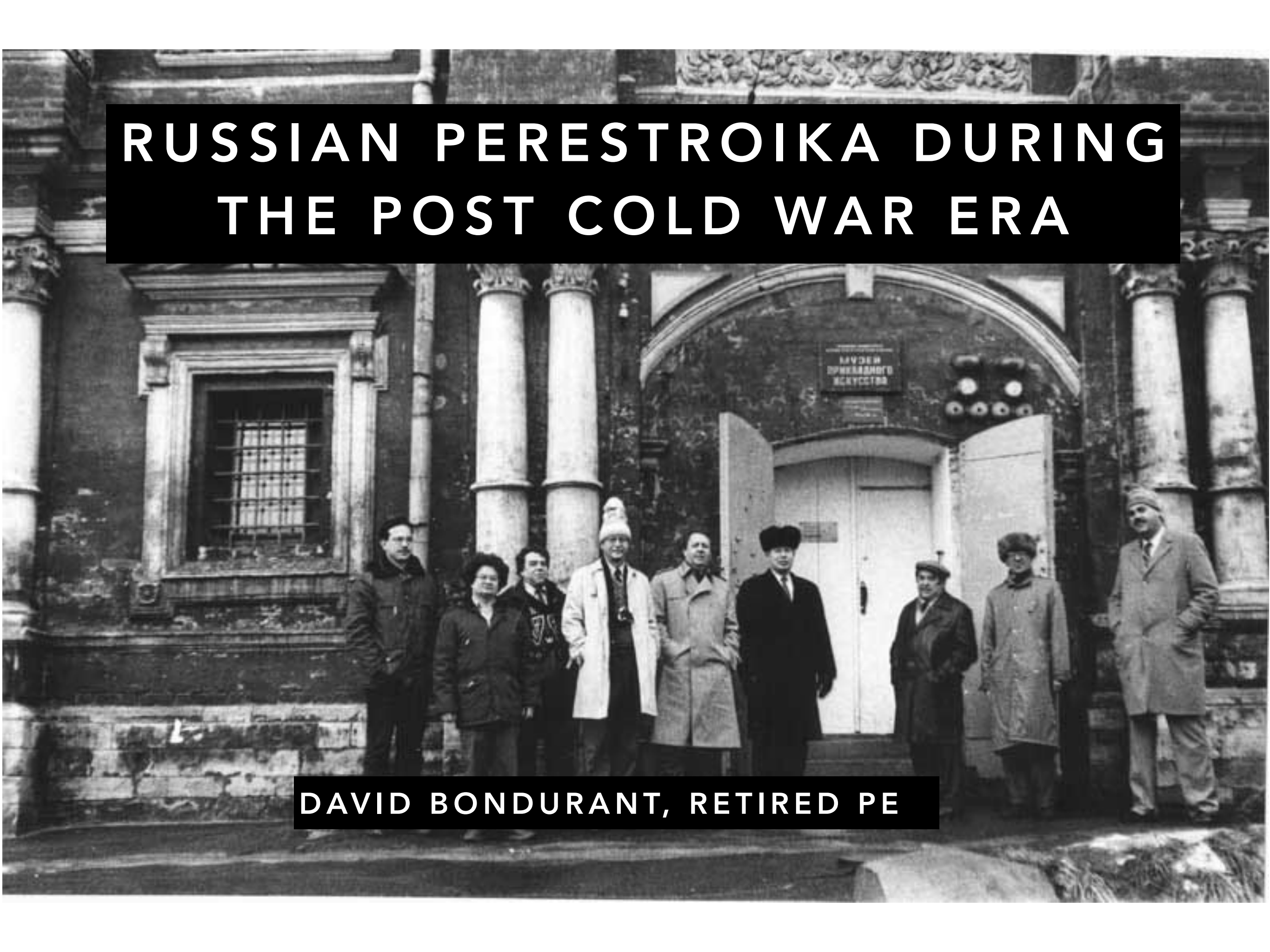


RUSSIAN PERESTROIKA DURING THE POST COLD WAR ERA



DAVID BONDURANT, RETIRED PE

MY BACKGROUND PRIOR TO 1990

- BS Physics, Truman State (MO), BS EE, Missouri S&T, MBA, Univ of Phoenix
- 1971 - Control Data - Worked on First DRAM Module for CDC Supercomputer
- 1972-80 - Sperry Univac - Computer for Trident Nav System, Switching Systems for McAutoNet, 16-Processor SIMD Sonar/Radar System, B-1 Avionics Computer, Mil-Std-1553 Prototype for Air Force, VHSIC Phase 0 with TRW, Motorola
- 1980-84 - Honeywell SSED- Bipolar ASIC for Air Force Cruise Missile Nav, Bipolar uP & ASIC for Navy ALWT, CMOS uP & Standard Cells for Honeywell Residential, VHSIC CAD Manager, VHSIC Sub-Micron with Motorola
- 1984-88 - Honeywell Digital Product Center - Bipolar, CMOS, Rad Hard CMOS ASIC - Major customers, Honeywell, Honeywell Bull, ETA Systems
- 1988-2002 - VP of Marketing & Applications, Ramtron & Enhanced Memory Systems, Leader in FRAM and Low-Latency DRAM (EDRAM) Products

CHANGING TIMES IN RUSSIAN RELATIONS

- 1971 - 1985 - The Cold War
- 1985 - 2002 - The Post Cold War Era
- 2002 - Today - New Cold War

DEFINITION OF TERMS

National Nuclear Security Agency (NNSA) - Established by Congress in 2000, NNSA is a semi-autonomous agency within the U.S. Department of Energy responsible for enhancing national security through the military application of nuclear science. NNSA maintains and enhances the safety, security, and effectiveness of the U.S. nuclear weapons stockpile without nuclear explosive testing; works to reduce the global danger from weapons of mass destruction; provides the U.S. Navy with safe and effective nuclear propulsion; and responds to nuclear and radiological emergencies in the U.S. and abroad.

