

## **RAYMOND JOHN JUZAITIS**

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### ***Executive Profile***

Twenty-eight years of experience in the management and execution of National Security R&D programs at the Department of Energy National Laboratories. Early focus in computational physics paved the way for a broad-based technical career that included nuclear weapons design, development, testing, and evaluation. Career assignments included two changes of station in senior advisory positions in the U.S. government: at the Pentagon (DoD), as well as at Defense Programs in DOE. Last sixteen years devoted to technical/line and program management with increasing levels of responsibility, and covering the full breadth of nuclear weapon program activities. In the mid- to late-1990's, as Division Leader, led the transition in technical culture of nuclear weapon design from a nuclear-test-based paradigm to a simulation-based paradigm (Science-Based Stockpile Stewardship). Senior management experience (Associate Director) at two nuclear weapons laboratories: Los Alamos National Laboratory (LANL) and Lawrence Livermore National Laboratory (LLNL). During the last several years, programmatic focus shifted to Non-Proliferation and Counter-Terrorism/Homeland Security programs. Educational background includes B.S.E. in Chemical Engineering (Princeton University), and M.E. and PhD in Nuclear Engineering (University of Virginia).

- Program management
- Organizational structure and design
- Strategic planning
- TQM implementation in R&D
- Nuclear weapon design
- Nuclear reactor engineering
- Technical line management
- Negotiation
- System dynamics
- Technical Safety Appraisals
- Physics simulation code development
- Uranium isotope separation

### ***Highlights of Experience***

#### Management

- Managed a program directorate engaging the matrixed effort of 900 FTEs and \$350M, supporting U.S. non-proliferation and counter-terrorism mission, with sponsors in the DOE/NNSA, DHS, DoD, and Intelligence Community
- Managed a directorate composed of six disciplinary divisions, with a program budget of around \$500M, responsible for the design and physics certification of nuclear weapon performance and safety.
- Oversaw the integration and projectization of a \$1B nuclear weapons program at Los Alamos National Laboratory, including physics certification and manufacturing associated with W88 pit production.
- Led the nuclear weapon design division at Los Alamos (X Division) through the technical transition from a nuclear testing-based paradigm to a simulation-based, science-based stockpile stewardship paradigm.
- Led a Program Integration Task Force (PITF) for the Assistant Secretary/Defense Programs at DOE. Task Force involved senior leaders of the nuclear weapons laboratories and production complex, and resulted in recommendations for enhancing the coherence of Stockpile Stewardship initiatives, as well as promoting balance in science and manufacturing/production elements of the enterprise.
- Restructured major organizations to eliminate redundancy, focus on core capabilities, and create more streamlined alignment to support technical or program strategy.

#### Technical

- Led the theoretical design effort for the primary stage of a new 500-kt thermonuclear Strategic Earth Penetrating Warhead (SEPW)
- Actively participated on the nuclear weapon design team for the W88 SLBM warhead.
- Led the conceptual planning and evaluation for the Low-Yield Nuclear Explosive Research (LYNER) facility, currently known as the "U1a Facility" for sub-critical experiments.

#### *Professional Experience*

**Associate Director: Non-Proliferation, Homeland, and International Security (NHI)** 2005 to Present  
*Lawrence Livermore National Laboratory* Livermore, CA

As a member of the Laboratory's senior management team, responsible for leading, developing, and managing a program directorate of around 900 FTEs that provide technology, analysis, and expertise to support the United States government in preventing the spread or use of Weapons of Mass Destruction, Major areas of emphasis include threat assessment and analysis, detection and interdiction, and response and recovery over the spectrum of potential threats, including: nuclear, chemical, and biological weapons and their delivery systems. The directorate has an annual program budget of about \$350M. The NHI Associate Director defines, develops, and conducts major Laboratory programs to meet the requirements of the Department of Energy (DOE), Department of Homeland Security (DHS), the Intelligence Community and other national security sponsors. During the first year of tenure in this position, conducted a broad organizational realignment designed to re-focus the five major program divisions on critical mission areas and to emphasize end-to-end, system-integrated technology developments and analyses that could credibly offer transformational capability to the nonproliferation and counterterrorism missions of the directorate. The five divisions of the NHI directorate include: Nonproliferation and Global Nuclear Materials Management (NP); Radiological/Nuclear Countermeasures (RN); Chemical-Biological Countermeasures (CB); Infrastructure Assessment and Force Protection (IP); and International Assessments and Knowledge Discovery (Z). With line and program oversight of the LLNL intelligence community/Field Intelligence Element, serve in the role of Senior Intelligence Official for the Laboratory.

