Idaho National Laboratory

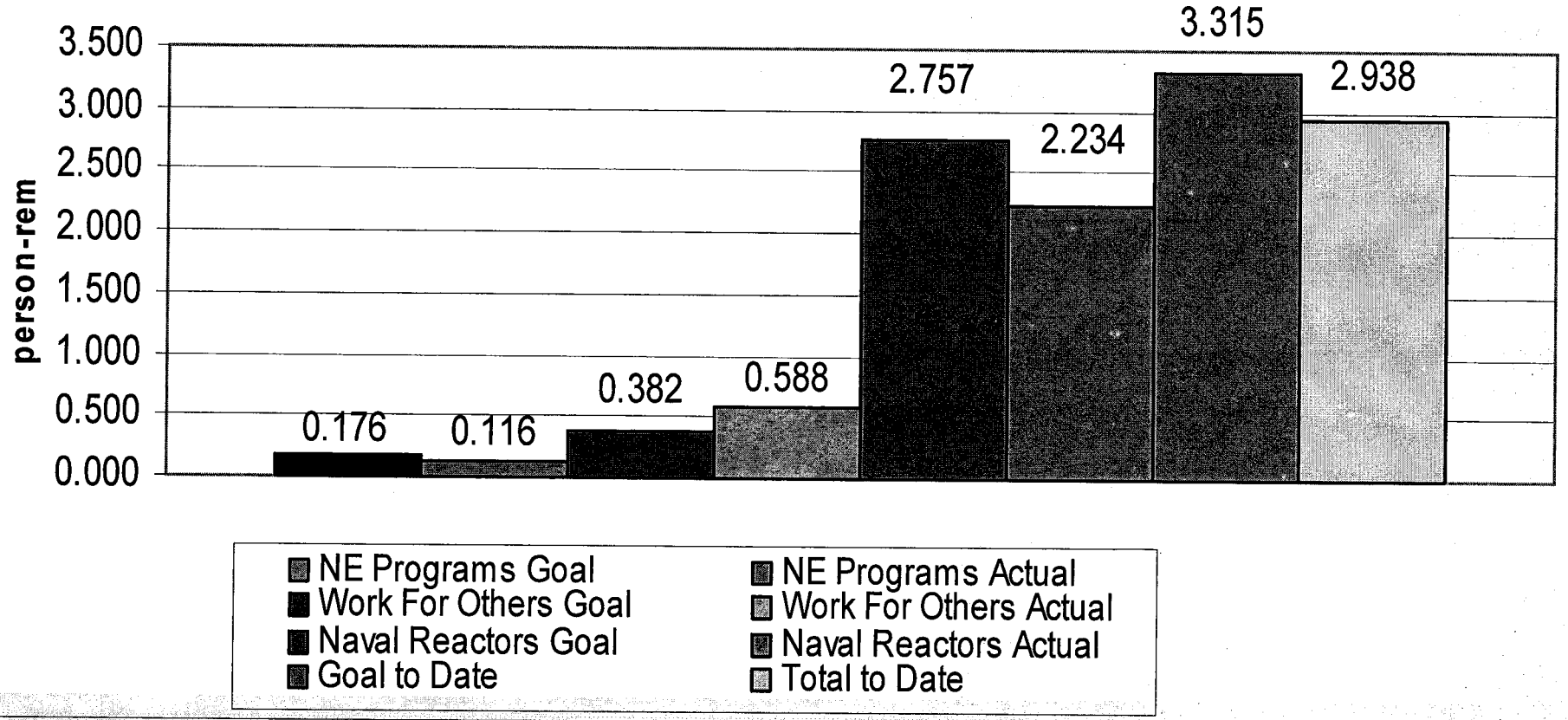
RTC/STC/CFA

CY-2007 ALARA Summary

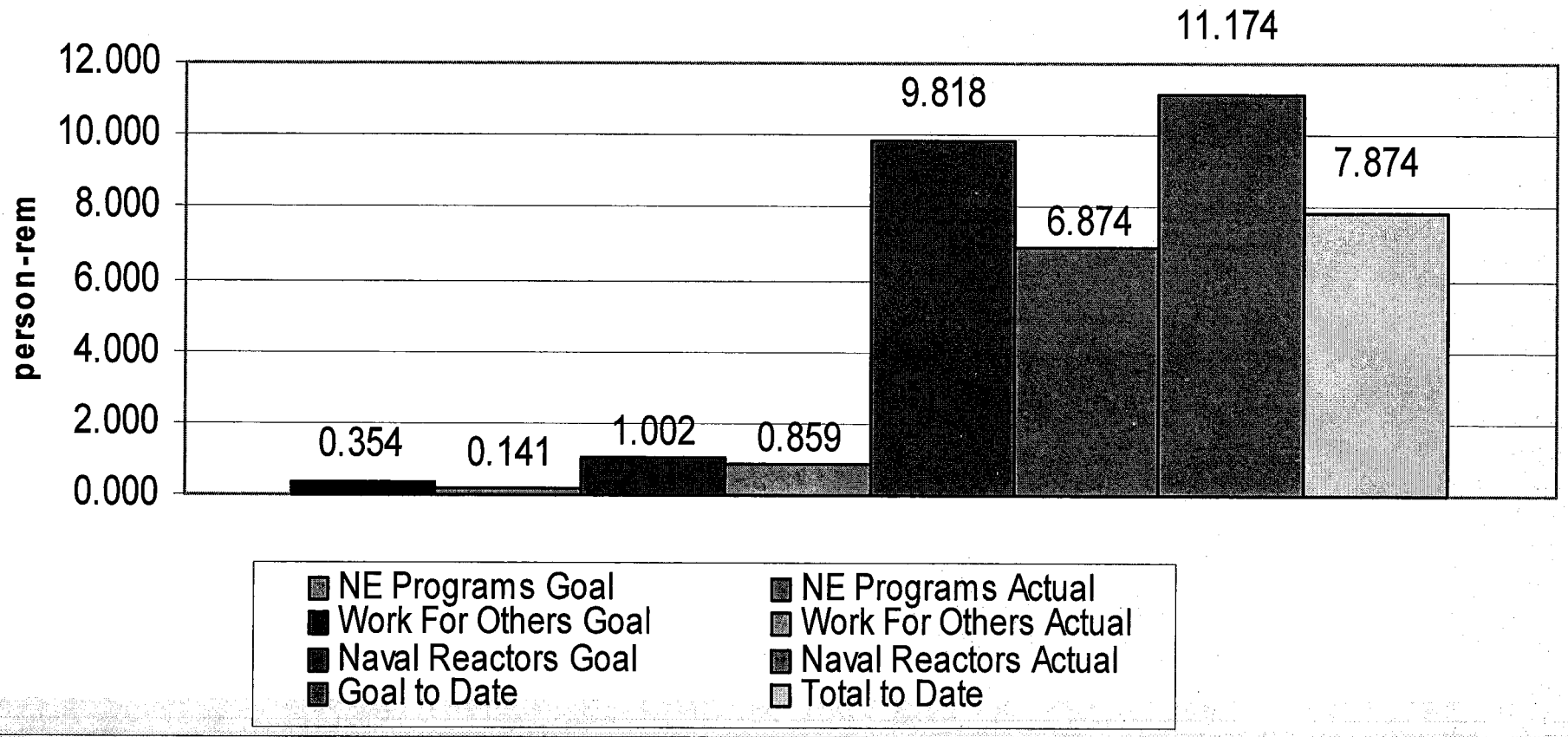
Brian Grant/ RTC ALARA Coordinator

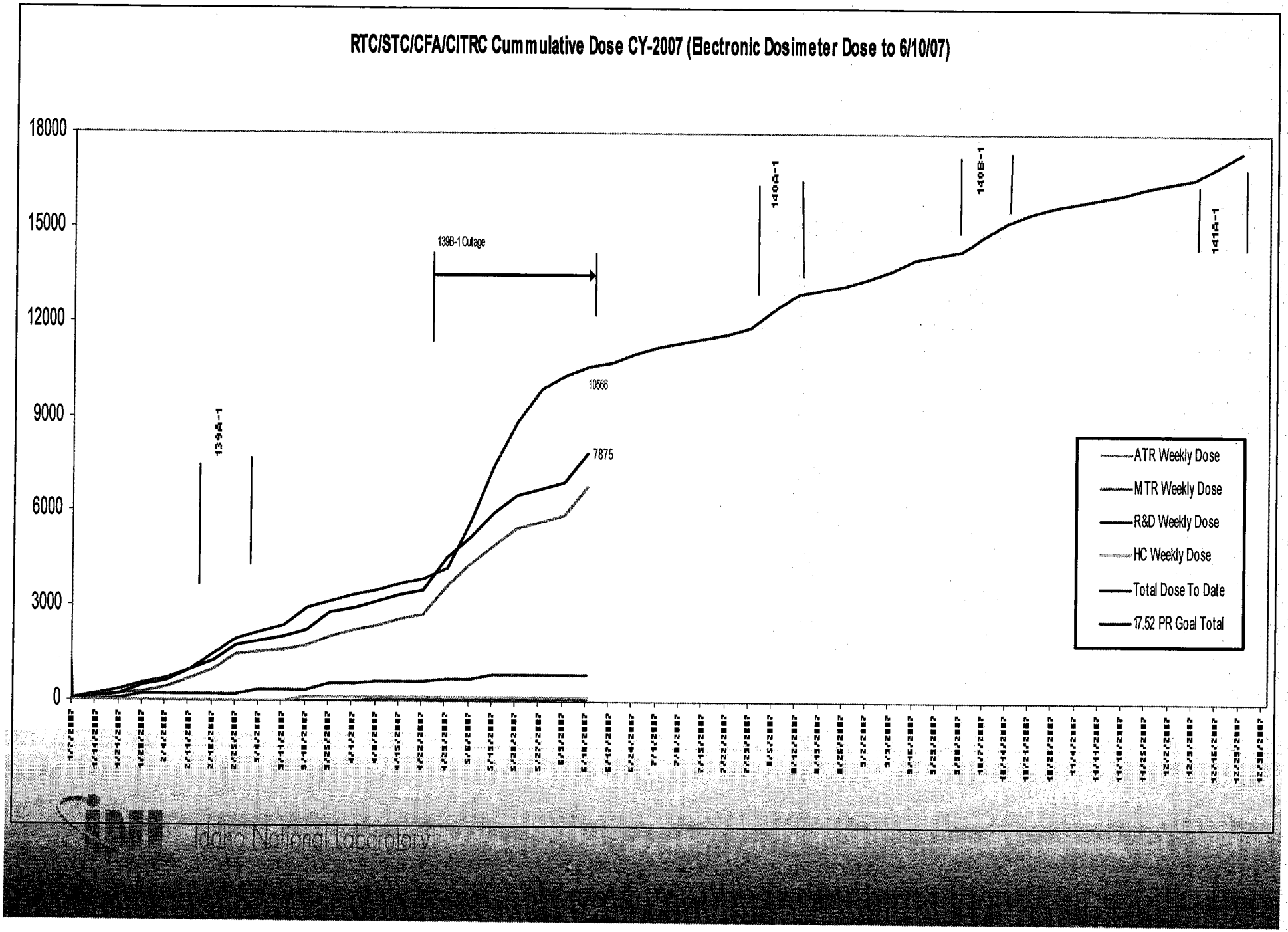
June 12, 2007

RTC/STC/CFA/CITRC CY-07 1st Qtr Dose Distribution & Tracking



RTC/STC/CFA/CITRC CY-2007 2nd Quarter Dose Distribution and Tracking





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2007 Performance to Date

Four non-reportable clothing contamination events

Two reportable clothing contamination events

Three non-reportable hot particle events

Two spills due to a leak from a pump following maintenance, one due to valve leak-by at a pump isolated for maintenance.

