



Florida Department of Agriculture & Consumer Services  
**BOB CRAWFORD, Commissioner**  
The Capitol • Tallahassee, FL 32399-0800

Please Respond To:  
Division of Standards  
Bureau of Fair Ride Inspection  
131 Administration Building  
3125 Conner Boulevard  
Tallahassee, FL 32399-1650  
1-800-HELP FLA  
Ph. (850) 488-9790, Fax (850) 488-9023



**MEMORANDUM**

**DATE:** March 2, 1999  
**TO:** CPSC, CARES MEMBERS, NAARSO MEMBERS & Others  
**FROM:** Mike Rinehart, Investigator/Operations & Management Consultant II  
**SUBJECT:** "Rodeo Rider" by S&S Accident of 1/24/99, King Richard's Fun Park

The enclosed is provided to you for your information and use in conducting your various safety programs.

This accident occurred on 1/24/99, at King Richard's Fun Park in Naples, Florida. The ride consists of a tower-boom, permanently mounted on a pad, supporting five fiberglass seats via two 1/4" wire ropes. The ride also comes on a trailer mounting for temporary shows.

On the Rodeo Rider, as well as other configurations of this ride, the seats are abreast of each other. S&S, the manufacturer also makes the ride configured with six seats on the Frog Hopper and Space Hopper using the same carriage/tower-boom. All three configurations have the same weight limitations.

This ride used two 1/4" wire ropes (6 strand, 19 wire) to suspend the tubs and carry the weight of the patrons through three cycles rising about 18 feet to the top of the boom and then dropping approximately 14 feet in a series of steps and then repeating this cycle a total of three times before lowering to the start position to unload and reload. Both wire ropes failed dropping the four patrons approximately four (4) feet. The weights of the individuals were as follows: 170 lbs., 145 lbs., 166 lbs. And 52 lbs. for a total weight of 533 lbs. at the time of the accident. Maximum load according to the manufacturer is a total of 400 lbs. or 140 lbs. per patron as per the manual.

Enclosed:

Conclusion by the State of Florida Engineer hired to investigate this accident.  
Photographs of the ride  
Manufacturer's 2/2/99 notice to owners  
Manufacturer's General Maintenance Procedures

If you have any additional questions regarding this accident do not hesitate to call me, (850) 922-2330.

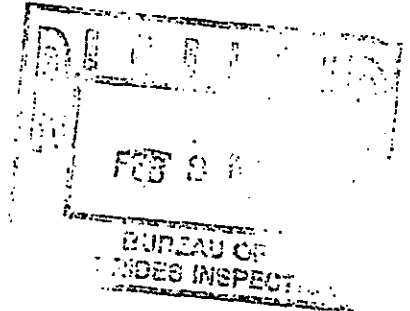


February 2, 1999

To: Mike Rinehart  
Florida Dept of Agriculture

Fax: 1-850-488-9023

Re: Routine Maintenance Reminder



Dear Mr. Rinehart,

Please remember to inspect your Frog Hopper or Rodeo Rider cables for wear. This should be included in your daily inspection. Look for breaks in the wires and for wear, frays or kinks. A single broken wire will cause the cable to lose strength rapidly and means the cable has seen excessive wear.

If you see a broken wire, do not operate the Frog Hopper until you have replaced the cable. Included with this letter are pages from the Frog Hopper/Rodeo Rider Maintenance Manuals on General Maintenance Procedures, 24-Hour Shift change Inspection Sheets and 5000 cycles or Monthly Maintenance checklist.

If you need to purchase additional cables or if you have any questions, please call Kevin Geddes at 435-752-1987.

Sincerely,

Jacob Rippstein  
Children's Ride Sales

*This is a copy  
of our letter to  
Frog Hopper &  
Rodeo Rider  
customers.  
Jane Simmons*

## SECTION 6: General Maintenance Procedures

### 6.4: CABLE SYSTEM

1. Inspect cables to ensure:
  - (a) Cables are free from twists, frays, and kinks.
  - (b) Cable connections are secure on both the passenger cart end and the cylinder head end.
  - (c) Make sure there are no separated or broken wires.
  - (d) The maximum wear of any one wire at any location does not exceed 25% of the wire thickness.

