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European cooperation on armoured vehicles

REPORT

submitted on behalf of the Technological and Aerospace Committee
by Mr Díaz de Mera, Rapporteur

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on European cooperation on armoured vehicles

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¹ Adopted unanimously by the Committee.

² *Members of the Committee:* Mr Marshall (Chairman); MM Lenzer, Atkinson (Vice-Chairmen), Mrs Aguiar, Mr Arnau, Mrs Blunck, Mrs Bribosia-Picard, Mr Cherribi, Sir John Cope (Alternate: Sir Dudley Smith), Mr Cunliffe (Alternate: Alexander), Mr Diana, Mrs Durrieu, Mr Feldmann, Mrs Gelderblom-Lankhout, MM Jeambrun, Le Grand, Litherland, López Henares (Alternate: Díaz de Mera), MM Lorenzi, Luis, Martelli, Olivo (Alternate: Lauricella), MM Polydoros, Probst, Ramírez Pery, Staes, Theis, Valleix, Mrs Zissi.

Associate members: MM Kirathoglu, Dinçer, Yurur.

N B. *The names of those taking part in the vote are printed in italics.*

Draft Recommendation
on European cooperation on armoured vehicles

The Assembly,

- (i) Considering the new world geostrategic situation characterised by the disappearance of the risk of bipolar confrontation and by the emergence of flashpoints for regional conflict;
- (ii) Bearing in mind the existence of the 1992 Treaty on Conventional Armed Forces in Europe and the preliminary negotiations begun early this year in Vienna to update the Treaty in the light both of the end of the cold war and of NATO enlargement to include central Europe,
- (iii) Taking the view that all of the above factors have a direct bearing on the operational requirements of the armies of WEU member countries,
- (iv) Noting that as far as armoured vehicles are concerned, those requirements make it necessary to maintain heavy armoured units of vehicles incorporating technologies that improve on existing performances in terms of fire-power, protection and tactical and strategic mobility;
- (v) Noting furthermore the need to create more units comprising light, multipurpose vehicles with these same high-performance features;
- (vi) Taking the view that European cooperation on armoured vehicles has been virtually non-existent to date, with one exception,
- (vii) Highlighting the fact that there are ten European firms producing this type of vehicle as compared to only two in the United States;
- (viii) Noting that for the time being there is no WEAG Panel I subgroup on armoured vehicle cooperation and that an attempt to make progress in this direction failed to come to anything for fear of duplicating NATO efforts;
- (ix) Noting that efforts by NATO have also failed to produce any tangible results;
- (x) Considering that the brief of WEAG Panel I covers standardisation of operational requirements and cooperation on equipment;
- (xi) Stressing that the Panel's tasks include, *inter alia*, promoting equipment programmes that represent good value for money to meet the operational requirements of WEAG member countries and improving capacity and competitiveness within the European defence industry;
- (xii) Welcoming efforts made by France, Germany and the United Kingdom in the Joint Armaments Cooperation Structure (JACS) to get an infantry fighting vehicle programme off the ground;
- (xiii) Noting that this initiative is also running into major difficulties which may even lead to its being cancelled;
- (xiv) Taking the view that restructuring the defence industry must be done not on a national but on a Europe-wide basis and cannot take place in the absence of cooperation programmes,

RECOMMENDS THAT THE COUNCIL

- 1 Task the Planning Cell to undertake a study to determine the operational requirements of WEU members for armoured vehicles, covering a range of equipment from combat tanks to light armoured vehicles;
2. Consider setting up a WEAG Panel I subgroup on cooperation in Europe on armoured vehicles, whose aims would be to.

- promote the maximum possible standardisation of operational requirements;
- encourage defence industry restructuring in this area by adjusting capacities to the reality of the market place and making the industry more competitive;
- assist countries interested in armoured vehicle cooperation programmes to identify partners with similar needs and schedules, having recourse to the Cooperation Opportunity Concertation Office (COCO) for this purpose;

3 Ensure that such efforts are in line with those undertaken by the JACS with a view to VCB I production.

Explanatory Memorandum

(submitted by Mr Díaz de Mera, Rapporteur)

I. Introduction

1 The Treaty on Conventional Armed Forces in Europe (CFE) which was signed in Paris in 1990 and entered into force in 1992 sought to achieve parity between East and West in terms of levels of heavy weaponry within the area between the Atlantic Ocean and the Urals. This meant destroying very large numbers of heavy weapons (tanks, armoured vehicles in general, combat aircraft etc.) and placing limits on those that remained. The CFE Treaty was signed by the 16 NATO member states and by the former members of the Warsaw Pact – 14 countries in all – among them the successor states of the former Soviet Union.

