

# Appendix 9A. The 100 largest arms-producing companies, 2005

EAMON SURRY and THE SIPRI ARMS INDUSTRY NETWORK\*

## I. Selection criteria and sources of data

Table 9A.1 lists the world's 100 largest arms-producing companies (excluding Chinese companies), ranked by their arms sales in 2005. The table contains information on the companies' arms sales in 2004 and 2005 and their total sales, profit and employment in 2005. It includes public and private companies, but excludes manufacturing or maintenance units of the armed services. Only companies with manufacturing activities in the field of military goods and services are listed, not holding or investment companies. Chinese companies are excluded because of the lack of data. Companies from other countries might also have been included at the lower end of the list had sufficient data been available.

Publicly available information on arms sales and other financial and employment data on the arms industry worldwide are limited. The sources of data for table 9A.1 include: company annual reports and websites, a SIPRI questionnaire, and news published in the business sections of newspapers, in military journals and by Internet news services specializing in military matters. Press releases, marketing reports, government publications of prime contract awards and country surveys were also consulted. Where no data are available from these sources, estimates have been made by SIPRI. The scope of the data and the geographical coverage are largely determined by the availability of information. All data are continuously revised and updated and may change between different editions of the SIPRI Yearbook.

The source for the dollar exchange rates is the International Monetary Fund (IMF), as provided in its *International Financial Statistics*.

## II. Definitions

*Arms sales.* Arms sales are defined by SIPRI as sales of military goods and services to military customers, including both sales for domestic procurement and sales for export. Military goods and services are those which are designed specifically for military purposes and the technologies related to such goods and services. They exclude sales of general-purpose goods (e.g. oil, electricity, office computers, cleaning services, uniforms and boots). They include all revenue related to the sale of military equipment, that is, not only for the manufacture but also for the research and development, maintenance, servicing and repair of the equipment. This definition serves as a

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guideline; in practice it is difficult to apply. Nor is there any good alternative, since no generally agreed standard definition of ‘arms sales’ exists. The data on arms sales in table 9A.1 often reflect only what each company considers to be the defence share of its total sales. The comparability of company arms sales in table 9A.1 is therefore limited.

*Total sales, profit and employment.* Data on total sales, profit and employment are for entire companies, not for arms-producing divisions alone. All data are for consolidated sales, including those of national and foreign subsidiaries. The profit data represent profit after taxes. Employment data are year-end figures, except for those companies which publish only a yearly average. All data are presented on the financial year basis reported by the company in its annual report.

### III. Calculations

Arms sales are sometimes estimated by SIPRI. In some cases SIPRI uses the figure for the total sales of a ‘defence’ division, although the division may also have some, unspecified, civil sales. When the company does not report a sales figure for a defence division or similar entity, estimates can sometimes be made based on data on contract awards, information on the company’s current arms production programmes and figures provided by company officials in media or other reports.

The data for arms sales are used as an approximation of the annual value of arms production. For most companies this is realistic. The main exception is shipbuilding companies. For these companies there is a significant discrepancy between the value of annual production and annual sales because of the long lead (production) time of ships and the low production run (number). Some shipbuilding companies provide estimates of the value of their annual production. These data are then used by SIPRI for those companies.

All data are collected in local currency and at current prices. For conversion from local currencies to US dollars, SIPRI uses the IMF annual average of market exchange rates. The data in table 9A.1 are provided in current dollars. Changes between years in these data are difficult to interpret because the change in dollar values is made up of several components: the change in arms sales, the rate of inflation and, for sales conducted in local currency, fluctuations in the exchange rate. Sales on the international arms market are often conducted in dollars. Fluctuations in exchange rates then do not have an impact on the dollar values but affect instead the value in local currency. If the value of the dollar declines, then the company’s revenue in local currency falls and, if its production inputs are paid for in local currency—which most often is the case—this has a negative impact on the company’s profit margins. Calculations in constant dollar terms are difficult to interpret for the same reasons. Without knowing the relative shares of arms sales derived from domestic procurement and from arms exports, it is impossible to interpret the exact meaning and implications of the arms sales data. These data should therefore be used with caution. This is particularly true for countries with strongly fluctuating exchange rates.

**Table 9A.1.** The 100 largest arms-producing companies in the world (excluding China), 2005

Figures for sales and profits are in US\$ m., at current prices and exchange rates.

