EPIDEMIOLOGIC INVESTIGATION REPORT

1. Task Number	2. Investigator's ID
130909CNE1141	2766

3. Office Code	4. Date of Accident YR MO DAY	5. Date Initiated YR MO DAY
810	2013 09 01	2013 09 26

6. Synopsis of Accident or Complaint UPC

The main axle on the Ferris wheel broke during use which caused the ride to jolt and shift. The operator immediately shut down the wheel and passengers were unloaded without any injuries reported. The operators reportedly had a safety cable installed in the axle per the manufacturers recommendations, in lieu of a retrofitted axle.

~~MFR/PRVLBR NOTIFIED~~ ✓ 8/2/17

COMMENTS: ___ YES ✓ NO

___ OVERRULED: ___ ATTACHED MJ

✓ EXCISIONS/FOIA Exs. 5

✓ ~~DO NOT RE-NOTIFY~~ ___ ~~RE-NOTIFY~~

7. Location (Home, School, etc)	8. City	9. State
5 - OTHER PUBLIC PROPERTY	MESHOPPEN	PA

10A. First Product	10B. Trade/Brand Name	10C. Model Number
1293 - AMUSEMENT ATTRACTIC	EXPO WHEEL	N/A

10D. Manufacturer Name and Address
WATKINS EXPO WHEEL, INC.
11501 SHERWOOD ROAD
UPPER FALLS, MD 21156

11A. Second Product	11B. Trade/Brand Name	11C. Model Number
0	NONE	NONE

11D. Manufacturer Name and Address
NONE

12A. Hispanic or Latino	12B. Race Other:	12C. Race Source

13. Age of Victim	14. Sex	15. Disposition	16. Injury Diagnosis
0	0 - Not Stated	0 - No Injury	71 - Other/NS/No inj

17. Body Part(s) Involved	18. Respondent	19. Type of Investigation	20. Time Spent (Operational / Travel)
99 - NONE	3 - 2nd Hand Info Only	2 - Telephone	15.50 / 0.00

21. Attachment(s)	22. Case Source	23. Sample Collection Number
9 - Multiple Attachments	02 - City/County/State Health Dept	

24. Permission to Disclose Name (Non NEISS Cases Only)

○ Yes ◉ No ○ Yes for Manuf. Only ○ Verbal ○ Written

25. Review Date	26. Reviewed By	27. Regional Office Director
10/22/2013	9084	Dennis R. Blasius

28. Distribution	29. Source Document Number
Joseph Williams	X1390087A

This investigation was initiated based on the report of an incident and a safety alert that was provided to the Commission by the Pennsylvania Department of Agriculture Amusement Ride Safety Division (PA ARSD) (Exhibits 1 and 2). The incident involved a Ferris wheel which had its main axle break within the hub of the wheel while being operated at a county fair on September 1, 2013. The information contained in this report was obtained primarily during a phone interview with a Supervisor from the PA ARSD on September 11, 2013.

The Ferris wheel in this case is believed to approximately 3 years old. It was set up and being utilized at a county fair for the time period of August 28 through September 2, 2013. According to the Supervisor from the PA ARSD, the operating firm of the Ferris wheel had a strong training program. In particular, the Supervisor of the PA ARSD indicated the operating employee of the Ferris wheel at the time of the incident was "well trained."

While the Supervisor from the PA ARSD stated the original design of this Ferris wheel was approved years before this unit was manufactured, he did provide a copy of a 2010 ride modification letter he had on file (Exhibit 3). The modification involved the gondolas on the Ferris wheel, but the letter indicated the ride had been manufactured in accordance with ASTM standards and Pennsylvania regulations. The Supervisor from the PA ARSD also provided a copy of the Operating Manual for the ride, which included the Ferris wheel's specifications (Exhibit 4). The Ferris wheel has 16 gondolas, capable of holding 2 adults or 3 children each, for a maximum ride capacity of the 48 people. The manual indicates the maximum operating wind speed is 35 MPH and the maximum static wind speed is 45 MPH. Weather conditions taken from the area on the day of the incident show winds were generally calm to less than 9 MPH (Exhibit 5).

