

SERVICE BULLETIN

Affected Park:
Affected Ride: INVERTED COASTER
Ride Name:

Item: Steel brake pad
Retaining bolts of the steel brake pad

Abstract of Issue:

Inspection of the steel brake pads and retaining bolts as per drawing on page 2.

Reason for Release:

Cracks were discovered on the second steel brake pads of the pilot coach in the transition area between chamfered and straight section.

Actions to be taken:

- visual and magnetic particle inspection of the steel brake pads in the area shown in the drawing on page 2. The Steel brakes pads presenting indications must be replaced.
- visual inspection and torque inspection of the retaining bolts.

Schedule:

Steel brake pads:

- Visual inspection: immediately.
- Magnetic particle testing: within a week.

Retaining bolts:

- Visual inspection and torque inspection.

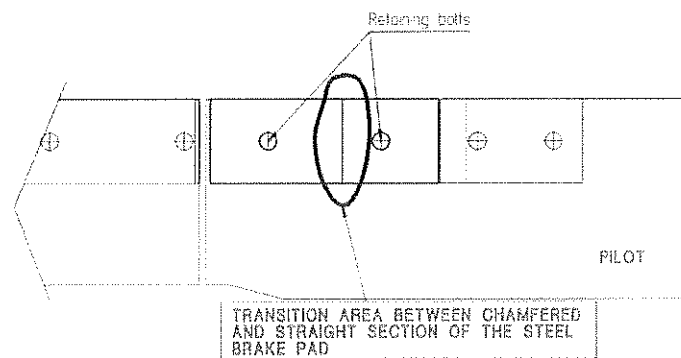
Additional request for maintenance:

The area between chamfered and straight section of the steel brake pad shall be checked as follows:

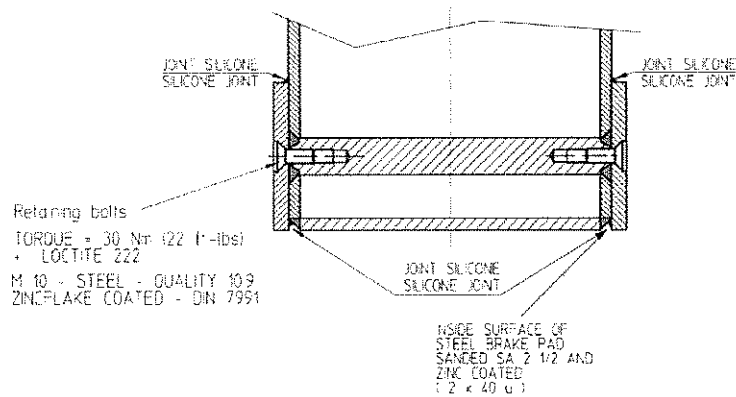
- Visually: every month.
- magnetic particles: annually.

SERVICE BULLETIN

Inverted Coaster (pilot car)



⇨ DIRECTION OF MOTION ⇨



- Note:**
- the retaining bolts for steel brake pads are M10 hexagon socket countersunk head screws according to DIN 7991:
 - fully threaded
 - material: steel – quality 10.9
 - surface treatment: 3 zincflake coated (Dacromet)
 - recommended torque: 30 Nm (22 ft-lbs)
 - the contact surfaces between the steel brake pad and the beam must be clean and free of grease / oil
 - silicon joint must be applied after assembly.

Sitting Coaster MEDUSA

Six Flags Great Adventure

LIST OF MANUFACTURER'S NOTICES

<u>Manufacturer's Notice #</u>	<u>Date</u>
2 / 99	October 14, 1999
2 / 01	September 25, 2001
2 / 04	April 5, 2004
3 / 04	April 5, 2004

BOLLIGER & MABILLARD

CONSULTING ENGINEERS, INC.