Rank <sup>a</sup>	2005	2004	Company (parent company)	Country/ region	Sector <sup>b</sup>	Arms sales		Total sales, 2005	Arms sales as % of total sales, 2005	Profit, 2005	Employment, 2005
						2005	2004				
1		1	Boeing	USA	Ac EI Mi Sp	28 050	27 500	54 845	51	2 572	153 000
2		3	Northrop Grumman	USA	Ac EI Mi Sh Sp	27 590	26 210	30 721	90	1 400	123 600
3		2	Lockheed Martin	USA	Ac EI Mi Sp	26 460	26 400	37 213	71	1 825	135 000
4		4	BAE Systems <sup>c</sup>	UK	A. Ac EI MV Mi SA/A Sh	23 230	19 840	28 020	83	1 060	100 000
5		5	Raytheon	USA	EI Mi	19 800	17 150	21 894	90	871	80 000
6		6	General Dynamics	USA	A EI MV Sh	16 570	15 150	21 244	78	1 461	72 200
7		9	Finmeccanica	Italy	A. Ac EI MV Mi SA/A	9 800	7 130	14 265	69	493	56 600
8		7	EADS <sup>d</sup>	Europe	Ac EI Mi Sp	9 580	9 470	42 545	23	2 085	113 210
9		11	L-3 Communications <sup>e</sup>	USA	EI	8 970	5 970	9 445	95	509	59 500
10		8	Thales	France	EI Mi SA/A	8 940	8 950	12 765	70	415	53 370
11		10	United Technologies Corp., UTC	USA	EI Eng	6 840	6 740	42 725	16	3 069	222 200
12		12	SAIC	USA	Comp (Oth)	5 060	4 670	7 792	65	927	42 500
S		S	MBDA (BAE Systems, UK/ EADS, Europe/ Finmeccanica, Italy)	Europe	Mi	4 080	3 850	4 080	100	..	10 600
13		15	DCN	France	Sh	3 520	3 240	3 524	100	340	12 200
14		14	Rolls Royce	UK	Eng	3 470	3 310	12 005	29	631	36 200
15		13	Computer Sciences Corp.	USA	Comp (Oth)	3 400	4 330	14 616	23	634	79 000
S		S	Pratt & Whitney (UTC)	USA	Eng	3 280	2 990	9 295	35	..	38 500
16		21	ITT Industries	USA	EI	3 190	2 410	7 430	43	360	41 000
17		17	General Electric	USA	Eng	3 000	3 000	149 702	2	16 353	316 000
18		18	Honeywell International	USA	EI	2 940	2 810	27 653	11	1 655	116 000
S		S	AgustaWestland (Finmeccanica) <sup>f</sup>	Italy	Ac	2 850	..	3 097	92	182	8 530

