

1 **UNDERTAKING J2.2**  
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4 **Undertaking**  
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6 To provide P-level associated with the working schedule and cost level associated with  
7 the working schedule.  
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11 **Response**  
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14 The duration of the working schedule for Unit 2 is 35 months, as provided in L 4.3-2  
15 AMPCO-066, p. 2, Chart 1. This working schedule duration is equivalent to a  
16 confidence level of P37 or 37%.  
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18 Completion of Unit 2 on the working schedule of 35 months, i.e. a return-to-service in  
19 mid-September 2019, would result in a reduction in the use of schedule contingency.  
20 OPG has approximated the reduction in the use of schedule contingency, based on the  
21 difference in durations between the P90 and the working schedule and an appropriate  
22 average daily rate.  
23

24 OPG's estimates that the in-service amount associated Unit 2 based on the working  
25 schedule would be reduced by \$144M, i.e. to approximately \$4656M.  
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27 The working schedule is intended to be aggressive. OPG is managing the work to this  
28 schedule to allow early identification of risks so that mitigating action can be taken  
29 promptly.

**UNDERTAKING J2.3**

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**Undertaking**

To determine the revenue-requirement impact of moving from a P90 to a P50 in this application.

**Response**

Please see Tr. Vol. 2, p. 202, lines 26-28, and p. 203, lines 1-6.

1 **UNDERTAKING J2.4**  
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4 **Undertaking**  
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7 To advise precisely where in the evidence there is an expert that says P90 is an  
8 appropriate allocation.  
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12 **Response**  
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14 The below references are derived from the Testimony of Dr. Patricia D. Galloway,  
15 located at Ex. D2-2-11, Attachment 3.  
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17 On page 8:

18  
19 “OPG’s selection of a P90 confidence level for the Unit 2 schedule is  
20 reasonable and in accordance with the robust risk analyses that were  
21 performed.”  
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23 On page 14:

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25 “By performing a detailed cost estimate and schedule based on a  
26 thorough and robust probabilistic risk assessment of the Program, *OPG*  
27 *has established a P90 confidence level of the cost to complete the*  
28 *Program and established an appropriate level of contingency, which in my*  
29 *opinion, is a reasonable cost estimate.” (emphasis added).*

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31 On page 54:

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33 “Q. Did you assess whether the amount of contingency included in the  
34 RQE by OPG was reasonable given the nature of the DRP?  
35

36 A. Yes. *In review of the DRP documentation and through interviews with*  
37 *OPG personnel, I have determined that OPG’s \$1.7B of contingency for*  
38 *the DRP is reasonable.* I base this finding on my understanding of the  
39 robust method in which OPG determined its contingency amount, which  
40 included a comprehensive risk assessment, Monte Carlo simulations,  
41 vetting by internal and external parties, and the decision to use a P90  
42 confidence level.” (emphasis added).  
43

44 On page 55:

1 "Q. Is it appropriate to use the P90 confidence level to determine the  
2 amount of contingency?  
3

4 A. Yes. Although no specific confidence level is considered a best  
5 practice, using a P90 confidence level provides OPG with a high  
6 probability that the Program will be completed within the budget. Using a  
7 lower confidence level, such as a P50 confidence level, may not  
8 adequately address the complexities and risks inherent with the execution  
9 of a megaprogram (particularly the extended duration of execution as  
10 compared to a typical project), thus increasing the risk of a cost overrun."  
11

12 On page 56:

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14 "Q. Did you reach any overall opinions concerning the RQE \$12.8B  
15 estimate for the DRP?  
16

17 A. Yes. From my review and evaluation of the contemporaneous  
18 documentation and the interviews of OPG management, at the time the  
19 RQE cost estimate was completed, OPG had ample reason to feel  
20 confident in the accuracy of RQE estimate. I found the methodologies  
21 employed by OPG to develop the RQE estimate to be world-class. A  
22 review of all the relevant documentation and interviews with OPG project  
23 personnel confirmed the fact that the methodologies employed met all  
24 accepted industry standards and guidelines as promulgated by AACE. As  
25 I discussed earlier in my testimony, *the use of a P90 confidence level,*  
26 *along with the detailed estimate development process, provides OPG with*  
27 *appropriate assurances that the DRP can be completed within the \$12.8B*  
28 *estimate." (emphasis added).*

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30 On page 62:

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32 "Q. Do you believe it is reasonable to use the high-confidence P90  
33 schedule for execution of Unit 2?  
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35 A. While there is no prescribed standard for use of a particular confidence  
36 schedule over another, OPG, by selecting the P90 schedule for Unit 2,  
37 has demonstrated its risk tolerance preference for a high-confidence  
38 schedule (aligning with its use of a P90 estimate) to limit the likelihood of  
39 schedule overruns. *I find OPG's selection of a P90 confidence level for the*  
40 *Unit 2 schedule to be reasonable and in accordance with the robust risk*  
41 *analyses that were performed." (emphasis added).*

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1 In part b of M1-4.3 AMPCO-009 regarding Schiff Hardin's assessment of whether a P50  
2 versus a P90 contingency or another contingency probability is the industry standard,  
3 Schiff Hardin stated:  
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5 "The P50 is an estimate of the project cost based on a 50% probability that the  
6 cost will not be exceeded. Stated another way, the P50 estimate is one with  
7 equal chance of project overruns or underruns. *The P90 is an estimate of the*  
8 *project cost based on a 90% probability that the cost will not be exceeded. Some*  
9 *project participants prefer to have less exposure to increases in capital budgets*  
10 *and often look for a P90 figure.* The P90 contingency means that the contingency  
11 allowance on top of the base estimate is sufficient to ensure that there is a 90%  
12 chance that the amount will not be exceeded. Budget determinations and the  
13 confidence level for projects/programs vary by the contracting strategy, schedule,  
14 and other project/program factors." (*emphasis added*).