DEPARTMENT OF DEFENSE IN-HOUSE RDT&E ACTIVITIES

Management Analysis Report for Fiscal Year 1993

Department of the Army

Department of the Navy

Department of the Air Force

Defense Nuclear Agency

FY-93 Department of Defense In-House RDT&E Activities Report, 1 November 1994.

ERRATA, 14 November 1994, page 1 of 2

Several errors and inconsistencies have been discovered in the FY-93 Report.

For the errors, corrected pages are attached for report holders. Since the report is printed on two sides, complete replacement pages (printed front and back) are attached. For report holders who have access to "GBC" binding equipment, the replacement pages can be punched, the report binding temporarily opened, and the corrected pages inserted to replace the originals. Alternatively, since each correction involves only a few characters or numbers, readers may wish to simply manually post the corrections to the twelve pages involved. The corrections are summarized below:

1. Page 1-2: Several column headings are truncated. "N-HOUSE" should read "IN-HOUSE"; "OTAL" should read "TOTAL"; and "HD" should read "PHD". (There are no errors on the front facing page, 1-1.)

2. Page 1-3: For the Belvoir RDEC, property costs erroneously appear in thousands of dollars instead of millions. The "REAL PROP" amount should read 14.041; the "EQUIP" amount should read 8.174.

3. Page 1-4: Two column headings are truncated. "N-HOUSE" should read "IN-HOUSE"; and "-HOUSE" should read "IN-HOUSE".

4. Page 1-6: Two column headings are truncated. "N-HOUSE" should read "IN-HOUSE"; and "-HOUSE" should read "IN-HOUSE". (There are no errors on page 1-5.)

5. Page 1-8: One column heading was truncated. "N-HOUSE" should read "IN-HOUSE". (There are no errors on page 1-7.)

6. Page 2-24: For the Belvoir Research, Development and Engineering Center, Property Acquisition Costs erroneously appear in thousands of dollars instead of millions. The "REAL PROPERTY" amount should read 14.041; the "EQUIPMENT" amount should read 8.174. (There are no errors on page 2-23.)

7. Page 2-36: For the Combat Systems Test Activity, several incorrect Personnel Data numbers appear. "Military Technical Support & Other Personnel" should read 173, not 5; "Total Technical Support & Other Personnel" should read 960, not 792. (There are no errors on page 2-35.)

8. Page 2-98: For OPTEC - Test and Experimentation Command, several incorrect Personnel Data numbers appear. "Military Scientists & Engineers-Other" should read 1103, not 13. "Civilian Scientists & Engineers-Other" should read 610, not 62. "Total Scientists & Engineers-Other" should read 1713, not 75. (There are no errors on page 2-97.)

9. Page 3-12: For the Naval Air Warfare Center, several incorrect Funding amounts appear. The correct amounts are as follows:

Appropriation	In-House	Out-of-House	Total
6.1 Other	no	1.480	3.949
6.2 IED (Navy)	changes	0.167	1.114
6.2 Other		40.961	108.329

(There are no errors on page 3-11.)

10. Page 3-22: For the Naval Civil Engineering Laboratory, several incorrect Personnel Data numbers appear. "Total Scientists & Engineers - Other" should read 184, not 177, and "Total Technical Support & Other Personnel" should read 205, not 196. (There are no errors on page 3-21.)

Inconsistencies:

1. The correct telephone number for the Naval Medical Research Unit #2, Jakarta, Indonesia (011-62-21-421-4454) appears on page 3-53. The telephone number on page 3-55 is incorrect.

2. The correct telephone number for the Naval Medical Research Unit #3, Cairo, Egypt (011-20-2-284-1375) appears on page 3-57. The telephone number on page 3-60 is incorrect.

TABLES

TABLE 1. ARMY RDT&E ACTIVITIES, PROGRAM AND PERSONNEL DATA, FY 1993

INSTALLATION	FUNDING DATA (MILLIONS $)				PERSONNEL DATA					
	TOTAL	TOTALS IN-HOUSE	TOTALS RDT&E	IN-HOUSE RDT&E	TOTAL MIL	TOTAL CIV	PHD MIL	PHD CIV	ENG MIL	ENG CIV
Aeromedical Research Laboratory	11.302	9.104	7.764	5.566	62	64	14	13	5	8
Armament RDEC	656.018	309.095	330.890	145.160	79	4,442	1	98	13	2,086
Army Research Laboratory	557.002	272.111	476.392	264.319	116	3,576	9	387	32	1,472
Army Research Office	110.995	0.000	110.995	0.000	3	102	0	43	0	1
Aviation RDEC	148.791	61.949	95.089	39.354	12	770	1	31	8	445
Aviation Technical Test Center	24.959	24.959	19.156	19.156	92	137	0	0	30	46
Belvoir RDEC	169.545	60.051	108.220	38.287	20	370	0	15	20	316
CECOM RDEC	559.170	140.859	277.380	83.114	140	2,211	1	54	20	1,300
Cold Regions Research and Engineering Laboratory	39.322	25.908	24.682	14.211	3	284	1	48	1	86
Cold Regions Test Center	10.278	10.278	6.104	6.104	73	33	0	0	5	7
Combat Systems Test Activity	129.195	85.440	78.899	50.260	185	1,099	0	7	12	305
Construction Engineering Research Laboratories	87.011	40.386	42.710	24.525	1	382	0	48	1	183
Dugway Proving Ground	86.116	47.728	64.600	36.008	67	582	0	26	48	91
Edgewood RDEC	222.288	100.226	168.105	64.463	49	1,120	3	77	20	559
Electronic Proving Ground	53.085	27.269	27.694	12.263	359	172	1	2	31	80
Engineer Waterways Experiment Station	317.711	210.725	274.963	168.783	5	1,567	1	181	4	549
Institute of Surgical Research	14.189	13.391	7.396	6.598	176	63	21	10	9	17
Materiel Systems Analysis Activity	43.346	30.277	32.249	22.147	15	434	0	11	12	320
Medical Research Inst. of Chemical Defense	23.712	23.202	19.156	18.649	77	178	17	33	0	50
Medical Research Inst. of Environmental Medicine	12.185	10.357	8.014	6.235	80	81	24	27	0	26
Medical Research Inst. of Infectious Diseases	38.926	38.230	27.391	26.695	252	240	34	45	20	34
Missile RDEC	485.326	126.624	365.669	86.897	28	2,046	2	56	6	256
Natick RDEC	142.758	72.264	114.800	49.673	45	925	0	58	3	338
OPTEC-Test and Experimentation Command	106.167	106.167	62.459	62.459	1,182	799	0	3	13	62
Research Inst. for the Behavioral & Social Sciences	42.498	20.985	40.857	19.344	11	225	0	104	6	27
Tank-Automotive RDEC	190.523	94.591	133.271	54.413	24	1,248	1	22	23	611
Topographic Engineering Center	78.135	29.417	27.187	19.242	11	413	0	14	4	242
Walter Reed Army Institute of Research	80.529	75.454	55.143	50.724	428	500	162	117	5	149
White Sands Missile Range	90.858	40.796	33.583	19.717	436	2,168	0	10	219	543
Yuma Proving Ground	124.242	76.948	82.301	45.505	204	739	0	0	13	150

TABLE 2. ARMY RDT&E ACTIVITIES, FACILITY DATA, FY 1993

INSTALLATION	LOCATION	SPACE AND PROPERTY						
			SPACE (THOUSANDS OF SQUARE FEET)				COST (MILLIONS $)	
		ACRES	LAB	ADMIN	OTHER	TOTAL	REAL PROP	EQUIP
Aeromedical Research Laboratory	Ft. Rucker, AL	44	107.946	24.520	39.652	172.118	11.382	44.240
Armament RDEC	Picatinny Arsenal, NJ	5,884	452.617	1,150.733	2,452.853	4,056.203	160.658	212.342
Army Research Laboratory	Adelphi, MD	2,353	1,849.000	405.000	713.000	2,967.000	1,264.000	527.000
Army Research Office	Rsrch Triangle Pk, NC	0	0.000	29.938	0.000	29.938	0.000	1.508
Aviation RDEC	St. Louis, MO	0	46.428	52.151	11.502	110.081	3.020	24.008
Aviation Technical Test Center	Ft. Rucker, AL	0	0.000	93.000	229.000	322.000	3.027	178.650
Belvoir RDEC	Ft. Belvoir, VA	240	332.949	67.117	260.390	660.456	14.041	8.174
CECOM RDEC	Ft. Monmouth, NJ	204	421.400	378.000	0.000	799.400	65.652	177.200
Cold Regions Research & Engineering Lab	Hanover, NH	194	88.961	74.054	148.000	311.015	32.015	22.482
Cold Regions Test Center	Ft. Greely, AK	0	1.400	18.200	198.400	218.000	14.300	40.825
Combat Systems Test Activity	Aberdeen PG, MD	56,707	155.466	166.016	910.538	1,232.020	28.991	182.496
Construction Engineering Research Labs	Champaign, IL	33	103.850	27.513	134.523	265.886	9.477	18.011
Dugway Proving Ground	Dugway, UT	798,855	170.573	157.344	2,266.652	2,594.569	135.000	40.913
Edgewood RDEC	Aberdeen PG, MD	0	936.000	216.000	310.000	1,462.000	70.100	129.600
Electronic Proving Ground	Ft. Huachuca, AZ	29,139	273.000	14.680	14.480	302.160	44.198	135.701
Engineer Waterways Experiment Station	Vicksburg, MS	3,608	2,486.540	183.350	63.730	2,733.620	463.560	406.000
Institute of Surgical Research	Ft. Sam Houston, TX	0	51.674	10.626	17.000	79.300	10.553	7.799
Materiel Systems Analysis Activity	Aberdeen PG, MD	4	1.600	126.350	6.050	134.000	3.596	8.271
Medical Research Inst. of Chemical Defense	Aberdeen PG, MD	30	40.502	36.488	115.745	192.735	23.100	24.400
Medical Research Inst. of Environ. Medicine	Natick, MA	1	38.754	6.560	33.750	79.064	25.505	6.116
Medical Research Inst. of Infectious Diseases	Ft. Detrick, MD	150	121.000	40.000	223.000	384.000	22.776	40.381
Missile RDEC	Redstone Arsenal, AL	4,000	909.000	76.000	124.000	1,109.000	216.000	259.000
Natick RDEC	Natick, MA	174	415.891	114.463	316.117	846.471	30.481	38.336
Optec-Test and Experimentation Cmd	Ft. Hood, TX	22	19.900	41.000	0.000	60.900	6.300	3.000
Rsrch. Inst. for Behavioral & Social Sciences	Alexandria, VA	0	10.300	86.000	14.000	110.300	3.500	22.400
Tank-Automotive RDEC	Warren, MI	102	512.500	176.000	0.000	688.500	81.400	192.800
Topographic Engineering Center	Alexandria, VA	0	121.772	15.529	36.998	174.299	22.400	13.490
Walter Reed Army Institute of Research	Washington, DC	0	243.000	102.000	177.000	522.000	46.314	62.109
White Sands Missile Range	White Sands, NM	2,166,253	66.385	966.270	4,327.973	5,360.628	383.699	393.000
Yuma Proving Ground	Yuma, AZ	838,376	22.175	161.300	1,709.159	1,892.634	93.072	304.590

TABLE 3. NAVY RDT&E ACTIVITIES, PROGRAM AND PERSONNEL DATA, FY 1993

INSTALLATION	FUNDING DATA (MILLIONS $) TOTAL	TOTALS IN-HOUSE	TOTALS RDT&E	IN-HOUSE RDT&E	PERSONNEL DATA TOTAL MIL	TOTAL CIV	PHD MIL	PHD CIV	ENG MIL	ENG CIV
Naval Aerospace Medical Research Laboratory	5.403	5.302	4.813	4.712	29	57	11	8	3	17
Naval Air Warfare Center	3,847.186	1,700.738	1,341.877	756.747	3,475	19,513	9	258	452	7,216
Naval Biodynamics Laboratory	4.061	2.530	3.784	2.253	33	36	3	3	3	15
Naval Civil Engineering Laboratory	74.473	47.762	53.425	30.678	16	385	0	12	7	177
Navy Clothing and Textile Research Facility	4.291	3.069	1.983	1.110	1	55	0	1	1	38
Naval Command, Control & Ocean Surveillance Ctr.	1,982.841	959.521	471.256	236.817	335	5,367	2	199	233	2,334
Naval Dental Research Institute	1.871	1.439	1.871	1.439	32	11	12	3	1	3
Naval Explosive Ordnance Disposal Tech. Ctr.	46.335	21.589	26.654	11.109	62	261	0	1	4	69
Naval Health Research Center	8.789	5.578	7.799	4.968	25	60	11	13	2	26
Naval Medical Research Institute	59.852	18.622	55.530	16.495	260	161	52	31	16	41
Naval Medical Research Unit # 2	4.191	4.135	2.951	2.937	19	106	10	12	1	41
Naval Medical Research Unit # 3	7.453	7.167	6.653	6.367	33	218	9	29	4	54
Navy Personnel Research and Development Center	29.838	17.454	17.081	9.434	17	225	0	53	5	107
Naval Research Laboratory	810.796	380.041	659.050	328.789	185	3,721	8	922	17	1,085
Naval Submarine Medical Research Laboratory	5.448	4.159	4.211	3.450	28	47	9	9	0	15
Naval Surface Warfare Center	3,334.372	2,209.403	1,094.171	658.759	626	21,261	0	460	133	8,479
Naval Undersea Warfare Center	1,317.506	691.756	438.530	209.688	367	7,112	0	143	25	3,133

TABLE 4. NAVY RDT&E ACTIVITIES, FACILITY DATA, FY 1993

INSTALLATION	LOCATION	SPACE AND PROPERTY						
			SPACE (THOUSANDS OF SQUARE FEET)				COST (MILLIONS $)	
		ACRES	LAB	ADMIN	OTHER	TOTAL	REAL PROP	EQUIP
Naval Aerospace Medical Research Laboratory	Pensacola, FL	3	36.591	26.516	56.714	119.821	13.958	10.649
Naval Air Warfare Center	Arlington, VA	1,165,875	6,464.579	1,530.885	10,102.209	18,097.673	4,102.356	1,549.239
Naval Biodynamics Laboratory	New Orleans, LA	2	25.845	23.149	5.200	54.194	2.183	5.501
Naval Civil Engineering Laboratory	Port Hueneme, CA	33	108.655	84.276	39.404	232.335	5.536	7.700
Navy Clothing and Textile Research Facility	Natick, MA	0	12.667	16.000	5.630	34.297	0.000	1.399
Naval Command, Control & Ocean Surveillance Ctr	San Diego, CA	1,673	2,419.766	498.047	1,894.221	4,812.034	269.185	224.946
Naval Dental Research Institute	Great Lakes, IL	0	21.264	6.001	9.318	36.583	0.000	1.700
Naval Explosive Ordnance Disposal Tech. Ctr.	Indian Head, MD	173	114.112	35.588	113.955	263.655	19.984	6.457
Naval Health Research Center	San Diego, CA	0	26.844	12.650	1.170	40.664	0.000	3.676
Naval Medical Research Institute	Bethesda, MD	7	161.930	63.875	0.000	225.805	8.200	14.676
Naval Medical Research Unit # 2	Jakarta APO AP,	0	16.900	10.990	4.400	32.290	0.847	2.287
Naval Medical Research Unit # 3	Cairo, Egypt, AL	4	68.244	9.058	71.330	148.632	10.600	5.763
Navy Personnel Research & Development Ctr	San Diego, CA	3	64.000	27.000	4.456	95.456	1.178	11.579
Naval Research Laboratory	Washington, DC	612	3,255.174	248.056	390.360	3,893.590	212.695	339.400
Naval Submarine Medical Research Laboratory	Groton, CT	0	46.183	10.537	4.962	61.682	0.000	4.147
Naval Surface Warfare Center	Arlington, VA	72,664	7,192.034	1,654.553	17,217.182	26,063.769	1,158.803	1,091.621
Naval Undersea Warfare Center	Newport, RI	3,231	3,407.705	243.500	2,476.368	6,127.573	241.459	994.652

TABLE 5. AIR FORCE RDT&E ACTIVITIES, PROGRAM AND PERSONNEL DATA, FY 1993

INSTALLATION	FUNDING DATA (MILLIONS $) TOTAL	TOTALS IN-HOUSE	TOTALS RDT&E	IN-HOUSE RDT&E	PERSONNEL DATA TOTAL MIL	TOTAL CIV	PHD MIL	PHD CIV	ENG MIL	ENG CIV
46th Test Group	71.400	33.983	61.461	26.074	198	296	1	2	25	164
4950th Test Wing	106.000	98.000	106.000	98.000	532	463	0	0	40	9
Armstrong Laboratory	198.100	27.800	174.100	27.600	528	539	71	124	162	169
Arnold Engineering Development Center	294.043	205.243	227.698	181.595	134	204	0	4	44	62
Development Test Center	368.499	273.463	260.772	177.886	1,672	1,980	2	7	275	832
Flight Test Center	451.129	320.831	174.693	96.028	4,524	3,443	51	13	1,127	464
Phillips Laboratory	862.400	202.700	643.200	140.900	665	1,318	35	214	358	427
Rome Laboratory	307.613	47.232	231.596	36.785	125	875	6	61	71	485
Wright Laboratory	1,044.300	166.600	996.300	144.900	378	2,179	35	195	274	1,326

TABLE 6. AIR FORCE RDT&E ACTIVITIES, FACILITY DATA, FY 1993

INSTALLATION	LOCATION	SPACE AND PROPERTY						
			SPACE (THOUSANDS OF SQUARE FEET)				COST (MILLIONS $)	
		ACRES	LAB	ADMIN	OTHER	TOTAL	REAL PROP	EQUIP
46th Test Group	Holloman AFB, NM	7,052	572.971	55.009	132.641	760.621	231.837	152.855
4950th Test Wing	WPAFB, OH	400	22.012	9.376	852.006	883.394	27.070	49.992
Armstrong Laboratory	San Antonio, TX	94	718.000	32.000	149.000	899.000	59.000	61.533
Arnold Engineering Development Center	Arnold AFB, TN	39,081	1,614.697	370.161	684.564	2,669.422	1,269.562	225.808
Development Test Center	Eglin AFB, FL	462,770	1,756.320	820.255	8,684.930	11,261.505	383.601	492.338
Flight Test Center	Edwards AFB, CA	297,032	302.354	273.206	8,624.164	9,199.724	665.703	0.149
Phillips Laboratory	Kirtland AFB, NM	50,000	519.000	544.000	1,212.000	2,275.000	150.000	857.500
Rome Laboratory	Griffiss AFB, NY	1,612	855.546	89.231	44.247	989.024	46.892	125.700
Wright Laboratory	WPAFB, OH	932	1,438.300	792.614	905.691	3,136.605	813.834	2,057.890

TABLE 7. DEFENSE NUCLEAR AGENCY RDT&E ACTIVITIES, PROGRAM AND PERSONNEL DATA, FY 1993

INSTALLATION	FUNDING DATA ($ MILLIONS)				PERSONNEL DATA					
	TOTAL	TOTALS IN-HOUSE	TOTALS RDT&E	IN-HOUSE RDT&E	TOTAL MIL	TOTAL CIV	PHD MIL	PHD CIV	ENG MIL	ENG CIV
Armed Forces Radiobiology Research Institute	17.574	17.574	17.292	17.292	74	160	22	34	7	52

Belvoir Research, Development and Engineering Center
Ft. Belvoir, VA 22060-5606 Commander: COL Dennis C. Cochrane
(703) 704-2238

MISSION

Responsible for achieving material and technical capability in combat support/combat service support though program areas of mobility/countermobility, survivability, energy and logistics which satisfy approved requirements to provide the United States with a superior combat and deterrent force in assigned mission areas.

CURRENT IMPORTANT PROGRAMS

Tactical Logistics Systems
Countermine/Counterobstacle Equipment
Tactical Electric Power Systems
Bridging Systems
Water Supply and Handling Equipment
Camouflage/Concealment/Deception Equipment

EQUIPMENT/FACILITIES

Facilities: R&D test laboratories. Bridge test hanger. Mobile stress analysis van. Rail impact. Truck stability tilt table. Radio frequency anechoic chamber. Vehicle test tracks. Shock/vibration dynamics and environmental simulators. Mine lanes for sensor test and evaluation. Automated camouflage pattern generation. Motion picture/visual pictorial support. Model fabrication shop. Laboratory capabilities include performance of tests and evaluations such as explosive, acoustic, environmental endurance and electrical/electronic, along with device/system design and engineering.

Belvoir Research, Development and Engineering Center
Ft. Belvoir, VA 22060-5606 Commander: COL Dennis C. Cochrane
(703) 704-2238

FY93 FUNDING DATA (MILLIONS $)			
APPROPRIATION	**IN-HOUSE**	**OUT-OF-HOUSE**	**TOTAL**
RDT&E:			
6.1 ILIR	0.252	NA	0.252
6.1 Other	0.734	0.240	0.974
6.2 IED (Navy)	NA	NA	NA
6.2 Other	8.918	11.083	20.001
6.3	3.763	26.171	29.934
Subtotal (S&T)	**13.667**	**37.494**	**51.161**
6.4	7.683	9.278	16.961
6.5	5.836	10.652	16.488
6.6	9.753	11.324	21.077
6.7	1.001	0.203	1.204
Non-DOD	0.347	0.982	1.329
TOTAL RDT&E	**38.2[illegible]**	**69.933**	**108.220**
Procurement	0.9..	3.970	4.889
Operations & Maintenance	19.024	34.691	53.715
Other	1.821	0.900	2.721
TOTAL FUNDING	**60.051**	**109.494**	**169.545**

MILITARY CONSTRUCTION (MILLIONS $)	
Military Construction (MILCON)	0.000

PERSONNEL DATA (END OF FISCAL YEAR 1993)				
		SCIENTISTS & ENGINEERS		TECHNICAL SUPPORT
TYPE	**END STRENGTH**	**PHD'S**	**OTHER**	**& OTHER PERSONNEL**
MILITARY	20	0	20	0
CIVILIAN	370	15	316	39
TOTAL	**390**	**15**	**336**	**39**

SPACE AND PROPERTY			
SPACE (THOUSANDS OF SQ FT)		**PROPERTY ACQUISITION COST (MILLIONS $)**	
LAB	332.949	**REAL PROPERTY**	14.041
ADMIN	67.117	* NEW CAPITAL EQUIPMENT	0.000
OTHER	260.390	**EQUIPMENT**	8.174
TOTAL	**660.456**	* NEW SCIENTIFIC & ENG. EQUIP.	0.000
ACRES	**240**	* Subset of previous category. See Equip./Facilities Narrative.	

NA = Not Applicable

Combat Systems Test Activity
Aberdeen Proving Gnd, MD 21005-5059
(410) 278-3574

Commander: COL James Kriebel
Technical Dir.: James W. Fasig

MISSION

Combat Systems Test Activity is the most diverse test facility within DoD, testing a broad spectrum of military weapons systems and equipment including armored vehicles, guns, ammunition, trucks, bridges, generators, night vision devices, and individual equipment (boots, uniforms, helmets, etc.). As a multi-purpose proving ground, with a temperate climate, our primary mission is to plan, conduct, analyze and report on projects supporting research, development, test and evaluation (RDTE), design, engineering, production, and surveillance tests for DoD agencies and contractors. In this single location, CSTA can subject an item to a full range of tests from automotive endurance and full weapons performance with environmental extremes, to full-scale live fire vulnerability/survivability/ lethality testing utilizing an extensive array of test ranges/facilities, simulators and models. In addition to testing domestic systems, we fully exploit foreign systems to assess the enemy threat. We also develop state-of-the-art test procedures (DoD, international), methodology and instrumentation in order to meet the test requirements of advancing military technologies.

CURRENT IMPORTANT PROGRAMS

Truck, M44A2 Series, 2 1/2 Ton, Extended Service Program
M1A2 Abrams Production Qualification Test (PQT)
Family of Medium Tactical Vehicles (FMTV)
M1A2 Abrams Live Fire Vulnerability Test
M88A1E1 Improved Recovery Vehicle, Endurance, Reliability Test (Ph II)

EQUIPMENT/FACILITIES

World-renowned automotive test/obstacle courses; numerous interior and exterior firing ranges; environmental simulation capabilities including rough-handling and vibration, electromagnetic interference and environmental conditioning capabilities; full transportability test capability to include rail, roadability, MIL-STD 209 pull and tie-down, internal and external air transport; UNDEX test pond for underwater explosives testing and Depleted Uranium Containment Fixture (Superbox) for live fire vulnerability and lethality testing; sophisticated non-destructive test facilities; robotics test facility; pulse radiation facility; state-of-the-art industrial complex which includes maintenance and experimental fabrication capabilities.

Combat Systems Test Activity
Aberdeen Proving Gnd, MD 21005-5059
(410) 278-3574

Commander: COL James Kriebel
Technical Dir.: James W. Fasig

FY93 FUNDING DATA (MILLIONS $)			
APPROPRIATION	**IN-HOUSE**	**OUT-OF-HOUSE**	**TOTAL**
RDT&E:			
6.1 ILIR	0.000	NA	0.000
6.1 Other	0.000	0.000	0.000
6.2 IED (Navy)	NA	NA	NA
6.2 Other	3.747	1.589	5.336
6.3	2.248	0.953	3.201
Subtotal (S&T)	**5.995**	**2.542**	**8.537**
6.4	6.245	2.648	8.893
6.5	0.000	0.000	0.000
6.6	32.774	21.225	53.999
6.7	0.000	0.000	0.000
Non-DOD	5.246	2.224	7.470
TOTAL RDT&E	**50.260**	**28.639**	**78.899**
Procurement	23.018	9.739	32.757
Operations & Maintenance	2.462	1.195	3.657
Other	9.700	4.182	13.882
TOTAL FUNDING	**85.440**	**43.755**	**129.195**

MILITARY CONSTRUCTION (MILLIONS $)	
Military Construction (MILCON)	0.000

PERSONNEL DATA (END OF FISCAL YEAR 1993)				
		SCIENTISTS & ENGINEERS		**TECHNICAL SUPPORT**
TYPE	**END STRENGTH**	**PHD'S**	**OTHER**	**& OTHER PERSONNEL**
MILITARY	185	0	12	173
CIVILIAN	1,099	7	305	787
TOTAL	**1,284**	7	**317**	**960**

SPACE AND PROPERTY			
SPACE (THOUSANDS OF SQ FT)		**PROPERTY ACQUISITION COST (MILLIONS $)**	
LAB	155.466	**REAL PROPERTY**	28.991
ADMIN	166.016	* NEW CAPITAL EQUIPMENT	2.165
OTHER	910.538	**EQUIPMENT**	182.496
TOTAL	**1,232.020**	* NEW SCIENTIFIC & ENG. EQUIP.	9.587
ACRES	**56,707**	* Subset of previous category. See Equip./Facilities Narrative.	

NA = Not Applicable

OPTEC - Test and Experimentation Command
Fort Hood, TX 76544-5065
(817) 288-9114

Commander: BG Anthony C. Trifiletti
Technical Dir: Marion Bryson

MISSION

Support the Army materiel acquisition and force development processes by managing the User Testing Program and conducting operational testing to support force development.

CURRENT IMPORTANT PROGRAMS

M1A2	Main Battle Tank
JAVELIN	Advanced anti-tank weapons system
FMTV	Family of Medium Tactical Vehicles
ATCCS	Army Tactical Command & Control System
C17	Transport aircraft
AFATDS	Advanced Field Artillery Data System
SINCGARS	Single Channel Ground & Airborne Radio Systems
AJCM	
ISM	

EQUIPMENT/FACILITIES

Position location, high angle modular integrated target, video, data acquisition and reduction, thermal imaging, fiber optics and video multiplexer/demultiplexer, range timing, microwave, environmental measurement and survey.

OPTEC - Test and Experimentation Command
Fort Hood, TX 76544-5065
(817) 288-9114

Commander: BG Anthony C. Trifiletti
Technical Dir: Marion Bryson

FY93 FUNDING DATA (MILLIONS $)			
APPROPRIATION	**IN-HOUSE**	**OUT-OF-HOUSE**	**TOTAL**
RDT&E:			
6.1 ILIR	0.000	NA	0.000
6.1 Other	0.000	0.000	0.000
6.2 IED (Navy)	NA	NA	NA
6.2 Other	0.000	0.000	0.000
6.3	0.000	0.000	0.000
Subtotal (S&T)	**0.000**	**0.000**	**0.000**
6.4	0.000	0.000	0.000
6.5	0.000	0.000	0.000
6.6	62.459	0.000	62.459
6.7	0.000	0.000	0.000
Non-DOD	0.000	0.000	0.000
TOTAL RDT&E	**62.459**	**0.000**	**62.459**
Procurement	0.000	0.000	0.000
Operations & Maintenance	43.708	0.000	43.708
Other	0.000	0.000	0.000
TOTAL FUNDING	**106.167**	**0.000**	**106.167**

MILITARY CONSTRUCTION (MILLIONS $)	
Military Construction (MILCON)	0.000

PERSONNEL DATA (END OF FISCAL YEAR 1993)				
		SCIENTISTS & ENGINEERS		**TECHNICAL SUPPORT**
TYPE	**END STRENGTH**	**PHD'S**	**OTHER**	**& OTHER PERSONNEL**
MILITARY	1,182	0	1103	79
CIVILIAN	799	3	610	186
TOTAL	**1,981**	**3**	**1,713**	**265**

SPACE AND PROPERTY			
SPACE (THOUSANDS OF SQ FT)		**PROPERTY ACQUISITION COST (MILLIONS $)**	
LAB	19.900	**REAL PROPERTY**	6.300
ADMIN	41.000	* NEW CAPITAL EQUIPMENT	0.000
OTHER	0.000	**EQUIPMENT**	3.000
TOTAL	**60.900**	* NEW SCIENTIFIC & ENG. EQUIP.	0.000
ACRES	**22**	* Subset of previous category. See Equip./Facilities Narrative.	

NA = Not Applicable

EQUIPMENT/FACILITIES (Cont.)

Other facilities include ground and air ranges, weapons and tactics analysis center, aircraft weapons survival laboratory, aircraft integration/simulation facilities, strategic systems T&E facility, and radar cross-section facility.

Patuxent River Station, MD:
Facilities include: RDT&E hangars, aircraft maintenance facilities, catapult launch system, landing systems test facility, automatic carrier landing system, marine air traffic control, Chesapeake Test Range, range EW and flight radar cross-section facility, aircraft electrical and environmental evaluation facility, antenna and avionics test facility, ship ground station helo-ship data link evaluation facility, Air Combat Environmental T&E facility (ACETEF), manned flight simulator, EW integrated systems test lab, anechoic chamber, electromagnetic environmental effects facility, EW closed loop facility, target support facility.

Trenton, NJ:
Facilities include: large and small engine altitude test area, large engine sea level test cells, rotor spin facility, fuel and lubricants facility, helicopter transmission test facility.

Warminster, PA:
Facilities include: VP/VS and Lamps Facilities, carrier ASW module lab, ASW engineering lab, vertical flight lab, air common acoustic processor lab, ASW mission planning lab, TACAIR combat training systems facility, TACAIR mission planning and systems development facilities, systems integration lab, sonar development simulation facility, dynamic flight simulator, vertical decelerator, ejection seat tower, environmental physiology lab, Navy standard signal processor lab.

Lakehurst, NJ:
Facilities include: C-13 steam catapult; MK-7 arresting gear; elevated fixed platform with installed Recovery, Assist, Secure and Traverse (RAST) system; three (3) active jet car test tracks; jet blast deflector; dedicated 12,000 ft catapult test runway; ground support equipment test course; jet blast site; Universal Lighting Pad (UPL); Ship Weapons Evaluation Facility (SWEF).

Indianapolis, IN:
Computer Aided Design (CAD) equipment, Computer Aided Manufacturing (CAM) equipment, digital avionics simulation laboratory, mobile navigation/communication lab, mission planning center, integrated avionics lab, ASW lab, microwave integrated circuits lab, EP-3/ES-3 integrated test facility, meteorological satellite recovery systems lab, microwave test range, design/development environmental test equipment, engineering design lab, materials lab, stereo lithography equipment, failure analysis equipment, scanning electron microscopes, model analysis equipment.

Naval Air Warfare Center
Arlington, VA 22243
(703) 604-6033 (x2200)

CO: RADM G. Strohsahl
Technical Dir.: Lewis Lundberg

FY93 FUNDING DATA (MILLIONS $)			
APPROPRIATION	**IN-HOUSE**	**OUT-OF-HOUSE**	**TOTAL**
RDT&E:			
6.1 ILIR	4.090	NA	4.090
6.1 Other	2.469	1.480	3.949
6.2 IED (Navy)	0.947	.167	1.114
6.2 Other	67.368	40.961	108.329
6.3	29.609	35.405	65.014
Subtotal (S&T)	**104.483**	**78.013**	**182.496**
6.4	138.481	106.587	245.068
6.5	187.062	171.646	358.708
6.6	244.208	130.560	374.768
6.7	82.513	98.324	180.837
Non-DOD	0.000	0.000	0.000
TOTAL RDT&E	**756.747**	**585.130**	**1,341.877**
Procurement	396.799	829.798	1,226.597
Operations & Maintenance	301.002	202.460	503.462
Other	246.190	529.060	775.250
TOTAL FUNDING	**1,700.738**	**2,146.448**	**3,847.186**

MILITARY CONSTRUCTION (MILLIONS $)	
Military Construction (MILCON)	45.300

PERSONNEL DATA (END OF FISCAL YEAR 1993)				
		SCIENTISTS & ENGINEERS		TECHNICAL SUPPORT
TYPE	**END STRENGTH**	**PHD'S**	**OTHER**	**& OTHER PERSONNEL**
MILITARY	3,475	9	452	3,014
CIVILIAN	19,513	258	7,216	12,039
TOTAL	**22,988**	**267**	**7,668**	**15,053**

SPACE AND PROPERTY			
SPACE (THOUSANDS OF SQ FT)		**PROPERTY ACQUISITION COST (MILLIONS $)**	
LAB	6,464.579	**REAL PROPERTY**	4,102.356
ADMIN	1,530.885	* NEW CAPITAL EQUIPMENT	29.373
OTHER	10,102.209	**EQUIPMENT**	1,549.239
TOTAL	**18,097.673**	* NEW SCIENTIFIC & ENG. EQUIP.	42.956
ACRES	**1,165,875**	* Subset of previous category. See Equip./Facilities Narrative.	

NA = Not Applicable

Naval Civil Engineering Laboratory
Port Hueneme, CA 93043-4328
(805) 982-1393

CO: CAPT. Joseph C. Penell
Technical Dir.: Robert N. Storer

MISSION

To be the principal Navy RDT&E center for shore and fixed surface and subsurface ocean facilities and for the Navy and Marine Corps construction forces. As an integral member of the Naval Facilities Engineering Command Team, our mission is to provide innovative technology products and services required to improve the acquisition, operation, and maintenance of Navy shore and ocean facilities and to enhance the Seabees and the Marine Corps operational readiness capabilities. In carrying out our mission, we conduct RDT&E transfer technology, and provide specialized engineering services.

CURRENT IMPORTANT PROGRAMS

Defense environmental restoration program. Pollution prevention. Navy shore facilities improvement. Deep ocean technology in support of ASW. Marine Corp amphibious logistics. Navy construction forces systems. Ocean test ranges. Underwater construction force systems. Explosive safety. Physical security systems. Independent exploratory development. Independent research. Support of Army and Air Force facilities engineering programs.

EQUIPMENT/FACILITIES

Deep ocean simulation laboratory. Shallow water dive tank. Research motor vessel "Independence". Ballistic test facility for testing security products. Metallurgical material laboratory. Chemistry laboratory. Water purification laboratory. Steamboiler laboratory. Electromagnetic Pulse (EMP) test facility. Environmental protection laboratory. Physical security test facility. Soils laboratory. Heavy equipment test facility. Helo lift test site. High temperature pavements stand. Fiber optics laboratory. Research support vessel. Controlled suspension test facility, recompression chamber, cold chamber.

Naval Civil Engineering Laboratory
Port Hueneme, CA 93043-4328
(805) 982-1393

CO: CAPT. Joseph C. Penell
Technical Dir.: Robert N. Storer

FY93 FUNDING DATA (MILLIONS $)			
APPROPRIATION	**IN-HOUSE**	**OUT-OF-HOUSE**	**TOTAL**
RDT&E:			
6.1 ILIR	0.259	NA	0.259
6.1 Other	0.733	0.510	1.243
6.2 IED (Navy)	0.170	0.030	0.200
6.2 Other	6.201	0.887	7.088
6.3	7.971	8.939	16.910
Subtotal (S&T)	**15.334**	**10.366**	**25.700**
6.4	8.423	8.873	17.296
6.5	2.390	2.555	4.945
6.6	0.010	0.000	0.010
6.7	1.810	0.360	2.170
Non-DOD	2.711	0.593	3.304
TOTAL RDT&E	**30.678**	**22.747**	**53.425**
Procurement	1.905	1.127	3.032
Operations & Maintenance	8.026	1.178	9.204
Other	7.153	1.659	8.812
TOTAL FUNDING	**47.762**	**26.711**	**74.473**

MILITARY CONSTRUCTION (MILLIONS $)	
Military Construction (MILCON)	0.438

PERSONNEL DATA (END OF FISCAL YEAR 1993)				
		SCIENTISTS & ENGINEERS		**TECHNICAL SUPPORT**
TYPE	**END STRENGTH**	**PHD'S**	**OTHER**	**& OTHER PERSONNEL**
MILITARY	16	0	7	9
CIVILIAN	385	12	177	196
TOTAL	**401**	**12**	**184**	**205**

SPACE AND PROPERTY			
SPACE (THOUSANDS OF SQ FT)		**PROPERTY ACQUISITION COST (MILLIONS $)**	
LAB	108.655	**REAL PROPERTY**	5.536
ADMIN	84.276	* NEW CAPITAL EQUIPMENT	0.350
OTHER	39.404	**EQUIPMENT**	7.700
TOTAL	**232.335**	* NEW SCIENTIFIC & ENG. EQUIP.	0.000
ACRES	**33**	* Subset of previous category. See Equip./Facilities Narrative.	

NA = Not Applicable

DEPARTMENT OF DEFENSE IN-HOUSE RDT&E ACTIVITIES REPORT

for

Fiscal Year 1993

Prepared for:

The Office of the Secretary of Defense
Director, Defense
Research and Engineering
The Pentagon
Washington, DC 20301

1 November 1994

FOREWORD

The Department of Defense (DoD) In-House Research, Development, Test and Evaluation (RDT&E) Activities Report for FY93 was prepared by the Office of the Secretary of Defense, and is a continuation of the series of reports initiated in 1966.

The Office of the Deputy Director of Defense Research and Engineering for Laboratory Management leads a Steering Group which is responsible for the preparation and oversight of the report and its underlying database. The Steering Group is composed of representatives from the offices of the Director of Defense Research and Engineering, the Deputy Assistant Secretary of the Army for Research and Technology, the Chief of Naval Research, the Deputy Assistant Secretary of the Air Force (Research and Engineering), the Director of the Defense Nuclear Agency and the Under Secretary of Defense (Comptroller).

A DoD organizational entity is considered to be a "DoD RDT&E Activity" when it is owned and operated by the Government, and a minimum of 25% of its total effort is devoted to research, exploratory or advanced development, engineering development, demonstration/validation, systems or operational support, or some combination thereof. Examples are a research laboratory, RD&E center, test activity, or multi-functional entity such as a "warfare center". An "In-House" RDT&E Activity is an organization where a minimum of 25% of the in-house manpower and/or 25% of the obligational authority used is devoted to in-house research, exploratory or advanced development, engineering development, etc.

Each In-House RDT&E Activity of the DoD is described in a standard multi-page format in this year's edition of the report. Funding data is broken down into the standard RDT&E sub-categories, which were partially redefined for FY93: 6.1 - Research, 6.2 - Exploratory Development, 6.3 - Advanced Development (formerly 6.3A), 6.4 - Demonstration & Validation (formerly 6.3B), 6.5 - Engineering and Manufacturing Development (formerly 6.4), 6.6 - Management Support (formerly 6.5), 6.7 - Operational Systems Development (formerly 6.6/6.7), and Non-DoD.

A partial organization chart, entitled "Abbreviated Functional Chart - Technical Organizations", appears for each Activity to provide an overview of its technical operations. Activities are listed alphabetically within their respective military departments. Selected data are summarized in tables in the first section of the report. Following the tables are the sections which cover the Army, Navy, Air Force and the Defense Nuclear Agency.

Organizational changes for FY93 appear in Appendix A. Appendix B contains definitions of the data elements displayed in this report. Appendix C defines selected abbreviations and acronyms. All zero-filled report data fields reflect a zero amount reported.

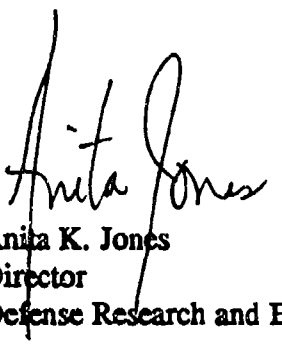
Every effort has been made to provide accurate information. Each submission was reviewed and approved by the head of the Activity. All numbers and statements submitted by each

Activity were then thoroughly examined by the members and staff of the Steering Group. Please note though, that this report does not reflect the total DoD RDT&E program. It is also not an accounting or budget management document, but rather a "snapshot" of the operation of individual Activities. All funding data reflect total obligational authority received in FY93.

The report is used by numerous organizations, including DoD, Office of Technology Assessment, DoD Audit Agency, various committees of the Congress, and the General Accounting Office. The report provides easily accessible, comprehensive and accurate information without frequent querying of field Activities.

This publication should be given widespread distribution in the DoD Laboratories, both as an internal resources reference document at the Director and Commanding Officer level, and as a catalog of general activity at the bench level. It provides laboratory staff an opportunity to familiarize themselves with the functional capabilities of other DoD Laboratories, thereby encouraging scientists and engineers to communicate with their counterparts at other labs on problems of common interest.

In addition, this publication should be helpful to those in the private sector interested in exploring the potential for technology cooperation with DoD Laboratories.



