UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

In the Matter of	)	
	)	
Gulf States Utilities Company, et al.	)	Docket No. 50-458
	)	
	)	
(River Bend Station)	)	

APPLICANTS' PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW RELATED TO CONTENTION 2 (OLD RIVER CONTROL STRUCTURE)

Findings of Fact

1. The Old River Control Project ("Project") functions to control and regulate the amount of water diverted from the Mississippi River into the Atchafalaya River, thereby maintaining the stability of both river systems, Fairless, ff. Tr. _____ at _____.

2. Without the Project, the Mississippi River would change its course to that of the Atchafalaya River, Fairless, ff. Tr. _____ at _____.

3. The Old River Control Project is located on the right descending bank of the Mississippi River, about 50 air miles northwest of Baton Rouge, Louisiana, Fairless, ff. Tr. _____ at _____.

4. The principal features of the project are: three mechanically operated control structures, designated as the low sill control structure; the overbank control structure; an auxiliary control structure (currently under construction); an inflow channel from the Mississippi River to the low sill structure; an outflow channel from the low sill structure to the Red River; a lock for navigation; forebay and tailbay channels for the lock; an earthen dam closing Old River; enlargement and extension of main line Mississippi River levees; and bank stabilization as required, Fairless, ff. Tr. _____ at _____.

5. The low sill structure is located at about Mississippi River Mile 315 above the head of passes (AHP). The low sill structure is a controlled spillway having a gross width of 566 feet between training walls and consisting principally of gated openings, a stilling basin, training walls, and abutments, Fairless, ff. Tr. _____ at _____.

6. The spillway section is composed of 11 gate openings each 44 feet wide, Fairless, ff. Tr. _____ at _____.

7. The low sill structure is operated on a continuous basis at all river stages, Fairless, ff. Tr. _____ at _____.

8. Flows through the low sill structure are controlled by means of adjustable vertical steel gates, Fairless, ff. Tr. _____ at _____.

9. At high water stages, the overbank control structure is operated together with the low sill structure to control flows, Fairless, ff. Tr. _____ at _____.

10. Upon completion of the auxiliary control structure, flow regulation will be accomplished by the combined operation of the low sill structure, the overbank structure, and the auxiliary structure, as appropriate, Fairless, ff. Tr. _____ at _____.

11. The Project is operated so as to maintain the flow distribution between the Mississippi and Atchafalaya Rivers in approximately the same proportions as occurred naturally (via lower Old River) in 1950, Fairless, ff. Tr. _____ at _____.

12. The 1950 flow distribution consisted of about 30% of the total latitude flow (combined flow in the Red River and in the Mississippi River above the control structures) passing down the Atchafalaya River on an annual basis and the remainder down the lower Mississippi River, Fairless, ff. Tr. _____ at _____.

13. To date, maintenance of this 70/30 annual distribution is, in fact, effective in maintaining a stable relationship between the two rivers, Fairless, ff. Tr. _____ at _____.

14. The current Federal Project for flood control and navigation along the lower Mississippi River has been under development for over 50 years and provides a reliable navigation system, a high degree of flood protection, and a dependable supply of fresh water, Fairless, ff. Tr. _____ at _____.

15. The Old River Control Project, by maintaining a stable relationship between the Mississippi and Atchafalaya Rivers, is an essential element of this plan, Fairless, ff. Tr. _____ at _____.

16. Failure of the Old River Control Project, resulting in a change in the course of the Mississippi River would have disastrous economic, social, and environmental effects on southern Louisiana and the entire nation, Fairless, ff. Tr. _____ at _____.

17. Were the Old River Control Project to fail and the Mississippi River to change its course, the abundant supply of fresh water in the lower Mississippi River, which New Orleans and other cities use for drinking water and on which billions of dollars of industrial development are dependent, would be reduced or eliminated, Fairless, ff. Tr. _____ at _____.

18. Were the Old River Control Project to fail and the Mississippi River to change its course, the flood protection system along the Atchafalaya River would not be able to accept the change in course without massive flooding and a long and costly redesign and reconstruction of the system, Fairless, ff. Tr. _____ at _____.

