

Proprietary Request by B&W mPower Dated 4-8-11 ML11102A096

Enclosure 1

Babcock & Wilcox Design Overview Workshop Questions

The following set of informal questions was developed by the NRC staff attending the Design Overview Workshop conducted in Rockville, MD on April 21, 2011. B&W NE responses are provided after each numbered question. As discussed during the meeting, the information provided as well as these responses are considered preliminary in nature and are subject to change as the mPower design continues to evolve.

1. Will external heaters be used for unit start up etc.?

[] [CCI per Affidavit 4(a)-(d)]

2. Will the reactor have the same radiation embrittlement characteristics as existing PWRs?

[]
[CCI per Affidavit 4(a)-(d)]

3. [

] [CCI per Affidavit 4(a)-(d)]

4. Will B&W consider accessibility for In-Service Inspection (ISI) in the design?

Yes. [

] [CCI per Affidavit 4(a)-(d)]

5. Are the reactor coolant pumps (RCPs) considered part of design basis accidents (DBAs)?

[] [CCI per Affidavit 4(a)-(d)]

6. [

] [CCI per Affidavit 4(a)-(d)]

7. Has the reactor coolant pump design been used elsewhere in the nuclear industry?

[

] [CCI per Affidavit 4(a)-(d)]

8. Does the reactor coolant pump impeller rotate with the shaft?

[

per Affidavit 4(a)-(d)]

] [CCI

9. Are the moving parts within the reactor coolant pump considered (design per) ASME Code?

[

per Affidavit 4(a)-(d)]

] [CCI

10. Has a blocked or locked shaft or impeller condition been considered in the design?

[

4(a)-(d)]

] [CCI per Affidavit

11. Must all of the reactor coolant pumps run at the same time or can some of them be out of service?

[
] [CCI per Affidavit 4(a)-(d)]

12. Will the Reactor coolant pump housings be designed per ASME code?

[] [CCI per Affidavit 4(a)-(d)]

Please see the response to Question # 9 above.

13. Will the reactor coolant pumps be designed with pump seals?

[] [CCI per Affidavit 4(a)-(d)]

14. Is the reactor coolant pump or portions of the pump designed to ASME Division 1 Subsection NG to maintain structural integrity?

[] [CCI per Affidavit 4(a)-(d)]

Please see the response to Question # 9 above.

15. Has a loss of cooling water or loss of reactor coolant pumps been considered in the design?

Please see the response to Question # 11.[

] [CCI per Affidavit 4(a)-(d)]

16. [

] [CCI per Affidavit 4(a)-(d)]

17. Is the reactor coolant pump integrity credited in a postulated accident? What is the impact (e.g. potential consequences)?

Please see the response to Question #5.

18. Are the RCP motors variable speed?

[] [CCI per Affidavit 4(a)-(d)]

19. Are the reactor vessel welds circumferential?

] [CCI per Affidavit 4(a)-(d)]

20. Is a feedwater line rupture considered in the design?

[] [CCI per Affidavit 4(a)-(d)]

21. What is the typical tech specs and instrument calibration cycle planned for the mPower design? [

] [CCI per Affidavit 4(a)-(d)]

22. What is the test plan for the control rod drive mechanisms (CRDMs) [

] [CCI per Affidavit 4(a)-(d)]

23. How many CRDMs are in the design?

[] [CCI per Affidavit 4(a)-(d)]

24. Is B&W satisfied with the SCRAM time in the CRDM prototype testing?

[

] [CCI per Affidavit 4(a)-(d)]

25. [

] [CCI per Affidavit 4(a)-(d)]

26. [

] [CCI per Affidavit 4(a)-(d)]

27. [

] [CCI per Affidavit

4(a)-(d)]

28. The fuel cycle of current reactors is 24 months. Since B&W is proposing a 4-year cycle, has a list of items that could malfunction been developed along with plans for inspection and testing of these items?