Anita K. Jones
Director
Defense Research and Engineering

Note: For additional copies of this report, contact:

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U.S. Department of Defense
Cameron Station, Bldg. 5
Alexandria, VA 22304-6145
703-274-6871

for all others:
National Technical Information Service (NTIS)
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Technology Administration
Springfield, VA 22161
703-487-4650

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TABLE 1. ARMY RDT&E ACTIVITIES, PROGRAM AND PERSONNEL DATA, FY 1993

INSTALLATION	FUNDING DATA (MILLIONS $)				PERSONNEL DATA					
	TOTAL	TOTALS IN-HOUSE	TOTALS RDT&E	IN-HOUSE RDT&E	TOTAL MIL	TOTAL CIV	HD MIL	HD CIV	ENG MIL	ENG CIV
Aeromedical Research Laboratory	11.302	9.104	7.764	5.566	62	64	14	13	5	8
Armament RDEC	656.018	309.095	330.890	145.160	79	4,442	1	98	13	2,086
Army Research Laboratory	557.002	272.111	476.392	264.319	116	3,576	9	387	32	1,472
Army Research Office	110.995	0.000	110.995	0.000	3	102	0	43	0	1
Aviation RDEC	148.791	61.949	95.089	39.354	12	770	1	31	8	445
Aviation Technical Test Center	24.959	24.959	19.156	19.156	92	137	0	0	36	46
Belvoir RDEC	169.545	60.051	108.220	38.287	20	370	0	15	20	316
CECOM RDEC	559.170	140.859	277.380	83.114	140	2,211	1	54	20	1,300
Cold Regions Research and Engineering Laboratory	39.322	25.908	24.682	14.211	3	284	1	48	1	86
Cold Regions Test Center	10.278	10.278	6.104	6.104	73	33	0	0	5	7
Combat Systems Test Activity	129.195	85.440	78.899	50.260	185	1,099	0	7	12	305
Construction Engineering Research Laboratories	87.011	40.386	42.710	4.525	1	382	0	48	1	183
Dugway Proving Ground	86.116	47.728	64.600	36.008	67	582	0	26	48	91
Edgewood RDEC	222.288	100.226	168.105	64.463	49	1,120	3	77	20	559
Electronic Proving Ground	53.085	27.269	27.694	12.263	359	172	1	2	31	80
Engineer Waterways Experiment Station	317.711	210.725	274.963	168.783	5	1,567	1	181	4	549
Institute of Surgical Research	14.189	13.391	7.396	6.598	176	63	21	10	9	17
Materiel Systems Analysis Activity	43.346	30.277	32.249	22.147	15	434	0	11	13	320
Medical Research Inst. of Chemical Defense	23.712	23.202	19.156	18.649	77	178	17	33	0	50
Medical Research Inst. of Environmental Medicine	12.185	10.357	8.014	6.235	80	81	24	27	0	26
Medical Research Inst. of Infectious Diseases	38.926	38.230	27.391	26.695	252	240	34	45	20	34
Missile RDEC	485.326	126.624	365.669	86.897	28	2,046	2	56	6	256
Natick RDEC	142.758	72.264	114.800	49.673	45	925	0	58	3	338
OPTEC-Test and Experimentation Command	106.167	106.167	62.459	62.459	1,182	799	0	3	13	62
Research Inst. for the Behavioral & Social Sciences	42.498	20.985	40.857	19.344	11	225	0	104	6	27
Tank-Automotive RDEC	190.523	94.591	133.271	54.413	24	1,248	1	22	23	611
Topographic Engineering Center	78.155	29.417	27.187	19.242	11	413	0	14	4	242
Walter Reed Army Institute of Research	80.529	75.454	55.143	50.724	428	500	162	117	5	149
White Sands Missile Range	90.858	40.796	53.583	19.717	436	2,168	0	10	219	543
Yuma Proving Ground	124.242	75.948	82.301	45.505	204	739	0	0	13	150

TABLE 2. ARMY RDT&E ACTIVITIES, FACILITY DATA, FY 1993

INSTALLATION	LOCATION	SPACE AND PROPERTY						
			SPACE (THOUSANDS OF SQUARE FEET)				COST (MILLIONS $)	
		ACRES	LAB	ADMIN	OTHER	TOTAL	REAL PROP	EQUIP
Aeromedical Research Laboratory	Ft. Rucker, AL	44	107.946	24.520	39.652	172.118	11.382	44.240
Armament RDEC	Picatinny Arsenal, NJ	5,884	452.617	1,150.733	2,452.853	4,056.203	160.658	212.342
Army Research Laboratory	Adelphi, MD	2,353	1,849.000	405.000	713.000	2,967.000	1,264.000	527.000
Army Research Office	Rsrch Triangle Pk, NC	0	0.000	29.938	0.000	29.938	0.000	1.508
Aviation RDEC	St. Louis, MO	0	46.428	52.151	11.502	110.081	3.020	24.008
Aviation Technical Test Center	Ft. Rucker, AL	0	0.000	93.000	229.000	322.000	3.027	178.650
Belvoir RDEC	Ft. Belvoir, VA	240	332.949	67.117	260.390	660.456	14,041.225	8,174.422
CECOM RDEC	Ft. Monmouth, NJ	204	421.400	378.000	0.000	799.400	65.652	177.200
Cold Regions Research & Engineering Lab	Hanover, NH	194	88.961	74.054	148.000	311.015	32.015	22.482
Cold Regions Test Center	Ft. Greely, AK	0	1.400	18.200	198.400	218.000	14.300	40.825
Combat Systems Test Activity	Aberdeen PG, MD	56,707	155.466	166.016	910.538	1,232.020	28.991	182.496
Construction Engineering Research Labs	Champaign, IL	33	103.850	27.513	134.523	265.886	9.477	18.011
Dugway Proving Ground	Dugway, UT	798,855	170.573	157.344	2,266.652	2,594.569	135.000	40.913
Edgewood RDEC	Aberdeen PG, MD	0	936.000	216.000	310.000	1,462.000	70.100	129.600
Electronic Proving Ground	Ft. Huachuca, AZ	29,139	273.000	14.680	14.480	302.160	44.198	135.701
Engineer Waterways Experiment Station	Vicksburg, MS	3,608	2,486.540	183.350	63.730	2,733.620	463.560	406.000
Institute of Surgical Research	Ft. Sam Houston, TX	0	51.674	10.626	17.000	79.300	10.553	7.799
Materiel Systems Analysis Activity	Aberdeen PG, MD	4	1.600	126.350	6.050	134.000	3.596	8.271
Medical Research Inst. of Chemical Defense	Aberdeen PG, MD	30	40.502	36.488	115.745	192.735	23.100	24.400
Medical Research Inst. of Environ. Medicine	Natick, MA	1	38.754	6.560	33.750	79.064	25.505	6.116
Medical Research Inst. of Infectious Diseases	Ft. Detrick, MD	150	121.000	40.000	223.000	384.000	22.776	40.381
Missile RDEC	Redstone Arsenal, AL	4,000	909.000	76.000	124.000	1,109.000	216.000	259.000
Natick RDEC	Natick, MA	174	415.891	114.463	316.117	846.471	30.481	38.336
OPTEC-Test and Experimentation Cmd	Ft. Hood, TX	22	19.900	41.000	0.000	60.900	6.300	3.000
Rsrch. Inst. for Behavioral & Social Sciences	Alexandria, VA	0	10.300	86.000	14.000	110.300	3.500	22.400
Tank-Automotive RDEC	Warren, MI	102	512.500	176.000	0.000	688.500	81.400	192.800
Topographic Engineering Center	Alexandria, VA	0	121.772	15.529	36.998	174.299	22.400	13.490
Walter Reed Army Institute of Research	Washington, DC	0	243.000	102.000	177.000	522.000	46.314	62.109
White Sands Missile Range	White Sands, NM	2,166,253	66.385	966.270	4,327.973	5,360.628	383.699	393.000
Yuma Proving Ground	Yuma, AZ	838,376	22.175	161.300	1,709.159	1,892.634	93.072	304.590

TABLE 3. NAVY RDT&E ACTIVITIES, PROGRAM AND PERSONNEL DATA, FY 1993

INSTALLATION	FUNDING DATA (MILLIONS $)				PERSONNEL DATA					
	TOTAL	TOTALS IN-HOUSE	TOTALS RDT&E	IN-HOUSE RDT&E	TOTAL MIL	TOTAL CIV	PHD MIL	PHD CIV	ENG MIL	ENG CIV
Naval Aerospace Medical Research Laboratory	5.403	5.302	4.813	4.712	29	57	11	8	3	17
Naval Air Warfare Center	3,847.186	1,700.738	1,341.877	756.747	3,475	19,513	9	258	452	7,216
Naval Biodynamics Laboratory	4.061	2.530	3.784	2.253	33	36	3	3	3	15
Naval Civil Engineering Laboratory	74.473	47.762	53.425	30.678	16	385	0	12	7	177
Navy Clothing and Textile Research Facility	4.291	3.069	1.983	1.110	1	55	0	1	1	38
Naval Command, Control & Ocean Surveillance Ctr.	1,982.841	959.521	471.256	236.817	335	5,367	2	199	233	2,334
Naval Dental Research Institute	1.871	1.439	1.871	1.439	32	11	12	3	1	3
Naval Explosive Ordnance Disposal Tech. Ctr.	46.335	21.589	26.654	11.109	62	261	0	1	4	69
Naval Health Research Center	8.789	5.578	7.799	4.968	25	60	11	13	2	26
Naval Medical Research Institute	59.852	18.622	55.530	16.495	260	161	52	31	16	41
Naval Medical Research Unit # 2	4.191	4.135	2.951	2.937	19	106	10	12	1	41
Naval Medical Research Unit # 3	7.453	7.167	6.653	6.367	33	218	9	29	4	54
Navy Personnel Research and Development Center	29.838	17.454	17.081	9.434	17	225	0	53	5	107
Naval Research Laboratory	810.796	380.041	659.050	328.789	185	3,721	8	922	17	1,085
Naval Submarine Medical Research Laboratory	5.448	4.159	4.211	3.450	28	47	9	9	0	15
Naval Surface Warfare Center	3,334.372	2,209.403	1,094.171	658.759	626	21,261	0	460	133	8,479
Naval Undersea Warfare Center	1,317.506	691.756	438.530	209.688	367	7,112	0	143	25	3,133

TABLE 4. NAVY RDT&E ACTIVITIES, FACILITY DATA, FY 1993								
		SPACE AND PROPERTY						
			SPACE (THOUSANDS OF SQUARE FEET)				COST (MILLIONS $)	
INSTALLATION	LOCATION	ACRES	LAB	ADMIN	OTHER	TOTAL	REAL PROP	EQUIP
Naval Aerospace Medical Research Laboratory	Pensacola, FL	3	36.591	26.516	56.714	119.821	13.958	10.649
Naval Air Warfare Center	Arlington, VA	1,165,875	6,464.579	1,530.885	10,102.209	18,097.673	4,102.356	1,549.239
Naval Biodynamics Laboratory	New Orleans, LA	2	25.845	23.149	5.200	54.194	2.183	5.501
Naval Civil Engineering Laboratory	Port Hueneme, CA	33	108.635	84.276	39.404	232.335	5.536	7.700
Navy Clothing and Textile Research Facility	Natick, MA	0	12.667	16.000	5.630	34.297	0.000	1.399
Naval Command, Control & Ocean Surveillance Ctr	San Diego, CA	1,673	2,419.766	498.047	1,894.221	4,812.034	269.185	224.946
Naval Dental Research Institute	Great Lakes, IL	0	21.264	6.001	9.318	36.583	0.000	1.700
Naval Explosive Ordnance Disposal Tech. Ctr.	Indian Head, MD	173	114.112	35.588	113.955	263.655	19.984	6.457
Naval Health Research Center	San Diego, CA	0	26.844	12.650	1.170	40.664	0.000	3.676
Naval Medical Research Institute	Bethesda, MD	7	161.930	63.875	0.000	225.805	8.200	14.676
Naval Medical Research Unit # 2	Jakarta APO AP,	0	16.900	10.990	4.400	32.290	0.847	2.287
Naval Medical Research Unit # 3	Cairo, Egypt, AL	4	68.244	9.058	71.330	148.632	10.600	5.763
Navy Personnel Research & Development Ctr.	San Diego, CA	3	64.000	27.000	4.456	95.456	1.178	11.579
Naval Research Laboratory	Washington, DC	612	3,255.174	248.056	390.360	3,893.590	212.695	339.400
Naval Submarine Medical Research Laboratory	Groton, CT	0	46.183	10.537	4.962	61.682	0.000	4.147
Naval Surface Warfare Center	Arlington, VA	72,664	7,192.034	1,654.553	17,217.182	26,063.769	1,158.803	1,091.621
Naval Undersea Warfare Center	Newport, RI	3,231	3,407.705	243.500	2,476.368	6,127.573	241.459	994.652

TABLE 5 AIR FORCE RDT&E ACTIVITIES PROGRAM AND PERSONNEL DATA, FY 1993

INSTALLATION	FUNDING DATA (MILLIONS)				PERSONNEL DATA						
	TOTAL	TOTALS IN-HOUSE	TOTALS RDT&E	IN-HOUSE RDT&E	TOTAL MIL	TOTAL CIV	PHD MIL	PHD CIV	ENG MIL	ENG CIV
46th Test Group	71.400	33.983	61.461	26.074	198	296	1	2	25	164
4950th Test Wing	106.000	98.000	106.000	98.000	532	463	0	0	40	9
Armstrong Laboratory	198.100	27.800	174.100	27.600	528	539	71	124	162	169
Arnold Engineering Development Center	294.043	205.243	227.698	181.595	134	204	0	4	44	62
Development Test Center	368.499	273.463	260.772	177.886	1,672	1,980	2	7	275	832
Flight Test Center	451.129	320.831	174.693	96.028	4,524	3,443	51	13	1,127	464
Phillips Laboratory	862.400	202.700	643.200	140.900	665	1,318	35	214	358	427
Rome Laboratory	307.613	47.232	231.596	36.785	125	875	6	61	71	485
Wright Laboratory	1,044.300	166.600	996.300	144.900	378	2,179	35	195	274	1,326

TABLE 6. AIR FORCE RDT&E ACTIVITIES, FACILITY DATA, FY 1993								
		SPACE AND PROPERTY						
			SPACE (THOUSANDS OF SQUARE FEET)				COST (MILLIONS $)	
INSTALLATION	LOCATION	ACRES	LAB	ADMIN	OTHER	TOTAL	REAL PROP	EQUIP
46th Test Group	Holloman AFB, NM	7,052	572.971	55.009	132.641	760.621	231.837	152.855
4950th Test Wing	WPAFB, OH	400	22.012	9.376	852.006	883.394	27.070	49.992
Armstrong Laboratory	San Antonio, TX	94	718.000	32.000	149.000	899.000	59.000	61.533
Arnold Engineering Development Center	Arnold AFB, TN	39,081	1,614.697	370.161	684.564	2,669.422	1,269.562	225.808
Development Test Center	Eglin AFB, FL	462,770	1,756.320	820.255	8,684.930	11,261.505	383.601	492.338
Flight Test Center	Edwards AFB, CA	297,032	302.354	273.205	8,624.164	9,199.724	665.703	0.149
Phillips Laboratory	Kirtland AFB, NM	50,000	519.000	544.000	1,212.000	2,275.000	150.000	857.500
Rome Laboratory	Griffiss AFB, NY	1,612	855.546	89.231	44.247	989.024	46.892	125.700
Wright Laboratory	WPAFB, OH	932	1,438.300	792.614	905.691	3,136.605	813.834	2,057.890

TABLE 7. DEFENSE NUCLEAR AGENCY RDT&E ACTIVITIES, PROGRAM AND PERSONNEL DATA, FY 1993

INSTALLATION	FUNDING DATA ($M)					PERSONNEL DATA					
	TOTAL	TOTALS IN-HOUSE	TOTALS RDT&E	IN-HOUSE RDT&E	TOTAL MIL	TOTAL CIV	FED MIL	FED CIV	ENG MIL	ENG CIV
Armed Forces Radiobiology Research Institute	17.574	17.574	17.292	17.292	74	160	22	34	7	52

TABLE 6. DEFENSE NUCLEAR AGENCY RDT&E ACTIVITIES, FACILITY DATA, FY 1993

INSTALLATION	LOCATION	SPACE AND PROPERTY						
		ACRES	SPACE (THOUSANDS OF SQUARE FEET)				COST (MILLIONS $)	
			LAB	ADMIN	OTHER	TOTAL	REAL PROP	EQUIP
Armed Forces Radiobiology Research Institute	Bethesda, MD	10	61.750	34.257	23.908	119.915	14.106	15.572

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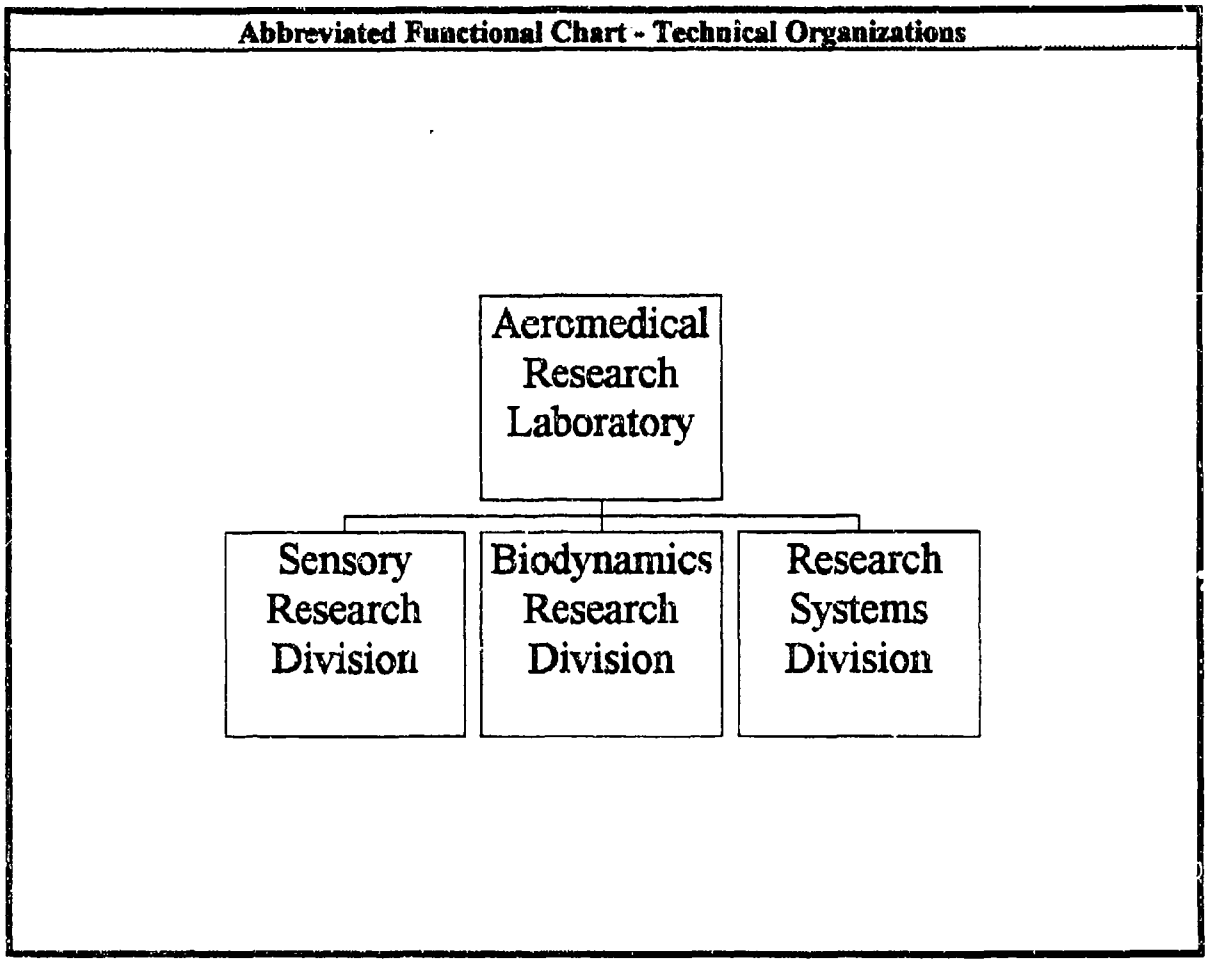
DEPARTMENT OF THE ARMY

DEPARTMENT OF THE ARMY

The Army's twenty nine (29) In-House RDT&E Activities are:

Aeromedical Research Laboratory



Aeromedical Research Laboratory
Fort Rucker, AL 36362-5292
(205) 255-6900

Commander: COL David H. Karney
Deputy CDR: COL Dennis F. Shanahan

MISSION

Conduct medical research related to the effects of military aviation, combat vehicles, and other weapons systems on soldier health and performance. Conduct research on the impact of continuous operations on crew performance, on health hazards of emerging military materiel systems and develops design criteria for aviator protective equipment and visual systems.

CURRENT IMPORTANT PROGRAMS

Aviator Performance Effects of Sustained Operations, Sleep Cycle Disruption and Extended Use of Night Vision Devices.

Soldier Tolerance to Biomechanical Impact and Prevention of Impact Injury.

Aeromedical (MANPRINT) Support for Comanche (RAH-66) and New Training Helicopter (NTH) Development.

Blast Overpressure (Impulse Noise) Tolerance.

Contact Lenses in Military Environments.

EQUIPMENT/FACILITIES

Multi-Axis Ride Simulation System; Helmet Drop Test Tower and Impact Facility; Variable Center of Gravity Helmet Device; Cardiopulmonary Lab; Biochemistry Lab; UH-60 Aeromedical Research Flight Simulator; Helicopter inflight Monitoring System; Modified Aircraft for Inflight Medical Research; Data Acquisition and Biotelemetry System - In-House/Mobile; Vivarium; High Intensity Impulse Noise generator (Shock Tube); Blast Overpressure Test Site (Explosive and Shock Tube Exposure); Mobile Acoustics Lab; Anechoic and Reverberation Chambers; Bio-Optical Testing Lab; Optical Fabrication Lab; Electro-Optical Testing Lab; Mobile Visual Displays Lab; Scientific and Medical Research Information Center; MEDEVAC Equipment Testing Facility; and Aviation Epidemiology Data Register.

BUILDING	AGE
6901	13 YRS
6902	13 YRS
6904	9 YRS
6903	19 YRS
6905	7 YRS
6906	4 YRS
8825	24 YRS

Aeromedical Research Laboratory
Fort Rucker, AL 36362-5292
(205) 255-6900

Commander: COL David H. Karney
Deputy CDR: COL Dennis F. Shanahan

FY93 FUNDING DATA (MILLIONS $)			
APPROPRIATION	**IN-HOUSE**	**OUT-OF-HOUSE**	**TOTAL**
RDT&E:			
6.1 ILIR	0.082	NA	0.082
6.1 Other	0.518	0.050	0.568
6.2 IED (Navy)	NA	NA	NA
6.2 Other	4.259	2.121	6.380
6.3	0.575	0.027	0.602
Subtotal (S&T)	**5.434**	**2.198**	**7.632**
6.4	0.132	0.000	0.132
6.5	0.000	0.000	0.000
6.6	0.000	0.000	0.000
6.7	0.000	0.000	0.000
Non-DOD	0.000	0.000	0.000
TOTAL RDT&E	**5.566**	**2.198**	**7.764**
Procurement	0.000	0.000	0.000
Operations & Maintenance	0.056	0.000	0.056
Other	3.482	0.000	3.482
TOTAL FUNDING	**9.104**	**2.198**	**11.302**

MILITARY CONSTRUCTION (MILLIONS $)	
Military Construction (MILCON)	0.000

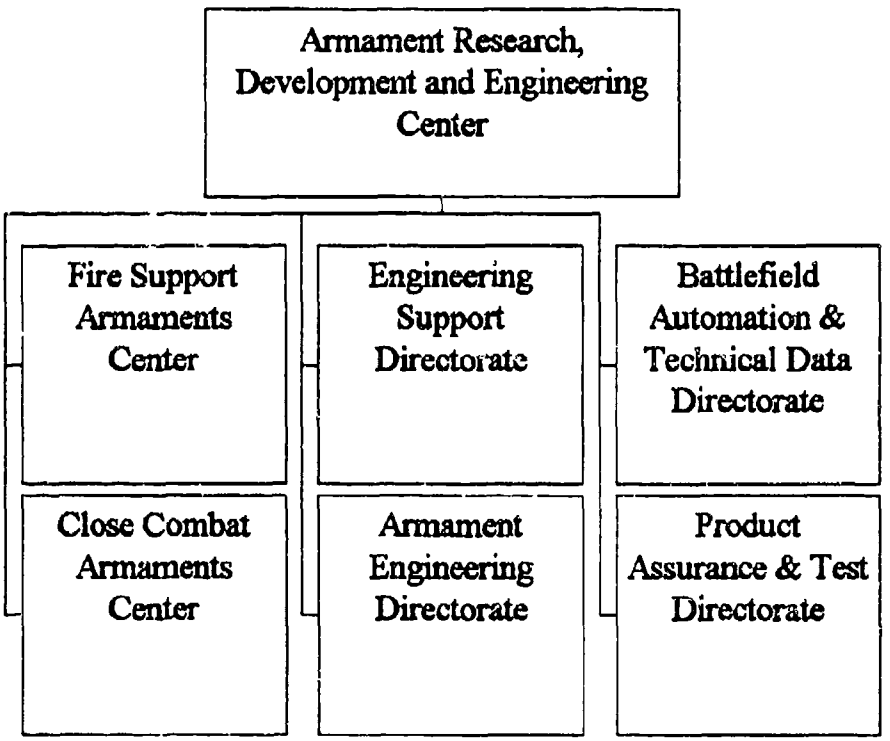
PERSONNEL DATA (END OF FISCAL YEAR 1993)				
		SCIENTISTS & ENGINEERS		**TECHNICAL SUPPORT**
TYPE	**END STRENGTH**	**PHD'S**	**OTHER**	**& OTHER PERSONNEL**
MILITARY	62	14	5	43
CIVILIAN	64	13	8	43
TOTAL	**126**	**27**	**13**	**86**

SPACE AND PROPERTY			
SPACE (THOUSANDS OF SQ FT)		**PROPERTY ACQUISITION COST (MILLIONS $)**	
LAB	107.946	**REAL PROPERTY**	11.382
ADMIN	24.520	* NEW CAPITAL EQUIPMENT	0.609
OTHER	39.652	**EQUIPMENT**	44.240
TOTAL	**172.118**	* NEW SCIENTIFIC & ENG. EQUIP.	0.451
ACRES	**44**	* Subset of previous category. See Equip./Facilities Narrative.	

NA = Not Applicable

Armament Research, Development and Engineering Center

Abbreviated Functional Chart - Technical Organizations



Armament Research, Development and Engineering Center
Picatinny Arsenal, NJ 07806-5000 Commander: BG Harvey E. Brown
(201) 724-6000 Technical Dir.: Mr. Carmen Spinelli

MISSION

Striving to be a community of research, development and engineering excellence, where people care and are well trained, empowered and motivated, the ARDEC will provide the best possible armament materiel to our primary customer, the Soldier in the Field. In spite of drastic defense resource cutbacks, ARDEC management will create a work environment consistent with our mission of conducting or managing research, development, and life-cycle engineering (including product assurance and integrated logistic support) for assigned armament and munitions systems and materiel. The ARDEC maintains a Technology Base which supports 90 percent of the Army's lethality, as well as executing the procurement and management of initial production quantities and technical support for over 1500 fielded systems.

CURRENT IMPORTANT PROGRAMS

Smart Munitions (including Intelligent Mines)
Pollution Prevention for Army Materiel Life Cycle Process
Tank Artillery and Mortar
Advanced Gun Propulsion (including Electric Guns)
Individual Soldier and Crew Served Weapons

EQUIPMENT/FACILITIES

Electric Armaments Research Center (EARC): This new launch facility, featuring the world's highest energy capacitor-based electric gun laboratory power supply, was dedicated in FY 92. EARC uses 52 megajoules (MJ) of capacitor storage to drive large caliber EM and ETC guns at energy levels exceeding current tank main armaments. A large caliber (120mm) ETC gun incorporating a modified M256 tank cannon has already completed a test series. Advanced composite railguns (90mm) and the Army/SDI D2 guided projectile are scheduled for testing here in FY 93.

The construction of a 34.5 KVA electrical feeder from the JCP&L provided ARDEC with a second electrical service. The installation of 5.3 miles of electric power lines will eliminate problems such as brown-outs. Further it will eliminate the payment of fines associated with consumption of power with high power factor charges. The construction was completed in FY 93. The construction cost was $826,000.

Armament Research, Development and Engineering Center
Picatinny Arsenal, NJ 07806-5000 Commander: BG Harvey E. Brown
(201) 724-6000 Technical Dir.: Mr. Carmen Spinelli

FY93 FUNDING DATA (MILLIONS $)			
APPROPRIATION	**IN-HOUSE**	**OUT-OF-HOUSE**	**TOTAL**
RDT&E:			
6.1 ILIR	1.111	NA	1.111
6.1 Other	1.792	9.116	10.908
6.2 IED (Navy)	NA	NA	NA
6.2 Other	31.844	15.681	47.525
6.3	8.230	68.508	76.738
Subtotal (S&T)	**42.977**	**93.305**	**136.282**
6.4	33.240	21.873	55.113
6.5	17.708	10.369	28.077
6.6	47.016	43.292	90.308
6.7	4.122	16.891	21.013
Non-DOD	0.097	0.000	0.097
TOTAL RDT&E	**145.160**	**185.730**	**330.890**
Procurement	96.250	110.243	206.493
Operations & Maintenance	59.091	11.912	71.003
Other	8.594	39.038	47.632
TOTAL FUNDING	**309.095**	**346.923**	**656.018**

MILITARY CONSTRUCTION (MILLIONS $)	
Military Construction (MILCON)	0.000

PERSONNEL DATA (END OF FISCAL YEAR 1993)				
		SCIENTISTS & ENGINEERS		TECHNICAL SUPPORT
TYPE	**END STRENGTH**	**PHD'S**	**OTHER**	**& OTHER PERSONNEL**
MILITARY	79	1	13	65
CIVILIAN	4,442	98	2,086	2,258
TOTAL	**4,521**	**99**	**2,099**	**2,323**

SPACE AND PROPERTY			
SPACE (THOUSANDS OF SQ FT)		**PROPERTY ACQUISITION COST (MILLIONS $)**	
LAB	452.617	**REAL PROPERTY**	160.658
ADMIN	1,150.733	* NEW CAPITAL EQUIPMENT	0.000
OTHER	2,452.853	**EQUIPMENT**	212.342
TOTAL	**4,056.203**	* NEW SCIENTIFIC & ENG. EQUIP.	5.590
ACRES	**5,884**	* Subset of previous category. See Equip./Facilities Narrative.	

NA = Not Applicable

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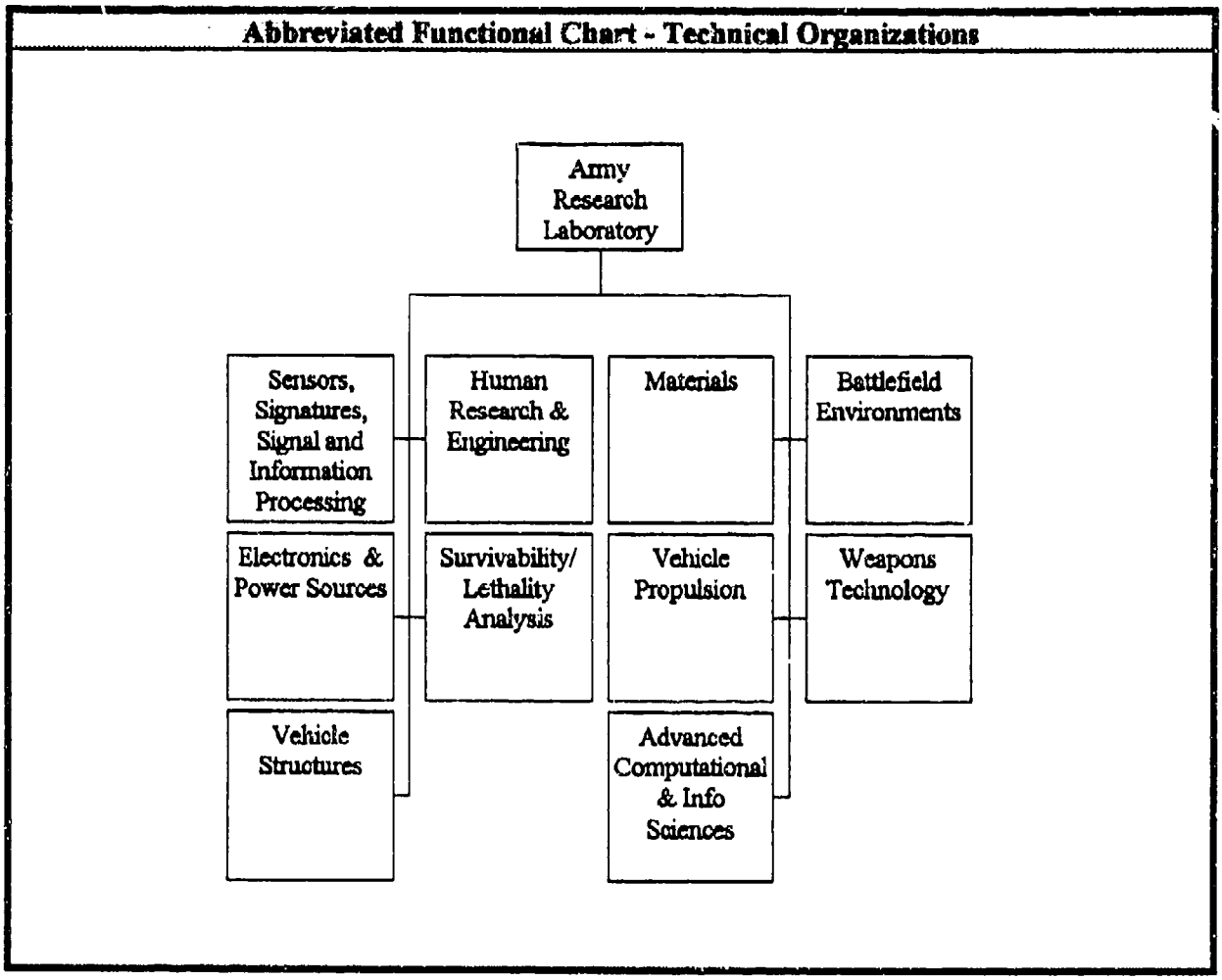
Army Research Laboratory



Army Research Laboratory
Adelphi, MD 20783-1197
(301) 394-1600

Director: Dr. John W. Lyons
Dep. Director: Col. William J. Miller

MISSION

The mission of ARL is to execute fundamental and applied research to provide the Army the key technologies and analytical support necessary to assure supremacy in future land warfare.

We envision the future ARL:

A laboratory preeminent in key areas of science and engineering relevant to land warfare.

A staff widely recognized as outstanding.

A partner with the Defense community, close to Army users and seen by them as essential to their missions.

An intellectual crossroads for the technical community, intensively interacting with academe, industry, and other government laboratories in the U.S. and abroad.

CURRENT IMPORTANT PROGRAMS

Digitization
Armor & Armaments
Soldier as a System
Survivability/Lethality
Air Ground Mobility
Owning the Weather

EQUIPMENT/FACILITIES

ARL Unique Facilities/Equipment:

Acoustic Source Generation System, Test Range for Advanced Aerospace Vulnerability, Ultra-lithography Facility, Advanced Microanalysis Center, Frequency Control and Acoustic Signal Processing Facility, Display Technology Center, Ion Implantation Facility, Aerodynamics Range, Transonic Range, Blast Range, Large-Caliber Experimental Test Facility, Autoclaves for Composites Processing Research, Materials Characterization Facility, "Big Crow" Electronic Warfare Flying Laboratory, High-Power-Microwave Research Facility, HIFX Flash X-Ray Facility, Triaxis Vibrator, Flame Research Facility, Atmospheric Profiling Research Facility, Aerosol/Laser Energy Interaction Laboratory, Computerized 600-m Small Arms Range, Indoor/Outdoor Robotics and Automation Research and Test Facility, Computerized Mobility/Portability Course, Pulse Power Center, Aurora Pulsed Radiation Facility, Icing Research Tunnel, Crashworthiness Facility, Transonic Dynamics Tunnel, High-Performance Computing Resources, Ultra-Wideband Foliage-Penetrating Synthetic Aperture Radar Test Bed, Nanoelectronic Fabrication Facility, Compression/Shear Gas Gun with 4-Beam Visar

Army Research Laboratory
Adelphi, MD 20783-1197
(301) 394-1600

Director: Dr. John W. Lyons
Dep. Director: Col. William J. Miller

FY93 FUNDING DATA (MILLIONS $)			
APPROPRIATION	**IN-HOUSE**	**OUT-OF-HOUSE**	**TOTAL**
RDT&E:			
6.1 ILIR	0.000	NA	0.000
6.1 Other	27.280	10.829	38.109
6.2 IED (Navy)	NA	NA	NA
6.2 Other	147.753	123.748	271.501
6.3	7.914	24.154	32.068
Subtotal (S&T)	**182.947**	**158.731**	**341.678**
6.4	4.321	3.213	7.534
6.5	0.000	0.000	0.000
6.6	75.970	47.598	123.568
6.7	0.187	1.538	1.725
Non-DOD	0.894	0.993	1.887
TOTAL RDT&E	**264.319**	**212.073**	**476.392**
Procurement	0.093	1.316	1.409
Operations & Maintenance	2.564	7.350	9.914
Other	5.135	64.152	69.287
TOTAL FUNDING	**272.111**	**284.891**	**557.002**

MILITARY CONSTRUCTION (MILLIONS $)	
Military Construction (MILCON)	0.000

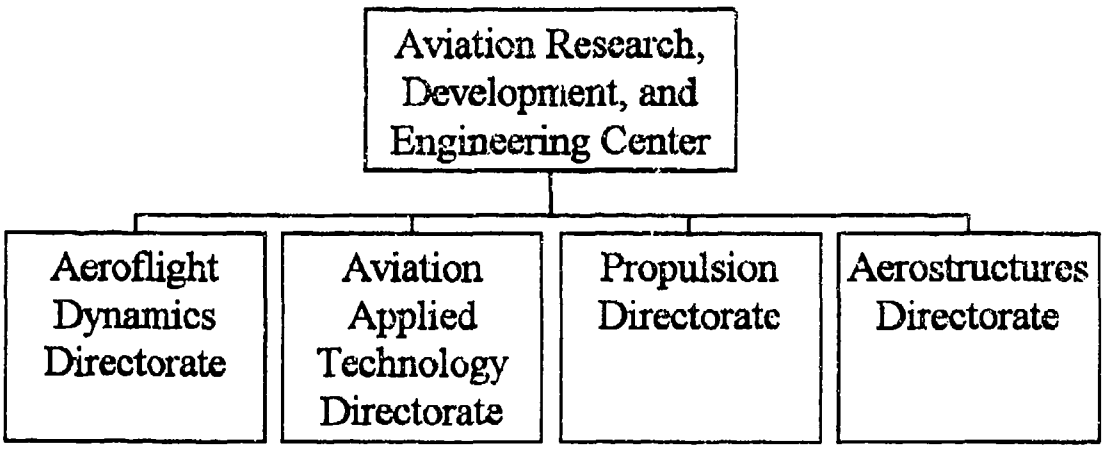
PERSONNEL DATA (END OF FISCAL YEAR 1993)				
		SCIENTISTS & ENGINEERS		TECHNICAL SUPPORT
TYPE	**END STRENGTH**	**PHD'S**	**OTHER**	**& OTHER PERSONNEL**
MILITARY	116	9	32	75
CIVILIAN	3,576	387	1,472	1,717
TOTAL	**3,692**	**396**	**1,504**	**1,792**

SPACE AND PROPERTY			
SPACE (THOUSANDS OF SQ FT)		**PROPERTY ACQUISITION COST (MILLIONS $)**	
LAB	1,849.000	REAL PROPERTY	1,264.000
ADMIN	405.000	* NEW CAPITAL EQUIPMENT	10.047
OTHER	713.000	EQUIPMENT	527.000
TOTAL	**2,967.000**	* NEW SCIENTIFIC & ENG. EQUIP.	0.000
ACRES	**2,353**	* Subset of previous category. See Equip./Facilities Narrative.	

NA = Not Applicable

Aviation Research, Development and Engineering Center

Abbreviated Functional Chart - Technical Organizations



Aviation Research, Development and Engineering Center
St. Louis, MO 63120-1798
(314) 263-1412
Commander: MG John S. Cowings
Technical Dir.: Thomas L. House

MISSION

Execute the DoD Rotorcraft Science and Technology program and provide "one-stop" engineering support to all life cycle phases as required to achieve technologically superior, safe, and supportable Army aviation systems and equipment. The AVRDEC has the responsibility to plan and, in most cases, execute the fundamental basic research, exploratory development, and advanced development programs supporting DOD rotorcraft needs in the areas of aeromechanics, propulsion, structures, reliability and maintainability, survivability, weaponization, avionics mission equipment, and systems integration/simulation.

CURRENT IMPORTANT PROGRAMS

Rotorcraft Pilot's Associate; Joint Turbine Advanced Gas Generator and Integrated High Performance Turbine Engine Technology; Advanced Rotorcraft Transmission Demonstration; Integrated Air-to-Air Weapons Program; Day/Night Adverse Weather Pilotage System; Man/Machine Integration Design and Analysis System; Advanced Boresight Equipment; Improved Airframe Manufacturing Technology.

EQUIPMENT/FACILITIES

IR Countermeasures Test Facility, Ballistic Test Range, Crew Station Research and Development Facility, Flight Research Aircraft, NASA-Ames 40x80/80x120 Wind Tunnel National Full-Scale Aerodynamics Complex, NASA-Ames Flight Simulation Complex, Vertical Motion Simulator, NASA-Ames Automation Sciences Research Facility, NASA-Ames Hover Test Facility.

Aviation Research, Development and Engineering Center
St. Louis, MO 63120-1798
(314) 263-1412

Commander: MG John S. Cowings
Technical Dir.: Thomas L. House

FY93 FUNDING DATA (MILLIONS $)			
APPROPRIATION	**IN-HOUSE**	**OUT-OF-HOUSE**	**TOTAL**
RDT&E:			
6.1 ILIR	0.346	NA	0.346
6.1 Other	2.143	0.842	2.985
6.2 IED (Navy)	NA	NA	NA
6.2 Other	21.015	20.244	41.259
6.3	4.337	20.877	25.214
Subtotal (S&T)	**27.841**	**41.963**	**69.804**
6.4	1.623	4.017	5.640
6.5	0.000	0.000	0.000
6.6	9.445	1.351	10.796
6.7	0.445	7.994	8.439
Non-DOD	0.000	0.410	0.410
TOTAL RDT&E	**39.354**	**55.735**	**95.089**
Procurement	0.158	9.511	9.669
Operations & Maintenance	13.751	2.713	16.464
Other	8.686	18.883	27.569
TOTAL FUNDING	**61.949**	**86.842**	**148.791**

MILITARY CONSTRUCTION (MILLIONS $)	
Military Construction (MILCON)	0.000

PERSONNEL DATA (END OF FISCAL YEAR 1993)				
		SCIENTISTS & ENGINEERS		TECHNICAL SUPPORT
TYPE	**END STRENGTH**	**PHD'S**	**OTHER**	**& OTHER PERSONNEL**
MILITARY	12	1	8	3
CIVILIAN	770	31	445	294
TOTAL	**782**	**32**	**453**	**297**

SPACE AND PROPERTY			
SPACE (THOUSANDS OF SQ FT)		**PROPERTY ACQUISITION COST (MILLIONS $)**	
LAB	46.428	**REAL PROPERTY**	3.020
ADMIN	52.151	* NEW CAPITAL EQUIPMENT	0.000
OTHER	11.502	**EQUIPMENT**	24.008
TOTAL	**110.081**	* NEW SCIENTIFIC & ENG. EQUIP.	0.588
ACRES	**0**	* Subset of previous category. See Equip./Facilities Narrative.	

NA = Not Applicable

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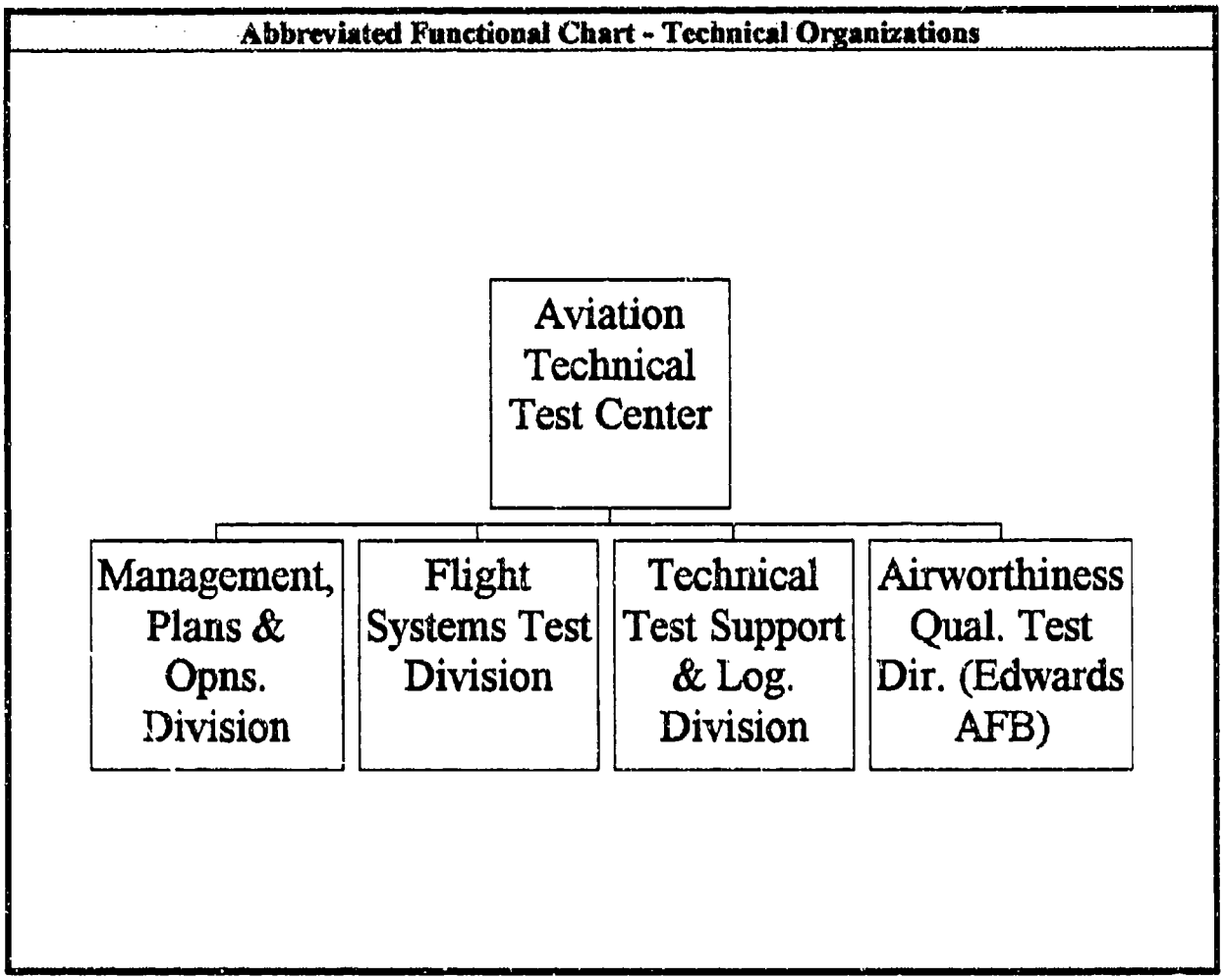
Aviation Technical Test Center



Aviation Technical Test Center
Fort Rucker, AL 36362-5270
(205) 255-8000

Commander: COL Joseph L. Bergantz
Tech Dir.: Flucher J. McCrory, Jr.

MISSION

Plan, conduct, analyze, and report the results of developmental tests and studies to include airworthiness flight testing of Army aviation systems and associated materiel/systems. To provide test, test support, development support, and evaluations of aviation materiel/systems; and provide other aviation support for authorized customers as directed by the U.S. Army Test and Evaluation Command.

CURRENT IMPORTANT PROGRAMS

Lead-the-Fleet Program
OH-58D Logistics Evaluation Program
RAH-66 Comanche Program
AH-64/W 701C Engine Limited Airworthiness & Flight Certification
HAVOC-X
Brilliant Anti-Tank (BAT) System

EQUIPMENT/FACILITIES

Sixty rotary- and fixed-wing aircraft are assigned (2 AH-1F, 7 AH-64, 2 C-23, 9 CH-3E, 2 CH-47D, 13 HH-3E, 6 OH-58A/C/D, 4 T-34C, 2 U-21, 8 UH-1H, 5 UH-60A/L) as test beds. Helicopter Icing Spray System (HISS): A CH-47D with an integrated 1,800-gallon water tank and spray apparatus combined with a highly instrumented U-21A to provide cloud physics documentation, conducts in-flight icing evaluations under both artificial and natural conditions. A portable modular engine test system provides accurate measurements of turbine engine performance for aircraft engines up to 5,000 hp and weight up to 2,000 lbs. Analog and digital aircraft data can be recorded and/or telemetered to the ground. On-site data processing and display exist--real time and postmission. Capability to collect and process video, still, and high-speed pictures exists.

Aviation Technical Test Center
Fort Rucker, AL 36362-5276
(205) 255-8000

Commander: COL Joseph L. Bergantz
Tech Dir.: Flucher J. McCrory, Jr.

FY93 FUNDING DATA (MILLIONS $)			
APPROPRIATION	**IN-HOUSE**	**OUT-OF-HOUSE**	**TOTAL**
RDT&E:			
6.1 ILIR	0.000	NA	0.000
6.1 Other	0.000	0.000	0.000
6.2 IED (Navy)	NA	NA	NA
6.2 Other	0.000	0.000	0.000
6.3	0.000	0.000	0.000
Subtotal (S&T)	**0.000**	**0.000**	**0.000**
6.4	0.000	0.000	0.000
6.5	0.000	0.000	0.000
6.6	19.156	0.000	19.156
6.7	0.000	0.000	0.000
Non-DOD	0.000	0.000	0.000
TOTAL RDT&E	**19.156**	**0.000**	**19.156**
Procurement	1.003	0.000	1.003
Operations & Maintenance	0.000	0.000	0.000
Other	4.800	0.000	4.800
TOTAL FUNDING	**24.959**	**0.000**	**24.959**

MILITARY CONSTRUCTION (MILLIONS $)	
Military Construction (MILCON)	0.000

PERSONNEL DATA (END OF FISCAL YEAR 1993)				
		SCIENTISTS & ENGINEERS		TECHNICAL SUPPORT
TYPE	**END STRENGTH**	**PHD'S**	**OTHER**	**& OTHER PERSONNEL**
MILITARY	92	0	30	62
CIVILIAN	137	0	46	91
TOTAL	**229**	**0**	**76**	**153**

SPACE AND PROPERTY			
SPACE (THOUSANDS OF SQ FT)		**PROPERTY ACQUISITION COST (MILLIONS $)**	
LAB	0.000	**REAL PROPERTY**	3.027
ADMIN	93.000	* NEW CAPITAL EQUIPMENT	0.000
OTHER	229.000	**EQUIPMENT**	178.650
TOTAL	**322.000**	* NEW SCIENTIFIC & ENG. EQUIP.	0.107
ACRES	**0**	* Subset of previous category. See Equip./Facilities Narrative.	

NA = Not Applicable

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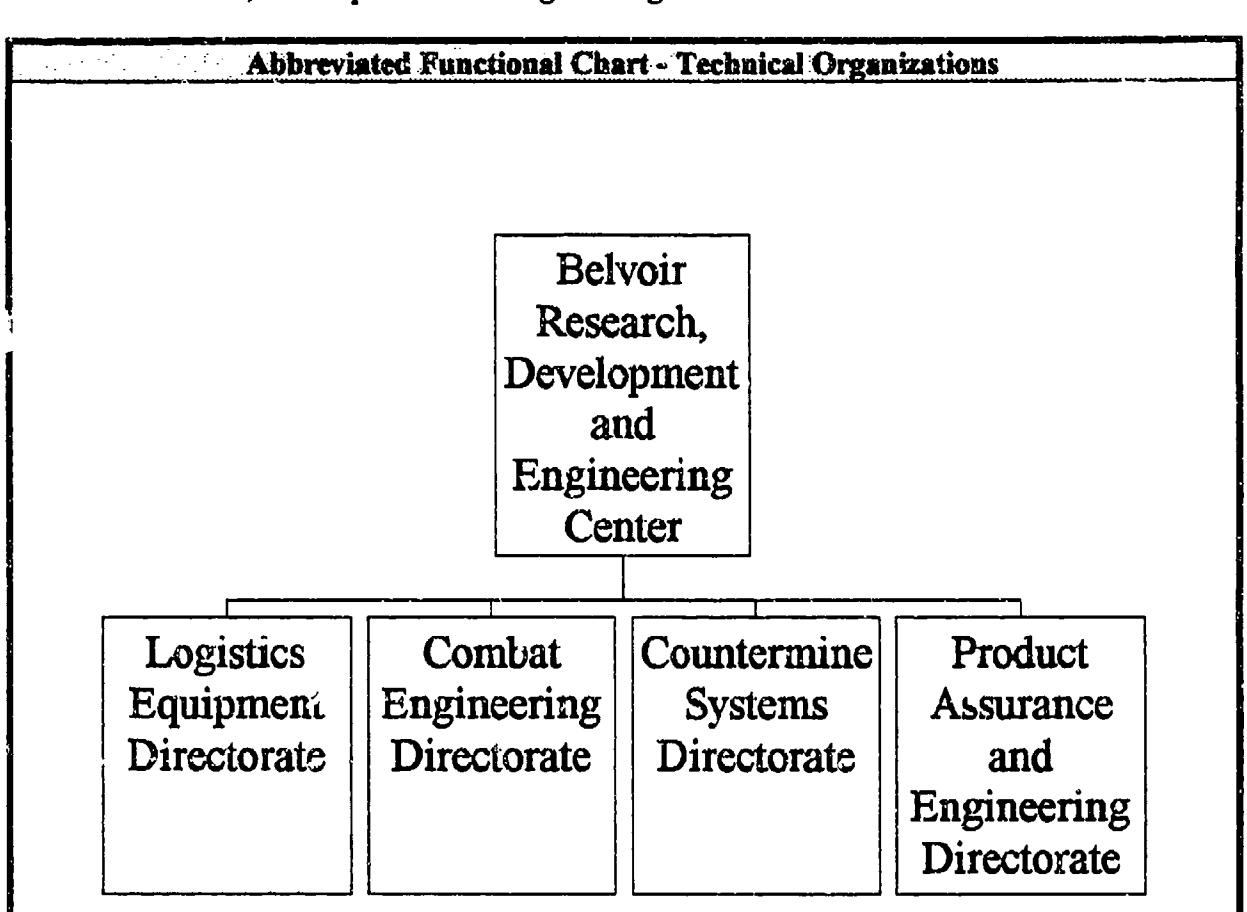
Belvoir Research, Development and Engineering Center



Belvoir Research, Development and Engineering Center
Ft. Belvoir, VA 22060-5606 Commander: COL Dennis C. Cochrane
(703) 704-2238

MISSION

Responsible for achieving material and technical capability in combat support/combat service support though program areas of mobility/countermobility, survivability, energy and logistics which satisfy approved requirements to provide the United States with a superior combat and deterrent force in assigned mission areas.

CURRENT IMPORTANT PROGRAMS

Tactical Logistics Systems
Countermine/Counterobstacle Equipment
Tactical Electric Power Systems
Bridging Systems
Water Supply and Handling Equipment
Camouflage/Concealment/Deception Equipment

EQUIPMENT/FACILITIES

Facilities: R&D test laboratories. Bridge test hanger. Mobile stress analysis van. Rail impact. Truck stability tilt table. Radio frequency anechoic chamber. Vehicle test tracks. Shock/vibration dynamics and environmental simulators. Mine lanes for sensor test and evaluation. Automated camouflage pattern generation. Motion picture/visual pictorial support. Model fabrication shop. Laboratory capabilities include performance of tests and evaluations such as explosive, acoustic, environmental endurance and electrical/electronic, along with device/system design and engineering.