*Note: If any of the above are seen—replace the cable.*

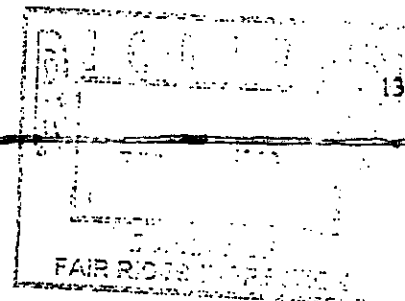
2. Inspect sheave assemblies.
3. Pulley bearings shouldn't have excessive play (max. 1/16").
4. Pulley mounts should be structurally sound, properly aligned and fastened.
5. Check for uneven or abnormal wear on all sheave load surfaces.

### 6.5: CART ASSEMBLY

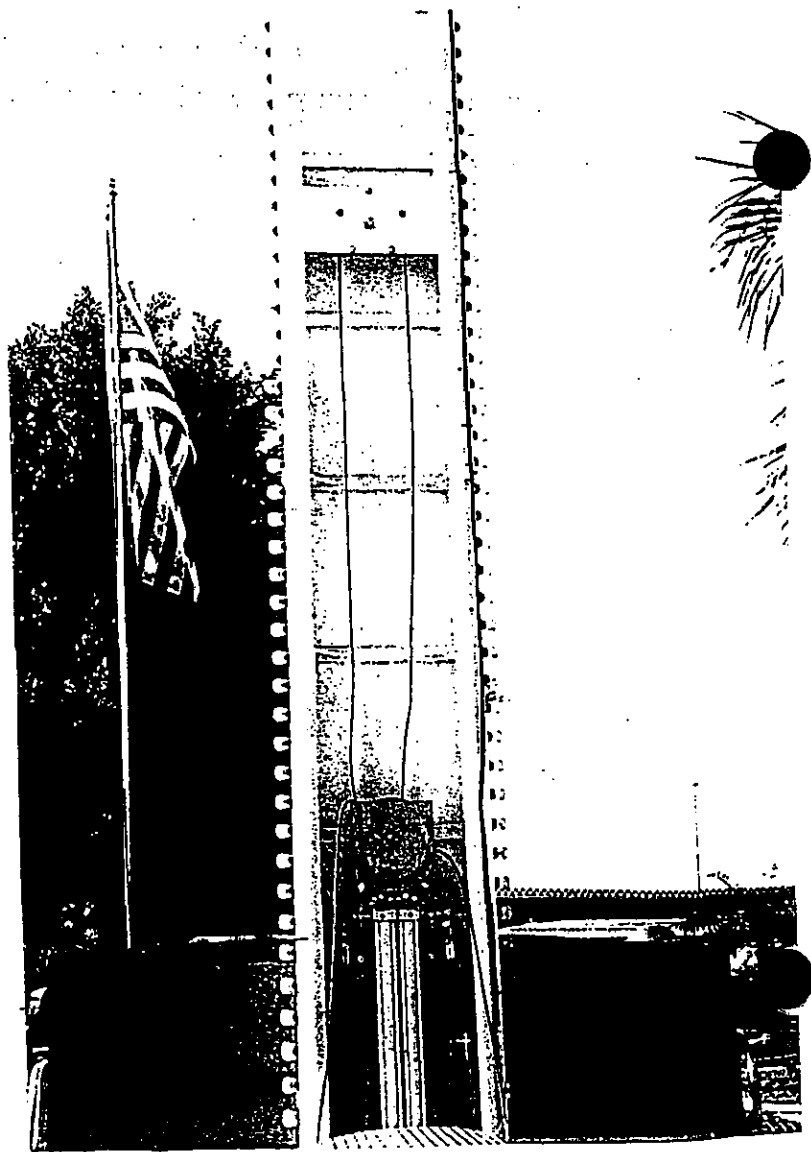
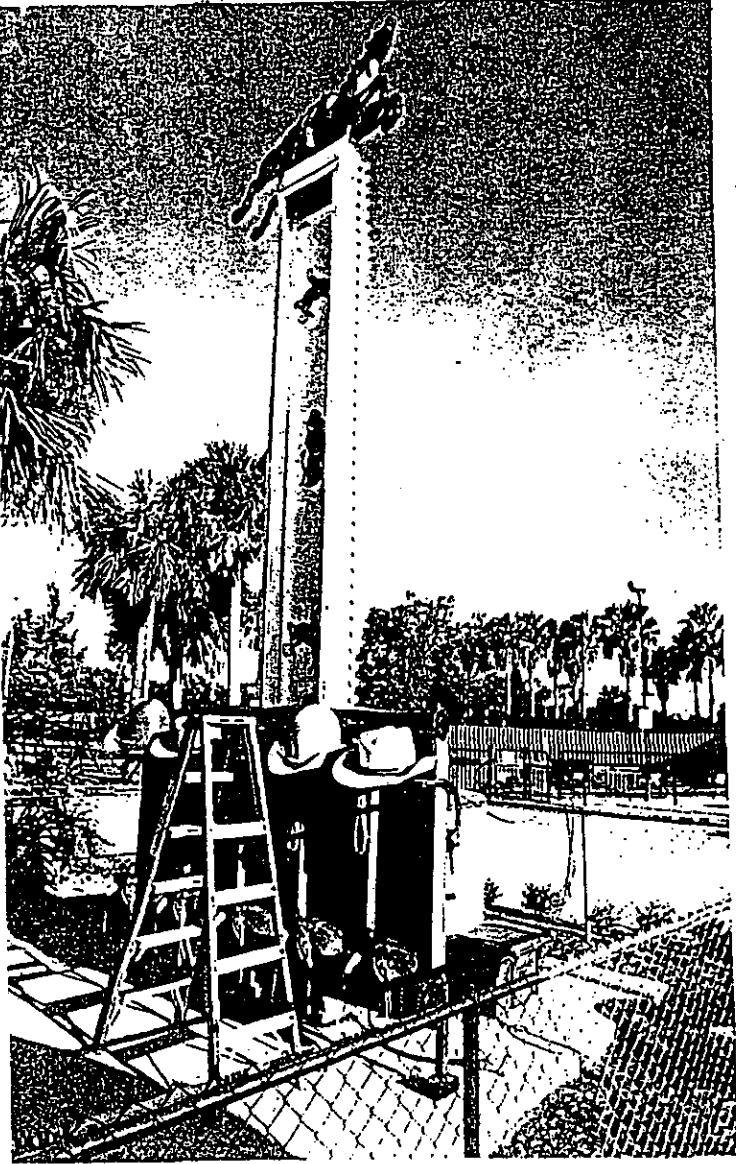
1. Inspect the structure for visual damage.
2. All bolts should be tight in place.
3. Check the cart wheels to make sure that:
  - (a) the wheels are free of flat spots, cracks, and chunks.
  - (b) The wheels are fastened properly.
  - (c) The wheels turn free and have no bearing noise while in operation.
4. There should be no visual corrosion to any fastener or weld. All surfaces should be finished for good appearance and to protect from rust/corrosion.

### 6.6: LOADING AREA/SYSTEM

1. Make sure deck and stairs are free of any "slip, trip, and fall" hazards such as debris, water, etc.
2. Make sure components of stairs are secure.
3. Make sure flooring is secure and does not present a hazard.
4. Make sure there are no sharp objects present.
5. Check all rails and gates for proper function.
6. Make sure all signs are present and legible.



Photos 2, 3, Ride Condition as found.

