

1 **Q. At Tab 1.3, Lockston Hydro Plant Refurbishment, at page 11, it is outlined that**  
2 **index testing on unit G1 was performed in 2003 by ACRES. The peak efficiency**  
3 **was 84.4%, and is considered low compared to modern runner design. What is**  
4 **considered to be efficient in modern runner design?**

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6 **A.** A reasonable peak efficiency assumption for a refurbished horizontal Francis type turbine  
7 such as generating unit G1 at Lockston plant would be 92%, based on an engineering  
8 estimate provided by Hatch.<sup>1</sup>

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<sup>1</sup> At page 11 of Tab 1.3 *Lockston Hydro Plant Refurbishment* it is anticipated that a peak unit efficiency of 87% can be achieved. This is based upon the 92% runner efficiency combined with a 95% generator efficiency to provide the estimate of 87% unit efficiency. (92% × 95% = 87%)