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Oriental Land Co., Ltd.

Tokyo Disney Resort
Official Website

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Cause of the Space Mountain Incident Determined at Tokyo Disneyland Park

Oriental Land Co., Ltd. announces the completion of the investigation into the incident which occurred on December 5, 2003 at the **Tokyo Disneyland** attraction **Space Mountain**. The attraction is scheduled to reopen in mid-February upon implementation of the required improvements.

1. Cause of the incident

a. Direct cause of the axle breakage

The incident occurred when the axle of the ride vehicle's rear wheels broke, causing the vehicle to derail during the operation of the attraction. Detailed analysis and investigation were conducted focusing on the cause of the breakage. It was determined that the gap between the axle which broke and its bearing exceeded the design specification. This wider-than-specified gap resulted in excess play between the axle and its bearing and caused more vibration than normal during the operation of the vehicle, placing excessive stress on the installation screw nut at the tip of the axle. This fatigue fracture of the axle was the direct cause of the breakage.

While the design specifies that the gap between axle and its bearing should be about 0.2 mm, the actual gap in this case was over 1 mm.

b. Reason for the gap being wider than designed

The axle that broke was one of 30 axles received in October 2002. All 30 axles were thinner than the design specification, which resulted in the gap between the axles and their bearings to be greater than the specified width. This abnormal situation occurred due the following:

In September 1995, the design specifications for the size of

maintain the design drawings was neglected. Consequently, two different drawings existed within our company after the changes were made and the old drawing showing the 44.14 mm diameter was used to order (in August 2002) the axles that were delivered in October 2002.

It has been confirmed that other axles ordered and delivered between September 1995 and October 2002 were all of the required size (45.00mm).

2. Countermeasures and Plan for Improvement

The following countermeasures have been or are being implemented to prevent the recurrence of this type of incident.

Countermeasures:

1. Immediate safety inspection of all roller-coaster-type attractions (implementation completed).
2. Checking of validity and conformity of the design drawings of the vehicle parts vital to the running of roller-coaster-type attractions (implementation completed).
3. Re-education of maintenance staff for ride-type attractions regarding safety and quality control (now being implemented).

Improvements:

1. Reinforcement of control and management by newly establishing a "Ride Control Group" to be responsible for a unified system of ordering, inspection upon delivery and quality control of important ride vehicle parts as well as maintenance of design drawings (implementation completed).
2. Thorough use of gauges made exclusively for measuring the axle and hole diameters at the work site (now being implemented).
3. Strengthening of the said axles (now being implemented).

3. Tentative Schedule for Reopening the Attraction

Space Mountain will reopen upon confirmation of safe operation through implementation of the above measures and thorough testing. At this point, the attraction is scheduled to restart operations in mid-February.

http://www.olc.co.jp/news/20040121_01en.html

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About this capture

make every effort to continue to build the public's trust regarding the safe operation of our Parks.