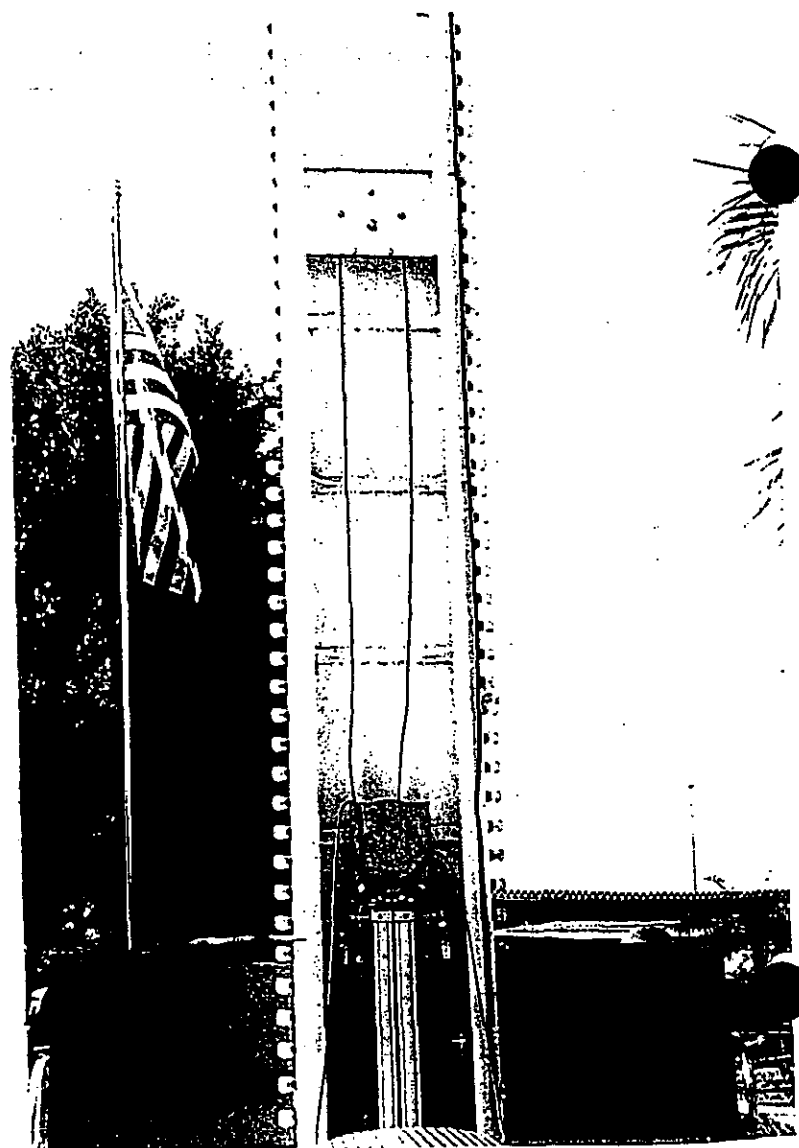
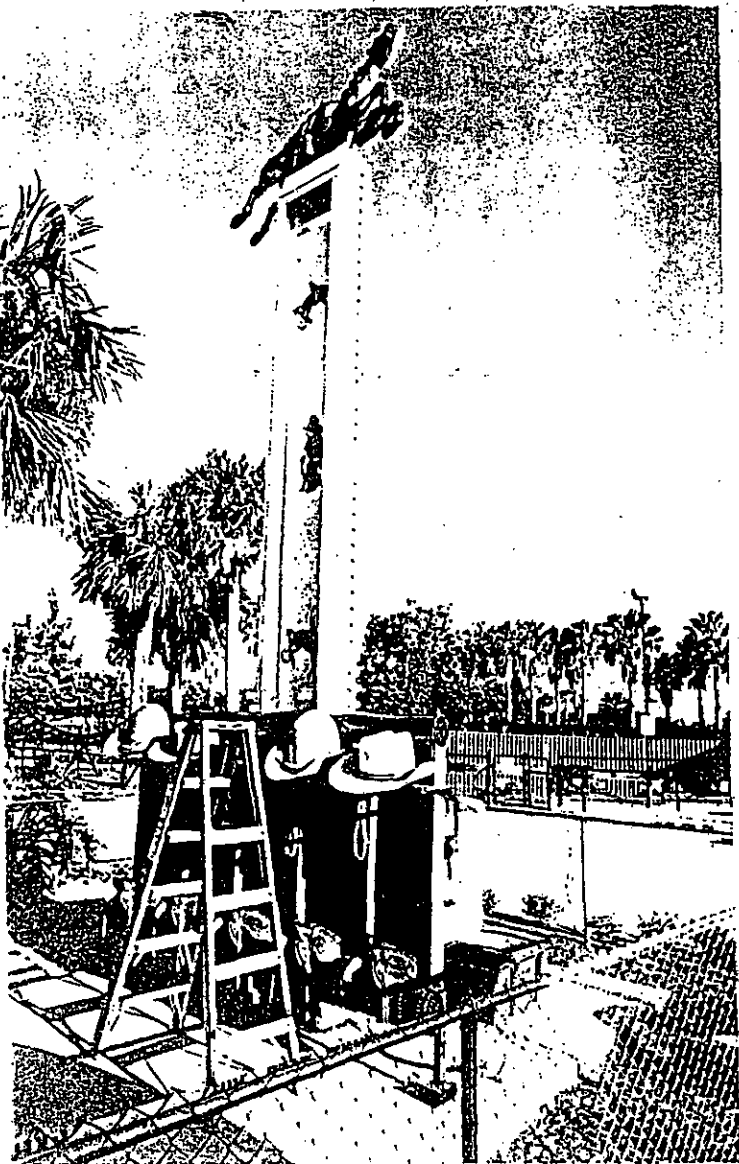