**Chief Scientist: Non-Proliferation, Arms Control, and International Security (NAI)** 2004 to 2005  
*Lawrence Livermore National Laboratory* Livermore, CA

As a member of NAI's senior management team (reporting to the Associate Director of NAI/HSO), participated in the overall management of NAI and Homeland Security Organization (HSO). Focus was on promoting excellence in the science and technology that support the missions of NAI and HSO. Developed a systems approach to top-level national problems by understanding emerging technological capabilities and participating in strategic programmatic planning. Participated in the planning for NAI/HSO internal science and infrastructure investments and helped develop the new scientific directions for NAI/HSO that are needed to meet future technology challenges. Focus areas included: support to the AD and DAD in planning and evaluation of NAI's Laboratory Directed R&D (LDRD) portfolio, support to the Laboratory's Science and Technology Office in reviewing FY05 proposals; (Acting) Thrust Leader for national DHS/S&T Rad/Nuc Systems Studies and Decision Tools portfolio; support to DHS/PPB in planning "Winter Study" to address End-to-End Rad/Nuc Countermeasures Architecture.

**Associate Director: Weapons Physics** 2001 to 2004  
*Los Alamos National Laboratory* Los Alamos, New Mexico

Programmatic responsibility over nuclear weapon physics design and assessment effort, including Lab-wide science activities that contribute most directly toward the science-based certification of nuclear weapon performance and safety. Line management authority over six Laboratory Divisions covering experimental, simulation, and weapon physics assessment: P (Physics), DX (Dynamic Experimentation), LANSCE (Los Alamos Neutron Science Center), X (Applied Physics), CCS (Computer and Computational Sciences), and CCN (Computer, Communications, and Networking). Major thrusts during tenure: implemented a more disciplined approach to Quantification of Margins and Uncertainties (QMU) in nuclear weapon certification assessments, reflected in certification plans addressing pit rebuild/remanufacturing and Stockpile Life Extension (SLEP) efforts; corresponding emphasis on development of predictive capability in supporting weapons science, while leading Laboratory-wide effort in building technical

foundation for "Science-Based Prediction" to support all major Laboratory programs; instituted an integrated, program-wide approach to planning and execution, based on a graded approach to project management and institution of enterprise-wide planning and tracking tools. In the last year, served as the Chair of the Program Integration Board, a Director-sponsored management initiative to integrate the activities of the three Associate Directors supporting the core nuclear weapons program: AD (Weapons Physics), AD (Weapons Engineering and Manufacturing), and AD (Operations).

**Research and Development:Theoretical Division (T-DO)**

2000 to 2001

*Los Alamos National Laboratory*

Los Alamos, NM

On a Laboratory Director-sponsored Return to Research grant, participated in research activity focused on quantification of uncertainty in nuclear weapon performance assessments. Helped develop a methodology for certification that engages scientific understanding through more focused integration of theoretical, experimental, and computational science at "performance gates". Identified practical metrics that derive from quantified uncertainties and thus influence the development of structured nuclear weapon certification plans

**Deputy Associate Director (Nuclear Weapons Technologies)**

1999 to 2000

*Los Alamos National Laboratory*

Los Alamos, NM

Serving in a dual role with responsibilities for the National Hydrodynamic Test Program. In the latter role, reported to the DOE Office of Defense Programs. Directed and coordinated the planning and execution of a national hydrodynamics program among the three weapons laboratories. Led the development of hydro testing requirements that addressed weapons physics and certification objectives, and (coupled with advanced simulation capability) constituted a basis for certification of the performance and safety of the primaries of weapons in the enduring stockpile. Provided an integrated multi-lab National Hydrodynamic Testing Plan to meet the goals of Stockpile Stewardship. Defined a path to evaluate the need for advanced hydrodynamic capabilities and manage development of complementary radiographic technologies on a realistic schedule (DARHT-II, Diagnostic-X, and PRAD/AHF). Coordinated planning and execution of DP-10 weapons science and technology campaigns (#1: Primary Certification; #3: Advanced Radiography), providing oversight for the development and achievement of milestones in the appropriate Program and Implementation Plans. Strived for and managed the balance between available resources and programmatic goals/objectives.

