Board Staff Interrogatory #221

Interrogatory

Reference:
Exhibit F2 / Tab 1 / Schedule 1 / Attachment 6 / pp. 36-38

Preamble:

Goodnight noted that technical adjustments were utilized to derive the 2-Unit CANDU staffing benchmark from the PWR.

Goodnight further applied a scaling factor of 1.8 (for most functions) to adjust from a 2-unit plant to a 4-unit plant.

Question(s):

a) Please provide the raw adjustments made in Goodnight's previous staffing study for OPG.

b) Please provide detailed rationale supporting the appropriateness of the technical adjustments made to the following staffing functions at Exhibit F2 / Tab 1 / Schedule 1 / Attachment 6 / p. 36:

   i. Admin
   ii. Budget / Accounting
   iii. Engineering – Reactor
   iv. Human Resources

c) Please provide the scaling factor used in Goodnight's previous staffing study for OPG to adjust from a 2-unit plant to a 4-unit plant.

d) Please provide the methodology used to derive the 1.8 scaling factor and provide detailed rationale supporting the 1.8 scaling factor at Exhibit F2 / Tab 1 / Schedule 1 / Attachment 6 / p. 38.

e) Please confirm that an escalator of 1.14x was applied to all of the staffing functions marked with a "1" to scale from a 35-hour work week to a 40-hour work week at Exhibit F2 / Tab 1 / Schedule 1 / Attachment 6 / p. 38.

f) Please explain all of the "ratio" adjustments made to the various job functions at Exhibit F2 / Tab 1 / Schedule 1 / Attachment 6 / p. 38.

Response

a) "Raw adjustments" account for technical differences between pressurized water reactors ("PWR") and CANDU plants (Ex. F2-1-1, Attachment 6, p. 35). Goodnight Consulting used the following raw adjustments in the previous study (EB-2016-0152, Ex. F2-1-1, Attachment 2, p. 22).

Figure 1

Staffing Function	Raw Adjustments 2014
Admin/Clerical	3
ALARA	2
Budget/Finance	1
Chemistry	0
Communications	0
Contracts/Purchasing	0
Design/Drafting	1
Document Control	2
Emergency Planning	0
Engineering - Computer	0
Engineering - Mods	3
Engineering - Plant	8
Engineering - Procurement	2
Engineering - Reactor	5
Engineering - Technical	5
Environmental	2
Facilities	0
Fire Protection	0
HP Applied	3
HP Support	1
Human Resources	1
Licensing	1
Maintenance/Construction	22
Maintenance/Construction Support	4
Management Assist	0
Materials Management	0
Nuclear Fuels	-1
Nuclear Safety Review	0
Operations	0
Operations Support	0
Outage Management	3
Project Management	1
QA	0
QC/NDE	1
Radwaste/Decon	3
Safety/Health	0
Scheduling	2
Training	3
Warehouse	2
Total	**80**

In the current Goodnight study, comparable raw adjustments totaled 78 (Ex. F2-1-1, Attachment 6, p. 36)

b) The technical adjustments resulted from Goodnight's conversations with OPG senior staff as well as a detailed review of OPG's technical specifications, design and operating environment. The specific rationales are provided at Ex. F2-1-1, Attachment 6, p. 36 for each functional area.

Figure 2

Staffing Function	Raw Adjustments 2019	Rationale
Admin	3	Approximately 1 additional admin/clerical person is needed for each additional 25 staff
Budget/Accounting	1	1 FTE additional functional staff needed to support the added personnel due to CANDU technology differences
Engineering - Reactor	5	Adjusted to 2-unit equivalent of OPG CANDU stated requirements
Human Resources	1	1 FTE additional functional staff needed to support the added personnel due to CANDU technology differences

c) Goodnight Consulting used the following scaling factors in the previous nuclear staffing benchmarking study, as submitted in EB-2016-0152, Ex. F2-1-1, Attachment 2, p. 24, column 5.

Figure 3

2-unit to 4-unit Scaling Factors, by Functional Area					
Staffing Function	2-Unit CANDU Benchmark	35 hour week?	Adjustment for 35 hour week	Scaling Factor From 2 to 4-Units	Initial 4-Unit CANDU Benchmark
Admin/Clerical	39	1	45	1.8	81
ALARA	7		7	1.8	13
Budget/Finance	14	1	16	1.8	29
Chemistry	27		27	1.8	49
Communications	3		3	1.8	5
Contracts/Purchasing	8	1	9	1.8	16
Design/Drafting	17	1	19	1.8	34
Document Control	17	1	19	1.9	36
Emergency Planning	6	1	7	1.5	11
Engineering - Computer	4	1	5	2	10
Engineering - Mods	34	1	39	1.8	70
Engineering - Plant	55	1	63	1.8	113
Engineering - Procurement	10	1	11	1.8	20
Engineering - Reactor	11	1	13	2	26
Engineering - Technical	34	1	39	1.8	70
Environmental	7	1	8	1.8	14
Facilities	28		28	1.8	50
Fire Protection	31		31	1.8	56
HP Applied	32		32	1.8	58
HP Support	12	1	14	1.8	25
Human Resources	7	1	8	1.8	14
Licensing	10	1	11	1.8	20
Maintenance/Construction	199		199	1.8	358
Maintenance/Construction Support	43		43	1.8	77
Management Assist	4	1	5	1.8	9
Materials Management	9	1	10	1.8	18
Nuclear Fuels	7	1	8	1.8	14
Nuclear Safety Review	11	1	13	1.8	23
Operations	126		126	2	252
Operations Support	40		40	2	80
Outage Management	14		14	1.8	25
Project Management	20	1	23	1.8	41
QA	12	1	14	1.8	25
QC/NDE	12		12	1.8	22
Radwaste/Decon	12		12	1.8	22
Safety/Health	5	1	6	1.8	11
Scheduling	24		24	1.8	43
Training	53		53	1.8	95
Warehouse	20	1	23	1.8	41
Total	**1024**		**1079**		**1976**

d) The following responses have been provided by Goodnight Consulting:

The initial analysis was based on some degree of efficiency that should be realized when scaling up from 2 to 4 units, specifically meaning that staffing would not be doubled in most cases, and therefore that a scaling factor of less than 2 would be appropriate. This was based on real-world operating experience from European sites with 4 reactor units. The 1.8 scaling factor was based on the judgement of our experts after a detailed review of OPG's nuclear assets. This included many conversations with OPG senior staff as well as a detailed review of OPG's technical specifications, design and operating environment.

e) Goodnight Consulting confirmed that all staffing functions marked with a “1” were scaled from a 40 hour work week (US model) to a 35 hour work week (Canadian model) using the 1.14x escalator.

f) “Ratio” adjustments were used to scale the Admin, Budget/Accounting, Human Resources and Safety Programs functions from 2 to 4 units. These functions were adjusted with a ratio scaling factor, calculated by the average number of people performing this function compared to the average total staffing contingent.