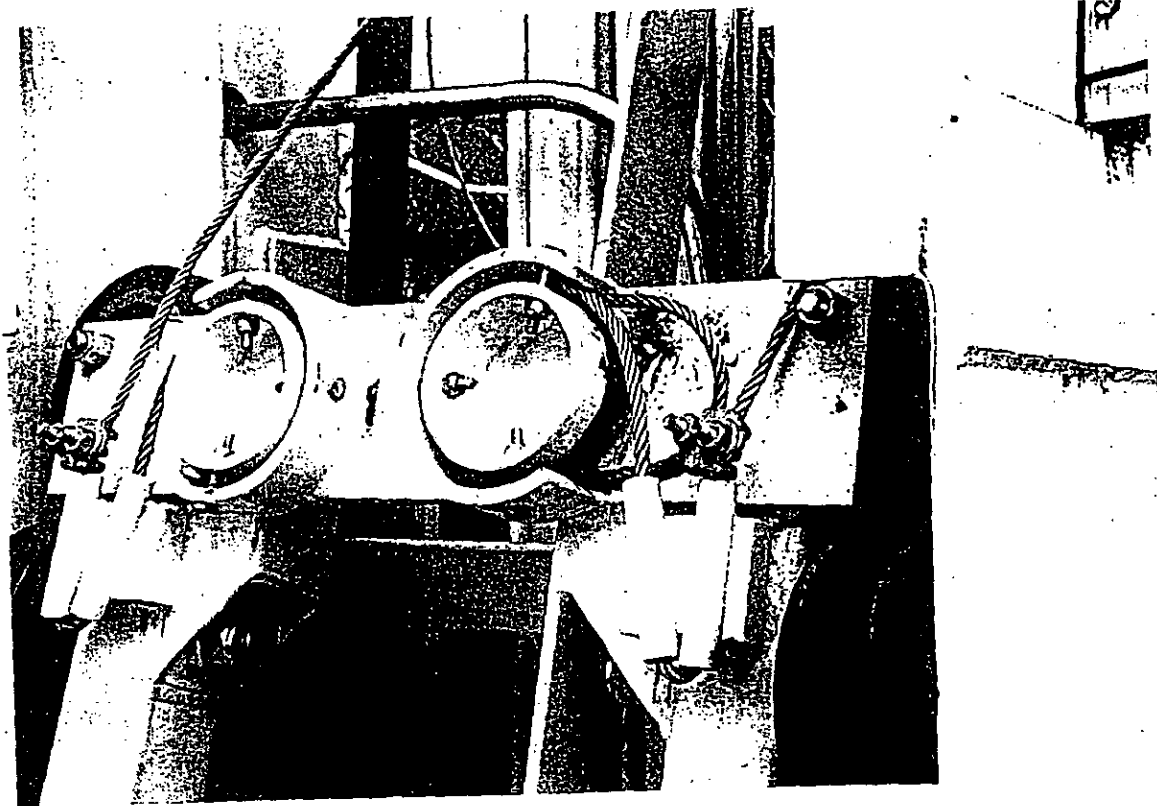