DEFINITION OF TERMS

Global Initiatives for Proliferation Prevention (GIPP)

The Initiatives for Proliferation Prevention (IPP) Program was established in 1994 to employ weapons scientists in the Newly Independent States (NIS) of the Former Soviet Union (FSU) in the pursuit of science with peaceful technology transfer applications. Up to this point in time, the primary instruments under which the NIS scientists have performed work in accomplishing the program mission have been subcontracts between the DOE National Laboratories and the NIS scientific institutes (Institutes). In addition to subcontracting with Institutes, the DOE National Laboratories have also engaged U.S. companies that are members of the United States Industry Coalition (USIC) for the purpose of furthering the program mission using Cooperative Research and Development Agreements (CRADAs).

DEFINITION OF TERMS

United States Industry Coalition (USIC)

The USIC created partnerships between US Companies and weapons scientists in the Newly Independent States (NIS) of the Former Soviet Union (FSU).

Since 1994, **GIPP** and its predecessor organizations have also worked with the United States Industry Coalition (USIC) to direct investment toward Russia as well as other states that emerged from the USSR. The mission has been to engage Soviet-era defense scientists and engineers in sustainable and gainful civilian work. Over 150 U.S. companies have worked with 110 institutes in Russia, Georgia, Uzbekistan, Armenia, Kazakhstan, and the Ukraine, with investments totaling over \$280 million—approximately a third of this applied within the biological sciences.