SIX FLAGS GREAT ADVENTURE
Attn: Mr. Robert J. Hoban,
Maintenance Vice President
Route 537
Jackson, NJ 08527, USA

O/ref.: C. Mabillard / me

October 14, 1999

Re.: Inverted Coaster Batman The Ride
Sitting Coaster Medusa

Dear Bob,

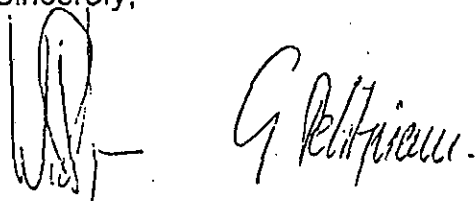
Please find hereenclosed

◆ Manufacturer's notice # 2 / 99

related to all types of B&M coasters.

We hope that this will not cause too much inconvenience and thank you in advance for your help.

Sincerely,

A handwritten signature in black ink, appearing to read "G. Peltier". The signature is written in a cursive style with a horizontal line extending to the right.

Encl.: ment.

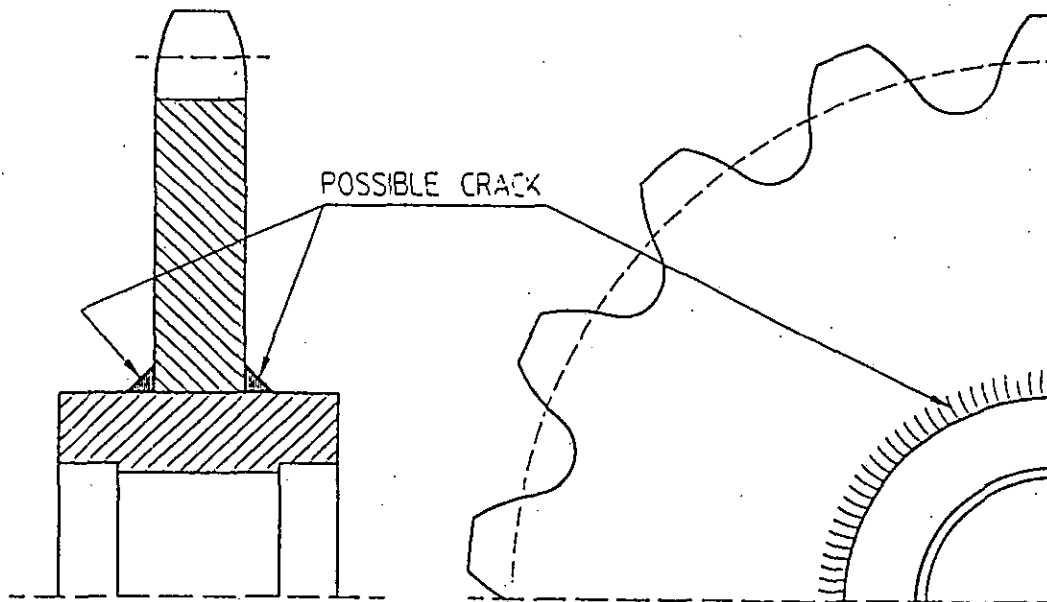
IMPORTANT MANUFACTURER'S NOTICE

2 / 99

Coasters: Inverted Coaster BATMAN THE RIDE
 Sitting Coaster MEDUSA

Components: Lift chain sprockets

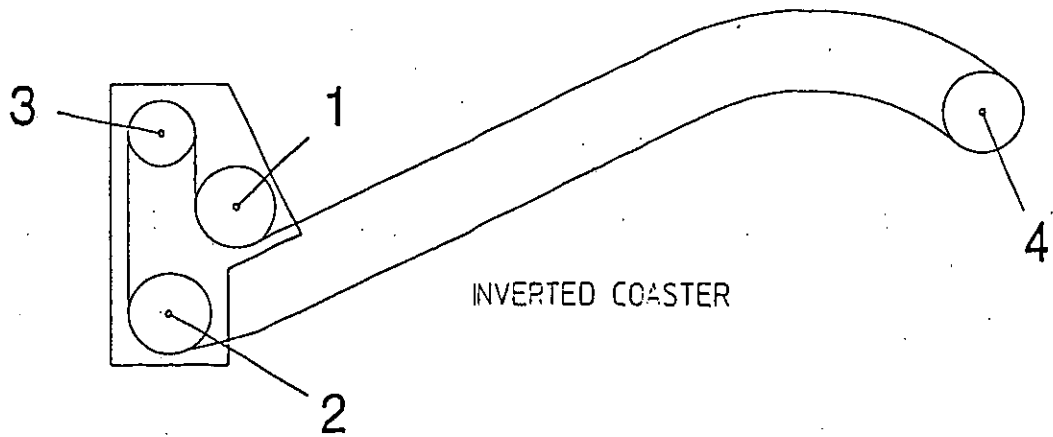
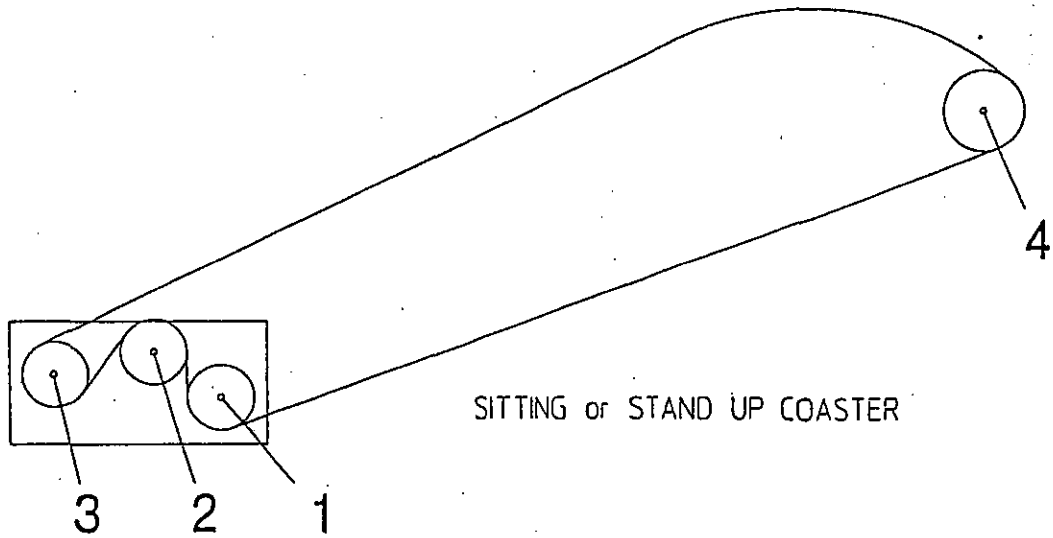
