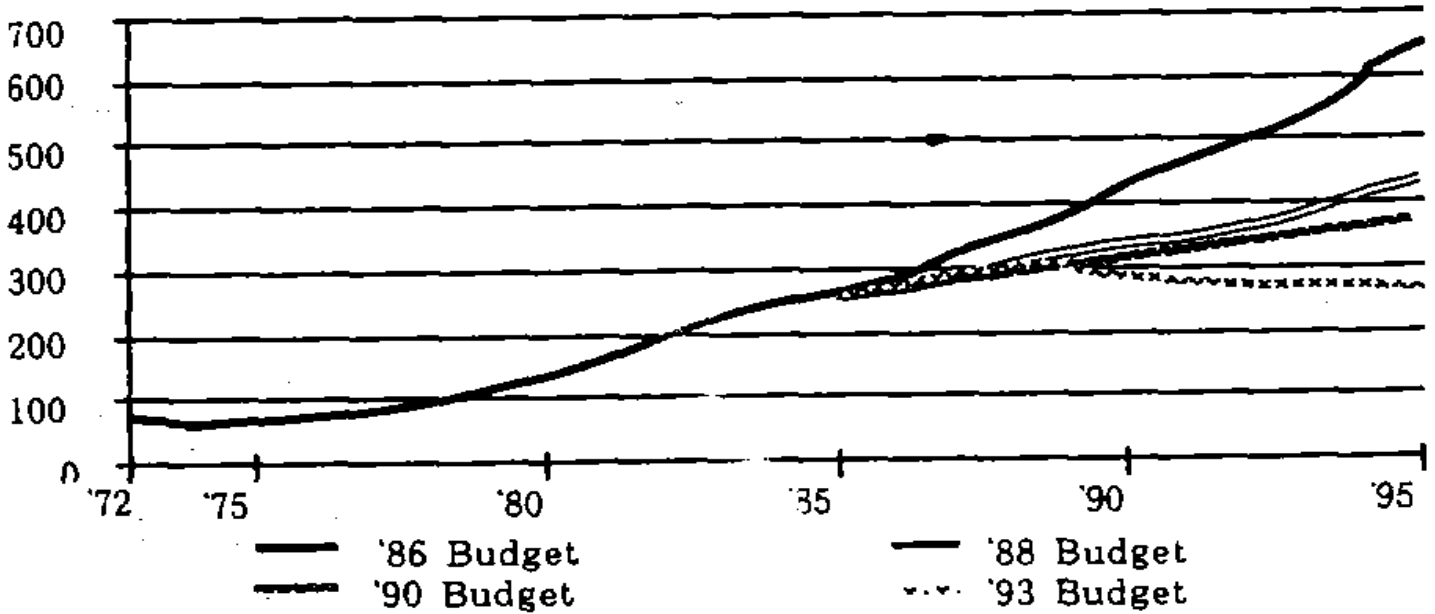


(Billions of Dollars)



가가 가 가 가 가 가

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'90 2,910 '85 '1993 2,676 '90
 8% '93 '93 '85 28.8%가
 '93 41%가 544 1 6 '86 1.176 8 6 가

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Department of Defense-Budget Authority by Appropriation^a (Dollars in Millions)

	FY1986 ^b	FY1987	FY1988	FY1989	FY1990	FY1991 ^c	FY1992 ^c	FY1993
Current Dollars								
Military Personnel	67,794	74,010	76,584	78,477	78,876	84,213	79,217	77,080
Operations & Maintenance	74,888	79,607	81,629	86,221	88,309	131,930	92,501	86,471
Procurement	92,506	80,234	80,053	79,390	81,376	71,740	60,532	54,416
Research, Development, Test and Evaluation (RDT&E)	33,609	35,644	36,521	37,530	36,459	36,193	36,999	38,813
Military Construction	5,281	5,093	5,349	5,738	5,130	5,188	4,942	6,195
Family Housing	2,803	3,075	3,199	3,276	3,143	3,296	3,650	4,004
Special Foreign Currency Program	2	4						
Defense-wide Contingency Revolving & Management Funds	5,235	2,612	1,246	897	566	2,701	4,324	1,552
Trust & Receipts	-707	-781	-801	-668	-832	-44,329	-5,690	-763
Deduct. Intragovt Receipt	-22	-28	-26	-25	-27	-29	-178	-29
Total, Current \$	281,390	279,469	283,755	290,837	292,999	290,904	276,297	67,628