2 At the start of this year negotiations began in Vienna to update the Treaty in the light of the new geostrategic situation that has emerged since the end of the cold war and with a view also to the decisions the Atlantic Alliance is shortly to take on enlargement towards central Europe.

3 Independently of the outcome of these negotiations to bring the CFE Treaty up to date, as of 1 January 1996, the NATO member countries had destroyed 6 692 battle tanks, whose numbers stood at 14 572 compared with a ceiling of 19 142 tanks.

4 By the same date, the former Warsaw Pact countries had destroyed 12 674 battle tanks and still had 19 003 out of a total limited to 20 000.

5 Turning to armoured vehicles, the NATO countries had destroyed 6 448, leaving them with 22 464 compared with an authorised ceiling of 29 822. The members of the now defunct Warsaw Pact had already destroyed 12 774, leaving them with 27 974 out of a possible 30 000.

6 The Vienna negotiations are not intended to halt implementation of the Treaty and should, moreover, according to the French Ministry of Foreign Affairs¹ concentrate on two aspects, moving to national ceilings (the ceilings fixed in

1990 represented a straight 50% split between the Warsaw Pact and NATO) and the possibility of new states acceding to NATO.

7 The Treaty's existence must be borne in mind as a background to any discussion of the prospects and the defence role (present and future) of armoured vehicles. So too must the new international security situation, characterised by a profusion of regional conflicts and the need for crisis-management operations to deal with them. A further consideration is the financial restrictions placed on western countries' defence budgets.

8 The above factors are influential in setting operational requirements reflecting the need to maintain smaller forces of heavy armoured vehicles and create larger units of light, multipurpose vehicles.

9 The traditional specifications for armoured vehicles, fire power, protection and tactical mobility, need to be supplemented by what has become a further requirement, strategic mobility. New armour-protection and electronics technologies must also be incorporated.

II. Armoured vehicle production in WEU member countries

10 It would perhaps be appropriate to make clear at this point that it is not the Rapporteur's intention to compile an exhaustive list of national armoured vehicle production capacities in WEU member states, but simply to give an illustration of some of them, looking in more detail at vehicles that could be considered to be either the most typical or the most interesting from an operational point of view.

11 Nor does this chapter deal with vehicle production under licence to third party states but is confined to considerations concerning national production from the concept definition stage through to vehicle manufacture.

12 Europe has ten companies manufacturing armoured vehicles while the United States has only two – leading to the obvious conclusion that Europe suffers from overcapacity in this branch.

¹ *Le Figaro*, 23 January 1997

of the defence industry and that fragmentation makes no economic sense. Consequently, rationalisation of the defence industry and the armoured vehicles sector in particular is both necessary and urgent.

13. Such rationalisation should not stop at a nation's own borders. If Europe wants to compete with the marketing networks of the major US defence firms it will need to form trans-national partnerships. The domestic markets of individual European countries are obviously too small to survive and it is also clear that export opportunities would increase if streamlining made European companies more competitive.

(i) *Germany*

14. The first Leopard 2A5 main battle tank prototype was completed by Krauss-Maffei in 1990 and, following regulation trials, was accepted for service the same year. Development was funded by Germany, the Netherlands and Switzerland² and Krauss-Maffei was awarded the contract in 1994. Delivery was taken in 1995 of the first of 255 Leopard 2 tanks being upgraded to the Leopard 2A5 configuration, which Germany had ordered.

15. As mentioned, the prime contractor for both the Leopard 2 and the Leopard 2A5 is Krauss-Maffei, while the turrets are being upgraded by Wegmann. The last Leopard 2 tanks upgraded to the Leopard 2A5 version will be delivered to Germany in late 1998.

16. In 1994 the Netherlands also decided to upgrade 180 of their Leopard 2s to Leopard 2A5s, with an option on a further 150 vehicles. It is anticipated that the programme will be completed in the course of the year 2000.