We draw your attention to the fact that cracks were found on one of our coasters on the center hub weld of the lift chain sprockets:



A total failure of such weld would cause severe damage at the lift chain.

Accordingly, we ask you to carefully visually check, every three months, the center hub welds of all lift chain sprockets, namely:

- 1. Drive sprocket
 - 2. Idler sprocket
 - 3. Tensionner sprocket
 - 4. Return sprocket
- } at the lift base
- at the lift top



BOLLIGER & MABILLARD

CONSULTING ENGINEERS INC.

SIX FLAGS GREAT ADVENTURE
Attn: Mr. Robert J. Hoban,
Maintenance Vice President
Route 537
Jackson, NJ 08527, USA

O/ref.: W. Bolliger / sb

September 25, 2001

Floorless Coaster Medusa

Dear Bob,

We are pleased to send you hereenclosed :

◆ **Manufacturer's notice # 2/01**

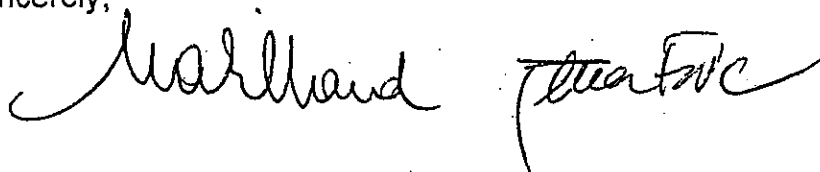
The purpose of this notice is to describe an additional recommended inspection of the central beam of the coaches.

