Update on Nuclear Test Personnel Review (NTPR) Program

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

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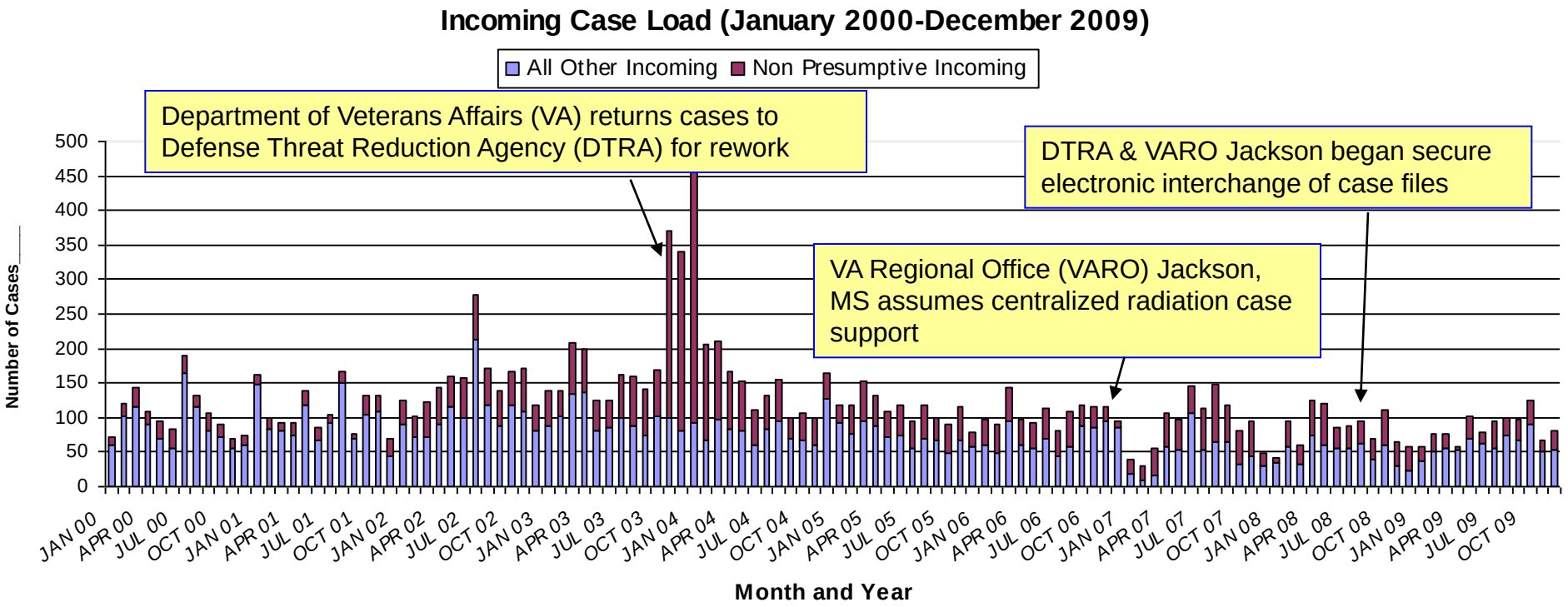
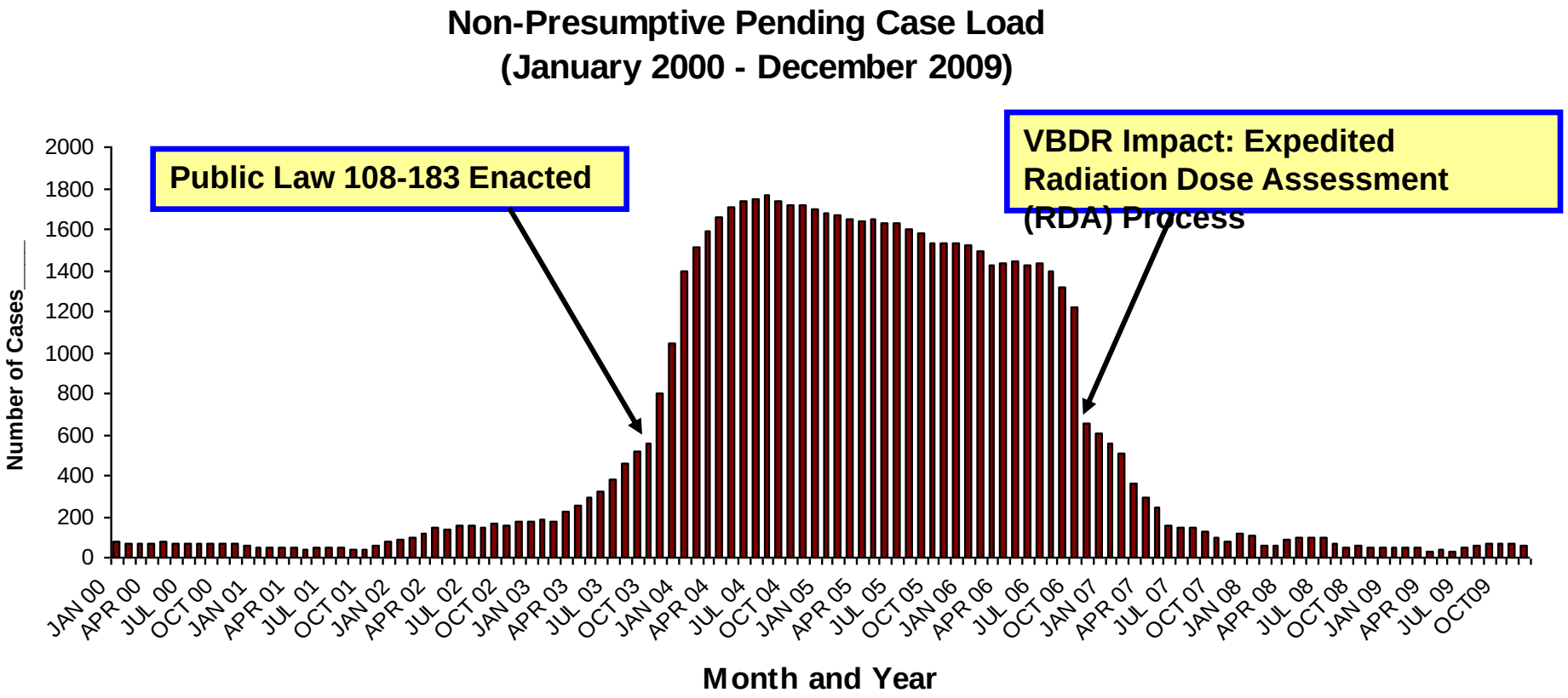
Agenda