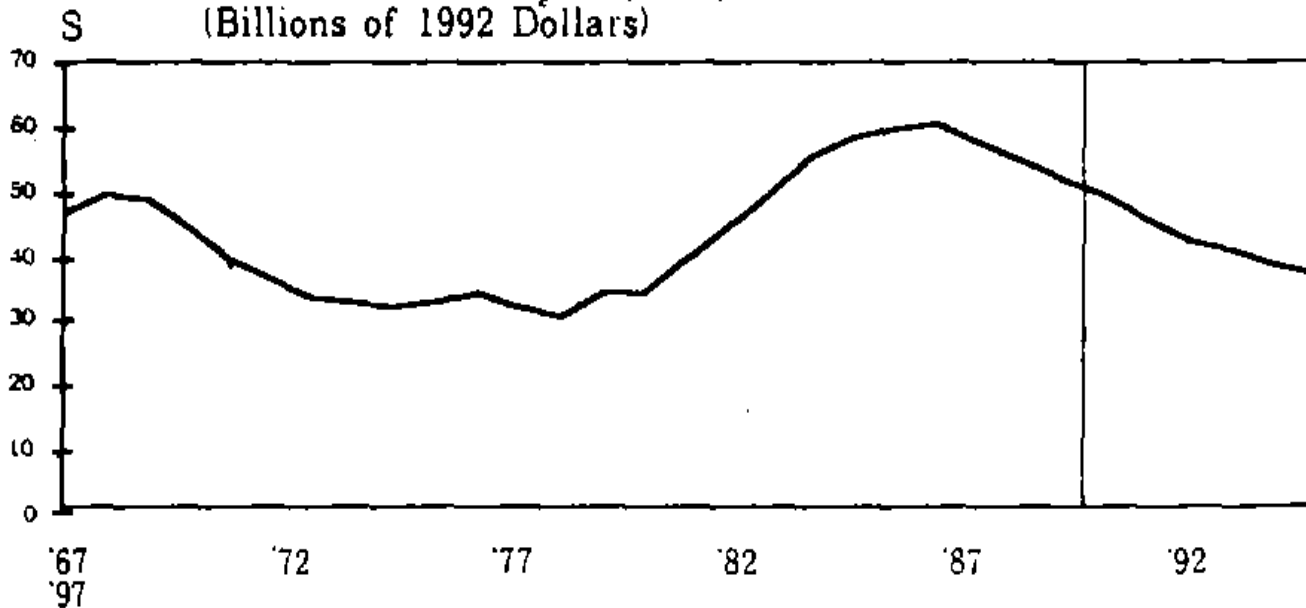
Total, Current \$	281.390	279.469	283.755	290.837	292.999	290.904	276.297	67.628
Current FY1992 Dollars								
Military Personnel	85.686	90.581	90.179	89.474	88.631	90.633	82.762	77.080
Operations & Maintenance	97.259	99.977	99.290	100.079	99.033	138.421	95.765	86.471
Procurement	117.686	98.551	94.681	90.515	89.651	76.498	62.511	54.416
RDT&E	43.025	44.233	43.688	43.093	40.287	35.578	38.231	38.813
Military Construction	6.802	6.333	6.381	6.572	5.661	5.541	5.106	6.195
Family Housing	3.550	3.790	3.821	3.761	3.477	3.497	3.771	4.004
Special Foreign Currency Program	3	4						
Defense-wide Contingency Revolving & Management Funds	6.647	3.229	1.495	1.033	626	2.877	4.467	1.552
Trust & Receipts	-898	-966	-961	-769	-921	-42.211	-5.878	-763
Deduct. Intragovt Receipt	-27	-35	-31	-29	-30	-31	-184	-29
Total, Current \$	359.132	345.699	338.543	333.728	326.415	308.803	286.551	267.628
% Real Growth								
Military Personnel	-3.4	6.5	-0.5	-0.8	-1.0	2.3	-8.7	-6.9
Operations & Maintenance	-4.7	2.8	-0.7	0.8	-1.1	39.8	-30.8	-9.7
Procurement	-7.5	-16.3	-3.9	-4.4	-1.0	-14.7	-18.3	-13.0
RDT&E	4.5	2.8	-1.2	-1.4	-6.5	-4.3	-0.9	1.5
Military Construction	-6.9	-6.9	0.8	3.0	-13.9	-2.1	-7.9	21.3
Family Housing	-5.3	6.8	0.8	-1.6	-7.6	0.6	7.8	6.2
Total	-4.4	-3.8	-2.1	-1.4	-2.2	-5.4	-7.2	-6.6

