

Update on Nuclear Test Personnel Review (NTPR) Program

***Brief for: Veterans' Advisory Board on
Dose Reconstruction (VBDR)***

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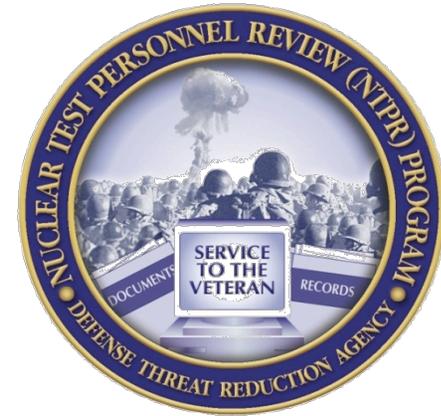
March 23, 2012





Agenda

- Atomic Veteran Metrics
- Quality Advances
- Communication Advances
- Technical Advances
- VBDR Recommendations



NTPR-DTRA Atomic Veteran Team (JAN 2012)



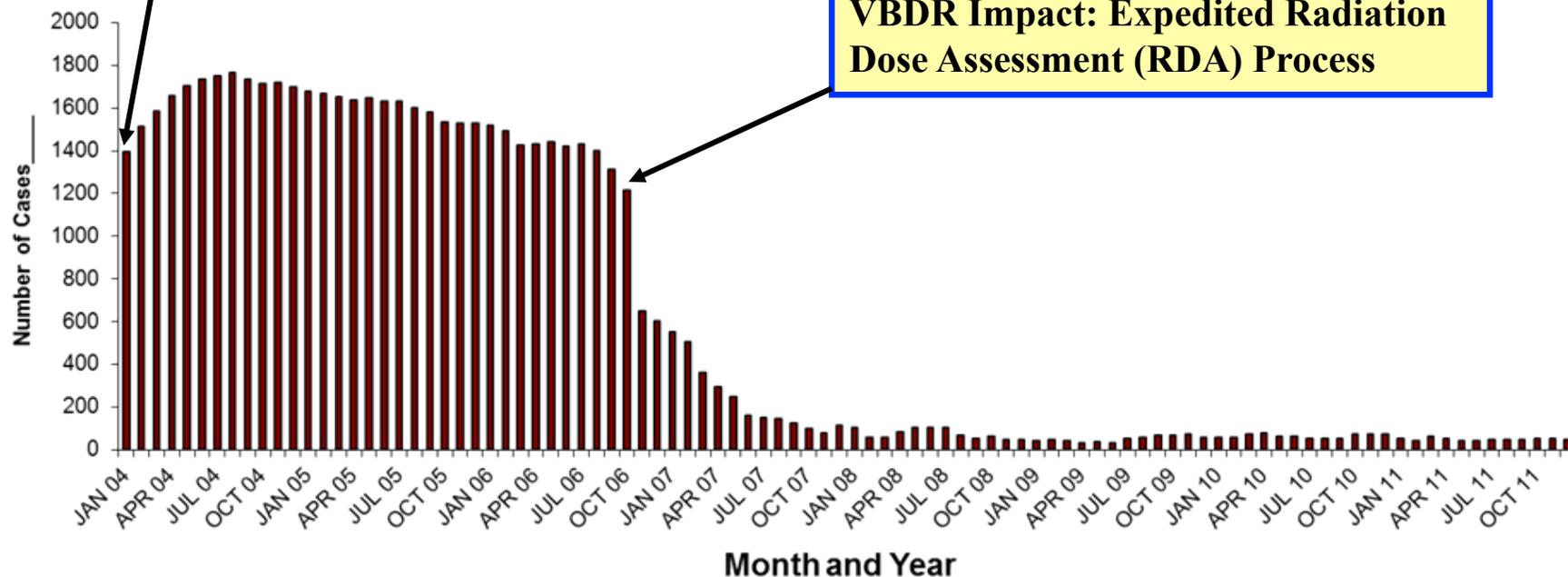
Metric: Manage Case Load

Metric Assessment: Achieved

**Public Law 108-183
December 2003**

**Non-Presumptive Pending Case Load
(January 2004 - December 2011)**

**VBDR Impact: Expedited Radiation
Dose Assessment (RDA) Process**

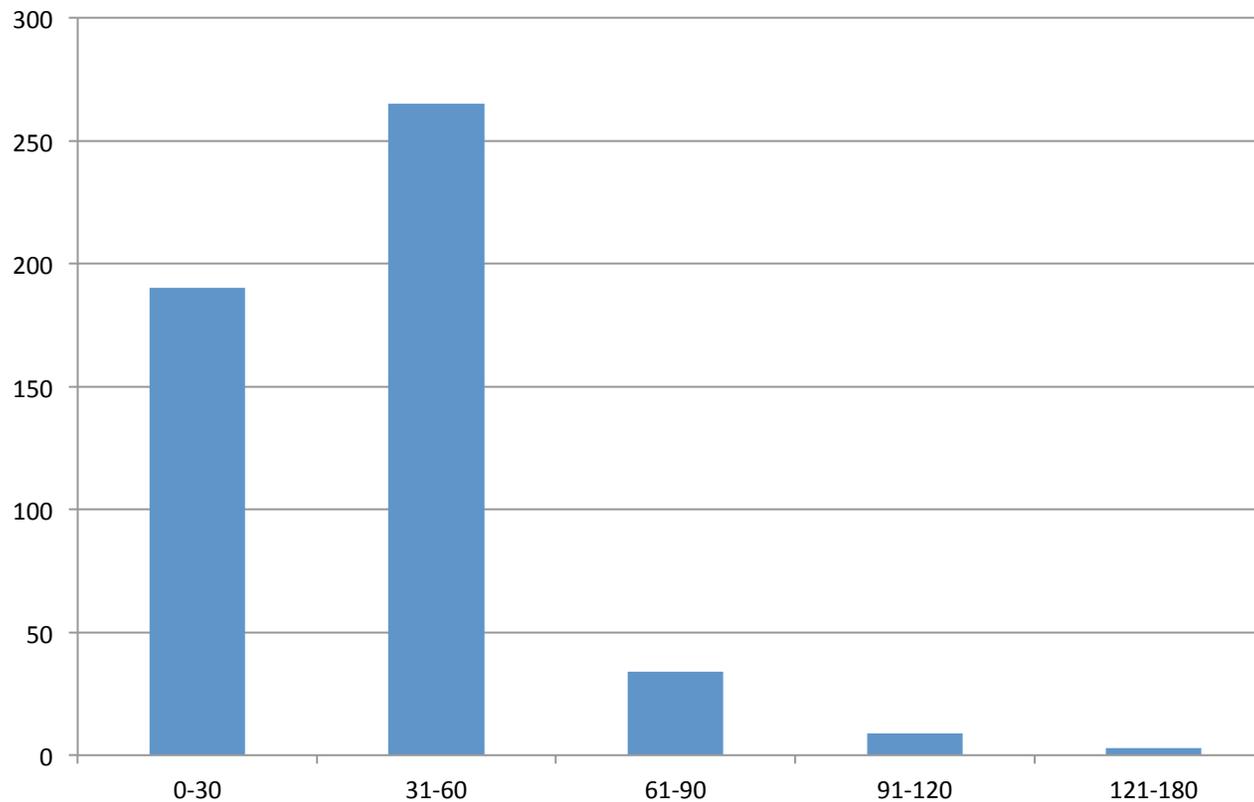




Metric: Complete Cases in 180 Days

Metric Assessment: Achieved

Total Cases by Days Pending (31 Dec 2011)





Metric: Increase Completed Cases

Metric Assessment: Not achieved

CY2011 Completed Cases	Total
Expedited RDA	256 (283)
Non-Expedited (H/N) RDA	62 (75)
Non-Expedited (NTS/PPG) RDA	4 (4)
VA Presumptive	116 (176)
VA Ionizing Radiation Registry	39 (26)
Department of Justice	78 (93)
Non-participant, Personal, Congressional	646 (587)
Note: CY2010 Metrics in Parenthesis	1201 (1244)
H/N: Hiroshima/Nagasaki; NTS/PPG: Nevada Test Site/Pacific Proving Ground	



Metric – Continuous Improvement

Metric Assessment: Achieved

- Publication of 3 technical reports (TR).
- Publication of 5 technical memorandums (TM).
- Presentation of RDA double blind studies to VBDR subcommittee (SC) # 1
- Submission of 4 quarterly quality reports to VBDR SC3



Metric – Continuous Improvement

Metric Assessment: Achieved

2011 Technical Publications

DTRA-TR-10-26: Personnel Radiation Exposure Associated with X-Rays Emanating from U.S. Coast Guard LORAN High Voltage Vacuum Tube Transmitter Units