17. Switzerland for its part took delivery of the last of its Leopard 2 MBTs in 1993 and will not decide on upgrading its vehicles until around 2000. Sweden has ordered 120 Leopard 2A5s, incorporating improvements in armour and command and control, with an option on a further 80.

18. Spain's procurement of the Leopard 2A5 will be considered later on in the section on that country.

19. The Leopard 2A5 has a crew of four, a combat weight of 57.9 tonnes, a maximum forward road speed of 72 km/h (31 km/h in reverse) and a road cruising range of 500 km. It can surmount 60% gradients, 30% side slopes and vertical obstacles to a height of 1.1 m.

20. It comes equipped with one each of the following guns, a main 120 mm, an MG3 coaxial 7.32 mm and an anti-aircraft MG3 7.62 mm gun. It also carries 8 smoke grenade dischargers on either side of the turret.

21. The decision to produce the Leopard 2 dates back to 1970. In 1974 the United States and Germany signed a memorandum of understanding (MOU) under which both countries affirmed their intention to make all reasonable efforts to standardise their tank programmes.

22. In 1977 the MOU was amended to include efforts to standardise some tank components between the two countries. These included engine, transmission, gunner's telescope, night vision equipment, fire-control system, tracks and main armament.

23. To meet US requirements, Germany built another model, known as the Leopard 2 (AV) (Austere Version) but the US eventually chose one of the two competing American designs, the Chrysler XM1. It did however adopt the Rheinmetall 120 mm smoothbore gun.

24. Finally, in 1977 the German army selected Krauss-Maffei as the prime contractor for series production of the Leopard 2, placing an order, with options, for 1 800 vehicles, 990 of which were to be built by Krauss-Maffei and the remainder by MaK. The first in the series was delivered in 1979.

25. The cost of the Leopard 2 programme for the German army as announced in 1982 was DM 5 100 million with the first production batches being for 380, 450 and 300 tanks.

26. The specifications for the Leopard 2 are as follows.

- crew of four.
- combat weight: 55.150 tonnes.
- maximum speed of 72 km/h (31 km/h in reverse),
- range. 500 km.
- gradients and equipment as for the Leopard 2A5.

² *Jane's Armour and Artillery*, 1996-97.

27 Early in 1994, Krauss-Maffei, as a private venture, completed a technology demonstration of the Puma MBT and, some months later its initial mobility trials. The Puma, in its six-wheel road configuration at 36 tonnes, weighs less than the Leopard series and this makes it suitable, from an operational point of view, for potential Far East markets

28. It is manned by a 4 + 4 crew, has a combat weight of 36 tonnes and a speed of 70 km/h and can surmount 60% gradients and 30% side-slopes. It has a 650 km range and is armed with a main 105 mm L7A3 gun and a coaxial 7.62 mm MG3 machine gun and (2 x 4) smoke grenade dischargers. It is also built by Krauss-Maffei Wehrtechnik GmbH

29. Regarding reconnaissance vehicles, worthy of note is the Wiesel Armoured Weapon Carrier, developed by Porsche and produced by MaK System as prime contractor. Between 1989 and 1992, the German army took delivery of 345 Wiesel vehicles armed with Hughes TOW ATGW launchers or Rheinmetall 20 mm cannon. The vehicle was deployed in Somalia in 1993 in both configurations. The Wiesel is air-portable and a variety of different turrets and weapons systems can be fitted, enabling it to undertake a wide variety of battlefield roles. The MK20 version carries a crew of 2 and the TOW version 3. Both versions weigh 2.8 tonnes and have a maximum road speed of 75 km/h and can deal with 60% gradients and 30% side-slopes. The weapons systems are discussed above. It has a 250 km range.

30. The MaK Wiesel 2 Extended Base Vehicle was developed as a private venture and offers the possibility of carrying out tasks additional to those of the version discussed above. It has a combat weight of 3.6 tonnes, can carry a crew of 6 and has a range of 550 km.

31. The Thyssen Henschel Transportpanzer, an armoured personnel carrier, is the direct successor of the Spähpanzer Luchs which started being produced around 1975. The present improved versions (8 x 8, 6 x 6 and 4 x 4) are produced by Thyssen.