[] [CCI per Affidavit 4(a)-(d)]

29. What is B&Ws approach to ATWS? Will the mPower design include a diverse shutdown system, a mitigation system, or both?

[] [CCI per Affidavit 4(a)-(d)]

30. The video shows a very coordinated/seamless refueling procedure. What margin of precision is needed in actual operation? What human factors errors or construction errors have been considered?

] [CCI per Affidavit 4(a)-(d)]

31. What are the thermo-hydraulic limiting conditions?

[

] [CCI per Affidavit 4(a)-(d)]

32. What is the moderator temperature coefficient throughout the cycle?

[

] [CCI per Affidavit 4(a)-(d)]

33. What tests will be run for Critical Heat Flux (CHF) correlation?

[

] [CCI per Affidavit 4(a)-(d)]

34. What is the test plan for CHF? Will the model be used for this?

[

] [CCI per Affidavit 4(a)-(d)]

35. [

] [CCI per Affidavit 4(a)-(d)]

36. What is the basis of the reactor cooling system chemistry design?

[

] [CCI per Affidavit 4(a)-(d)]

37. [

] [CCI per Affidavit 4(a)-(d)]

38. Can the emergency core cooling system (ECCS) design deal with a multiple steam generator tube rupture (SGTR) event? [

[CCI per Affidavit 4(a)-(d)]

]

39. [

] [CCI per Affidavit 4(a)-(d)]

40. What is the classification of the ultimate heat sink and what is its location relative to containment?

[

] [CCI per Affidavit 4(a)-(d)]

41. Explain in more detail the operation and design of the ultimate heat sink. [

] [CCI per Affidavit 4(a)-(d)]

42. Is there a component cooling system included in the design?

[

] [CCI per Affidavit 4(a)-(d)]

43. Does the reactor pressure vessel design include an over pressure protection system? What is its capacity? Where does it discharge?

[

]

[CCI per Affidavit 4(a)-(d)]

44. [

] [CCI per Affidavit 4(a)-(d)]

45. [

] [CCI per Affidavit 4(a)-(d)]

46. [

] [CCI per Affidavit 4(a)-(d)]

47. For a plant with the air-cooled condenser option, how would the plant operator dispose of liquid radiate?

[

] [CCI per Affidavit 4(a)-(d)]

48. In the event of a tube leak, isolation of steam and feed water lines would isolate the leak unless the main steam safety valves open on high pressure. Where does the steam go?

[

] [CCI per Affidavit 4(a)-(d)]

49. How would response to a tube leak or rupture be different if OTSG shell were designed to the same pressure as the pressurizer and reactor vessel? Would the main steam safety relief valves have higher settings?

[

] [CCI per Affidavit 4(a)-(d)]

50. Explain how B&W is addressing the effects of large differential temperatures in the reactor coolant system and its impact on components such as the electrical components of the RCP (circulators) and the tight tolerances of the CRDMs.

[

] [CCI per Affidavit 4(a)-(d)]

51. How will (fuel) rods be changed during the fuel cycle?

[

] [CCI per Affidavit 4(a)-(d)]

52. [

] [CCI per Affidavit 4(a)-(d)]

53. [

] [CCI per Affidavit 4(a)-(d)]

54. [

] [CCI per

Affidavit 4(a)-(d)]

55. [

] [CCI per Affidavit 4(a)-(d)]

56. Slide 92 “Recent Licensing Issues” for I&C should also address broader operational issues not just communication.

We will take this as a staff comment and will factor it into our design effort to keep a focus on key licensing issues.

57. Will B&W take credit for testability and self tests?

See response to Question #56 above.

58. [

] [CCI per Affidavit 4(a)-(d)]

59. [

] [CCI per Affidavit 4(a)-(d)]

60. When is the next interaction on I&C with B&W planned?

A meeting is scheduled for May 26th to discuss the I&C Software Quality Assurance Plan development.