- Program Metrics
- Technical Advances
- Quality Advances
- Communication Advances
- VBDR Recommendation Status
- The Road Ahead

Metric: Incoming Cases



Metric: Pending Case Load



Other 2009 Metrics

CY2009 Completed Cases	Total
Expedited RDA	220
Non-Expedited (H/N) RDA	54
Non-Expedited (NTS/PPG) RDA	1
VA Presumptive	116
VA Ionizing Radiation Registry	37
Department of Justice	94
Non-participant, Personal, Congressional	437
Note: CY2008 total: 1049	**959**

H/N: Hiroshima/Nagasaki
NTS/PPG: Nevada Test Site/Pacific Proving Ground

Other 2009 Metrics

- Average VA Response Time: 46 days
- Maximum VA Response Time: 183 days
- Outreach Phone Calls: 800+
- Publication of 3 DTRA technical reports (TR) and 13 NTPR technical memorandums (TM)
- Presentation of 2 RDA double blind studies to VBDR subcommittee (SC) # 1
- Submission of 4 quarterly reports to SC3
- Data submissions to SC4 (as requested)

Technical Advances – RDA Uncertainty

- NTPR continues to refine its approach to RDA uncertainty analysis, via a probabilistic approach (which employs Monte Carlo simulation techniques).
- Although NTPR standard operating procedures and methods (SOP/SM), as of January 2010 (revision 1.3), describe uncertainty calculations via both deterministic and probabilistic approaches, the probabilistic option has not yet been used for a dose of record.
- NTPR will continue to test and document its probabilistic approach, before using this option in a dose of record.

Technical Advances – RDA Uncertainty

- Five PPG and one NTS case studies comparing probabilistic versus deterministic approaches were presented in DTRA-TR-09-13.
  - Probabilistic models were developed for external and internal dose and land and shipboard case studies were performed.
  - Sensitivity studies were completed of 53 separate sources of variability
  - Initial studies demonstrated that in most cases, NTPR's deterministic approach was more conservative than its probabilistic approach.
- Based on SC1 feedback, NTPR is now analyzing two additional PPG and four additional NTS case studies. This remains an active NTPR research initiative.

