WELCOME, INTRODUCTIONS, AND ASSOCIATES PROGRAM OVERVIEW

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October 20, 2005

TOPICS

- AGENDA
- APNTOWL & CEAR ADMINISTRATIVE REPORT
- CEAR & APNTOWL TECHNICAL REPORT

AGENDA, 1

- 1. (8:30) Welcome, Introduction, and Associates Program Overview – RPG
- 2. (8:40) Description of Associates Program Operation – RPG
- 3. (8:45) CVS Depository for Modularized CEAR Computer Resources – RPG and Xiaogang Han
- 4. (8:55) Code Package Developments on the Monte Carlo – Library Least-Squares (MCLLS) Approach for PGNAA and EDXRF - RPG
- 5. (9:20) Radioactive Particle Tracking – Ashraf Shehata
- (9:45) COFFEE BREAK

AGENDA, 2

- 6. (10:00) The CEARPGA Code for Coincidence PGNAA Monte Carlo Simulation – X. Han
- 7. (10:35) Multiphase Flow Measurement Research in Bergen – Geir Johansen, Visiting Professor from the University of Bergen, Norway
- 8. (11:05) Detector Response Function Development for MCNP Use – Avneet Sood and X. Han
- 9. (11:15) Gamma-Ray Thickness Gauge Modeling – Fusheng Li
- (11:40) LUNCH

AGENDA, 3

- 10. (1:00) Simultaneous Modeling of the Density, Porosity, and C/O Logs – F. Li
- 11. (1:15) Recent Advances in EDXRF Research – RPG and F. Li
- 12. (1:30) Carbon Oxygen Log Research – X. Han and Ashraf Shehata
- 13. (1:45) Prompt Gamma-Ray Imaging Using the GEANT4 Code – L. Xu
- (2:15) SODA BREAK

AGENDA, 4

- 14. (2:30) Recent and Proposed MCNP Changes – Avneet Sood
- 15. (2:50) Status of Monte Carlo book – RPG and Avneet Sood
- 16. (3:00) Current Oil Well Logging Tools; Can we do more? – RPG and All
- (3:15) Future Proposals: (1) NEER on Real Time Digital Electronic Pulse Analysis (2) NIH on Prompt Gamma-Ray Imaging (PGI) of Mice
- (3:30) Future Associates Program Research – Open Discussion
- (4:00) ADJOURNMENT

APNTOWL & CEAR ADMINISTRATIVE REPORT, 1

- MEMBERSHIP
  - Present: Baker Atlas, Computalog (Advantage Engineering), EXXON Mobil, and LANL
  - Future: Analyser Systems, Shell, Halliburton, Pathfinder, Others(?)
- PERSONNEL
  - APNTOWL Partially Supported: RPG, Weijun Guo, Xiaogang Han, and Ashraf Shehata
  - Department Supported: Fusheng Li and Z. Wang
- EXPENDITURES

APNTOWL & CEAR ADMINISTRATIVE REPORT, 2

- OTHER FUNDING
  - NEER Grant (W. Metwally and X. Han)
  - Sabia STTR (W. Metwally and X. Han)
- PROPOSALS:
  - NEER (DOE)
  - NIBIB (NIH)
- PUBLICATIONS

APNTOWL & CEAR ADMINISTRATIVE REPORT, 3

- CONFERENCES AND PRESENTATIONS
  - Gave Paper at IAEA meeting at Washington University in St. Louis, Mo on April 4-7, 2005 (RPG)
  - Attended NIH Site Visit at UNC in Chapel Hill on May 23, 2005 (RPG)
  - Attended and gave two papers at IRRMA-VI at McMaster University in Hamilton, Canada on June 20-24, 2005 (CEAR had a total of six papers)
  - Gave seminar at Los Alamos National Lab – June 28, 2005 (RPG)
  - Presented a Workshop and gave a paper at Denver X-Ray Conference in Colorado Springs, CO on August 1-5, 2005 (RPG and A. Sood)

APNTOWL & CEAR ADMINISTRATIVE REPORT, 4

- Gave invited paper at the European Workshop on Quantitative Analysis in XRF Spectrometry at Ghent University in Ghent, Belgium on October 13-14, 2005
- Invited to present a seminar at Idaho National Lab on November 2, 2005
- Will present two papers (X. Han will present one) at the ANS Winter Meeting in Washington, DC on November 13-17, 2005.

CEAR & APNTOWL TECHNICAL REPORT, 1

- CEAR NIH Grant: Combine K and L XRF *in vivo* measurement methods for increasing the sensitivity and/or accuracy for Pb in bone (finished)
- CEAR NEER (DOE) Grant: Investigate coinci-dence measurement approaches for increasing the sensitivity of the PGNAA approach for on-line bulk analysis and C/O measurement (ends on December 31, 2005)
- CEAR Sabia (DOE) Contract: Investigate by Monte Carlo simulation the design and sensitivity of PGNAA for bulk coal analysis - adding the use of coincidence techniques (finished)

CEAR & APNTOWL TECHNICAL REPORT, 2

- International Atomic Energy Agency (IAEA):
  - Investigation of a simple perfect mixer with radioactive and dye tracers for benchmarking Computational Fluid Dynamics (CFD) models
  - Acting as Program Reviewer
- APNTOWL:
  - Increase the sensitivity of **C/O** tools by use of the MCLLS approach with compound libraries such as H_2O, NaCl, CH_2 (Oil), $CaCO_3$, SiO_2, etc.
  - Develop a semi-empirical model for the **density tool** that includes composition as well as density
  - Develop a mathematical algorithm for stripping for **LLS** purposes
  - Investigate **combining** the responses of a **number of nuclear tools** to obtain added information