

NARRATIVE

Elevator or Device No. C-17549

1 Introduction

2 On July 22, 2000, at approximately 7:30 PM, an accident occurred at the Santa Maria De Goretti Church
3 Festival. The church is located at 2980 Senter Road, San Jose, California. A 35 year old male named [REDACTED]
4 [REDACTED] and a 32 year old female named [REDACTED] were injured when their left front seat chain
5 broke while riding on the Whirlwind amusement ride, owned by Butler Amusements Inc. The two were
6 thrown out of the ride, approximately 50 feet, where they landed on the pavement. The Division of
7 Occupational Safety and Health, Amusement Ride Section in Sacramento was notified of the accident on
8 July 22, 2000 at 8:30 PM via a telephone call to Phillip Lindquist, Associate Engineer for Amusement Rides,
9 by Kurt Vomberg, Manager for Butler Amusements. Mr. Vomberg told Mr. Lindquist that the site was being
10 preserved. Mr. Lindquist was then assigned the accident investigation by Nancy Medeiros, Senior Engineer
11 for Amusement Rides. Mr. Lindquist told Mr. Vomberg he would arrive the next day to conduct an accident
12 investigation.

8 Description of Ride

9 Wisdom Industries Ltd., is the manufacturer of the Whirlwind ride. The ride is a swing type ride with 12
10 seats, each seat has four chains (one in each corner) for suspending the seat from the sweep above. Each
11 seat holds 2 adults or 3 children with a total ride capacity of 24 adults or 36 children. The maximum load per
12 seat is 400 pounds. There are two set chain lengths from the manufacturer: (2) front chains - 9 feet 5 inches
13 long and (2) rear chains - 9 feet long. All chain links come new from the manufacturer at 3/16 inch in
14 diameter. The ride travels at 11.5 rotations per minute (RPM) in the counter clockwise direction and takes 20
15 seconds to reach full speed. The diameter of the ride, when running, is approximately 36 feet. The velocity of
16 the rider at full speed is 14.8 miles per hour (21.67 feet per second). At full speed the ride reaches a 19° tilt
17 giving riders a range of height from 3 feet to 14 feet off of the ground. The ride is enclosed by a 55 foot
18 diameter, 42 inch high fence with entrance and exit gates. The allowable ride height is 48 inches to ride
19 alone and 44 inches accompanied with an adult. The ride cycle duration is 3 minutes long and operations
20 must be shut down if the wind reaches 30 miles per hour. The ride is equipped with a constant pressure foot
21 switch and two hand pressed emergency stop buttons (left and right). If the operator's foot is removed from
22 the constant pressure switch or the left emergency stop button is pressed dynamic braking will activate and
23 the ride will lower to its resting position. Also, if the left hand emergency stop button is activated the control
24 panel will not function until the button is reset. If the right hand emergency stop button is activated the
25 shunt trip breaker will trip and the ride will lower, coming to a full stop and all power will be shut off. The
26 ride is powered by a 230/460 volt, 3 phase, 1800 RPM motor for rotation.

18 Description of Accident

19 I arrived on site at 11:00 AM on July 23, 2000 and found the Whirlwind ride had been sealed off with police
20 tape. San Jose Police Officer Terry Brown and Mr. Vomberg met me at the Whirlwind ride. Mr. Vomberg
21 stated the victims had landed on the pavement outside the rides' fenced perimeter, which is about 50 feet
22 from the center of the ride. I was shown to an area to the left of the entrance gate just outside the fence.
23 Both [REDACTED] and [REDACTED] landed in this area. I was told there had been blood on the pavement, it had
24 already been cleaned up. I was also told that the victims were husband and wife and had been riding
25 together in seat #5. I was informed that the injuries were serious and the victims had been transported by
26 ambulance to the San Jose Medical Center.

24 On initial inspection of seat #5, I noticed the tub was angled down leaning slightly in a forward direction from
25 the left front corner. This was due to a missing left front chain. I was told that this chain broke, ejecting the
26 victims from the ride. I asked where the left front chain was located, since it was not attached to the seat or
the sweep of the ride. Mr. Vomberg and Terry Brown informed me that the police had taken the chain and the
3 crotch straps for seat #5 into custody and the items were in the evidence locker at the San Jose Police



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1 Station. Later these items were released to the Division and remain in our custody. I was informed that the
2 chain link had broken where it attached to the seat. I then asked if the broken link was with the chain and
3 was informed that no one had been able to find the broken link and that the chain in custody had no broken
4 links. Later, when the Division received custody of the chain, I was able to confirm the links absence from
5 the chain. On examination of the area surrounding the ride, I could not locate the missing broken link and to
6 this date it has never been located. I took photographs of the accident scene and seat #5. All three crotch
7 straps were sheared off at the seat. I conducted a visual inspection of the ride and documented various
8 items. I told Mr. Vomberg he could then disassemble the ride and move it. It was decided to move the ride to
9 Butler's storage yard in Santa Nella where I could finish my examination of the ride.