Technical Advances – 2009 Publications

2009 NTPR Publications
DTRA-TR-09-13: NTPR RDA Probabilistic Uncertainty
DTRA-TR-09-14: Evaluation of NTPR RDA 3X Upper Bound Factor
DTRA-TR-09-15: Effective NTS Reuspension Factors
NTPR-TM-09-01: Compilation of NTPR Initial Doses
NTPR-TM-09-02: Enewetak Doses from Prior Operations
NTPR-TM-09-03: Internal Doses from Incidental Ingestion of Contaminated Soil
NTPR-TM-09-04: Gamma Source Modification Factor
NTPR-TM-09-05: Intensity Dist. From Fallout on Ship Decks
NTPR-TM-09-06: Characterization of Descending Fallout
NTPR-TM-09-07: Internal Dose from Inhalation of Descending Fallout
NTPR-TM-09-08: Bias Adjustments for FIIDOS Inhalation Dose Conversion Factors
NTPR-TM-09-09: Deposition Fraction Modifications for Inhalation of Descending Fallout
NTPR-TM-09-10: Modeling of Protection Factors for Land-Based Structures
NTPR-TM-09-11: Modeling of Shielding Factors for Ships
NTPR-TM-09-12: Radiological Decay Function used in Probabilistic Assessments
NTPR-TM-09-13: Uncertainties from Iso-Intensity Mapped Data

Technical Advances – 2010 Publications

2010 NTPR SOP/SM Publications
NTPR-SOP-RA01: Radiation Dose Assessment for Cases Requiring Detailed Analysis
NTPR-SOP-RA03: Standardized RDA Reports & Calculational Worksheets
NTPR-SOP-RA04: Internal RDA Reviews
NTPR-SM-ED01: Film Badge Dose Assessment
NTPR-SM-ED02: Whole Body External Dose - Reconstruction
NTPR-SM-ED03: Skin Dose from External Sources
NTPR-SM-ED04: Skin Dose from Dermal Contamination
NTPR-SM-ED05: Lens of the Eye Dose
NTPR-SM-ID01: Dose to Organs from Intake of Radioactive Materials
NTPR-SM-UA01: Dose Uncertainty and Upper Bound Determinations

Technical Advances – VBDR Recommendation Status

- With the publication of NTPR RDA SOP/SM, Revision 1.3 in January 2010:
  - VBDR recommendation 7 concerning appropriate treatment of upper bounds is now closed:
    - Probabilistic methods are incorporated with appropriate treatment of upper bounds
  - VBDR recommendation 14 concerning use of default upper bound factors is now closed:
    - NTPR developed and tested probabilistic uncertainty analysis capabilities for implementation in future RDAs
    - NTPR SOP/SM retains use of deterministic upper bounds as a dose maximizing alternative when judged appropriate

Quality Advances

- NTPR's Quality Plan 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 and corrective action system

Overarching Goal: Continuous Product Improvement
"Service to the Veteran"

