



UNITED STATES GOVERNMENT
National Labor Relations Board
Office of Inspector General

Memorandum

March 23, 2011

To: Bryan Burnett
Chief Information Officer

From: David Berry 
Inspector General

Subject: Inspection Report No. OIG-INS-63-11-02: Hard Drive Failures

We initiated this inspection in February 2011 to calculate the hard drive failure rates for the Dell laptop computers purchased since the end of Fiscal Year (FY) 2009.

OVERVIEW

We found that 52 of the 495 Dell laptop computers purchased and installed since July 2009 experienced a hard drive failure. For three of these laptop computers, the hard drive failed twice. Of the 52 laptop computers, 49 had hard drive failures within 1 year of installation, a failure rate of 9.90 percent. That rate is significantly above independent research studies of hard drive failures, which place the annual hard drive failure rate at 2 to 4 percent.

BACKGROUND

Between July 20, 2009 and September 10, 2010, the Agency purchased 510 Dell Latitude E6500 and Latitude E6510 laptop computers. The purchase orders are summarized in the table below:

Purchase Order Number	Date	Model	Vendor Name	Computers	Price	Total Cost
59A-090000	7/20/2009	Latitude E6500	Dell	150	\$1,391.86	\$208,779.00
59-0900028	9/25/2009	Latitude E6500	Dell	235	\$1,391.86	\$327,087.10
59F-100006	3/29/2010	Latitude E6500	Intelligent Decisions	50	\$1,496.00	\$74,800.00
59F-100032	9/10/2010	Latitude E6510	Intelligent Decisions	75	\$1,570.00	\$117,750.00
Total				510		\$728,416.10

Prior to purchasing the 510 laptop computers identified in the above table, the Agency made single unit purchases of Dell Latitude E6500 laptop computers on January 5, 2009, for use as an advance computer for evaluation; and on June 26, 2009, for imaging needs before the receipt of the bulk orders. Of the 512 laptop computers in the universe, 495 have been installed prior to our inspection.

During the first quarter of FY 2011, the Office of the Chief Information Officer (OCIO) noticed an increase in the number of hard drive failures in these laptop computers. The OCIO communicated this to Dell on December 1, 2010, and continued to communicate with Dell as hard drives continued to fail. Staff in the OCIO stated that the hard drives are under warranty and are replaced when they fail, but that Dell procedures require the users to run a diagnostic test and inform Dell of the error code. If the diagnostic test does not reveal an error code, then Dell will not replace the drive. The Agency requested a supply of spare hard drives, which Dell provided.

FINDINGS

Failures

We found that 52 of the 495 Dell laptop computers purchased and installed since July 2009 experienced a hard drive failure. For three of these laptop computers, the hard drive failed twice. Of the 52 laptop computers, 49 had hard drive failures within 1 year of installation, for a failure rate of 9.90 percent. The table below shows the statistics by the model:

Model	Computers	Failed Hard Drives	Percent	Failed Hard Drives Within 1 Year	Percent
Latitude E6500	436	49	11.24	46	10.55
Latitude E6510	59	3	5.08	3	5.08
Total	495	52	10.51	49	9.90

The failure rate among the laptop computers differed by purchase order. For the four bulk purchases, only one did not have any hard drive failures. This is shown in the table below:

Purchase Order Number	Vendor Name	Computers	Failed Hard Drives	Percent	Failed Hard Drives Within 1 Year	Percent
468073517	Dell	1	0	0.00	0	0.00
493885454	Dell	1	0	0.00	0	0.00
59A-090000	Dell	150	15	10.00	12	8.00
59-0900028	Dell	235	34	14.47	34	14.47
59F-100006	Intelligent Decisions	49	0	0.00	0	0.00
59F-100032	Intelligent Decisions	59	3	5.08	3	5.08
Total		495	52	10.51	49	9.90

In its correspondence with the Agency, Dell stated that the overall rate of failure for the hard drives was within the expected limits. This claim is not consistent with independent research studies we reviewed for this inspection. Studies of hard drive failure rates performed by Carnegie Mellon University and the French hardware review and optimization Web site Hardware.fr showed the average annual hard drive failure rate to range from 2 to 4 percent. Another study analyzing the failure rate for 30,000 laptop computers, conducted by warranty firm SquareTrade, found that 4.7 percent of laptop computers failed during the first year for non-accident related reasons. This would include failures due to hard drives as well as other reasons.

Age at Failure

The table below shows that the majority of the hard drive failures on the Dell Latitude E6500 and E6510 laptop computers occurred in the second half of the first year after installation.

	Computers with a Hard Drive Failure	Percent
Prior to Installation	2	3.85
Less than 3 Months	10	19.23
7 Days or Less	2	
Less than 1 Month	3	
1 – 2 Months	5	
2 – 3 Months	0	
3 – 6 Months	7	13.46
6 – 9 Months	17	32.69
9 – 12 Months	13	25.00
More than 1 Year	3	5.77
Total	52	100.00

Costs

Staff in the OCIO identified certain costs related to the hard drive failures. The Agency spent \$4,340 to recover files from three failed hard drives. Other costs would include the time spent by the Help Desk to repair or replace the failed hard drive and the lost time to the employees. Staff in the OCIO noted that if the hard drive failure occurred in a field office, the employee’s time without the primary computer could be over a week, which includes the time to send the laptop computer back and forth to Headquarters.

SCOPE

We interviewed staff in the OCIO and the Acquisitions Management Branch to learn about the issues with the laptop computer hard drive failures. We obtained and reviewed the purchase orders and invoices relating to the laptop computer purchases. We reviewed correspondence between the vendor and the Agency regarding the hard drive failures.

We extracted data from the OCIO asset tracking database to determine the universe of laptop computers purchased during the scope of the inspection. We also obtained access to the

OCIO Help Desk call ticket database to determine the universe of hard drive failures for those computers through March 3, 2011. We then calculated the failure rate and other statistics related to the hard drive failures.

This review was done in accordance with Quality Standards for Inspections issued by the President's Council on Integrity and Efficiency.

SUGGESTIONS

1. To prevent the loss of data and limit the time an employee may be without a replacement laptop computer, we suggest that the OCIO notify personnel that are assigned a Dell Latitude E6500 laptop computer and request that they save files only on the network storage drives;
2. Because the hard drive failure rate of the Dell Latitude E6500 laptop computers purchased from Dell is significantly higher than the rate of the same Dell Latitude E6500 laptop computers purchased from Intelligent Decisions, we suggest that the OCIO coordinate with the NLRB Contracting Officer to notify the Contracting Officer for the General Services Administration schedule contract with Dell and determine an appropriate course of action.