Appendix F
Computer Runs

Section I
H5310

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  EXAMPLE of Lock Filling

CONDUIT GEOMETRY: LENGTH =   490.0 FT.  WIDTH=  14.0 FT.
                  HEIGHT= 14.0 FT.  N= 2-CULVERT OPERATION)

CHAMBER GEOMETRY: LENGTH = 670.0 FT.  WIDTH =110.0 FT.

LOSS COEFFICIENT: INTAKE   .200
       UPSTREAM CONDUIT   .050
     DOWNSTREAM CONDUIT   .950
              MANIFOLD   .750
      TOTAL(VALVE OPEN)  2.050   LOCK COEF.= .698

ELEVATIONS: UPPER POOL 409.60
            LOWER POOL 329.90
         CULVERT ROOF 312.00


VALVE OPENS AT   1.00-MIN. RATE FOR   1.00 MINUTES


ACC.VEL. ERROR TO I= 47 IS    .06014
ACC.VEL. ERROR TO I= 54 IS    .33680


LOCK FILLS TO UPPER POOL IN  9.37 MINUTES
EXTREME ELEVATION AT TIME = 10.60 MINUTES
MAX COMPUTED OVERTRAVEL = 1.27 FT.
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VALVE PARAMETERS					ELEVATIONS (FT-DATUM)				
TIME (M)	OPEN. RATIO	CONT. COEF.	LOSS COEF.	TOTAL INFLOW CFS	LOCK CHAMBER	US VALVE WELL	PIEZ.HD VALVE	DS VALVE WELL	CAV.PAR.
.00	1.00	.80	10000.00	0.	329.90	409.60	329.90	329.90	9.99
.20	.13	.77	86.65	2802.	330.13	408.61	328.93	330.72	.78
.40	.29	.66	19.28	5598.	330.81	405.64	320.13	333.19	.59
.60	.49	.67	4.42	9865.	332.07	397.31	314.73	339.45	.49
.80	.73	.76	.73	15220.	334.11	380.34	327.05	351.67	.71
1.00	1.00	.90	.10	18095.	336.83	368.24	360.48	361.64	2.03
2.00	1.00	.90	.10	16954.	351.33	373.29	366.48	373.11	2.48
3.00	1.00	.90	.10	14989.	364.33	381.22	375.90	381.36	3.51
4.00	1.00	.90	.10	13024.	375.73	388.17	384.15	388.59	5.04
5.00	1.00	.90	.10	11059.	385.54	394.15	391.25	394.80	7.45
6.00	1.00	.90	.10	9094.	393.74	399.15	397.19	400.01	9.99
7.00	1.00	.90	.10	7129.	400.34	403.18	401.98	404.19	9.99
8.00	1.00	.90	.10	5164.	405.35	406.23	405.60	407.37	9.99
9.00	1.00	.90	.10	3199.	408.75	408.31	408.06	409.53	9.99
10.00	1.00	.90	.10	1234.	410.56	409.41	409.37	410.67	9.99
11.00	1.00	.90	.10	-658.	410.77	409.57	409.52	410.74	9.99
12.00	1.00	.90	.10	-1257.	409.87	409.48	409.32	409.75	9.99

	RATE RISE (F/M)	VEL. (F/S)	VEL HDS(F) REF. AREA	VENA CONT.	DIFFERENTIAL HDS(F) VALVE	TOTAL LOSS	INERTIA	OVERALL
.00	.000	.000	.000	.000	79.700	79.700	.000	79.700
.20	2.281	7.147	.793	80.472	68.724	70.270	9.055	79.472
.40	4.558	14.282	3.167	88.676	61.076	67.252	11.425	78.788
.60	8.031	25.166	9.835	92.407	43.447	62.624	15.564	77.529
.80	12.391	38.828	23.410	76.693	17.183	62.832	13.311	75.487
1.00	14.731	46.160	33.086	40.847	3.309	67.827	5.078	72.775
2.00	13.802	43.249	29.045	35.858	2.905	59.543	-1.269	58.274
3.00	12.203	38.238	22.704	28.029	2.270	46.542	-1.271	45.271
4.00	10.603	33.225	17.141	21.162	1.714	35.139	-1.271	33.868
5.00	9.003	28.212	12.359	15.258	1.236	25.336	-1.271	24.065
6.00	7.404	23.199	8.357	10.318	.836	17.133	-1.271	15.861
7.00	5.804	18.187	5.136	6.341	.514	10.529	-1.271	9.257
8.00	4.204	13.174	2.695	3.327	.269	5.525	-1.271	4.253
9.00	2.605	8.161	1.034	1.277	.103	2.120	-1.271	.849
10.00	1.005	3.149	.154	.190	.015	.316	-1.271	-.956
11.00	-.535	-1.678	.044	.044	.004	.090	-.971	-1.169
12.00	-1.023	-3.207	.160	.160	.016	.327	2.060	-.273