32 It has a crew of 2 + 10 (passengers), a combat weight of 19 tonnes, a speed of 105 km/h on the road and a fording speed of 10.5 km/h and an 800 km range. It is armed with a 20 mm can-

non or a 7.62 mm machine gun and also carries 6 smoke grenade dischargers.

33. Lastly, Krauss-Maffei completed its first prototype all-purpose carrier vehicle in 1995. Krauss-Maffei claim that typical roles for it are as an armoured personnel carrier, a light reconnaissance vehicle, a command and control vehicle, a materials transport vehicle, a weapons carrier for a turret-mounted gun, a mortar vehicle, a light air defence system, a missile launching vehicle and forward observer vehicle.

34. This is a four-wheeled vehicle with a crew of 1 + 3 and a combat weight of 6 tonnes. It has a maximum road speed of 100 km/h. It is still at the prototype stage and has not yet gone into production.

(ii) Spain

35. SBB Blindados SA, a public limited company, is possibly the only European firm dealing solely with the production, improvement and maintenance of armoured vehicles. Its order books at present reflect the Spanish Defence Ministry's programme in terms of armoured vehicle requirements for the Spanish army.

36. Work on upgrading and modernising 150 M60 A3 TTS battle tanks is expected to be completed by the end of 1998. The 646 BMRs (wheeled armoured vehicle) by the same manufacturer is now being upgraded.

37. The BMR 6 x 6 310 HP is an amphibious, aeroportable vehicle which can carry 13 men, it has a combat weight of approximately 14 tonnes, an engine power of 310 HP, a maximum road speed of between 96 and 103 km/h (depending on wheel type) and a range of 1 000 km. It can mount a 60% gradient and 30% side slope and has a fording speed of between 3 km/h (wheels) and 9 km/h (hydrojets). The turret is equipped with a 12.72 mm machine gun and a range of optional equipment is available.

38 The BLR 4 x 4 210 HP armoured personnel carrier carries a crew of 13 and has a combat weight of 12 tonnes. It can achieve a maximum road speed of 93 km/h and has a 570 km range. It can mount the same gradients as the BMR 6 x 6 and can be equipped with a 5.56 mm machine gun or a turret mounted with a 12.7 mm machine gun as well as other options.

39. Both vehicles were used to the Spanish military authorities' complete satisfaction in the conflict in former Yugoslavia and in other international missions undertaken by the Spanish army.

40. Additionally, the Spanish Defence Ministry is currently involved in a cooperation programme with the Austrian Defence Ministry for production of an armoured infantry combat vehicle. The ASCOD (Austrian Spanish Co-Operative Development) programme is better known in Spain under the name Pizarro.

41. Spain and Austria have cooperated over this programme from the outset, in other words from the definition stage. Production is being carried out jointly in both countries on vehicles for the armies in their own and third countries.

42. The Pizarro weighs 25.2 tonnes (with basic ballistic protection) and carries 11 people (3 + 8) at a maximum road speed of 70 km/h (35 km/h in reverse) and has a range of 500 km.

43. Armament comprises a 30 mm x 173 duel-feed Mauser MK 30 automatic cannon, a 7.62 mm x 51 coaxial machine gun and a 4 x 3 76 mm smoke grenade discharger system. It has a digital FCC fire-control system and an electro-mechanical gun and turret control equipment with manual backup.

44. SBB Blindados SA is the prime contractor for the Pizarro programme which comprises three phases: 1996-2001; 2002-2005 and 2006-2009 covering a total of 463 vehicles. The first phase consists of 144 vehicles at a total cost of 41 583 million pesetas.

45. Lastly, it is worth noting that in mid-1995 it was announced that Spain would produce 200 German Krauss-Maffei Leopard 2A5 tanks under licence³ for the Spanish Army, with deliveries to run from 1998 at the rate of 40 vehicles a year. A Memorandum of Understanding was signed by both governments in Brussels, in June 1995, covering this and other defence projects.

46. So far Spain has taken delivery of one Leopard 2 from the German army for training purposes and is leasing a further 108 Leopard 2A4s for five years.

47. The prime contractor for the Leopard 2A5E will be SBB Blindados SA and the Spanish content of the Leopard 2A5E is expected to be around 60-70% of the total. Nevertheless the change of government in Spain will probably lead to changes to the agreements between the two governments in the regard.