19. Were the Old River Control Project to fail and the Mississippi River to change its course, the continued existence of historic towns along the banks of the Atchafalaya River, such as Kortz Springs, Berwick, and Morgan City, would be threatened, Fairless, ff. Tr. _____ at _____.

20. Were the Old River Control Project to fail and the Mississippi River to change its course, vast adverse environmental impacts would occur both in the Atchafalaya Basin, America's largest river swamp, and in the coastal bays and marshes adjacent to the present outlets of the Atchafalaya and Mississippi Rivers, Fairless, ff. Tr. _____ at _____.

21. Were the Old River Control Project to fail and the Mississippi River to change its course, the tremendous volume of shallow draft navigation between the upper Mississippi River and the ports of Baton Rouge and New Orleans would be seriously disrupted, Fairless, ff. Tr. _____ at _____.

22. Erosion (scour) of the inflow and outflow channel bed and banks has occurred in a number of years since the Project was put in operation. Considerable bank stabilization has been placed to repair damages and prevent continued erosion, Fairless, ff. Tr. _____ at _____.

23. During the flood of 1973, scour occurred immediately in front of the low sill structure and brought about the collapse of one of the concrete inflow training walls, the loss of about one-half of a concrete approach slab in front of the structure, and the formation of a large void underneath the gated portion of the structure, Fairless, ff. Tr. _____ at _____.

24. To repair the 1973 scour damage, emergency repairs were required during 1973 and 1974, consisting of: filling the scour hole in front of the structure with riprap; construction of a riprap training dike to replace the concrete inflow training wall which was destroyed by the scour damage; and filling the void underneath the structure with cement grout. These repairs were successful in stabilizing conditions and preventing further damage, Fairless, ff. Tr. _____ at _____.

25. From 1975 to the present time, a comprehensive rehabilitation plan of the entire Old River Complex has been carried out by the Corps of Engineers, Fairless, ff. Tr. _____ at _____.

26. Work completed to date as part of this rehabilitation plan includes modification of the gates of the low sill structure to improve flow conditions through the structure; additional scour protection in both the inflow and outflow channels of the low sill structure; replacement piezometers at the low sill structure; repair of the stilling basin of the low sill structure; and modification of the overbank control structure, Fairless, ff. Tr. _____ at _____.

27. The repair and rehabilitation of the low sill structure enabled dependable control to be reestablished over the distribution of flow by 1977 and has provided a high degree of confidence in the ability of the project to meet normal day-to-day operating requirements, including major floods, Fairless, ff. Tr. _____ at _____.

28. Construction of an auxiliary structure will insure that the differential head does not exceed the safe limit, Fairless, ff. Tr. _____ at _____.

29. The Project demonstrated its effectiveness and reliability during the floods of 1979 and 1983, Fairless, ff. Tr. _____ at _____.

30. The auxiliary structure, the final element in the rehabilitation program, is now under construction and is scheduled for completion in the fall of 1986, Fairless, ff. Tr. _____ at _____.

31. With completion of the auxiliary structure, the ability of the Old River project to safely and reliably perform its authorized function under all conditions, including possible emergencies, will be fully restored, Fairless, ff. Tr. _____ at _____.

32. The auxiliary structure is designed to operate together with the low sill structure, reducing both hydraulic and structural stress at the low sill structure and providing needed operational flexibility, Fairless, ff. Tr. _____ at _____.

33. The picketboat operation, including the radar and TV system, is conducted on a 24 hour per day basis, Fairless, ff. Tr. _____ at _____.

34. Following the scour damage in 1973, strict control was placed on the allowable differential head at the low sill structure and a comprehensive daily surveillance program for the low sill structure and its adjacent channels was established, Fairless, ff. Tr. _____ at _____.

35. As part of the surveillance program, technicians at the low sill structure monitor various indicators of structural integrity, Fairless, ff. Tr. _____ at _____.

36. Hydrographic and topographic surveys of the channel bottoms are performed daily as is monitoring of foundation pressures, Fairless, ff. Tr. _____ at _____.

37. Alignments and vibrations are periodically observed and recorded, Fairless, ff. Tr. _____ at _____.

38. The stilling basin of the low sill structure is inspected annually, water levels permitting, Fairless, ff. Tr. _____ at _____.