We recommend the inspection to be done immediately and then in accordance with this notice.

Please do not hesitate to contact us should you have any question regarding this notice.

We thank you in advance for your help with this matter.

Sincerely,

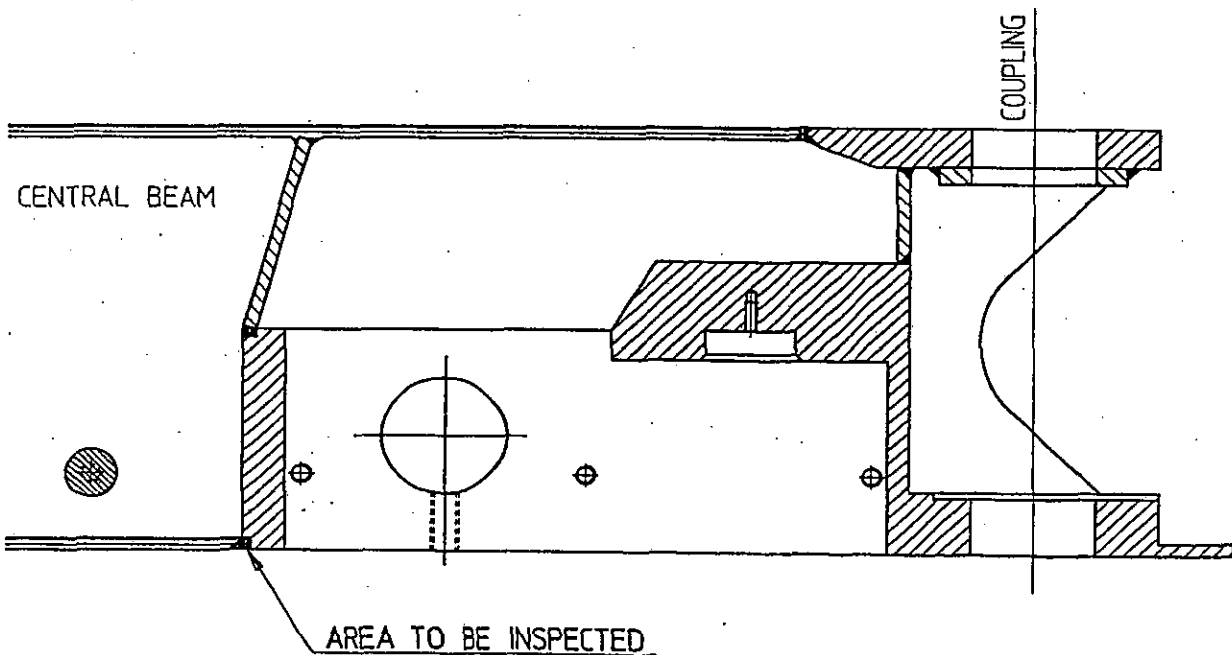
Handwritten signature of Mabillard in cursive script.

IMPORTANT MANUFACTURER'S NOTICE

Park : SIX FLAGS GREAT ADVENTURE

Roller Coaster : Floorless Coaster Medusa

- 1) We draw your attention to the fact that cracks were found at the connection ratchet box / plate on the central beam of the coaches on one B&M ride.



- 2) We accordingly ask you to inspect these connections as follows:
 - a) immediate visual inspection, then
 - b) weekly visual inspection.

- 3) If any crack is found, the crack needs to be repaired before being further operated.

Bolliger & Mabillard shall be informed of any such crack.

BOLLIGER & MABILLARD

CONSULTING ENGINEERS INC.

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SIX FLAGS GREAT ADVENTURE
Attn: Mr. Don Burkholder,
Director of Maintenance &
Construction
Route 537
Jackson, NJ 08527, USA

O/ref.: G. Petitpierre / E. Berra / ru

April 5, 2004

Floorless Coaster MEDUSA

Dear Don,

We send you hereenclosed :

◆ **Manufacturer's notice # 2/04**

Purpose of this notice is to clarify the procedure for the daily and weekly inspection of the anti-return SPRAG element on the lift drive unit.