48. Indeed the Spanish Defence Minister, Mr Serra, stated on 7 November 1996⁴ that he wanted to examine again, on a realistic financial and operational basis, what the options were for Spain's Defence Ministry and Spanish industrial capabilities with regard to the Leopard 2s.

49. Only recently, *Defense News*⁵ reported that the Spanish Army intended to increase its tank force with 320 Leopard 2A5 tanks and an additional 23 Buffel armoured recovery vehicles at a total cost of 500 billion pesetas. Negotiations are proceeding slowly because the Spanish Government has not decided which Spanish firm will be involved in the project.

50. The 108 Leopard 2A4s that the Spanish army currently has on a rental basis form part of its First Armoured Division and represent Spain's contribution to the Eurocorps. They will have to be returned to Germany if the additional 320 Leopard 2A5s are not procured.

51. Finally it should be added that Spain is considering increasing commonality in other ways, including possibly buying the German armoured howitzer 2000 (Panzerhaubitze 2000). Spain has a requirement for 132 of these.

(iii) France

52. GIAT Industries is Europe's first-ranking supplier of land defence equipment and the industry leader in France. A French public company, GIAT Industries was created on 1 July 1990 by setting up a consortium of several French defence firms. The GIAT Industries Group includes other, mainly Belgian, international defence companies such as FN SA, Canons Delcour, Browning SA, etc.

53. In 1996, estimated turnover was 8 300 million French francs, 60% of which was earned on the international market. The firm currently

³ *Jane's Armour and Artillery*, 1996-97.

⁴ *Diario de sesiones del Congreso de los Diputados*, No. 104, 1996.

⁵ *Defense News*, 3-9 March, 1997.

employs 15 000 staff, 3 000 of whom work outside France. It spends 1 100 million francs on research and development

54. GIAT Industries' main fields of R&D are global protection of weapons systems (detection and countermeasures, composite and reactive armour) future guns and ammunition (140 mm guns and munitions, electric guns, intelligent ammunition, Murat insensitive ammunition, the future soldier system and future armoured infantry combat vehicle) and battlefield robot systems.

55. One of GIAT industries' main activities is the production of armoured systems and turrets and the logistical support that goes with them

56. Its Armoured Systems Division, on four industrial sites in France, has a turnover of 3 900 million francs⁶ and has produced more than 18 000 armoured vehicles to date. The main activities of this division are the Leclerc system, wheeled and tracked armoured vehicles, tank and naval turrets, terminal information systems and logistical support.

57. The Leclerc battle tank, GIAT's flagship vehicle, is considered capable of meeting present and future operational needs well into the next century. It has been chosen by the French army as its main fighting component.

58. The Leclerc carries a crew of 3 and has a combat weight of 55 tonnes, a maximum speed of 70 km/h, a maximum cross-country speed of 50 km/h and a 500 km range (700 km with disposable tanks)

59. The Leclerc carries a 120 mm smooth bore gun with a calibre length of 52 which means that it fires projectiles with exceptional initial velocity, stability and precision. The tank also has a 12.7 mm machine gun mounted coaxially and a 7.62 mm machine gun mounted externally on the turret roof. It also has a Galix launcher system which can throw smoke, antipersonnel or infrared decoy grenades.

60. The Leclerc is also equipped with a Leclerc Battlefield Management System (LBMS) allowing it to communicate in real time with surveillance and combat units on the battlefield. Its onboard digital computers receive, analyse, manage and automatically transmit internally gener-

ated data, e.g. navigation and enemy location data, and draw on externally generated data from the computerised communications network.

61. The observation and fire control system consists of a commander's HL-70, 360° stabilised panoramic sight with two magnifications, an LI (light intensification) channel (HL-80 option with thermal camera and laser rangefinder), a gunner's HL-60 stabilised sight, with two magnifications, a day and thermal infrared channel and laser rangefinder and a video system replicating the gunner's sight to the tank commander.

62. GIAT Industries also produces a family of front-armoured cars (VAB) covering a complete range of specialised armoured personnel carriers for different types of missions. More than 5 000 vehicles belonging to this family have been produced to date and are in service in the French army and in the armies of a further 14 countries. 4 x 4 and 6 x 6 models exist in both the VAB and the VAB NG (new generation) configuration.