^a Numbers may not add to totals due to rounding.

^b Lower Budget Authority in the Military Personnel Accounts in FY 1986 reflects the congressional direction to finance \$4.5 billion for the military pay raise and retirement accrual costs by transfers from prior year unobligated balances.

^c In FY 1991-92, abrupt increases in budget authority, especially Operations and Maintenance (O&M), were due to the incremental costs of Operation DESERT SHIELD/STORM. The FY 1991-92 sharp rise in receipts reflects offsetting allied contributions. FY 1991 O&M also includes the \$15 billion appropriated for the Persian Gulf Regional Defense Fund. From this fund, also \$300 million was spent, and that was for refugee assistance, not for Operation DESERT SHIELD/STORM.

California Defense Expenditures (Billions of 1992 Dollars)



, '86 336 9 '93 388 13 가 (< 1 >)
 가 '90 가 8 2 가 (< 3 >). 2
 510 가 75% 37 , 1992 가 21% 25%
 . 1988 37 5 , 1990 1992 2 3 8 (10) 65% 10 7

- McDonnell Douglas 21,000
- Lockheed 8,000
- Hughes 5,000
- Northrop 2,000
- Lockheed 1,000
- General Dynamics 1,000
- 440
- 38,440

- McDonnell Douglas 4,000~5,000

- Hughes 4,500

- Hughes 9,500

2.

2

< 4 >

Key California Weapons Programs

PROGRAMS

MAJOR CONTRACTORS

Aircraft

B-1 Bomber

Rockwell

B-2 Bomber

Northrop; Hughes

C-17 Transport

McDonnell-Douglas

C-130 Transport

Rockwell

F-18 Fighter

Northrop

F-117 Stealth Fighter

Lockheed

Missiles and Space

Trident

Lockheed

MX

Rockwell; Gencorp; TRW

Cruise

General Dynamics; Hughes

Tomahawk

General Dynamics; Hughes

Strategic Defense Initiative

McDonnell-Douglas; TRW;

Lockheed

Tracked Vehicles

M-113

FMC

Bradley

FMC

Electronics Systems

McDonnell-Douglas; Hughes; Westinghouse; Lockheed; TRW; Ford Motors;
other companies

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TRW Civil System

Northrop

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NASA

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IBM
Process Development Center

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ITT Cannonn

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 Security 가 가 ,
 FM TV 가 가 ,
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 " " New Technology Week 誌 가 가 " ,
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Transfer (1986 가) 1989 National Competitiveness Technology 가 가 (CRADAs) 가 ,
 , 60% , 1 , CRADAs 4 가 가 52 , 2/3 ,
 , 1977 33 1992 3~4 7 1,175 ,

Transfer CRADAs가 1989 National Competitiveness Technology 가 가 가 가 ,
 , 가 가 5 가 , 가 가 가 ,
 , '92 5000 , '93 1991 1 4,100 가 2000 가 가 CRADAs ,

(1) 가 ,
 30 가 , 500 1,000 ,
 '70 가 , 20 가 ,
 1969 ,

. 1970

1979

1988
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. 1990 6

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'92 75 가 '94 5

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post graduated

(2) CSPP

Computer Systems Policy Project(CSPP) 1989 11 가 가

. 1990 12 CEO
가

1991 DEC 가

가 (CRADA)

3가 가

10 3 CEO가
CRADA

< 2 >

1. Lawrence Livermore National Laboratory

Measurements and Diagnostics

- Sensors and detectors
- Data acquisition and analysis
- Imaging and signal processing