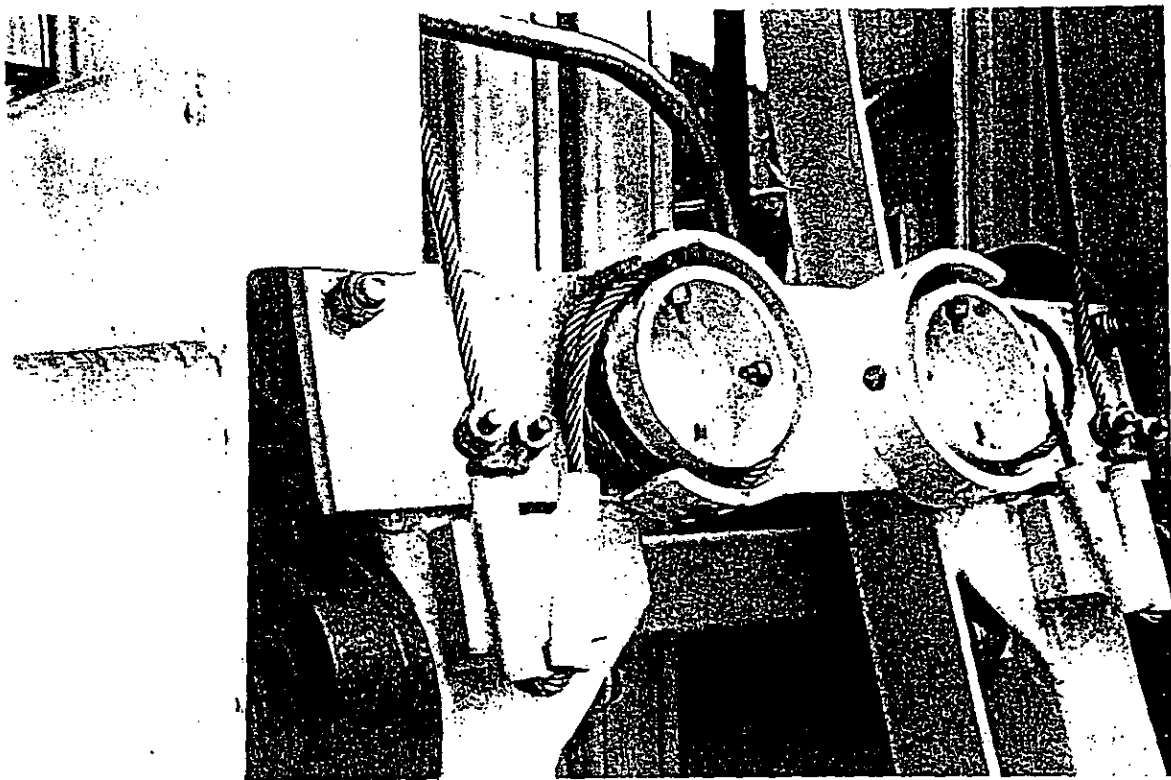
## Conclusions