63. The VAB VCI Dragar is an armoured infantry fighting and support vehicle and a means of transport on the battlefield, thanks to its high mobility and special armour. The Dragar carries a crew of 8 – a pilot and one man in the front compartment, a gunner in the turret and 5 men in the rear compartment. The total combat weight of the 4 x 4 version is 12.6 tonnes while the 6 x 6 version weighs 13.8 tonnes. It is armed with a 25 mm GIAT industries 25 M 811 gun with dual feeding, a 7.62 mm coaxial machine gun and 6 Galix grenade launchers. The Dragar has protection against 7.62 mm AP (armour piercing) rounds at any distance and, among various other options, can be fitted with a laser rangefinder and a thermal camera with a 2 500 m range.

64. Other family members are the VAB APC (armoured personnel carrier), the head of the family, several thousand of which are in service with the French Army, the VAB VTM (mortar towing vehicle) 120, the VAB PC (command post vehicle) the VAB Recovery (armoured recovery and workshop vehicle) and the VAB Ambulance.

65. Lastly, it should be noted that GIAT has various cooperation agreements with a number of European and American firms, for example, the future 155 mm self-propelled howitzer and ammunition and the 155 Bonus intelligent ammu-

⁶ 1996 estimates.

nition in partnership with Bofors of Sweden, the future 140 mm tank weapon (FTMA) with Rheinmetall of Germany and British Royal Ordnance, the 25 mm turret programme with Otobreda of Italy or the RAH 66 Comanche gun turret system with Lockheed Martin of the United States

(iv) Italy

66 The Italian Defence Ministry takes the view that the present strategic picture resulting from the disappearance of the bipolar world has led to reductions in military equipment. However the variety of possible operational frameworks (general warfare, regional conflict situations and peacekeeping operations) require that a proportion of traditional mechanised armoured vehicles should be retained and that units should be lighter and more flexible. Crisis intervention tasks are likely to assume an importance that is equal to if not greater than traditional theatre operations. All these changes demand the introduction of specialised hardware and equipment in order to strike a fine balance between strategic mobility requirements and classic fire-power, protection and tactical mobility.

67. The Italian Army has therefore decided to procure two types of combat vehicle, tracked main battle tanks and wheeled armoured vehicles. To meet the specifications for vehicles for intervention in classic battlefield operations, a second-generation battle tank and an infantry fighting vehicle have been developed.

68 The Ariete CI is currently being brought into service and studies are being carried out for an advanced second or third-generation battle tank. Also, the Dardo infantry fighting vehicle will soon receive approval

69. Moreover the need to equip tactical reconnaissance units with vehicles with high strategic and operational mobility which are also able to carry out peacekeeping tasks has led to the setting-up of an R & D programme to develop two separate families of wheeled armoured vehicles.

70. The first comprises combat-weight vehicles of between 24 and 28 tonnes, like the Centauro, which has been in service since 1992, and the VBC 8 x 8.

71. The second of these families consists of vehicles under 8 tonnes like the Puma 6 x 6 and 4 x 4

72. The Centauro B1 tank destroyer was designed to carry out tactical reconnaissance and territorial defence tasks. The cavalry unit is equipped with this vehicle which is fitted with a 105 mm high-pressure gyrostabilised gun and associated automated fire control system. It has high road mobility, a good power to weight ratio, a long range and good cross-country mobility

73. The Centauro carries a fully armed and equipped crew of 2 to 4 men, which makes it extremely flexible to use, especially in peacekeeping operations.

74. In order to have a troop carrier with mobility and protection specifications similar to those of the Centauro tank, development has begun on a family of medium tanks whose main characteristic is a high degree of interoperability with other tanks. The battlefield version (VBC 8 x 8) already exists in prototype.

75. This will carry 7 fully equipped men in addition to the tank commander and the pilot and may be armed with a range of equipment such as a 12.7 mm machine gun and a 25 or 60 mm cannon, plus two missile launchers.

76. Bearing in mind Italy's recent experience in Somalia and Bosnia, a possible use has emerged for short-range heavy automatic armaments against interposing forces rather than a range of 400-500 m, as in a cold-war scenario.

77. Vehicles in the Centauro family have a basic protection guaranteed to withstand 14.5 mm bullets (25 mm on the front section). This can be increased to 30 mm by bolting on additional protection.