61. How many operators does B&W plan to have in the control room?

[

] [CCI per Affidavit 4(a)-(d)]

62. How does B&W plan to meet various NRC requirements and guidance on control room habitability against a toxic gas release nearby or a carbon dioxide build-up inside the control room during a design basis accident?

[

] [CCI per Affidavit 4(a)-(d)]

63. Where would the emergency preparedness and response facilities be located in and around the control room?

[

]

[CCI per Affidavit 4(a)-(d)]

64. I&C Functions PCL and PML: does the balance of plant systems include security systems (detection, assessments, access controls, CAS/SAS, etc)?

[

] [CCI per Affidavit 4(a)-(d)]

65. How will human factors be applied in the design of central access system(CAS)/secondary access system(SAS)?

Human factors principals will be part of the design process for CAS/SAS.

66. Where is the equipment hatch located?

[

] [CCI per Affidavit 4(a)-(d)]

67. Is B&W considering the use of LOCADOSE for PRA insights and design basis accident dose analysis? Will there be deviations or additions to the SRP methods?

[

] [CCI per Affidavit 4(a)-(d)]

68. Describe the containment construction.

[

] [CCI per Affidavit 4(a)-(d)]

69. [

]

[CCI per Affidavit 4(a)-(d)]

70. [

] [CCI per Affidavit 4(a)-(d)]

71. Do both units need to be built at the same time?

[

] [CCI per Affidavit 4(a)-(d)]

72. Is the nuclear steam supply system mostly inside the reactor vessel?

Yes.

73. [

] [CCI per Affidavit 4(a)-(d)]

74. What elevation of water would flood the reactor cavity?

[
] [CCI per Affidavit 4(a)-(d)]

75. How many feet above grade is the roof elevation?

[
] [CCI per Affidavit 4(a)-(d)]

76. How will the radiologically controlled area be serviced?

[
] [CCI per Affidavit 4(a)-(d)]

77. What is the structure over containment?

[
] [CCI per Affidavit 4(a)-(d)]

78. What is the seismic design of the safety related structures?

Our approach to the seismic design will be shared with the NRC staff at a meeting scheduled for the 17th of May. [
] [CCI per Affidavit 4(a)-(d)]

79. What is the stack height?

[
] [CCI per Affidavit 4(a)-(d)]

80. Will the design take credit for the reactor service building with regards to leaking?

[
] [CCI per Affidavit 4(a)-(d)]

81. (Does the design include a) one room containment in the perspective of containment accidents?

[
(d)] [CCI per Affidavit 4(a)-

82. [
]

[CCI per Affidavit 4(a)-(d)]

83. Will a seismic analysis take multi-module plants into consideration?

[
] [CCI per Affidavit 4(a)-(d)]

84. Describe how fuel transfer with new fuel will be accomplished.

[
] [CCI per Affidavit 4(a)-(d)]

85. Will the concept of leak before break be part of the design criteria in the piping design (postulated pipe break)?

[
4(a)-(d)] [CCI per Affidavit

86. [
]

[CCI per Affidavit 4(a)-(d)]

87. How long will it take to boil off the spent fuel pool?

[
] [CCI per Affidavit 4(a)-(d)]

88. Describe the spent fuel pool make-up and cooling systems. What happens to these systems in the event of a spent fuel pool failure?

[

] [CCI per Affidavit 4(a)-(d)]

89. Regarding the fuel transfer tube; what design features are being used to prevent leaks and sudden loss of refueling water?

[

] [CCI per Affidavit 4(a)-(d)]

90. How is the refueling gate sealed to prevent leakage?

[

][CCI per Affidavit 4(a)-

(d)]

91. [

] [CCI per Affidavit 4(a)-(d)]

92. [

] [CCI per Affidavit 4(a)-(d)]

93. [

] [CCI per Affidavit 4(a)-(d)]

94. [

]

[CCI per Affidavit 4(a)-(d)]

95. Will B&W incorporate beyond design basis conditions to test PRA?

[

] [CCI per Affidavit 4(a)-(d)]