Highest exposed individuals (to 6/11/07)

- *214 mrem ED/TLD (BEA Pipe-Fitter supporting ATR)*
- *321 mrem neutron + 2 mrem ED = 323 mrem(PINS Project)*

2007 Projections

Expect adjustment to the annual goal for the following projects:

- *Minus 1100 mrem for heat exchanger tube plugging (canceled)*
- *Minus 250 mrem for M-111 ion exchanger replacement (overestimation)*
- *Minus 190 mrem for handling loop decontamination filters (dose savings)*
- *Minus 30 mrem for the 40-T crane trolley replacement (postponed)*
- *Minus 500 mrem for replacing the M-5 Hx drain valve (completed as part of the Hx inspection)* *Total = minus 2070*

- *Plus 500 mrem for heat exchanger secondary side inspections and cleaning (work scope not included in original goal)*
- *Plus 900 mrem for 2B-SE valve repair (rework)* *Total = plus 1400*

Total Net Adjustment = minus 670 mrem

New 2007 Goal = 16.85 person-rem

ALARA Success

Heat Exchanger Inspections

- *Life Extension Project to determine expected lifetime of components at ATR.*
  - *Drain valves located under heat exchanger are crud traps.*
  - *All drain valves were flushed and replaced during work, both as source reduction and to extend overall component lifetime.*
  - *Dose savings of approximately 60-70 %.*

Loop Decontamination Filter Handling

- *Transfer high radiation filter drums to disposal container.*
  - *Prepared labels used to limit time at drum attaching identification labels.*
  - *Transfer and loading plan to ensure proper shielding after loading.*
  - *Special shielded storage container designed and used for transport.*
  - *Pre-staged cribbing to secure box in cargo container*
  - *Worker involvement in planning*
  - *Dose savings of approximately 60 %.*

ALARA Challenges

Hydraulic Shuttle Irradiation System (HSIS Rabbit) Installation

- *Reactivation of pneumatic system that was temporarily removed in 1990s.*
- *Redesigned to use reactor vessel differential pressure for shuttle transfer instead of plant air pressure.*
- *Send/receive station submerged in canal to provide shielding and ease of transfer to shipping container.*
- *Transfer lines utilize available structural shielding where possible*
- *Designed for 16 shuttles and center 36-inches of the active core region*
- *Challenges for installation:*
  - *Canal installation may require partial draining of the west end of the canal*
    - *High radiation from irradiated isotope targets, expended core components, stored experiments, and waste materials*
    - *Contamination spread from high contamination walls and surfaces inside the canal*
    - *Inspection, testing, use and subsequent decontamination/handling of canal bulkhead*
    - *Increased liquid waste volume.*
  - *Extensive shielding of transfer lines passing through occupied areas.*
  - *Establishing proper controls (boundaries, RCT coverage, abnormal/emergency operations).*

ALARA Challenges

Experiment Handling in the Gas Cooled Loop (GCL) Transfer Facility

- *3-4 experiments need to be sized out of water to ensure no water infiltration into the experiment (AGR, AGC, TMIST).*
- *Experiment cask can interface with port in floor to access GCL.*
- *Canal handling scenarios explored did not provide adequate means to cut the tests while providing the necessary shielding and preventing water ingress.*
- *Challenges:*
  - *GCL cubicle needs to be updated*
    - *Shield window is removed and periscope penetration is unshielded*
    - *Shield door is encased behind steel wall*
    - *Through-tubes are empty – no remote handling methods available*
    - *Shield plugs, cubicle penetrations need to be tested for integrity*
    - *Handling devices such as hoists, dollies, lifts need to be inspected/installed*
    - *Utilities need to be inspected and/or preventive maintenance performed to ensure proper operation.*
  - *Cutting method and controls need to be designed and installed*
  - *Shipping container needs to be procured that fits the dimensions of the various tests.*