**Senior Technical Advisor**

1998 to 1999

*Department of Energy, Defense Programs*

Washington, DC

Recruited by the DOE Assistant Secretary for Defense Programs (Dr. Victor Reis) to serve in a senior advisory capacity to the Office of Weapons Science (later Weapons Research, Development, and Simulation). Provided technical advice and coordination for the planning, development, and integration of nuclear weapon technology activities and technical capabilities supporting the Stockpile Stewardship program. Scope of responsibilities included above-ground and sub-critical experimental program activities, advanced physics modeling and simulation, and weapon certification and assessment. Supported program with analysis and recommendations regarding the technical scope and resource allocation for the Stewardship Program. Worked with Defense Programs federal line management and the DP Nuclear Weapons Laboratories management in technical goal definition and program planning and execution. Major accomplishments: (1) led the Program Integration Task Force (PITF chartered by the Assistant Secretary for Defense Programs), which developed recommendations for the restructuring of Defense Programs offices to promote the integration of weapons R&D and improve overall coherence of enterprise-wide science and manufacturing/production activities; (2) assisted in the refocusing of nuclear weapons R&D activities (experimental, simulation, weapon certification) along the lines of "technology campaigns" aimed at developing the crucial enabling technologies to support certification of nuclear weapons without the benefit of underground nuclear testing.

**Division Leader (Applied Theoretical and Computational Physics, X Division)**

1992 to 1998

*Los Alamos National Laboratory*

Los Alamos, NM

Senior Laboratory management position, reporting to the Laboratory Director. Technical direction for a Division with approximately 300 employees and a budget of \$70 million. X Division is responsible for theoretical nuclear weapons design, analysis, and assessment. Major responsibilities for the weapons physics, design technology, and computational physics capabilities supporting the Nuclear Weapons Program, providing senior line management oversight and direction of the transition from a nuclear test-based technical paradigm to a stewardship paradigm. The latter emphasized technical assessments based on validated, high-fidelity physics simulation of nuclear weapon performance and safety, integrating continued experimentation in CTBT-compliant regimes and the archived body

of nuclear test data. X Division was realigned in structure to promote greater focus on computational physics and physics application activities in support of Science-Based Stockpile Stewardship. Strong focus on project management was implemented in the restructured Division to facilitate the technical objectives of the Accelerated Strategic Computing Initiative (ASCI). Served one term as Chair of the Laboratory Leadership Council (LLC), an institutional leadership role.

**Deputy Division Leader (Field Testing, J Division)**

1990 to 1992

*Los Alamos National Laboratory*

Los Alamos, NM

Assisted and acted for the Division Leader in technical line/program management of the underground nuclear test activities supporting the Laboratory's Nuclear Weapons Program. Responsibilities included line management of Division, review and planning for nuclear tests, and representation of test program interests in Laboratory, DOE, and interagency interactions. Appointed in 1992 by the Manager (DOE/NV) as Scientific Advisor for underground nuclear tests at the Nevada Test Site. In this role, worked with the Test Director and Nevada Operations Office to provide management coordination between the technical objectives of the tests and operational considerations in compliance with DOE policy and national treaty obligations. Served as LANL member to DOE/NV Verification Evaluation Panel (VEP), which was charged with the responsibility for implementing the on-site verification protocols of the Threshold Test Ban Treaty. Laboratory point-of-contact for the DOE Test Ban Readiness Program. Led the conceptual planning and evaluation for the Low-Yield Nuclear Explosive Research (LYNER) facility, currently known as the "U1a Facility" for sub-critical experiments. Led the J-Division preparation and Technical Safety Appraisal (TSA) effort associated with the DOE "Tiger Team" ES&H audit of the Laboratory.