According to the Supervisor from the PA ARSD, when manufacturer of the Ferris wheel changed hands several years ago, the new owner recommended the main axle on the Ferris wheel be retrofitted with a replacement that is significantly thicker. While the upgrade was recommended by the manufacturer, it was not required. The Supervisor from the PA ARSD believed the cost to retrofit each unit was approximately $25,000. As an alternative, the manufacturer recommended a safety cable to be installed through the axle in the event of failure. The Supervisor from the PA ARSD was unable to provide a copy of these manufacturer recommendations. He did say however that the unit involved in this incident had the safety cable installed as per the manufacturer's recommendations.

For the first several days of the county fair the Ferris wheel reportedly operated without incident. On September 1, 2013, at approximately 5:30pm, the Supervisor from the PA ARSD stated the ride was being operated with an unspecified number of riders when the operating employee noticed the entire ride jolted and shifted slightly. The operator immediately stopped the ride and called for help. The Ferris wheel was then secured in a safe position and the temporarily trapped riders were brought water by employees of the operating firm until they could be safety unloaded. A Safety Inspector from the PA ARSD was reportedly on-site within a few minutes of the incident. According to the PA ARSD Supervisor, all the riders of the Ferris wheel were safely unloaded and no injuries

were reported. Since no injuries were reported the PA ARSD incident report indicates this incident was not reportable to them as an accident.

It was determined that the axle on the Ferris wheel broke within the main hub and caused the incident. This Investigator requested additional photographs of the break on the incident unit but the Supervisor from the PA ARSD stated the area of the break was not visible and no other photographs were available. This Investigator then asked if the unit was still at the same location so it could be examined in-person. He stated that the unit had since been moved but he was unsure of its current location. He believed it may have been brought back to the manufacturer's location in Maryland but he could not confirm this.

Following the incident the Supervisor of the PA ARSD stated he became aware of other similar problems with other units and the original axle. He was not aware of any other incident in Pennsylvania but had had heard of similar incidents on this ride outside of the state. He was not aware of any incidents that involved injuries to consumers. According to the PA ARSDS Supervisor, there are seven units of this Ferris wheel registered for use in Pennsylvania. Based on this information, his office issued their Safety Alert for this ride which requires that if the upgraded axle has not been retrofitted on the unit, each unit must have the safety cable installed per the manufacturer's recommendations and must be subjected to an annual ultrasonic test.

At the time this Investigator spoke with the PA ARSD Supervisor, he stated that of the seven units of this ride in the State of Pennsylvania, only two units had been subjected to the ultrasonic test. One unit reportedly passed and the second unit reportedly failed. Copies of the results of these tests were not available.

The PA ARSD Supervisor stressed the operators of the unit in this case did have their own certified inspectors on staff and had a strong training program which assured the situation did not become one where injuries were involved.

PRODUCT IDENTIFICATION

Product..... Ferris Wheel

Brand Name.....Expo Wheel

Seating.....16 gondolas (2 adults or 3 children per seat)

Maximum Capacity.....48

Serial Number.....1E9DS5324AE225029 (2010-8-C)

pennsylvania
DEPARTMENT OF AGRICULTURE
AMUSEMENT RIDE SAFETY DIVISION

TO: **Interested parties**

FROM: **Joseph G. Filoromo, supervisor**

SUBJECT: **Expo Wheel Incident**

DATE: **9-3-13**

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At approximately 5:30pm on Sunday, an incident occurred at Wyoming County Fair in Meshoppen Pennsylvania where the axle of a Ferris Wheel broke. The ride operator immediately stopped the ride, securing it in a safe position. The riders were evacuated in a professional manner as local rescue teams worked with the ride owner to safely and calmly evacuate the ride.

EXPO WHEEL

There were no injuries; therefore this is not reportable as an accident.

- **The Owner, Jim Houghton Enterprises was well represented at the recent Pennsylvania Ride Safety Seminar and conducted operator training recently on site in conjunction with the Department of Agriculture Amusement Ride Safety Division. A lifetime of experience and said training proved valuable as Mr. Houghton made several spot on decisions.**
- **The well trained ride operator stopped the ride immediately and called for help. It was critical that the wheel not be turned at that time.**
- **The owners secured the wheel in a safe position.**
- **The son of the owner, Jim Houghton Jr. climbed up into the frame of the ride to talk to the temporarily trapped riders, explain what was happening, keep them calm and comfortable and brought them water.**