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DO YOU NEED TO STORE THE OUTPUT IN A DATA FILE?Y OR N
N

ENTER END OR RERUN
E
Stop - Program terminated.
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 EXAMPLE Downstream Surge

OUTPUT CODES:  AP= 1 AQ= 1 AR= 1 AS= 1

AP.PROBLEM STATEMENT
1.TRAPEZOIDAL CANAL: INITIAL DEPTH= 12.90 FT INITIAL FLOW=       .00 CFS
  BOTTOM WIDTH=  220.00 SIDESLOPE= 1V:  1.000H
2.INITIAL STATION=    731.00 FT
  STATION VALUES INCREASE DOWNSTREAM
3.INITIAL TIME=      .0 SEC
     TIME STEP=   10.0 SEC
   TOTAL STEPS=   24
4.LOCK EMPTYING;SURGE TRAVELS DOWNSTREAM.
  LOCK-CHAMBER EQUALIZATION TIME=  660.0 SEC
5.LOCK FLOW PLUS INITIAL CHANNEL FLOW:

     TIME      FLOW       TIME      FLOW       TIME      FLOW
     (SEC)     (CFS)      (SEC)     (CFS)      (SEC)     (CFS)
       .0       .000       80.0 15950.000      160.0 13750.000
      10.0  2750.000       90.0 15675.000      170.0 13475.000
      20.0  5500.000      100.0 15400.000      180.0 13200.000
      30.0  8250.000      110.0 15125.000      190.0 12925.000
      40.0 11000.000      120.0 14850.000      200.0 12650.000
      50.0 13750.000      130.0 14575.000      210.0 12375.000
      60.0 16500.000      140.0 14300.000      220.0 12100.000
      70.0 16225.000      150.0 14025.000      230.0 11825.000

6.PROFILES NEEDED AT THE FOLLOWING 1 TIMES (SEC):
  120.000
7.HYDROGRAPHS NEEDED AT THE FOLLOWING 1 STATIONS (FT):
  731.000

AQ.SURGE CHARACTERISTICS:
                                SURGE              AVE. FROUDE
STEP     TIME       FLOW       VEL.    DEPTH      VEL. NUMBER
        (SEC)      (CFS)      (FPS)     (FT)     (FPS)
   1     .000       .000     19.839   12.900      .000   .000
   2   10.000   2750.000     20.458   13.444      .878   .043
   3   20.000   5500.000     21.701   13.958     1.692   .082
   4   30.000   8250.000     22.858   14.445     2.452   .117
   5   40.000  11000.000     23.942   14.911     3.168   .149
   6   50.000  13750.000     24.964   15.357     3.844   .178
   7   60.000  16500.000     25.932   15.787     4.487   .204
   8   70.000  16225.000     26.392   15.745     4.425   .202
   9   80.000  15950.000     26.299   15.702     4.361   .199
  10   90.000  15675.000     26.206   15.660     4.298   .197
  11  100.000  15400.000     26.113   15.617     4.234   .194
  12  110.000  15125.000     26.019   15.574     4.170   .191
  13  120.000  14850.000     25.924   15.531     4.106   .189
  14  130.000  14575.000     25.829   15.487     4.041   .186
  15  140.000  14300.000     25.734   15.444     3.976   .183
  16  150.000  14025.000     25.638   15.400     3.910   .180
  17  160.000  13750.000     25.542   15.356     3.845   .178
  18  170.000  13475.000     25.445   15.312     3.778   .175
  19  180.000  13200.000     25.347   15.268     3.712   .172
  20  190.000  12925.000     25.250   15.224     3.645   .169
  21  200.000  12650.000     25.151   15.179     3.578   .166
  22  210.000  12375.000     25.052   15.135     3.511   .163
  23  220.000  12100.000     24.953   15.090     3.443   .160
  24  230.000  11825.000     24.853   15.045     3.375   .158
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EXAMPLE Surge Upstream