DTRA-TR-10-29: A Technical Approach to Expedited Processing of NTPR Radiation Dose Assessments

DTRA-TR-11-01: Compendium of Proposed NTPR Expedited Processing Groups

NTPR-TM-11-01: Transfer of Deposited Fallout from Surfaces to the Hands and to the Mouth

NTPR-TM-11-02: Skin Dose from Dermal Contact with Resuspended Fallout Material

NTPR-TM-11-03: Analysis of Skin Exposure to Finite Circular Sources of Fallout

NTPR-TM-11-06: Dose Estimate from Exposure to U.S. Navy Radium Plaque Adaptometer During Night Vision Tests

NTPR-TM-12-01: Procedure for USCG LORAN Personnel Rad. Dose Determinations



Quality Advances – Objectives

- Monitor, measure, analyze, control, and improve processes
- Reduce product variation
- Measure/verify product conformity
- Obtain feedback on product performance
- Lead an effective root cause analysis

**Overarching Goal: Continuous Product Improvement
“Service to the Veteran”**



Quality Advances—Double Blind RDAs

Double-blind RDA Intercomparison Case 8a (Sep 2011):

Soldier, cook stationed on Enewetak Atoll during Operation GREENHOUSE.

Lessons learned:

- Using NTPR veteran case file information, two independent RDA teams are capable of calculating similar external doses.
- However, internal dose calculations showed greater inconsistencies in pathways and methods.
- NTPR needs to continue implementing explicit, prescriptive & simple guidance to ensure RDA consistency.
- NTPR guidance should include, redacted, sample RDAs/Mathcad spreadsheets.
- NTPR guidance should include a complete list of standardized variable names & definitions from RDA Standard Operating Procedures (SOP).



Quality Advances—Double Blind RDAs

Double-blind RDA Intercomparison Case 8b (Sep 2011):

Airman, radio operator stationed on Enewetak Atoll during Operation REDWING

Additional lessons learned:

- Provide detailed guidance for internal dose pathways in NTPR SOP Appendix B-7 (Operation REDWING) and Scenario of Participation & Radiation Exposure (SPARE) .
- Revise NTPR guidance to minimize inconsistencies regarding intensity function formats & input data, Tstart & Tend definitions, use of modification factor for internal dose from resuspended fallout, & use of exposure variable conversions for intensities.
- NTPR RDA SOP ED02, “Whole Body External Dose – Reconstruction” & Appendix B-7 appear inconsistent with regard to use of post-peak intensity data pairs for early fallout period. NTPR will clarify ED02.



Quality Advances – QQR

- **Quarterly Quality Report (QQR) submission history to VBDR SC3:**
 - 1st submission was 2008, 4th quarter
 - Four 2009, 2010, & 2011 submissions
- **QQR format:**
 - Introduction
 - Performance Information and Metrics
 - Reported Quality Issues Tracking Spreadsheet
 - Decision Summary Sheet/RDA Reported Quality Issues
- **Improvements to the QQR are now minimal. This is a stable workproduct.**