19	S	16	Halliburton	USA	Comp (Oth)	2 720	3 100	20 994	13	2 358	106 000
20	S	19	KBR (Halliburton) <sup>g</sup>	USA	Comp (Oth)	2 720	3 100	10 894	25	..	..
20	S	19	SAFRAN <sup>h</sup>	France	Comp (Ac El Eng)	2 630	2 510	13 155	20	623	58 000
20	S	23	United Defense (BAE Systems, UK)	USA	MV	..	..	..	..	..	..
21	S	29	Dassault Aviation Group	France	Ac	2 210	1 670	4 264	52	379	12 080
22	S	20	Mitsubishi Heavy Industries <sup>i</sup>	Japan	Ac MV Mi Sh	2 190	2 500	25 333	9	271	62 210
23	S	25	Eurocopter Group (EADS)	Europe	Ac	2 120	1 620	3 994	53	..	12 790
24	S	26	Saab	Sweden	Ac El Mi	2 110	1 930	2 585	82	160	12 830
24	S	24	Alliant Techsystems	USA	SA/A	2 060	1 740	3 217	64	154	15 200
25	S	30	Snecma (SAFRAN) <sup>h</sup>	France	Eng	..	..	..	..	..	..
26	S	31	Harris	USA	El	1 870	1 550	3 001	62	202	12 600
27	S	37	Rockwell Collins	USA	El	1 810	1 540	3 445	53	396	17 000
28	S	27	Textron	USA	Ac El Eng MV	1 800	1 300	10 043	18	203	37 000
29	S	28	Rheinmetall	Germany	A El MV SA/A	1 740	1 720	4 296	41	147	18 550
30	S	39	CEA	France	Oth	1 710	1 720	3 993	43	-167	15 010
31	S	41	DRS Technologies	USA	El	1 680	1 280	1 736	97	82	9 800
32	S	48	Almaz-Antei <sup>i</sup>	Russia	Mi	1 590	1 190	1 770	90	64	87 500
33	S	34	EDS	USA	Comp (Oth)	1 570	990	19 757	8	150	117 000
34	S	35	QinetiQ	UK	Comp (Oth)	1 550	1 390	1 912	81	165	11 450
35	S	33	Sikorsky (UTC)	USA	Ac	1 550	1 690	2 802	55	..	9 640
36	S	40	Israel Aircraft Industries	Israel	Ac El Mi	1 520	1 370	2 340	65	25	15 000
37	S	43	Goodrich	USA	Comp (Ac)	1 510	1 420	5 397	28	264	22 000
38	S	44	Smiths	UK	El	1 450	1 240	5 485	26	402	30 000
39	S	51	URS Corp.	USA	El	1 410	1 150	3 918	36	82	29 200
40	S	57	Selex Sensors & Airborne Systems (Finmeccanica)	Italy	Comp (El)	1 380	560	1 841	75	85	7 170
41	S	57	Anteon	USA	Comp (Oth)	1 310	1 130	1 493	88	79	9 500
42	S	51	ThyssenKrupp <sup>k</sup>	Germany	Sh	1 240	930	52 318	2	1 267	187 220
43	S	70	Armor Holdings	USA	Comp (MV Oth)	1 190	610	1 637	73	133	4 940
44	S	57	CACI International	USA	Comp (Oth)	1 190	770	1 623	73	85	10 400

Rank <sup>a</sup>	2005	2004	Company (parent company)	Country/ region	Sector <sup>b</sup>	Arms sales		Total sales, 2005	Arms sales as % of total sales, 2005	Profit, 2005	Employment, 2005
						2005	2004				
42	36		Kawasaki Heavy Industries <sup>f</sup>	Japan	Ac Eng Mi Sh	1 180	1 320	11 999	10	149	28 920
43	47		VT Group	UK	Sh	1 170	1 040	1 540	76	76	9 920
44	42		Ordnance Factories	India	A SA/A	1 150	1 150	1 371	84	..	118 640
S	S		Alenia Aeronautica (Finmeccanica)	Italy	Ac	1 120	1 030	1 418	79	..	7 340
45	52		Hindustan Aeronautics	India	Ac Mi	1 100	900	1 219	90	151	29 100
S	46		Sagem (SAFRAN) <sup>b</sup>	France	El	..	..	..	..	..	..
46	50		Elbit Systems	Israel	El	1 070	940	1 070	100	32	6 340
47	59		Oshkosh Truck	USA	MV	1 060	770	2 959	36	160	7 960
48	56		Samsung <sup>l</sup>	S. Korea	A El MV Mi Sh	1 050	800	141 033	1	9 452	222 000
49	64		AM General <sup>m</sup>	USA	MV	1 050	690	..	..	..	..
50	49		Mitsubishi Electric <sup>i</sup>	Japan	El Mi	1 040	950	32 701	3	868	99 440
51	53		Cobham	UK	Comp (Ac El)	1 010	900	1 982	51	216	10 720
52	54		NEC <sup>j</sup>	Japan	El	980	840	43 776	2	110	154 180
53	45		Navantia <sup>n</sup>	Spain	Sh	970	1 090	1 211	80	-124	5 560
54	55		Engineered Support Systems	USA	Sh	970	840	1 018	95	87	3 670
S	S		EADS Space (EADS, Europe)	France	Sp	960	..	3 356	29	..	10 980
55	S		ST Engineering <sup>o</sup>	Singapore	Ac El MV SA/A Sh	940	860	2 034	46	241	13 100
56	58		ManTech International	USA	Comp (Oth)	930	770	980	95	44	6 000
57	62		GIAT Industries	France	A MV SA/A	910	730	909	100	15	..
58	S		DynCorp <sup>p</sup>	USA	Comp (Oth)	870	940	1 967	44	7	14 400
S	S		Samsung Techwin (Samsung)	S. Korea	A El Eng MV	850	620	2 335	36	82	4 400
59	60		Rafael	Israel	Ac Mi SA/A Oth	800	760	846	95	..	5 000
S	S		Devonport Management (KBR) <sup>q</sup>	UK	Sh	800	700	849	94	40	5 100
60	61		Krauss-Maffei Wegmann <sup>r</sup>	Germany	MV	750	750	746	100	..	2 700
61	22		GKN <sup>s</sup>	UK	Ac	740	2 400	6 633	11	107	36 500
62	65		Diehl	Germany	Mi SA/A	720	650	2 052	35	..	10 300