39 "Failure" of the Old River Project is defined as a situation wherein the project is damaged to the point that it is unable to operate. The definition does not require that failure be of a sudden and massive nature, Fairless, ff. Tr. _____ at _____.

40. Studies of the low sill structure have identified three possible failure modes: (1) failure of the stilling basin of the structure, (2) failure of the main (gated portion) structure, and (3) failure of the levee system, adjacent to the structure, Fairless, ff. Tr. _____ at _____.

41. While the levee system adjacent to the Old River Control Structure could fail, the likelihood of such failure is not greater at the Old River Control Structure than at any other point in the system, Fairless, ff. Tr. _____ at _____.

42. Failure of a levee would not produce the catastrophic consequences that failure of the low sill structure would, Fairless, ff. Tr. _____ at _____.

43. Under the most adverse circumstances, one of these failures could occur suddenly. Even if this were to occur, however, there would not be a sudden shifting of the Mississippi River to a new channel. Rather, the Mississippi River would begin to gradually shift to a new channel. If this gradual movement was not altered by emergency construction, the change in course would take years to complete, Fairless, ff. Tr. _____ at _____.

44. The Corps has prepared a contingency plan for implementation in the event of incipient failure at the low sill structure, Fairless, ff. Tr. _____ at _____.

45. The contingency plan provides for construction of a riprap dam across the inflow channel leading to the low sill structure, providing either a partial or complete closure as the situation may require, Fairless, ff. Tr. _____ at _____.

46. It is estimated that about 2½ months would be required to construct the first stage (partial closure) of the riprap dam and about 4 to 5 additional months would be required to complete the full closure dam, Fairless, ff. Tr. _____ at _____.

47. Full restoration and/or replacement of the low sill structure would require several years, Fairless, ff. Tr. _____ at _____.

48. During this period of construction the flow in the Mississippi River might be decreased, Fairless, ff. Tr. _____ at ___.

49. Based upon River Bend Station's river water requirements, it is not expected that this possible decrease in flow would be sufficient to affect adversely the plant's cooling water requirements, Fairless, ff. Tr. _____ at _____; Cahill, et al., Tr. _____ at 2, ¶2 and at 3, ¶6.

50. A failure of the low sill structure would set in motion processes which, if not altered by emergency construction, would, over a period of years, result in a change of course of the Mississippi River to the Atchafalaya River, Fairless, ff. Tr. _____ at _____.

51. Were the low sill structure to fail and the Mississippi River to change its course, flows in the Mississippi River downstream of Old River would decrease with time and eventually the lower Mississippi would receive little or no flow during low water periods and significant flows only during high water periods, Fairless, ff. Tr. _____ at _____.

52. Were the low sill structure to fail and the Mississippi River to change its course, the rate at which this reduction would occur is greatly dependent upon the hydrologic conditions occurring from year to year and cannot be foretold but it would likely take at least several years, Fairless, ff. Tr. _____ at _____.

53. Were the Old River Control Project to fail and the Mississippi River to change its course, salt water intrusion would increase as flows in the lower Mississippi River decreased and at the extreme condition, where little or no flow was entering the river, salinity levels at River Bend Station would approach those of seawater, Fairless, ff. Tr. _____ at _____.

54. Were the Old River Control Project to fail and the Mississippi River to change its course, sedimentation would occur in the channel below Old River, but it is likely that sufficient water would remain available at the River Bend Station for its operation, Fairless, ff. Tr. _____ at _____; Cahill, et al., Tr. _____ at 2, ¶2 and at 3, ¶6.

55. With the auxiliary structure completed and in operation, and assuming an appropriate maintenance program, the probability of a failure of the Old River Project is almost nil, Fairless, ff. Tr. _____ at _____.

56. Assuming a hypothetical failure, salt water could eventually intrude into the area of the River Bend Station. Because it is not possible to predict the yearly flow regime or the time necessary for complete diversion, it is not possible to predict how long the salt line would require to reach the River Bend Station, Fairless, ff. Tr. _____ at _____; Cahill, et al., Tr. _____ at 2-3, ¶4.

