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Option reservoir operation during floods

Furstenburg, Leon

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VAALDAM DEMONSTRATION RUN. USER CONTROLLED GATES.
1975 FLOOD SIMULATION.

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TIME (hours)	INFLOW RATE (m3/s)	WATER LEVEL (m)	OUTFLOW RATE (m3/s)	STORAGE VOLUME (m3)	GATED FLOW (m3/s)	NUMBER OF GATES	SPILL (m3/s)
147.00	3082.13	21.520	3077.60	0.225E+10	3077.604	38	36.01733
148.00	3234.50	21.519	3075.56	0.225E+10	3075.562	38	36.01422
149.00	3386.88	21.521	3078.79	0.225E+10	3078.786	38	36.49281
150.00	3539.25	21.527	3088.26	0.225E+10	3088.264	38	37.90961
151.00	3691.63	21.535	3101.63	0.225E+10	3101.627	38	39.93099
152.00	3844.00	21.544	3116.65	0.225E+10	3116.652	38	42.23614
153.00	3665.38	21.552	3130.11	0.226E+10	3130.114	38	44.32989
154.00	3486.75	21.556	3137.53	0.226E+10	3137.528	38	45.49399
155.00	3308.13	21.561	3144.96	0.226E+10	3144.958	38	46.66863
156.00	3129.50	21.562	3147.03	0.226E+10	3147.034	38	46.99798
157.00	2950.88	21.560	3143.74	0.226E+10	3143.744	38	46.47608
158.00	2772.25	21.555	3136.31	0.226E+10	3136.309	38	45.30208
159.00	2593.63	21.550	3284.98	0.226E+10	3284.977	40	39.81502
160.00	2415.00	21.541	3427.26	0.225E+10	3427.264	42	33.9229
161.00	2512.00	21.529	3562.72	0.225E+10	3562.719	44	27.88696
162.00	2609.00	21.515	3538.10	0.225E+10	3538.097	44	25.44916
163.00	2706.00	21.506	3521.85	0.224E+10	3521.851	44	23.87557
164.00	2803.00	21.496	3503.93	0.224E+10	3503.929	44	22.17298
165.00	2900.00	21.487	3487.80	0.224E+10	3487.803	44	20.67191
166.00	2997.00	21.483	3479.92	0.224E+10	3479.915	44	19.94867
167.00	3094.00	21.478	3472.04	0.223E+10	3472.036	44	19.23376
168.00	3191.00	21.477	3469.84	0.223E+10	3469.836	44	19.0355
169.00	3121.00	21.473	3461.98	0.223E+10	3461.976	44	18.3318
170.00	3051.00	21.468	3454.13	0.223E+10	3454.129	44	17.63701
171.00	2981.00	21.464	3446.30	0.223E+10	3446.296	44	16.95121
172.00	2911.00	21.460	3438.48	0.223E+10	3438.478	44	16.27435
173.00	2841.00	21.452	3424.29	0.223E+10	3424.286	44	15.06693
174.00	2771.00	21.443	3408.45	0.222E+10	3408.447	44	13.7518
175.00	2701.00	21.435	3394.36	0.222E+10	3394.36	44	12.61214
176.00	2631.00	21.426	3378.64	0.222E+10	3378.639	44	11.3751
177.00	2657.38	21.417	3362.98	0.222E+10	3362.982	44	10.18138
178.00	2683.75	21.409	3349.06	0.221E+10	3349.062	44	9.1537
179.00	2710.13	21.400	3333.53	0.221E+10	3333.53	44	8.046595
180.00	2736.50	21.394	3323.70	0.221E+10	3323.7	44	7.368456
181.00	2762.88	21.386	3309.93	0.221E+10	3309.932	44	6.449537
182.00	2789.25	21.382	3302.40	0.221E+10	3302.395	44	5.96245
183.00	2815.63	21.377	3294.87	0.220E+10	3294.872	44	5.488083
184.00	2842.00	21.369	3281.23	0.220E+10	3281.228	44	4.659172
185.00	2831.13	21.365	3273.76	0.220E+10	3273.761	44	4.223517
186.00	2820.25	21.361	3266.31	0.220E+10	3266.311	44	3.802175
187.00	2809.38	21.353	3252.80	0.220E+10	3252.802	44	3.07434
188.00	2798.50	21.348	3245.41	0.220E+10	3245.414	44	2.69706
189.00	2787.63	21.344	3238.04	0.219E+10	3238.043	44	2.336465
190.00	2776.75	21.338	3228.53	0.219E+10	3228.531	44	1.895653
191.00	2765.88	21.330	3215.23	0.219E+10	3215.234	44	1.331083
192.00	2755.00	21.326	3207.97	0.219E+10	3207.967	44	1.050404