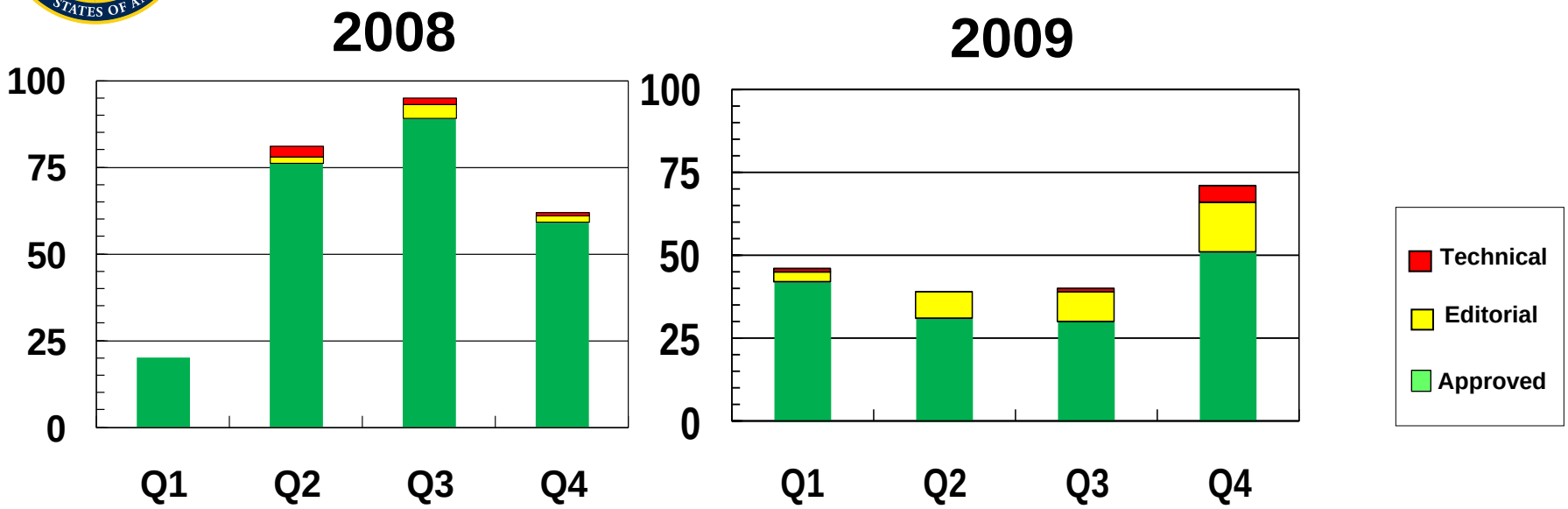
Quality Advances

- **Double-blind RDA Intercomparisons:**
  - Case #5 completed Mar 2009:
  - Case #6 completed Dec 2009:
    - Significant contributors to dose identified by all three RDA analysts.
    - Potential improvements for lesser dose contributors identified for future RDA SOP Appendix revisions.
- **Quarterly Report Submissions to SC3:**
  - 1st submission was 2008, 4th quarter
  - Four 2009 submissions
  - Report format continues to evolve based on NTPR continuous improvement and SC suggestions/recommendations
  - Now includes descriptive program metrics and Quarterly Quality Report (QQR)

Quality Advances

- **Decision Summary Sheet (DSS):**
  - Two types of DSS:
    - Full RDA DSS
    - Expedited or H/N RDA DSS
  - Ongoing revisions to expedited or H/N RDA DSS's will improve documentation of decisions and response to veteran's claims.
- **Quarterly Quality Report (QQR):**
  - Reported Quality Issue (RQI) tracking spreadsheet initiated, per SC3 suggestion
  - Will focus on significant DSS/RDA-related activities/issues
  - Will be located on the NTPR-VPN share drive for coordinated input of quality issues from all NTPR team members
  - Will continue & modify as needed with SC3 input for process-improvement.

Quality Advances – DSS Reviews



	Q1	Q2	Q3	Q4	2008	Q1	Q2	Q3	Q4	2009	Total	%
Expedited	17	58	67	37	179	27	27	28	48	130	309	
H/N	3	23	28	25	79	19	12	12	23	66	145	
Approved	20	76	89	59	244	42	31	30	51	154	398	87
Editorial	0	2	4	2	8	3	8	9	15	35	43	10
Technical	0	3	2	1	6	1	0	1	5	7	13	3

Quality Advances – VBDR Recommendation Status

- With the completion of 6 RDA double-blind cases and the submission of 5 quarterly submissions to SC3:
  - VBDR recommendation 5 concerning double-blind RDAs is now closed:
    - NTPR will continue to perform RDA double-blind case analyses and will incorporate “lessons learned” in its continuous product improvement process.
  - VBDR recommendation 6 concerning quarterly metric submissions is now closed:
    - NTPR will continue its quarterly quality report submissions (which includes quality metrics). These reports continue to evolve as part of NTPR’s continuous product improvement process and VBDR SC’s suggestions and recommendations

Communication Advances

- Performed 800+ veteran outreach phone calls last year.
- Continually updates NTPR factsheets and DTRA website to optimize veteran communication.
- Provided veteran listings to SC4 in support of dose cohort outreach:
  - 10 rem or greater
  - 5-10 rem
  - 1-5 rem

VBDR-DTRA Recommendation Status

- VBDR-DTRA recommendation (1 of 20 remains open):

  5: Double-blind RDA effort
  6: NTPR quarterly QA metric submission to SC3
  7: RDA SOP includes appropriate treatment of upper bounds
  14: NTPR discontinues use of default upper bound factors
  19: Quarterly Quality Report (QQR)

  - Recommendations 5, 6, 7, & 14 closed since last meeting

  - Recommendations 19 remains open. NTPR continues to work with SC3 in revising its QQR submission

The Road Ahead

- Publish NTPR's Expedited RDA technical basis document (DTRA-TR-10-XX)
- Publish remaining NTPR SM and appendices
- Submit NTPR RDA advances for peer-review journal publication
- Refine NTPR Quality procedures
- Publish outstanding National Council on Radiation Protection & Measurements (NCRP) Reports:
  - Uncertainties in Internal Radiation Dose Reconstruction
  - Principles & Practices of Radiation Dose Reconstruction