

1 Q. Provide the method used to confirm the reasonableness of the 2007  
2 Hydraulic Production forecast estimates generated from the SYSSIM model?  
3 (NP-35 NLH, Page 2, Line 5 to 7)  
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6 A. The estimated hydraulic production was developed using SYSSIM. As noted  
7 in IC 129 NLH, SYSSIM is an integrated hydro-thermal simulation tool that is  
8 built around the Acres Reservoir Simulation Program (ARSP) hydraulic  
9 simulation engine. ARSP has been used extensively by Hydro and other  
10 groups for evaluation of hydraulic–production related issues. SYSSIM adds  
11 constraints and load limitations to the problem formulation, and calls ARSP  
12 as a module to simulate the hydraulic portion of the problem.  
13

14 The following steps were taken to confirm the reasonableness of the 2007  
15 hydraulic production forecast:  
16

- 17 1. Calibrate the ARSP model to 2004 experience,
- 18 2. Validate the ASRP model against 2005 experience, and
- 19 3. Develop 2007 forecast hydraulic production.  
20

21 The calibration activity for ARSP involved collecting 2004 actual data, and  
22 constraining the model on a monthly basis to produce reservoir storages and  
23 channel flows consistent with 2004 experience. The resultant plant  
24 production was compared to 2004 actual production. Where necessary,  
25 plant efficiency curves were modified to bring simulated production closer to  
26 actual production. The model was considered calibrated when annual  
27 simulated production by plant was within  $\pm 0.1\%$  of the annual total by plant.

1       The validation activity involved collecting 2005 actual data, and again  
2       constraining the model on a monthly basis to produce reservoir storages and  
3       channel flows consistent with 2005 experience. The resultant simulated  
4       production was compared with actual production. The simulated production  
5       was 0.57% greater than actual production for the year, with individual plant  
6       production typically varying between  $\pm 1\%$  of actual. The calibrated and  
7       validated model was then used with 2007 forecast data to develop the 2007  
8       hydraulic production estimate.

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10      At various stages in the process, SGE Acres was engaged to ensure that the  
11      exercise was correct and reasonable. The attachments to IC 128 NLH  
12      document this correspondence. Attachments 1, 2, and 3 were actioned prior  
13      to or in conjunction with the calibration phase. The investigation into the spill  
14      (Attachment 4) was done in conjunction with the calibration and validation  
15      steps. The work and results were done during the two steps, while the  
16      documentation was delayed for several weeks. The opinion of SGE Acres  
17      regarding suitability and reasonableness is included in Attachment 5 and was  
18      provided after their review of all phases.