

FPP Change Request Form

Change Form # & Title: 15IHR006 – Unit 3 Fixed Blade 1% Range Table
Date Submitted: April 20, 2015
Project: IHR
Requester Name, Agency: Greg Moody, NWW- OD
Final Action: APPROVED – [May 14, 2015](#)

FPP Section: Reference tables for turbine unit 1% ranges at the rear of the Ice Harbor Dam section in the FPP.

Justification for Change: Adding an additional turbine unit 1% range Table IHR-7 to document lower and upper 1% efficiency range for Unit 3 with and without STSs, moving from a Kaplan to a fixed blade operation.

This testing was done in March 2015 by HDC, after the runner blades were welded.

Proposed Changes:

See new Table IHR-7 below.

*Changes the spill pattern table numbers by 1.

Comments from others:

Record of Final Action:

APPROVED at FPOM meeting May 14, 2015.

Table IHR-7. Ice Harbor Dam Turbine Unit 3 Power (MW) and Flow (cfs) at Upper and Lower Limits of the $\pm 1\%$ Peak Efficiency Range. ^a

Project Head (feet)	Turbine Unit 3							
	with STSs				No STSs			
	1% Lower Limit (MW) (cfs)		1% Upper Limit (MW) (cfs)		1% Lower Limit (MW) (cfs)		1% Upper Limit (MW) (cfs)	
85	70.9	11,452	75.2	12,141	69.8	11,404	74.1	12,100
86	71.9	11,471	76.1	12,140	70.8	11,423	75.0	12,098
87	72.9	11,490	77.0	12,139	71.8	11,442	75.9	12,097
88	73.9	11,508	77.9	12,137	72.8	11,460	76.8	12,096
89	74.9	11,526	78.9	12,136	73.8	11,477	77.7	12,094
90	75.9	11,542	79.8	12,134	74.7	11,494	78.6	12,092
91	77.1	11,593	81.3	12,226	75.9	11,544	80.1	12,184
92	78.3	11,642	82.8	12,316	77.1	11,593	81.6	12,274
93	79.5	11,690	84.4	12,404	78.3	11,641	83.1	12,362
94	80.7	11,737	85.9	12,490	79.5	11,688	84.6	12,447
95	81.9	11,783	87.4	12,575	80.6	11,734	86.1	12,531
96	82.4	11,732	87.8	12,495	81.1	11,683	86.5	12,452
97	82.9	11,682	88.2	12,417	81.7	11,633	86.9	12,374
98	83.5	11,633	88.5	12,340	82.2	11,584	87.2	12,297
99	84.0	11,585	88.9	12,265	82.7	11,536	87.6	12,223
100	84.5	11,537	89.3	12,192	83.2	11,489	88.0	12,149
101	85.4	11,549	90.3	12,210	84.1	11,500	89.0	12,168
102	86.4	11,560	91.4	12,229	85.0	11,511	90.0	12,186
103	87.3	11,571	92.4	12,247	85.9	11,522	91.0	12,204
104	88.2	11,582	93.4	12,265	86.9	11,533	92.0	12,222
105	89.2	11,593	94.5	12,282	87.8	11,544	93.1	12,239

a. Prepared by HDC, March 2015, for Unit 3 with fixed blades. Based on 1956 Model Test and 2006 Unit 3 STS Index Test w/ STS adjustment factor.