63																									
S	67	-	Bharat Electronics	India	EI	700	620	807	87	132	12 260														
			Selex Communications	Italy	Comp (EI Oth)	680	..	846	80	32	4 480														
			(Finmeccanica)																						
	64	69	Indra	Spain	EI	670	610	1 495	45	129	7 580														
	65	-	Admiralteiskie Verfi <sup>/</sup>	Russia	Sh	650	340	689	95	..	..														
	66	74	Stewart & Stevenson	USA	MV	630	550	726	87	26	1 250														
	67	79	EDO	USA	EI	620	480	648	95	26	3 000														
	68	66	MTU Aero Engines	Germany	Eng	610	620	2 672	23	41	6 750														
	69	73	Fincantieri	Italy	Sh	610	560	2 822	21	64	9 380														
	70	63	Babcock International Group	UK	Sh	610	700	1 521	40	54	8 760														
	71	71	Irkut <sup>/</sup>	Russia	Ac	600	570	712	84	84	15 420														
	72	76	Korea Aerospace Industries	S. Korea	Ac	590	510	661	89	1	2 730														
	73	68	RUAG	Switzerland A Ac	Eng SA/A	580	620	959	61	-15	5 640														
	74	77	Aerospace Corp. <sup>/</sup>	USA	Comp (Oth)	580	510	664	87	..	3 500														
	75	78	Curtiss-Wright	USA	Comp (Ac )	570	480	1 131	50	75	5 890														
	76	-	Sevmash <sup>/</sup>	Russia	Sh	540	..	677	79	73	26 300														
	77	85	Cubic	USA	Comp (EI Oth)	540	450	804	68	12	6 000														
	78	72	Avio	Italy	Eng	530	560	1 593	33	-136	4 800														
S	S	S	United States Marine Repair (BAE Systems, UK)	USA	Comp (Sh )	..	530	..	..	..	..														
	79	32	Sukhoi <sup>/</sup>	Russia	Ac	520	1 470	562	93	-	27 000														
	80	86	Tenix	Australia	EI SA/A Sh	500	440	777	64	..	4 000														
	81	87	DaimlerChrysler, DC <sup>u</sup>	Germany	Eng	500	440	186 289	-	3 540	382 720														
	82	82	Mitre <sup>v</sup>	USA	Oth	500	460	962	51	..	5 750														
S	S	S	ADI (Transfield Group/ Thales, France)	Australia	EI SA/A Sh	500	440	558	90	..	2 500														
S	S	S	MTU Friedrichshafen (DC)	Germany	Eng	500	440	1 904	26	..	5 780														
	83	84	Ultra Electronics	UK	EI	490	450	623	78	53	2 880														
	84	96	Jacobs Engineering Group <sup>w</sup>	USA	Comp (Oth)	480	390	5 635	8	151	27 200														
	85	90	Moog	USA	Comp (EI Mi )	480	430	1 051	46	65	6 660														
	86	100	United Industrial	USA	Ac	480	360	517	93	41	2 000														