**Special Scientific Advisor (ATSD-AE)**

1988 to 1990

*Department of Defense*

Washington, DC

On change-of-station appointment at the Pentagon, assisted the Assistant to the Secretary of Defense (Atomic Energy) in carrying out his responsibilities within the Department of Defense and with the Nuclear Weapons Council. Frequently represented the interests of the ATSD (AE) in meetings, staffing actions, briefings, and numerous interactions with DoD and DOE offices, as well as other Executive Branch organizations and Congressional staff. Major assignments: chief technical point of contact in the office for nuclear reactor technologies (New Production Reactor) and tritium production (including reactor safety, assessment of goal quantities of tritium); cognizance over technical verification issues arising from the Nuclear Testing Talks (TTBT verification protocols). Other areas of responsibility: nuclear weapon design, development, testing issues; nuclear material production; DOE nuclear weapon complex modernization study; arms control.

**Nuclear Weapon Design Team Leader (X-4)**

1984 to 1988

*Los Alamos National Laboratory*

Los Alamos, NM

Responsibilities in this role required professional, technical, and administrative leadership for the team in support of the group mission and its technical objectives. Main technical accomplishment in this period involved leading the nuclear weapon design team (primary stage) in the development of a new 500-kT Strategic Earth Penetrating Warhead (SEPW).

**Technical Staff Member, Nuclear Weapon Design (X-4)**

1982 to 1984

*Los Alamos National Laboratory*

Los Alamos, NM

Active participation in a broad computational and experimental effort focused on nuclear weapon design and test activities. Participation on numerous nuclear and above-ground (hydrodynamic) tests. Focus on the W88 nuclear weapon development program, including participation on the physics design team.

**Technical Staff Member, Radiation Transport Code Development (X-6)**

1979 to 1982

*Los Alamos National Laboratory*

Los Alamos, NM

Participated in Monte Carlo radiation transport code development, with specialization in the field of variance reduction associated with Monte Carlo simulations of particle transport. Programmatic emphasis in weapon performance diagnostics and intrinsic radiation characterization of nuclear warheads (INRAD).

### *Education*

Ph.D, Nuclear Engineering 1980  
*UNIVERSITY OF VIRGINIA* Charlottesville, VA  
Doctoral Dissertation: "Minimizing the Cost of Splitting in Monte Carlo Radiation Transport Simulation"

M.E., Nuclear Engineering 1976  
*UNIVERSITY OF VIRGINIA* Charlottesville, VA  
Area of concentration: Theoretical and experimental issues of advanced gas-centrifuge uranium isotope separation.

B.S.E., Chemical Engineering 1974  
*PRINCETON UNIVERSITY* Princeton, NJ  
Senior Thesis: "Thermal Effects of Ion Beams Impinging on Metal Surfaces"

### *Professional Affiliations*

- Member, American Nuclear Society, 1974 to 2007
- Inducted, Sigma Xi, University of Virginia, 1978

### *Specialized Training*

- Fundamentals of Finance for Technical Executives, MIT Sloan School of Management, Cambridge, MA, 2001
- System Dynamics for Senior Managers, MIT Sloan School of Management, Cambridge, MA, 2000
- Managing the Institution, LANL Training and Development, Los Alamos, NM, 1998
- Managing Technical Professionals and Organizations, MIT Sloan School of Management, Cambridge, MA, 1997
- Director's Workshop for Leaders: Managing Risk, LANL Training and Development, Los Alamos, NM, 1997
- Program on Negotiation for Senior Executives, Harvard/MIT/Tufts, Cambridge, MA, 1995
- Advanced Program for Senior Executives: Dealing with Difficult People and Difficult Situations, Harvard/MIT/Tufts, Cambridge, MA, 1995
- Seven Habits of Highly Effective People, Covey Leadership Center through LANL, Los Alamos, NM, 1994
- Environmental Regulation, Executive Enterprises, Inc., Denver, CO, 1992
- Nuclear Treaties Training Course, Defense Intelligence College (DIA), Washington, DC, 1991
- Graduate, Crosby Quality College, Orlando, FL, 1991
- Total Quality Management (TQM), University of New Mexico College of Engineering, Albuquerque, NM, 1989

### *Honors and Awards*

- **Outstanding Achievement in the Feasibility Study of the LYNER Concept**, Department of Energy Weapons Excellence Award, 1993
- **Development of a Booster Explosive, X-0407**, Department of Energy Weapons Excellence Award, 1989
- **The Theoretical Design of a New Class of Nuclear Device**, Department of Energy Weapons Excellence Award, 1988