

BFN INTAKE PERFORMANCE CHARACTERISTICS

The CCW System includes a combined intake structure and pumping station, which houses the necessary equipment for screening debris from the circulating water, pumping water through the condenser, and supplying virtually all other raw cooling water requirements for the plant. Bar racks (also referred to as trash racks) are used at the intake to stop large debris from entering the system. The bars in the racks are 2.5 inches apart. Traveling screens are installed downstream of the bar racks to provide for protection against smaller debris. The screen consists of 3/8-inch mesh. There are two traveling screens for each of three CCW pumps per unit, for a total of 18 traveling screens to service all three units.

Each unit has a screen wash pump rated at 1360 GPM at a head of 260 feet. The screen wash is normally run in the manual mode, essentially continuously during most of the year. In this mode, the traveling screen and screen wash pump are started locally. Screen wash header pressure is then throttled to achieve screen wash header supply pressure of >70 psig. The nozzles and trough are then inspected for blockage and/or debris. If the screen wash system is shut down, operators would wash the screens when the pressure drop across them increases to 7 inches of water column.

The intake structure and pumping station is designed to provide a flow of 630,000 GPM to the condenser during open cycle operation, and 30,000 GPM to plant auxiliaries, for a total of 660,000 GPM for each of three units.

The BFN intake does not incorporate provision for de-icing since this has not been a problem for BFN (no ice in the main channel on Wheeler Reservoir in recent decades, and even extensive shoreline ice is very rare). Nonetheless, plant procedures (such as 1,2,3-OI-27A, Screen Wash System, and 0-GOI-200-1, Freeze Protection Inspection) address precautionary actions to be taken in the event that the water temperature is below 34°F and the air temperature rapidly lowers to less than 19°F, since ice could possibly form on the traveling screens and trash racks. The procedures also address compensatory actions (involving erection of temporary structures and installation of heaters) to be taken in the event that there is indication of ice formation on the traveling screens while washing the screens when freeze protection is in effect.

Trash rack clearing has on occasion become a problem, particularly with aquatic weeds in the fall; in response, BFN is considering installation of self-cleaning trash racks. There is no provision for a fish return system; the only problem of this kind has been the occasional plugging of the screens during shad die-offs from unusually cold winter temperatures.”