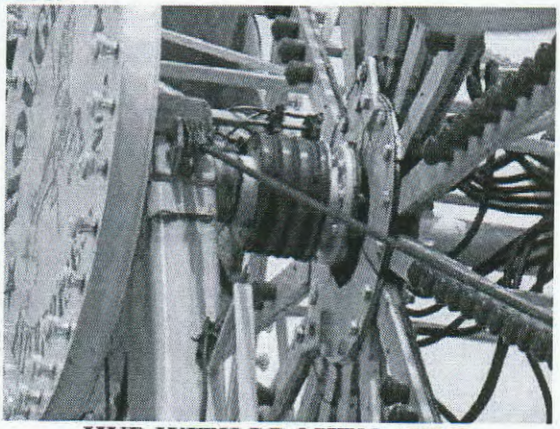
Pennsylvania Department of Agriculture Amusement Ride safety division senior inspector John Jardine was on site within minutes to address the situation.

- **I monitor the location of operating rides and locations of the Quality assurance inspectors. When an incident occurs, the closest available QA Inspector is dispatched. Meanwhile a field office is set up wherever I am with full access to data and files in Harrisburg.**
- **Inspector Jardine played in important part during the evacuation to maintain calm and coordinate efforts with the Fair, Owner, and the department.**
- **On Monday I traveled to the location and gathered information for the ongoing investigation.**

The cause of this incident is under investigation.

- **Flawed inspection, operation or maintenance has already been ruled out.**
- **The investigation is centered on the design and may affect 7 similar rides in the Commonwealth in the very near future.**

NORMAL ALIGNMENT OF THE HUB



HUB WITH BROKEN AXLE

THANK YOU

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E-mail: jfiloromo@state.pa.us

pennsylvania
DEPARTMENT OF AGRICULTURE
AMUSEMENT RIDE SAFETY DIVISION

TO: **Owners and inspectors of Expo Wheels manufactured by Expo Wheel LLC in Pennsylvania**

FROM: **Joseph G. Filoromo, supervisor**

SUBJECT: **SAFETY ALERT** Safety cable and ultrasound test required immediately

DATE: **September 3, 2013**

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Recently an incident occurred where the axle broke on one of these rides. Fortunately, this ride had the recommended safety cable installed and the situation was handled professionally while the ride was evacuated.

I have learned that these rides have some history of problems with the axle and that a new improved axle is now available from the manufacturer but is not a required upgrade.

The ride that you are inspecting may or be perfectly sound, but the inspection point for this issue is not visible. I have spoken to the manufacturer and we conclude that in order to insure the safety of Expo Wheels manufactured by Expo Wheel LLC that do not have the new type axle, that the manufacturer recommended safety cable must be installed and that the ride have an annual Ultrasound Test. The dimensions of the axle remain straight from end to end.

Before operating this ride you must indicate that you do have the safety cable and must forward your Ultrasound Non Destructive Test report to this office.

Reports can be e-mailed to jfiloromo@pa.gov, faxed to 717-754-0228 or by US mail to: Pennsylvania Department of Agriculture, Amusement Ride Safety Division Attn: J. Filoromo 2301 North Cameron Street. / Harrisburg PA 17110-9408

Further information is available from the manufacturer:
Expo Wheels LLC, / 11501 Sherwood Road, / Upper Falls MD 21156
Roger Wadkins direct telephone line: (443) 463-8016

Please give this matter your immediate attention.

THANK YOU

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E-mail: JFiloromo@Pa.Gov

Mr. John Dillabaugh Director
Amusement Ride Safety Standards, Rm. G-4
2301 N. Cameron Street
Harrisburg, PA 17110

RECD SEP 23 2010

Manufacturer: Expo Wheels L.L.C
514 Polaski Hwy.
Joppa, Maryland

Reference Owner: James & Jason Houghton
736 Street Road
Cochranville, PA 19330

Subject: Structural Inspection of rebuilt gondolas on existing Ferris Wheel.

Dear M. Dillabaugh,

On Thursday, September 16, 2010 I made a structural inspection of the above referenced subject.

The gondolas are completely new and redesigned to set four (4) passengers. The design was redesigned from the connection to the Ferris Wheel , to the bottom floor plates. Calculations were made and the system was found to be structurally sound.

Please accept this report as my certification of the following:

1) The ride attraction has been designed and manufactured in conformance with ASTM Standasrds on Amusement Rides and Devise, pursuant to ASTM F-24 Committee.

2) The ride is manufactured in conformance with Pennsylvania Regulations, Chapter 139 Pennsylvania Code 7.

Respectfully submitted,

Roy M. Benjamin, P.E.