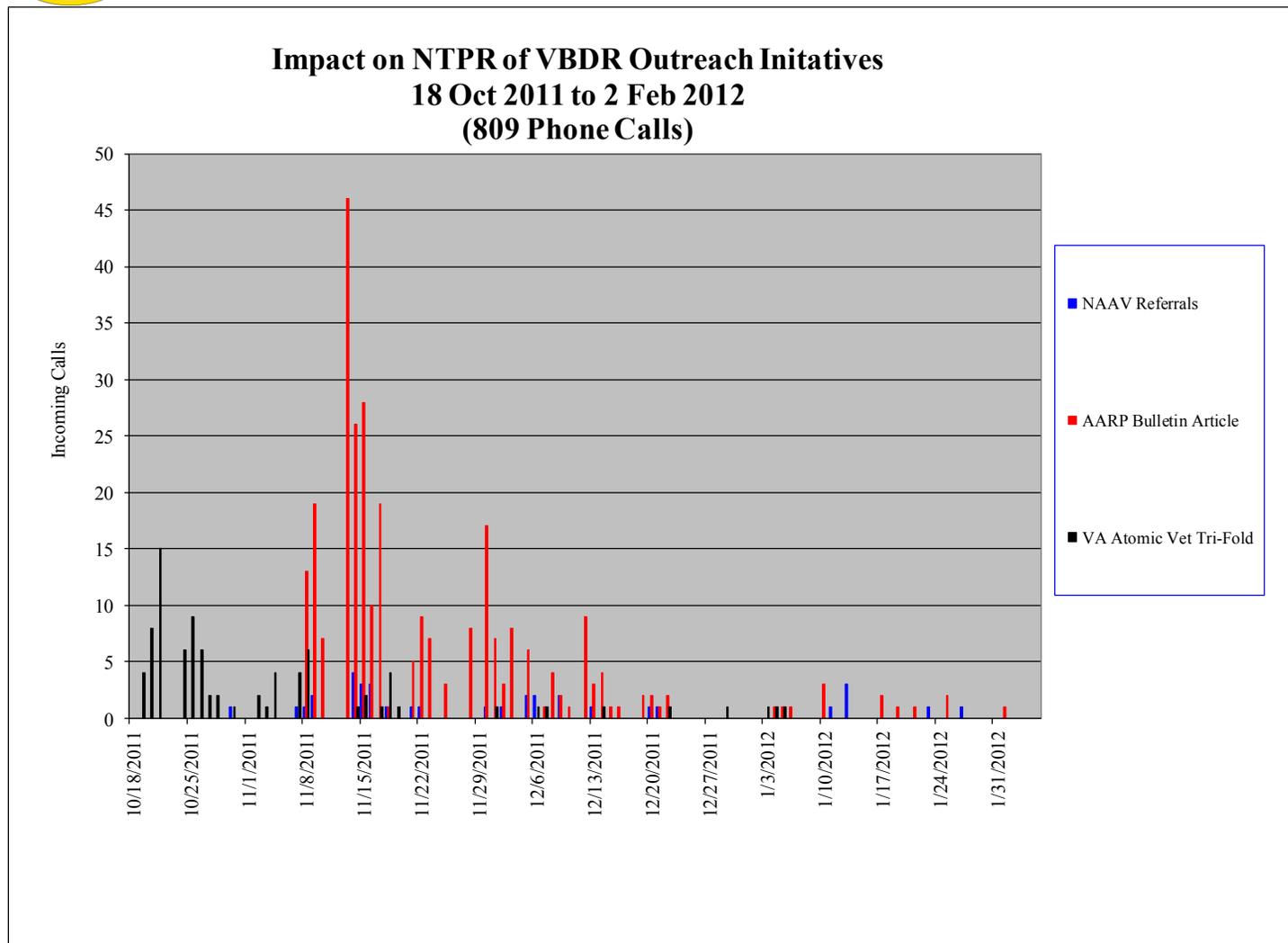


Communication Advances

- Performed 1,100 veteran outreach phone calls last year (37 % Increase).
- Continually updated NTPR factsheets and DTRA website to optimize veteran communication.
- The NTPR Program office is working closely with DTRA and VA public affairs offices to advance atomic veteran communication.



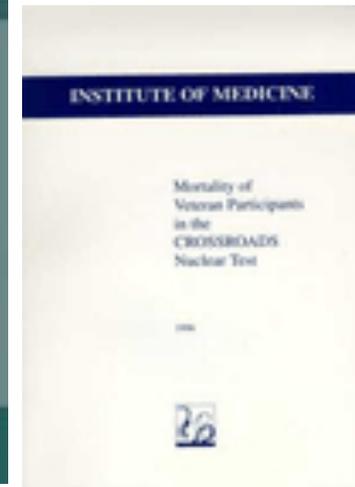
Communication Advances





Technical Advances – Radioepidemiology

- DTRA, VA, & Veteran Service Organizations are co-sponsoring a follow-on atomic veteran radioepidemiology study.
- Dr. Boice (VBDR member) is principal investigator on this National Cancer Institute (NCI) funded study.
- This is a study of potential radiogenic disease in Operation Trinity, Crossroads, Greenhouse, Upshot-Knothole, Castle, Redwing, Plumbbob, & Hardtack I veterans.



Radioepidemiology Team (Feb 2012)
5 Year NCI Grant to Vanderbilt University
Government Sponsors: H&HS, DOD, VA, ...



Technical Advances – Radioepidemiology

- The military services, Nuclear Regulatory Commission, Department of Energy, and commercial radiation dosimetry processors are also supporting this study.
- Specifically, the Army, Navy, & Air Force are providing radiation exposure received by veteran study participants that was not associated with U.S. nuclear weapons tests. This improves the quality of the study by minimizing a confounding factor.