Belvoir Research, Development and Engineering Center
Ft. Belvoir, VA 22060-5606 Commander: COL Dennis C. Cochrane
(703) 704-2238

FY93 FUNDING DATA (MILLIONS $)			
APPROPRIATION	IN-HOUSE	OUT-OF-HOUSE	TOTAL
RDT&E:			
6.1 ILIR	0.252	NA	0.252
6.1 Other	0.734	0.240	0.974
6.2 IED (Navy)	NA	NA	NA
6.2 Other	8.918	11.083	20.001
6.3	3.763	26.171	29.934
Subtotal (S&T)	**13.667**	**37.494**	**51.161**
6.4	7.683	9.278	16.961
6.5	5.836	10.652	16.488
6.6	9.753	11.324	21.077
6.7	1.001	0.203	1.204
Non-DOD	0.347	0.982	1.329
TOTAL RDT&E	**38.287**	**69.933**	**108.220**
Procurement	0.919	3.970	4.889
Operations & Maintenance	19.024	34.691	53.715
Other	1.821	0.900	2.721
TOTAL FUNDING	**60.051**	**109.494**	**169.545**

MILITARY CONSTRUCTION (MILLIONS $)	
Military Construction (MILCON)	0.000

PERSONNEL DATA (END OF FISCAL YEAR 1993)				
		SCIENTISTS & ENGINEERS		TECHNICAL SUPPORT
TYPE	END STRENGTH	PHD'S	OTHER	& OTHER PERSONNEL
MILITARY	20	0	20	0
CIVILIAN	370	15	316	39
TOTAL	390	15	336	39

SPACE AND PROPERTY			
SPACE (THOUSANDS OF SQ FT)		PROPERTY ACQUISITION COST (MILLIONS $)	
LAB	332.949	REAL PROPERTY	14,041.225
ADMIN	67.117	* NEW CAPITAL EQUIPMENT	0.000
OTHER	260.390	EQUIPMENT	8,174.422
TOTAL	660.456	* NEW SCIENTIFIC & ENG. EQUIP.	0.000
ACRES	240	* Subset of previous category. See Equip./Facilities Narrative.	

NA = Not Applicable

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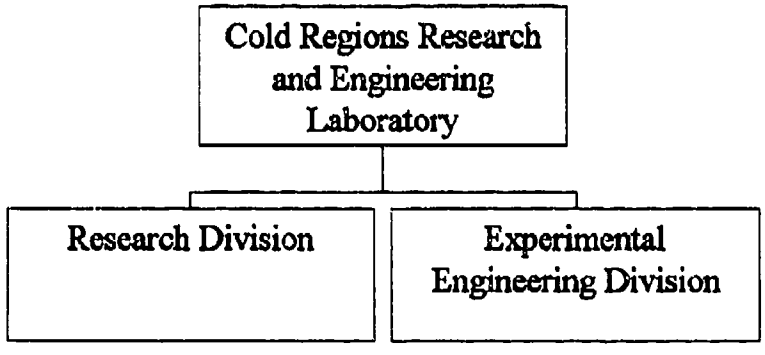
Cold Regions Research and Engineering Laboratory

Abbreviated Functional Chart - Technical Organizations



Cold Regions Research and Engineering Laboratory
Hanover, NH 03755-1290
(603) 646-4386

Commander: Palmer Bailey
Director: Dr. Lewis E. Link

MISSION

As the Army's comprehensive expert on cold regions problems, the Cold Regions Research and Engineering Laboratory (CRREL) investigates the nature of and the effects of cold and winter on military activities where winter and cold represents a severe problem. Maintain the DoD Cold Regions Technical Information Analysis Center.

CURRENT IMPORTANT PROGRAMS

Program Manager for the DoD Joint Test and Evaluation Smart Weapons Operability Enhancement Program, developing simulation methods for impact of environment on smart weapons systems. Special technology development to allow restoration of contaminated sites in cold climates and winter conditions, and non-materiel solutions to critical materiel low temperature operability problems. Infrastructure technologies to dramatically reduce life cycle cost of military installations in cold climates.

EQUIPMENT/FACILITIES

CRREL's military and civilian staff possess a wealth of knowledge and experience in a wide range of scientific and engineering disciplines related to cold regions research. CRREL's main laboratory contains 24 cold labs that can be operated to -35 F, a soils physics lab, analytical chemistry labs including a clean room complex, and a low temperature materials testing lab. Also located on site are an ice hydraulics research facility, including a snowdrift wind tunnel; a Frost Effects Research Facility for full scale geotechnical and facility tests; an equipment test facility for large scale equipment tests to -35 F; and a greenhouse. The new Civil Works Remote Sensing/GIS Center and the new Geophysical Research Facility are operational. Construction of a new Technical Information Analysis Center is completed. The CRREL-Alaska office at Fairbanks provides research logistics support and maintains coordination with DoD elements in Alaska and the Pacific Rim.

Cold Regions Research and Engineering Laboratory
Hanover, NH 03755-1290
(603) 646-4386

Commander: Palmer Bailey
Director: Dr. Lewis E. Link

FY93 FUNDING DATA (MILLIONS $)			
APPROPRIATION	**IN-HOUSE**	**OUT-OF-HOUSE**	**TOTAL**
RDT&E:			
6.1 ILIR	0.247	NA	0.247
6.1 Other	1.595	0.456	2.051
6.2 IED (Navy)	NA	NA	NA
6.2 Other	5.431	2.690	8.121
6.3	0.348	0.402	0.750
Subtotal (S&T)	**7.621**	**3.548**	**11.169**
6.4	0.000	0.000	0.000
6.5	0.000	0.000	0.000
6.6	5.982	1.526	7.508
6.7	0.608	5.397	6.005
Non-DOD	0.000	0.000	0.000
TOTAL RDT&E	**14.211**	**10.471**	**24.682**
Procurement	0.000	0.000	0.000
Operations & Maintenance	5.170	1.430	6.600
Other	6.527	1.513	8.040
TOTAL FUNDING	**25.908**	**13.414**	**39.322**

MILITARY CONSTRUCTION (MILLIONS $)	
Military Construction (MILCON)	0.000

PERSONNEL DATA (END OF FISCAL YEAR 1993)				
		SCIENTISTS & ENGINEERS		**TECHNICAL SUPPORT**
TYPE	**END STRENGTH**	**PHD'S**	**OTHER**	**& OTHER PERSONNEL**
MILITARY	3	1	1	1
CIVILIAN	284	48	86	150
TOTAL	**287**	**49**	**87**	**151**

SPACE AND PROPERTY			
SPACE (THOUSANDS OF SQ FT)		**PROPERTY ACQUISITION COST (MILLIONS $)**	
LAB	88.961	**REAL PROPERTY**	32.015
ADMIN	74.054	* NEW CAPITAL EQUIPMENT	1.041
OTHER	148.000	**EQUIPMENT**	22.482
TOTAL	**311.015**	* NEW SCIENTIFIC & ENG. EQUIP.	0.767
ACRES	**194**	* Subset of previous category. See Equip./Facilities Narrative.	

NA = Not Applicable

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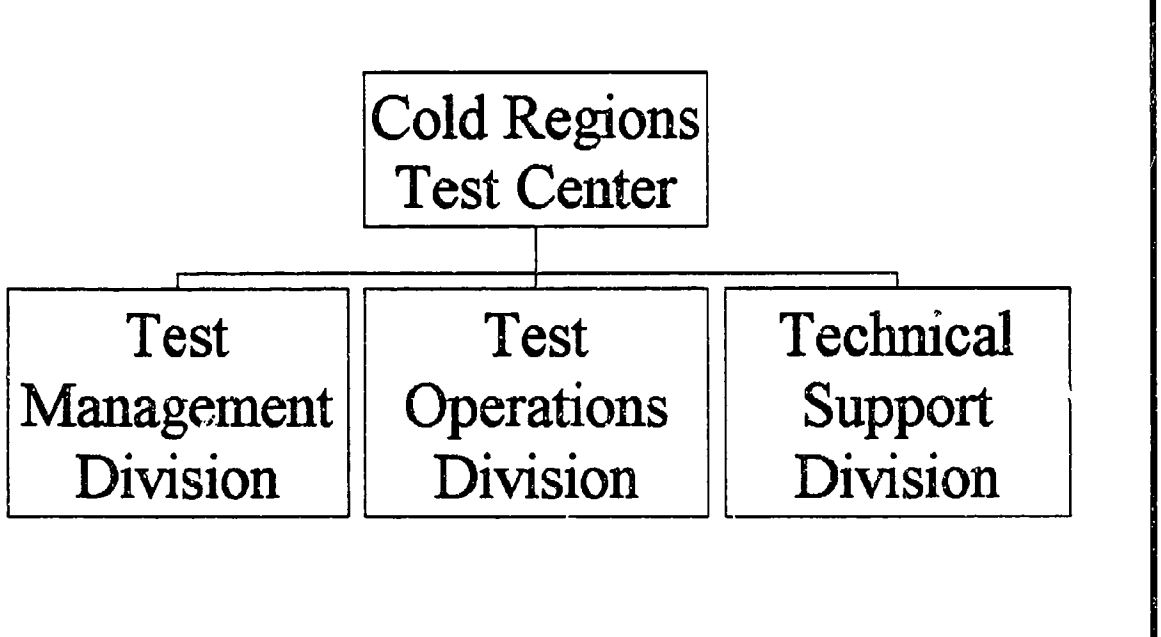
Cold Regions Test Center

Abbreviated Functional Chart - Technical Organizations



Cold Regions Test Center
Fort Greely, AK 96508-3110
(907) 873-4215

Commander: MAJ James F. Ellington
Tech Director: Mr. Jerold G. Barger

MISSION

Plan, conduct and report the results of cold regions, mountain and northern environmental phases of developmental and other tests. Review plans and monitor developmental testing planned or conducted by proponent materiel developers, producers, and contractors in accordance with integrated testing cycle policies.

CURRENT IMPORTANT PROGRAMS

Chemical agent detector network
M913 105MM cartridge, high explosive rocket assisted
Standardized integrated command post shelter
OH58D Army helicopter improvement program
M1A1 product improvements

EQUIPMENT/FACILITIES

630,000 acre test area. 500,000 Acre isolated impact area. 50 Kilometer unobserved range. Large restricted air space/unrestricted firing to 100,000 ft. ordinate; coordination with FAA can effect unrestricted ordinate. 3rd order survey points. Good secondary roads. Vehicle test courses and extensive cross country terrain ranges available. Photo lab, limited maintenance capability and engineer support available. Instrumentation available for most items. Statistical,maintenance evaluation, human factor capabilities and computer support available. Ambient temps to -50° Fahrenheit occasionally, below 0 degrees Fahrenheit from November through March.

Cold Regions Test Center
Fort Greely, AK 96508-3110
(907) 873-4215

Commander: MAJ James F. Ellington
Tech Director: Mr. Jerold G. Barger

FY93 FUNDING DATA (MILLIONS $)			
APPROPRIATION	**IN-HOUSE**	**OUT-OF-HOUSE**	**TOTAL**
RDT&E:			
6.1 ILIR	0.000	NA	0.000
6.1 Other	0.000	0.000	0.000
6.2 IED (Navy)	NA	NA	NA
6.2 Other	0.000	0.000	0.000
6.3	0.000	0.000	0.000
Subtotal (S&T)	**0.000**	**0.000**	**0.000**
6.4	0.000	0.000	0.000
6.5	0.000	0.000	0.000
6.6	6.104	0.000	6.104
6.7	0.000	0.000	0.000
Non-DOD	0.000	0.000	0.000
TOTAL RDT&E	**6.104**	**0.000**	**6.104**
Procurement	0.230	0.000	0.230
Operations & Maintenance	0.000	0.000	0.000
Other	3.944	0.000	3.944
TOTAL FUNDING	**10.278**	**0.000**	**10.278**

MILITARY CONSTRUCTION (MILLIONS $)	
Military Construction (MILCON)	0.000

PERSONNEL DATA (END OF FISCAL YEAR 1993)				
		SCIENTISTS & ENGINEERS		TECHNICAL SUPPORT
TYPE	**END STRENGTH**	**PHD'S**	**OTHER**	**& OTHER PERSONNEL**
MILITARY	73	0	5	68
CIVILIAN	33	0	7	26
TOTAL	**106**	**0**	**12**	**94**

SPACE AND PROPERTY			
SPACE (THOUSANDS OF SQ FT)		**PROPERTY ACQUISITION COST (MILLIONS $)**	
LAB	1.400	**REAL PROPERTY**	14.300
ADMIN	18.200	* NEW CAPITAL EQUIPMENT	0.000
OTHER	198.400	**EQUIPMENT**	40.825
TOTAL	**218.000**	* NEW SCIENTIFIC & ENG. EQUIP.	1.300
ACRES	0	* Subset of previous category. See Equip./Facilities Narrative.	

NA = Not Applicable

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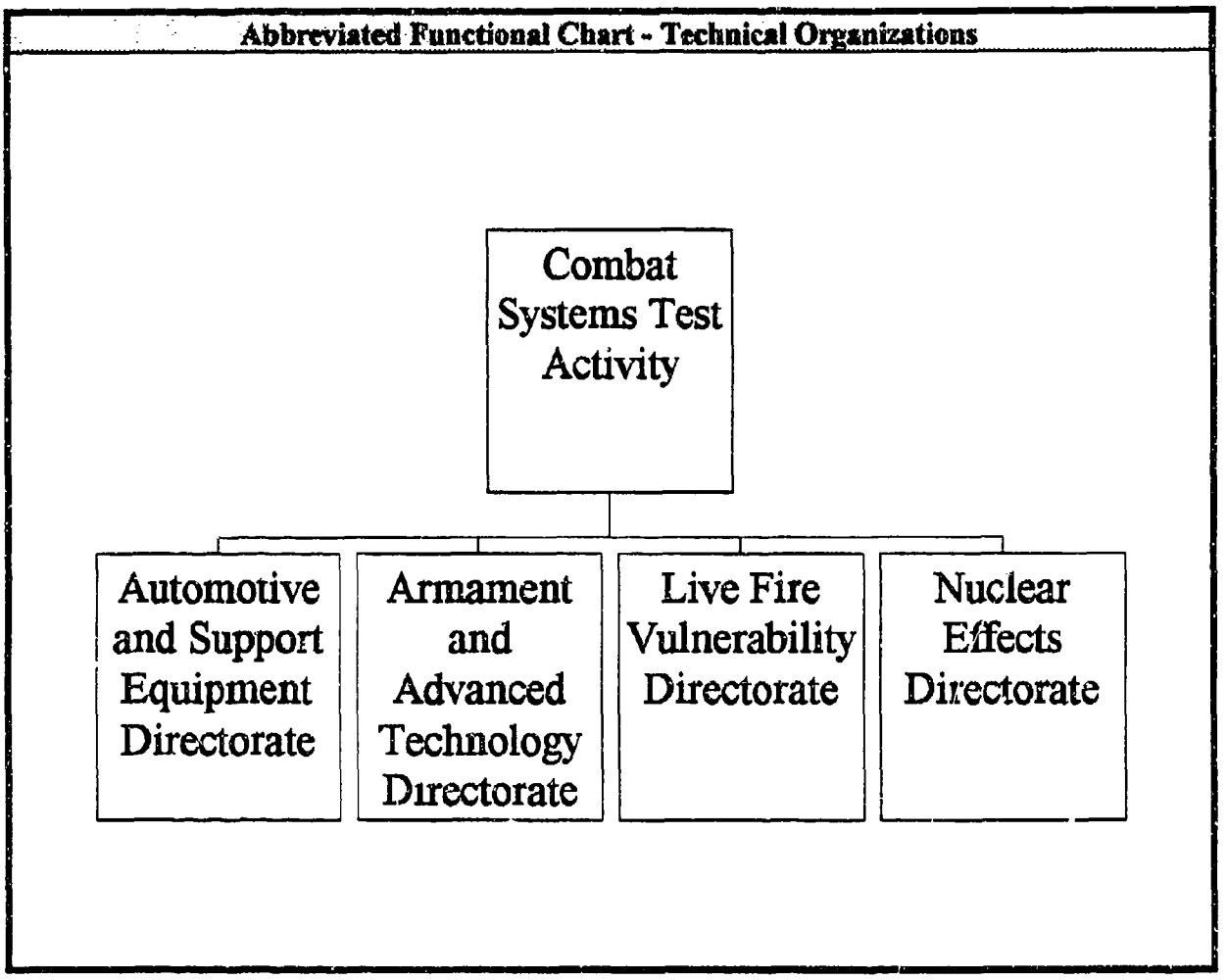
Combat Systems Test Activity



Combat Systems Test Activity
Aberdeen Proving Gnd, MD 21005-5059
(410) 278-3574

Commander: COL James Kriebel
Technical Dir.: James W. Fasig

MISSION

Combat Systems Test Activity is the most diverse test facility within DoD, testing a broad spectrum of military weapons systems and equipment including armored vehicles, guns, ammunition, trucks, bridges, generators, night vision devices, and individual equipment (boots, uniforms, helmets, etc.). As a multi-purpose proving ground, with a temperate climate, our primary mission is to plan, conduct, analyze and report on projects supporting research, development, test and evaluation (RDTE), design, engineering, production, and surveillance tests for DoD agencies and contractors. In this single location, CSTA can subject an item to a full range of tests from automotive endurance and full weapons performance with environmental extremes, to full-scale live fire vulnerability/survivability/ lethality testing utilizing an extensive array of test ranges/facilities, simulators and models. In addition to testing domestic systems, we fully exploit foreign systems to assess the enemy threat. We also develop state-of-the-art test procedures (DoD, international), methodology and instrumentation in order to meet the test requirements of advancing military technologies.

CURRENT IMPORTANT PROGRAMS

Truck, M44A2 Series, 2 1/2 Ton, Extended Service Program
M1A2 Abrams Production Qualification Test (PQT)
Family of Medium Tactical Vehicles (FMTV)
M1A2 Abrams Live Fire Vulnerability Test
M88A1E1 Improved Recovery Vehicle, Endurance, Reliability Test (Ph II)

EQUIPMENT/FACILITIES

World-renowned automotive test/obstacle courses; numerous interior and exterior firing ranges; environmental simulation capabilities including rough-handling and vibration, electromagnetic interference and environmental conditioning capabilities; full transportability test capability to include rail, roadability, MIL-STD 209 pull and tie-down, internal and external air transport; UNDEX test pond for underwater explosives testing and Depleted Uranium Containment Fixture (Superbox) for live fire vulnerability and lethality testing; sophisticated non-destructive test facilities; robotics test facility; pulse radiation facility; state-of-the-art industrial complex which includes maintenance and experimental fabrication capabilities.

Combat Systems Test Activity
Aberdeen Proving Gnd, MD 21005-5059
(410) 278-3574

Commander: COL James Kriebel
Technical Dir.: James W. Fasig

FY93 FUNDING DATA (MILLIONS $)			
APPROPRIATION	**IN-HOUSE**	**OUT-OF-HOUSE**	**TOTAL**
RDT&E:			
6.1 ILIR	0.000	NA	0.000
6.1 Other	0.000	0.000	0.000
6.2 IED (Navy)	NA	NA	NA
6.2 Other	3.747	1.589	5.336
6.3	2.248	0.953	3.201
Subtotal (S&T)	**5.995**	**2.542**	**8.537**
6.4	6.245	2.648	8.893
6.5	0.000	0.000	0.000
6.6	32.774	21.225	53.999
6.7	0.000	0.000	0.000
Non-DOD	5.246	2.224	7.470
TOTAL RDT&E	**50.260**	**28.639**	**78.899**
Procurement	23.018	9.739	32.757
Operations & Maintenance	2.462	1.195	3.657
Other	9.700	4.182	13.882
TOTAL FUNDING	**85.440**	**43.755**	**129.195**

MILITARY CONSTRUCTION (MILLIONS $)	
Military Construction (MILCON)	0.000

PERSONNEL DATA (END OF FISCAL YEAR 1993)				
		SCIENTISTS & ENGINEERS		**TECHNICAL SUPPORT**
TYPE	**END STRENGTH**	**PHD'S**	**OTHER**	**& OTHER PERSONNEL**
MILITARY	185	0	12	5
CIVILIAN	1,099	7	305	787
TOTAL	**1,284**	**7**	**317**	**792**

SPACE AND PROPERTY			
SPACE (THOUSANDS OF SQ FT)		**PROPERTY ACQUISITION COST (MILLIONS $)**	
LAB	155.466	**REAL PROPERTY**	28.991
ADMIN	166.016	* NEW CAPITAL EQUIPMENT	2.165
OTHER	910.538	**EQUIPMENT**	182.496
TOTAL	**1,232.020**	* NEW SCIENTIFIC & ENG. EQUIP.	9.587
ACRES	**56,707**	* Subset of previous category. See Equip./Facilities Narrative.	

NA = Not Applicable

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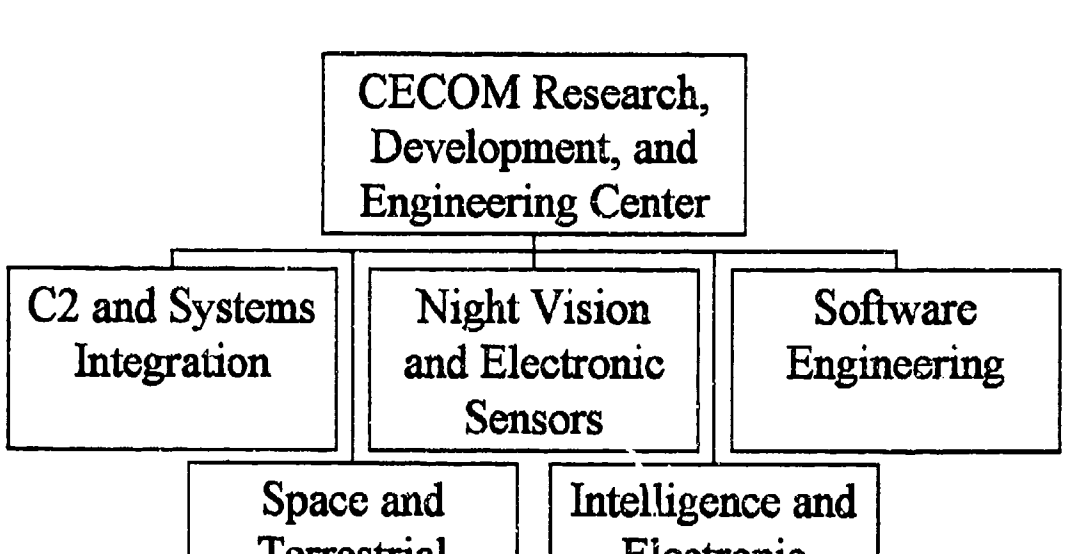
Communications-Electronics Research, Development and Engineering Center

Abbreviated Functional Chart - Technical Organizations



Communications-Electronics Research, Development and Engineering Center

Ft. Monmouth, NJ 07703-5201
(908) 532-0829

Director: Mr. Robert F. Giordano

MISSION

The Communications-Electronics (Command) Research, Development and Engineering Center, the CECOM RDEC, headquartered at Ft. Monmouth, NJ, is the AMC Center for research, development and engineering in Command and Control, Communications, Computers and Intelligence (C4I); Electronic Warfare; Night Vision and Electro-Optics; and Avionics. The Center's mission is focused on providing support to the PEO's and PM's; developing and acquiring superior technologies; developing, acquiring, testing and evaluating non-major systems; and sustaining and enhancing systems and equipment.
The CECOM RDEC will promote and nurture a proactive atmosphere which embraces continuous improvement by:

Providing the highest quality support to American Armed Forces;
Delivering superior technologies, products and services for:
Owning the Night, Owning the Spectrum, Knowing the Enemy,
Digitization of the Battlefield, Software Development and Sustainment,
Systems Architecture, and Global Seamless Communications; and
Creating an organization committed to development of its workforce, attainment of individual fulfillment, and team effectiveness.

Communications-Electronics Research, Development and Engineering Center

CURRENT IMPORTANT PROGRAMS

Combined Arms Command and Control ATD. Real time command and control for coordinated and synchronized combined arms operations on the battlefield. The effort develops a digital architecture demonstrating command and control functionality for shared situational awareness, a common battlefield view, and horizontal information exchange including target handover for a Brigade and Below combined arms task force.

Battlefield Combat Identification ATD. Integration and display of target identification and situational awareness information. This effort is aimed at solving the combat identification problem underscored by friendly casualties during the Gulf War. Program leverages off existing and pursues new technologies to develop and demonstrate systems that will help solve the ground-to-ground and air-to-ground battlefield identification problem, emphasizing covert and secure operations. Solutions will address weapons platforms and dismounted soldiers.

Survivable Adaptive System ATD. Demonstrating high capacity communications network for command and control while on the move. Enhanced survivable system using advanced communications and distributed processing technologies providing secure communications and connectivity between command posts.

Common Ground Station ATD. This effort will provide timely and usable near real time battlefield knowledge on-the-move to the brigade commander and staff using standard IEW modules. The common ground station links various unique ground stations and, by providing the right information at the right time, increases friendly force survivability and combat effectiveness.

Multisensor Aided Targeting Air ATD. This effort demonstrates the economical fusion of multiple sensor aid processor modules in an automated target acquisition suite. Target acquisition information is obtained from second generation thermal imagers, millimeter wave (MMW) radar, laser radar, etc. The effort will provide the user with the ability to rapidly acquire targets at extended ranges in day, night, and in adverse weather, increasing lethality and survivability from shorter target search times.

EQUIPMENT/FACILITIES

The CECOM RDEC boasts many U.S. Government-unique and world-unique facilities supporting a broad range of technical areas. These facilities will significantly enhance the CECOM RDEC's ability to increase productivity for future R&D efforts in a timely and cost effective manner. The following is a sampling of the CECOM RDEC facilities:

ELECTRONIC COUNTERMEASURES LABORATORY - Examines and analyzes counter-measures efforts in the HF, VHF and low UHF range; contains consolidated group of specialized equipment. No other facility in the Army has this capability.

FIBER OPTIC TEST FACILITY - A world unique facility that provides for the actual evaluation of optical fiber, cable and other optical components and systems simulating tactical field environment as well as verifying product performance; supports new electro-optic device development. Detail device characterization capabilities are available to support projects as directed by communications, network, robotics systems and foreign S&T assignments.

TACTICAL SPACE SYSTEMS RESEARCH FACILITY - Worldwide unique capabilities exist within the facility for satellite system development and engineering evaluation. Equipment includes: AN/TSC-85B and AN/TSC-93B, tactical SHF satellite terminals, a variety of UHF Manpack radios and MILSTAR (EHF), test-beds for Navy, Army (terminals) and engineering model satellite simulators, certified Manpack radios for UHG satellite operations.

COMMUNICATIONS SYSTEMS DESIGN CENTER - A worldwide unique lab because it houses a high-speed modeling and simulation system, a prototype development center, and a Mobile Subscriber Equipment (MSE) network which provides a wide area communications hub to each of the other directorate labs. Equipment includes: support facility with MSE shelters, general test equipment, model shop with equipment for prototyping.

HF CHANNEL SIMULATOR - A world unique system that simulates the ionosphere; used to evaluate the performance of radios and modems for industry, Army and other Government agencies. It is unique because the simulator is not only capable of performing all of its functions in a fixed frequency mode, but also in a frequency hopping mode, at instantaneous bandwidths up to 12 KHz, and with simulated jamming. Equipment includes: SINCGARS and IHFR radios, anechoic chamber, audio reverberant chamber.

SIGNALS ANALYSIS LABORATORY - Contains state-of-the-art electronic equipment (some of which are one-of-a-kind) and specialized digital signal processing software. The combination of state-of-the-art hardware and software allows waveform measurements which are unparalleled in either government or private industry.

Communications-Electronics Research, Development and Engineering Center
Ft. Monmouth, NJ 07703-5201 Director: Mr. Robert F. Giordano
(908) 532-0829

FY93 FUNDING DATA (MILLIONS $)			
APPROPRIATION	**IN-HOUSE**	**OUT-OF-HOUSE**	**TOTAL**
RDT&E:			
6.1 ILIR	1.088	NA	1.088
6.1 Other	4.914	4.470	9.384
6.2 IED (Navy)	NA	NA	NA
6.2 Other	27.666	56.850	84.516
6.3	17.400	58.138	75.538
Subtotal (S&T)	**51.068**	**119.458**	**170.526**
6.4	5.848	14.909	20.757
6.5	10.110	31.964	42.074
6.6	10.675	15.741	26.416
6.7	5.413	12.194	17.607
Non-DOD	0.000	0.000	0.000
TOTAL RDT&E	**83.114**	**194.266**	**277.380**
Procurement	30.499	109.489	139.988
Operations & Maintenance	23.458	95.288	118.746
Other	3.788	19.268	23.056
TOTAL FUNDING	**140.859**	**418.311**	**559.170**

MILITARY CONSTRUCTION (MILLIONS $)	
Military Construction (MILCON)	0.000

PERSONNEL DATA (END OF FISCAL YEAR 1993)				
		SCIENTISTS & ENGINEERS		TECHNICAL SUPPORT
TYPE	**END STRENGTH**	**PHD'S**	**OTHER**	**& OTHER PERSONNEL**
MILITARY	140	1	10	129
CIVILIAN	2,211	54	1,300	857
TOTAL	**2,351**	**55**	**1,310**	**986**

SPACE AND PROPERTY			
SPACE (THOUSANDS OF SQ FT)		**PROPERTY ACQUISITION COST (MILLIONS $)**	
LAB	421.400	**REAL PROPERTY**	65.652
ADMIN	378.000	* NEW CAPITAL EQUIPMENT	0.000
OTHER	0.000	**EQUIPMENT**	177.200
TOTAL	**799.400**	* NEW SCIENTIFIC & ENG. EQUIP.	42.500
ACRES	**204**	* Subset of previous category. See Equip./Facilities Narrative.	

NA = Not Applicable

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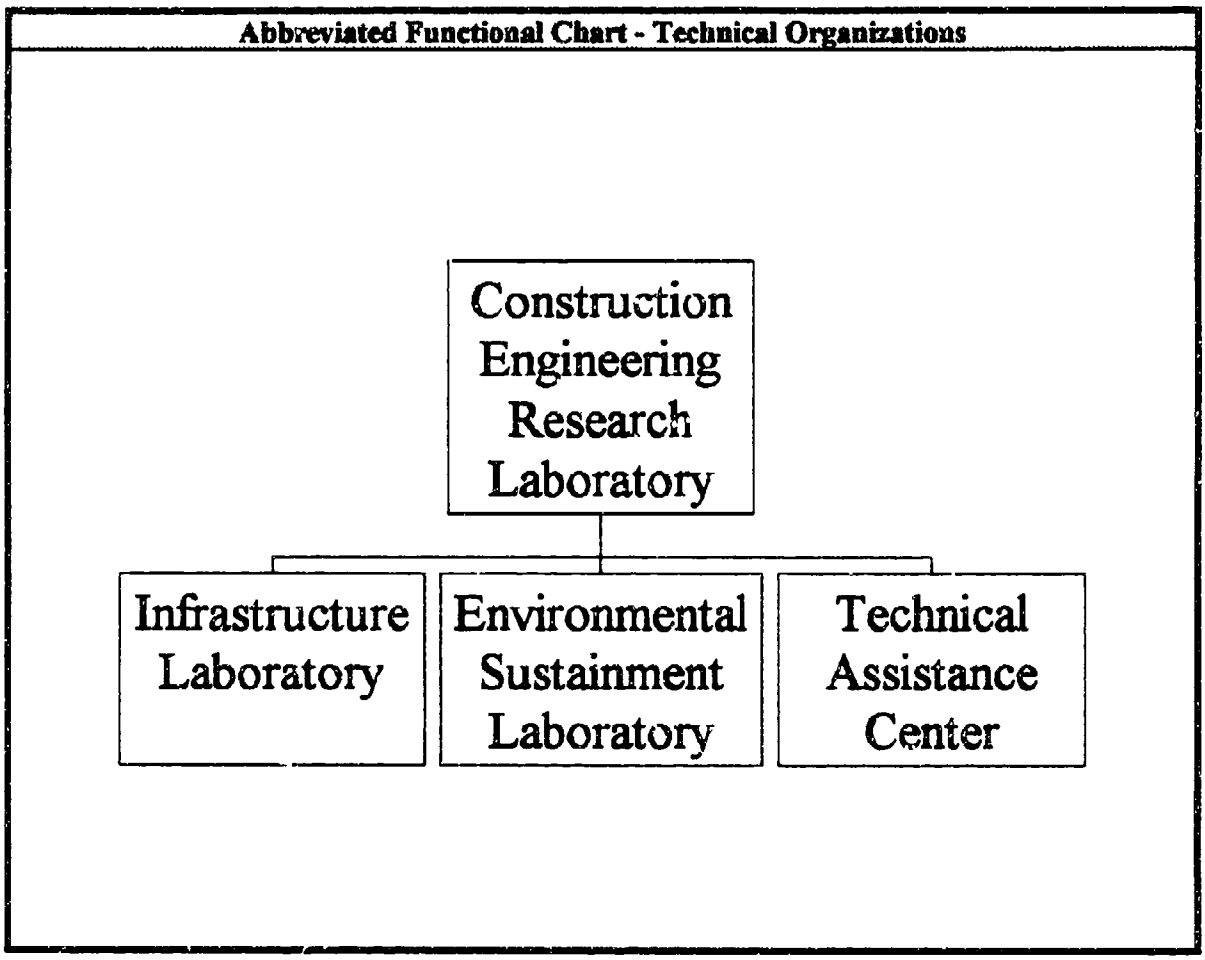
Construction Engineering Research Laboratories



Construction Engineering Research Laboratories
Champaign, IL 61826-9005
(217) 373-7216

Director: Louis R. Shaffer
Cmdr/Dep Dir.: LTC David J. Rehbein

MISSION

USACERL's primary mission is to equip and sustain the Garrison Commanders with affordable products of innovative technologies, rapidly fielded, for installations to serve as Power Projection Platforms, Home to the Force, and Work and Training Bases as designated in the National Military Strategy for the 21st Century. The requirement to shape our installations to meet the 21st Century missions demands innovative processes/systems and affordable technologies, integrated across the entire spectrum of installation functions, and focused on the specific requirements of installation management/base operations, environmental stewardship and training. USACERL, co-located with the University of Illinois at Urbana-Champaign, is DOD's unique critical mass to manage and perform the innovative research and technical assistance to address this challenge. Under the Tri-Service Engineer Panel, USACERL has the lead for basic and applied research and engineering studies in support of the Army's program of planning, programming, construction, revitalization, operation, maintenance and repair of conventional military facilities world-wide, installation environmental management, environmental and spatial modeling, resource modeling and simulation, design and construction of pollution control facilities, and development of environmental planning systems to support the Army in training, readiness, and mobilization missions.

The issues of infrastructure design and sustainment, energy consumption, pollution control, and environmental compliance and stewardship represent critical concerns and rapidly increasing costs to the Army, DOD, and the nation. USACERL provides critical and integrated solutions to these issues, expertise to help military installations implement new technologies and a history of hands-on involvement with installation customers. One example, the Integrated Training Area Management programs, being fielded to provide critical management for training ranges, is part of the TAP (Total Army Plan); TRADOC estimates a return on investment in ITAM of 27:1.

To maintain our competitive advantage, to remain cost competitive, and to cope with the explosive growth of technology options, we aggressively leverage our technology advances through the forming of consortia, cooperation with other government and sister services' laboratories, academia, the private sector, and the international community for product generation and sustainment. The in-house expertise consists of the optimal mix of key in-house research, development and technical assistance capability not provided from outside the Army or DOD; this capability is leveraged with world-class university research and technical assistance centers to assure high payoff technologies in those areas critical to providing the DOD and Army customers products which give them a unique operational edge.

Construction Engineering Research Laboratories

CURRENT IMPORTANT PROGRAMS
Integrated Installation Management Decision Support System for Garrison Commanders
Fort Hood Model Installation Energy Project
Training Land Carrying Capacity
Pollution Controls for Military Manufacturing Processes
Defense Environmental Network and Information eXchange (DENIX)

EQUIPMENT/FACILITIES

Biaxial Shock Test Machine-BSTM: A national R&D shock test asset; the only large capacity (6 ton) high frequency, high acceleration shaketable in the western world; capable of programmable, simultaneous vertical and horizontal motions; being upgraded in FY96 to add full triaxial capability; estimated replacement cost is $15-20 million.

Ion Plating Systems: Custom-designed to meet highly specialized research specifications to do small scale prototype thin film coating experiments; only facility of this kind (plasma-assisted physical vapor disposition) in the Army.

Heating, Ventilation and Air Conditioning Test Facility: A large "mini-facility" with four rooms (zones) that can be thermally controlled separately to replicate a variety of HVAC systems and conditions, including dual or single duct and variable or constant air volume conditions; includes ventilation system, hot water supply loops, chilled water supply loops, HVAC systems configuration, facility controls, and data acquisition system; used to validate the energy thermodynamics analysis program and to analyze performance of proposed standard digital control panels; unique facility in DoD.

Acoustics Lab: Impulse Noise Technology Center, one of a kind in the world to quantify impact and mitigation technology for cannon, helicopter, blast and small caliber weapon fire on human endurance and the natural ecosystem; unique facility in DoD.

Integrated Simulation Language Laboratory: Twelve SUN SPARC stations and a Silicon Graphics Iris Crimson Virtual Reality engine, networked with the DoD simulation community via INTERNET to develop and test an advanced object-oriented, collaborative software development environment for producing the next generation of distributed, interactive simulations for DoD.

Paint Laboratory: Specialized equipment necessary to perform Qualified Product List testing on paints used by the Army (an "honest broker" function); capability to manufacture lab size batches of experimental coatings and perform both real-time and accelerated performance testing of coatings; capability to perform forensic analysis of paint samples.

Spatial Planning & Management Center: Facility to incorporate GIS into Master Planning R&D with state-of-the-art hardware and software for research at USACERL and partnering with the University of Illinois' Department of Urban and Regional Planning in the College of Fine and Applied Arts.

Equipment and facilities co-located at the University of Illinois, Urbana-Champaign: In 1966, the U.S. Army Corps of Engineers proposed a new laboratory for engineering research to support military construction. In national competition in 1967, the University of Illinois at Urbana-Champaign was selected for co-locating USACERL. This unique relationship between USACERL and the University of Illinois, annually cited as one of the top three engineering schools in the nation, has been touted by HQ USACE as a prime example of "reinventing Government." Of approximately 900 personnel working at USACERL, over 450 are University of Illinois faculty, staff or students. Designated as an allied agency of the University of Illinois, $250-500 million of University of Illinois research laboratory equipment is accessible.

Construction Engineering Research Laboratories
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FY93 FUNDING DATA (MILLIONS $)			
APPROPRIATION	**IN-HOUSE**	**OUT-OF-HOUSE**	**TOTAL**
RDT&E:			
6.1 ILIR	0.022	NA	0.022
6.1 Other	1.716	2.076	3.792
6.2 IED (Navy)	NA	NA	NA
6.2 Other	14.058	9.465	23.523
6.3	0.796	0.179	0.975
Subtotal (S&T)	**16.592**	**11.720**	**28.312**
6.4	0.000	0.000	0.000
6.5	0.000	0.000	0.000
6.6	5.059	5.406	10.465
6.7	0.000	0.000	0.000
Non-DOD	2.874	1.059	3.933
TOTAL RDT&E	**24.525**	**18.185**	**42.710**
Procurement	0.000	0.000	0.000
Operations & Maintenance	15.676	28.422	44.098
Other	0.185	0.018	0.203
TOTAL FUNDING	**40.386**	**46.625**	**87.011**

MILITARY CONSTRUCTION (MILLIONS $)	
Military Construction (MILCON)	0.133

PERSONNEL DATA (END OF FISCAL YEAR 1993)				
		SCIENTISTS & ENGINEERS		**TECHNICAL SUPPORT**
TYPE	**END STRENGTH**	**PHD'S**	**OTHER**	**& OTHER PERSONNEL**
MILITARY	1	0	1	0
CIVILIAN	382	48	183	151
TOTAL	**383**	**48**	**184**	**151**

SPACE AND PROPERTY			
SPACE (THOUSANDS OF SQ FT)		**PROPERTY ACQUISITION COST (MILLIONS $)**	
LAB	103.850	**REAL PROPERTY**	9.477
ADMIN	27.513	* NEW CAPITAL EQUIPMENT	0.327
OTHER	134.523	**EQUIPMENT**	18.011
TOTAL	**265.886**	* NEW SCIENTIFIC & ENG. EQUIP.	1.011
ACRES	**33**	* Subset of previous category. See Equip./Facilities Narrative.	

NA = Not Applicable

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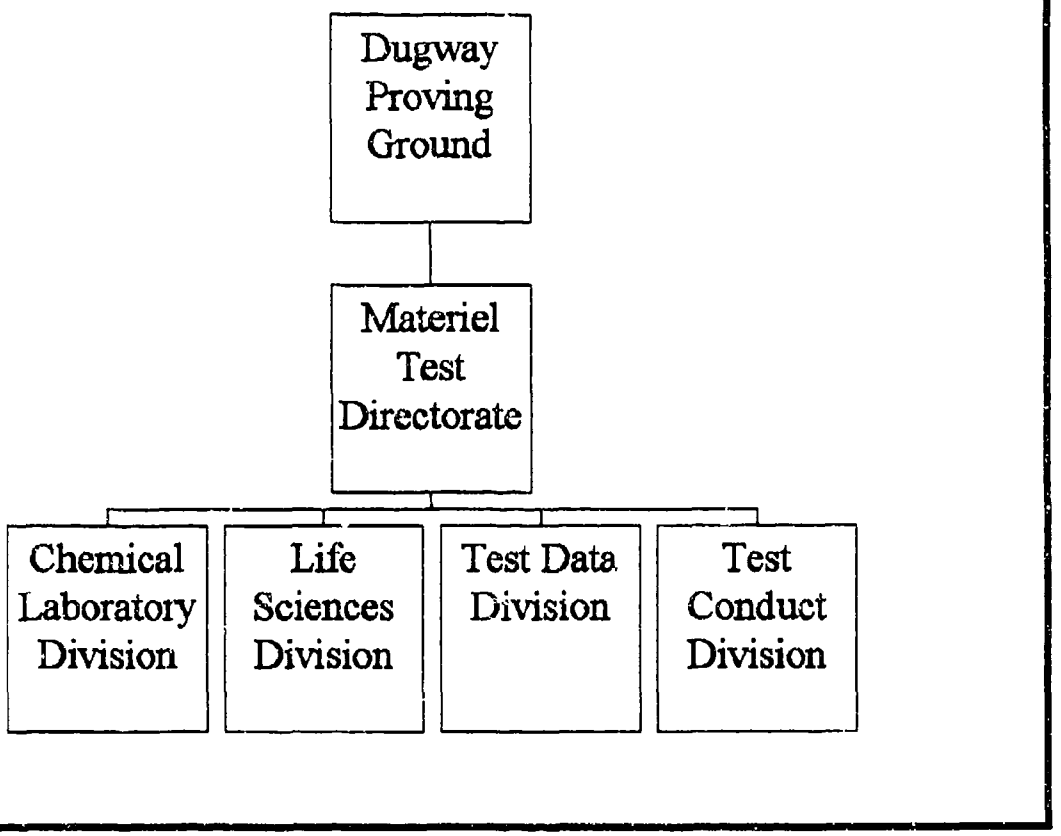
Dugway Proving Ground

Abbreviated Functional Chart - Technical Organizations



Dugway Proving Ground
Dugway, UT 84022-5000
(801) 831-2146

Commander: COL James R. King
Technical Dir.: William J. Haslem

MISSION

Plan, conduct, analyze and report the results of exploratory, developmental, and production tests and delivery systems, incendiary devices. Operate the proving ground as a DoD Major Range and Test Facility Base (MRTFB) and to operate the Tropic Test Site in the Republic of Panama to test a wide range of equipment in a natural tropic environment. DPG is the DoD-designated Chemical and Biological Defense Test and Evaluation Reliance test site.

Test conventional and illuminating artillery, mortars and rockets, as well as land and air vehicles. Perform tests of all material commodities to assess chemical and biological hardness and contamination/decontamination survivability. Test procedures and by-products of chemical and conventional weapons demilitarization and perform tests and develops procedures for on-site verification inspections for chemical weapons treaties. Dugway provides the base of operation for the Joint Services Project, Chemical and Biological Joint Contact Point and Test, which provides chemical and biological defense information and operationally oriented tests and analysis to the Services and CINCS.

CURRENT IMPORTANT PROGRAMS

Research, development and laboratory investigations. Joint-operations chemical and biological defense tests and studies for CINCS and Services. Munitions development/acceptance and production testing. Environmental studies to support DPG and Army programs.

EQUIPMENT/FACILITIES

Instrumented grids for chemical, biological and smoke/obscurant systems. Artillery range for conventional and chemical metal parts. Ballistics and dissemination tests with field sample, sample mass analysis, meteorological (auto data acquisition and MESOMET network) system. Physical and environmental test facility (MIL SPEC 810) chambers for total agent containment. Operations supported by meteorological research on behavior of clouds. Chemical, life science technology, ecological survival of DPS. Capability for planning analysis, evaluation of tests and operations research. Labs equipped for wide range of chemical, microbiological, toxicological, immunological and pollution studies. Technical and mass array of fluorescent air tracers. External-communication and range safety system. Outstanding features are: large land area, restricted air space, long and flat artillery ranges, projectile recovery, sonic and electromagnetic sterility and diverse technical and scientific skills.

Dugway Proving Ground
Dugway, UT 84022-5000
(801) 831-2146

Commander: COL James R. King
Technical Dir.: William J. Haslem

FY93 FUNDING DATA (MILLIONS $)			
APPROPRIATION	**IN-HOUSE**	**OUT-OF-HOUSE**	**TOTAL**
RDT&E:			
6.1 ILIR	0.000	NA	0.000
6.1 Other	0.704	0.608	1.312
6.2 IED (Navy)	NA	NA	NA
6.2 Other	0.000	0.000	0.000
6.3	0.000	0.000	0.000
Subtotal (S&T)	**0.711**	**0.614**	**1.325**
6.4	4.161	3.592	7.753
6.5	0.000	0.000	0.000
6.6	31.136	24.386	55.522
6.7	0.000	0.000	0.000
Non-DOD	0.000	0.000	0.000
TOTAL RDT&E	**36.008**	**28.592**	**64.600**
Procurement	1.155	0.966	2.121
Operations & Maintenance	3.587	3.136	6.723
Other	6.978	5.694	12.672
TOTAL FUNDING	**47.728**	**38.388**	**86.116**

MILITARY CONSTRUCTION (MILLIONS $)	
Military Construction (MILCON)	0.000

PERSONNEL DATA (END OF FISCAL YEAR 1993)				
		SCIENTISTS & ENGINEERS		**TECHNICAL SUPPORT**
TYPE	**END STRENGTH**	**PHD'S**	**OTHER**	**& OTHER PERSONNEL**
MILITARY	67	0	10	19
CIVILIAN	582	26	91	465
TOTAL	**649**	**26**	**101**	**484**

SPACE AND PROPERTY			
SPACE (THOUSANDS OF SQ FT)		**PROPERTY ACQUISITION COST (MILLIONS $)**	
LAB	170.573	**REAL PROPERTY**	135.000
ADMIN	157.344	* NEW CAPITAL EQUIPMENT	63.630
OTHER	2,266.652	**EQUIPMENT**	40.913
TOTAL	**2,594.569**	* NEW SCIENTIFIC & ENG. EQUIP.	2.875
ACRES	**798,855**	* Subset of previous category. See Equip./Facilities Narrative.	