6 During the course of my on site inspection I met with Jeff Harband, Insurance Adjuster for St. Paul
7 Insurance Co. Mr. Harband asked me if he could take the three remaining chains from chair #5 to examine
8 them in his office. Since the chains were not broken I allowed Mr. Harband to take them into his custody and
9 return them to the Division's office on Monday July 24, 2000.

8 On July 26, 2000 at 11:30 AM, I met with Mr. William Redford, Maintenance Manager for Butler, accompanied
9 by Ms. Medeiros at Butler's winter quarters. During the meeting I served a Preliminary Order to Mr. Redford
10 requiring Butler Amusements, Inc. to preserve the ride in its existing condition until the Division's
11 investigation was completed. I then proceeded to take measurements of the remaining chains. These
12 measurements were taken in two stages: the first stage included the chain link wear at the ends where the
13 chain meets the chair and the second stage, on July 27, 2000, the full measurement of individual chain
14 lengths. It was discovered that many of the chain links attached to the seats showed a great deal of wear in
15 the throat loop of the link and were below the minimum dimension of 0.145" (inch), set by Wisdom. In fact,
16 there were nine right front links, seven left front links, and one right rear link below the minimum dimension.
17 These links should have been replaced according to manufacturer's specifications. Three of these links
18 were so worn that they measured 0.073", 0.079" and 0.092". Another five links measured below 0.110". In
19 addition to the worn throat area of the link there were areas of the link sides which were visibly very worn. I
20 also noted during my inspection that the links that were badly worn were not covered by anything and could
21 have been visually inspected at any time while they were still attached to the seat.

16 As far as the measurements on the overall length of the chains were concerned, there were no extreme
17 differences. Most fell within the original manufacturer's lengths. One chain on chair 12 measured 1 1/2"
18 shorter than the other chains and three chains measured 1" shorter than the others, relative to their
19 mounting to the corners of the chairs. It is possible they were shortened since their purchase from Wisdom.
20 I also found several crotch straps with severe wear. Butler Amusements has dismantled the Whirlwind ride
21 and it is stored at their winter quarters in Santa Nella, California with no plans to use the ride in the near
22 future.

20 Wisdom has put into operation a few different methods of attaching the chains to the chairs. On this
21 particular Whirlwind, the chains were attached to the seats by placing the end of the chain link between two
22 steel ears protruding from the fiberglass seat. Through both of the ears and the one chain link, a 5/16"
23 shoulder bolt with a lock nut on the end held the system together. The fit between the chain link and the
24 ears is loose and the link is free to rotate. In this configuration one is able to rotate the link and visually
25 inspect the wear of the bottom inside loop section of the link which fits up against the bolt. It is during the
26 operation of the ride that this inside bottom loop section of the link swivels on the bolt, this is where the
wear occurs. There is no secondary attachment holding the chain to the seat. This Whirlwind had been
purchased new by Butler Amusements the previous ride season and was operating in its second ride
season when this accident occurred.



1 San Jose Police Report

2 Officer Terry Brown with the San Jose Police Department was on site at the time of the accident working a
3 uniform pay job. He took photos of the victim's injuries and noted an odor of alcohol on the breath of the
4 injured male. Officer Leiter of the San Jose Police Department was dispatched at 1933 hrs to the scene of
5 the accident to investigate. He was instructed to contact Robbie Ingram the ride operator and take a
6 statement. While talking to Ingram he noticed the ride operator was intoxicated. He describes the operator
7 as having red watery eyes with slurred speech and an odor of alcohol. He requested that Ingram submit to a
8 Preliminary Alcohol Screening (PAS) Test which revealed a Blood Alcohol Content (BAC) of 0.162% (the
9 legal limit for driving an automobile in the state of California is 0.08%). In Ingram's statements he told officer
10 Leiter that he completes a daily check list before operating the ride and that he had checked the ride that
11 day and found nothing wrong. He stated he visually checks all the seats.