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TIME (hours)	INFLOW RATE (m3/s)	WATER LEVEL (m)	OUTFLOW RATE (m3/s)	STORAGE VOLUME (m3)	GATED FLOW (m3/s)	NUMBER OF GATES	SPILL (m3/s)
193.00	2774.00	21.321	3200.73	0.219E+10	3200.725	44	.7927052
194.00	2793.00	21.313	3187.63	0.219E+10	3187.627	44	.39107
195.00	2812.00	21.309	3180.48	0.218E+10	3180.483	44	.2142476
196.00	2831.00	21.305	3173.38	0.218E+10	3173.381	44	7.716466E
197.00	2850.00	21.300	3166.35	0.218E+10	3166.345	44	2.969205E
198.00	2869.00	21.296	3159.39	0.218E+10	3159.39	44	0
199.00	2888.00	21.291	3152.44	0.218E+10	3152.441	44	0
200.00	2907.00	21.287	3145.50	0.218E+10	3145.497	44	0
201.00	2854.50	21.286	3143.56	0.218E+10	3143.557	44	0
202.00	2802.00	21.281	3136.62	0.218E+10	3136.619	44	0
203.00	2749.50	21.280	3134.68	0.218E+10	3134.681	44	0
204.00	2697.00	21.276	3127.75	0.217E+10	3127.749	44	0
205.00	2644.50	21.268	3115.15	0.217E+10	3115.149	44	0
206.00	2592.00	21.263	3108.24	0.217E+10	3108.235	44	0
207.00	2539.50	21.254	3094.15	0.217E+10	3094.15	44	0
208.00	2487.00	21.250	3087.25	0.217E+10	3087.251	44	0
209.00	2434.88	21.241	3073.20	0.216E+10	3073.198	44	0
210.00	2382.75	21.232	3059.17	0.216E+10	3059.169	44	0
211.00	2330.63	21.223	3045.16	0.216E+10	3045.162	44	0
212.00	2278.50	21.214	3031.18	0.216E+10	3031.177	44	0
213.00	2226.38	21.205	3017.21	0.215E+10	3017.212	44	0
214.00	2174.25	21.196	3003.27	0.215E+10	3003.269	44	0
215.00	2122.13	21.187	2989.35	0.215E+10	2989.348	44	0
216.00	2070.00	.177	2973.96	0.215E+10	2973.958	44	0
217.00	1995.38	21.167	2958.59	0.214E+10	2958.594	44	0
218.00	1920.75	21.157	2943.26	0.214E+10	2943.257	44	0
219.00	1846.13	21.144	2922.39	0.214E+10	2922.391	44	0
220.00	1771.50	21.130	2901.57	0.213E+10	2901.571	44	0
221.00	1696.88	21.117	2880.80	0.213E+10	2880.802	44	0
222.00	1622.25	21.103	2860.08	0.212E+10	2860.082	44	0
223.00	1547.63	21.087	2834.58	0.212E+10	2834.58	44	0
224.00	1473.00	21.070	2809.15	0.211E+10	2809.154	44	0
225.00	1522.38	21.053	2783.81	0.211E+10	2783.805	44	0
226.00	1571.75	21.037	2758.53	0.210E+10	2758.532	44	0
227.00	1621.13	21.020	2733.34	0.210E+10	2733.337	44	0
228.00	1670.50	21.008	2714.93	0.209E+10	2714.928	44	0
229.00	1719.88	20.994	2694.62	0.209E+10	2694.615	44	0
230.00	1769.25	20.981	2674.35	0.209E+10	2674.352	44	0
231.00	1818.63	20.971	2659.52	0.208E+10	2659.521	44	0
232.00	1868.00	20.957	2639.35	0.208E+10	2639.35	44	0
233.00	1913.38	20.948	2506.65	0.208E+10	2506.65	42	0
234.00	1958.75	20.940	2495.31	0.208E+10	2495.306	42	0
235.00	2004.13	20.936	2489.08	0.207E+10	2489.082	42	0
236.00	2049.50	20.931	2482.86	0.207E+10	2482.86	42	0
237.00	2094.88	20.927	2476.64	0.207E+10	2476.642	42	0
238.00	2140.25	20.923	2470.43	0.207E+10	2470.431	42	0

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239.00	2185.63	20.921	2468.70	0.207E+10	2468.696	42	0
240.00	2231.00	20.917	2462.49	0.207E+10	2462.49	42	0
241.00	2189.88	20.913	2456.29	0.207E+10	2456.291	42	0
242.00	2148.75	20.908	2450.10	0.207E+10	2450.096	42	0
243.00	2107.63	20.907	2448.37	0.207E+10	2448.365	42	0
244.00	2066.50	20.903	2442.18	0.207E+10	2442.178	42	0
245.00	2025.38	20.898	2436.00	0.206E+10	2435.995	42	0
246.00	1984.25	20.889	2423.41	0.206E+10	2423.407	42	0
247.00	1943.13	20.885	2417.24	0.206E+10	2417.242	42	0
248.00	1902.00	20.881	2411.08	0.206E+10	2411.081	42	0
249.00	1664.25	20.872	2398.54	0.206E+10	2398.536	42	0
250.00	1426.50	20.863	2386.02	0.206E+10	2386.015	42	0
251.00	1188.75	20.846	2362.75	0.205E+10	2362.748	42	0
252.00	951.00	20.829	2339.55	0.205E+10	2339.553	42	0
253.00	713.25	20.813	2316.44	0.204E+10	2316.435	42	0
254.00	475.50	20.789	2066.54	0.204E+10	2066.539	38	0
255.00	237.75	20.769	1826.93	0.203E+10	1826.93	34	0
256.00	0.00	20.749	1592.59	0.202E+10	1592.593	30	0
257.00	0.00	20.730	1573.27	0.202E+10	1573.267	30	0
258.00	0.00	20.710	1554.02	0.201E+10	1554.02	30	0
259.00	0.00	20.686	1531.38	0.201E+10	1531.382	30	0
260.00	0.00	20.666	1512.31	0.200E+10	1512.31	30	0
261.00	0.00	20.647	1493.32	0.200E+10	1493.316	30	0
262.00	0.00	20.627	1474.40	0.199E+10	1474.402	30	0
263.00	0.00	20.603	1839.40	0.199E+10	1839.403	38	0

PEAK INFLOW RATE= 4421.00m3/s
PEAK OUTFLOW RATE= 3562.72m3/s
LAG TIME= 57.00hours
PERCENTAGE ATTENUATION= 19.41%

Author Furstenburg Leon
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