Pief's Contributions to Arms Control and Nuclear Disarmament

by

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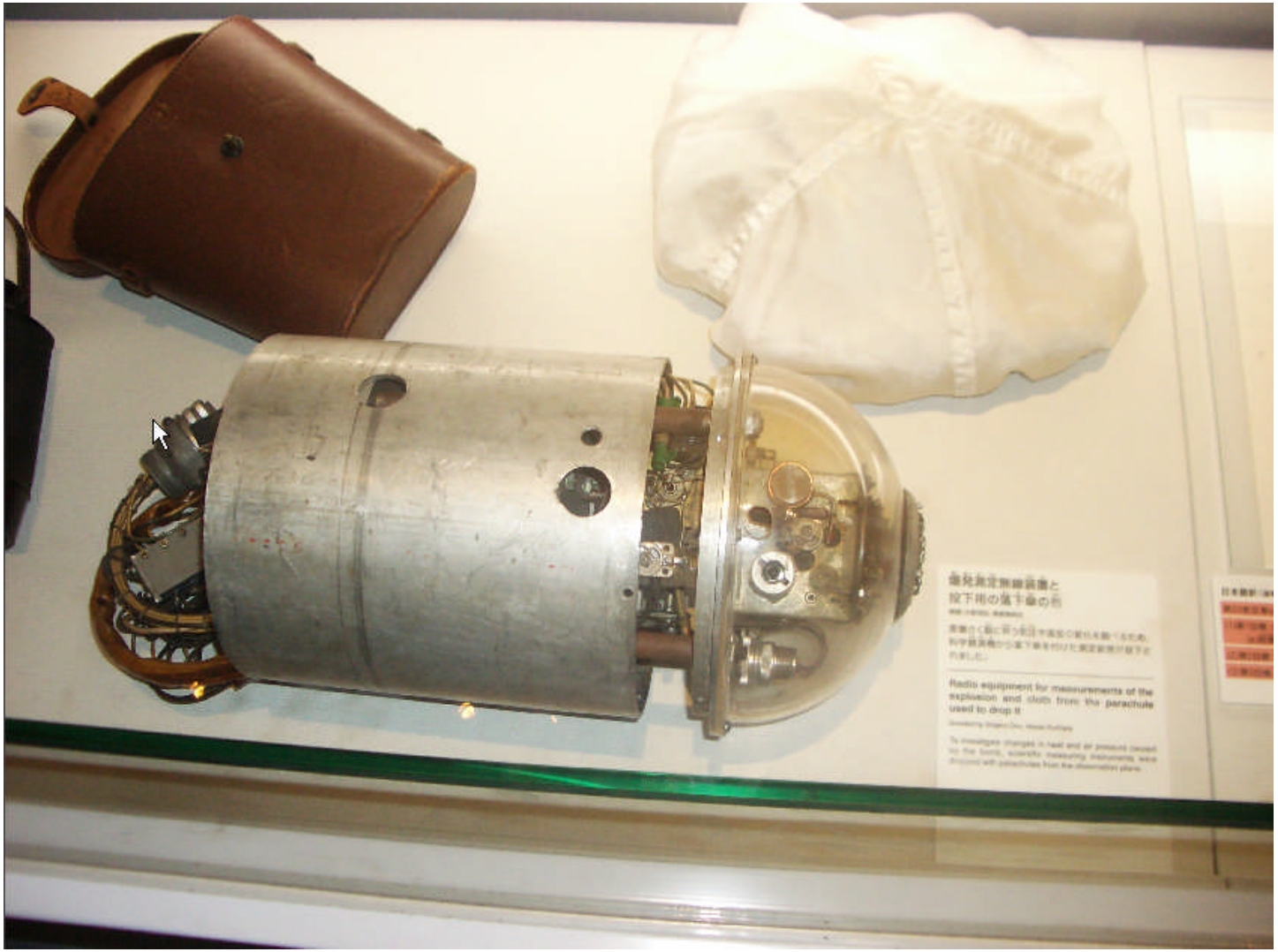
Outline

- Pief during WW II
- The MTA—materials testing accelerator
- Geneva—Technical Working Groups and CERN
- President's Science Advisory Committee—PSAC
- Ballistic Missile Defense—BMD or ABM
  - PSAC
  - Strategic Military Panel of PSAC
  - Paul Doty's advisory group to Henry Kissinger
- MIRV—multiple independently targeted reentry vehicles
  - The interaction of MIRV and ABM
- "The South Atlantic event"—a foreign nuclear test?