57. Were there to be any extended saltwater intrusion into the vicinity near River Bend Station, GSU would shut down the facility, if operational conditions required, until a safety and environmental evaluation demonstrated that the plant could be restarted and an economic evaluation would be conducted to determine whether this course was warranted, Cahill, et al., ff. Tr. _____ at 3, ¶5.

58. There exist alternative means by which River Bend Station could be operated in the hypothetical event of reduced freshwater flow in the Mississippi River channel or of the presence of the salt line near River Bend Station, Cahill, et al., ff. Tr. _____ at 3, ¶6.

59. A viable alternative should the Old River Control Project fail, salt water be present near the River Bend site, and operational conditions require would be to extend the makeup water pipeline from its present point of suction in the Mississippi River channel westward approximately 25 miles to the Atchafalaya River channel, Cahill, et al., ff. Tr. _____ at 4, ¶8(a).

60. A viable alternative should the Old River Control Project fail, salt water be present near the River Bend site, and operational conditions require would be to extend the makeup water pipeline northwestward approximately 30 miles to the Mississippi River above the point of the Old River Control Project. This alternative would avoid a Mississippi River Channel crossing, Cahill, et al., ff. Tr. _____ at 4, ¶8(b).

61. A viable alternative should the Old River Control Project fail, salt water be present near the River Bend site, and operational conditions require would be to install a reverse osmosis system to treat saline water for use as cooling tower makeup, Cahill, et al., ff. Tr. _____ at 4, ¶8(c).

62. A viable alternative should the Old River Control Project fail, salt water be present near the River Bend site, and operational conditions require would be to replace, where necessary, the components and piping systems carrying river water with materials compatible with salt water. These systems include the makeup water system, circulating water system, and the service water system, Cahill, et al., ff. Tr. _____ at 4-5, ¶8(d).

63. A viable alternative should the Old River Control Project fail, salt water be present near the River Bend site, and operational conditions require would be to separate the service water system, which provides cooling to safety-related components, from the circulating water system. A cooling tower would be added for heat dissipation from this system and makeup water would be supplied from groundwater wells. The circulating water system (condenser) could be modified using saltwater-compatible materials. Water would be supplied from the river channel as makeup, Cahill, et al., ff. Tr. _____ at 5, ¶8(e).

64. Considering the present investment in the facility, there are available alternatives should the Old River Control Structure fail, Cahill, et al., ff. Tr. _____ at 5, ¶9.

65. Before proceeding with any alternative, a detailed feasibility and cost analysis would be conducted after consultation with governmental authorities, Cahill, et al., ff. Tr. _____ at 5, ¶9.

66. An environmental assessment of the selected changes would be submitted to the NRC, Cahill, et al., ff. Tr. _____ at 5, ¶9.

67. In the event the Old River Control Structure were to fail, several of the available alternatives may be amenable to joint action by users of Mississippi River water. For such alternatives, the pro rata share of cost for River Bend Station would be expected to be less than discussed above, Cahill, et al., ff. Tr. _____ at 5-6, ¶10.

68. The probability of failure of the Old River Control Structure is not sufficiently high that the consequences of operating the River Bend Station following such failure must be considered, Cahill, et al., ff. Tr. _____ at 6, ¶11.

69. Applicants have considered the public health, safety, and environmental impacts of further facility operation under altered river flow and salinity conditions in the event of failure, Cahill, et al., ff. Tr. _____ at 2-6, ¶¶3-11.

Conclusions of Law

1. The probability of failure of the Old River Control Structure is not sufficiently high that the consequences of operating the River Bend Station following such failure must be considered.

2. Applicants have considered the public health, safety, and environmental impacts of further facility operation under altered river flow and salinity conditions in the event of failure.

3. Alternative means do exist whereby River Bend Station could be operated under altered river flow and salinity conditions in the hypothetical event of a failure of the Old River Control Structure.

4. The issuance of an operating license to the Applicants will not be inimical to the common defense and security or to the health and safety of the public.

5. Pursuant to 10 C.F.R. §2.760a and 10 C.F.R. §50.57, the Director of Nuclear Reactor Regulation should be authorized to issue to the Applicants, upon making requisite findings with respect to matters not embraced in the Initial Decision, a license authorizing operation of River Bend Station.