NA = Not Applicable

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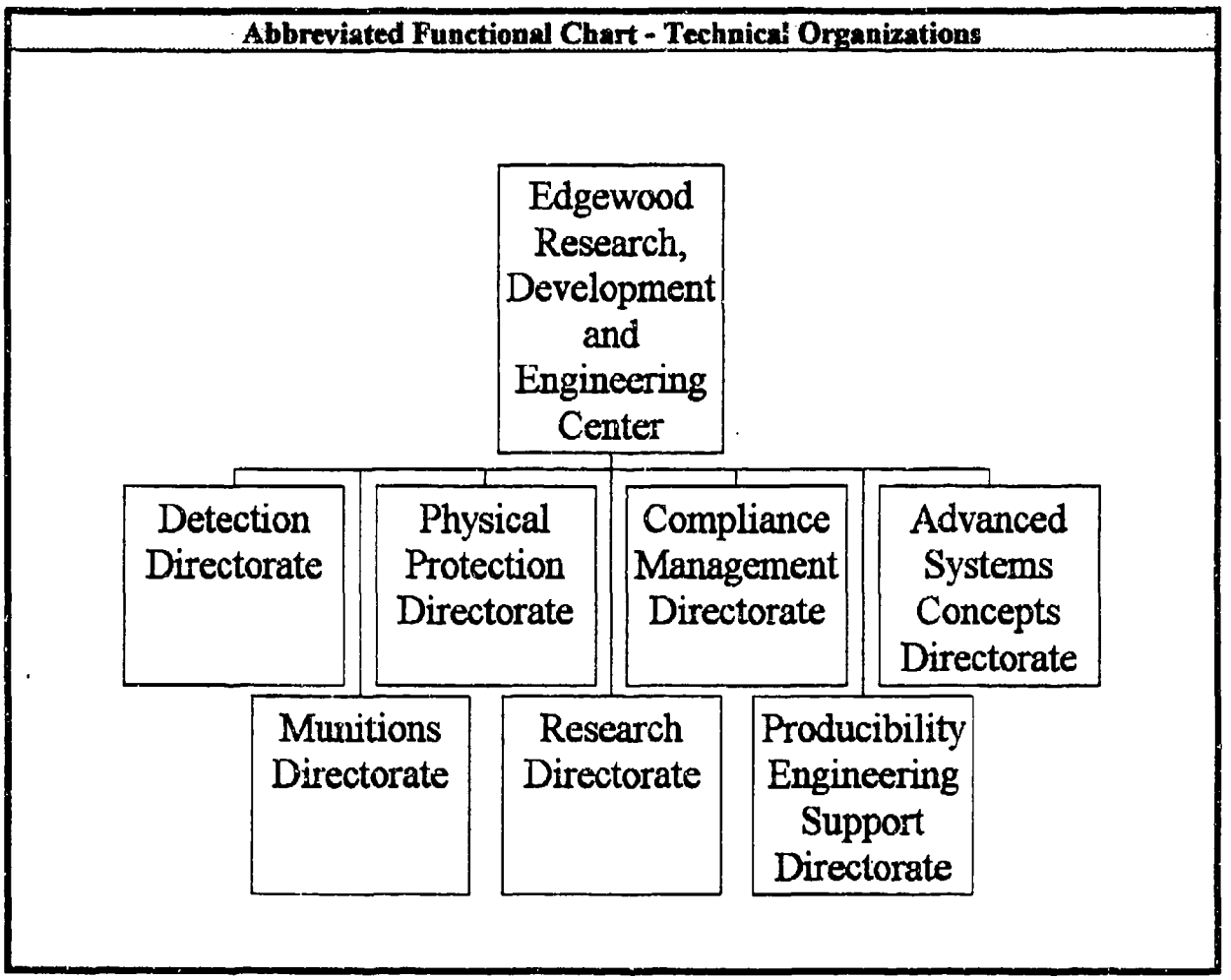
Edgewood Research Development and Engineering Center



Edgewood Research Development and Engineering Center
Aberdeen Proving Gnd, MD 21010-5423
(410) 671-3838 Technical Dir.: Joseph J. Vervier

MISSION

A research, development and engineering agency for executing the chemical and biological defense programs for the Army and Joint Services (JS). Provide research, development and acquisitions as well as life cycle engineering support for chemical/biological defense and smoke/obscurant equipment under DODD 5160.5. Act as DoD lead lab for the JS chemical/biological/smoke technology base.

CURRENT IMPORTANT PROGRAMS

- Nuclear, Biological and Chemical (NBC) Reconnaissance, Detection and Identification.
- Individual and Collective Protection.
- NBC Decontamination.
- Smoke, Obscurants and Target Defeating Materials.
- Chemical Treaty Verification

EQUIPMENT/FACILITIES

Major equipment is contained in a complex of R&D engineering/laboratory areas and includes: Process engineering facility. Production and facility design chamber for studies of respiratory protection design drivers. Simulant agent challenge test chamber. Rubber/elastomer mold facility. Specialized chemical agent labs. Pyrotechnic mixing, loading, handling facility. Subsonic, supersonic, transonic wind tunnel. Complete analytical chemistry (tract analysis/tandem mass spectrometry). Obscurant test chambers for transmission measurements. Laser spectroscopy lab. Robotic toxic agent lab. CAD/CAE/CAM network.

Edgewood Research Development and Engineering Center
Aberdeen Proving Gnd, MD 21010-5423
(410) 671-3838 Technical Dir.: Joseph J. Vervier

FY93 FUNDING DATA (MILLIONS $)			
APPROPRIATION	**IN-HOUSE**	**OUT-OF-HOUSE**	**TOTAL**
RDT&E:			
6.1 ILIR	0.615	NA	0.615
6.1 Other	3.484	2.907	6.391
6.2 IED (Navy)	NA	NA	NA
6.2 Other	26.664	21.777	48.441
6.3	1.429	2.869	4.298
Subtotal (S&T)	**32.192**	**27.553**	**59.745**
6.4	17.973	28.880	46.853
6.5	13.775	42.154	55.929
6.6	0.186	4.766	4.952
6.7	0.337	0.289	0.626
Non-DOD	0.000	0.000	0.000
TOTAL RDT&E	**64.463**	**103.642**	**168.105**
Procurement	13.499	3.802	17.301
Operations & Maintenance	16.386	8.125	24.511
Other	5.878	6.493	12.371
TOTAL FUNDING	**100.226**	**122.062**	**222.288**

MILITARY CONSTRUCTION (MILLIONS $)	
Military Construction (MILCON)	0.000

PERSONNEL DATA (END OF FISCAL YEAR 1993)				
		SCIENTISTS & ENGINEERS		TECHNICAL SUPPORT
TYPE	**END STRENGTH**	**PHD'S**	**OTHER**	**& OTHER PERSONNEL**
MILITARY	47	3	20	24
CIVILIAN	1,120	77	559	484
TOTAL	**1,167**	**80**	**579**	**508**

SPACE AND PROPERTY			
SPACE (THOUSANDS OF SQ FT)		**PROPERTY ACQUISITION COST (MILLIONS $)**	
LAB	936.000	**REAL PROPERTY**	70.100
ADMIN	216.000	* NEW CAPITAL EQUIPMENT	1.000
OTHER	310.000	**EQUIPMENT**	129.600
TOTAL	**1,462.000**	* NEW SCIENTIFIC & ENG. EQUIP.	8.300
ACRES	**0**	* Subset of previous category. See Equip./Facilities Narrative.	

NA = Not Applicable

Navy Clothing and Textile Research Facility
Natick, MA 01760-0001
(508) 651-4172

CO: CDR W. E. Johnson
Technical Dir: Barbara A. Avellini, Ph.D

FY93 FUNDING DATA (MILLIONS $)			
APPROPRIATION	**IN-HOUSE**	**OUT-OF-HOUSE**	**TOTAL**
RDT&E:			
6.1 ILIR	0.000	NA	0.000
6.1 Other	0.000	0.000	0.000
6.2 IED (Navy)	0.306	0.274	0.580
6.2 Other	0.245	0.115	0.360
6.3	0.466	0.484	0.950
Subtotal (S&T)	**1.017**	**0.873**	**1.890**
6.4	0.093	0.000	0.093
6.5	0.000	0.000	0.000
6.6	0.000	0.000	0.000
6.7	0.000	0.000	0.000
Non-DOD	0.000	0.000	0.000
TOTAL RDT&E	**1.110**	**0.373**	**1.983**
Procurement	0.000	0.000	0.000
Operations & Maintenance	1.959	0.349	2.308
Other	0.000	0.000	0.000
TOTAL FUNDING	**3.069**	**1.222**	**4.291**

MILITARY CONSTRUCTION (MILLIONS $)	
Military Construction (MILCON)	0.000

PERSONNEL DATA (END OF FISCAL YEAR 1993)				
		SCIENTISTS & ENGINEERS		TECHNICAL SUPPORT
TYPE	END STRENGTH	PHD'S	OTHER	& OTHER PERSONNEL
MILITARY	1	0	1	[illegible]
CIVILIAN	55	1	38	16
TOTAL	56	1	39	16

SPACE AND PROPERTY			
SPACE (THOUSANDS OF SQ FT)		PROPERTY ACQUISITION COST (MILLIONS $)	
LAB	12.667	REAL PROPERTY	0.000
ADMIN	16.000	* NEW CAPITAL EQUIPMENT	0.000
OTHER	5.630	EQUIPMENT	1.399
TOTAL	34.297	* NEW SCIENTIFIC & ENG. EQUIP.	0.130
ACRES	0	* Subset of previous category. See Equip./Facilities Narrative.	

NA = Not Applicable

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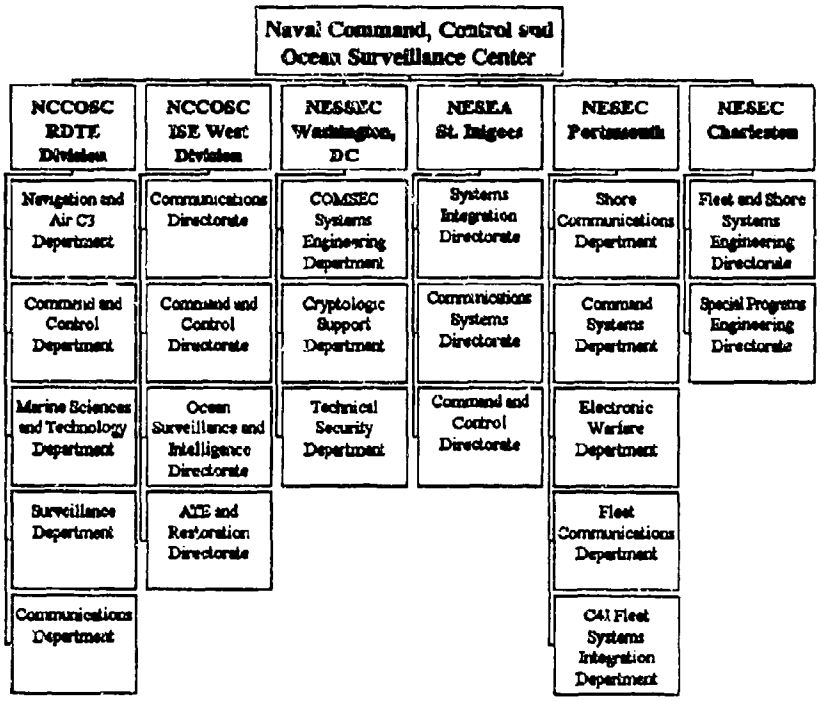
Naval Command, Control and Ocean Surveillance Center

Abbreviated Functional Chart - Technical Organizations



Naval Command, Control and Ocean Surveillance Center
San Diego, CA 92147-5088
(619) 553-9740

CO: RADM J. J. Donegan
Technical Dir.: Paul Wessel

MISSION

To be the Navy's full spectrum research, development, test and evaluation, engineering and fleet support center for command, control and communications systems and ocean surveillance and the integration of those systems which overarch multiplatforms. Leadership areas: Command, Control and Communication Systems; Command, Control and Communication Systems Countermeasures; Ocean Surveillance Systems; Command, Control and Communication Modeling and Analysis; Ocean Engineering; Navigation Support; Marine Mammals; Integration of Space Communication and Surveillance Systems.

CURRENT IMPORTANT PROGRAMS

Navy Tactical Command System - Afloat (NTCS-A). Joint Tactical Information Distribution System (JTIDS). Global Positioning System (GPS). SHF/EHF/UHF Satellite Communications. Tactical Receive Equipment (TRE)/TRE Related Applications (TRAP). Integrated Undersea Surveillance System (IUSS). AdvancEd Marine Biological Systems. Air Traffic Control. Consolidated Cryptologic Program. Relocatable Over-the-Horizon Radar. Navy Ada. Depot Operations. Communication Support System (CSS). Navy Command and Control Systems Ashore (NCCS Ashore). Submarine Electronic Support Measures (ESM). Enhanced VERDIN. Multifunctional Information Distribution System (MIDS). Operations Support Systems (OSS). Advanced Combat Direction System Block 0 and Block 1. Advanced Deployable System (ADS). Surveillance Towed Array Sensor System (SURTASS)/LFA System. Advanced Tethered Vehicle (ATV). Next Generation Weather Radar (NEXRAD). CLASSIC TRUMP Counter-Narcotics. Navy Shore Electromagnetic Environmental Effects (E3). Naval Space Surveillance Center Transmitter Antenna. Radiation, Detection, Indication and Computation (RADIAC). Physical Security Systems. Satellite Anti-Jam Tactical Users Reconfigurable Network (SATURN). Repair, Align, and Calibrate Program for AN/SLQ-32(V) systems. Naval Computer Incident Response Team (NAVCIRT). TEMPEST Field Testing. Advance Based Functional Component C3A Van Program. Fleet Mobile Operational Command Center Production. Air Defense Communications Platform. E-2C Airborne Tactical Data System. Shipboard Interior Communications. Multimission Advanced Tactical Terminal/Prototype Information Correlation Exploitation System (MATT/PICES).

EQUIPMENT/FACILITIES

The Naval Command, Control and Ocean Surveillance Center (NCCOSC) maintains over 120 major facilities in support of the warfare center mission. Special purpose test beds, simulators, laboratories, calibration facilities and repair shops support development, engineering, prototyping, integration, installation, test, and life cycle support of the command, control, communication and surveillance systems for which NCCOSC is responsible. Some of the unique or special interest facilities are listed below by location.

EQUIPMENT/FACILITIES

RDT&E Division, San Diego, CA:
High Performance Computing Laboratory providing a wide range of advanced computer systems for the scientific investigation of next-generation architecture. Microelectronics laboratory and production line for products unavailable commercially. Research, Evaluation and Systems Analysis (RESA) facility, a large-scale computer-based simulation/wargaming system used to support a variety of applications, including C3I architecture assessment, concept of operations development, advanced technology evaluation, joint exercises, and test and evaluation of advanced systems.

RDT&E Division Detachment, Warminster, PA:
High-accuracy navigation sensor laboratory, housed in a specially constructed 155-ft-diameter building that provides the capability to conduct extremely high-stability long-term R&D investigations of new technology sensors including ring laser, fiber-optic, and superconducting gyros. Simulated Ships Motion Facility (SCORSBY), a 4,000 sq.ft. facility housing three large ship motion simulators that have the capacity to accommodate navigation systems weighing up to 3,000 lbs, designed to apply controlled roll, pitch, and heading motions to new technology navigation systems, and incorporate the capability for high-accuracy dynamic readouts for strategic and tactical applications.

NISE (NCCOSC In-Service Engineering) West, San Diego, CA:
Radioactive Detection Indication and Calibration (RADIAC) lab repairs and calibrates approximately 5,000 pieces of major equipment each year. Cryptographic repair shop is the west coast service repair depot for classified electronic equipment, processing approximately 6,000 pieces each year.

NESEA (Naval Electronic Systems Engineering Activity), St. Inigoes, MD:
Electromagnetic Interference/Electromagnetic Environmental Effects/TEMPEST Facility, a fully instrumented facility providing for the development and testing of MIL-STD-460 series test procedures and applications. Communication, Integration, and Test Laboratory supports the integration, installation and test of Radio Communication Systems (RCSs) for the AEGIS CG 47 and DDG 51 class shipbuilding programs. Shipboard Communications Integration Facility used for on-the-job training of ships' crews on the AEGIS RCSs, the Single Audio System, and other fleet training projects. AEGIS Satellite Production Test Center houses seven test beds for the AEGIS RCS production and has RCS mockups for the CG 47 and DDG 51 class shipbuilding programs.

NESEC (Naval Electronic Systems Engineering Center), Portsmouth, VA:
Command Systems Test Facility containing state-of-the-art equipment used to evaluate, test and provide direct fleet support for C4 systems, and includes complete NTCS-A and NCCS-Ashore system suites, communication interfaces, and on-line secure tactical communications capabilities (TADIXS/OTCIXS). Surveillance Engineering Center housing systems and equipment test beds in support of Submarine and Surface Electronic Warfare, Surveillance, and Shipboard Cover and Deception (SCADS) programs.

NESEC, Charleston, SC:
AN/GPN-27 Radar Site, an Air Traffic Control ASR-8 Radar that is an operational Airport Surveillance Radar providing for modification, PITCO, and standardization testing. Simulator and Software Support Facility for equipment necessary to provide lifecycle support for strategic submarine comm. systems, housing four unique and diverse security systems representing equipment deployed at naval shore sites.

Naval Command, Control and Ocean Surveillance Center
San Diego, CA 92147-5088
(619) 553-9740

CO: RADM J. J. Donegan
Technical Dir.: Paul Wessel

FY93 FUNDING DATA (MILLIONS $)			
APPROPRIATION	**IN-HOUSE**	**OUT-OF-HOUSE**	**TOTAL**
RDT&E:			
6.1 ILIR	2.275	NA	2.275
6.1 Other	4.320	3.771	8.091
6.2 IED (Navy)	0.821	0.081	0.902
6.2 Other	41.400	51.104	92.504
6.3	19.547	45.785	65.332
Subtotal (S&T)	**68.363**	**100.741**	**169.104**
6.4	46.120	31.805	77.925
6.5	46.399	43.792	90.191
6.6	3.594	5.877	9.471
6.7	44.536	40.851	85.387
Non-DOD	27.805	11.373	39.178
TOTAL RDT&E	**236.817**	**234.439**	**471.256**
Procurement	367.498	478.499	845.997
Operations & Maintenance	266.461	214.318	480.779
Other	88.745	96.064	184.809
TOTAL FUNDING	**959.521**	**1,023.320**	**1,982.841**

MILITARY CONSTRUCTION (MILLIONS $)	
Military Construction (MILCON)	2.683

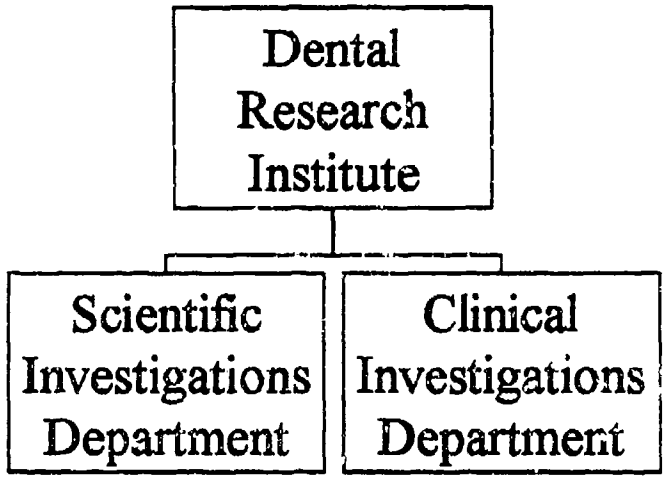
PERSONNEL DATA (END OF FISCAL YEAR 1993)				
		SCIENTISTS & ENGINEERS		TECHNICAL SUPPORT
TYPE	**END STRENGTH**	**PHD'S**	**OTHER**	**& OTHER PERSONNEL**
MILITARY	335	2	233	100
CIVILIAN	5,367	199	2,334	2,834
TOTAL	**5,702**	**201**	**2,567**	**2,934**

SPACE AND PROPERTY			
SPACE (THOUSANDS OF SQ FT)		**PROPERTY ACQUISITION COST (MILLIONS $)**	
LAB	2,419.766	**REAL PROPERTY**	269.185
ADMIN	498.047	* NEW CAPITAL EQUIPMENT	4.155
OTHER	1,894.221	**EQUIPMENT**	224.946
TOTAL	**4,812.034**	* NEW SCIENTIFIC & ENG. EQUIP.	0.000
ACRES	**1,673**	* Subset of previous category. See Equip./Facilities Narrative.	

NA = Not Applicable

Naval Dental Research Institute

Abbreviated Functional Chart - Technical Organizations



Naval Dental Research Institute
Great Lakes, IL 60088-5259
(708) 688-5647

CO: CAPT. Stephen A. Ralls, DC USN
Chief Scientist: Dr. Lloyd Simonson

MISSION

To research, develop, test, and evaluate new methods and materials that limit oral disease, reduce dental emergencies, maximize operational readiness, and promote dental wellness for Navy and Marine Corps personnel.

CURRENT IMPORTANT PROGRAMS

Current Important Programs: Our research program is divided into eight current objectives:

- Develop Rapid Chairside Dental Diagnostics
- Develop a Radiographic System to Identify Dental Disease Progression
- Develop a Managed Dental Care Delivery System
- Compile and Analyze Dental Epidemiologic Data
- Address Safety Issues
- Evaluate New Treatment Techniques, Equipment, and Materials
- Develop a Risk Assessment Program
- Develop Advanced Imaging of Pathologic Conditions

EQUIPMENT/FACILITIES

- 44,235 square feet AAALAC-accredited animal colony.
- A comprehensive dental research library, numerous volumes and journals with direct MEDLINE access.
- Electron microscope capability.
- Extensive computer and data processing facilities.
- Direct access to large military populations and the Navy's only Recruit Training Center.
- Direct access to the American Dental Association, three university dental schools, a large VA hospital, a large Naval Hospital, a major Naval Dental Center, and the headquarters of nearly 50 leading dental organizations.
- A gas chromatography microbial identification system.
- Numerous other state-of-the art equipment.
- Direct access to the National Institute of Dental Research, National Library of Medicine, the National Institute of Standards and Technology, and National Institutes of Health (NDRI Bethesda detachment).

Naval Dental Research Institute
Great Lakes, IL 60088-5259
(708) 688-5647

CO: CAPT. Stephen A. Ralls, DC USN
Chief Scientist: Dr. Lloyd Simonson

FY93 FUNDING DATA (MILLIONS $)			
APPROPRIATION	**IN-HOUSE**	**OUT-OF-HOUSE**	**TOTAL**
RDT&E:			
6.1 ILIR	0.100	NA	0.100
6.1 Other	0.264	0.098	0.362
6.2 IED (Navy)	0.000	0.000	0.000
6.2 Other	0.000	0.223	0.223
6.3	0.501	0.111	0.612
Subtotal (S&T)	**0.865**	**0.432**	**1.297**
6.4	0.000	0.000	0.000
6.5	0.000	0.000	0.000
6.6	0.574	0.000	0.574
6.7	0.000	0.000	0.000
Non-DOD	0.000	0.000	0.000
TOTAL RDT&E	**1.439**	**0.432**	**1.871**
Procurement	0.000	0.000	0.000
Operations & Maintenance	0.000	0.000	0.000
Other	0.000	0.000	0.000
TOTAL FUNDING	**1.439**	**0.432**	**1.871**

MILITARY CONSTRUCTION (MILLIONS $)	
Military Construction (MILCON)	0.000

PERSONNEL DATA (END OF FISCAL YEAR 1993)				
		SCIENTISTS & ENGINEERS		TECHNICAL SUPPORT
TYPE	**END STRENGTH**	**PHD'S**	**OTHER**	**& OTHER PERSONNEL**
MILITARY	32	12	1	19
CIVILIAN	11	3	3	5
TOTAL	**43**	**15**	**4**	**24**

SPACE AND PROPERTY			
SPACE (THOUSANDS OF SQ FT)		**PROPERTY ACQUISITION COST (MILLIONS $)**	
LAB	21.264	**REAL PROPERTY**	0.000
ADMIN	6.001	* NEW CAPITAL EQUIPMENT	0.000
OTHER	9.318	**EQUIPMENT**	1.700
TOTAL	**36.583**	* NEW SCIENTIFIC & ENG. EQUIP.	0.049
ACRES	**0**	* Subset of previous category. See Equip./Facilities Narrative.	

NA = Not Applicable

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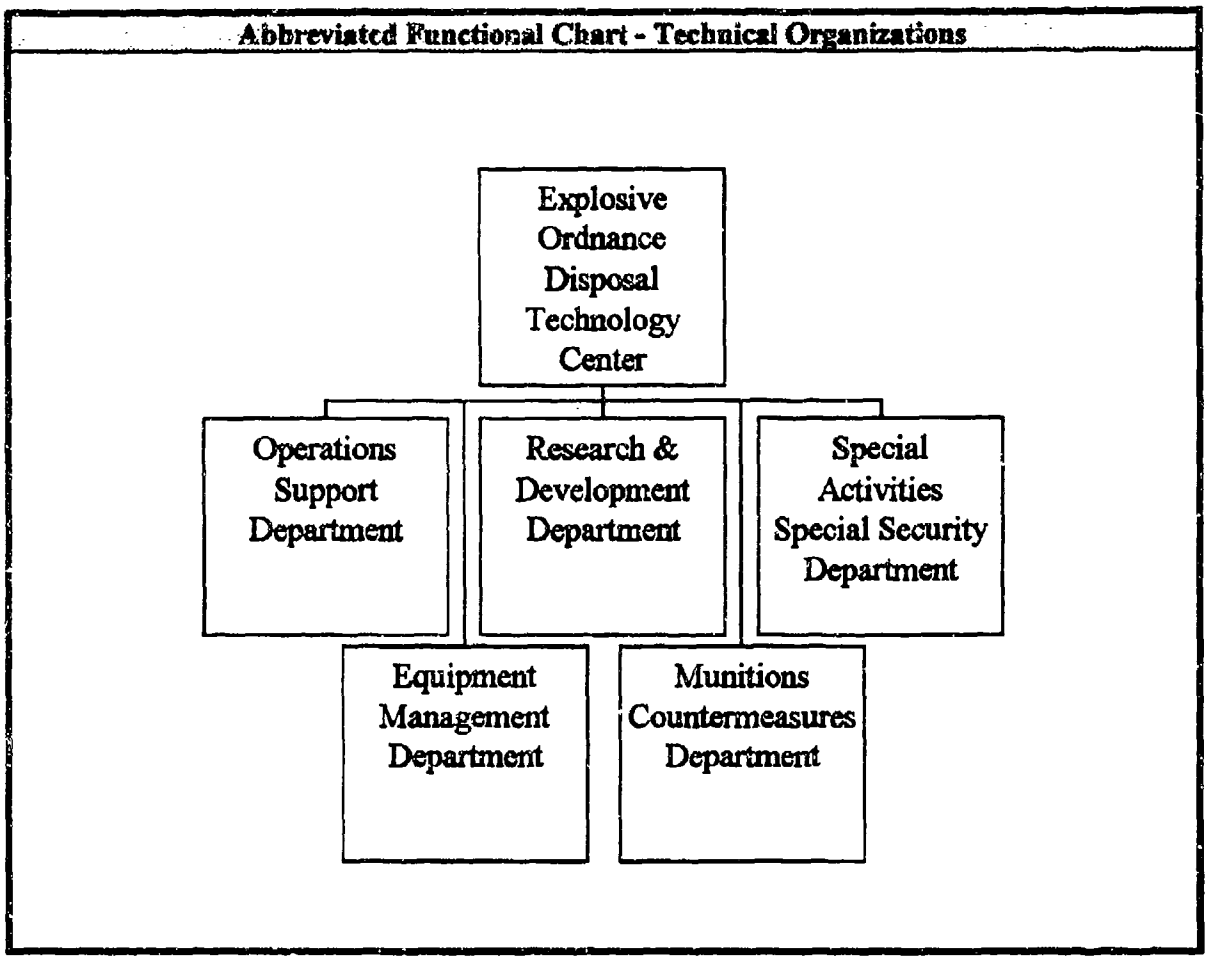
Naval Explosive Ordnance Disposal Technology Center



Naval Explosive Ordnance Disposal Technology Center
Indian Head, MD 20640-5070
(301) 743-6811

CO: CAPT. J. H. Cocowitch
Supv. Gen Engr.: Edward W. Rice

MISSION

To provide explosive ordnance disposal (EOD) technology and logistics management for the joint services and develop war essential intelligence, equipment and procedures to counter munitions, both U.S. and foreign, as required to support Department of Defense and components and the peacetime security needs of other agencies; as assigned by Commander, Naval Sea Systems Command.

CURRENT IMPORTANT PROGRAMS

Navy single service management of joint service technology support; joint service exploratory development; joint service advanced development (acquisition program); joint service engineering development (EOD publications); joint service logistics support (in-service engineering and depot level maintenance); intelligence and foreign ordnance acquisition; joint service advanced technology demonstration; area clearance technology demonstration.

EQUIPMENT/FACILITIES

Our complexes and facilities are unique state-of-the-art buildings specifically outfitted for conducting explosive ordnance exploitation in conjunction with developing ordnance countermeasure and render safe procedures.

Our munitions disassembly complex, completed in FY 92 for ordnance exploitation, contains remotely operated disassembly equipment which provides a unique munitions exploitation capability. Physical, chemical, and functional data are documented by photography, X-ray, and precise measurement equipment.

Our ordnance countermeasures lab, completed in FY 93, contains 62,250 square feet of floor space shared by approximately 100 employees from the Research and Development Department and the Munitions Countermeasures Department. This structure contains various labs for robotics, electronics, chemistry and toxicology, equipment assembly and others. Our Technical Library, which provides immediate research access to approximately 300,000 ordnance-related publications from the pre-Revolutionary War era to the present, and database access to a wide range of technical subject matter worldwide is also located in this building.

EQUIPMENT/FACILITIES (Cont.)

Our underwater test facility includes a hyperbaric test chamber capable of simulating water depths to 300 feet with controlled environment for 38-130 degrees Fahrenheit for equipment evaluation and diver life support systems development. The facility also includes a recompression chamber to support diver safety.

Our magnetometry facility is a test facility with a stable- background magnetic field which is maintain for low-level static and dynamic magnetic anomaly testing to certify special tools used on magnetically sensitive devices.

The explosive test range provides facilities to validate and verify techniques and procedures developed in support of Service requirements.

Our area search test range is a 20-acre test facility containing diverse buried ordnance items with precisely known orientation, depth and geographic location. Sensors and search systems for range clearance are tested for effectiveness and reliability.

Some of our equipment are explosive proof metal working equipment; steam-out system for removal of explosive compositions; closed- circuitry TV and communication systems for monitoring and recording explosive exploration in remote sites; coordinate measurement machine; chromatograph; HVAC; overhead crane; automated EOD pubs system; solvent/hazmat storage facility; and, range surveillance camera.

Naval Explosive Ordnance Disposal Technology Center
Indian Head, MD 20640-5070
(301) 743-6811

CO: CAPT. J. H. Cocowitch
Supv. Gen Engr.: Edward W. Rice

FY93 FUNDING DATA (MILLIONS $)			
APPROPRIATION	**IN-HOUSE**	**OUT-OF-HOUSE**	**TOTAL**
RDT&E:			
6.1 ILIR	0.000	NA	0.000
6.1 Other	0.000	0.000	0.000
6.2 IED (Navy)	0.000	0.000	0.000
6.2 Other	1.659	2.291	3.950
6.3	0.690	1.600	2.290
Subtotal (S&T)	**2.349**	**3.891**	**6.240**
6.4	2.090	4.891	6.981
6.5	4.540	1.192	5.732
6.6	0.800	0.000	0.800
6.7	0.000	0.000	0.000
Non-DOD	1.330	5.571	6.901
TOTAL RDT&E	**11.109**	**15.545**	**26.654**
Procurement	3.430	3.914	7.344
Operations & Maintenance	5.210	2.974	8.184
Other	1.840	2.313	4.153
TOTAL FUNDING	**21.589**	**24.746**	**46.335**

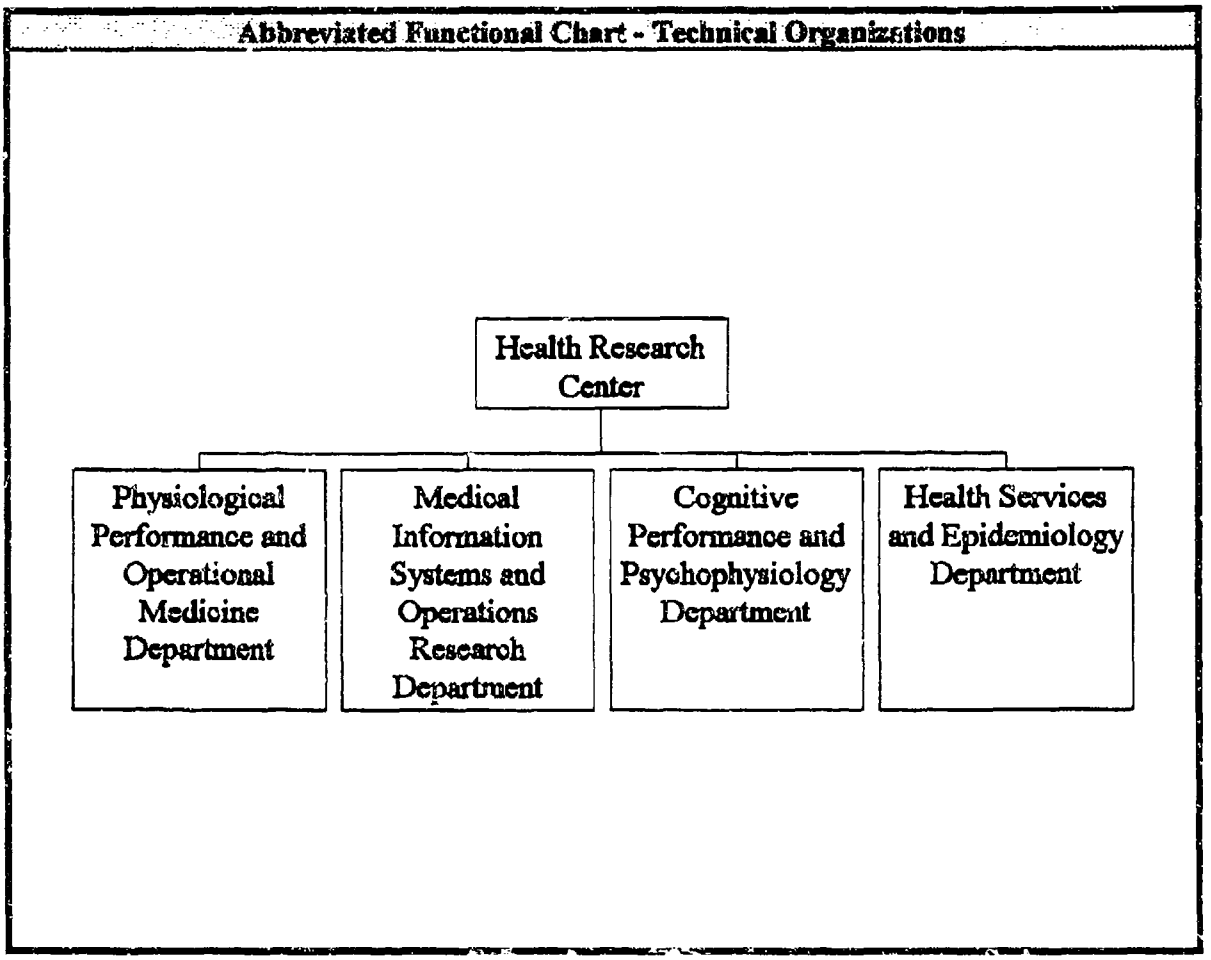
MILITARY CONSTRUCTION (MILLIONS $)	
Military Construction (MILCON)	0.000

PERSONNEL DATA (END OF FISCAL YEAR 1993)				
		SCIENTISTS & ENGINEERS		**TECENICAL SUPPORT**
TYPE	**END STRENGTH**	**PHD'S**	**OTHER**	**& OTHER PERSONNEL**
MILITARY	62	0	4	58
CIVILIAN	261	1	69	191
TOTAL	**323**	**1**	**73**	**249**

SPACE AND PROPERTY			
SPACE (THOUSANDS OF SQ FT)		**PROPERTY ACQUISITION COST (MILLIONS $)**	
LAB	114.112	**REAL PROPERTY**	19.984
ADMIN	35.588	* NEW CAPITAL EQUIPMENT	0.800
OTHER	113.955	**EQUIPMENT**	6.457
TOTAL	**263.655**	* NEW SCIENTIFIC & ENG. EQUIP.	0.500
ACRES	**173**	* Subset of previous category. See Equip./Facilities Narrative.	

NA = Not Applicable

Naval Health Research Center



Naval Health Research Center
San Diego, CA 92186-5122
(619) 553-8400

CO: CAPT. Thomas N. Jones
Scientific Dir: Dr. Don Stephen Nice

MISSION

To support fleet operational readiness through research, development, test, and evaluation on the biomedical, psychological, and physiological aspects of Navy and Marine Corps personnel health and performance; and to perform such other functions or tasks as may be directed by higher authority.

CURRENT IMPORTANT PROGRAMS

The R&D mission at Naval Health Research Center (NAVHLTHRSCHCEN) address four programmatic/functional areas: (1) Health Sciences and Epidemiology; (2) Medical Information Systems; (3) Physiological Performance and Operational Medicine; and (4) Cognitive Performance and Psychophysiology. Within these functional programs areas are projects areas, each comprised of one or more research efforts.

- Environmental Extremes
- Occupational Health
- Alertness Management Systems
- Work Physiology
- Disease Surveillance
- Health Care Policy
- Special Operations
- Epidemiology
- Health Promotion
- Modeling of Human Performance
- Musculoskeletal Injury
- Biological Rhythms
- HIV Studies and Registry
- Model and Forecasting
- Cognitive Electrophysiology
- Infectious Disease Studies
- Psychological Stress
- Expert Systems
- Alcohol Rehabilitation
- Medical Informatics

EQUIPMENT/FACILITIES

● Human Performance/Environmental Physiology Laboratory: A unique facility with a capability readily applied to any military platform need in the Fleet. Proximity to the San Diego and West Coast fleet maximizes tech transfer into the operational forces. Capability can also be mobile and can set-up a temporary human performance laboratory anywhere in CONUS and OCONUS.

Equipment:
Two environmental chambers; temperature range -20 deg. F to 180 deg. F; humidity 20-85%. Immersion tank; allows whole-body exposure, with temperature range of 45 to 110 deg. F. Swim flume; allows exposure to hot or cold moving water at 0 to 4 knots with temperature range of 45 to 90 deg. F. Ergonmetry equipment; Treadmills, cycles, skiing, upper body and swimming. Open-circuit spirometry metabolic measurement systems. Muscle strength and endurance computerized measurement systems. Biomechanics laboratory; Motion, ground reaction forces, EMG, equilibrium. Biochemistry laboratory; Clinical/hormonal chemistries. Electromyograph laboratory; EMG devices and computerized analysis equipment. Body composition laboratory; Anthropometric, hydrodensitometry, dual-energy x-ray absorptiometry, whole body water. Infrared Camera system; measures surface skin temperatures. Tube suit calorimeter; measures six body regions for heat flux. Microclimate cooling systems; gel packs, water, air, water/air combined. Cold weather/high altitude human performance lab at Marine Corps Mountain Warfare Training Center, Bridgeport, CA. Performance assessment Battery (PAB); Computerized cognitive function tests.

● Biological Rhythms and Sleep Laboratory - Subjects in an isolation facility within the laboratory can be protected from exposure to outside light during sleep recordings. Sustained operations/continuous operations (SUSOPS/CONOPS) and circadian phase shifting studies are also conducted. Laboratory includes areas for cognitive testing and two sound insulated sleep rooms (one holding up to eight people in bunks for group studies, and a small room for one or two subjects). Four PAB stations are equipped with a variety of performance software linked in a Landtastic network allowing data from all four to be down loaded to the master unit which is equipped with an optical disk device for data storage. Controlled bright light administration is possible with the combination of a built in light system in the PAB testing room and portable light boxes. The isolation facility also includes a treadmill for exercising subjects.

Equipment:
Polysomnography: Three Beckman (SensorMedics) 8 channel polygraphs; one Nihon Kohden 12 channel polygraph; one Nicolet Sleep Wake Analyzer - 3 bed, 32 channel EEG system; 14 Medilog 9000 portable EEG recorders; 1 Medilog 9000 scanner. Evoked Potentials: 1 Neuroscan EEG data acquisition and analysis system; 1 Nicolet Compact Four, portable electrodiagnostic system. Activity Monitors: 9 Ambulatory monitoring actigraphs; 10 ambulatory monitoring Version 6.6 actigraphs; 1 actigraph interface unit with software to download actigraph data to PC.

Miscellaneous:
1 Intoxilyzer breath alcohol analyzer; 2 Criticon Dinamap automatic blood pressure/pulse monitors; 7 386 PCs, one with APX 5200 optical disk drive for data storage; 3 Apollo Light Systems Bright Lite 3 Boxes.

Naval Health Research Center
San Diego, CA 92186-5122
(619) 553-8400

CO: CAPT. Thomas N. Jones
Scientific Dir: Dr. Don Stephen Nice

FY93 FUNDING DATA (MILLIONS $)			
APPROPRIATION	**IN-HOUSE**	**OUT-OF-HOUSE**	**TOTAL**
RDT&E:			
6.1 ILIR	0.280	NA	0.280
6.1 Other	0.161	0.060	0.221
6.2 IED (Navy)	0.945	0.758	1.703
6.2 Other	0.206	0.050	0.256
6.3	2.850	1.792	4.642
Subtotal (S&T)	**4.442**	**2.660**	**7.102**
6.4	0.000	0.000	0.000
6.5	0.000	0.000	0.000
6.6	0.410	0.129	0.539
6.7	0.106	0.042	0.148
Non-DOD	0.010	0.000	0.010
TOTAL RDT&E	**4.968**	**2.831**	**7.799**
Procurement	0.000	0.000	0.000
Operations & Maintenance	0.300	0.055	0.355
Other	0.310	0.325	0.635
TOTAL FUNDING	**5.578**	**3.211**	**8.789**

MILITARY CONSTRUCTION (MILLIONS $)	
Military Construction (MILCON)	0.000

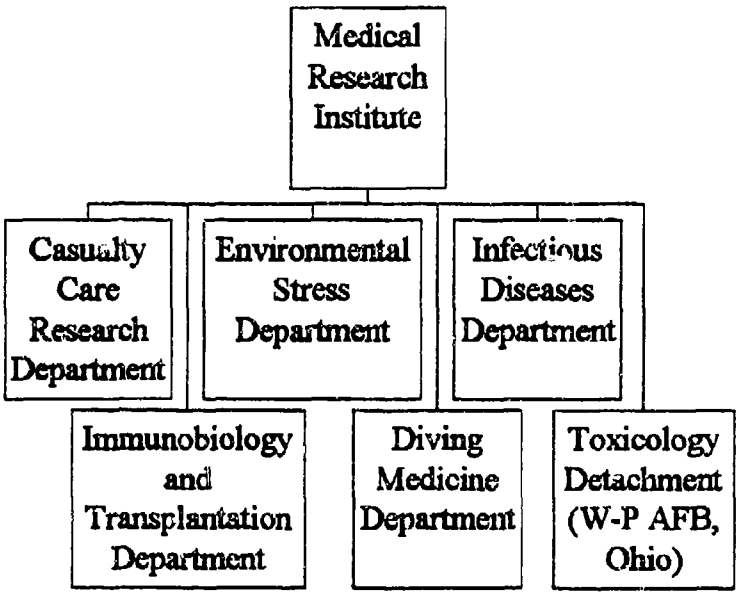
PERSONNEL DATA (END OF FISCAL YEAR 1993)				
		SCIENTISTS & ENGINEERS		**TECHNICAL SUPPORT**
TYPE	**END STRENGTH**	**PHD'S**	**OTHER**	**& OTHER PERSONNEL**
MILITARY	25	11	2	12
CIVILIAN	60	13	26	21
TOTAL	**85**	**24**	**28**	**33**

SPACE AND PROPERTY			
SPACE (THOUSANDS OF SQ FT)		**PROPERTY ACQUISITION COST (MILLIONS $)**	
LAB	26.844	**REAL PROPERTY**	0.000
ADMIN	12.650	* NEW CAPITAL EQUIPMENT	0.000
OTHER	1.170	**EQUIPMENT**	3.676
TOTAL	**40.664**	* NEW SCIENTIFIC & ENG. EQUIP.	0.983
ACRES	0	* Subset of previous category. See Equip./Facilities Narrative.	

NA = Not Applicable

Naval Medical Research Institute

Abbreviated Functional Chart - Technical Organizations



Naval Medical Research Institute
Bethesda, MD 20889-5607
(301) 295-0007

CO: CAPT. Robert G. Walter, DC, USN
Scientific Adv: CAPT. R. Gaugler, MSC, USN

MISSION

The mission of the Naval Medical Research Institute, Bethesda, Maryland, as assigned by the Secretary of the Navy and the Chief, Bureau of Medicine and Surgery is:

To conduct research, development, tests and evaluations to enhance the health, safety, and readiness of Navy and Marine Corps personnel in the effective performance of peacetime and contingency missions, and to perform such other functions or tasks as may be directed by higher authority.

The specific functions to be accomplished are:

- Provide basic and applied research on infectious diseases, tissue transplantation, diving and hyperbaric medicine, casualty care, and environmental medicine and human factors which are directly related to military requirements and operational needs.
- Maintain a program of basic biomedical research in areas of military importance to develop knowledge in anticipation of future problems.
- Provide the scientific potential for the application of new biomedical knowledge to operational problems.
- Provide biomedical research capabilities to support field laboratories, hospitals and other naval activities in problems beyond their scope.
- Provide a source of scientific advisors and consultants readily available to operational commands.

CURRENT IMPORTANT PROGRAMS

- Diving Medicine Program: Includes studies on the safety and mission efficiency of diving equipment and procedures (especially decompression procedures), the physiology of diving and oxygen toxicity, novel decompression methods using Hydrogen/Oxygen gas mixtures, methods to improve diver performance, and improved treatment of diving medical problems.
- Infectious Disease Program: Includes studies on the development of vaccines, the design and development of rapid diagnostic methods, and the collection and analysis of epidemiological information on significant infectious disease threats to

Naval Medical Research Institute

CURRENT IMPORTANT PROGRAMS (Cont.)

operating forces. Diseases studied include malaria, diarrheal diseases, dengue fever, HIV infection, hepatitis, and rickettsial diseases. Scientific expertise gained in these studies provide the basis for the deployment of field rapid diagnostic laboratories such as those deployed during Operations Desert Shield/Desert Storm and in Somalia. The laboratories were a major factor in the early diagnosis and treatment of disease in our troops, and their consequent rapid return to duty.

- Combat Casualty Care Program: Includes studies on enhancement of wound healing, treatment and prevention of septic shock, control of immunological system processes, and methods to control and augment the formation of new blood cells.

- Environmental Stress/Toxicology Program: Includes studies to evaluate the significance of specific environmental factors unique to Navy operations; and develop standards for exposure to these factors, and/or methods to improve performance of personnel required to operate in these environments. Factors include both hot and cold thermal stress, electromagnetic radiation hazards, and toxicology of numerous Navy-related chemicals.

- Bone Marrow Transplantation and Immunology Program: Includes studies on improved methods for typing of transplantation donors, methods for the isolation and controlled growth of blood cell precursor cells for reconstitution of the hematopoietic system, and the identification of cellular control mechanisms and development of methods for modulation of immune system activity.

EQUIPMENT/FACILITIES

Buildings:

Complex of 7 buildings (1 off site) containing approximately 160,000 square feet of laboratories, 25,000 square feet of office space and 13,000 square feet of storage.

The laboratory includes the following specialized facilities or equipment:

- Man-rated, Deep-dive Hyperbaric Research Chamber Complex: A DOD unique diving medical research chamber capable of reaching simulated depths of 300 meters, with full research quality level support systems, and composed of 5 separate, interconnected chambers, one with wet-pot capability.

- Large Animal Hydrogen Diving Chamber: A DOD unique chamber capable of accommodating large animals and using Hydrogen/Oxygen gas mixtures. Designed for use in the study of novel enzymatic decompression techniques.

- Emergency Hyperbaric Treatment Chamber: Special chamber designed for treatment of hyperbaric injuries or other clinical hyperbaric treatments.

- Scanning Transmission Electron Microscope: Standard research quality instrument approximately 10 years old.

- Fluorescence Cytometers: Three fully capable instruments, two with double laser capability, one with triple beam capability.

- Digital Imaging System

Naval Medical Research Institute
Bethesda, MD 20889-5607
(301) 295-0007

CO: CAPT. Robert G. Walter, DC, USN
Scientific Adv: CAPT. R Gaugler, MSC, USN

FY93 FUNDING DATA (MILLIONS $)			
APPROPRIATION	**IN-HOUSE**	**OUT-OF-HOUSE**	**TOTAL**
RDT&E:			
6.1 ILIR	0.749	NA	0.749
6.1 Other	4.673	0.936	5.609
6.2 IED (Navy)	0.000	0.000	0.000
6.2 Other	3.825	2.213	6.038
6.3	3.834	32.349	36.183
Subtotal (S&T)	**13.081**	**35.498**	**48.579**
6.4	2.035	2.348	4.383
6.5	0.000	0.000	0.000
6.6	1.301	1.146	2.447
6.7	0.000	0.000	0.000
Non-DOD	0.078	0.043	0.121
TOTAL RDT&E	**16.495**	**39.035**	**55.530**
Procurement	0.000	0.000	0.000
Operations & Maintenance	0.745	0.000	0.745
Other	1.382	2.195	3.577
TOTAL FUNDING	**18.622**	**41.230**	**59.852**

MILITARY CONSTRUCTION (MILLIONS $)	
Military Construction (MILCON)	0.000

PERSONNEL DATA (END OF FISCAL YEAR 1993)				
		SCIENTISTS & ENGINEERS		TECHNICAL SUPPORT
TYPE	**END STRENGTH**	**PHD'S**	**OTHER**	**& OTHER PERSONNEL**
MILITARY	260	52	16	192
CIVILIAN	161	31	41	89
TOTAL	**421**	**83**	**57**	**281**

SPACE AND PROPERTY			
SPACE (THOUSANDS OF SQ FT)		**PROPERTY ACQUISITION COST (MILLIONS $)**	
LAB	161.930	**REAL PROPERTY**	8.200
ADMIN	63.875	* NEW CAPITAL EQUIPMENT	0.880
OTHER	0.000	**EQUIPMENT**	14.676
TOTAL	**225.805**	* NEW SCIENTIFIC & ENG. EQUIP.	0.650
ACRES	7	* Subset of previous category. See Equip./Facilities Narrative.	

