
MDF Door Cycle Slam Report

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Project 187-2419

Prepared for: IHS Door Company
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Objective: To evaluate the performance of a 3-0, 8-0 door constructed by IHS Door Company during the NWDA TM-7 Cycle Slam Test.

Samples: One 3 ft- 0 in. wide, 8 ft- 0 in. tall, 1.75 in. thick door was constructed by IHS Door Company from medium density fiberboard. This door was painted white by IHS staff prior to delivery to the Natural Resources Research Institute (NRRI). At the completion of testing, the door was returned to IHS Door Company.

Testing: The NRRI cycle slam test equipment was modified prior to the test to allow for testing of an 8 ft-0 in. door. The hinges selected and attached to the door were Hager #1279 4-1/2" x 4-1/2" USP, stk# 08833. The screws used to attach the door were No. 12 x 1-1/4 F.H, as supplied with the hinges. Four hinges were used to hang the door. The final door weight after attaching the hinges and with the backer plate attached was 109.4 lbs. The closer used during testing was an LCN Super Smoothie. Figure 1 shows the door mounted in the testing machine and Figures 2-4 show the pusher bar, closer, mounting hardware and backing plates.

The door was inspected after each 25,000 cycles up to a total of 100,000 cycles. The rate of testing was approximately 20 cycles per minute. After the first 100,000 cycles, the door was then tested during non-business hours (typically 5 pm until 8 am the following day) until a total of 519,569 cycles were completed. There were several occasions where an electrical malfunction stopped the testing overnight. Table 1 reports the dates of testing and the cycles completed each day. Figures 6 and 7 shows paint wear and one hinge that loosed during testing.

Results: Inspection of the door showed the following:

1. The door shows no visually apparent damage after 500,000 (+) cycles.
2. The door shows no wear that would inhibit functionality.
3. Screws in one hinge would loosen slightly and needed to be tightened.
4. Some paint cracks were noted during testing at the joint of the insert panel to the stile and rail, but they appear to be unrelated to the cycle slam testing.

Table 1.--A summary of the testing cycles completed during the NWDA TM-7 Cycle Slam Test.

Date	Slam Count	Notes
October 11, 2007	Start	
October 12	25,440	
October 13	50,163	
October 14	75,105	
October 15	100,021	Malfunction
October 16	117,679	
October 17	136,505	
October 18	142,039	Malfunction
October 19	159,813	
October 22	234,760	
October 23	252,207	
October 24	270,401	
October 25	270,911	Malfunction
October 26	273,194	Malfunction
October 26	274,264	Malfunction
October 29	296,091	
October 30	304,831	Malfunction
October 31	311,729	Malfunction
November 1	315,210	Malfunction
November 2	316,711	
November 5	397,248	
November 6	414,285	
November 7	430,421	Malfunction
November 8	448,978	
November 9	467,596	
November 11, 2007	519,569	

¹A recurring electrical problem would cause a cycle interruption until reset.



Figure 1.--Cycle slam test fixture with IHS Door attached to frame.



Figure 2.--Pusher bar attached to middle point of door.



Figure 3.--Pusher bar backer plates.



Figure 4.--Closer bar attached to door.



Figure 5.--Closer bar backer plate.



Figure 6.--Paint wear that occurred during the testing.



Figure 7.--Loose screws noted on one hinge during the testing.