Rank <sup>a</sup>	2005	2004	Company (parent company)	Country/ region	Sector <sup>b</sup>	Arms sales		Total sales, 2005	Arms sales as % of total sales, 2005	Profit, 2005	Employment, 2005
						2005	2004				
S	-		Selex Sistemi Integrati (Finmeccanica)	Italy	Comp (El)	470	..	728	65	72	3 100
87	88		MAN	Germany	MV Sh	460	440	18 248	3	587	60 780
88	95		Meggitt	UK	Oth	460	390	1 121	41	120	5 680
89	97		Toshiba <sup>c</sup>	Japan	El Mi	450	380	57 554	1	709	172 000
90	80		CAE	Canada	El	440	460	914	48	54	5 000
91	-		Severnaya Verf <sup>d,x</sup>	Russia	Sh	440	20	453	98	9	3 500
S	S		General Dynamics Land Systems Canada (General Dynamics, USA)	Canada	MV	420	..	..	..	..	..
S	94		SMA (SAFRAN)	France	Comp (Ac)	..	..	..	..	..	..
S	-		MBDA Italia (MBDA, Europe)	Italy	Mi	410	..	409	100	-39	1 480
92	89		Aerokosmicheskoe Oborudovanie <sup>e</sup>	Russia	El	400	440	585	69	48	38 900
S	-		BAE Systems Australia (BAE Systems, UK)	Australia	Comp (El)	400	..	..	..	..	2 600
S	S		Samsung Thales (Thales, France/ Samsung)	S. Korea	El	400	360	400	100	27	1 000
93	99		Embraer	Brazil	Ac	390	360	3 752	10	291	16 950
94	-		Teledyne Technologies	USA	El	390	340	1 207	32	64	7 270
S	S		Oto Melara (Finmeccanica)	Italy	A MV Mi	390	390	392	100	7	1 350
95	98		Orbital Sciences Corp.	USA	Sp	380	370	703	54	28	2 600
S	S		Areva (CEA)	France	Eng Oth	380	390	12 593	3	1 305	..
96	93		Kongsberg Gruppen	Norway	El Mi SA/A	370	400	885	42	41	3 370
97	-		Universal Shipbuilding Corp. <sup>f,y</sup>	Japan	Sh	360	100	..	..	..	..
98	-		TRV Corp. <sup>g,z</sup>	Russia	Mi	350	220	374	95	7	22 260
99	-		MMPP Salyut <sup>h</sup>	Russia	Comp (Ac)	350	310	403	87	5	13 520
100	92		Israel Military Industries	Israel	A MV SA/A	340	400	379	90	..	2 720

<sup>a</sup> Companies are ranked according to the value of their arms sales in 2005. Companies with the designation S in the rank columns are subsidiaries. A dash (–) in place of a rank for 2004 indicates either that the company did not make arms sales in 2004 or that it did not rank among the 100 largest companies in 2004. Company names and structures are listed as they were on 31 Dec. 2005. Information about subsequent changes is provided in these notes. The 2004 ranks may differ from those published in *SIPRI Yearbook 2006* owing to the continual revision of data, most often because of changes reported by the company itself and sometimes because of improved estimations. Major revisions are explained in these footnotes.

<sup>b</sup> Key to abbreviations: A = artillery, Ac = aircraft, El = electronics, Eng = engines, Mi = missiles, MV = military vehicles, SA/A = small arms/ammunition, Sh = ships, Sp = space and Oth = other. Comp (. . .) = components, services or anything less than final systems in the sectors within the parentheses; it is used only for companies that do not produce final systems.

<sup>c</sup> Figures for BAE Systems arms sales are obtained by subtracting sales by its Commercial Aerospace division from total sales. The sales by its Commercial Aerospace business group were primarily accounted for by its 20% stake in Airbus. In addition, BAE Systems' arms sales include an estimate of \$146 million for arms sales of United Defense in the first 6 months of the year. United Defense was acquired by BAE Systems in June 2005. As part of this acquisition BAE Systems also acquired United States Marine Repair.

<sup>d</sup> EADS (the European Aeronautic Defence and Space Company) is 22.32% owned by DaimlerChrysler (Germany), 29.75% by SOGEADE (whose share capital is held by Lagardère and the French State) and 5.44% by SEPI, a Spanish state holding company. EADS is registered in the Netherlands.

<sup>e</sup> Data for L-3 Communications arms sales in 2005 include an estimate of \$750 million for the arms sales of the Titan Corporation in the first 7 months of that year. L-3 Communications completed its acquisition of the Titan Corporation on 29 July 2005.

<sup>f</sup> In Nov. 2004 Finmeccanica (Italy) completed the acquisition of GKN's (UK) 50% share in the helicopter company AgustaWestland, which had previously been a joint venture.

<sup>g</sup> Figures for KBR arms sales are estimates based on one-third of its 'Government and Infrastructure' division sales. During 2004 and 2005 the company performed services and support work for the US Army under a Logistics Civil Augmentation Program (LOGCAP) contract awarded in 2001. During 2006 the US Army announced that KBR's contract would not be renewed. Also during 2006 KBR's parent company Halliburton initiated a public offering of KBR shares.