78. The Centauro was deployed in Somalia and former Yugoslavia and has proved its toughness and the suitability of its gun system for use in peacekeeping operations as well as in the reconnaissance tasks for which it was designed and developed.

79. Because of their characteristics, these tanks have been used to escort motor convoys, for wide area control and for road patrols, and have proven rapid intervention capability in unforeseen crises.

80. As mentioned previously, the Italian army's tank fleet will include a family of Puma class tanks. These are smaller and lighter than the Centauro.

81 The Puma family will probably enter into service in 1998 in two basic configurations, a 4 x 4 and a 6 x 6 version, both capable of a high degree of strategic and tactical mobility and with protection able to withstand 7.62 mm bullets (12.7 mm on the front section) The possibility of mounting them with a vast range of weapons systems gives them wide flexibility of use.

82. The Puma 4 x 4 will be used to equip light infantry regiments to increase levels of protection in territorial defence and peacekeeping operations.

83. The Puma 6 x 6 will be assigned to the cavalry units for tactical reconnaissance tasks Prototype trials have proved satisfactory for the time being and everything seems to suggest that approval will follow in the course of this year.

84 It was noted earlier in this section that the Ariete battle tank was about to enter into service. This has a crew of four, a combat weight of 52 tonnes, a maximum speed of 65 km/h, a 550 km range and is able to surmount 60% gradients.

85. It comes mounted with a 120 mm gun, integrated fire control system with laser range-finder and a 7.62 mm machine gun. It will also be fitted with a stabilised panoramic periscope with night and day sight (infrared camera) and a digital fire control system and other advanced technological facilities

86. Lastly, mention should be made of the Dardo infantry fighting vehicle which is about to be approved by the Italian army. The Dardo is a combat tank and a motorised personnel carrier. It can accommodate a 3 + 7 crew and is armed with a 25 mm cannon, anti-tank missiles and a fire control system with a laser rangefinder.

87 All the vehicles referred to above are produced by the Iveco-Fiat-Oto Melara 50/50 joint venture, a consortium set up in 1985 to produce combat vehicles, with plants in Bolzano (Iveco) and La Spezia (Oto Melara). Iveco produces engines, spare parts, suspension systems, tracks and the hull for the wheeled vehicles, and Oto Melara the weaponry, fire-control system, turrets and optical systems and hulls for the tracked vehicles.

(v) United Kingdom

88. The Aerospace and Defence Directorate of Britain's Department of Trade and Industry

looks, as far as main battle tanks are concerned, to three British manufacturers, Vickers, GKN and Alvis, which are world wide producers and exporters of these types of vehicle.

89. Vickers Defence systems started work on the Challenger 2 in November 1986 as a private venture and shortly afterwards, in March 1987, made its first presentation of the vehicle to the British Ministry of Defence⁷. In February 1988, Vickers submitted a formal proposal regarding the tank to the MOD following the issue of the staff requirement

90. In December 1988 it was announced that Vickers Defence Systems was to be awarded a £90 million contract to undertake a demonstration phase (also referred to as the proof of principle phase) which lasted until September 1990.

91. In June 1991 the British Government selected the Challenger 2 and placed an order worth £520 million for 127 Challenger 2 MBTs and 13 driver training tanks. Production began in 1993 and the first vehicles were delivered in July 1994. The Challenger 2 was produced at the Vickers Defence Systems plants in Leeds and Newcastle

92 The Challenger 2 is the first British Army tank since World War II to be designed, developed and produced exclusively by a single contractor, Vickers Defence Systems, with set reliability goals laid down in the fixed price contract.

93. In July 1994, Vickers Defence Systems was awarded a second contract by the UK MOD for the supply of 259 Challenger 2 and nine driver training tanks plus training and logistic support. The total value of the contract is £800 million and means that production of the Challenger 2 will continue at least until the year 2000 and that the British Army will be equipped with Challenger 2s while the Challenger 1 will be phased out.

94. The Challenger 2 is the best protected tank in NATO⁸ incorporating Chobham second-generation armour plating. Its NBC (nuclear,

⁷ *Jane's Armour and Artillery*, 1996-1997.

⁸ *Evolución del carro de combate en el mundo (Worldwide developments in combat tanks)*. José de Francisco García, Madrid 1993.