Technical Advances: Non-Atomic Veterans

NTPR's atomic veteran RDA methodology is useful for other military communities. Over the last year, the NTPR Program has provided RDA support for:

- Approx. 10,000 US Coast Guard veterans stationed at LORAN transmitters between 1942-2010,
- A few thousand military veterans working at McMurdo Station, Antarctica between 1962 – 1979, and
- The DOD-affiliated community of approx. 68,000 personnel that were adjacent to the Fukushima Daiichi Nuclear Power Station, Japan in 2011.



USCG LORAN Support

- Some US Coast Guard (USCG) veterans stationed at LORAN transmitter units have expressed concern that their duties may have caused them radiogenic disease due to their occupational exposure to x-rays emanating from high voltage vacuum tubes.
- To address this concern, the USCG Commandant commissioned a LORAN radiation exposure study. The NTPR Program lead the study, assisted by USCG military and a veteran volunteer.





USCG LORAN Support

- LOng RANge Navigation (LORAN)
 - Developed at Lincoln Labs (MIT) during WWII. Guided allied ships and aircraft during the war.
 - Used throughout the globe until 1994, when the final 24th U.S. GPS satellite was launched. From 1994 to 2010 usage diminished due to GPS's increased location accuracy and worldwide coverage. In 2010, U.S. LORAN was officially discontinued.





USCG LORAN Support

- LORAN transmitter units were higher powered than commercial radio and television transmitters:
 - R/F power to LORAN transmitting towers was produced by a series of high powered, water cooled vacuum tube amplifiers. An unwanted, incidental by-product was low energy x-rays. Nominally, maximum tube bias voltage was 21.5 kVp.



1st IPA Tube



2nd IPA Tube

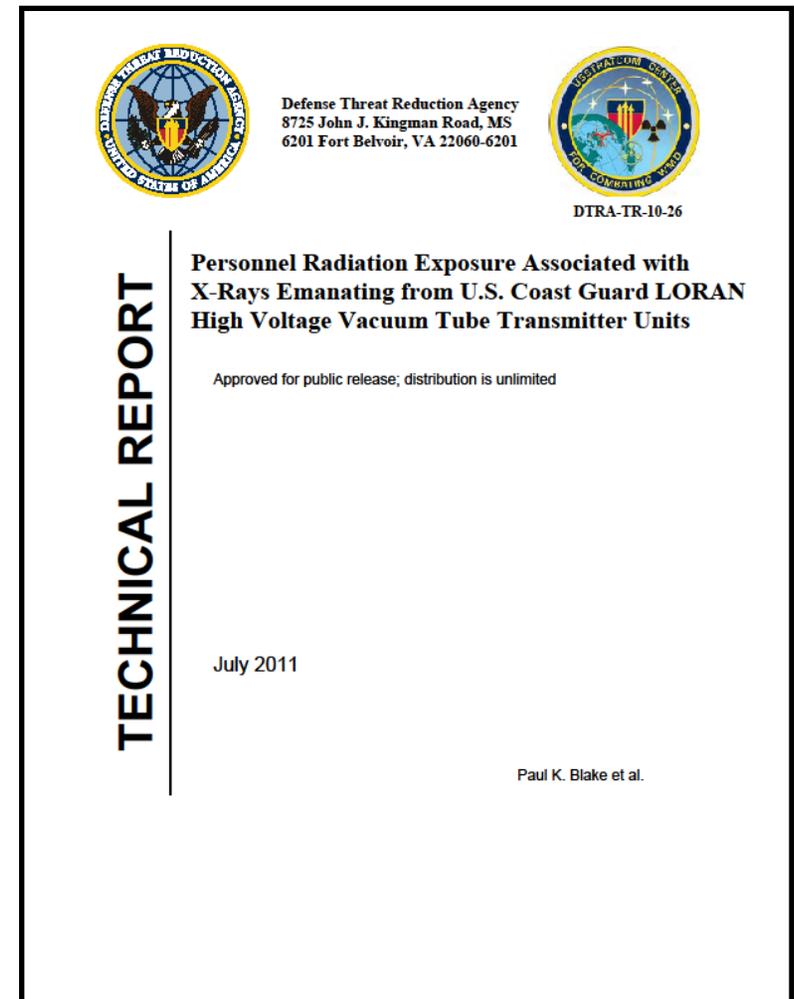


PA Tube



USCG LORAN Support

- DTRA-TR-10-26, published in July 2011 states there are 2 discrete LORAN exposure scenarios:
 - the majority of the LORAN service members who received minimal occupational ionizing radiation exposure, and
 - a smaller group of LORAN personnel who performed "exceptional" maintenance activities (and were not monitored with personnel radiation dosimeters). This group potentially received significant ionizing radiation doses. There is also significant uncertainty associated with this scenario.