We draw your attention to the fact that the anti-return SPRAG is a major safety device. The ride shall not be operated with a faulty anti-return SPRAG.

◆ **Manufacturer's notice # 3/04**

Purpose of this notice is to require an additional inspection of the vehicle central beam/coupling receiver.

Please do not hesitate to contact us should you have any question regarding these notices.

We thank you in advance for your help with this matter.

Sincerely,

G. Petitpierre *E. Berra*

IMPORTANT MANUFACTURER'S NOTICE

Park : **SIX FLAGS GREAT ADVENTURE**

Roller Coaster : **Floorless Coaster Medusa**

Purpose of this notice is to clarify the procedure for the daily and weekly inspection of the anti-return SPRAG element on the lift drive unit.

Daily inspection:

- Listen to the SPRAG for abnormal noise. In case of abnormal noise:
 - inspect the SPRAG to find the cause of the noise
 - carry out the inspection as specified for the weekly inspection.

Weekly inspection:

- Stop the train on the lift so that no anti-rollback dogs are in contact with the anti-rollback rack. It may be necessary to stop several times the train on the lift to get that result.

In case of any doubt:

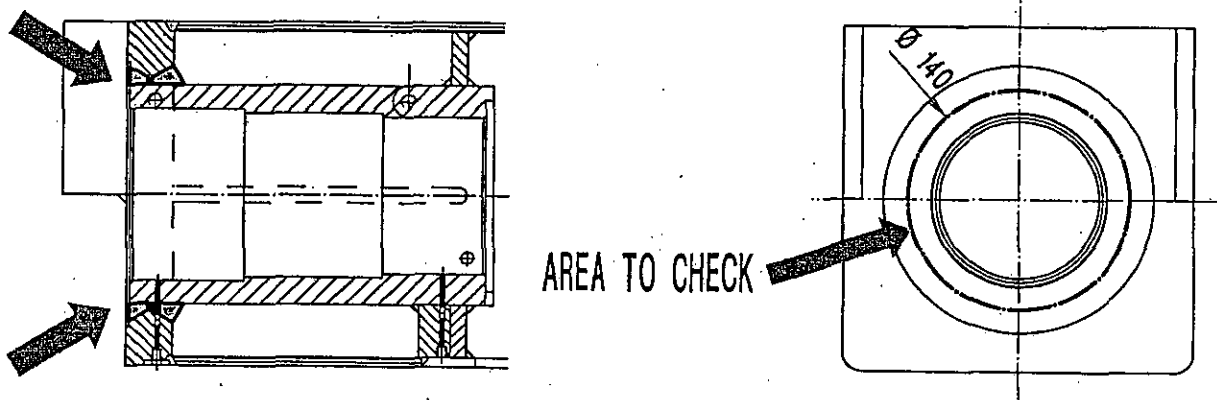
- a) make sure that the ride is stopped and secure, with no train on the lift.
- b) dismantle the connecting rod that hold the torque arm in place an attempt to lift the torque arm; it should not be possible to do so.

IMPORTANT MANUFACTURER'S NOTICE

Park : **SIX FLAGS GREAT ADVENTURE**

Roller Coaster : **Floorless Coaster Medusa**

1. We draw your attention to the fact that one crack was found in the weld between the front plate of the central beam and the pipe of the coupling receiver on a B&M coaster.



2. INSPECTION

2.1 GENERAL

THE AREA SHOWN ABOVE SHALL BE INSPECTED AT LEAST ONCE A YEAR AS FOLLOWS:

- a) dismantle the fork and the front thrust washer on each vehicle.
- b) magnetic particle inspection of the area shown above.

