



National Transportation Safety Board

Enbridge Line 6B Heavy Crude Oil Release

Marshall Michigan, July 25th 2010

Preliminary Operations Timeline

FOR OFFICIAL USE ONLY. THE INFORMATION SUPPLIED IN THIS TIMELINE SHALL BE CONSIDERED PRELIMINARY AND IS SUBJECT TO CHANGE THROUGHOUT THE COURSE OF THE INVESTIGATION. THIS INFORMATION IS NOT TO BE DISTRIBUTED WITHOUT WRITTEN CONSENT FROM THE NTSB.

Enbridge Operations Timeline - Marshall Michigan

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Line #	Relative Time hh:mm	Date	Event Time (EDT) Local	Event Description
1	00:00	7/25/2010	5:56 PM to 5:58 PM	There is a scheduled shutdown of line 6B for 6:00 PM on July 25th. During this time, the Griffith, Laporte, Niles and Mendon Pump stations were shutdown from the Pipeline Controller. Mendon received the last stop command at 5:58 PM.
2	00:02	7/25/2010	5:58 PM	Line 6B experiences an abrupt pressure drop at the Marshall Pumping Station. A low suction pressure alarm is received by the Pipeline Controller. The loss of suction pressure initiates a local shutdown of the station.
3	00:07	7/25/2010	6:03 PM	The Pipeline Controller receives a 5 minute volume balance alarm between the Griffith and Marshall stations. This indicates a discrepancy in flows between the two points.
4	00:09	7/25/2010	6:05 PM	The Pipeline Controller calls the Material Balance System (MBS) Analyst to investigate the 5-minute alarm. The MBS Analyst diagnoses the alarm as 'Column Separation' (a separation in the flow) and advises the Pipeline Controller that the condition will be present until the line is restarted (approx. 10 hours later or 4:00 AM the following morning).
5	00:11	7/25/2010	6:07 PM	The 5 minute volume balance alarm, generated at 6:03 PM, clears itself. This indicated that the flow imbalance was no longer below its alarm threshold.
6	03:04	7/25/2010	8:30 PM to 9:00 PM	Pipeline Controller Shift Change.
7	03:30	7/25/2010	9:26 PM	First 911 call received at the Calhoun County Dispatch Center, located in Marshall City. The caller complains of an odor, possibly natural gas. The Marshall City Fire Dept. and later Marshall Township Fire Dept. would respond. There were no callouts from dispatcher to any Utility companies.
8	10:08	7/26/2010	4:04 AM	The Pipeline Controller begins the scheduled line 6B start. This was planned from the 10 hour shutdown the previous day. The line valves are commanded open and the Griffith Pump Station started.
9	10:16	7/26/2010	4:12 AM	The Pipeline Controller receives a 5 min. volume balance alarm between the Griffith and Marshall stations.
10	10:21	7/26/2010	4:17 AM	The Pipeline Controller receives a 20 min. volume balance alarm between the Griffith and Marshall stations.

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11	10:26	7/26/2010	4:22 AM	The Pipeline Controller receives a second 5 min. volume balance alarm between the Griffith and Marshall stations. This is to alert the Controller that the alarm has remained in an active state for over 10 minutes.
12	10:28	7/26/2010	4:24 AM	The Pipeline Controller phones the MBS analyst about the 5 min volume balance alarms. During the conversation a slight pressure increase is observed leading them to believe that they may be overcoming the column separation. The decision is made to wait. There is some discussion of adding a pump at the Mendon Station.
13	11:01	7/26/2010	4:36 AM to 4:57 AM	Several more volume balance alarms are generated. Including a 5 min. volume balance alarm, 20 min volume balance alarm and 2 hour volume balance alarm.
14	11:07	7/26/2010	5:03 AM	Discussions take place in the Control Center regarding the lack of pressure building downstream of the Mendon station. The line is shutdown because they are unable to resolve the column separation and pressure issues.
15	12:38	7/26/2010	6:34 AM	Further discussions between the Control Center shift lead and Pipeline Controller as well as the MBS analyst involve 'Column separation' and lack of pressure on the line. They note that it is taking longer than usual to reverse the column separation and attribute this to the Niles Pump station being bypassed for an Inline Inspection tool. During this conversation they review the Operating procedures for multiple volume balance alarms. The decision is made to restart the line.
16	13:14	7/26/2010	7:10 AM	The 6B Line is restarted from the Control Center.
17	13:16	7/26/2010	7:12 AM	The Pipeline Controller receives a 2-hour volume balance alarm between the Griffith and Marshall Pump Stations.
18	13:39	7/26/2010	7:35 AM	The Pipeline Controller receives 5 minute and 20 minute volume balance alarms between Marshall and RW (End of line) stations.
19	13:46	7/26/2010	7:37 AM to 7:42 AM	The Pipeline Controller receives 5 minute & 20 minute volume balance alarms between the Griffith and Marshall stations.

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20	13:59	7/26/2010	7:46 AM to 7:55 AM	Discussion between the Pipeline Controller and MBS analyst suggests that a lack of pressure may be due to bypassing the Niles pump station. They decide that overcoming the column separation will require more power (pumps). Their review of existing stations shows insufficient pressure available to bring the column back together. The line is shutdown and the block valve at mile post 650.64 (downstream of Marshall) is commanded closed.
21	15:04	7/26/2010	8:30 AM to 9:00 AM	Pipeline Controller Shift Change.
22	14:50	7/26/2010	8:46 AM	The Control Center continues troubleshooting the line 6B issues.
23	15:53	7/26/2010	9:49 AM	A Marshall Technician is called by the control center to visit the pump station to look for leaks in the general vicinity. The technician verifies low suction and discharge pressures but finds no leaks at the station. No mention is made of odors.
24	16:20	7/26/2010	10:16 AM	The Control Center contacts the Regional Manager to discuss issues related to fixing the column separation. The control center asks about population density in the area of Marshall in order to determine if they should have received calls about odors or leaks. The Control Center asks to have the Marshall technician check the instrumentation at the Pump station.
25	17:22	7/26/2010	11:18 AM	An outside call is received at the Enbridge Control Center from a local gas Utility (Consumers Energy) reporting Oil in the creek. Consumers Energy was onsite responding to as many as 46 customer complaints of natural gas odors.
26	17:24	7/26/2010	11:20 AM	The Control Center Calls the Regional Manager to discuss the Consumer Energy call and confirmation of leak. The Pipeline Controller begins to isolate the line by closing block valves upstream and downstream of Marshall.
27	17:34	7/26/2010	11:30 AM	The Enbridge Regional Manager contacts the Enbridge Marshall Maintenance Shop and instructs a technician to investigate the area of the reported leak.
28	17:49	7/26/2010	11:45 AM	The Enbridge technician from the Marshall Maintenance shop confirms with the Regional Manager that there is oil on the ground.