

3436. NOTES ON 1997 INTERNATIONAL ALARA SYMPOSIUM, ORLANDO, FLORIDA, MARCH 16-20, 1997

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- **PURPOSE:** To promote exchange of ideas and management approaches to maintaining exposures ALARA. (Similar in content to old REM seminars and BNL workshops.)
- Attended by ALARA coordinators and HP personnel from more than 34 US plants and eight foreign countries as well as reps from several regulatory bodies.
- **Topics included:**
 - World class ALARA performers
 - Work management good practices
 - ALARA experience and dose reduction applications
 - SG replacement and other high dose jobs
- **Short outages:** Some plants have trimmed outages to between 10 and 20 days by:
 - eliminating unnecessary tasks
 - performing tasks more efficiently
 - freezing outage scope 6 to 9 months prior to the start of outage
 - training workers in multiple skills
 - Fins, whose annual outages average 15 days (10 days-refueling, 2-3 wks. for service outage) give workers bonuses for short outages and jobs completed ahead of schedule
 - Fins have a complete set of replacement parts/components on hand during outages to minimize outage down time
 - Fins continually modernize their plants so plants always have a 40 yr. lifetime ahead of them.
- **Declining collective doses:**
 - Doses at plants continue to decline
 - Doses at US plants are now comparable with doses in many European countries (US LWRs averaged 199 person-rem/unit in 1995)
 - The French have set an annual dose goal of 120 person-rem per unit by the year 2000
 - Many European and US plants realizing annual doses well under 100 person-rem.

- Source term reduction:
 - Wide use of zinc injection which has reduced dose levels in some plants by a factor as high as 2.5
 - Currently 24 US BWRs are utilizing zinc injection (18 use DZO and 6 use natural zinc oxide). Price of depleted zinc has dropped by 40% over the last few years
 - 30 US utilities have ordered over 400 replacement valves containing NOREM instead of stellite
 - EPRI found that applying a thin electroplated coating of chromium to surfaces in contact with reactor coolant results in a much lower amount of activity deposition than occurs on electropolished surfaces. A chromium coated SG manway seal plates at Millstone 2 showed a 12-fold decrease in the amount of activity pickup over a 12 month period

- \$/person-rem:
 - Values used range from \$700 to over \$20000/person/rem
 - Some utilities only use an alpha value for high dose jobs
 - Fill out alpha value handout

- Work management:
 - Many plants have increased ALARA awareness by:
 - Emphasizing ALARA at corporate level
 - Assign HP personnel to maintenance, operators, and other departments
 - French estimate 3-year contracts with their contractor personnel to allow them to become more familiar with the plant, thereby resulting in lower doses
 - To lower doses at Duane Arnold, the same tech who plans the work also writes the RWP and provides job coverage for the job

- High dose jobs:
 - Several utilities discussed dose reduction techniques used during recent special maintenance jobs such as SG replacements and feeding modifications
 - Ringhals recently replaced their 3 SGs in 90 days for 129.5 rem (a record low dose for a 3-loop plant)

- ISOE Workshop:
 - ISOE (Info System on Occupational Exposure) was developed by the OECD (Organization for Economic Co-op and Development) Nuclear Energy Agency in 1992
 - It is a data collection and communication network for nuclear utilities
 - It provides a mechanism for dissemination of information and exchange of experiences on dose reduction techniques
 - Currently the ISOE database contains information for 394 reactors, both operating and shutdown, from 61 utilities from 22 countries. Thirty-two of the 109 operating US reactors are participating members of ISOE
 - Types of information available on ISOE:
 - internal and external doses, broken down by dose range and personnel type
 - operating and shutdown dates and doses
 - specific doses for various jobs (SG maintenance, refueling, pressurizer, RCP maintenance, valve work, routine inspections, scaffolding, etc.)
 - component dose rates (SG channel head, BRAC points)

For more information see abstracts on ACEFAX (Notes 3437-3460) or contact David W. Miller, Clinton Power Station, P.O. Box 678, Clinton, IL, Phone 217-935-8881, Ext. 8880; Fax 217-535-4632; E-mail DWMPHD@AOL.COM