Outline (2)

- The NAS Committee on International Security and Arms Control—CISAC—for US-Soviet scientific contact in national security
- Directed energy weapons and the Strategic Defense Initiative
- CISAC reports
  - (list 6)
- The Amaldi conferences
- CISAC work with Chinese scientists in national security
- Coda



Radio equipment for measurements of the explosion and cloth from the parachute used to drop it. Hiroshima Peace Museum. (Photo courtesy of Ben Rusek, NAS CISAC)

Excerpts from CISAC reports

- **The Future of the U.S.-Soviet Nuclear Relationship (1991)**

"Instead, we seek an appropriate balance between the positive and adverse effects of nuclear weapons in the face of many uncertainties. We recommend, in furtherance of a new nuclear policy, that:

"(1) In the agreements that follow the Strategic Arms Reduction Treaty (START), the United States and the Soviet Union should reduce the number of nuclear warheads in their strategic forces to 3,000-4,000 actual warheads, a reduction of as much as a factor of 3 below anticipated START levels. The remaining strategic forces of both sides should be made more survivable, both by eliminating the most vulnerable forces (in particular MIRVed ICBMs) and by reducing the vulnerability of retained forces.

Pief with CISAC and Soviet counterpart at STRATCOM HQ
(E.P. Velikhov, et al. July 1991)

Management and Disposition of Excess Weapons Plutonium (1994)

Separated weapon-usable material—highly enriched uranium or plutonium of any composition aside from almost pure Pu-238--should be provided security comparable to that provided nuclear weapons in storage—the "stored nuclear weapons standard."
The initial goal of disposition of excess weapons plutonium should be to degrade it to a condition in which its security needs are comparable with those of spent reactor fuel itself—the "spent-fuel standard."

Nor rising to the level of $e^{i\pi} + 1 = 0$ *but nevertheless useful is the Google tip to go straight to the desired document by putting in the Google search box*

{ site:nap.edu "Management and Disposition"}

(without the "{ }" of course).

- **Management and Disposition of Excess Weapons Plutonium: Reactor-Related Options (1995)** (Among others,) “The panel recommends that the United States immediately initiate joint project-oriented activities with Russia covering both the MOX and the vitrification options. The panel also strongly concurs with the parent committee's recommendation that the United States and Russia should continue discussions with the aim of agreeing that whatever disposition options are chosen, an agreed, stringent standard of accounting, monitoring, and security will be maintained throughout the process—coming as close as practicable to meeting the standard of security and accounting applied to intact nuclear weapons.”

. The Future of U.S. Nuclear Weapons Policy (1997)

"In any case, the regime of progressive constraints constituting the committee's proposed near- to midterm program makes good sense in its own right—as a prescription for reducing nuclear dangers without adverse impact on other U.S. security interests—regardless of one's view of the desirability and feasibility of ultimately moving to prohibition."

- **Technical Issues Related to the Comprehensive Nuclear Test Ban Treaty (2002)**

"The worst-case scenario under a no-CTBT regime poses far bigger threats to U.S. security—sophisticated nuclear weapons in the hands of many more adversaries—than the worst-case scenario of clandestine testing in a CTBT regime, within the constraints posed by the monitoring system."

Monitoring Nuclear Weapons and Nuclear-Explosive Materials: An Assessment of Methods and Capabilities (2005)

As a result of the assessments described above, we have come to the following general conclusions:
"1. Present and foreseeable technological capabilities exist to support verification at declared sites, based on transparency and monitoring, for declared stocks of all categories of nuclear weapons—strategic and nonstrategic, deployed and nondeployed—as well as for the nuclear-explosive components and materials that are their essential ingredients. Many of these capabilities could be applied under existing bilateral and international arrangements without the need for additional agreements beyond those currently in force."

The first bilateral talks between Chinese scientists and the CISAC delegation led by Pief. 20 years ago.

Many famous Chinese scientists attended the welcoming banquet. (photos courtesy of Hu Side)

Pief was welcomed by the leaders of COSTIND in China.

Pief with Hu Side and a friend of Adele's

Pief with CISAC and CSGAC in Beijing, ~ 2003

Coda

Pief was one of the most important founders of the great tradition of American science advising in national security matters. He made full use also of his energy and intellect in trying to make the world's decision makers better informed in the national self interest and in the interest of the world's inhabitants. In this approach he was my personal hero, for his dedication, his good spirit, his ability, his insistence on integrity, and his readiness to take pencil in hand to commit ideas to paper as informative and persuasive prose.