC*) respectively. The other consortia bidding, but who lost, were led by Northrop Grumman and Thales.

80. However, it also appeared that TRW's role was minimal in the NATO Theatre Missile Defence Programme contract, which in any event was only a feasibility study , and that overlaps were otherwise minimal in the EEA. Moreover, it appeared that the Parties would still face competition in the EEA on the military command and control system, from both US and European companies, such as Lockheed Martin, Science Applications International Corporation (*SAIC*), Raytheon, Thales, Matra BAe Dynamics and Alenia Marconi Systems. Finally, customers did not express any concerns regarding the operation in that sector.

81. In conclusion, the operation does not raise competition concerns in the military command and control systems market in the EEA.

C.4 Miscellaneous parts, Information technology

82. Regarding these markets, the investigation confirmed the position of the notifying party according to which there would be no affected markets due to the transaction and that competition would not be impeded in the EEA.

V. CONCLUSION

83. For the above reasons, the Commission has decided not to oppose the notified operation and to declare it compatible with the common market and with the EEA Agreement. This decision is adopted in application of Article 6(1)(b) of Council Regulation (EEC) No 4064/89.

For the Commission

(signed)
Mario MONTI
Member of the Commission