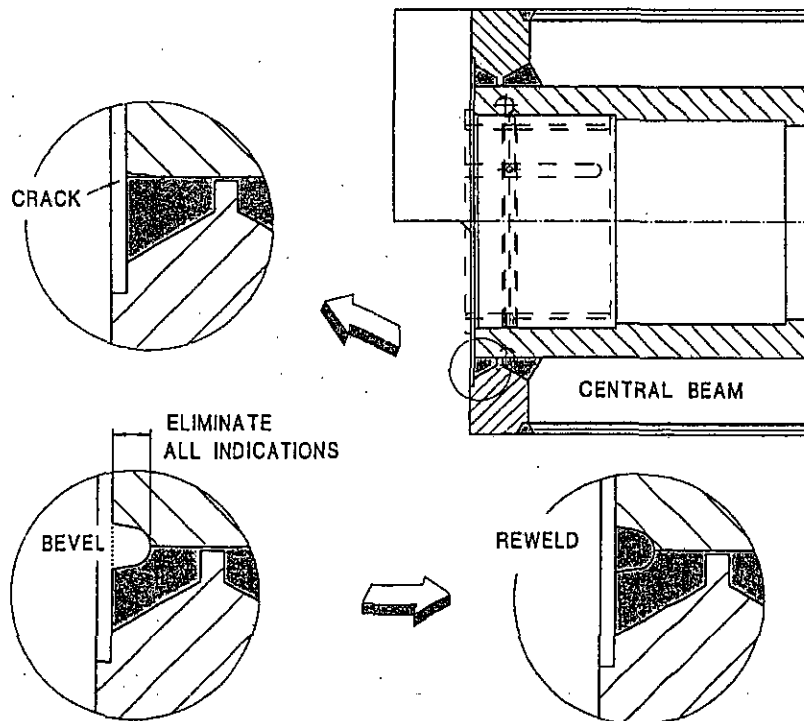
2.2 IMMEDIATE ADDITIONAL INSPECTION

- a) No immediate additional inspection is required for the Park who did carry out the inspection as indicated under paragraph 2.1 above within the last six months (e.g. inspection carried out during the annual maintenance as per the maintenance manual).
- b) For the Parks who did not carry out the inspection as indicated under paragraph 2.1 above within the last six months, an inspection in accordance with paragraph 2.1 above shall be carried out within 45 days.

3. INFORMATION TO THE MANUFACTURER

Bolliger & Mabillard shall be informed of any crack found. Vehicles presenting cracks shall not be operated.

A repair can be conducted according to the following instructions:



1. Eliminate the crack by grinding and prepare the bevel as shown.
2. Preheat at 180 - 200 F°
3. Reweld the root using TIG process.
4. Liquid penetrant test after the first pass.
5. Finish welding using SMAW or GMAW.
6. Final NDT check.
7. Grind the surface flush using a gauge.
8. Touch up paint.

SERVICE BULLETIN

Affected Park: Six Flags Great Adventure
Affected Ride: Floorless Coaster
Ride Name: MEDUSA

Drawing No: SC-D33-014
Item No: 9

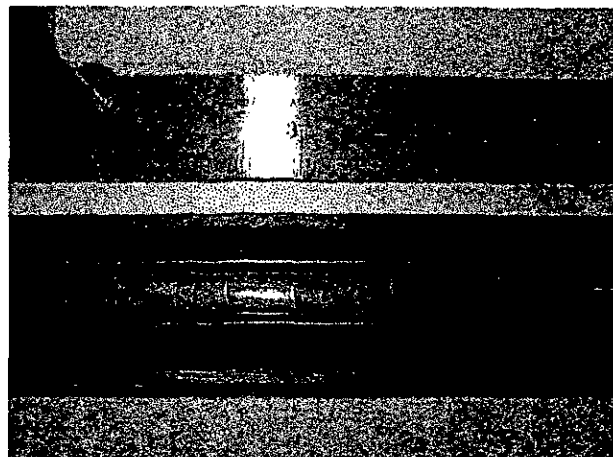
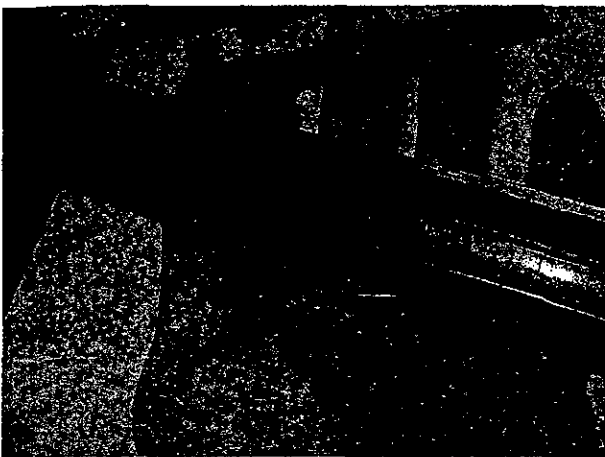
Abstract of Issue:
Inspection of the spline shafts of the shoulder harnesses
Item # 9 – drwg SC-D33-014