NA = Not Applicable

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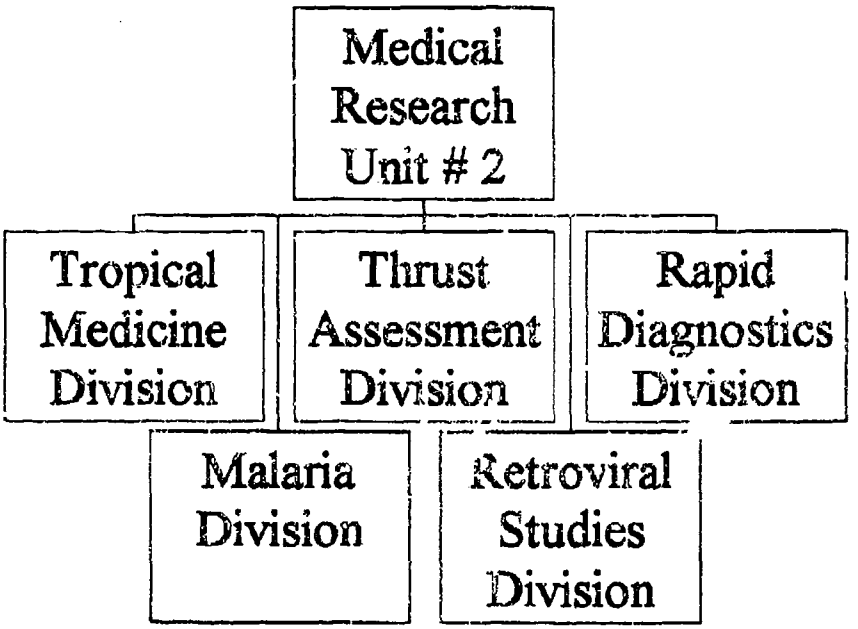
Naval Medical Research Unit # 2

Abbreviated Functional Chart - Technical Organizations



Naval Medical Research Unit # 2
Jakarta, Indonesia
011-62-21-421-4454

CO: CAPT. F. Stephen Wignall
Exec. Officer: CAPT. Raymond P. Olafson

MISSION

Conduct RDT&E in tropical medicine and infectious disease to maintain and enhance the health, safety, and readiness of Navy and Marine Corps personnel in the performance of peacetime and contingency missions in Southeast Asia and other tropical and subtropical regions.

CURRENT IMPORTANT PROGRAMS

Evaluation of new antimalarial agents or combinations of traditional antimalarial agents for the treatment and prevention of malaria in Indonesia.

Development of a malaria vaccine test site determining the epidemiology of hepatitis e virus infections in Southeast Asia.

Identification of emerging infectious disease threat agents in Southeast Asia, including areas in Vietnam frequented by members of the Joint Task Force for Full Accounting.

Development and evaluation of methods for the rapid identification of infectious disease threat agents such as those responsible for febrile diarrhea, sexually transmitted diseases, and AIDS.

EQUIPMENT/FACILITIES

Mosquito breeding colony for parasite vector transmission and susceptibility studies with malaria and filariasis. Animal colony used in mosquito breeding, parasite studies, and for production of antigens and antibodies. Virology dept has capability of isolation and identification of human viral pathogens and also of performing serological tests for evidence of viral infections. Microbiology department maintains a comprehensive diagnostic medical microbiology capability and in addition has sophisticated equipment and reagents required for biomolecular identification and characterization of microbial pathogens. Parasitology dept has developed the first procedure for the growth of filarid worms in vitro. Tropical medicine department utilizes a double laser flow cytometer for identification of specific white cell types by detecting specific epitopes on the white cell surface. NAMRU-2 also maintains a field laboratory in Jayapura, Irian Jaya which primarily is used to perform malaria related laboratory assays and also to process research specimens for shipment to the Jakarta lab. All departments work closely with counterparts within indonesian laboratories and hospitals.

The proposed transfer of the Bl3 laboratory to Namru-2 Jakarta will give this command a state-of-the-art containment facility that exceeds all current requirements for work with biosafety level 3 pathogens. This facility will allow NAMRU-2 personnel to work safely, both at the lab bench and with experimental animals, with such regionally important agents as rickettsia, Japanese b encephalitis virus and hantaan virus. It will also provide the needed biocontainment for proposed field programs to survey for emerging diseases in indonesia.

NAMRU-2 maintains a detachment in Manila, Republic of the Philippines (scheduled for closure 1 July 1994) which is capable of detecting HIV specific antibodies, retroviral culture, and characterizing white blood cell populations by flow cytometry. Complete bacteriology laboratory facilities exist that could be utilized in future collaborative research in the Republic of the Philippines.

Naval Medical Research Unit # 2
Jakarta, Indonesia
(62) 421-4454

CO: CAPT. F. Stephen Wignall
Exec. Officer: CAPT. Raymond P. Olafson

FY93 FUNDING DATA (MILLIONS $)			
APPROPRIATION	IN-HOUSE	OUT-OF-HOUSE	TOTAL
RDT&E:			
6.1 ILIR	0.000	NA	0.000
6.1 Other	0.358	0.014	0.372
6.2 IED (Navy)	0.000	0.000	0.000
6.2 Other	0.563	0.000	0.563
6.3	0.380	0.000	0.380
Subtotal (S&T)	**1.301**	**0.014**	**1.315**
6.4	0.000	0.000	0.000
6.5	0.000	0.000	0.000
6.6	1.636	0.000	1.636
6.7	0.000	0.000	0.000
Non-DOD	0.000	0.000	0.000
TOTAL RDT&E	**2.937**	**0.014**	**2.951**
Procurement	0.000	0.000	0.000
Operations & Maintenance	0.000	0.000	0.000
Other	1.198	0.042	1.240
TOTAL FUNDING	**4.135**	**0.056**	**4.191**

MILITARY CONSTRUCTION (MILLIONS $)	
Military Construction (MILCON)	0.000

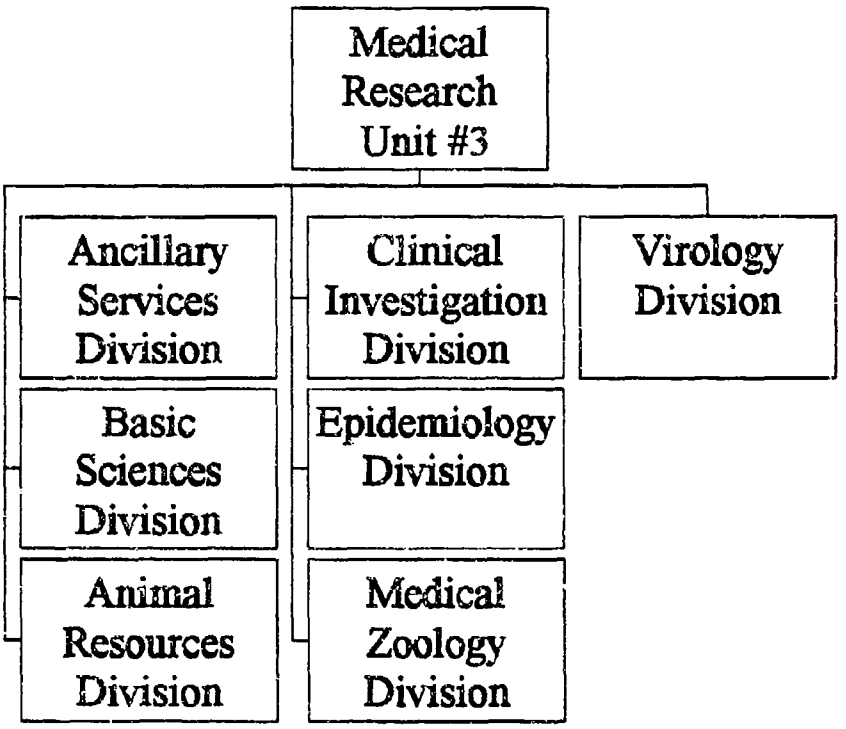
PERSONNEL DATA (END OF FISCAL YEAR 1993)				
		SCIENTISTS & ENGINEERS		TECHNICAL SUPPORT
TYPE	END STRENGTH	PHD'S	OTHER	& OTHER PERSONNEL
MILITARY	19	10	1	8
CIVILIAN	106	12	41	53
TOTAL	**125**	**22**	**42**	**61**

SPACE AND PROPERTY			
SPACE (THOUSANDS OF SQ FT)		PROPERTY ACQUISITION COST (MILLIONS $)	
LAB	16.900	**REAL PROPERTY**	0.847
ADMIN	10.990	* NEW CAPITAL EQUIPMENT	0.076
OTHER	4.400	**EQUIPMENT**	2.287
TOTAL	**32.290**	* NEW SCIENTIFIC & ENG. EQUIP.	0.081
ACRES	**0**	* Subset of previous category. See Equip./Facilities Narrative.	

NA = Not Applicable

Naval Medical Research Unit # 3

Abbreviated Functional Chart - Technical Organizations



Naval Medical Research Unit # 3
Cairo, Egypt
011-20-2-284-1375

CO: CAPT. Richard G. Hibbs

MISSION

To conduct research, development, test and evaluation to enhance the health, safety, and readiness of Navy and Fleet Marine personnel assigned to Southwest Asia and Africa in the performance of peacetime and contingency missions, and to perform other such functions as may be directed by higher authority.

FUNCTIONS

- Conduct research programs in infectious diseases (ID) which directly relate to military medical requirements and operational needs.
- Conduct interactive ID research with the Navy and other DOD medical R&D laboratories, specifically in areas of preventive medicine, epidemiology and tropical medicine.
- Develop and maintain capability to provide ID risk assessment information and conduct research and development to improve prevention, diagnosis, and treatment of ID in the Fleet and Fleet Marine Force.
- Maintain a technology base and scientific and technical expertise in infectious disease and tropical medicine to provide advisory assistance when requested.
- Provide or undertake such other appropriate functions as may be authorized or directed.

CURRENT IMPORTANT PROGRAMS

Continuing assessment of regional infectious diseases of epidemic potential, and/or likely to hamper military operations

- Assessment of the efficacy of current drug treatment regimens to treat schistosomiasis
- Determine the range of genetic variability of HIV-1 stains isolated from subjects with a wide spectrum for different risk factors for HIV infection
- Develop a field test site for phase 3 trials of enterotoxigenic E. Coli vaccine and identify the pathogenic strains of ETEC responsible for epidemics of diarrheal disease in Egypt

Naval Medical Research Unit # 3

CURRENT IMPORTANT PROGRAMS

- Characterize protective immune responses against Group B Meningococcus
- Assess the threat of Hepatitis E infections to deployed U. S. forces in Theater of Operation
- Determine incidence of Campylobacter strains responsible for diarrheal diseases in deployed forces in Egypt
- Continue technology base capability to rapidly identify, formulate control strategies and assess the threat of high hazard viral disease threats to military operations
- Continue tech base capability for identifying and evaluating the threat of arthropod vectors which transmit militarily important diseases

EQUIPMENT/FACILITIES

The equipment and resources at NAMRU-3 make it competitive with any major research laboratory in the United States.

BIOMEDICAL RESEARCH SCIENCE BUILDING
- 6 story state-of-the-art design completed in 1983
- Clinical and Applied Research Laboratory.
- 2,750 Sq Ft P-3 level biohazard containment
- Backup emergency generators and modern ventilation and waste disposal design.

LIBRARY
- Heavily used by local scientists/physicians
- Subscription to over 75 scientific journals
- Houses over 7000 reference books
- Interacts with Library of Medicine (Bethesda) via CD-ROM and computer link through USAID

SNAIL BREEDING LABORATORY
- Produces over 1 million cercariae per day

INSECTARY
- Supports colonies of disease vectors such as ticks, mosquitoes and sandflies.

ANIMAL FACILITY
- Directed by U.S. Army Veterinarian and enlisted (91T) Veterinary Technician.
- State-of-the-Art Barrier Facility for breeding inbred mouse strains, rodents, geese, sheep, baboons, etc

EQUIPMENT/FACILITIES (Cont.)

PUBLIC WORKS FACILITY
- Directed by U.S.N. Civil Engineering Corps Officer
- Engineering: Maintenance, construction, design, transportation (30 vehicles)
- Shops: Automotive, electrical, mechanical, sheet metal, carpentry, paint, plumbing

OTHER SUPPORT FACILITIES
- Administration, Finance, Supply, Public Works, Pharmacy, Medical Equipment Repair, Safety,
- Occupational Health, Computer and Post Office.

ACCESS TO ABBASSIA FEVER HOSPITAL (1500 BED)
- Largest MOH Infectious Disease Hospital (1500 beds)
- Immediately adjacent to NAMRU-3
- NAMRU-3 wards: FUO, Enteric Fever and Meningitis; Intensive Care Unit.

Naval Medical Research Unit # 3
Cairo, Egypt
(202) 284-1381

CO: CAPT. Richard G. Hibbs

FY93 FUNDING DATA (MILLIONS $)			
APPROPRIATION	**IN-HOUSE**	**OUT-OF-HOUSE**	**TOTAL**
RDT&E:			
6.1 ILIR	0.000	NA	0.000
6.1 Other	0.811	0.000	0.811
6.2 IED (Navy)	0.000	0.000	0.000
6.2 Other	0.953	0.000	0.953
6.3	0.460	0.000	0.460
Subtotal (S&T)	2.224	0.000	2.224
6.4	0.000	0.000	0.000
6.5	0.181	0.248	0.429
6.6	3.133	0.038	3.171
6.7	0.000	0.000	0.000
Non-DOD	0.829	0.000	0.829
TOTAL RDT&E	**6.367**	**0.286**	**6.653**
Procurement	0.000	0.000	0.000
Operations & Maintenance	0.649	0.000	0.649
Other	0.151	0.000	0.151
TOTAL FUNDING	**7.167**	**0.286**	**7.453**

MILITARY CONSTRUCTION (MILLIONS $)	
Military Construction (MILCON)	0.000

PERSONNEL DATA (END OF FISCAL YEAR 1993)				
		SCIENTISTS & ENGINEERS		TECHNICAL SUPPORT
TYPE	**END STRENGTH**	**PHD'S**	**OTHER**	**& OTHER PERSONNEL**
MILITARY	33	9	4	20
CIVILIAN	218	29	54	135
TOTAL	**251**	**38**	**58**	**155**

SPACE AND PROPERTY			
SPACE (THOUSANDS OF SQ FT)		**PROPERTY ACQUISITION COST (MILLIONS $)**	
LAB	68.244	**REAL PROPERTY**	10.600
ADMIN	9.058	* NEW CAPITAL EQUIPMENT	0.000
OTHER	71.330	**EQUIPMENT**	5.763
TOTAL	**148.632**	* NEW SCIENTIFIC & ENG. EQUIP.	0.075
ACRES	4	* Subset of previous category. See Equip./Facilities Narrative.	

NA = Not Applicable

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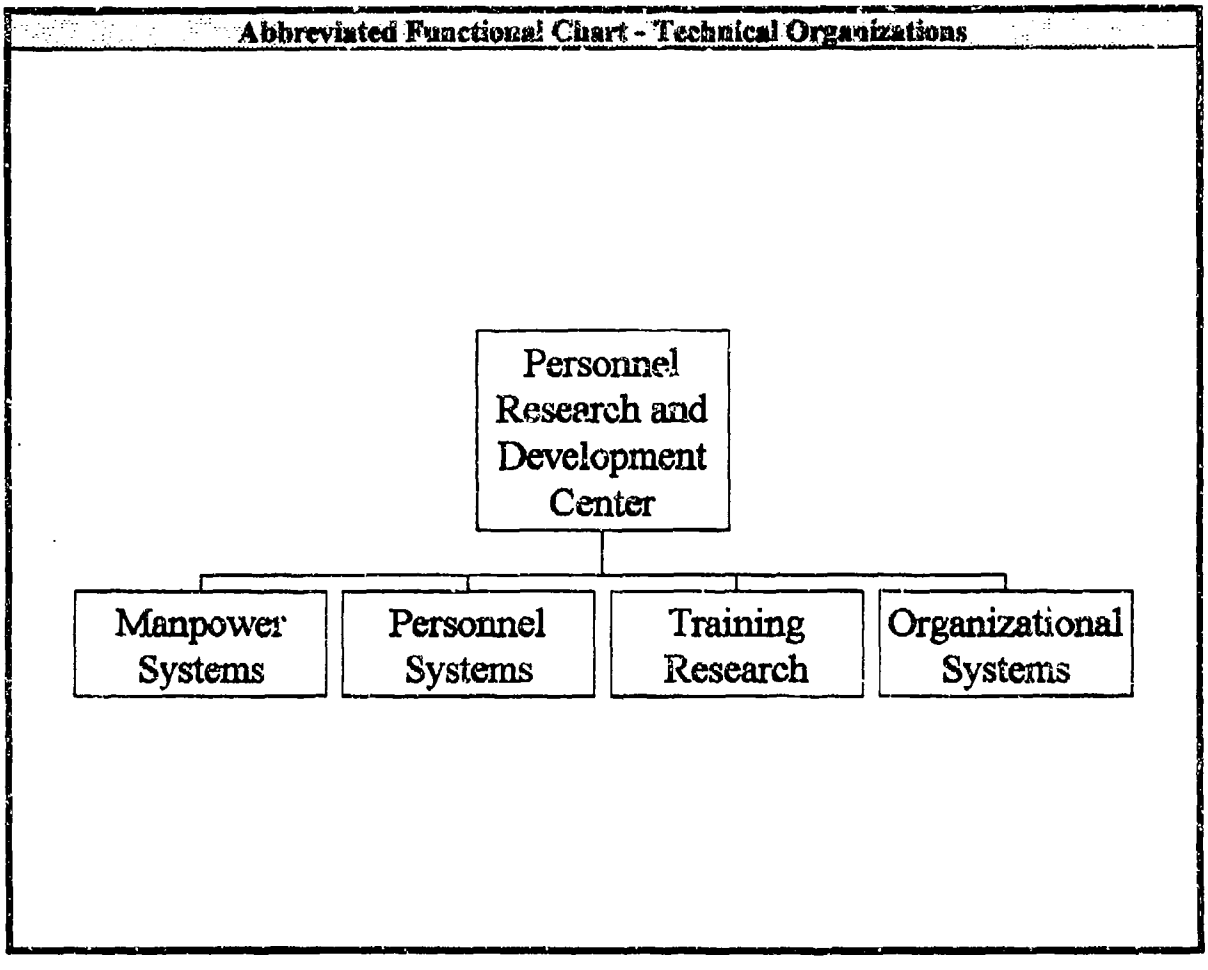
Navy Personnel Research and Development Center



Navy Personnel Research and Development Center
San Diego, CA 92151-7250
(619) 553-7812

CO: CAPT. J. D. McAfee
Technical Dir: Mr. Murray W. Rowe

MISSION

NPRDC serves as the Navy's principal research laboratory for Manpower, Personnel and Training (MPT) technology development. In this capacity, we maintain and enhance fleet readiness through the development of state-of-the-art technology solutions to significant operational problems in: Workforce Management; Personnel Testing; Person/Job Assignments; Classroom and Afloat Training; Organizational Productivity

CURRENT IMPORTANT PROGRAMS

Workforce Management--We are conducting a comprehensive program designed to improve Navy's ability to manage its personnel resources (collectively referred to as "the force") and its $21 billion personnel budget. The products of these efforts are suites of integrated, computer-based models, databases and systems with the following capabilities:

- The ability to test the effects of alternative policies on the force by mathematically simulating force dynamics subject to the test policies.
- Rapid collection and displaying of information from many sources about force characteristics in easily understood graphic and tabular forms.
- Development of monthly manning plans subject to numerous budgetary and end-strength constraints. Involves statistically forecasting all monthly losses and gains to the force at several levels of detail.

Separate efforts within our program address Enlisted and Officer Workforce Management. One illustrative sub-project in our program is concentrating on the development of an integrated Enlisted Strength Planning System (ESPS.) When complete, this system will provide consistent, systematic accounting of all force transactions (gains and losses) for daily monitoring by Navy planners, will use these data to update forecasts of future gains and losses, will reevaluate accession plans in light of the latest information, and will generate, on demand, a revised strength plan and the cost associated with the plan. The integrated oversight, forecasting and plan generation capabilities offered by ESPS will significantly improve Navy's ability to anticipate budgetary problems, to formulate effective corrective personnel policies, and to avoid drastic policy actions (e.g. freezing accessions and/or freezing advancements) having adverse side effects on the force.

Personnel Testing--We are engaged in a broad program supporting technology advancements in all aspects of personnel testing in the military, including recruit selection testing, job classification testing and performance measurement. A central focus of our program is the development and validation of the technology underlying computer adaptive testing. As DOD Executive Agent, the Navy has developed a computer adaptive version of the Armed Services Vocational Aptitude Battery, known as CAT-ASVAB, which is in operational test and evaluation (OT&E) at several nationwide Military Entrance Processing Stations (MEPS.) OT&E results to date are positive. However, universal acceptance of the technology requires the following R&D issues be resolved: --the development of a Deliberate Failure Scoring [illegible] for

Navy Personnel Research and Development Center

CURRENT IMPORTANT PROGRAMS (Cont.)

adaptive test and for tests with non-traditional scoring systems (to identify intentional attempts to fail.) – the extent to which hardware/software differences (e.g. computer speed or visual appearance of graphics) affect applicant performance. –the determination whether computerized test batteries predict differentially across demographic subgroups. –the determination whether qualification rates of demographic subgroups are differentially impacted by introducing new tests.

Our program is addressing these issues in the specific context of CAT-ASVAB and in the broader context of computer adaptive testing in general.

Person/Job Assignments–We are conducting a multi-faceted program with the objective of increasing the detailer's ability to make informed and accurate decisions when assigning sailors to new jobs upon completion of their tours and to enable each detailer to service a larger constituency. Our efforts are focussed in 3 areas:

- Developing the technology to optimally match lists of rotating sailors to lists of available jobs in accordance with prioritized Navy policies regarding cost of relocating the sailors, meeting sailors' location preferences, reuse of skills, etc. This effort is the most mature component of our Person/Job Assignment Program. The technology has been successfully developed and embedded in a newly operational system named Computer-Enhanced Detailing and Distribution (CEDAD.)

- Developing the technology to assess assignment policy tradeoffs. The goal is to provide Navy with the capability to quantify the tradeoffs between competing assignment policies that have conflicting objectives (e.g. maximize priority job fills while minimizing PCS costs.) This capability will enable the Navy to set realistic, executable policies by quantifying the degree of policy compliance that is achievable given concurrent policies.

- Designing the Future Generation Detailer Decision Support System (FGDDSS). The goal is to exploit emerging computer and telecommunications technologies to design the detailing support system of the future. Given declining resources, future support systems must permit greater detailer productivity while preserving high quality service to the individual sailor and allowing the sailor to continue to participate in the detailing process. It is envisioned that the FGDDSS will permit worldwide, round-the-clock, dialin access to real-time assignment support systems and that detailers will have sophisticated multitasking software for accessing the large volumes of personnel and policy data they need while working with each sailor.

Classroom and Afloat Training–We are conducting a training and education research program that incorporates advanced instructional and computer-based training technologies to create new and better ways to teach complex warfighting skills. Developing a Naval force of highly trained and skilled personnel ready to meet the challenges of operating in hostile environments is a very expensive and constant responsibility. The goal of this program is to reduce the excessive costs associated with initial skill training as well as those that are incurred as a function of the constant need to refresh highly perishable but infrequently practiced job skills. The development of highly effective and efficient training systems becomes increasingly important as the dollars to sustain personnel readiness decline. Several efforts conducted within our program in recent years proved so successful during the prototype demonstration phase that they made the transition through rapid prototyping to production and currently provide the integral teaching strategy for impotant Navy warfighting communities.

CURRENT IMPORTANT PROGRAMS (Cont.)

The Interactive Multisensor Analysis Trainer (IMAT) is an example of an R&D program that transitioned directly to production. The IMAT integrates two advanced technologies (instructional methodology and computer-based graphics systems) and creates a four-dimensional visual and dynamic environment. The IMAT is currently designed to support the very complex, multi-domain operator and tactician tasks performed in Undersea Warfare. The system uses real-world models, databases and algorithms to accurately generate representations of real world oceans, threat submarine propulsion systems, sensor arrays, and system displays. The ability to manipulate the variables within that environment in a visual field provides the student with a dynamic cause and effect demonstration of the important interactive variables. The trainer can create a full range of visual simulations suitable to apprentice through master training by controlling the complexity and variability of the visual scene. Instructors who previously relied on teaching these complex relationships to high school graduates by using equations and academic descriptions can now let the student "see" the physical interactions that previously existed only in scientific notation. The trainer, which was originally developed and tested in the aviation undersea warfare community, will transition to the surface and subsurface undersea warfare communities to support both officer and enlisted training. The application of this technology created a training system that can truly consolidate the development of very costly training that previously required individualized development for every operator and tactician course in the Navy.

Organizational Productivity--We have a long history of investigating and developing organizational solutions to meet Navy goals. Productivity of individuals, combat forces and management organizations is critically important at any time, but the current climate of budget reduction and downsizing makes it imperative that technical innovations be identified and applied to Navy functions. The products of these efforts provide a number of important benefits both to Navy planners and to Fleet sailors that make their jobs easier and faster to perform.

A current focus of our program is to improve the way in which students are scheduled to attend Navy schools, in order to minimize the number of empty school seats, time awaiting instruction (AI) upon arrival at the school and time awaiting transfer (AT) after training is completed. (The AI and AT times for 1992 were estimated to be more than 1.51 million man-days.) The scope of this problem is enormous. The Navy operates over 400 schools in different locations that conduct over 35,000 classes every year. Approximately 350,000 students attend one or more of these classes each year. About 80% of these students are Navy members. The other students are from the other services, reserves, civilians and foreign nationals.

The technical approach being taken is to attempt to adapt the technology developed by American Airlines for reserving seats on their flights. Being profit-oriented, the Airlines objective was to maximize their yield. The Navy's objective of minimizing empty school seats is directly parallel. Transitioning this technology from commercial industry would allow Navy to benefit from leveraging American Airlines' investment in developing and testing this technology. The technical challenge we face is in adapting the technology to a system in which "reservations" are not currently centrally managed.

EQUIPMENT/FACILITIES

The Center occupies approximately 95,000 square feet of space in converted World War II barracks buildings. Much of this is configured to accommodate the social science and mathematical analysis tasks performed on microcomputers and minicomputers. The facilities include upgraded electrical capability and air conditioning of the most equipment-intensive rooms. In addition, there are two facilities which contain computer rooms with raised flooring, central air conditioning, and upgraded electrical power. These are: Manpower and Personnel Research Computing Facility (MAPCOM): This is a 2,000 square foot IBM 4381 mainframe computer facility used to develop, process, and maintain statistical and forecasting systems; very large, complex personnel and training databases, and large software system applications. Training Research Computing Facility (TRCF): This is a 1,600 square foot Sun Systems facility, operating under the UNIX operating system. It provides network (internal and external) services, data analysis software, text processing support, graphics/video image processing software, and electronic mail/news services. The data analysis, text processing, and graphics/video image processing software is specialized and, in some cases, custom written for NPRDC applications. Some of the TRCF services required modifications to the UNIX operating system kernel, necessitating an NPRDC source license for the UNIX operating system.

Navy Personnel Research and Development Center
San Diego, CA 92151-7250
(619) 553-7812

CO: CAPT. J. D. McAfee
Technical Dir: Mr. Murray W. Rowe

FY93 FUNDING DATA (MILLIONS $)			
APPROPRIATION	IN-HOUSE	OUT-OF-HOUSE	TOTAL
RDT&E:			
6.1 ILIR	0.216	NA	0.216
6.1 Other	0.055	0.023	0.078
6.2 IED (Navy)	0.150	0.050	0.200
6.2 Other	2.610	1.197	3.807
6.3	4.637	4.731	9.368
Subtotal (S&T)	7.668	6.001	13.669
6.4	0.000	0.000	0.000
6.5	0.503	0.477	0.980
6.6	0.439	0.707	1.146
6.7	0.824	0.462	1.286
Non-DOD	0.000	0.000	0.000
TOTAL RDT&E	9.434	7.647	17.081
Procurement	0.000	0.360	0.360
Operations & Maintenance	7.918	4.265	12.183
Other	0.102	0.112	0.214
TOTAL FUNDING	17.454	12.384	29.838

MILITARY CONSTRUCTION (MILLIONS $)	
Military Construction (MILCON)	0.300

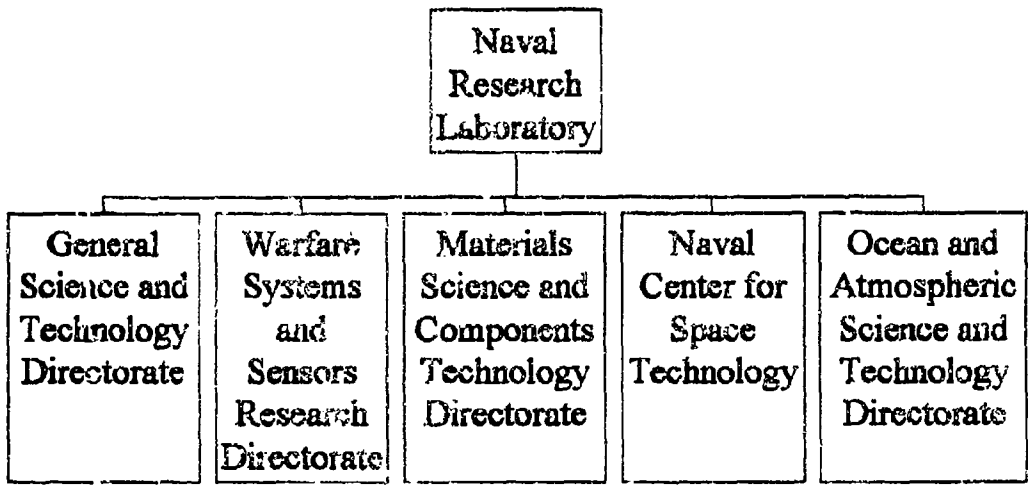
PERSONNEL DATA (END OF FISCAL YEAR 1993)				
		SCIENTISTS & ENGINEERS		TECHNICAL SUPPORT
TYPE	END STRENGTH	PHD'S	OTHER	& OTHER PERSONNEL
MILITARY	17	0	5	12
CIVILIAN	225	53	107	65
TOTAL	242	53	112	77

SPACE AND PROPERTY			
SPACE (THOUSANDS OF SQ FT)		PROPERTY ACQUISITION COST (MILLIONS $)	
LAB	64.000	REAL PROPERTY	1.178
ADMIN	27.000	* NEW CAPITAL EQUIPMENT	0.864
OTHER	4.456	EQUIPMENT	11.579
TOTAL	95.456	* NEW SCIENTIFIC & ENG. EQUIP	0.676
ACRES	3	* Subset of previous category. See Equip./Facilities Narrative.	

NA = Not Applicable

Naval Research Laboratory

Abbreviated Functional Chart - Technical Organizations



Naval Research Laboratory
Washington, DC 20375-5320
(202) 767-2541

CO: CAPT. Paul G. Gaffney
Dir of Research: Timothy P. Coffey

MISSION

Operate the Navy's full spectrum corporate laboratory to conduct a broadly based multidisciplinary program of scientific research and advanced technological development directed toward maritime applications of new and improved materials, techniques, equipment, systems and ocean, atmospheric, and space sciences and related technologies. In fulfillment of this mission, the Naval Research Laboratory:

- Initiates and conducts scientific research of a basic and long-range nature in scientific areas of special interest to the Navy.
- Conducts exploratory and advanced technological development deriving from or appropriate to the scientific program areas.
- Within areas of technological expertise, develops prototype systems applicable to specific projects.
- Performs scientific research and development for other naval commands and, where specifically qualified, for other agencies of the Department of Defense and, in defense-related efforts, for other Government agencies.
- Upon request from appropriate naval commands, assumes responsibility as the Navy's principal R&D activity in areas of unique professional competence.
- Serves as the principal activity for the Navy and its contractors in providing accurate calibration, test, evaluation and reference standards services on acoustic transducers and materials.
- Serves as the lead Navy activity for mapping, charting, and geodesy (MC&G) research and development for the Defense Mapping Agency.

LEADERSHIP AREAS: NRL, the Navy's single, integrated corporate laboratory, provides the Navy with a broad foundation of in-house expertise from scientific through advanced development activity. Specific leadership responsibilities and expertise are maintained in the following areas:

- Primary in-house research for the physical, engineering, space, and environmental sciences.
- Broadly based exploratory and advanced development program in response to identified and anticipated Navy needs.
- Broad multidisciplinary support to the Naval Warfare Centers.
- Space and space systems technology, development, and support.

Naval Research Laboratory

CURRENT IMPORTANT PROGRAMS

Current Important Programs

- Advanced ECM and decoys for Navy EW systems.
- Radars for countering the low cross-section sea-skimmer threat.
- Fiber optic technology.
- Biomolecular technology.
- Multisensor space surveillance.
- Tactical receive equipment.
- Deep Space Program Science Experiment/CLEMENTINE.

EQUIPMENT/FACILITIES

P-3 AIRCRAFT:
NRL maintains five uniquely configured P-3 aircraft for research use. The aircraft are based at the NRL Flight Support Detachment, NAS Patuxent River, MD.

MASSIVELY PARALLEL COMPUTATION FACILITY:
This facility features a 16K node Thinking Machines CM-200 and a 256-node Thinking Machines CM-5. The CM-5 is in a very large memory, (high performance 32 Gbytes, >40 GFlop) configuration, permitting advanced research in computational fluid dynamics, meteorology, oceanography and other "physics-based" modeling not otherwise feasible. The facility has 100 Gigabytes of secondary storage and 4.5 Terabytes of tertiary storage. Extensive graphics and visualization facilities are also available.

CENTRAL TARGET SIMULATION FACILITY:
The CTS facility is a high performance, hardware-in-the-loop simulator used for real-time test and evaluation of electronic warfare systems and techniques for countering the missile threat to the Navy.

ISOLATION MEASUREMENT CHAMBER FACILITY:
The Isolation Measurement Chamber Facility provides a capability for measuring antenna-to-antenna radiation coupling characteristics from 2.0 to 40.0 GHz. Configuration and size of the facility and special handling equipment allow for accommodation of portions of airframes having antennas mounted in the same position as those of operational aircraft. The facility is also capable for making accurate measurements of the radar cross section of small objects.

ANECHOIC TANK FACILITY:
Provides accurate calibration, test, and evaluation measurements of underwater acoustic devices and related materials under ocean temperature and hydrostatic pressure conditions. The facility consists of two independently operated, water-filled, thermally insulated steel tanks: ATFI, which is 2.5 m in diameter and 7.6 m in length, and ATFII, which is 3.8 m in diameter and 11.1 m in length.

EQUIPMENT/FACILITIES (Cont.)

MASS SPECTROMETRY FACILITY:
Principal research instruments include: Finnigan TSQ-70 triple quadrupole mass spectrometer equipped with particle bombardment, electrospray, thermal desorption, electron ionization and chemical ionization capabilities. Ion trapping experiments are conducted on a superconducting magnet Fourier transform mass spectrometer equipped with an Extrel Odyssey data system. Ions are usually formed by laser desorption (with a variety of lasers). Ions can be trapped and studied by activation or reactions with neutrals. A hybrid instrument consisting of conventional magnetic/electrostatic sectors and quadrupoles (VG/Fisons ZAB 2FQ) for use in the study of ion properties. Two time-of-flight mass spectrometers (using MALDI) for studies of large molecules; one of these instruments is equipped to study ion-surface collisions. Conventional gas chromatograph/ mass spectrometers include a quadrupole based system (Hewlett-Packard 5988) and an ion trap based system (Finnigan ITS-40). An additional ion trap system (Varian Saturn III) is being used in the development of membrane introduction techniques for water analysis.

FIRE RESEARCH PLATFORM (MOBILE, AL):
EX-USS Shadwell (LSD15) has an overall length of 457 ft and a beam of 72 ft. As a test bed, the ship contains one pressure zone to study smoke management, including a collective protection system that has been created on all levels forward of frame 35. Selected ship systems that are important to fire protection and damage control have been reactivated, such as ventilation, electrical power, fluid distribution, fire mains, fire pumps, and internal communications.

GAMBLE II FACILITY:
Produces high-voltage (3 MV), high-current (> 1 MA), short (< 100 ns) pulses of energy of either positive or negative polarity.

NANOELECTRONICS PROCESSING FACILITY:
The NPF maintains a tool base of state-of-the-art processing equipment. There is a strong emphasis on computer-aided design and lithography utilizing an e-beam lithography system with a 10-nanometer spot size. To transfer patterns of these dimensions into a variety of metal, semiconductor or insulator materials, two reactive ion etchers are used. Ultra-violet and deep ultra-violet photolithographic equipment is available. Ultra-clean oxidation and polysilicon deposition furnaces are used to create high purity, low defect films. Low pressure chemical vapor deposition is also available for silicon oxide and nitride films. A number of different metal films can be deposited with high vacuum evaporation and sputtering equipment. A complete bonding and packaging capability exists within the NPF for all types of device mounting.

MOLECULAR BEAM EPITAXY (MBE) OF III-V SEMICONDUCTORS:
Three MBE reactors are dedicated to the growth of III-V semiconductors and are equipped to perform in-situ RHEED and quadrupole mass spectroscopy. Substrate temperatures are measured with infrared transmission spectroscopy. All systems have separate sample preparation and introduction chambers. Two surface science chambers that permit in-vacuo transfer of epitaxial layers are available for growth studies.

EQUIPMENT/FACILITIES (Cont.)

In the first, an angle-resolved electron spectrometer is used to determine the structure and chemical identity of epitaxial layers and buried interfaces. In the second, a scanning tunneling microscope and atomic force microscope are employed to determine surface morphology and growth mode.

LARGE ACOUSTIC TANK:
The Large Acoustic Tank is a core research capability for in-water structural acoustics studies. The steel cylindrical tank is 55 feet in diameter, 50 feet deep, and contains 800,000 gallons of deionized water. The entire tank is vibration and temperature isolated. This unique laboratory is also instrumented with precise measurement systems, which include large workspace in-water robotic scanners capable of generating nearfield acoustic holography radiation and scattering databases.

MARK III OPTICAL INTERFEROMETER:
The Mark III Optical Interferometer is the most advanced Michelson interferometer operating in the world today. It combines light from pairs of telescopes spaced over baselines from 3 to 31 m. The visible light from these telescopes is combined in a central optics laboratory, where interference fringes are detected and tracked. The facility can determine stellar positions with an accuracy as fine as 10 milliarc-seconds, more than 50 times better than normal ground based telescopes (and better than the Hubble Space Telescope).

THERMAL HIGH-VACUUM CHAMBERS:
Three test chambers comprise an environmental testing complex designed to create and maintain high-vacuum and/or thermal conditions. The complex is completely self-contained, but does require utilities inputs and an adequate supply of liquid and gaseous nitrogen. The facility includes a chamber room, machinery room, and a 26,000-gal liquid nitrogen storage facility. The complex may be controlled automatically or manually.

Naval Research Laboratory
Washington, DC 20375-5320
(202) 767-2541

CO: CAPT. Paul G. Gaffney
Dir of Research: Timothy P. Coffey

FY93 FUNDING DATA (MILLIONS $)			
APPROPRIATION	**IN-HOUSE**	**OUT-OF-HOUSE**	**TOTAL**
RDT&E:			
6.1 ILIR	0.000	NA	0.000
6.1 Other	105.939	9.212	115.151
6.2 IED (Navy)	0.169	0.000	0.169
6.2 Other	76.083	79.189	155.272
6.3	94.539	141.809	236.348
Subtotal (S&T)	**276.730**	**230.210**	**506.940**
6.4	15.747	23.621	39.368
6.5	21.670	32.506	54.176
6.6	1.637	4.911	6.548
6.7	4.719	14.156	18.875
Non-DOD	8.286	24.857	33.143
TOTAL RDT&E	**328.789**	**330.261**	**659.050**
Procurement	9.164	82.475	91.639
Operations & Maintenance	18.268	7.829	26.097
Other	23.820	10.190	34.010
TOTAL FUNDING	**380.041**	**430.755**	**810.796**

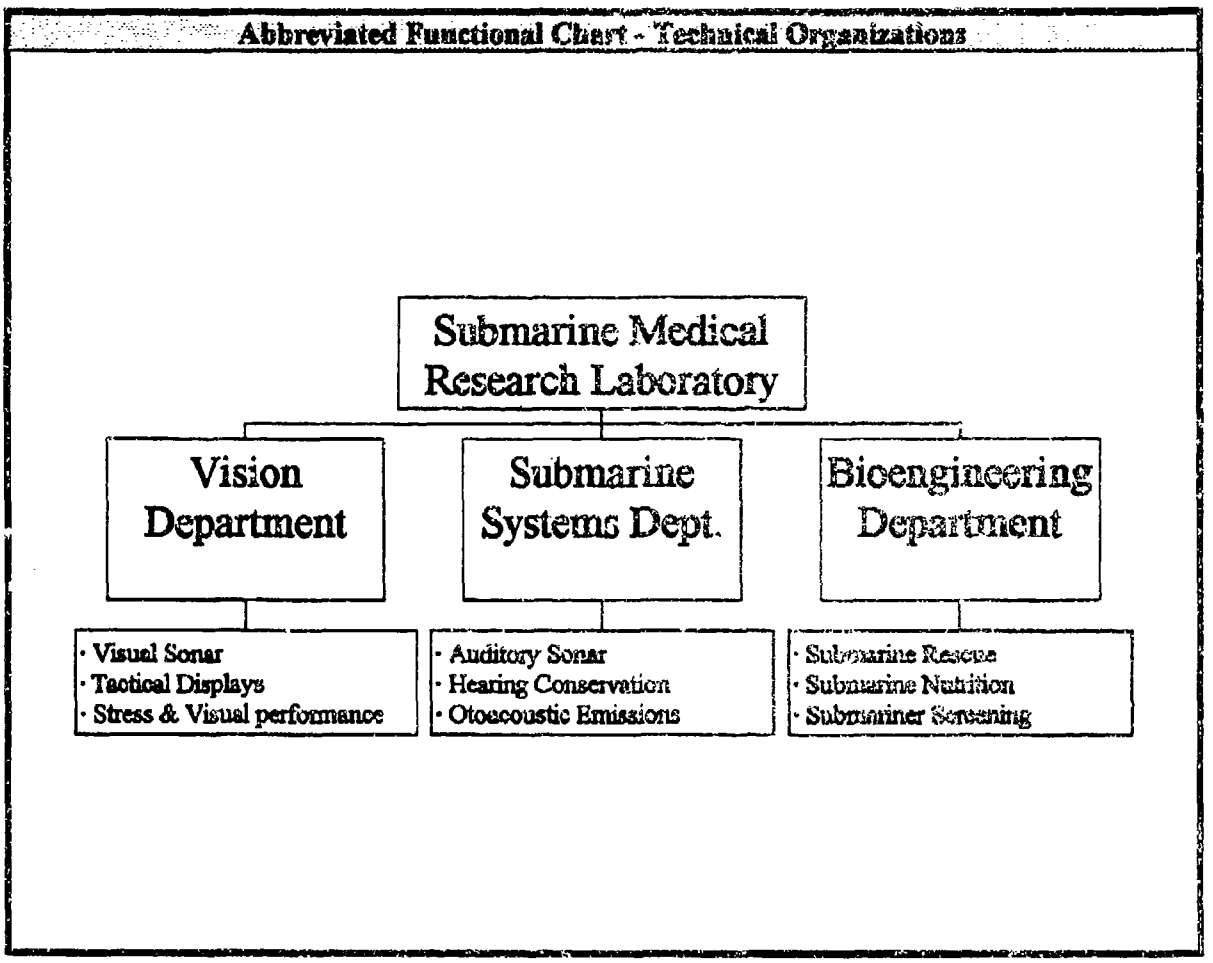
MILITARY CONSTRUCTION (MILLIONS $)	
Military Construction (MILCON)	0.000

PERSONNEL DATA (END OF FISCAL YEAR 1993)				
		SCIENTISTS & ENGINEERS		TECHNICAL SUPPORT
TYPE	**END STRENGTH**	**PHD'S**	**OTHER**	**& OTHER PERSONNEL**
MILITARY	185	8	17	160
CIVILIAN	3,721	922	1,085	1,714
TOTAL	**3,906**	**930**	**1,102**	**1,874**

SPACE AND PROPERTY			
SPACE (THOUSANDS OF SQ FT)		**PROPERTY ACQUISITION COST (MILLIONS $)**	
LAB	3,255.174	**REAL PROPERTY**	212.695
ADMIN	248.056	* NEW CAPITAL EQUIPMENT	0.000
OTHER	390.360	**EQUIPMENT**	339.400
TOTAL	**3,893.590**	* NEW SCIENTIFIC & ENG. EQUIP.	28.419
ACRES	**612**	* Subset of previous category. See Equip./Facilities Narrative.	

NA = Not Applicable

Naval Submarine Medical Research Laboratory



Naval Submarine Medical Research Laboratory
Groton, CT 06349-5900
(203) 449-3263
CO: CAPT. P.K. Weathersby, MSC, U
Executive Offc: Cdr M.D. Curley, MSC, USN

MISSION

Provide timely, high quality Research and Development to the Submarine force to enhance auditory and visual sonar operator performance, submariner health and physical standards, closed environment atmospheric monitoring, submarine escape and rescue, and hearing conservation both in air and under the sea.

CURRENT IMPORTANT PROGRAMS

Medical problems associated with pressurized submarine rescue; reduction of attrition rates for submariners by better screening; improved performance on auditory, digital, and visual sonars; physiological performance effects of altered submarine atmospheres; hearing conservation; nutrition aboard submarines; evoked to acoustic emissions; tactical displays.

Sonar Display Enhancements - including development of headsets, analog and digital signal processing techniques, to maximize the intelligent, efficient use of man's visual and auditory systems.

Submarine Escape and Rescue - developing decision guidelines for survivors based upon physiological, engineering and operational factors, and providing guidance to operational commanders in establishing procedures and equipment for escape and rescue.

Submarine Clinical Issues - reducing the loss of talented personnel by instituting data-based decisions on Submarine Disquals/Waivers for conditions of kidney Stones and asthma.

Hearing Conservation - developing guidelines for diver safe exposure limits to underwater noise from tools and sonars; exploring the use of evoked otoacoustic emissions to detect the early stages of hearing loss.

Tactical Displays - providing ways to enhance operator performance by applying our knowledge of the human sensory systems, specifically using color, symbology, highlighting cues, orientation, and default presentations.

Psychiatric Screening of all enlisted and officer submarine candidates undergoing training at Basic Enlisted Submarine School and Submarine officers Basic Course.

Submarine Atmospheres - develop, maintain data base of submarine atmosphere constituents from varied data sources, answer such health questions as arise from data, and recommend better submarine atmospheric monitoring and control.

EQUIPMENT/FACILITIES

Laboratory facilities for use of up-to-date equipment and instruments to perform basic and applied research. Facilities include two-man rated 300 and 150 PSGI hyperbaric chambers. Complete exercise physiology lab; instrumentation shop; technical library; graphic arts and photography shop. Anechoic chambers; psychoacoustical lab. operational sonar simulation labs; mass spectrometers, gas chromatograph.

- Multi-man, dual lock hyperb aric chamber that has been certified as an audiometric test facility. This quiet chamber is essential to electro-acoustic and psycho-acoustic research on the development of hearing conservation standards for diving operations. This test chamber also has the capacity to be altered to perform hypobaric operations.

- A large reverberation room that is used for submarine habitability studies. Up to ten men may be housed within the room while being exposed to noise conditions. This facility is currently dedicated to the establishment of acoustic habitability standards for submarines and surface vessels using powerful low frequency sonar.

- A large anechoic chamber that is used for studies of the ear in free-field conditions. This facility is used to make control measurements of the characteristics of the ear in order to develop models of the ear for spatial localization and synthesized localized three dimensional sounds (virtual reality). This facility is also required to explore the feasibility of free-field listening techniques for sonar operator displays.

- Experimental vision/perception Laboratory which includes photometric/spectroradiometric/optical bench equipment. No other DOD laboratory has developed a research thrust aimed at analyzing the visual display characteristics of sonar reception most compatible with the human operator.

- A specialized computer automated psychoacoustics laboratory for experiments on sonar operator performance. This facility may be used to test four men at a time using advanced sonar target presentation techniques.

- A sonar simulation facility also used for advanced studies of active and passive sonar operator performance using "real-life" or simulated sonar contacts.

- NSMRL has additional specialized laboratory facilities, i.e., biochemistry, gas chromatography/mass spectrometry, pulmonary physiology. These facilities, while not unique within DON or DOD, are essential in that they are dedicated to the specialized operational problems of submarine environments and crew health and safety considerations.