7 Statement from William Robbie Ingram, Operator

8 On July 23, 2000, 3:30 PM, Mr. Ingram stated he was operating the ride at the time of the accident. I asked
9 Mr. Ingram how long he has operated the Whirlwind ride and he told me six months and that he was trained
10 on operation procedures for the ride. I then asked Mr. Ingram if he had checked the restraint system in the
11 seat the victims fell out of before starting the ride cycle and Mr. Ingram said he visually checked seats with
12 riders. I asked if he saw the victims fall out of their seat, he said no. Mr. Ingram stated he did see the injured
13 victims on the ground and then stopped the ride and unloaded remaining patrons and left the ride area and
14 went behind Butler Amusements Office.

12 Statement from [REDACTED], Witness

13 On July 31, 2000, 1:00 PM, [REDACTED] stated he was directly behind the victims who were ejected from seat
14 #5. [REDACTED] stated the male victim was jumping up and down in his seat and swinging the seat from side to
15 side and the female victim was also jumping up and down in the seat until they were ejected from the seat.
16 He also stated that the victims jumping up and down in the seat caused the ride to bounce. [REDACTED] said
17 the victims landed on the outside of the ride fence.

16 Statement from Lance Moyer, Maintenance Supervisor

17 On July 31, 2000 1 PM, Mr. Moyer stated that he was the maintenance supervisor for Butler Amusements,
18 Inc. I asked Mr. Moyer how often he inspects the Whirlwind ride, and he told me once a week. Mr. Moyer
19 stated he has done general maintenance in the past on the Whirlwind ride. I asked Mr. Moyer if he had
20 inspected the chains supporting the seats, he said yes. I asked Mr. Moyer if he knew what the manufacturer
21 requires for chain replacements, he stated no. I then asked Mr. Moyer if he has any experience with chain
22 link wearing and replacements on this particular ride or any other ride, he stated no.

21 Statement from Richard Latiker, Maintenance Mechanic

22 On July 31, 2000, 1:30 PM, Mr. Latiker stated his job is maintenance mechanic for Butler Amusements, Inc. I
23 asked Mr. Latiker if he inspects rides for maintenance, he stated no. I asked Mr. Latiker if he had done any
24 maintenance on the Whirlwind ride in question, he stated yes he had changed three links on seats #11 and
25 #12. I asked Mr. Latiker if he inspected the chains on the Whirlwind ride, he stated no. I asked Mr. Latiker did
26 he know what Wisdom required in their maintenance manual for chain replacement, he stated no. I asked Mr.
Latiker if he had any experience with chain link wearing and replacement on this particular ride or other
rides, he stated no.

1 Interview with the injured at the hospital

2 On July 26, 2000, I went to the San Jose Medical Center to interview the injured. The injured were
3 non-English speaking Vietnamese, I was accompanied by Ms. Medeiros and a Vietnamese translator who
4 worked for the Division, Kimberly Davis. [REDACTED] was unable to give a coherent interview due to his
5 condition at the time. [REDACTED] answered several questions. She stated that the ride had been running for
6 a while and then began to feel sharp pains in her abdomen prior to being ejected from the ride. When asked
7 if they were bouncing in their seat, she stated no. She remembers completing approximately one and a half
8 rotations with the sharp pain in her abdomen before falling to the pavement. The extent of their known
9 injuries is as follows. [REDACTED] suffered abrasions to his chest, arms, left hand and jaw. He also received a
10 laceration to his left forehead. [REDACTED] suffered abrasions to her hands and feet, fractured pelvis with
11 pain in her right knee, left hip and femur.

7 Conclusion

8 After inspecting the ride, taking measurements, interviewing witnesses and reviewing all reports, I have
9 concluded the following:

10 The chains found on the ride at the time of the accident were well worn below the acceptable standard set
11 by the manufacturer, this standard is specified in the daily check list on page 6 of the Operators Manual
12 supplied by the manufacturer, Wisdom Industries. Butler Amusements daily inspection checklist filled out
13 by Mr. Ingram and other operators for several months prior to the accident did not include any inspection of
14 the chains. There is no mention in the comment section on any of these reports that the chains needed to be
15 replaced due to wear. Mr. Moyer, Maintenance Supervisor for Butler Amusements, stated he inspects the
16 ride for maintenance requirements once a week. The documents provided by Butler Amusements show that
17 Mr. Moyer had not done any inspections on the ride for the five months prior to the accident. These daily
18 checklists also show that Mr. Moyer had not done any maintenance on the ride since one month prior to the
19 accident. Mr. Moyer states he was not aware of the manufacturer's inspection and replacement
20 requirements for the chains.