Computational Science and Engineering

- Solids, fluids, atomic structure
- Electronics, electromagnetics
- Scientific visualization
- Massively parallel processing

Lasers, Optics, Electro-optics

- High power/high radiance lasers
- High power semiconductor diode laser arrays
- X-ray sources, optics, and materials
- High power optical fiber transport

Engineered materials

- Ceramic-metallic composites
- Multi-layers
- Ultralightweight materials

Applied Physics and Chemistry

- Plasma, solid-state and atomic physics
- Chemical kinetics
- Magnetics and superconductivity
- Nuclear chemistry
- Linear accelerators

Atmospheric and Geosciences

- Seismology and imaging
- Geochemistry

- X-ray sources, optics, and materials
 - High power optical fiber transport
- Manufacturing Engineering
- Precision engineering
 - Computer modeling
 - Computed tomography
- Electronic Systems
- High density packaging
 - Pulsed power
 - High speed data transmission

- Seismology and imaging
 - Geochemistry
 - Transport modeling
 - Global climate
- Defense Science
- Nuclear measurements
 - X-ray optics and diagnostics
 - Energetic materials
 - Conventional munitions
- Bioscience
- Genomics
 - Physical biology
 - Analytical cytology

2 Los Alamos National Laboratory

Nuclear Technologies

- Nuclear weapons design
- Reactor design and safety analysis
- Nuclear medicine
- Nuclear measurements

High Performance Computing and Modeling

- Global environment (climate change, etc.)
- Computational test bed for industry
- Massively parallel processing.
- High data rate communications
- Traffic modeling
- Visualization

Dynamic Experimentation and Diagnostics

- Arms control/verification/safeguards
- Global environment
- Neutron scattering
- Measurement of explosive phenomena
- Light detection and ranging (LIDAR) for atmospheric measurements

Systems Engineering and Rapid Prototyping

- Transportation systems
- Environmental and energy systems analysis
- Lasers manufacturing
- Accelerator systems

Advanced materials and Processing

- Plutonium processing
- Manufacturing process analysis
- Materials modeling (materials by design)
- Polymers
- Ceramics
- Metallics
- Composites

Beam Technologies

- Accelerator transmutation of waste laser diagnostics
- Laser diagnostics
- Material characterization
- Photonics
- Photolithography
- Human genome
- Traffic simulations
- Neural networks
- Non-linear phenomena

3. Sandia National Laboratory

Engineered Materials and Processes

- Synthesis and processing of metals, ceramics, organics
- Characterization and analytical technique development
- Theory, simulation and modeling of materials and processes.
- Melting, casting and joining metal alloys.
- Chemical vapor deposition and plasma processing
- Ion beam processing and analysis

Computational simulations and High Performance Computing

- Massively parallel computation
- High performance scientific computing
- Quantum chemistry and electronic structure
- Computational hydrodynamics, mechanics, and dynamics
- Digital communications and networking
- Information security
- Development and application of intelligent machines
- Signal processing

Microelectronics and Photonics

- Microsensors
- Optoelectronics and photonics
- X-ray lithography
- Reliability physics and engineering
- Radiation hardening technologies
- Advanced microelectronics and photonics packaging
- Advanced compound semiconductors

Physical Simulation and Engineering Sciences

- Fluid and thermal sciences
- Combustion science
- Geological sciences
- Experimental mechanics
- Solid and structural mechanics
- Aerodynamics
- Radiation transport and above-ground radiation testing.
- Diagnostics and instrumentation development
- Nondestructive evaluation
- Environmental testing and engineering.
- Research reactor engineering and experimentation

Pulsed Power

- Intense particle beam physics and technology
- high speed switching
- Intense x-ray physics
- Radiation effects simulation
- Plasma and electromagnetic theory and application

· Sources: Lawrence Livermore National Laboratory, Livermore, CA; Los Alamos National Laboratory, Los Alamos, NM; Sandia National Laboratories, Albuquerque, NM.

CRADA가 1

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* "JETRO, 342 (1994 7, 8)"

(朴敬善編譯)