Board Staff Interrogatory #174

Interrogatory

Reference:
Exhibit D2 / Tab 2 / Schedule 11 / Attachment 3 / pp. 58-60

Preamble:

Bates White noted that it derived its estimate for the OPG contractor productivity from data in two "wrench time" studies that were commissioned by OPG that are consistent with Bates White's own first-hand experience with construction projects inside the protected area of a nuclear facility.

The "wrench time" study done by the University of Ontario Institute of Technology reviewed several DRP activities to identify major contributors to downtime which were divided into two categories: site specific considerations (i.e. breaks, briefings, site preparation, travel time, waiting, work stoppage) and items common among nuclear facilities (i.e. personal protective equipment, permit sign-off, activity tooling and equipment).
Bates White noted that the EMWG guidelines do not present specific information regarding assumptions upon which it based its labour rate projections. However, Bates White is of the view that the EMWG are mean estimates and more likely to be consistent with RSMeans-type productivity assumptions than the data-driven factors determined by the available site-specific "wrench time" studies. Bates White stated that as the EMWG productivity factors are mean estimates, combining the reduced wrench time productivity estimate with the EMWG installation rate data is a reasonable approach and should produce reliable results.

Question(s):

a) Please advise what aspects of the DRP were the subject of the "wrench time" studies.

b) Please advise whether it is Bates Whites position that:

   i. The EMWG nuclear unit hours and non-nuclear unit hours reflect none of the site-specific considerations and therefore combining the reduced wrench time productivity estimate and EMWG data is appropriate; or

   ii. OPG's D2O Project had greater downtime for the noted site-specific considerations than what is reflected in the EMWG nuclear unit hours

and non-nuclear unit hours and therefore combining the reduced wrench time productivity estimate and EMWG data is appropriate.

c) Please discuss in detail Bates White's understanding of how the nuclear unit hours and non-nuclear unit hours were derived for the EMWG guidelines. Specifically, please advise whether the unit hours in the EMWG guidelines are based on averages of actual construction times for nuclear construction projects.

d) Please provide the total project cost (comparable to the $517.7 million estimate) if the labour productivity adjustment was not applied in combination with the EMWG-related factors (i.e. applying only the EMWG factor and wage adjustment to the relevant categories of labour costs).

Response

The following response was prepared by Bates White:

a) The aspects of work on the DRP that were the subject of the "wrench time" studies were administrative factors that affected the amount of time available for productive labour. Such factors are largely due to what the EMWG would describe as "regional" or "site-specific" factors, such as regulatory requirements, labour agreements, size of the site, and similar factors. For the DRP, the major drivers for "non-wrench time" included on-site travel time, waiting/work stoppages, and lunch/breaks.

b) Our position is consistent with i), not ii). We note that, in describing the basic formula for determining labour cost, the EMWG (see Section 6.2.4) uses the number of units installed, the unit installation rate, and unit labor cost per hour (which includes base rates, fringe benefits, and any travel or subsistence allowances), with no further adjustments. In describing its estimation methods, the EMWG guide does not provide guidance to address the development of what it refers to as "site-specific" or "regional" measures of "productivity," but does anticipate that these would be accomplished "subsequent" to the estimates developed using the guide (see EMWG Section 6.3). Further, we note that, in describing the factors incorporated into the estimates, the EMWG states that nuclear systems "require more elaborate procedures, documentation, and quality assurance/quality control," i.e., factors associated with the technical nature of the work (EMWG Section 4.5).

c) The unit installation rates provided in the EMWG were based on actual construction times for construction of nuclear reactors in the U.S. (See introductory paragraph to Ex. D2-2-11, Attachment 3, Appendix G, Section G.2., “Reference Plant Data.”)

d) As discussed above, Bates White continues to believe that application of a site-specific labour productivity factor is consistent with the cost estimating method described by the EMWG and, indeed, is anticipated by the EMWG when site-specific conditions are known. If the calculated, site-specific labor factor were not applied, the change to the project cost would be as represented in the response to Ex. L-D2-02-Staff-172 part (c). However, it is implausible to assume standard commercial productivity (66%) would apply.