21 The chain link which broke on seat #5 was never found, the fact of the matter is it failed causing the
22 accident. I do not know the condition of the link and the amount of wear that may have been present at the
23 time of the accident. Judging by the inspection of the remaining chain links on the rest of the ride, the state
24 of the failed chain link was probably close to the states of the inspected chain links, or worse. Many of the
25 inspected links were worn below tolerance and could have failed as well, given the sufficient conditions of
26 force and time. These links should have been replaced before the accident occurred.

On page 6 of the Operator's Manual it also states that the crotch straps are to be inspected for fraying.
During my inspection I noticed that many of the crotch straps were frayed and in need of replacement. It
appears that the three crotch straps for seat #5 were ripped off at the attachment point to the seat. This
could have been done when the injured's were thrown from the ride.

Butler Amusement's maintenance program for this ride was inadequate. Inspections were done by operators
and maintenance personnel without inspecting key components spelled out by the manufacturer.
Statements provided by Mr. Moyer and Mr. Latiker show that they had no experience with this ride and its
chain link wear and replacement requirements. The Operator's Manual, in the General Safety Guidelines
section, page 15, states that "1. All work must be done by competent, qualified mechanics capable of
understanding the function of the parts and their proper installation. 2. Inspect the ride each day of
operation to determine that no portion of the ride is damaged, omitted, or worn in such a manner that it is
unsafe, or that unsafe conditions may develop." Due to the fact that the operators and the maintenance crew
involved with this ride did not recognize the worn chain links and frayed crotch straps and they had no

1 experience with maintaining or replacing worn chain links, this makes them not entirely competent by the
2 manufacturer's, nor the Division's, standards to perform maintenance and inspections on this ride.

3 To this date I have never been able to contact the injured after the interview at the hospital. The phone
4 number on file apparently has a new owner. I have spoken to the injured's lawyer, Mike Pietrykowski. He
5 said he would provide me with written statements from the injured. I have not received anything from his
6 office.

7 As a result of this accident investigation, the operating permit was removed and the following was required
8 in order to issue an annual operating permit.

9 R1. The daily pre-operational inspection and report shall be ride specific and include all daily
10 pre-operational inspections as specified in the manufacturer's operation and or maintenance manuals
11 as well as in Title 8, 3910 and ASTM F 770-93 section 4. These daily inspection reports shall be kept on
12 site and available for review by the Division. 7902 LC

13 R2. The scheduled periodic maintenance and the inspection of the components for allowable wear as
14 specified in the manufacturer's maintenance manuals shall be performed and documented. 3911

15 R3. The required maintenance inspection of components for wear and or damage during assembly and
16 disassembly of the ride shall be performed and documented. 3911

17 R4. As a minimum the daily pre-operational inspection and report shall contain the following: 3910

- 18 -Operation of all control mechanisms.
- 19 -Operation of speed limiting devices.
- 20 -Operation of brakes
- 21 -Fastenings and other equipment provided for safety.
- 22 -Visual inspection of all passenger-carrying devices, including restraint devices and latches.
- 23 -Visual inspection of entrances, exits, stairs and ramps
- 24 -Test of all communications equipment necessary for the operation of the ride.
- 25 -Prior to carrying passenger, the ride shall be operated for a minimum of one complete operating cycle.

26 At the time of the inspection for the annual operating permit, the Division verified that half of the chains had
been replaced, all of the bad chain links were removed and all of the connections (chain to sweep) had been
replaced. Along with those, the shoulder bolts at the seats were all replaced, any worn or missing crotch
strap had been replaced and the operator training and documentation had been completed. The operator at
the time of accident is no longer employed by Butler Amusements.

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Elevator or Device No. C-17549

- 1 Injured Party # 1
- 2 [REDACTED]
- 3 [REDACTED]
- 4 [REDACTED]
- 5 Injured Party # 2
- 6 [REDACTED]
- 7 [REDACTED]
- 8 Interviewed
- 9 Robbie William Ingram - Butler Amusements Ride Operator
- 10 Richard Latiker - Butler Amusements Maintenance
- 11 Lance Moyer - Butler Amusements Maintenance Foreman
- 12 Enclosures
- 13 1. San Jose Police Report
- 14 2. Butler Daily Ride Reports
- 15 3. Whirlwind Inspections 2000
- 16 4. Whirlwind Seat Chain Measurements
- 17 5. Wisdom Safety Alert Bulletin
- 18 6. Preliminary Order
- 19 7. Operators Manual for Whirlwind
- 20 8. Amusement Ride Field Report Dated 1-23-01