Naval Submarine Medical Research Laboratory
Groton, CT 06349-5900
(203) 449-3263

CO: CAPT. P.K. Weathersby, MSC
Executive Offc: Cdr M.D. Curley, MSC

FY93 FUNDING DATA (MILLIONS $)			
APPROPRIATION	**IN-HOUSE**	**OUT-OF-HOUSE**	**TOTAL**
RDT&E:			
6.1 ILIR	0.000	NA	0.000
6.1 Other	0.116	0.000	0.116
6.2 IED (Navy)	0.124	0.000	0.124
6.2 Other	0.000	0.145	0.145
6.3	0.654	0.161	0.815
Subtotal (S&T)	**0.894**	**0.306**	**1.200**
6.4	1.080	0.063	1.143
6.5	0.016	0.000	0.016
6.6	1.358	0.392	1.750
6.7	0.000	0.000	0.000
Non-DOD	0.102	0.000	0.102
TOTAL RDT&E	**3.450**	**0.761**	**4.211**
Procurement	0.000	0.000	0.000
Operations & Maintenance	0.412	0.475	0.887
Other	0.297	0.053	0.350
TOTAL FUNDING	**4.159**	**1.289**	**5.448**

MILITARY CONSTRUCTION (MILLIONS $)	
Military Construction (MILCON)	0.000

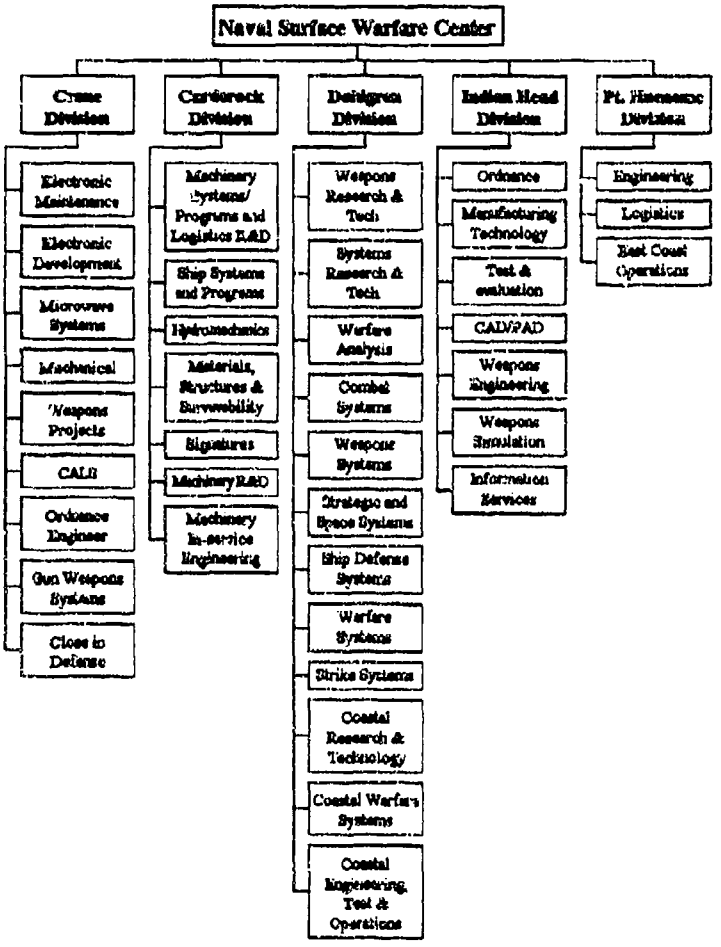
PERSONNEL DATA (END OF FISCAL YEAR 1993)				
		SCIENTISTS & ENGINEERS		**TECHNICAL SUPPORT**
TYPE	**END STRENGTH**	**PHD'S**	**OTHER**	**& OTHER PERSONNEL**
MILITARY	28	9	0	19
CIVILIAN	47	9	15	23
TOTAL	**75**	**18**	**15**	**42**

SPACE AND PROPERTY			
SPACE (THOUSANDS OF SQ FT)		**PROPERTY ACQUISITION COST (MILLIONS $)**	
LAB	46.183	**REAL PROPERTY**	0.000
ADMIN	10.537	* NEW CAPITAL EQUIPMENT	0.000
OTHER	4.962	**EQUIPMENT**	4.147
TOTAL	**61.682**	* NEW SCIENTIFIC & ENG. EQUIP.	0.238
ACRES	**0**	* Subset of previous category. See Equip./Facilities Narrative.	

NA = Not Applicable

Naval Surface Warfare Center

Abbreviated Functional Chart - Technical Organizations



Naval Surface Warfare Center
Arlington, VA 22242-5160
(703) 602-0632

CO: RADM E. S. McGinley, II
Technical Dir.: Dr. Ira Blatstein

MISSION

Operate the Navy's full spectrum RDT&E, engineering and fleet support center for ship hull, mechanical and electrical systems, surface ship combat systems, coastal warfare systems, and other offensive and defensive systems associated with surface warfare.

CURRENT IMPORTANT PROGRAMS

Propulsion machinery systems and components test, evaluation and in-service engineering. Hull, mechanical and electrical (HM&E) auxiliary machinery systems and components test and evaluation and in-service engineering. HM&E electrical machinery systems and components test and evaluation and in-service engineering. Hull and deck machinery systems components test and evaluation and in-service engineering. Surface warfare modeling and analysis. Ship vulnerability and survivability. Surface and undersea vehicle hull machinery, propulsors and equipment. Platform systems integration AEGIS combat system. Ship self defense - including the self defense test ship. Cruise weapon systems - Tomahawk and Harpoon. Gun weapon systems. Standard missile. Continuous processing of composite propellants (an international cooperative R&D agreement to develop processing). Ordnance environmental R&D of energetics processing technologies. Gun propulsion R&D for the Navy's Electrothermal Chemical (ET-C) gun and Range Enhancement Near-Term (RENT) programs. Tri-service RDT&E, engineering, manufacturing, and fleet support for cartridges, cartridge and propellant actuated devices, and aircrew escape propulsion systems. RDT&E for Navy and Marine Corps Mine Countermeasures (MCM) including: distributed explosives technology, demonstrative/advanced countermeasure system, surf zone MCM, and shallow water MCM. Gun weapon system replacement program. MK 15 Phalanx close-in weapon system overhaul project. MK 45 gun engineering project. 76mm MK 75 program and life cycle support. SLQ-32 electronic countermeasures systems. Miniature/microminiature electronic repair. Precise integrated navigation systems (PINS) ISEA/ILS/DOP. AN/SYQ-13 navigation systems. Trident. Submarine Launched Ballistic Missile (SLBM) targeting. Unmanned Aerial Vehicle (UAV). Ship-self defense systems. Vertical Launch System (VLS). Gun ammunition. Mines. Warheads. ASW systems. EW systems. AEGIS radar, search and track. EM effects. Magnetic silencing. Chemical and biological defense. Ship/airborne mine CM combat system integration. Diving and life support. Special warfare. Amphibious warfare.

Naval Surface Warfare Center

EQUIPMENT/FACILITIES

Dahlgren Site:
Wind tunnel complex with capability to MACH 18. 25 mile Potomac River range for testing guns, ammunition, and integrated shipboard sensors. Disk pack facility for SLBM fire control systems and targeting. SLBM retargeting facility. Product assurance and simulation facilities for surface ship combat systems. AEGIS computer facility. Magnetic silencing facility. Ocean and harbor ranges. 1.75 million gallon hydroballistic tank. Mine tank and sensor facilities for testing mines and underwater systems, explosives and warheads. Materials research facilities. Chemical/biological defense laboratory. Nuclear effects facility. General purpose laboratories. Compartmented laboratory.

Dahlgren Coastal Systems Station:
Expeditionary Warfare modeling and simulation. Mines and mine countermeasures equipment and systems. Specialized mine warfare transducers and active/passive sonar modeling for MCM. Special Warfare mission equipment. Ocean simulation to 2,250' depth. Diving and Life Support systems development and test. Gas Analysis. Fleet diving support complex. Gulf test range. Magnetic target detection and classification range. Mine exploitation complex. Pier space. Boats, heliport complex with equipment. Gulf test range.

Crane:
Overwater radio frequency (RF) test range. Surveillance radar overhaul facility. Special equipment and computers for microelectronics technology. Electron linear accelerator. Materials analysis instrumentation. State-of-the-art CAD/CAE modeling and simulation tools and automated test equipment which accommodate any range of circuit card technology. Thick film circuit card manufacturing laboratory.

Carderock Philadelphia Site:
Full-scale IPMP (SSN-21) steam propulsion land based test site. Full-scale LSD-41 diesel propulsion land based test site. Full-scale DDG-51 gas turbine land based test site. Full-scale electric drive/machinery module land based test site. Full-scale gear meteorology and calibration lab. Full-scale air compressor test site. Full-scale submarine life support test site. Full-scale submarine generator test site. Full-scale submarine ship service generator test site. Fire, pollution, marine equipment lab. Full-scale conveyor and elevator test complex. Full-scale submarine mast bending test facility. Full-scale submarine periscope/antenna test sites. Full scale submarine buoy communication test site. Chemistry and metallurgy lab. Full-scale gravimetric flow calibration lab. Test operations. Analysis and control center. Full-scale steam propulsion testing complex.

Carderock Division - Patuxent River MD: Special trials unit; surface effects test ship.

Carderock Division - Memphis TN: Large Cavitation Channel (LCC).

Carderock Bethesda Site:
Simulation, planning and analysis research Center. Explosives test pond. Data and image processing systems. David Taylor model basin complex. Maneuvering and seakeeping basin. Rotating arm basin. Radio Controlled model facility. Circulating water channel. 24-inch and 36-inch cavitation channels. Dynamic control system simulator. 140-foot towing basin. Hydrodynamic/hydroacoustic technical center. Deep submergence pressure tanks. Structural evaluation lab. Wind tunnels.

EQUIPMENT/FACILITIES

Carderock Annapolis Site:
Fire research and air contamination facility. Machinery systems silencing lab. Acoustics materials lab. Magnetic fields lab. Low observable materials lab. Advanced electrical machining. Technology and development facility. Submarine fluid dynamics facility. Electric power tech lab. Metallic materials and processing facility. Marine composites lab. Marine coatings and corrosion control facility. Marine tribology lab. Deep ocean pressure simulation facility. Shipboard environmental protection facility.

Carderock Division - Portsmouth VA site: Shock trials instrumentation.

Carderock Division - Bayview ID site: Acoustic research detachment.

Carderock Division - Santa Cruz CA site: Acoustic range facility, radar imaging facility.

Carderock Division - Bremerton WA site: Carr inlet test facility.

Carderock Division - Ketchikan AK site: Southeast Alaska facility.

Carderock Division - Panama City FL: Lauren & Athena research vessels/ship systems.

Carderock Division - Cape Canaveral FL: Research Vessel Hayes.

Carderock Division - Norfolk VA: Combatant craft engineering detachment.

Indian Head:
Continuous processing facility. Composite case/component overbraiding facility. Synthesis and scale-up facilities for all types of energetic materials. Test facilities. Surface warfare engineering facility. Electrostatic Discharge (ESD) facility.

Port Hueneme Division, Port Hueneme, CA: Surface Warfare Engineering Facility.

Port Hueneme Division, San Diego, CA: Integrated Combat Systems Test Facility (ICSTF).

Port Hueneme Division, Dam Neck, VA: Software program generation and life-cycle maintenance laboratories.

Naval Surface Warfare Center
Arlington, VA 22242-5160
(703) 602-0632

CO: RADM E. S. McGinley, II
Technical Dir.: Dr. Ira Blatstein

FY93 FUNDING DATA (MILLIONS $)			
APPROPRIATION	IN-HOUSE	OUT-OF-HOUSE	TOTAL
RDT&E:			
6.1 ILIR	6.045	NA	6.045
6.1 Other	9.366	3.175	12.541
6.2 IED (Navy)	2.215	0.759	2.974
6.2 Other	110.714	98.899	209.613
6.3	45.206	36.130	81.336
Subtotal (S&T)	**173.546**	**138.963**	**312.509**
6.4	298.020	179.805	477.825
6.5	93.541	51.070	144.611
6.6	24.321	30.567	54.888
6.7	69.331	35.007	104.338
Non-DOD	0.000	0.000	0.000
TOTAL RDT&E	**658.759**	**435.412**	**1,094.171**
Procurement	804.712	341.743	1,146.455
Operations & Maintenance	471.761	227.900	699.661
Other	274.171	119.914	394.085
TOTAL FUNDING	**2,209.403**	**1,124.969**	**3,334.372**

MILITARY CONSTRUCTION (MILLIONS $)	
Military Construction (MILCON)	36.050

PERSONNEL DATA (END OF FISCAL YEAR 1993)				
		SCIENTISTS & ENGINEERS		TECHNICAL SUPPORT
TYPE	END STRENGTH	PHD'S	OTHER	& OTHER PERSONNEL
MILITARY	626	0	133	493
CIVILIAN	21,261	460	8,479	12,322
TOTAL	**21,887**	**460**	**8,612**	**12,815**

SPACE AND PROPERTY			
SPACE (THOUSANDS OF SQ FT)		PROPERTY ACQUISITION COST (MILLIONS $)	
LAB	7,192.034	**REAL PROPERTY**	1,158.803
ADMIN	1,654.553	* NEW CAPITAL EQUIPMENT	36.331
OTHER	17,217.182	**EQUIPMENT**	1,091.621
TOTAL	**26,063.769**	* NEW SCIENTIFIC & ENG. EQUIP.	45.621
ACRES	**72,664**	* Subset of previous category. See Equip./Facilities Narrative.	

NA = Not Applicable

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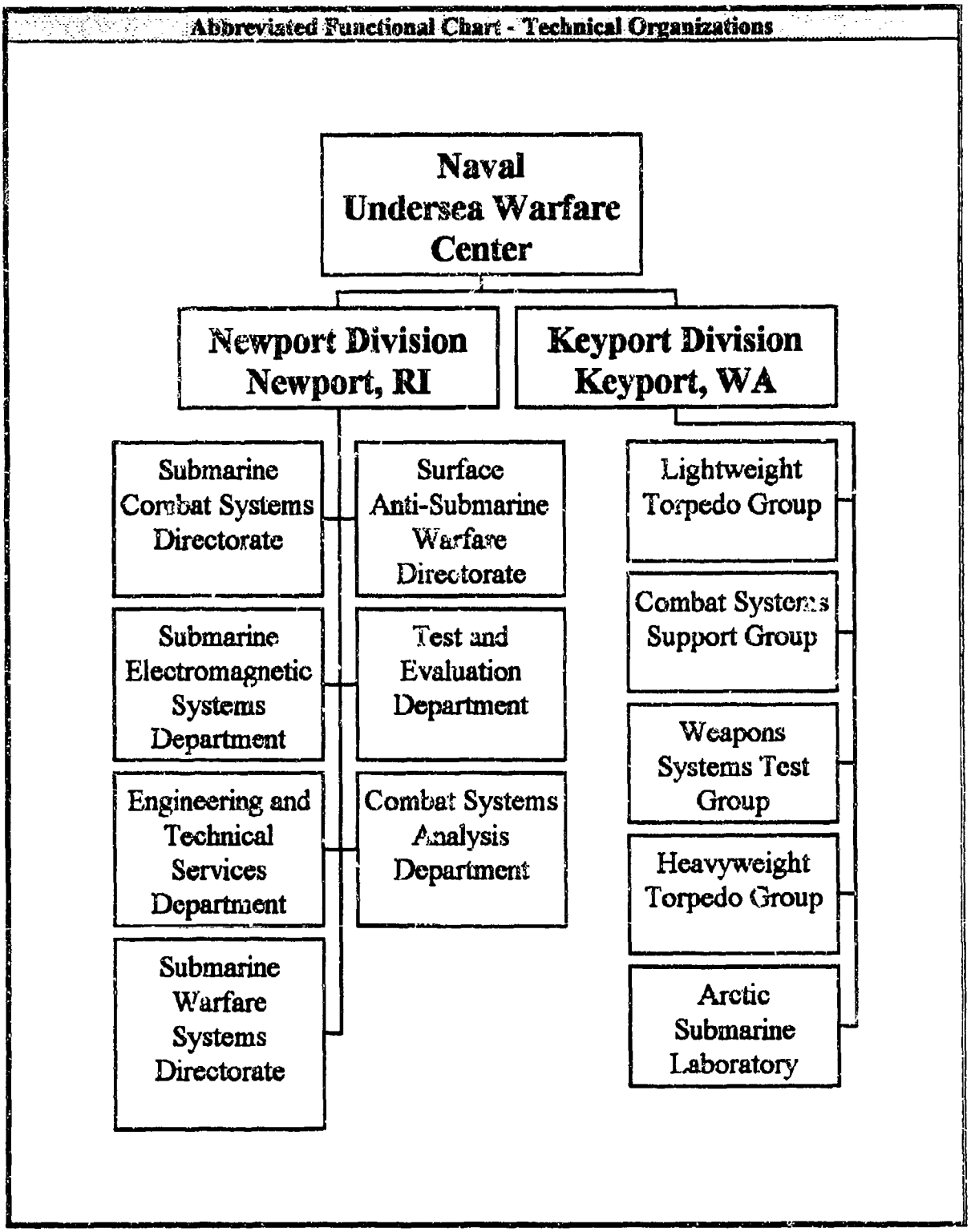
Naval Undersea Warfare Center

Abbreviated Functional Chart - Technical Organizations



Naval Undersea Warfare Center
Newport, RI 02841-1708
(401) 841-6769

CO: RADM Scott L. Sears
Technical Dir.: Earle L. Messere

MISSION

Operate the Navy's full-spectrum RDT&E, engineering, and fleet support center for submarines, autonomous underwater systems, and offensive and defensive weapon systems associated with undersea warfare.

CURRENT IMPORTANT PROGRAMS

SUBMARINE COMBAT SYSTEMS: Combat Control System Improvement Program (CCS MK1/2), AN/BSY-2/BQG-5 Submarine Combat System, AN/BSY-1 Combat Control, TRIDENT Defensive Weapons Systems, TRIDENT Defensive Weapons System, TRIDENT Mission Support, New Attack Submarine Program, Submarine Combat Systems, SSN-21 Combat System Development.

SUBMARINE SENSORS: AN/BQQ-5 Submarine Sonar, Periscopes , Submarine Electronic Warfare Systems, Submarine Antennas, Electro-Optic/Fiber Optic Sensors, Sonar Advanced Development, Submarine Ancillary Sonar Systems.

SUBMARINE WEAPONS & LAUNCHERS: Torpedo MK 48 ADCAP, TOMAHAWK Cruise Missile Submarine Launched, Mobile ASW Target MK 30, Submarine Weapon Storage and Launch, EMATT Target, Torpedo MK 50, Torpedo MK 46, Countermeasures, Unique Mines.

SUBMARINE COMMUNICATIONS: Navy EHF SATCOM Program, EM Communications Systems, Shipboard Interior Communications Systems.

COMBAT SYSTEMS: Surface Combat Systems, CV-ASW Module, Combat Systems Common, Missiles, ASW Testing.

SURFACE SHIP SONAR: AN/SLQ-25A Program, AN/SQQ-89 Basic, Surface Ship ASW Advanced Development (SSASWAD), Surface Ship Acoustic Analysis Center (SSAAC), Surface Ship Torpedo Defense (SSTD).

T&E/RANGES: Atlantic Undersea Test & Evaluation (AUTEC), Southern California ASW Training Range (SOAR), Barstur Upgrade, Australian Underwater Tracking Range, Deep Water R&D Range, Portable Tracking System, Range Technology Program, Ranges, Mobile Sea Range.

NAVIGATION: Dead Reckoning Navigation, Submarine Inertial Navigation, Surface Inertial Navigation.

UNDERSEA WARFARE SCIENCE AND TECHNOLOGY: Undersea Vehicle Guidance and Control; Undersea Vehicle Hydrodynamics, Quieting and Propulsion; Acoustic and Torpedo Countermeasures, Unmanned Undersea Vehicle; Weapon and Small Device Launcher; Submarine Combat Tactical Control.

Naval Undersea Warfare Center

CURRENT IMPORTANT PROGRAMS (Cont.)

UNDERSEA WARFARE MODELING AND ANALYSIS: S&T Requirements Analysis, New Program Requirements Development, Cost and Operational Effectiveness Analysis (COEA) for Acquisition Programs, Early Operational Assessment, Fleet Employment Guidelines and Tactical Decision Aids, Intelligence Data Assessment, Submarine and Undersea Warfare Synthetic Environments.

OTHER: Arctic Submarine Lab, Mines, Surveillance, Other USW.

EQUIPMENT/FACILITIES

NUWC Division, Newport, RI:
Acoustic Test Facility; Advanced and Scientific and Engineering Computational Center; Advanced Submarine Launcher Facility; Advanced Underwater Vehicle Quiet Propulsion Research and Development Facility; Advanced Underwater Vehicles Laboratory; Combat Systems Technology Laboratory; Combat Control Systems Laboratory; Integrated Warfare Analysis Laboratory; Missile Simulation, Development, and Test Facility; Propulsion Test Facility; SSN 688 Vertical Launch System Missile Tube Test Facility; Superconducting Electromagnetic Thruster and Seawater Magnetohydrodynamics Test Facility; Transient Flow Loop Facility; Weapons Analysis Facility; Littoral Undersea Test Facility Complex; Test and Evaluation Analysis Laboratory.

NUWC Detachment New London, CT:
Acoustic Display Research Facility; Hybrid Microcircuit Design and Fabrication Facility; Integrated Transducer Design Facility; Land-Based Integrated Test Site; Man-Machine Sonar Test Bed; Periscope Research and Development Test Facility; Quiet Water Tunnel Experimental Facility; Submarine Antenna Over-Water Arch Facility; Towed Array Complex.

NUWC Detachment Dodge Pond, CT: Dodge Pond Acoustic Measurement Facility.

NUWC Detachment Andros Island, Bahamas:
Atlantic Undersea Test and Evaluation Center (AUTEC); R/V NUWC Ranger.

NUWC Detachment Seneca Lake, NY:
Seneca Lake Acoustic Measurement Facility; Submarine Antenna Test Range (Fisher's Island, NY); Submersible Sensor Test Platform (Fisher's Island, NY).

EQUIPMENT/FACILITIES (Cont.)

NUWC Division Keyport, WA:
Undersea Weapons Repair and Maintenance Depot, Undersea Weapon Evaluation Facility (UWEF), Torpedo Explosive Operating Complex, Torpedo Storage Magazines, Hardware Environmental Test Facility, Target Mk 30 and Range Tracking Pinger IMA's, Shipboard Electronic Systems Evaluation Facilities, Combat Systems Facilities, Transducer Automated Test Facility, Weapon Acceptance and Operational Test Facility, Underwater Noise Analysis Facility, Light Industrial Support Facility, Industrial Waste Treatment Facility, Hazardous Waste Treatment, Storage, and Disposal Facility, Otto Fuel II Reclamation Plant, Lithium Decontamination Facility, Recycling Facility, Hyperbaric Chamber, Automated Material Handling Facility, Naval Undersea Museum, Navy Mine Depot, Range Craft, NUWC Northwest Ranges, Range Display & Information Center

NUWC Detachment Hawaii:
Hawaiian Island Underwater Range, Postoperational Analysis Critique and Exercise Review Facility, CV-ASW Module Laboratory, Target and Range Tracking Pinger IMA's.

NUWC Detachment San Diego, CA:
Arctic Submarine Laboratory, San Clemente Island Underwater Range, Target and Range Tracking Pinger IMA's.

Naval Undersea Warfare Center
Newport, RI 02841-1708
(401) 841-6769

CO: RADM Scott L. Sears
Technical Dir.: Earle L. Messere

FY93 FUNDING DATA (MILLIONS $)			
APPROPRIATION	IN-HOUSE	OUT-OF-HOUSE	TOTAL
RDT&E:			
6.1 ILIR	2.621	NA	2.621
6.1 Other	0.537	0.404	0.941
6.2 IED (Navy)	0.877	0.001	0.878
6.2 Other	30.276	34.896	65.172
6.3	11.177	12.302	23.479
Subtotal (S&T)	**45.488**	**47.603**	**93.091**
6.4	62.892	75.788	138.680
6.5	75.781	55.753	131.534
6.6	11.875	35.281	47.156
6.7	13.652	14.417	28.069
Non-DOD	0.000	0.090	0.000
TOTAL RDT&E	**209.688**	**228.842**	**438.530**
Procurement	254.896	264.122	519.018
Operations & Maintenance	173.790	94.153	267.943
Other	53.382	38.633	92.015
TOTAL FUNDING	**691.756**	**625.750**	**1,317.506**

MILITARY CONSTRUCTION (MILLIONS $)	
Military Construction (MILCON)	14.070

PERSONNEL DATA (END OF FISCAL YEAR 1993)				
		SCIENTISTS & ENGINEERS		TECHNICAL SUPPORT
TYPE	END STRENGTH	PHD'S	OTHER	& OTHER PERSONNEL
MILITARY	367	0	25	342
CIVILIAN	7,112	143	3,133	3,836
TOTAL	7,479	143	3,158	4,178

SPACE AND PROPERTY			
SPACE (THOUSANDS OF SQ FT)		PROPERTY ACQUISITION COST (MILLIONS $)	
LAB	3,407.705	REAL PROPERTY	241.459
ADMIN	243.300	* NEW CAPITAL EQUIPMENT	12.404
OTHER	2,476.368	EQUIPMENT	994.552
TOTAL	6,127.373	* NEW SCIENTIFIC & ENG. EQUIP.	60 508
ACRES	3,231	* Subset of previous category. See Equip./Facilities Narrative.	

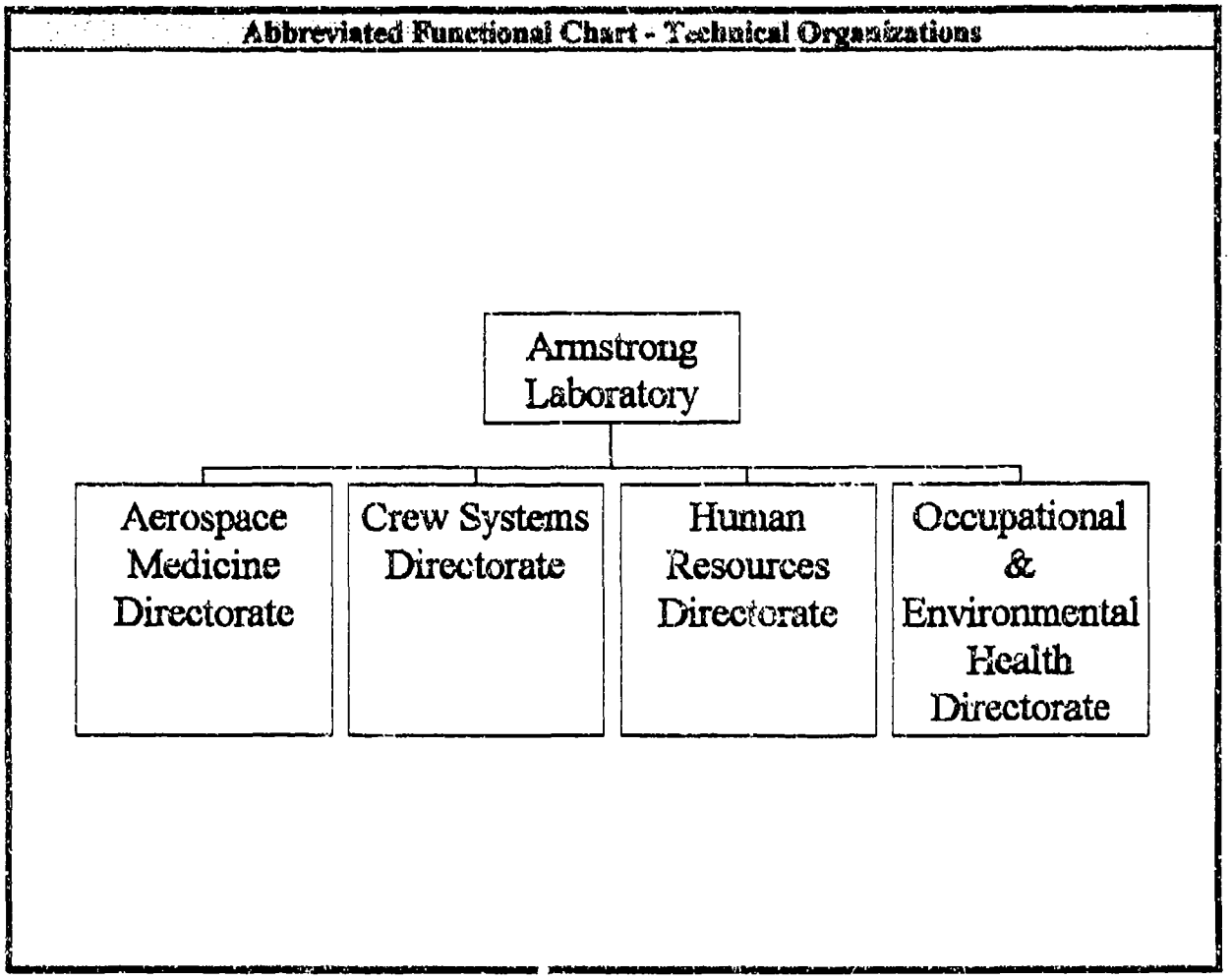
NA = Not Applicable

DEPARTMENT OF THE AIR FORCE

DEPARTMENT OF THE AIR FORCE

The Air Force's nine (9) In-House RDT&E Activities are:

Armstrong Laboratory



Armstrong Laboratory
San Antonio, TX 78235-5118
(210) 536-3966

Commander: Dr. Billy Welch
Chief Scientist: Dr. George C. Mohr

MISSION

Advance and apply technology to provide the Air Force with superior capabilities in the areas of human resources, crew systems, aerospace medicine, and occupational/environmental health through integration execution of research, development, and operational support. Provide continuous product and process improvement to enhance: crew protection and performance; training and logistics; and force management, health and safety.

CURRENT IMPORTANT PROGRAMS

The resources of the Armstrong Laboratory are organized into five integrated "thrusts" which bridge specific research programs and projects. Technical thrust areas are: crew systems integration; force readiness-human resources; force readiness-aerospace medicine; crew protection; and environmental protection. The Armstrong Laboratory is also host to "Tri-Service Research Centers" in toxicology and directed energy, created in accordance with the Project Reliance initiative for DoD laboratory consolidation.

EQUIPMENT/FACILITIES

The Armstrong Laboratory conducts RDT&E at Wright-Patterson AFB, OH, Brooks AFB, TX, and Williams AFB, AZ, but most of the equipment and facilities are located at Wright-Patterson and Brooks Air Force bases. Equipment and facilities include: two human centrifuges for acceleration and spatial disorientation research; a cardiac catheterization suite for cardiology research and aeromedical evaluations; anechoic chambers for study of sound and noise; "virtual worlds" for systems and training research; inhalation toxicology chambers; a directed energy facility for research of bioeffects of lasers and RF radiation; a facility for controlled study of group dynamics and teamwork in simulated air operations; a TEMPEST secure facility with simulators for EW research and training; and a facility for using recruits as test subjects in RDT&E of computer automated training and force management tools.

Armstrong Laboratory
San Antonio, TX 78235-5118
(210) 536-3966

Commander: Dr. Billy Welch
Chief Scientist: Dr. George C. Mohr

FY93 FUNDING DATA (MILLIONS $)			
APPROPRIATION	IN-HOUSE	OUT-OF-HOUSE	TOTAL
RDT&E:			
6.1 ILIR	0.500	NA	0.500
6.1 Other	2.400	3.200	5.600
6.2 IED (Navy)	NA	NA	NA
6.2 Other	24.000	59.200	83.200
6.3	0.700	52.100	52.800
Subtotal (S&T)	27.600	114.500	142.100
6.4	0.000	15.900	15.900
6.5	0.000	12.200	12.200
6.6	0.000	0.000	0.000
6.7	0.000	0.000	0.000
Non-DOD	0.000	3.900	3.900
TOTAL RDT&E	27.600	146.500	174.100
Procurement	0.000	0.000	0.000
Operations & Maintenance	0.000	0.000	0.000
Other	0.200	23.800	24.000
TOTAL FUNDING	27.800	170.300	198.100

MILITARY CONSTRUCTION (MILLIONS $)	
Military Construction (MILCON)	0.000

PERSONNEL DATA (END OF FISCAL YEAR 1993)				
		SCIENTISTS & ENGINEERS		TECHNICAL SUPPORT
TYPE	END STRENGTH	PHD'S	OTHER	& OTHER PERSONNEL
MILITARY	528	71	162	295
CIVILIAN	539	124	169	246
TOTAL	1,067	195	331	541

SPACE AND PROPERTY			
SPACE (THOUSANDS OF SQ FT)		PROPERTY ACQUISITION COST (MILLIONS $)	
LAB	718.000	REAL PROPERTY	59.000
ADMIN	32.000	* NEW CAPITAL EQUIPMENT	3.000
OTHER	149.000	EQUIPMENT	61.533
TOTAL	899.000	* NEW SCIENTIFIC & ENG. EQUIP.	3.113
ACRES	94	* Subset of previous category. See Equip./Facilities Narrative.	

NA = Not Applicable

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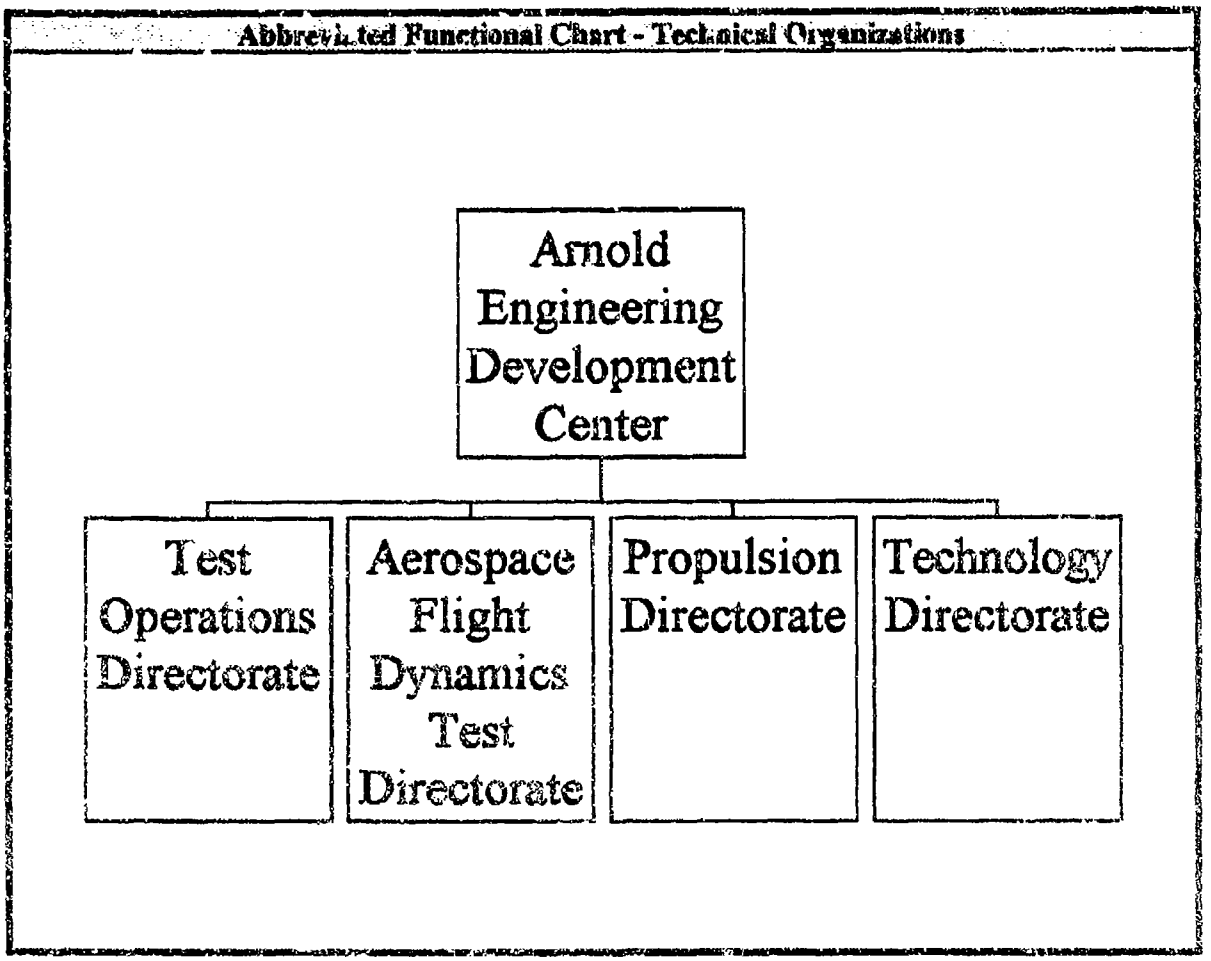
Arnold Engineering Development Center



Arnold Engineering Development Center
Arnold AFB, TN 37389-5000
(615) 454-3000

Commander: Colonel Lawrence P. Graviss
Chief Scientist: Dr. Donald C. Daniel

MISSION

Test aircraft, missile, and space systems and subsystems at the flight conditions they will experience during a mission. Conduct a research and technology program to develop advanced testing techniques and instrumentation, and to support the development of new test facilities. Support DoD, other Government agencies, private sector companies, and foreign military sales.

CURRENT IMPORTANT PROGRAMS

The most significant programs supported by AEDC in FY 93 are:

- F-22 fighter and F-119 engine
- F/A-18 fighter
- Theater Missile Defense
- F-15E fighter
- Seek Eagle
- B-1 Bomber
- Classified Projects

EQUIPMENT/FACILITIES

Included are wind tunnels with sections to 16 ft. and speeds from subsonic to Mach 20; turbine engine test cells which provide simulation to Mach 3; rocket test cells, the largest rated at .5 million lbs. thrust at altitude; dust and snow erosion facilities; a bird impact facility; and two captive trajectory systems. These facilities have supported development and qualification of most major aeronautical, missile, and space systems since 1954. This testing complements expensive and often hazardous flight testing, and assures that system deficiencies are found early, saving time and resources in the overall development, acquisition, and deployment process.

Arnold Engineering Development Center
Arnold AFB, TN 37389-5000
(615) 454-3000

Commander: Colonel Lawrence P. Graviss
Chief Scientist: Dr. Donald C. Daniel

FY93 FUNDING DATA (MILLIONS $)			
APPROPRIATION	IN-HOUSE	OUT-OF-HOUSE	TOTAL
RDT&E:			
6.1 ILIR	0.000	NA	0.000
6.1 Other	0.029	0.083	0.112
6.2 IED (Navy)	NA	NA	NA
6.2 Other	0.205	0.584	0.789
6.3	0.490	1.396	1.886
Subtotal (S&T)	0.724	2.063	2.787
6.4	0.000	0.000	0.000
6.5	9.196	34.330	43.526
6.6	170.060	5.114	175.174
6.7	0.000	0.000	0.000
Non-DOD	1.615	4.596	6.211
TOTAL RDT&E	**181.595**	**46.103**	**227.698**
Procurement	0.634	1.826	2.460
Operations & Maintenance	2.653	7.551	10.204
Other	20.361	33.320	53.681
TOTAL FUNDING	**205.243**	**88.800**	**294.043**

MILITARY CONSTRUCTION (MILLIONS $)	
Military Construction (MILCON)	0.584

PERSONNEL DATA (END OF FISCAL YEAR 1993)				
		SCIENTISTS & ENGINEERS		TECHNICAL SUPPORT
TYPE	END STRENGTH	PHD'S	OTHER	& OTHER PERSONNEL
MILITARY	134	0	44	90
CIVILIAN	204	4	62	138
TOTAL	338	4	106	228

SPACE AND PROPERTY			
SPACE (THOUSANDS OF SQ FT)		PROPERTY ACQUISITION COST (MILLIONS $)	
LAB	1,614.697	REAL PROPERTY	1,269.562
ADMIN	370.161	* NEW CAPITAL EQUIPMENT	127.888
OTHER	684.564	EQUIPMENT	225.808
TOTAL	2,669.422	* NEW SCIENTIFIC & ENG. EQUIP.	4.505
ACRES	39,081	* Subset of previous category. See Equip./Facilities Narrative.	

NA = Not Applicable

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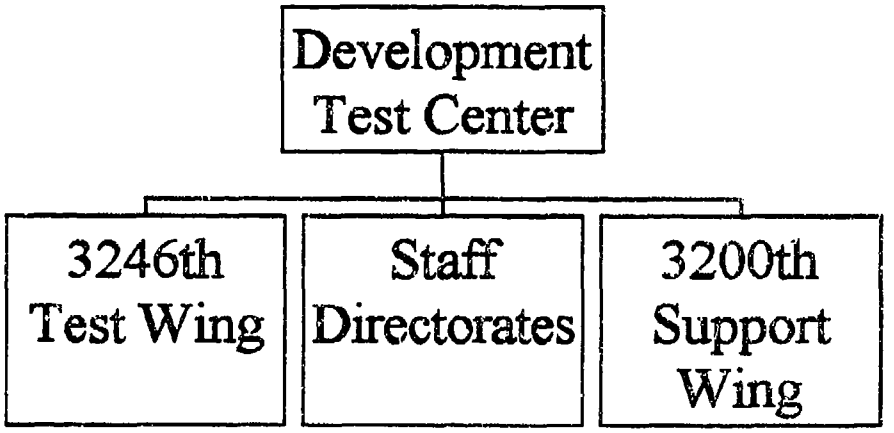
Development Test Center

Abbreviated Functional Chart - Technical Organizations



Development Test Center
Eglin AFB, FL 32542-5498
(904) 882-3931

Commander: BG Stewart E. Cranston
Executive Dir.: Dr. J. Daniel Stewart

MISSION

Through integrated management of research, development, test, acquisition, and support, we advance and use technology to acquire and sustain superior systems in partnership with our customers and suppliers. We perform continuous product and process improvement throughout the life cycle. As an integral part of the Air Force war fighting team, we contribute to affordable combat superiority, readiness, and sustainability.

CURRENT IMPORTANT PROGRAMS

The following are some of the more important programs on which AFDTC is working:

AMRAAM*
Hellfire
Chicken Little**
Joint Stars
Seek Eagle
F-15E TEWS
Sensor Fuse Weapons
JTIDS
JDAM*
JSOW*
AIM - 9X
ASRAAM
Various Allied Weapons

* Navy & Air Force Joint Programs
** Army & Air Force Joint Program

EQUIPMENT/FACILITIES

Equipment and facilities include: climatic testing facility; simulation facilities; gun test facility; security systems test facility; damage potential sled track; time-space-position instrumentation facilities; telemetry systems facilities; data handling facilities; marine operations facilities; photographic laboratory; weather characterization facilities; land test ranges; Gulf water test areas; laser ranging/tracking facilities; frequency control and analysis facilities; electro-optical systems facilities (ground and airborne); and aircraft maintenance (test associated) facilities.

Development Test Center
Eglin AFB, FL 32542-5498
(904) 882-3931

Commander: BG Stewart E. Cranston
Executive Dir.: Dr. J. Daniel Stewart

FY93 FUNDING DATA (MILLIONS $)			
APPROPRIATION	IN-HOUSE	OUT-OF-HOUSE	TOTAL
RDT&E:			
6.1 ILIR	0.000	NA	0.000
6.1 Other	0.000	0.000	0.000
6.2 IED (Navy)	NA	NA	NA
6.2 Other	0.000	0.000	0.000
6.3	0.000	0.000	0.000
Subtotal (S&T)	**0.000**	**0.000**	**0.000**
6.4	0.000	0.000	0.000
6.5	24.381	33.892	58.273
6.6	153.505	45.490	198.995
6.7	0.000	3.504	3.504
Non-DOD	0.000	0.000	0.000
TOTAL RDT&E	**177.886**	**82.886**	**260.772**
Procurement	0.000	0.000	0.000
Operations & Maintenance	13.977	0.000	13.977
Other	81.600	12.150	93.750
TOTAL FUNDING	**273.463**	**95.036**	**368.499**

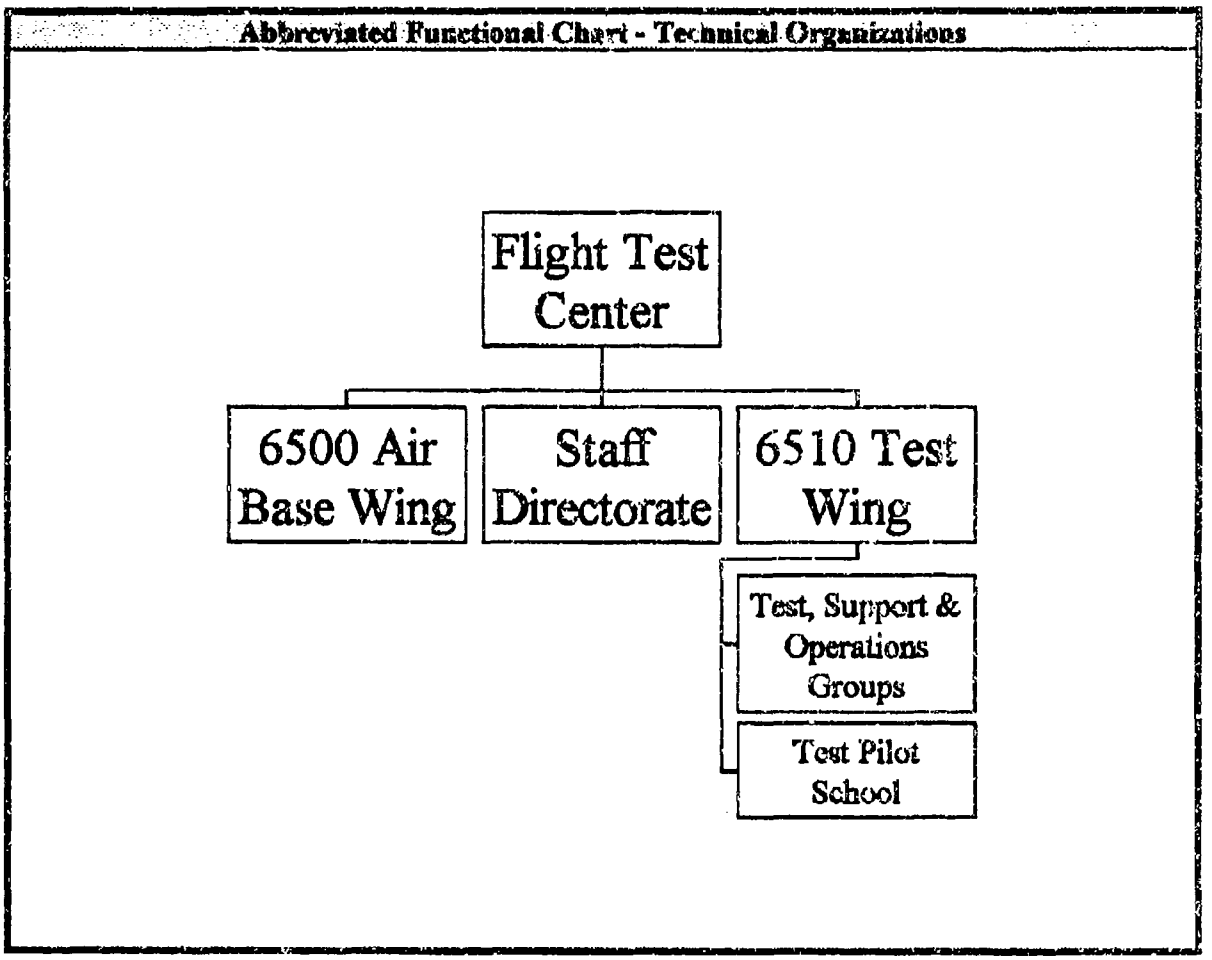
MILITARY CONSTRUCTION (MILLIONS $)	
Military Construction (MILCON)	1.678

PERSONNEL DATA (END OF FISCAL YEAR 1993)				
		SCIENTISTS & ENGINEERS		TECHNICAL SUPPORT
TYPE	END STRENGTH	PHD'S	OTHER	& OTHER PERSONNEL
MILITARY	1,672	2	275	1,395
CIVILIAN	1,980	7	832	1,141
TOTAL	**3,652**	**9**	**1,107**	**2,536**

SPACE AND PROPERTY			
SPACE (THOUSANDS OF SQ FT)		PROPERTY ACQUISITION COST (MILLIONS $)	
LAB	1,756.320	**REAL PROPERTY**	383.601
ADMIN	820.255	* NEW CAPITAL EQUIPMENT	0.000
OTHER	8,684.930	**EQUIPMENT**	492.338
TOTAL	11,261.505	* NEW SCIENTIFIC & ENG. EQUIP.	0.000
ACRES	462,770	* Subset of previous category. See Equip./Facilities Narrative.	

NA = Not Applicable

Flight Test Center



Flight Test Center
Edwards AFB, CA 93524-1000
(805) 277-3837

Commander: BG Richard L. Engel
Executive Dir.: Mr. Richard L. Hildebrand

MISSION

The Air Force Flight Test Center (AFFTC) is charged with supporting the Air Force Materiel Command (AFMC) mission by conducting and supporting testing of both manned and unmanned aerospace vehicles. This mission involves not only all aspects of testing of air vehicles, but includes the flight evaluation and recovery of research vehicles, development testing of aerodynamic decelerators, and the operation of the Air Force Test Pilot School. To support this testing the AFFTC operates and manages the Edwards Flight Test Range and the Utah Test and Training Range. The Center operates a fleet of test bed aircraft for early development and check out of new avionics and Advance Range Instrumentation Aircraft (ARIA) worldwide in support of a variety of space and missile tests. The center supports and participates in test and evaluation programs for the Air Force, other Department of Defense activities, other government agencies, as well as for contractors and foreign governments.

