



## Shop Loading at Replacement Steam Generator (RSG) Suppliers and Tubing Vendor Facilities

Demark recently (4Q03 & 1Q04) completed site visits of all six RSG suppliers currently bidding on US utility contracts; B&W Canada, Framatome (France), ENSA (Spain), Ansaldo (Italy), MHI (Japan) and Doosan (Korea). Additionally, the three steam generator tubing vendors: Valinox (France), Sandvik (Sweden) and Sumitomo (Japan), were also visited. Shop loading at both the RSG suppliers and tubing vendors vary significantly, but in general, all are very busy with US as well as other nuclear and non-nuclear work.

The following US utility contracts are currently in place with the RSG suppliers:

B&W –	Oconee
Framatome –	Prairie Island, Callaway, Salem ANO, St. Lucie
ENSA –	BV, Comanche Peak
Ansaldo –	Palo Verde
MHI –	Ft. Calhoun
Doosan –	Watts Bar

Similarly, the following US utility contracts are in place for RSG tubing:

Valinox –	Watts Bar, Comanche Peak
Sandvik –	Palo Verde, BV, Callaway (almost complete)
Sumitomo –	Ft. Calhoun, Salem, ANO, St. Lucie Recently completed: PI & Oconee

All six of the RSG suppliers are actively pursuing US SGRP contracts. All advertise that they can meet the delivery schedule for at least one more SGRP with delivery of their components as early as the fall of 2007. The tubing vendors are not as flexible in their shop loading. All three tubing vendors are quite busy and may well be the “critical path” item for upcoming RSG delivery schedules.

There are currently three RSG orders to be placed in the near future. They are Diablo Canyon, San Onofre and Crystal River. Diablo Canyon has four Westinghouse Model 51 steam generators in Unit 1 and 2 generating over 1000

## Shop Loading – Continued

MWe per unit. San Onofre has two Combustion Engineering steam generators in Unit 2 and 3 generating over 1000 MWe per unit. Crystal River currently has two B&W OTSGs generating approximately 850 MWe.

All three projects will overlap to some extent with regards to the component fabrication, tubing manufacture and forging manufacture. Demark believes that the shop loading at the RSG suppliers is such that the schedule for delivery of all three pending SGRPs can be met depending on the supplier(s) chosen. Tubing on the other hand could pose the bigger challenge. (For more information contact Joe Calle)

## Oconee Unit 1 Replaces Steam Generators and Reactor Head

The steam generators and reactor vessel head were successfully replaced during the 2003 fall outage at Oconee Nuclear Station. This was the first replacement of B&W “once through” steam generators (OTSGs) and included the replacement of the second reactor vessel head at the station.

The outage was originally scheduled for 78 days, and would have completed in approximately 89 days if all post Mode 4 activities would have completed as scheduled. During the restart, the station was challenged with several non-SGRP issues, which delayed unit restart.

Outage performance has challenged the personnel supporting the replacement activities to enhance performance on the upcoming outage. Areas receiving additional attention include human performance and safety, FME on RCS piping, duration for installation of the rigging systems, NDE on RCS forgings, welding of RCS, tendon tensioning, and secondary side large bore pipe welding and NDE.

As a result, the implementation plans have been refined and the team is preparing for an improved outage for Unit 2, currently scheduled to begin March 20, 2004.



## **Unit 2 Replacing Steam Generators in Fall 2007**

A new Demark client has decided to replace the Unit 2 steam generators in the fall of 2007. Unit 1 previously replaced steam generators in 1997. The owner plans to replace the Unit 2 reactor head during the same outage. The Unit 2 RSGs are being supplied by Framatome while the Unit 1 RSGs were provided by B&W, Canada.

The owner team is made up of many of the same personnel that were involved with the Unit 1 replacement and as such are a very experienced and effective team. Nonetheless, Demark has been requested to support them. Demark prepared the Replacement Steam Generator (RSG) Component design specification, performed the independent review and provided the professional engineer's certification. Mr. Joe Calle, P.E. and Mr. Con Wilson, P.E. provided these services. Demark's Mark Inserra and Joe Calle also provided consulting for preparation of the Installation Specification.

On a longer term basis, Demark is providing licensing and engineering support for the Reactor Head and Steam Generator Replacement Projects. Mr. Ed Lozito is the lead engineer for this effort.

## **Leak in New RSGs Shuts Palo Verde-2**

Palo Verde-2 shut down (2/20/2004) after a small tube leak was detected in one of the new replacement steam generators just recently replaced during their last outage. This shutdown is approximately 60 days after initial startup with the replacement steam generators. This may be a significant event for replacement steam generators in general and fabrication oversight efforts in particular. We will provide more information as it becomes available to the public.

## **Replacement of Steam Generators Announced for Spring 2007**

Another new Demark client has announced that they will be replacing steam generators in the Spring of 2007. They have contracted with Westinghouse to supply the RSGs. Westinghouse will provide the design, licensing, quality oversight and project management associated with the supply of the RSGs. The RSGs will be fabricated by ENSA, Spain. ENSA is currently working with Westinghouse in the same capacity to provide three RSGs scheduled for a Spring 2006 replacement.

Demark's initial scope is to provide fabrication oversight of the steam generators at the ENSA facilities in Santander, Spain. Demark is currently providing a similar effort for another client. Demark is very excited about its growing fabrication oversight services.

## **Demark New Employees and Relocations:**

The fourth quarter of 2003 and the first quarter of 2004 have been very busy times for Demark. Delineated below are new additions and relocations of Demark personnel.

Steve Vogel: PI SGRP  
David Spear: FC SGRP & Rx Head  
Edward Lozito: SL SGRP & Rx Head  
Paul Langford: Various SGRPs  
Rick Hoover: BV Power Uprate  
Jim Hesler: BV SGRP  
George Kavalir: BV SGRP  
Don Maclsaac: BV SGRP  
Bernard Martin: BV SGRP

## **Quote of the Month**

What lies behind us and what lies before us are small matters compared to what lies within us.  
--Ralph Waldo Emerson