USCG LORAN Support

- The previously mentioned 2nd exposure scenario resulted in development of a USCG LORAN SPARE form and follow-on recommendations (in the TR) to:
 - LORAN veterans and their dependents,
 - VA, and
 - USCG.





McMurdo Station Support

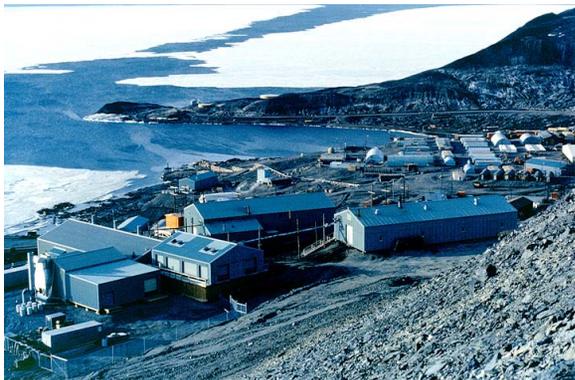
- A few McMurdo Station veterans have unsuccessfully sought VA radiogenic disease compensation.
- Non-comprehensive military radiation dose assessments for McMurdo Station, non-reactor plant staff who filed for VA radiogenic disease compensation may have occurred.
- To address this concern, DOD established a radiation dose assessment team in 2011 comprised of personnel from: NTPR Program, Navy, Army, and veteran volunteers.





McMurdo Station Support

- The DOD McMurdo Station RDA team has completed their initial findings which are being delivered today.
- The associated draft technical report will be undergoing external peer-review.
- Final results should be published within one year.





Operation TOMODACHI Support

- On March 11th, a destructive 9.0 earthquake off the northeast coast of Japan triggered a tsunami (tidal wave). This caused widespread devastation, including damage to the Fukushima Daiichi nuclear power station. A major result of this damage was release of radioactive material from the power plant.
- The U.S. Department of Defense (DOD) launched Operation TOMODACHI to help Japan respond to these events.





Operation TOMODACHI Support

- 15 Mar 2011: Chair, Senate Veterans Affairs Committee urged DOD to establish a database of participants to track environmental exposures.
- 31 Mar 2011: DOD agreed.
- 06 Jul 2011 DOD established Operation TOMODACHI Registry (OTR) and established five working groups (WG):
 - Steering
 - Implementation
 - **Dose Assessment & Recording (DARWG)**
 - Population of Interest
 - Medical & Claims User



Operation TOMODACHI Support

DARWG Scope:

Evaluate data and perform dose estimates for the approx. 68,000 Population of Interest (POI).

DARWG Deliverables:

Aug 2011: Determine period of time for assessing POI radiation exposure.

Jan 2012: Determine initial upper-bound RDAs for Shore-Based POI.

Aug 2012: Complete upper-bound RDAs for remainder of POI, and load doses into OTR.



Operation TOMODACHI Support



Office of Secretary of Defense:

Oversight and policy guidance



Military Health Physicists:

Evaluate data and conduct dose assessments



DTRA (NTPR):

DOD's lead for radiation dose reconstruction



AFRRI:

Tri-Service focal point for human radiation exposure sciences





Operation TOMODACHI Support

- Ongoing review of DARWG deliverables:
 - Internal DOD
 - Veterans' Advisory Board On Dose Reconstruction
 - Competitively awarded contract for review by:
 - Congressionally-chartered,
 - Nationally-renowned,
 - Radiation Health Subject Matter Expert



VBDR Recommendation Status

- VBDR-DTRA recommendation (0 of 20 remain open):
 - Recommendation 19 closed since last meeting.
 - DTRA continues to submit Quarterly Quality Reports to VBDR
- VBDR-Joint recommendation (0 of 1 remain open):
 - DTRA worked with VA to develop a screening process for subcapsular cataracts, similar to skin cancer processing, at VA Regional Office Jackson. This closed the one outstanding joint recommendation.