Reason for Release:
Machining marks have been discovered on a limited number of spline shafts. Such indications are not critical. It is however recommended to replace spline shafts which show such marks or other signs of wear.

Action to be taken:
Inspection (magnetic particle or dye penetrant) of spline shafts shall be carried out during the next annual inspection, but not later than March 31, 2006. Spline shafts showing marks or signs of wear shall be replaced.

Completion:
During the next annual inspection, but not later than March 31, 2006.

Detail of Issue:
Typical picture of machining mark:



NOTIFICATION

Affected Park: Six Flags Great Adventure
Affected Ride: Floorless Coaster
Ride Name: MEDUSA

Item: Lift driving unit one way clutch (Sprag Clutch)

Abstract of Issue:

This notification clarifies the lubrication, the inspection and the installation of the lift drive unit one way clutch hereafter called Sprag Clutch.

Reason for Release:

Clarification of the lubrication, the inspection and the installation of the lift drive unit one way clutch hereafter called Sprag Clutch.

Action to be taken:

Lubricate and inspect the Sprag Clutch as indicated.

Detail of Issue:

GREASE LUBRICATION

1. The clutch is factory packed with Fuchs Renolit MP2 grease. Only other recommended grease mentioned on the table below may be used. **THE USE OF LUBRICANTS OTHER THAN THOSE RECOMMENDED CAN CAUSE IMPROPER SPRAG ENGAGEMENT AND SUBSEQUENT FAILURE OF THE UNIT.**
2. Grease the sprag clutch every 3 months. Wipe fittings clean and pump new grease into all fittings until it flows past labyrinth seals on both sides of unit.

BOLLIGER & MABILLARD

CONSULTING ENGINEERS INC.

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Bulletin No.:	6
Release Date:	July 6, 2005
Effective Date:	July 6, 2005
Supersedes:	Notice 2/04
Issued by:	A. Beck
Checked by:	G. Petitpierre / E. Berra
Page:	2 of 2

Affected Park:
Six Flags Great Adventure

Affected Ride: Floorless Coaster

Ride Name: Medusa

Detail of Issue continued:

GREASE

TEMPERATURE RANGE	RECOMMENDATION
-7°C TO +65°C	FUCHS RENOLIT MP2 (Original) MOBIL GREASE MP2 MOBIL MOBILUX 2 SHELL ALBIDA R2 ESSO BEACON 2

INSPECTION OF THE SPRAG CLUTCH

Daily Inspection

Listen to the sprag for abnormal noise. In case of abnormal noise:

- inspect the sprag to find the cause of the noise
- carry out the inspection as specified for the weekly inspection

Weekly Inspection

To check the sprag clutch efficiency, stop the train on the lift so that no anti-rollback dogs are in contact with the toothed rack (the whole train load is then supported by the sprag clutch). It may be necessary to stop the train several times on the lift to get that result.

INSTALLATION (Clutch replacement)

1. Before mounting on a shaft, check for damage and dimensional accuracy.
2. Check that free direction of rotation is correct.
3. Offer unit to shaft and apply pressure to end face of inner race only.

High pressure applied to the outer race could cause damage to the bearings and premature failure of the unit.

4. Secure unit axially by use of retaining plate.
5. Reconnect the torque arm