FIRST CONTACT

- In 1988, I am Director of Marketing for Ramtron International, a Ferroelectric RAM startup in Colorado Springs
- Oren Benton, Denver businessman, invests \$30M to build the world's first Ferroelectric prototype manufacturing facility in Colorado Springs
- Mr. Benton owns as many as 35 companies including Nuexco, the world's largest Uranium brokerage
- I host visiting groups of Russian scientists (Nuexco customers)
- November 1990 - I am ask to join a team evaluating joint ventures with Russian Ministry of Atomic Power and Industry



WHAT'S HAPPENING AT THIS TIME

- Jan 1985, Ronald Reagan begins 2nd term
- March 1985, Gorbachev becomes General Secretary of the Soviet Union, launches Glasnost & Perestroika
- December 1987, Intermediate-range Nuclear Forces Treaty signed
- Jan 1989, George HW Bush takes office
- October 1989, Reunification of Germany
- November 1989, Berlin Wall comes down



Berlin Wall Falls

THE TEAM

- Chuck Peterson, President of Nuexco
- Dr. Larry Stolarczyk, President of Stolar Industries
- Bill Butterwick, Marketing, PRC, a Food Processing Company
- David Bondurant, Director of Marketing, Ramtron International, a Ferroelectric Memory company

THE VISIT

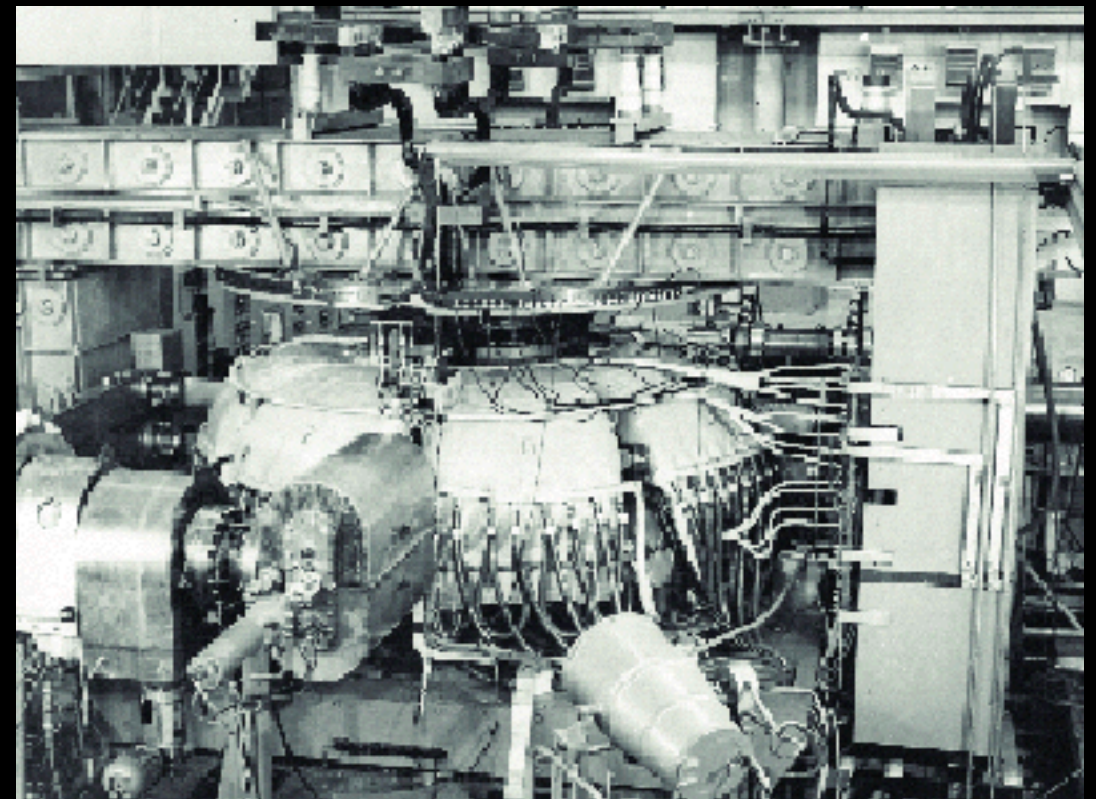
- Ministry of Atomic Power & Industry in Moscow
- I.V. Kurchatov Institute of Atomic Energy (National Research Center), Moscow
- Y.E. Sedakov Institute of Measuring Systems, Gor'kii