<sup>h</sup> In May 2005 Snecma merged with Sagem to form SAFRAN. To enable a comparison of the finances of SAFRAN in 2004 and 2005, the company reported pro forma data in which the merger was presumed to have taken place on 1 Jan. 2004. During 2005 SAFRAN also obtained 100% of the shares of SMA, which had previously been held by Snecma, EADS and Renault.

<sup>i</sup> For Japanese companies figures in the arms sales column represent new military contracts rather than arms sales.

<sup>j</sup> This is the fourth year that Russian companies have been covered by the SIPRI Top 100. There may be other Russian companies that should be in the list, but insufficient data are available. The situation in the Russian arms industry is still very fluid, and company names are likely to change as they are restructured. Irkut and Sukhoi provide detailed financial information on their websites. For Irkut, all data are from its own consolidated financial statements. For Sukhoi, consolidated revenue data was provided on special request to the Centre for Analysis of Strategies and Technologies (CAST). Data for Admiralteiskie Verfi and MMPP Salyut total sales and arms sales are from CAST. For all other Russian companies in the list, figures for total sales and profits in 2005 are from Expert RA, the Russian rating agency, while figures for arms sales share estimates and employment are from CAST.



<sup>k</sup> Figures for ThyssenKrupp arms sales are estimates. The company acquired German submarine maker Howaldtswerke-Deutsche Werft (HDW) in Jan. 2005. <sup>l</sup> Data for Samsung arms sales are uncertain. The figure is the sum of estimated arms sales for Samsung Techwin and 50% of the 2004 sales of Samsung Thales (2005 data were not available).

<sup>m</sup> Limited financial data are publicly available for AM General. The SIPRI estimate of arms sales is based on a 3-year average of US Department of Defense prime contract awards plus an estimate of its exports.

<sup>n</sup> The military shipbuilding activities of Izar were transferred to a new company, 'New Izar', on 31 Dec. 2004. The company was subsequently launched with the name Navantia on 2 Mar. 2005. The Spanish state holding company SEPI is the sole shareholder. Data for 2005 are based on available data for 2004.

<sup>o</sup> ST Engineering was previously a subsidiary of Singapore Technologies Pte Ltd, which was dissolved on 31 Dec. 2004. As of 1 Jan. 2005, all companies that were under the control of Singapore Technologies Pte Ltd, including ST Engineering, came under the direct control of Temasek Holdings, an investment holding company of the Singaporean Government.

<sup>p</sup> Computer Sciences Corporation completed its sale of Dyncorp International to Veritas Capital in Feb. 2005.

<sup>q</sup> Devonport Management Limited is owned by Halliburton KBR (51%), Balfour Beatty (24.5%) and the Weir Group (24.5%).

<sup>r</sup> Figures for Krauss-Maffei Wegmann were provided on special request from the company.

<sup>s</sup> GKN's arms sales declined markedly in 2005 due to the 2004 sale of its 50% stake in AugustaWestland.

<sup>t</sup> The Aerospace Corporation operates a Federally Funded Research and Development Center for the US Air Force.

<sup>u</sup> Figures for DaimlerChrysler arms sales are for the arms-producing activities of MTU Friedrichshafen and exclude DaimlerChrysler's 22.32% share in EADS. With the sales of MTU Aero Engines in late 2003 and MTU Friedrichshafen in late 2005, DaimlerChrysler has now divested itself of all its major arms-producing activities other than its share in EADS.

<sup>v</sup> Mirre operates 3 Federally Funded Research and Development Centers for the US Department of Defense.

<sup>w</sup> Figures for Jacobs Engineering Group arms sales represent US Department of Defense prime contracts awarded.

<sup>x</sup> Severnaya Verf's 2004 arms sales are based on the 2005 arms sales share estimate.

<sup>y</sup> Universal Shipbuilding Corporation was established in Oct. 2002 when NKK Corporation and Hitachi Zosen Corporation integrated their shipbuilding operations. NKK and Kawasaki Steel Corporation subsequently merged to form JFE Holdings. During 2005, therefore, Universal Shipbuilding Corporation was jointly owned by JFE Holdings (50%) and Hitachi Zosen Corporation (50%). In Nov. 2006 JFE was in talks to take full control of the joint venture.

<sup>z</sup> TRV (Takticheskoe Raketnoe Vooruzhenie, tactical missile armament) Corporation is translated in the English language version of the CAST list as the Tactical Missiles Corporation.