Based on the information contained in this report and my experience and training as an engineer, my initial conclusions are as follows:

- The cause of the failure was overload of the ride.
- The probable cause of overload was excessive patron weight, possibly shortly before final failure. Further laboratory analysis may provide a more precise history.
- Had the ride been inspected on the day of the accident, the degraded condition of the wire rope along its length should have been apparent. If degradation was not apparent during the morning's inspection then high overload of the ride occurred on the date of the failure but prior to the actual failure.
- At the actual failure site more advanced degradation was possibly present due to a wearing action and higher shock loads from ride use.
- The area of the failure at the capstan is difficult to access for inspection and requires removing the ride car itself and removing the wire rope from the capstan.
- The ride does not have a load limit posted that is visible to the operator or patrons.
- The wire rope support system may be marginally designed especially with respect to foreseeable overweight conditions.
- Excessive patron weight and/or high usage rates are likely to induce additional failures.
- The Occupational Safety and Health Administration requires a minimum factor of safety of 10.7 for employee personnel hoists, where employees are supported by wire ropes. The subject accident ride's factors of safety are about at this level, but the rope diameter is only  $\frac{1}{4}$  inch, whereas OSHA requires  $\frac{1}{2}$  inch.

Photos 2, 3, Ride Condition as found.





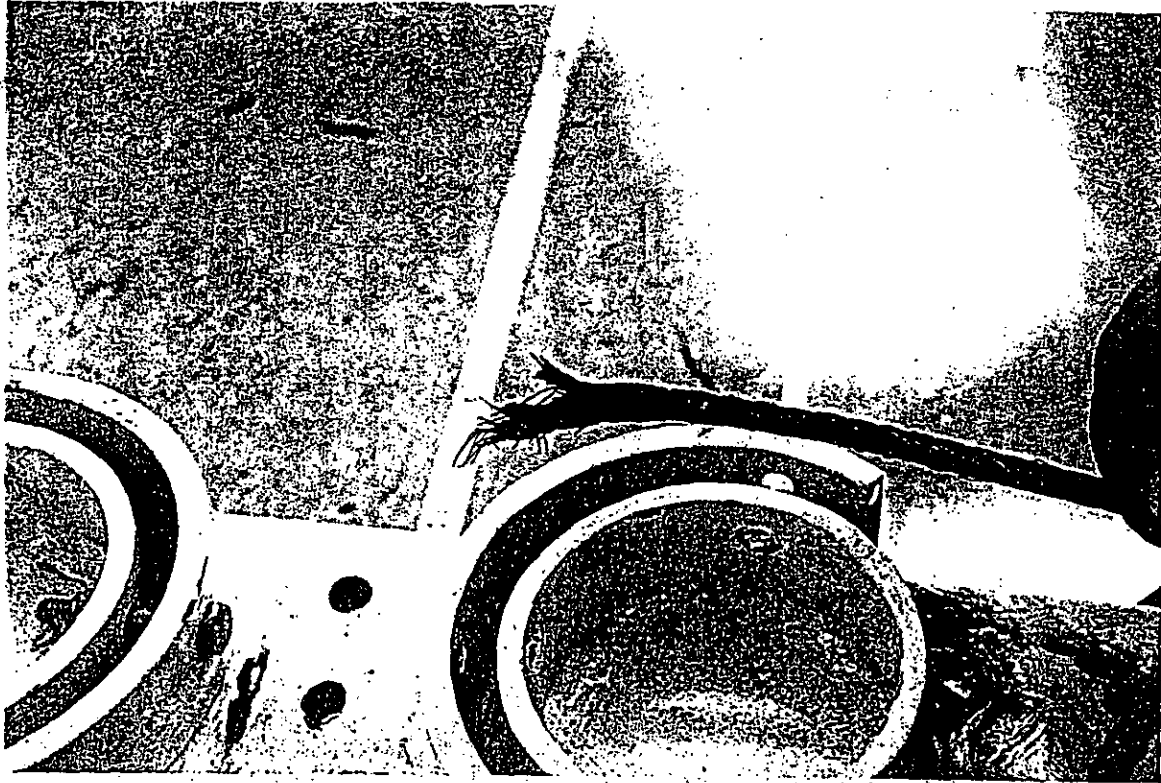




Photo 22: East cable fracture