OUTPUT CODES: AP= 1 AQ= 1 AR= 1 AS= 1

AP.PROBLEM STATEMENT
1.TRAPEZOIDAL CANAL: INITIAL DEPTH= 15.50 FT INITIAL FLOW= .00 CFS
BOTTOM WIDTH= 220.00 SIDESLOPE= 1V: 1.000H
2.INITIAL STATION= 1400.00 FT
STATION VALUES INCREASE UPSTREAM
3.INITIAL TIME= .0 SEC
TIME STEP= 10.0 SEC
TOTAL STEPS= 24
4.LOCK FILLING;SURGE TRAVELS UPSTREAM.
LOCK-CHAMBER EQUALIZATION TIME= 480.0 SEC
5.LOCK FLOW PLUS INITIAL CHANNEL FLOW:

TIME (SEC)	FLOW (CFS)	TIME (SEC)	FLOW (CFS)	TIME (SEC)	FLOW (CFS)
.0	.000	80.0	16190.480	160.0	12952.380
10.0	2833.333	90.0	15785.710	170.0	12547.620
20.0	5666.667	100.0	15380.950	180.0	12142.860
30.0	8500.000	110.0	14976.190	190.0	11738.100
40.0	11333.330	120.0	14571.430	200.0	11333.330
50.0	14166.670	130.0	14166.670	210.0	10928.570
60.0	17000.000	140.0	13761.900	220.0	10523.810
70.0	16595.240	150.0	13357.140	230.0	10119.050

6.PROFILES NEEDED AT THE FOLLOWING 1 TIMES (SEC):
120.000
7.HYDROGRAPHS NEEDED AT THE FOLLOWING 1 STATIONS (FT):
1400.000

AQ.SURGE CHARACTERISTICS:

STEP	TIME (SEC)	FLOW (CFS)	SURGE VEL. (FPS)	DEPTH (FT)	AVE. VEL. (FPS)	FROUDE NUMBER
1	.000	.000	-21.640	15.500	.000	.000
2	10.000	2833.333	-21.086	14.962	.804	.038
3	20.000	5666.667	-19.857	14.391	1.672	.080
4	30.000	8500.000	-18.521	13.779	2.619	.128
5	40.000	11333.330	-17.050	13.113	3.670	.184
6	50.000	14166.670	-15.398	12.376	4.861	.251
7	60.000	17000.000	-13.488	11.533	6.259	.335
8	70.000	16595.240	-12.564	11.661	6.043	.322
9	80.000	16190.480	-12.879	11.787	5.833	.309
10	90.000	15785.710	-13.185	11.909	5.629	.297
11	100.000	15380.950	-13.482	12.028	5.430	.285
12	110.000	14976.190	-13.772	12.145	5.236	.273
13	120.000	14571.430	-14.055	12.260	5.047	.262
14	130.000	14166.670	-14.331	12.372	4.862	.251
15	140.000	13761.900	-14.601	12.483	4.681	.241
16	150.000	13357.140	-14.864	12.591	4.505	.231
17	160.000	12952.380	-15.123	12.698	4.332	.221
18	170.000	12547.620	-15.376	12.802	4.162	.212
19	180.000	12142.860	-15.623	12.905	3.995	.202
20	190.000	11738.100	-15.867	13.007	3.832	.193
21	200.000	11333.330	-16.105	13.107	3.672	.185
22	210.000	10928.570	-16.340	13.206	3.514	.176
23	220.000	10523.810	-16.570	13.303	3.359	.168
24	230.000	10119.050	-16.796	13.399	3.207	.159