CURRENT IMPORTANT PROGRAMS

The following are some of the current important programs on which the AFFTC is working: B-2 development; AC-130U gunship qualification and test and evaluation program; C-17 transport development; B-1B follow-on development; F-117 development; F-15 follow-on development; F-16 follow-on development; LANTRIN follow-on development; BIG CROW; TSSAM mission support; Advance Range Instrumentation Aircraft; B-1B conventional weapons upgrade; U-2 follow-on development; M-130 development; and F-22 development.

EQUIPMENT/FACILITIES

Major unique facilities and equipment include: Integrated Facility for Avionics System Test (IFAST); Benefield anechoic facility; real time mission control facility; precision impact range area used for bombing/gunnery/infrared systems integration; personnel and cargo parachute drop zones; hydrant refueling system for heavy aircraft; aircraft weight and balance facility complex; R-2508 restricted airspace; photo/video lab for airborne and ground testing; intermediate aircraft maintenance support capability; Pacer Comet jet engine test facility; horizontal aircraft thrust stand; photo resolution range; instrumented low level terrain following course; and aircraft gun system harmonization range (GUNBUTT).

Flight Test Center
Edwards AFB, CA 93524-1000
(805) 277-3837

Commander: BG Richard L. Engel
Executive Dir.: Mr. Richard L. Hildebrand

FY93 FUNDING DATA (MILLIONS $)			
APPROPRIATION	**IN-HOUSE**	**OUT-OF-HOUSE**	**TOTAL**
RDT&E:			
6.1 ILIR	0.000	NA	0.000
6.1 Other	0.000	0.000	0.000
6.2 IED (Navy)	NA	NA	NA
6.2 Other	0.000	0.000	0.000
6.3	0.000	0.000	0.000
Subtotal (S&T)	0.000	0.000	0.000
6.4	0.000	0.000	0.000
6.5	0.000	0.000	0.000
6.6	96.028	78.665	174.693
6.7	0.000	0.000	0.000
Non-DOD	0.000	0.000	0.000
TOTAL RDT&E	**96.028**	**78.665**	**174.693**
Procurement	0.000	11.377	11.377
Operations & Maintenance	15.735	29.156	44.891
Other	209.068	11.100	220.168
TOTAL FUNDING	**320.831**	**130.298**	**451.129**

MILITARY CONSTRUCTION (MILLIONS $)	
Military Construction (MILCON)	24.500

PERSONNEL DATA (END OF FISCAL YEAR 1993)				
		SCIENTISTS & ENGINEERS		TECHNICAL SUPPORT
TYPE	**END STRENGTH**	**PHD'S**	**OTHER**	**& OTHER PERSONNEL**
MILITARY	4,524	51	1,127	3,346
CIVILIAN	3,443	13	464	2,966
TOTAL	**7,967**	**64**	**1,591**	**6,312**

SPACE AND PROPERTY			
SPACE (THOUSANDS OF SQ FT)		**PROPERTY ACQUISITION COST (MILLIONS $)**	
LAB	302.354	**REAL PROPERTY**	665.703
ADMIN	273.206	* NEW CAPITAL EQUIPMENT	0.040
OTHER	8,624.164	**EQUIPMENT**	0.149
TOTAL	9,199.724	* NEW SCIENTIFIC & ENG. EQUIP.	0.000
ACRES	**297,032**	* Subset of previous category. See Equip./Facilities Narrative.	

NA = Not Applicable

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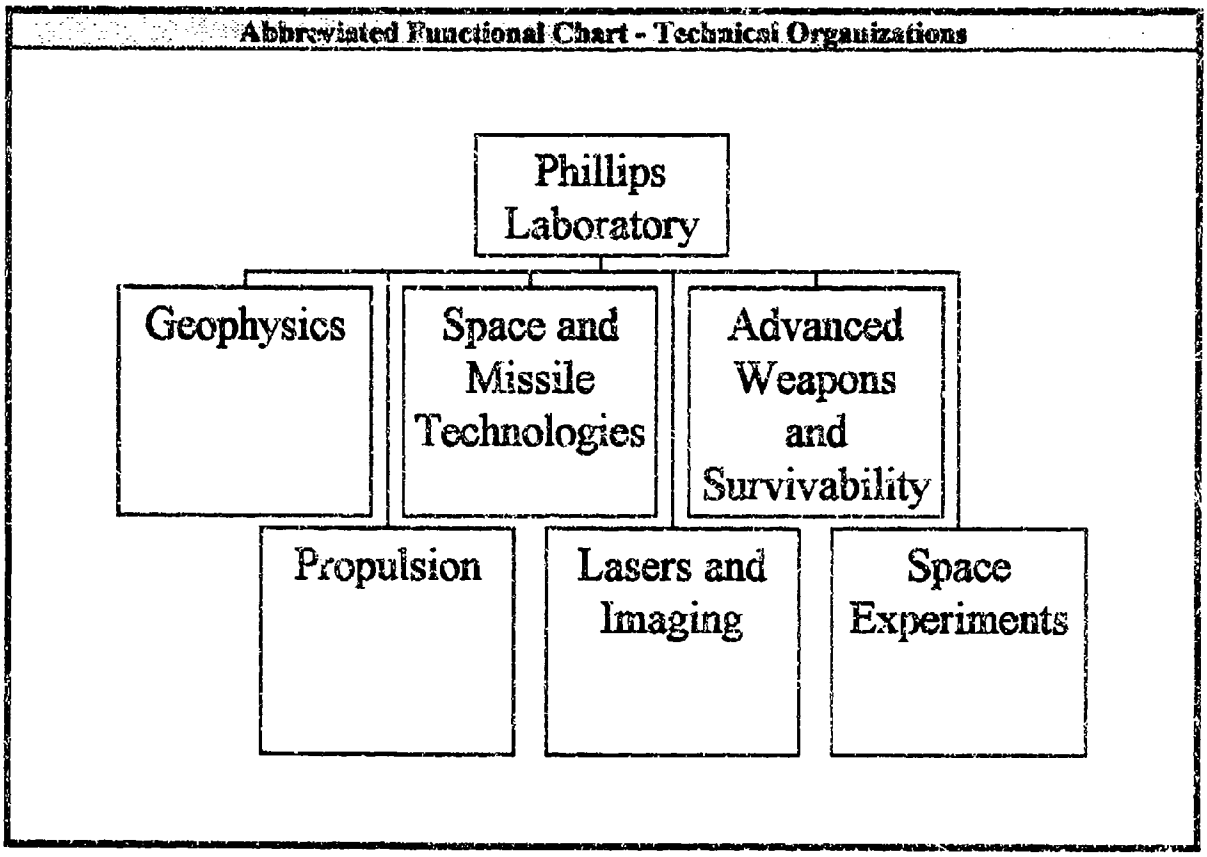
Phillips Laboratory



Phillips Laboratory
Kirtland AFB, NM 87117-5776
(505) 846-4583

Commander: Colonel Richard W. Davis
Chief Scientist: Dr. Joseph Janni

MISSION

Advance science and technology to provide the developments and improvements needed to continue the accomplishment of the Air Force mission. Primarily charged with planning, organizing, directing, executing, and controlling USAF research and development in the following areas: military space and missile technology; space experiments; directed energy weapons and weapons effects; survivability; geophysics technical developments; and geophysics effects on systems.

CURRENT IMPORTANT PROGRAMS

The following are some of the current important programs (thrusts) on which the laboratory is working: Space & Missile Technology—advanced space technology integration & demonstration, missile propulsion technology, space systems propulsion technology, space vehicle and missile dynamics technology, space vehicle power and thermal management; advanced weapons—laser technology, high power microwave (HPM), space system survivability; and geophysics—geophysics for environmental quality, geophysics for synthetic environments, ionospheric effects on Air Force systems, space effects on Air Force systems, terrestrial effects on Air Force systems, weather impact on Air Force systems.

EQUIPMENT/FACILITIES

Primary operating locations are: Kirtland AFB, NM, Edwards AFB, CA, and Hanscom AFB, MA. Equipment and facilities include: component development lab; Starfire optical range; developmental optics facility; Malabar test facility; Air Force Maui optical station; Argus aircraft; chemical laser facility; semiconductor and diode laser facilities; payload integration facility; RF spectrum analyzer; balloon launch facility; Area 53-classified Sun computer network; two (2) electrical discharge coaxial lasers; cryogenic hydrogen supply system; high energy microwave lab; high frequency research facility; fixed and portable PC-controlled data acquisition systems; Sleet database for EM data archive and manipulation; high power narrowband and ultra-wideband system; Shiva Star capacitor bank; space simulation chambers; and two (2) KC-135 aircraft for optical, upper atmospheric studies.

Phillips Laboratory
Kirtland AFB, NM 87117-5776
(505) 846-4583

Commander: Colonel Richard W. Davis
Chief Scientist: Dr. Joseph Janni

FY93 FUNDING DATA (MILLIONS $)			
APPROPRIATION	IN-HOUSE	OUT-OF-HOUSE	TOTAL
RDT&E			
6.1 ILIR	0.700	NA	0.700
6.1 Other	11.200	8.100	19.300
6.2 IED (Navy)	NA	NA	NA
6.2 Other	11.200	109.800	121.000
6.3	112.400	352.200	464.600
Subtotal (S&T)	135.500	470.100	605.600
6.4	0.000	0.000	0.000
6.5	4.500	3.500	8.000
6.6	0.100	28.000	28.100
6.7	0.800	0.700	1.500
Non-DOD	0.000	0.000	0.000
TOTAL RDT&E	140.900	502.300	643.200
Procurement	0.000	0.000	0.000
Operations & Maintenance	1.100	0.000	1.100
Other	60.700	157.400	218.100
TOTAL FUNDING	202.700	659.700	862.400

MILITARY CONSTRUCTION (MILLIONS $)	
Military Construction (MILCON)	0.000

PERSONNEL DATA (END OF FISCAL YEAR 1993)				
		SCIENTISTS & ENGINEERS		TECHNICAL SUPPORT
TYPE	END STRENGTH	PHD'S	OTHER	& OTHER PERSONNEL
MILITARY	665	35	358	272
CIVILIAN	1,318	214	427	677
TOTAL	1,983	249	785	949

SPACE AND PROPERTY			
SPACE (THOUSANDS OF SQ FT)		PROPERTY ACQUISITION COST (MILLIONS $)	
LAB	519.000	REAL PROPERTY	150.000
ADMIN	544.000	* NEW CAPITAL EQUIPMENT	0.000
OTHER	1,212.000	EQUIPMENT	857.500
TOTAL	2,275.000	* NEW SCIENTIFIC & ENG. EQUIP.	14.000
ACRES	50,000	* Subset of previous category. See Equip./Facilities Narrative.	

NA = Not Applicable

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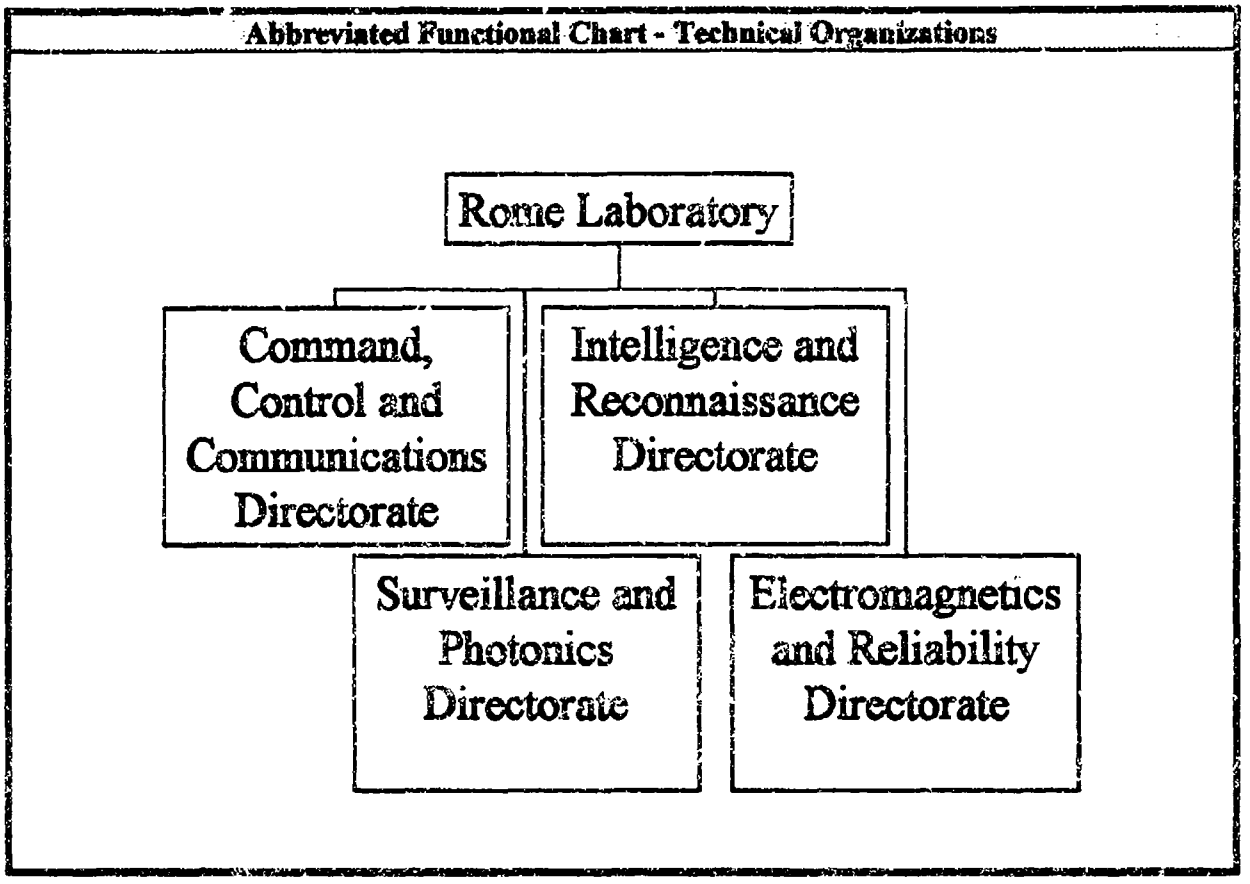
Rome Laboratory



Rome Laboratory
Griffiss AFB, NY 13441-4514
(315) 330-7701

Commander: Colonel Paul D. Nielsen
Chief Scientist: Dr. Fred I. Diamond

MISSION

Air Force center of expertise for advancing the state-of-the-art in command, control, communications and intelligence (C3I) by planning and executing research, development, test and selected acquisition programs. To achieve these goals, Rome Laboratory: Conducts vigorous research, development, and test programs in all applicable technologies; Transitions technology to current and future systems to improve operational capability, readiness, and supportability; Provides a full range of technical support to Air Force Materiel Command product centers and other Air Force organizations; Conducts selected acquisition programs for low-volume, limited quantity intelligence and software systems; and Promotes transfer of technology to the private sector. The lab maintains leading-edge technological expertise in the areas of surveillance, communications, command and control, intelligence, advanced electromagnetics, computational sciences, signal processing, reliability science, and photonics technology.

CURRENT IMPORTANT PROGRAMS

The following are some of the current important programs/thrusts on which the laboratory is working: low observable surveillance; secure survivable communications; battle information management and decision aids; non-cooperative target identification; signal processing; artificial intelligence; photonics; intelligence processing; and reliability assessment.

EQUIPMENT/FACILITIES

Primary operating locations are: Hanscom AFB, MA and Griffiss AFB, NY. Equipment and facilities include: reconnaissance exploitation facility; photonics facility; Electronic Intelligence (ELINT) development facility; Electronic Counter-Countermeasures (ECCM) and signal processing facility; solid state device failure analysis facility; command and control technology center; electro-magnetic vulnerability facility; surveillance facility; materials synthesis and development facility; Intelligence Information Processing Facility (IIPF); and experimental device fabrication facility.

Rome Laboratory
Griffiss AFB, NY 13441-4514
(315) 330-7701

Commander: Colonel Paul D. Nielsen
Chief Scientist: Dr. Fred I. Diamond

FY93 FUNDING DATA (MILLIONS $)			
APPROPRIATION	**IN-HOUSE**	**OUT-OF-HOUSE**	**TOTAL**
RDT&E:			
6.1 ILIR	0.208	NA	0.208
6.1 Other	4.072	8.633	12.705
6.2 IED (Navy)	NA	NA	NA
6.2 Other	24.383	55.240	79.623
6.3	1.717	29.577	31.294
Subtotal (S&T)	30.380	93.450	123.830
6.4	5.260	77.985	83.245
6.5	0.737	10.029	10.766
6.6	0.276	11.779	12.055
6.7	0.000	0.000	0.000
Non-DOD	0.132	1.568	1.700
TOTAL RDT&E	36.785	194.811	231.596
Procurement	0.086	5.032	5.118
Operations & Maintenance	3.061	57.136	60.197
Other	7.300	3.402	10.702
TOTAL FUNDING	47.232	260.381	307.613

MILITARY CONSTRUCTION (MILLIONS $)	
Military Construction (MILCON)	0.000

PERSONNEL DATA (END OF FISCAL YEAR 1993)				
		SCIENTISTS & ENGINEERS		TECHNICAL SUPPORT
TYPE	**END STRENGTH**	**PHD'S**	**OTHER**	**& OTHER PERSONNEL**
MILITARY	125	6	71	48
CIVILIAN	875	61	485	329
TOTAL	1,000	67	556	377

SPACE AND PROPERTY			
SPACE (THOUSANDS OF SQ FT)		**PROPERTY ACQUISITION COST (MILLIONS $)**	
LAB	855.546	REAL PROPERTY	46.892
ADMIN	89.231	* NEW CAPITAL EQUIPMENT	0.000
OTHER	44.247	EQUIPMENT	125.700
TOTAL	989.024	* NEW SCIENTIFIC & ENG. EQUIP.	8.600
ACRES	1,612	* Subset of previous category. See Equip./Facilities Narrative.	

NA = Not Applicable

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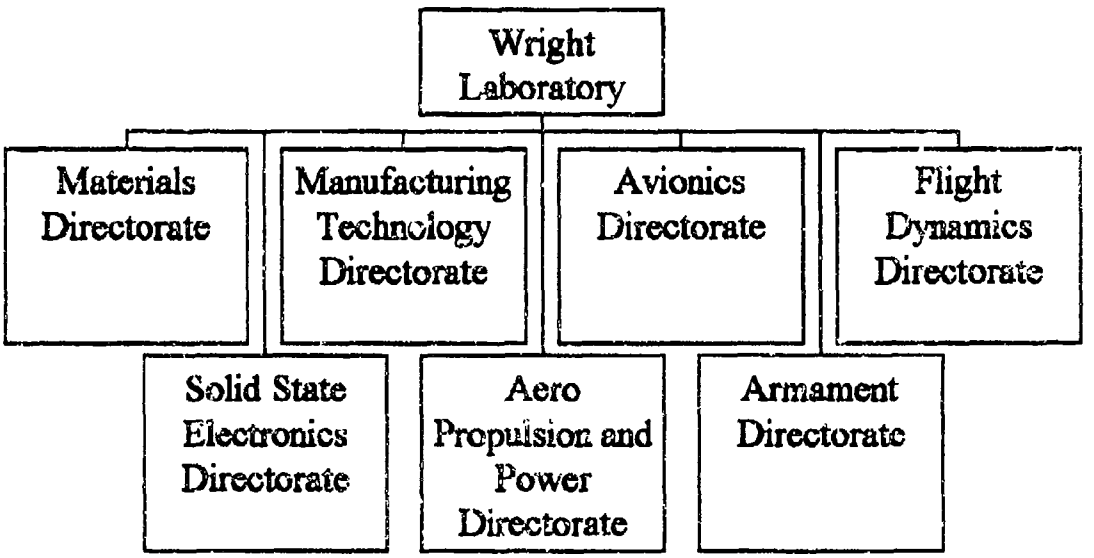
Wright Laboratory

Abbreviated Functional Chart - Technical Organizations



Wright Laboratory
Wright-Patterson AFB, OH 45433-7542
(513) 255-4119

Commander: Colonel David A. Herrelko
Chief Scientist: Dr. G. Keith Richey

MISSION

To lead and focus the Air Force's aeronautical technology investment by performing in-house research and establishing contractual partnerships with universities and contractors. Also, to provide technical leadership in the transition of new technology to warfighting systems.

CURRENT IMPORTANT PROGRAMS

The following are some of the current important programs/thrusts on which the laboratory is working: aeropropulsion and power technology; air vehicles technology; avionics and solid state devices technology; conventional armament technology; materials technology; and manufacturing technology.

EQUIPMENT/FACILITIES

Primary operating locations are: Wright-Patterson AFB, OH and Eglin AFB, FL. Equipment and facilities include: sensor evaluation facility; targeting systems characterization facility; electro-optics research facilities; large amplitude motion simulator; structure testing facility; DoD landing gear development facility; aircraft survivability research facility; laser hardened material evaluation lab; ramjet combustion research facility; combustion research facilities; compressor test facility; high explosive R&D facility; hypervelocity launcher experiment facility; and aeroballistics research facility.

Wright Laboratory
Wright-Patterson AFB, OH 45433-7542
(513) 255-4119

Commander: Colonel David A. Herrelko
Chief Scientist: Dr. G. Keith Richey

FY93 FUNDING DATA (MILLIONS $)			
APPROPRIATION	**IN-HOUSE**	**OUT-OF-HOUSE**	**TOTAL**
RDT&E:			
6.1 ILIR	0.600	NA	0.600
6.1 Other	11.600	15.900	27.500
6.2 IED (Navy)	NA	NA	NA
6.2 Other	97.600	237.600	335.200
6.3	26.400	445.300	471.700
Subtotal (S&T)	**136.200**	**698.800**	**835.000**
6.4	6.400	45.300	51.700
6.5	1.600	40.600	42.200
6.6	0.000	62.400	62.400
6.7	0.000	0.000	0.000
Non-DOD	0.700	4.300	5.000
TOTAL RDT&E	**144.900**	**851.400**	**996.300**
Procurement	0.000	8.700	8.700
Operations & Maintenance	6.700	0.600	7.300
Other	15.000	17.000	32.000
TOTAL FUNDING	**166.630**	**877.700**	**1,044.300**

MILITARY CONSTRUCTION (MILLIONS $)	
Military Construction (MILCON)	13.800

PERSONNEL DATA (END OF FISCAL YEAR 1992)				
		SCIENTISTS & ENGINEERS		TECHNICAL SUPPORT
TYPE	**END STRENGTH**	**PHD'S**	**OTHER**	**& OTHER PERSONNEL**
MILITARY	378	35	274	69
CIVILIAN	2,179	195	1,326	658
TOTAL	**3,557**	**230**	**1,600**	**727**

SPACE AND PROPERTY			
SPACE (THOUSANDS OF SQ FT)		**PROPERTY ACQUISITION COST (MILLIONS $)**	
LAB	1,438.300	REAL PROPERTY	373.834
ADMIN	792.614	* NEW CAPITAL EQUIPMENT	1.940
OTHER	905.691	EQUIPMENT	2,057.869
TOTAL	**3,136.605**	* NEW SCIENTIFIC & ENG. EQUIP.	10.100
ACRES	**932**	* Subset of previous category. See Equip./Facilities Narrative.	

NA = Not Applicable

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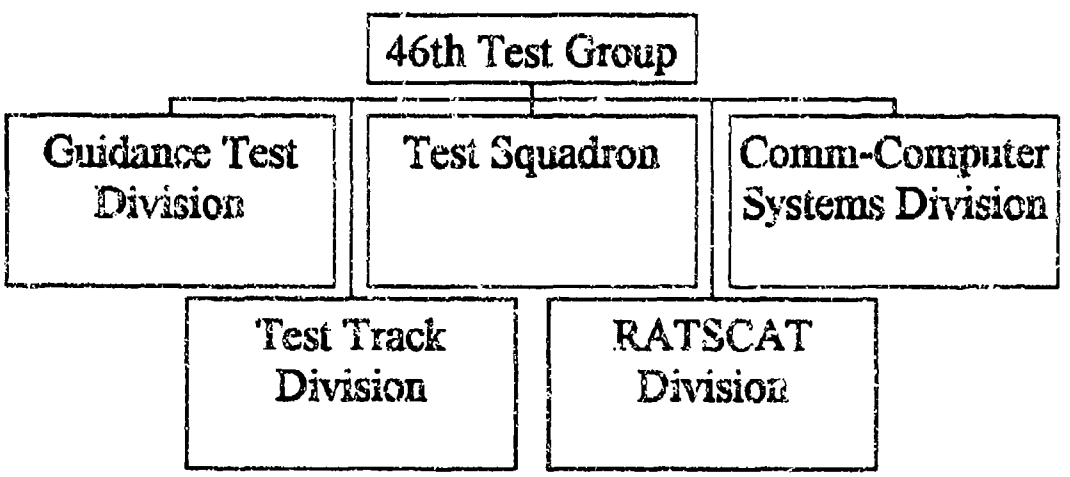
46th Test Group

Abbreviated Functional Chart - Technical Organizations



46th Test Group
Holloman AFB, NM 88330-7715
(505) 475-1368

Commander: Colonel Carl V. Lyday
Technical Dir.: Kenneth R. Holland

MISSION

Operate the world's premier facilities for measuring radar signatures, testing missile guidance systems, testing aircraft navigation systems, and testing armaments and escape systems on a high speed test track. Conduct flight testing of the nation's highest-priority air-to-air missile systems. Provide airspace control for the White Sands Missile Range (WSMR).

CURRENT IMPORTANT PROGRAMS

The 46 TG is supporting such programs as: hypersonic lethality testing for Theater Missile Defense (TMD); Crew Escape System Technology (CREST) tests; Global Positioning System (GPS) integration for all mandated DoD weapon systems; field tests of the Federal Aviation Administration's (FAA) GPS navigational and landing aids; and electromagnetic testing including radar cross section and antenna pattern measurements of such advanced systems as the B-2, the Advanced Cruise Missile, and the Advanced Tactical Fighter.

EQUIPMENT/FACILITIES

Equipment and facilities include: High Speed Test Track (HSTT)—the world's longest sled track (50,788 ft), the Project Reliance lead for all DoD test tracks, and the Center of Excellence for ejection seat testing. The HSTT supports sled speeds exceeding Mach 8 and accelerations up to 200G for aerodynamic tests, impact tests, and missile simulations in various controlled environments of rain, particle, and blast/shock wave. Central Inertial Guidance Test Facility (CIGTF)—America's most seismically stable (0.01 micro G isolated background level) test bed for truth reference validation of navigation systems. CIGTF has the largest collection of precision rate tables (10), multi-axis tables (12), and precision centrifuges (3) in DoD. Radar Target Scatter (RATSCAT) Mainsite and RATSCAT Advanced Measurement System (RAMS)—America's only site capable of low observable, monostatic/bistatic RCS measurement for full-scale and sub-scale systems—up to 100,00 lbs at Mainsite and 30,000 lbs at RAMS. Both facilities have computer resources to support RCS target predictions, detection profiles, model validation, and real time diagnostic imaging. 586th Flight Test Squadron—Aircraft support for testing of air-to-air missiles, air-to-ground ordnance, photo/safety chase, inertial navigational systems, and Global Positioning Systems. The squadron owns two T-38's, rents an F-15 and F-16 from Eglin AFB, and rents a C-12 from the Army when needed.

46th Test Group
Holloman AFB, NM 88330-7715
(505) 475-1368

Commander: Colonel Carl V. Lyday
Technical Dir.: Kenneth R. Holland

FY93 FUNDING DATA (MILLIONS $)			
APPROPRIATION	IN-HOUSE	OUT-OF-HOUSE	TOTAL
RDT&E:			
6.1 ILIR	0.000	NA	0.000
6.1 Other	0.000	0.000	0.000
6.2 IED (Navy)	NA	NA	NA
6.2 Other	0.000	0.000	0.000
6.3	0.000	0.000	0.000
Subtotal (S&T)	0.000	0.000	0.000
6.4	0.000	0.000	0.000
6.5	0.000	0.000	0.000
6.6	26.074	35.387	61.461
6.7	0.000	0.000	0.000
Non-DOD	0.000	0.000	0.000
TOTAL RDT&E	26.074	35.387	61.461
Procurement	0.000	0.000	0.000
Operations & Maintenance	0.000	0.000	0.000
Other	7.909	2.030	9.939
TOTAL FUNDING	33.983	37.417	71.400

MILITARY CONSTRUCTION (MILLIONS $)	
Military Construction (MILCON)	0.000

PERSONNEL DATA (END OF FISCAL YEAR 1993)				
		SCIENTISTS & ENGINEERS		TECHNICAL SUPPORT
TYPE	END STRENGTH	PHD'S	OTHER	& OTHER PERSONNEL
MILITARY	198	1	25	172
CIVILIAN	296	2	164	130
TOTAL	494	3	189	302

SPACE AND PROPERTY			
SPACE (THOUSANDS OF SQ FT)		PROPERTY ACQUISITION COST (MILLIONS $)	
LAB	572.971	REAL PROPERTY	231.837
ADMIN	55.009	* NEW CAPITAL EQUIPMENT	0.774
OTHER	132.641	EQUIPMENT	152.855
TOTAL	760.621	* NEW SCIENTIFIC & ENG. EQUIP.	0.000
ACRES	7,052	* Subset of previous category. See Equip./Facilities Narrative.	

NA = Not Applicable

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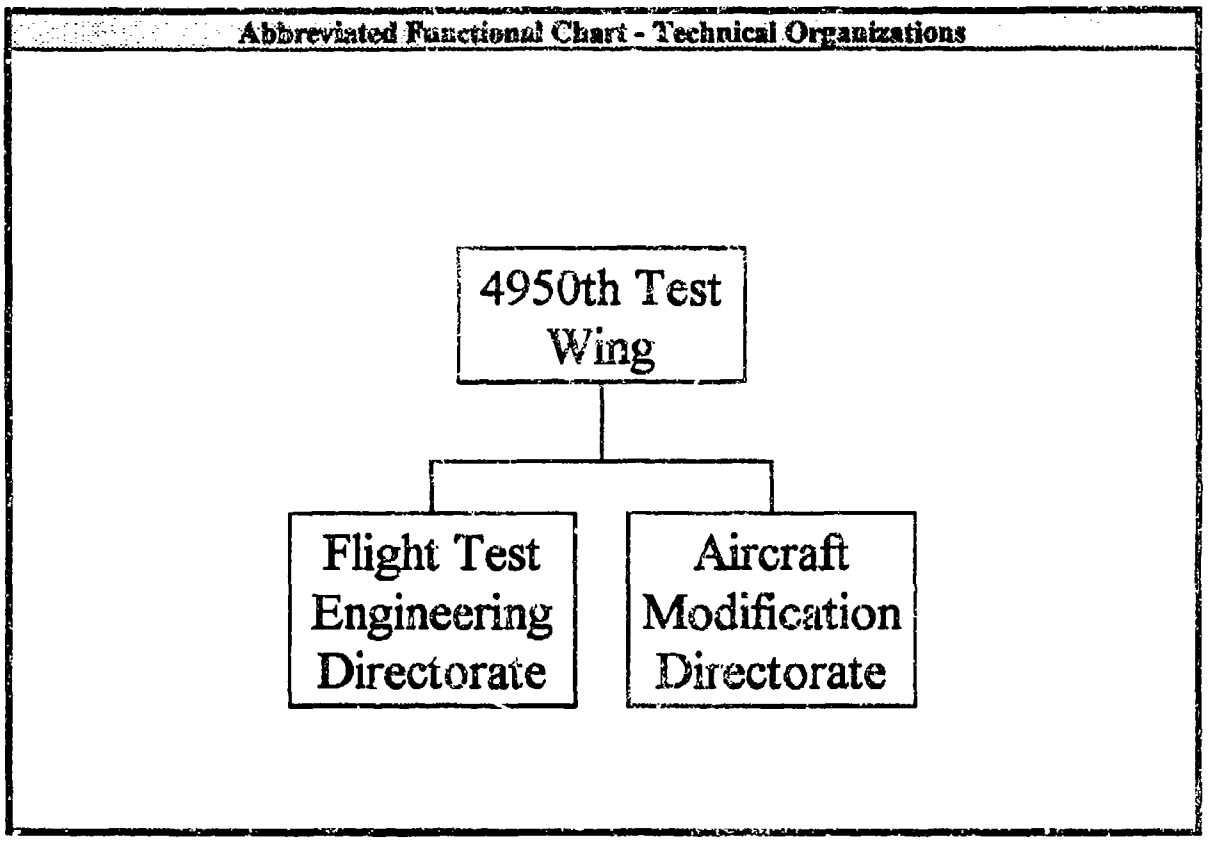
4950th Test Wing



4950th Test Wing
Wright-Patterson AFB, OH 45433-5113
(513) 257-2298

Commander: Colonel John K. Morris
Vice Commander: Colonel J. H. Doolittle III

MISSION

Plan and conduct worldwide airborne research, telemetry acquisition, and systems flight testing. Test commercial aircraft for military applications. Operate 21 C-135/C-18/C-141 testbed aircraft and EC-135/EC-18 Advanced Range Instrumentation Aircraft (ARIA). Support ACC, AMC, AFSPC, AFMC, Army, Navy, and NASA testing and operations.

CURRENT IMPORTANT PROGRAMS

The following are some of the current important programs the test center is working on: SATCOM Testbed Aircraft; Cruise Missile Mission Control Aircraft (CMMCA); Electronic Counter Countermeasures/Advanced Radar Testbed (ECCM/ARTB); Airborne Imagery Transmission (ABIT); Silent Attack Warning System (SAWS); Airborne Laser (ABL) Risk Reduction Aircraft; Commercial Microwave Landing System Avionics (CMLSA); Military Microwave Landing System Avionics (MMLSA); Open Skies Surveillance Aircraft; Hyperspectral Digital Imagery Collection Experiment (HYDICE); T-39 Electronic Warfare Pod; Radar Enhancement; WR-ALC F-15 Radar Support; Big Crow Upgrade; C-141 RAMTIP Electric Starlifter; Joint Primary Aircraft Training System (JPATS); T-1A Low Speed Handling Qualities; T-3A Enhanced Flight Screener QT&E/QOT&E; Advanced Range Instrumentation Aircraft (ARIA); Titan IV Upgrades; Space Based Data Relay (SBDR) Upgrade to ARIA; GSP/INS Upgrade to ARIA; ARIA Air Refueling Upgrade; F-15 Hardware System Trainer (HST); Combat Talon Aircraft Updates; Halon Replacement Program; and F-117 Environmental Covers.

EQUIPMENT/FACILITIES

Equipment and facilities include: Precision Measurement Equipment Laboratory (PMEL); specialized and quick response fabrication/modification equipment facility; Computer Aided Design and Manufacturing (CAD/CAM) capability; Advanced Range Instrumentation Aircraft (ARIA); ARIA Reentry Scoring Systems; Advanced Cruise Missile Mission Control Aircraft (CMMCA); Integrated Data Facility (IDF); Logistics Material Control Activity (LMCA); temporary/prototype aircraft modification facility; DEC VAX computer system; and a 2000 square mile restricted test area in southwest Ohio.

4950th Test Wing
Wright-Patterson AFB, OH 45433-5113
(513) 257-2298

Commander: Colonel John K. Morris
Vice Commander: Colonel J. H. Doolittle III

FY93 FUNDING DATA (MILLIONS $)			
APPROPRIATION	**IN-HOUSE**	**OUT-OF-HOUSE**	**TOTAL**
RDT&E:			
6.1 ILIR	0.000	NA	0.000
6.1 Other	0.000	0.000	0.000
6.2 IED (Navy)	NA	NA	NA
6.2 Other	0.000	0.000	0.000
6.3	0.000	0.000	0.000
Subtotal (S&T)	**0.000**	**0.000**	**0.000**
6.4	0.000	0.000	0.000
6.5	5.000	0.000	5.000
6.6	93.000	8.000	101.000
6.7	0.000	0.000	0.000
Non-DOD	0.000	0.000	0.000
TOTAL RDT&E	**98.000**	**8.000**	**106.000**
Procurement	0.000	0.000	0.000
Operations & Maintenance	0.000	0.000	0.000
Other	0.000	0.000	0.000
TOTAL FUNDING	**98.000**	**8.000**	**106.000**

MILITARY CONSTRUCTION (MILLIONS $)	
Military Construction (MILCON)	0.000

PERSONNEL DATA (END OF FISCAL YEAR 1993)				
		SCIENTISTS & ENGINEERS		**TECHNICAL SUPPORT**
TYPE	**END STRENGTH**	**PHD'S**	**OTHER**	**& OTHER PERSONNEL**
MILITARY	532	0	40	492
CIVILIAN	463	0	9	454
TOTAL	**995**	**0**	**49**	**946**

SPACE AND PROPERTY			
SPACE (THOUSANDS OF SQ FT)		**PROPERTY ACQUISITION COST (MILLIONS $)**	
LAB	22.012	**REAL PROPERTY**	27.070
ADMIN	9 376	* NEW CAPITAL EQUIPMENT	0.000
OTHER	852.006	**EQUIPMENT**	49.992
TOTAL	**883.394**	* NEW SCIENTIFIC & ENG. EQUIP.	0.000
ACRES	**400**	* Subset of previous category. See Equip./Facilities Narrative.	

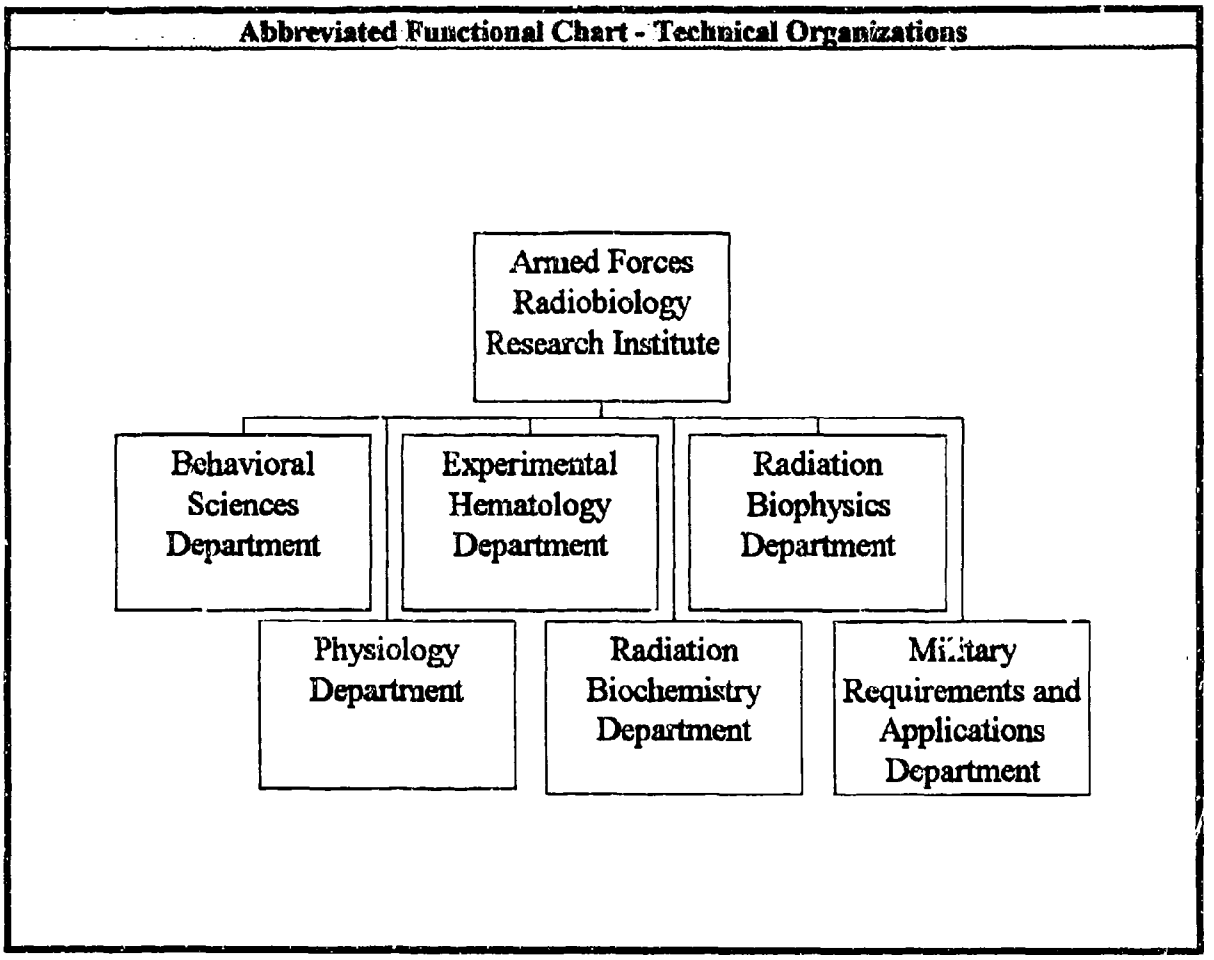
NA = Not Applicable

DEFENSE NUCLEAR AGENCY

DEFENSE NUCLEAR AGENCY

The only In-House RDT&E Activity within DNA is the Armed Forces Radiobiology Research Institute (AFRRI).

Armed Forces Radiobiology Research Institute



Armed Forces Radiobiology Research Institute
Bethesda, MD 20889-5603
(301) 295-1210

Director: Captain Robert L. Bumgarner
Scientific Dir.: E. John Ainsworth

MISSION

The mission of Armed Forces Radiobiology Research Institute shall be to conduct research in the field of radiobiology and related matters essential to the operational and medical support of the Department of Defense and military services. The biomedical research program is directed toward acquiring the quantitative and qualitative data necessary for assessing the effects of radiation on man.

CURRENT IMPORTANT PROGRAMS

Optimize combinations of protective agents to promote survival and combat effectiveness in radiation environments. Measure radiation effects on molecules, genes and cells. Determine space radiation effects on cancer induction. Evaluate protective mechanisms to preserve brain function. Evaluate the biological effects of different types of radiation on the battlefield. Model risks of acute and chronic bioeffects following irradiation.

EQUIPMENT/FACILITIES

Functions: operate facilities for conducting radiobiology research and disseminating results. Conduct advanced training: provide analysis consultation on bioeffects of radiation and perform such other research functions as required. Major equipment includes: pulse and steady state nuclear reactor 300,000-Curie Cobalt-60 irradiator, electron linear accelerator, X-ray, theratron exposure capability and electron microscope. Support services include: measurement of radiation fields, provision and care of laboratory animals, equipment design and fabrication assistance, real-time data acquisition system, television and film documentation of experiments, personnel and environmental monitoring, editorial assistance in report preparation, and a large technical library.

Armed Forces Radiobiology Research Institute
Bethesda, MD 20889-5603
(301) 295-1210

Director: Captain Robert L. Bumgarner
Scientific Dir.: E. John Ainsworth

FY93 FUNDING DATA (MILLIONS $)			
APPROPRIATION	**IN-HOUSE**	**OUT-OF-HOUSE**	**TOTAL**
RDT&E:			
6.1 ILIR	0.000	NA	0.000
6.1 Other	0.000	0.000	0.000
6.2 IED (Navy)	NA	NA	NA
6.2 Other	17.292	0.000	17.292
6.3	0.000	0.000	0.000
Subtotal (S&T)	**17.292**	**0.000**	**17.292**
6.4	0.000	0.000	0.000
6.5	0.000	0.000	0.000
6.6	0.000	0.000	0.000
6.7	0.000	0.000	0.000
Non-DOD	0.000	0.000	0.000
TOTAL RDT&E	**17.292**	**0.000**	**17.292**
Procurement	0.000	0.000	0.000
Operations & Maintenance	0.000	0.000	0.000
Other	0.282	0.000	0.282
TOTAL FUNDING	**17.574**	**0.000**	**17.574**

MILITARY CONSTRUCTION (MILLIONS $)	
Military Construction (MILCON)	0.000

PERSONNEL DATA (END OF FISCAL YEAR 1993)				
		SCIENTISTS & ENGINEERS		**TECHNICAL SUPPORT**
TYPE	**END STRENGTH**	**PHD'S**	**OTHER**	**& OTHER PERSONNEL**
MILITARY	74	22	7	45
CIVILIAN	160	34	52	74
TOTAL	**234**	**56**	**59**	**119**

SPACE AND PROPERTY			
SPACE (THOUSANDS OF SQ FT)		**PROPERTY ACQUISITION COST (MILLIONS $)**	
LAB	61.750	**REAL PROPERTY**	14.106
ADMIN	34.257	* NEW CAPITAL EQUIPMENT	0.028
OTHER	23.908	**EQUIPMENT**	15.572
TOTAL	**119.915**	* NEW SCIENTIFIC & ENG. EQUIP.	0.450
ACRES	**10**	* Subset of previous category. See Equip. Facilities Narrative.	

NA = Not Applicable

APPENDIX A
DISESTABLISHMENT, ESTABLISHMENT, OR CHANGE IN ORGANIZATION NAME

APPENDIX A

DISESTABLISHMENT, ESTABLISHMENT, OR CHANGES IN ORGANIZATION NAME BETWEEN FY92 AND FY93

DEPARTMENT OF THE ARMY

The Chemical Research, Development and Engineering Center has been renamed the Edgewood Research, Development and Engineering Center.

DEPARTMENT OF THE NAVY

No changes

DEPARTMENT OF THE AIR FORCE

The 6585th Test Group has been renamed the 46th Test Group to be consistent with its parent's organization name change to the 46th Test Wing.

DEPARTMENT OF DEFENSE AGENCIES

No changes

APPENDIX A

DISESTABLISHMENT, ESTABLISHMENT, OR CHANGES IN ORGANIZATION NAME BETWEEN FY92 AND FY93

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APPENDIX B
DEFINITIONS OF REPORT ELEMENTS

APPENDIX B
DEFINITIONS OF REPORT ELEMENTS

Please note the following RDT&E Budget Activity (BA) Realignment as found in Program Budget Decision No. 299 effective as of 12/3/93:

BA	Old BA Title	Applicable Old Research Categories
1	Technology Base	6.1, 6.2
2	Advanced Technology Development	6.3A
3	Strategic Programs	6.3B, 6.4, 6.6
4	Tactical Programs	6.3B, 6.4, 6.6
5	Intelligence and Communications Development	6.3B, 6.4, 6.6
6	Defensewide Mission Support	6.5
7	----------	

(Research Category 6.6 above refers to Operational Systems Development)

BA	New BA Title	Applicable New Research Categories
1	Technology Base	6.1
2	Exploratory Development	6.2
3	Advanced Development	6.3
4	Demonstration and Validation (Dem/Val)	6.4
5	Engineering & Manufacturing Development (EMD)	6.5
6	RDT&E Management Support	6.6
7	Operational Systems Development	6.7

6.1 ILIR - This is the total obligational authority for research 6.1 (Navy PE=0601152N) In-Laboratory (In-House) Independent Research program elements.

6.1 Other In-House/Out-of-House - This is the total obligational authority for Research 6.1 program elements conducted In-House (excluding ILIR) or Out-of-House

6.2 IED In-House/Out-of-House (for Navy only) - This is the total obligational authority for Innovative Exploratory Development 6.2 (Navy PE=0602936N) program elements conducted In-House/Out-of-House.

6.2 Other In-House/Out-of-House - This is the total obligational authority for exploratory development 6.2 program elements conducted In-House (excluding IED)/Out-of-House (excluding IED).

6.3 (previously 6.3A) In-House/Out-of-House - This is the total obligational authority for Advanced Development 6.3 program elements conducted In-House/Out-of-House.

APPENDIX B
DEFINITIONS OF REPORT ELEMENTS

6.4 (previously 6.3B) In-House/Out-of-House - This is the total obligational authority for Demonstration and Validation (Dem/Val) 6.4 program elements conducted In-House/Out-of-House.

6.5 (previously 6.4) In-House/Out-of-House - This is the total obligational authority for Engineering and Manufacturing Development (EMD) 6.5 program elements conducted In-House/Out-of-House.

6.6 (previously 6.5) In-House/Out-of-House -This is the total obligational authority for RDT&E Management Support 6.6 program elements conducted In-House/Out-of-House.

6.7 In-House/Out-of-House - This is the total obligational authority for all Operational Systems Development (OSD) 6.7 with RDT&E funds conducted In-House/Out-of-House. This item is interpreted in its broadest sense to include operational developments outside the systems areas, and not included in any of the above categories.

Acres - This is the total number of acres fee-owned and/or acres leased from other than DoD activities. Included is land which is public domain. In cases involving tenants who are also R&D Activities, the tenants will have indicated only the acreage occupied solely by them. The owning Activity will account for the remainder including any acreage occupied by non-R&D tenants. This amount excludes all easements and permits, and is rounded to the nearest acre.

End Strength, Military/Civilian - This is the total year end strength, for both officer and enlisted military personnel and civilians (including foreign nationals). Summer hires, co-ops, students, and patients are excluded.