KURCHATOV INSTITUTE

- Until 1955, Laboratory No.2, USSR Academy of Sciences
- Founded in 1943 to develop nuclear weapons
- Site of 1st Nuclear Reactor outside US
- Major experimental work in thermonuclear fusion and plasma physics
- Since 2007, Russian center for coordinating nanotechnology



Kurchatov Institute - Moscow



T-3A Tokamak controlled
nuclear fusion -1967

Y.E.SEDAKOV ALL-RUSSIAN SCIENTIFIC INSTITUTE OF MEASURING SYSTEMS

- The Institute was established in 1966 as a subsidiary of the Scientific Research Institute of Experimental Physics.
- In 1970, it was designated as the lead enterprise for developing radio telemetry systems for special control.
- Today, the center continues to design non-nuclear components for Russia's nuclear warheads. The center receives and processes information from the radio telemetry systems of special control and the trajectory measurements taken during flight tests.
- It is a federal research and production center specializing in electronic engineering that is part of Rosatom State Atomic Energy Corporation. It has its own design center and a small line for manufacturing radiation-tolerant LSICs and VLSIs in CMOS, CMOS SOS, and CMOS SOI process for national needs.

TEAM VISITS MINISTRY COMMUNE



TEAM VISITS MINISTRY SUMMER CAMP



DR. SEDAKOV & KEY SCIENTISTS LEAD GORKY TOUR



DR. SEDAKOV LEADS WALK ON VOLGA RIVER



TEAM TOURS ADVANCED SEMICONDUCTOR FACILITY



TEAM TOURS ADVANCED SEMICONDUCTOR FACILITY



POST MORTUM

- July 1991 - Boris Yeltsin becomes President of Russia
- November 1991 - Communist Party USSR & KGB dissolved
- December 1991 - Soviet Union dissolved

POST MORTUM

- Other Ramtron scientists visit but no semiconductor joint venture occurred
- Chuck Peterson becomes CEO of USIC creating partnerships between US companies, Russia and the newly independent states
- Dr. Larry Stolarczyk becomes VP of Research for RIM Tech from 1991-94 to develop remote sensing technology with Russian scientists. He co-founded USIC. He was principal scientist on 5 advanced electromagnetic imaging projects with Russian scientists and DOE Labs.
- Oren Benton's Nuxeco imports \$100Ms of Russian Uranium between 1991-94. Some of this material is weapons grade materials from the newly independent states.

SUMMARY

- Linton F. Brooks, Administrator of NNSA speech to USIC in November 2002 - "your work is particularly important now. Think of the past year or even past few weeks - September 11, October anthrax attacks, Moscow theatre hostages, revelations of N. Korean nuclear weapons program.... The US Government ... must not permit weapons of mass destruction expertise to spread...Our strategy has several parts ... control of materials prevent a "brain drain" of weapons expertise..."

CONCLUSION

International Science & Technology Center (ISTC) and Science & Technology Center Ukraine continues USIC programs in Newly Independent States involving 75,000 scientists. Over \$900M invested from 1994-2018.

2018 Project Funding and Total Project Funding (1994–2018) – by Beneficiary Country

Country	Number of funded projects 2018	Allocated funds 2018 (USD)	Number of funded projects Total	Allocated Funds Total (USD)
Armenia	1	650,000	186	47,444,110
Belarus	0	0	100	27,481,454
Georgia	1	298,030	171	33,728,978
Kazakhstan	2	269,345	213	77,301,457
Kyrgyzstan	0	0	94	24,803,073
Russia	0	0	2,033	667,127,177
Tajikistan	2	3,697,674	53	18,788,331
Ukraine	0	0	1	64,296
Jordan	0	0	1	250,000
Regional project	1	1,166,900	3	3,067,873
Total	7	\$ 6,081,949	2,855	\$ 900,136,747