Equipment - Property Acquisition Cost - This is the total acquisition cost of all "personal property" equipment, which includes the cost of installed equipment directly related to mission execution, such as lab test equipment. This total includes the acquisition cost of new scientific and engineering equipment. Each reporting Activity is responsible for reporting this information for those facilities assigned to, or occupied and utilized by it. An R&D owner does not report this information for the facilities assigned to or occupied by its R&D tenants, as tenants report this information separately. Installed equipment reported under **Real Property - Property Acquisition Cost** is not included here.

In-House Obligations - Obligations reported under this category are for activities performed, or to be performed, by the organizational entity. The work is carried on directly by their own personnel. In addition to personnel costs, also included under In-House are the costs of supplies and equipment essentially of an off-the-shelf nature that are procured for use in In-House research and development, plus such things as travel, publications, and other types of services in support of In-House functions. (Excluded from the In-House entity total are personnel expenses for planning and administering contracts and grants for Out-of-House work.)

APPENDIX B
DEFINITIONS OF REPORT ELEMENTS

In-House RDT&E Activities - These Activities are organizational entities which perform at least 25% of their work in any or all of the categories of research, development, test and evaluation (RDT&E). In addition, at least 25% of an Activity's In-House manpower and/or 25% of the obligational authority used In-House is devoted to one or more of the categories of RDT&E.

MILCON - This is the total obligational authority for Military Construction appropriations.

New Capital Equipment - Property Acquisition Cost - This is the total acquisition cost for new capital equipment (i.e., installed physical plant equipment such as HVAC) acquired in FY93. This amount is also included in the total entry for **Real Property - Property Acquisition Cost**.

New Scientific & Engineering Equipment - Property Acquisition Cost - This is the total acquisition cost for new scientific and engineering equipment acquired in FY93, including the cost of newly installed equipment directly related to mission execution, such as lab test equipment. This amount is also included in the total entry for **Equipment - Property Acquisition Cost**.

Non-DoD In-House/Out-of-House - This is total obligational authority for all RDTE In-House/Out-of-House not reported under 6.1-6.7, as defined above, including non-Defense funds for work which is conducted In-house/Out-of-House.

Obligational Authority - Authority for the financial resources available for obligation in the specific year being reported. This includes unobligated authority carried forward from the prior year and all obligational authority received or made available for obligation in the year being reported, including the unobligated authority which will be carried forward into the following year.

O&M/Operations & Maintenance In-House/Out-of-House - This is the total obligational authority for Operations and Maintenance appropriations In-House/Out-of-House, regardless of source.

Other In-House/Out-of-House - This is the total obligational authority for all "other" (i.e., not reported elsewhere) appropriations In-House/Out-of-House, regardless of source.

Out-Of-House Obligations - Obligations reported under this category are for activities performed, or to be performed, by other than the organizational entity. Out-of-House performers may include other departmental or DoD organizational entities, industrial firms, educational institutions, not-for-profit institutions, and private individuals. Included as Out-of-House work are all expenses paid the Out-of-House performers, as well as the expenses incurred in planning and administering these programs by personnel of the organizational entity. This would also include travel and other supporting services.

Procurement In-House/Out-of-House - This is the total obligational authority for procurement appropriations In-House/Out-of-House regardless of source.

APPENDIX B
DEFINITIONS OF REPORT ELEMENTS

RDT&E - The sum of the total obligational authority, regardless of source, for both In-House and Out-of-House funding for the following categories:

Research 6.1
Innovative Exploratory Development 6.2
Advanced Development 6.3
Demonstration and Validation 6.4
Engineering and Manufactoring Development 6.5
RDT&E Management Support 6.6
Operational Systems Development 6.7
Non-DoD

Real Property - Property Acquisition Cost - This is the total acquisition cost of all land, buildings and capital equipment, including the cost of installed physical plant equipment such as HVAC (in excess of $200) and improvements. This total includes the acquisition cost of new capital equipment. Each reporting Activity is responsible for reporting this information for those facilities assigned to, or leased or occupied by it. An R&D owner will not report this information for the facilities assigned to or occupied by its R&D tenants, as they must report this information separately. This total does not include acreage or real property in buildings rented from private owners.

Scientists and Engineers - This generally includes full-time professional government scientific and engineering civilian personnel actively engaged in RDT&E activities. It also includes military professionals, both officer and enlisted, actively engaged in RDT&E activities. Lawyers, accountants, chaplains, social workers, and educators should be excluded.

PhD's, Military/Civilian - This is the total number of military (officer and enlisted) and civilian **scientists and engineers** whose most advanced degree is a doctorate. Degrees must be earned from an accredited college or university. Honorary degrees are excluded.

Other, Military/Civilian - This is the total number of military (officer and enlisted) and civilian **scientists and engineers** who do not hold a doctorate degree, but who are considered professionals. Professionals include full-time Government scientific and engineering personnel actively engaged in RDTE activities. Lawyers, accountants, chaplains, social workers and educators are excluded.

Space, Admin - This is the total number of square feet of building space determined to be administrative space (usually that portion occupied by the headquarters staff and excludes scientists', or engineer's offices in a laboratory). Each reporting Activity is responsible for reporting this information for those facilities assigned to, or leased, or occupied by it.

APPENDIX B
DEFINITIONS OF REPORT ELEMENTS

Space, Lab - This is the total number of square feet of building space determined to be laboratory space. Each reporting Activity is responsible for reporting this information for those facilities assigned to, or leased, or occupied by it.

Space, Other - This is the total number of square feet of all remaining building space. Each reporting Activity is responsible for reporting this information for those facilities assigned to, or leased, or occupied by it.

Technical Support and Other Personnel - This generally includes non-professionals working on an RDT&E project or program in support of a professional. In the case of civilians, it includes, but is not limited to, those holding positions that fall into the Civil Service Occupational Groups and Series of Classes, General Schedule. This grouping also includes professional, administrative and clerical personnel in General Schedule and Federal Wage System positions who provide support services in such areas as computers, personnel, technical library, logistics, and facilities.

Total Funding - The sum of Total RDT&E, Procurement, Operations & Maintenance and Other.

APPENDIX B
DEFINITIONS OF REPORT ELEMENTS

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APPENDIX C
SELECTED STANDARD ABBREVIATIONS AND ACRONYMS

APPENDIX C
SELECTED STANDARD ABBREVIATIONS AND ACRONYMS

AAM - Air-to-Air Missile
AAW - Antiair Warfare
ADKEM - Advanced Kinetic Energy Missile
ADPE - Automatic Data-Processing Equipment
AFDTC - Air Force Development Test Center
AGS - Armored Gun Systems
AI - Artificial Inteliigence
AMC - US Army Materiel Command
APG - Aberdeen Proving Ground
ARDEC - Armament Research, Development and Engineering Center
ARIA - Advanced Range Instrumentation Aircraft
ASAS - All Source Analysis System
ASW - Antisubmarine Warfare
ATCCS - Army Tactical Command and Control System
ATRJ - Advanced Technology Radar Jammer
BFVS - Bradley Fighting Vehicle Systems
BW - Biological Warfare
C3 - Command, Control and Communications
C3I - Command, Control, Communications and Intelligence
CAD - Computer Aided Design
CAE - Computer Aided Engineering
CAM - Computer Aided Manufacturing
CB - Chemical Biological
CBR - Chemical, Biological Radiological
CE - Chief of Engineers Army
CECOM - Communications and Electronics Command
CG - Commanding General
CIGTF - Central Inertial Guidance Test Facility
CM - Countermeasures
CMMCA - Cruise Missile Mission Control Aircraft
CNO - Chief of Naval Operations
CRREL - Cold Regions Research and Engineering Laboratory
CW - Chemical Warfare
CWA - Chemical Warfare Agents
DA - Department of the Army
DARPA - Defense Advance Research Projects Agency
DART - Demonstration of Advanced Radar Technology
DDN - Defense Data Network
DIRCM - Directional Infrared Countermeasures
DoD - Department of Defense
DPG - Dugway Proving Ground
DZ - Drop Zone
ECCM - Electronic Counter-Countermeasures
ECCM/ARTB - Electronic Counter-Countermeasures Advanced Radar Test Bed

APPENDIX C
SELECTED STANDARD ABBREVIATIONS AND ACRONYMS

ECM - Electronic Countermeasures
ECWCS - Extended Cold Weather Clothing System
EDDIC - Experimental Design, Demonstration and Integration Center
ELINT - Electronic Intelligence
EMI - Electromagnetic Interference
EMP - Electromagnetic Propagation
EMW - Electromagnetic Warfare
EO - Electro-Optical
EO-IR - Electro-Optics/Infrared
EOD - Explosive Ordnance Disposal
EPLRS - Enhanced Position Location Reporting System
ET - Engineering Artillery
ETDL - Electronics Technology and Devices Laboratory
EW - Electronic Warfare
EWTES - Electronic Warfare Threat Environment Simulation
EWVA - Electronic Warfare Vulnerability Assessments
FA - Field Artillery
FAADS - Forward Area Air Defense Systems
GCA - Ground-Controlled Approach
GPS - Global Positioning System
HF - High-Frequency
HFE - Human Factors Engineering
HIFX - High Intensity Flash X-ray
HPM - High Powered Microwaves
IDF - Integrated Data Facility
IED - Innovative Exploratory Development
IEW - Intelligence Electronic Warfare
IFAST - Integration Facility for Avionics System Test
IFF - Identification, Friend or Foe
IIPF - Intelligence Information Processing Facility
ILIR - In-Lab Innovative Research
IM - Insensitive Munitions
IR - Infrared
IRCM - Infrared Countermeasures
JDAM - Joint Direct Attack Munitions
JSOW - Joint Standoff Weapon
JTIDS - Joint Tactical Information Distribution System
LEAP - Lightweight Exo-Atmospheric Projectile
LMCA - Logistics Material Control Activity
MIRCL - Mid-Infrared Chemical Laser
MPT - Military Potential Test
MRSR - Multi-Role Survivable Radar
MSMS - Molten Salt Melt Structure
NASC - Naval Air Systems Command

APPENDIX C
SELECTED STANDARD ABBREVIATIONS AND ACRONYMS

NASP - National Aerospace Plane
NAVAIR - Naval Air Systems Command
NAVSEA - Naval Sea Systems Command
NBC - Nuclear, Biological and Chemical
NCAC - National Center for Advanced Computing
NDT - Non-Destructive Testing
NEMP - Nuclear Electromagnetic Propagation
NTC - National Training Center
NVD - Night Vision Devices
OPTEC - Operational, Test and Evaluation Command
PEO - Program Executive Officer
PI - Product Improvement
PLS - Palletized Load System
PM - Program Manager
PMEL - Precision Measurement Equipment Laboratory
POL - Petroleum, Oil, Lubricants
QA - Quality Assurance
QMDO - Qualitative Material Development
R&D - Research and Development
RDT&E - Research, Development, Test and Evaluation
RESA - Research Evaluation and Systems Analysis
RF - Radio Frequency
RFPI - Rapid Force Projection Initiative
SADARM - Search and Destroy Armor
SDI - Strategic Defense Initiative
SLED - Standard Linear Energy Doubler
STAR - Systems Test bed for Avionics Research
T&E - Test and Evaluation
TACOM - Tank Automotive Command
TAOS - Technology for Autonomous Operational Survivability
TASS - Tactical Avionics Simulator
TECOM - Test and Evaluation Command
TMAS - Tank Main Armament System
TRADOC - Training and Indoctrination Command
UDT - Underwater Demolition Team
USW - Undersea Warfare
UV - Ultraviolet
V/STOL - Vertical/Short Takeoff and Landing
VHF - Very High Frequency

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FY-93 Department of Defense In-House RDT&E Activities Report, 1 November 1994.

ERRATA. 14 November 1994, page 1 of 2

Several errors and inconsistencies have been discovered in the FY-93 Report.

For the errors, corrected pages are attached for report holders. Since the report is printed on two sides, complete replacement pages (printed front and back) are attached. For report holders who have access to "GBC" binding equipment, the replacement pages can be punched, the report binding temporarily opened, and the corrected pages inserted to replace the originals. Alternatively, since each correction involves only a few characters or numbers, readers may wish to simply manually post the corrections to the twelve pages involved. The corrections are summarized below:

1. Page 1-2: Several column headings are truncated. "N-HOUSE" should read "IN-HOUSE"; "OTAL" should read "TOTAL"; and "HD" should read "PHD". (There are no errors on the front facing page, 1-1.)

2. Page 1-3: For the Belvoir RDEC, property costs erroneously appear in thousands of dollars instead of millions. The "REAL PROP" amount should read 14.041; the "EQUIP" amount should read 8.174.

3. Page 1-4: Two column headings are truncated. "N-HOUSE" should read "IN-HOUSE"; and "-HOUSE" should read "IN-HOUSE".

4. Page 1-6: Two column headings are truncated. "N-HOUSE" should read "IN-HOUSE"; and "-HOUSE" should read "IN-HOUSE". (There are no errors on page 1-5.)

5. Page 1-8: One column heading was truncated. "N-HOUSE" should read "IN-HOUSE". (There are no errors on page 1-7.)

6. Page 2-24: For the Belvoir Research, Development and Engineering Center, Property Acquisition Costs erroneously appear in thousands of dollars instead of millions. The "REAL PROPERTY" amount should read 14.041; the "EQUIPMENT" amount should read 8.174. (There are no errors on page 2-23.)

7. Page 2-36: For the Combat Systems Test Activity, several incorrect Personnel Data numbers appear. "Military Technical Support & Other Personnel" should read 173, not 5; "Total Technical Support & Other Personnel" should read 960, not 792. (There are no errors on page 2-35.)

8. Page 2-98: For OPTEC - Test and Experimentation Command, several incorrect Personnel Data numbers appear. "Military Scientists & Engineers-Other" should read 1103, not 13. "Civilian Scientists & Engineers-Other" should read 610, not 62. "Total Scientists & Engineers-Other" should read 1713, not 75. (There are no errors on page 2-97.)

AD-A282 498

9. Page 3-12: For the Naval Air Warfare Center, several incorrect Funding amounts appear. The correct amounts are as follows:

Appropriation	In-House	Out-of-House	Total
6.1 Other	no	1.480	3.949
6.2 IED (Navy)	changes	0.167	1.114
6.2 Other		40.961	108.329

(There are no errors on page 3-11.)

10. Page 3-22: For the Naval Civil Engineering Laboratory, several incorrect Personnel Data numbers appear. "Total Scientists & Engineers - Other" should read 184, not 177, and "Total Technical Support & Other Personnel" should read 205, not 196. (There are no errors on page 3-21.)

Inconsistencies:

1. The correct telephone number for the Naval Medical Research Unit #2, Jakarta, Indonesia (011-62-21-421-4454) appears on page 3-53. The telephone number on page 3-55 is incorrect.

2. The correct telephone number for the Naval Medical Research Unit #3, Cairo, Egypt (011-20-2-284-1375) appears on page 3-57. The telephone number on page 3-60 is incorrect.

TABLES

TABLE 1. ARMY RDT&E ACTIVITIES, PROGRAM AND PERSONNEL DATA, FY 1993

INSTALLATION	FUNDING DATA (MILLIONS $)				PERSONNEL DATA					
	TOTAL	TOTALS IN-HOUSE	TOTALS RDT&E	IN-HOUSE RDT&E	TOTAL MIL	TOTAL CIV	PHD MIL	PHD CIV	ENG MIL	ENG CIV
Aeromedical Research Laboratory	11.302	9.104	7.764	5.566	62	64	14	13	5	8
Armament RDEC	656.018	309.095	330.890	145.160	79	4,442	1	98	13	2,086
Army Research Laboratory	557.002	272.111	476.392	264.319	116	3,576	9	387	32	1,472
Army Research Office	110.995	0.000	110.995	0.000	3	102	0	43	0	1
Aviation RDEC	148.791	61.949	95.089	39.354	12	770	1	31	8	445
Aviation Technical Test Center	24.959	24.959	19.156	19.156	92	137	0	0	30	46
Belvoir RDEC	169.545	60.051	108.220	38.287	20	370	0	15	20	316
CECOM RDEC	559.170	140.859	277.380	83.114	140	2,211	1	54	20	1,300
Cold Regions Research and Engineering Laboratory	39.322	25.908	24.682	14.211	3	284	1	48	1	86
Cold Regions Test Center	10.278	10.278	6.104	6.104	73	33	0	0	5	7
Combat Systems Test Activity	129.195	85.440	78.899	50.260	185	1,099	0	7	12	305
Construction Engineering Research Laboratories	87.011	40.386	42.710	24.525	1	382	0	48	1	183
Dugway Proving Ground	86.116	47.728	64.600	36.008	67	582	0	26	48	91
Edgewood RDEC	222.288	100.226	168.105	64.463	49	1,120	3	77	20	559
Electronic Proving Ground	53.085	27.269	27.694	12.263	359	172	1	2	31	80
Engineer Waterways Experiment Station	317.711	210.725	274.963	168.783	5	1,567	1	181	4	549
Institute of Surgical Research	14.189	13.391	7.396	6.598	176	63	21	10	9	17
Materiel Systems Analysis Activity	43.346	30.277	32.249	22.147	15	434	0	11	13	320
Medical Research Inst. of Chemical Defense	23.712	23.202	19.156	18.649	77	178	17	33	0	50
Medical Research Inst. of Environmental Medicine	12.185	10.357	8.014	6.235	80	81	24	27	0	26
Medical Research Inst. of Infectious Diseases	38.926	38.230	27.391	26.695	252	240	34	45	20	34
Missile RDEC	485.326	126.624	365.669	86.897	28	2,046	2	56	6	256
Natick RDEC	142.758	72.264	114.800	49.673	45	925	0	58	3	338
OPTEC-Test and Experimentation Command	106.167	106.167	62.459	62.459	1,182	799	0	3	13	62
Research Inst. for the Behavioral & Social Sciences	42.498	20.985	40.857	19.344	11	225	0	104	6	27
Tank-Automotive RDEC	190.523	94.591	133.271	54.413	24	1,248	1	22	23	611
Topographic Engineering Center	78.135	29.417	27.187	19.242	11	413	0	14	4	242
Walter Reed Army Institute of Research	80.529	75.454	55.143	50.724	428	500	162	117	5	149
White Sands Missile Range	90.858	40.796	53.583	19.717	436	2,168	0	10	219	543
Yuma Proving Ground	124.242	76.948	82.301	45.505	204	739	0	0	13	150

TABLE 2. ARMY RDT&E ACTIVITIES, FACILITY DATA, FY 1993

INSTALLATION	LOCATION	SPACE AND PROPERTY						
			SPACE (THOUSANDS OF SQUARE FEET)				COST (MILLIONS $)	
		ACRES	LAB	ADMIN	OTHER	TOTAL	REAL PROP	EQUIP
Aeromedical Research Laboratory	Ft. Rucker, AL	44	107.946	24.520	39.652	172.118	11.382	44.240
Armament RDEC	Picatinny Arsenal, NJ	5,884	452.617	1,150.733	2,452.853	4,056.203	160.658	212.342
Army Research Laboratory	Adelphi, MD	2,353	1,849.000	405.000	713.000	2,967.000	1,264.000	527.000
Army Research Office	Rsrch Triangle Pk, NC	0	0.000	29.938	0.000	29.938	0.000	1.508
Aviation RDEC	St. Louis, MO	0	46.428	52.151	11.502	110.081	3.020	24.008
Aviation Technical Test Center	Ft. Rucker, AL	0	0.000	93.000	229.000	322.000	3.027	178.650
Belvoir RDEC	Ft. Belvoir, VA	240	332.949	67.117	260.390	660.456	14.041	8.174
CECOM RDEC	Ft. Monmouth, NJ	204	421.400	378.000	0.000	799.400	65.652	177.200
Cold Regions Research & Engineering Lab	Hanover, NH	194	88.961	74.054	148.000	311.015	32.015	22.482
Cold Regions Test Center	Ft. Greely, AK	0	1.400	18.200	198.400	218.000	14.300	40.825
Combat Systems Test Activity	Aberdeen PG, MD	56,707	155.466	166.016	910.538	1,232.020	28.991	182.496
Construction Engineering Research Labs	Champaign, IL	33	103.850	27.513	134.523	265.886	9.477	18.011
Dugway Proving Ground	Dugway, UT	798,855	170.573	157.344	2,266.652	2,594.569	135.000	40.913
Edgewood RDEC	Aberdeen PG, MD	0	936.000	216.000	310.000	1,462.000	70.100	129.600
Electronic Proving Ground	Ft. Huachuca, AZ	29,139	273.000	14.680	14.480	302.160	44.198	135.701
Engineer Waterways Experiment Station	Vicksburg, MS	3,608	2,486.540	183.350	63.730	2,733.620	463.560	406.000
Institute of Surgical Research	Ft. Sam Houston, TX	0	51.674	10.626	17.000	79.300	10.553	7.799
Materiel Systems Analysis Activity	Aberdeen PG, MD	4	1.600	126.350	6.050	134.000	3.596	8.271
Medical Research Inst. of Chemical Defense	Aberdeen PG, MD	30	40.502	36.488	115.745	192.735	23.100	24.400
Medical Research Inst. of Environ. Medicine	Natick, MA	1	38.754	6.560	33.750	79.064	25.505	6.116
Medical Research Inst. of Infectious Diseases	Ft. Detrick, MD	150	121.000	40.000	223.000	384.000	22.776	40.381
Missile RDEC	Redstone Arsenal, AL	4,000	909.000	76.000	124.000	1,109.000	216.000	259.000
Natick RDEC	Natick, MA	174	415.891	114.463	316.117	846.471	30.481	38.336
Optec-Test and Experimentation Cmd	Ft. Hood, TX	22	19.900	41.000	0.000	60.900	6.300	3.000
Rsrch. Inst. for Behavioral & Social Sciences	Alexandria, VA	0	10.300	86.000	14.000	110.300	3.500	22.400
Tank-Automotive RDEC	Warren, MI	102	512.500	176.000	0.000	688.500	81.400	192.800
Topographic Engineering Center	Alexandria, VA	0	121.772	15.529	36.998	174.299	22.400	13.490
Walter Reed Army Institute of Research	Washington, DC	0	243.000	102.000	177.000	522.000	46.314	62.109
White Sands Missile Range	White Sands, NM	2,166,253	66.385	966.270	4,327.973	5,360.628	383.699	393.000
Yuma Proving Ground	Yuma, AZ	838,376	22.175	161.300	1,709.159	1,892.634	93.072	304.590

TABLE 3. NAVY RDT&E ACTIVITIES, PROGRAM AND PERSONNEL DATA, FY 1993

	FUNDING DATA (MILLIONS $)				PERSONNEL DATA					
INSTALLATION	TOTAL	TOTALS IN-HOUSE	TOTALS RDT&E	IN-HOUSE RDT&E	TOTAL MIL	TOTAL CIV	PHD MIL	PHD CIV	ENG MIL	ENG CIV
Naval Aerospace Medical Research Laboratory	5.403	5.302	4.813	4.712	29	57	11	8	3	17
Naval Air Warfare Center	3,847.186	1,700.738	1,341.877	756.747	3,475	19,513	9	258	452	7,216
Naval Biodynamics Laboratory	4.061	2.530	3.784	2.253	33	36	3	3	3	15
Naval Civil Engineering Laboratory	74.473	47.762	53.425	30.678	16	385	0	12	7	177
Navy Clothing and Textile Research Facility	4.291	3.069	1.983	1.110	1	55	0	1	1	38
Naval Command, Control & Ocean Surveillance Ctr.	1,982.841	959.521	471.256	236.817	335	5,367	2	199	233	2,334
Naval Dental Research Institute	1.871	1.439	1.871	1.439	32	11	12	3	1	3
Naval Explosive Ordnance Disposal Tech. Ctr.	46.335	21.589	26.654	11.109	62	261	0	1	4	69
Naval Health Research Center	8.789	5.578	7.799	4.968	25	60	11	13	2	26
Naval Medical Research Institute	59.852	18.622	55.530	16.495	260	161	52	31	16	41
Naval Medical Research Unit # 2	4.191	4.135	2.951	2.937	19	106	10	12	1	41
Naval Medical Research Unit # 3	7.453	7.167	6.653	6.367	33	218	9	29	4	54
Navy Personnel Research and Development Center	29.838	17.454	17.081	9.434	17	225	0	53	5	107
Naval Research Laboratory	810.796	380.041	659.050	328.789	185	3,721	8	922	17	1,085
Naval Submarine Medical Research Laboratory	5.448	4.159	4.211	3.450	28	47	9	9	0	15
Naval Surface Warfare Center	3,334.372	2,209.403	1,094.171	658.759	626	21,261	0	460	133	8,479
Naval Undersea Warfare Center	1,317.506	691.756	438.530	209.688	367	7,112	0	143	25	3,133

TABLE 4. NAVY RDT&E ACTIVITIES, FACILITY DATA, FY 1993								
		SPACE AND PROPERTY						
			SPACE (THOUSANDS OF SQUARE FEET)				COST (MILLIONS $)	
INSTALLATION	LOCATION	ACRES	LAB	ADMIN	OTHER	TOTAL	REAL PROP	EQUIP
Naval Aerospace Medical Research Laboratory	Pensacola, FL	3	36.591	26.516	56.714	119.821	13.958	10.649
Naval Air Warfare Center	Arlington, VA	1,165,875	6,464.579	1,530.885	10,102.209	18,097.673	4,102.356	1,549.239
Naval Biodynamics Laboratory	New Orleans, LA	2	25.845	23.149	5.200	54.194	2.183	5.501
Naval Civil Engineering Laboratory	Port Hueneme, CA	33	108.655	84.276	39.404	232.335	5.536	7.700
Navy Clothing and Textile Research Facility	Natick, MA	0	12.667	16.000	5.630	34.297	0.000	1.399
Naval Command, Control & Ocean Surveillance Ctr	San Diego, CA	1,673	2,419.766	498.047	1,894.221	4,812.034	269.185	224.946
Naval Dental Research Institute	Great Lakes, IL	0	21.264	6.001	9.318	36.583	0.000	1.700
Naval Explosive Ordnance Disposal Tech. Ctr.	Indian Head, MD	173	114.112	35.588	113.955	263.655	19.984	6.457
Naval Health Research Center	San Diego, CA	0	26.844	12.650	1.170	40.664	0.000	3.676
Naval Medical Research Institute	Bethesda, MD	7	161.930	63.875	0.000	225.805	8.200	14.676
Naval Medical Research Unit # 2	Jakarta APO AP,	0	16.900	10.990	4.400	32.290	0.847	2.287
Naval Medical Research Unit # 3	Cairo, Egypt, AL	4	68.244	9.058	71.330	148.632	10.600	5.763
Navy Personnel Research & Development Ctr.	San Diego, CA	3	64.000	27.000	4.456	95.456	1.178	11.579
Naval Research Laboratory	Washington, DC	612	3,255.174	248.056	390.360	3,893.590	212.695	339.400
Naval Submarine Medical Research Laboratory	Groton, CT	0	46.183	10.537	4.962	61.682	0.000	4.147
Naval Surface Warfare Center	Arlington, VA	72,664	7,192.034	1,654.553	17,217.182	26,063.769	1,158.803	1,091.621
Naval Undersea Warfare Center	Newport, RI	3,231	3,407.705	243.500	2,476.368	6,127.573	241.459	994.652

TABLE 5. AIR FORCE RDT&E ACTIVITIES, PROGRAM AND PERSONNEL DATA, FY 1993										
	FUNDING DATA (MILLIONS $)				PERSONNEL DATA					
INSTALLATION	TOTAL	TOTALS IN-HOUSE	TOTALS RDT&E	IN-HOUSE RDT&E	TOTAL MIL	TOTAL CIV	PHD MIL	PHD CIV	ENG MIL	ENG CIV
46th Test Group	71.400	33.983	61.461	26.074	198	296	1	2	25	164
4950th Test Wing	106.000	98.000	106.000	98.000	532	463	0	0	46	9
Armstrong Laboratory	198.100	27.800	174.100	27.600	528	539	71	124	162	169
Arnold Engineering Development Center	294.043	205.243	227.698	181.595	134	204	0	4	44	62
Development Test Center	368.499	273.463	260.772	177.886	1,672	1,980	2	7	275	832
Flight Test Center	451.129	320.831	174.693	96.028	4,524	3,443	51	13	1,127	464
Phillips Laboratory	862.400	202.700	643.200	140.900	665	1,318	35	214	358	427
Rome Laboratory	307.613	47.232	231.596	36.785	125	875	6	61	71	485
Wright Laboratory	1,044.300	166.600	996.300	144.900	378	2,179	35	195	274	1,326

TABLE 6. AIR FORCE RDT&E ACTIVITIES, FACILITY DATA, FY 1993

INSTALLATION	LOCATION	SPACE AND PROPERTY						
			SPACE (THOUSANDS OF SQUARE FEET)				COST (MILLIONS $)	
		ACRES	LAB	ADMIN	OTHER	TOTAL	REAL PROP	EQUIP
46th Test Group	Holloman AFB, NM	7,052	572.971	55.009	132.641	760.621	231.837	152.855
4950th Test Wing	WPAFB, OH	400	22.012	9.376	852.006	883.394	27.070	49.992
Armstrong Laboratory	San Antonio, TX	94	718.000	32.000	149.000	899.000	59.000	61.533
Arnold Engineering Development Center	Arnold AFB, TN	39,081	1,614.697	370.161	684.564	2,669.422	1,269.562	225.808
Development Test Center	Eglin AFB, FL	462,770	1,756.320	820.255	8,684.930	11,261.505	383.601	492.338
Flight Test Center	Edwards AFB, CA	297,032	302.354	273.206	8,624.164	9,199.724	665.703	0.149
Phillips Laboratory	Kirtland AFB, NM	50,000	519.000	544.000	1,212.000	2,275.000	150.000	857.500
Rome Laboratory	Griffiss AFB, NY	1,612	855.546	89.231	44.247	989.024	46.892	125.700
Wright Laboratory	WPAFB, OH	932	1,438.300	792.614	905.691	3,136.605	813.834	2,057.890

TABLE 7. DEFENSE NUCLEAR AGENCY RDT&E ACTIVITIES, PROGRAM AND PERSONNEL DATA, FY 1993

INSTALLATION	FUNDING DATA (MILLIONS $)				PERSONNEL DATA					
	TOTAL	TOTALS IN-HOUSE	TOTALS RDT&E	IN-HOUSE RDT&E	TOTAL MIL	TOTAL CIV	PHD MIL	PHD CIV	ENG MIL	ENG CIV
Armed Forces Radiobiology Research Institute	17.574	17.574	17.292	17.292	74	160	22	34	7	52

Belvoir Research, Development and Engineering Center
Ft. Belvoir, VA 22060-5606 Commander: COL Dennis C. Cochrane
(703) 704-2238

MISSION

Responsible for achieving material and technical capability in combat support/combat service support though program areas of mobility/countermobility, survivability, energy and logistics which satisfy approved requirements to provide the United States with a superior combat and deterrent force in assigned mission areas.

CURRENT IMPORTANT PROGRAMS

Tactical Logistics Systems
Countermine/Counterobstacle Equipment
Tactical Electric Power Systems
Bridging Systems
Water Supply and Handling Equipment
Camouflage/Concealment/Deception Equipment

EQUIPMENT/FACILITIES

Facilities: R&D test laboratories. Bridge test hanger. Mobile stress analysis van. Rail impact. Truck stability tilt table. Radio frequency anechoic chamber. Vehicle test tracks. Shock/vibration dynamics and environmental simulators. Mine lanes for sensor test and evaluation. Automated camouflage pattern generation. Motion picture/visual pictorial support. Model fabrication shop. Laboratory capabilities include performance of tests and evaluations such as explosive, acoustic, environmental endurance and electrical/electronic, along with device/system design and engineering.

Belvoir Research, Development and Engineering Center
Ft. Belvoir, VA 22060-5606 Commander: COL Dennis C. Cochrane
(703) 704-2238

FY93 FUNDING DATA (MILLIONS $)			
APPROPRIATION	**IN-HOUSE**	**OUT-OF-HOUSE**	**TOTAL**
RDT&E:			
6.1 ILIR	0.252	NA	0.252
6.1 Other	0.734	0.240	0.974
6.2 IED (Navy)	NA	NA	NA
6.2 Other	8.918	11.083	20.001
6.3	3.763	26.171	29.934
Subtotal (S&T)	**13.667**	**37.494**	**51.161**
6.4	7.683	9.278	16.961
6.5	5.836	10.652	16.488
6.6	9.753	11.324	21.077
6.7	1.001	0.203	1.204
Non-DOD	0.347	0.982	1.329
TOTAL RDT&E	**38.287**	**69.933**	**108.220**
Procurement	0.919	3.970	4.889
Operations & Maintenance	19.024	34.691	53.715
Other	1.821	0.900	2.721
TOTAL FUNDING	**60.051**	**109.494**	**169.545**

MILITARY CONSTRUCTION (MILLIONS $)	
Military Construction (MILCON)	0.000

PERSONNEL DATA (END OF FISCAL YEAR 1993)				
		SCIENTISTS & ENGINEERS		**TECHNICAL SUPPORT**
TYPE	**END STRENGTH**	**PHD'S**	**OTHER**	**& OTHER PERSONNEL**
MILITARY	20	0	20	0
CIVILIAN	370	15	316	39
TOTAL	**390**	**15**	**336**	**39**

SPACE AND PROPERTY			
SPACE (THOUSANDS OF SQ FT)		**PROPERTY ACQUISITION COST (MILLIONS $)**	
LAB	332.949	**REAL PROPERTY**	14.041
ADMIN	67.117	* NEW CAPITAL EQUIPMENT	0.000
OTHER	260.390	**EQUIPMENT**	8.174
TOTAL	**660.456**	* NEW SCIENTIFIC & ENG. EQUIP.	0.000
ACRES	**240**	* Subset of previous category. See Equip./Facilities Narrative.	

NA = Not Applicable

Combat Systems Test Activity
Aberdeen Proving Gnd, MD 21005-5059
(410) 278-3574

Commander: COL James Kriebel
Technical Dir.: James W. Fasig

MISSION

Combat Systems Test Activity is the most diverse test facility within DoD, testing a broad spectrum of military weapons systems and equipment including armored vehicles, guns, ammunition, trucks, bridges, generators, night vision devices, and individual equipment (boots, uniforms, helmets, etc.). As a multi-purpose proving ground, with a temperate climate, our primary mission is to plan, conduct, analyze and report on projects supporting research, development, test and evaluation (RDTE), design, engineering, production, and surveillance tests for DoD agencies and contractors. In this single location, CSTA can subject an item to a full range of tests from automotive endurance and full weapons performance with environmental extremes, to full-scale live fire vulnerability/survivability/ lethality testing utilizing an extensive array of test ranges/facilities, simulators and models. In addition to testing domestic systems, we fully exploit foreign systems to assess the enemy threat. We also develop state-of-the-art test procedures (DoD, international), methodology and instrumentation in order to meet the test requirements of advancing military technologies.

CURRENT IMPORTANT PROGRAMS

Truck, M44A2 Series, 2 1/2 Ton, Extended Service Program
M1A2 Abrams Production Qualification Test (PQT)
Family of Medium Tactical Vehicles (FMTV)
M1A2 Abrams Live Fire Vulnerability Test
M88A1E1 Improved Recovery Vehicle, Endurance, Reliability Test (Ph II)

EQUIPMENT/FACILITIES

World-renowned automotive test/obstacle courses; numerous interior and exterior firing ranges; environmental simulation capabilities including rough-handling and vibration, electromagnetic interference and environmental conditioning capabilities; full transportability test capability to include rail, roadability, MIL-STD 209 pull and tie-down, internal and external air transport; UNDEX test pond for underwater explosives testing and Depleted Uranium Containment Fixture (Superbox) for live fire vulnerability and lethality testing; sophisticated non-destructive test facilities; robotics test facility; pulse radiation facility; state-of-the-art industrial complex which includes maintenance and experimental fabrication capabilities.

Combat Systems Test Activity
Aberdeen Proving Gnd, MD 21005-5059
(410) 278-3574

Commander: COL James Kriebel
Technical Dir.: James W. Fasig

FY93 FUNDING DATA (MILLIONS $)			
APPROPRIATION	**IN-HOUSE**	**OUT-OF-HOUSE**	**TOTAL**
RDT&E:			
6.1 ILIR	0.000	NA	0.000
6.1 Other	0.000	0.000	0.000
6.2 IED (Navy)	NA	NA	NA
6.2 Other	3.747	1.589	5.336
6.3	2.248	0.953	3.201
Subtotal (S&T)	**5.995**	**2.542**	**8.537**
6.4	6.245	2.648	8.893
6.5	0.000	0.000	0.000
6.6	32.774	21.225	53.999
6.7	0.000	0.000	0.000
Non-DOD	5.246	2.224	7.470
TOTAL RDT&E	**50.260**	**28.639**	**78.899**
Procurement	23.013	9.739	32.757
Operations & Maintenance	2.462	1.195	3.657
Other	9.700	4.182	13.882
TOTAL FUNDING	**85.440**	**43.755**	**129.195**

MILITARY CONSTRUCTION (MILLIONS $)	
Military Construction (MILCON)	0.000

PERSONNEL DATA (END OF FISCAL YEAR 1993)				
		SCIENTISTS & ENGINEERS		**TECHNICAL SUPPORT**
TYPE	**END STRENGTH**	**PHD'S**	**OTHER**	**& OTHER PERSONNEL**
MILITARY	185	0	12	173
CIVILIAN	1,099	7	305	787
TOTAL	**1,284**	**7**	**317**	**960**

SPACE AND PROPERTY			
SPACE (THOUSANDS OF SQ FT)		**PROPERTY ACQUISITION COST (MILLIONS $)**	
LAB	155.466	**REAL PROPERTY**	28.991
ADMIN	166.016	* NEW CAPITAL EQUIPMENT	2.165
OTHER	910.538	**EQUIPMENT**	182.496
TOTAL	**1,232.020**	* NEW SCIENTIFIC & ENG. EQUIP.	9.587
ACRES	**56,707**	* Subset of previous category. See Equip./Facilities Narrative.	

NA = Not Applicable

OPTEC - Test and Experimentation Command
Fort Hood, TX 76544-5065
(817) 288-9114
Commander: BG Anthony C. Trifiletti
Technical Dir: Marion Bryson

MISSION

Support the Army materiel acquisition and force development processes by managing the User Testing Program and conducting operational testing to support force development.

CURRENT IMPORTANT PROGRAMS

M1A2	Main Battle Tank
JAVELIN	Advanced anti-tank weapons system
FMTV	Family of Medium Tactical Vehicles
ATCCS	Army Tactical Command & Control System
C17	Transport aircraft
AFATDS	Advanced Field Artillery Data System
SINCGARS	Single Channel Ground & Airborne Radio Systems
AJCM	
ISM	

EQUIPMENT/FACILITIES

Position location, high angle modular integrated target, video, data acquisition and reduction, thermal imaging, fiber optics and video multiplexer/demultiplexer, range timing, microwave, environmental measurement and survey.

OPTEC - Test and Experimentation Command
Fort Hood, TX 76544-5065
(817) 288-9114

Commander: BG Anthony C. Trifiletti
Technical Dir: Marion Bryson

FY93 FUNDING DATA (MILLIONS $)			
APPROPRIATION	**IN-HOUSE**	**OUT-OF-HOUSE**	**TOTAL**
RDT&E:			
6.1 ILIR	0.000	NA	0.000
6.1 Other	0.000	0.000	0.000
6.2 IED (Navy)	NA	NA	NA
6.2 Other	0.000	0.000	0.000
6.3	0.000	0.000	0.000
Subtotal (S&T)	**0.000**	**0.000**	**0.000**
6.4	0.000	0.000	0.000
6.5	0.000	0.000	0.000
6.6	62.459	0.000	62.459
6.7	0.000	0.000	0.000
Non-DOD	0.000	0.000	0.000
TOTAL RDT&E	**62.459**	**0.000**	**62.459**
Procurement	0.000	0.000	0.000
Operations & Maintenance	43.708	0.000	43.708
Other	0.000	0.000	0.000
TOTAL FUNDING	**106.167**	**0.000**	**106.167**

MILITARY CONSTRUCTION (MILLIONS $)	
Military Construction (MILCON)	0.000

PERSONNEL DATA (END OF FISCAL YEAR 1993)				
		SCIENTISTS & ENGINEERS		TECHNICAL SUPPORT
TYPE	**END STRENGTH**	**PHD'S**	**OTHER**	**& OTHER PERSONNEL**
MILITARY	1,182	0	1103	79
CIVILIAN	799	3	610	186
TOTAL	**1,981**	**3**	**1,713**	**265**

SPACE AND PROPERTY			
SPACE (THOUSANDS OF SQ FT)		**PROPERTY ACQUISITION COST (MILLIONS $)**	
LAB	19.900	**REAL PROPERTY**	6.300
ADMIN	41.000	* NEW CAPITAL EQUIPMENT	0.000
OTHER	0.000	**EQUIPMENT**	3.000
TOTAL	**60.900**	* NEW SCIENTIFIC & ENG. EQUIP.	0.000
ACRES	**22**	* Subset of previous category. See Equip./Facilities Narrative.	

NA = Not Applicable

EQUIPMENT/FACILITIES (Cont.)

Other facilities include ground and air ranges, weapons and tactics analysis center, aircraft weapons survival laboratory, aircraft integration/simulation facilities, strategic systems T&E facility, and radar cross-section facility.

Patuxent River Station, MD:
Facilities include: RDT&E hangars, aircraft maintenance facilities, catapult launch system, landing systems test facility, automatic carrier landing system, marine air traffic control, Chesapeake Test Range, range EW and flight radar cross-section facility, aircraft electrical and environmental evaluation facility, antenna and avionics test facility, ship ground station helo-ship data link evaluation facility, Air Combat Environmental T&E facility (ACETEF), manned flight simulator, EW integrated systems test lab, anechoic chamber, electromagnetic environmental effects facility, EW closed loop facility, target support facility.

Trenton, NJ:
Facilities include: large and small engine altitude test area, large engine sea level test cells, rotor spin facility, fuel and lubricants facility, helicopter transmission test facility.

Warminster, PA:
Facilities include: VP/VS and Lamps Facilities, carrier ASW module lab, ASW engineering lab, vertical flight lab, air common acoustic processor lab, ASW mission planning lab, TACAIR combat training systems facility, TACAIR mission planning and systems development facilities, systems integration lab, sonar development simulation facility, dynamic flight simulator, vertical decelerator, ejection seat tower, environmental physiology lab, Navy standard signal processor lab.

Lakehurst, NJ:
Facilities include: C-13 steam catapult; MK-7 arresting gear; elevated fixed platform with installed Recovery, Assist, Secure and Traverse (RAST) system; three (3) active jet car test tracks; jet blast deflector; dedicated 12,000 ft catapult test runway; ground support equipment test course; jet blast site; Universal Lighting Pad (UPL); Ship Weapons Evaluation Facility (SWEF).

Indianapolis, IN:
Computer Aided Design (CAD) equipment, Computer Aided Manufacturing (CAM) equipment, digital avionics simulation laboratory, mobile navigation/communication lab, mission planning center, integrated avionics lab, ASW lab, microwave integrated circuits lab, EP-3/ES-3 integrated test facility, meteorological satellite recovery systems lab, microwave test range, design/development environmental test equipment, engineering design lab, materials lab, stereo lithography equipment, failure analysis equipment, scanning electron microscopes, model analysis equipment.

Naval Air Warfare Center
Arlington, VA 22243
(703) 604-6033 (x2200)

CO: RADM G. Strohsahl
Technical Dir.: Lewis Lundberg

FY93 FUNDING DATA (MILLIONS $)			
APPROPRIATION	**IN-HOUSE**	**OUT-OF-HOUSE**	**TOTAL**
RDT&E:			
6.1 ILIR	4.090	NA	4.090
6.1 Other	2.469	1.480	3.949
6.2 IED (Navy)	0.947	.167	1.114
6.2 Other	67.368	40.961	108.329
6.3	29.609	35.405	65.014
Subtotal (S&T)	**104.483**	**78.013**	**182.496**
6.4	138.481	106.587	245.068
6.5	187.062	171.646	358.708
6.6	244.208	130.560	374.768
6.7	82.513	98.324	180.837
Non-DOD	0.000	0.000	0.000
TOTAL RDT&E	**756.747**	**585.130**	**1,341.877**
Procurement	396.799	829.798	1,226.597
Operations & Maintenance	301.002	202.460	503.462
Other	246.190	529.060	775.250
TOTAL FUNDING	**1,700.738**	**2,146.448**	**3,847.186**

MILITARY CONSTRUCTION (MILLIONS $)	
Military Construction (MILCON)	45.300

PERSONNEL DATA (END OF FISCAL YEAR 1993)				
		SCIENTISTS & ENGINEERS		**TECHNICAL SUPPORT**
TYPE	**END STRENGTH**	**PHD'S**	**OTHER**	**& OTHER PERSONNEL**
MILITARY	3,475	9	452	3,014
CIVILIAN	19,513	258	7,216	12,039
TOTAL	**22,988**	**267**	**7,668**	**15,053**

SPACE AND PROPERTY			
SPACE (THOUSANDS OF SQ FT)		**PROPERTY ACQUISITION COST (MILLIONS $)**	
LAB	6,464.579	**REAL PROPERTY**	4,102.356
ADMIN	1,530.885	* NEW CAPITAL EQUIPMENT	29.373
OTHER	10,102.209	**EQUIPMENT**	1,549.239
TOTAL	**18,097.673**	* NEW SCIENTIFIC & ENG. EQUIP.	42.956
ACRES	**1,165,875**	* Subset of previous category. See Equip./Facilities Narrative.	

NA = Not Applicable

Naval Civil Engineering Laboratory
Port Hueneme, CA 93043-4328
(805) 982-1393

CO: CAPT. Joseph C. Penell
Technical Dir.: Robert N. Storer

MISSION

To be the principal Navy RDT&E center for shore and fixed surface and subsurface ocean facilities and for the Navy and Marine Corps construction forces. As an integral member of the Naval Facilities Engineering Command Team, our mission is to provide innovative technology products and services required to improve the acquisition, operation, and maintenance of Navy shore and ocean facilities and to enhance the Seabees and the Marine Corps operational readiness capabilities. In carrying out our mission, we conduct RDT&E transfer technology, and provide specialized engineering services.

CURRENT IMPORTANT PROGRAMS

Defense environmental restoration program. Pollution prevention. Navy shore facilities improvement. Deep ocean technology in support of ASW. Marine Corp amphibious logistics. Navy construction forces systems. Ocean test ranges. Underwater construction force systems. Explosive safety. Physical security systems. Independent exploratory development. Independent research. Support of Army and Air Force facilities engineering programs.

EQUIPMENT/FACILITIES

Deep ocean simulation laboratory. Shallow water dive tank. Research motor vessel "Independence". Ballistic test facility for testing security products. Metallurgical material laboratory. Chemistry laboratory. Water purification laboratory. Steamboiler laboratory. Electromagnetic Pulse (EMP) test facility. Environmental protection laboratory. Physical security test facility. Soils laboratory. Heavy equipment test facility. Helo lift test site. High temperature pavements stand. Fiber optics laboratory. Research support vessel. Controlled suspension test facility, recompression chamber, cold chamber.

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Port Hueneme, CA 93043-4328
(805) 982-1393

CO: CAPT. Joseph C. Penell
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FY93 FUNDING DATA (MILLIONS $)			
APPROPRIATION	**IN-HOUSE**	**OUT-OF-HOUSE**	**TOTAL**
RDT&E:			
6.1 ILIR	0.259	NA	0.259
6.1 Other	0.733	0.510	1.243
6.2 IED (Navy)	0.170	0.030	0.200
6.2 Other	6.201	0.887	7.088
6.3	7.971	8.939	16.910
Subtotal (S&T)	**15.334**	**10.366**	**25.700**
6.4	8.423	8.873	17.296
6.5	2.390	2.555	4.945
6.6	0.010	0.000	0.010
6.7	1.810	0.360	2.170
Non-DOD	2.711	0.593	3.304
TOTAL RDT&E	**30.678**	**22.747**	**53.425**
Procurement	1.905	1.127	3.032
Operations & Maintenance	8.026	1.178	9.204
Other	7.153	1.659	8.812
TOTAL FUNDING	**47.762**	**26.711**	**74.473**

MILITARY CONSTRUCTION (MILLIONS $)	
Military Construction (MILCON)	0.438

PERSONNEL DATA (END OF FISCAL YEAR 1993)				
		SCIENTISTS & ENGINEERS		**TECHNICAL SUPPORT**
TYPE	**END STRENGTH**	**PHD'S**	**OTHER**	**& OTHER PERSONNEL**
MILITARY	16	0	7	9
CIVILIAN	385	12	177	196
TOTAL	**401**	**12**	**184**	**205**

SPACE AND PROPERTY			
SPACE (THOUSANDS OF SQ FT)		**PROPERTY ACQUISITION COST (MILLIONS $)**	
LAB	108.655	**REAL PROPERTY**	5.536
ADMIN	84.276	* NEW CAPITAL EQUIPMENT	0.350
OTHER	39.404	**EQUIPMENT**	7.700
TOTAL	**232.335**	* NEW SCIENTIFIC & ENG. EQUIP.	0.000
ACRES	**33**	* Subset of previous category. See Equip./Facilities Narrative.	

NA = Not Applicable