

## **MIFACE Investigative Report #02MI120**

### **Subject: Farmer Killed When His Tractor Leaves Public Road Shoulder and Overturns Into a Ditch**

#### **Summary**

On August 31, 2002, a 70-year old male part-time farmer was fatally injured when his 30 year old Farm-All 656 tractor equipped with a front-end loader rolled over on top of him while traveling on a public road. The tractor was not equipped with a roll-over protection structure (ROPS).



Figure 1 – Tractor overturn view from road

At approximately 6:00pm, he left his farm and drove the tractor on a paved, asphalt, 2-lane road with a narrow paved shoulder that went up a hill to help his neighbor. Hidden by grass/weed growth approximately 5-6 feet from the paved right shoulder of the road was a steep 3-foot ditch. He had traveled eastbound up the hill approximately 500 feet when he left the right shoulder and attempted to re-enter the roadway. He was unable to re-enter the roadway and the tractor wheels entered the ditch. The tractor flipped over, probably striking the victim as it overturned and pinning him under the tractor. A passing motorist saw the overturned tractor and called 911. Emergency response arrived and the victim was declared dead at the scene. Toxicology results indicated an elevated blood alcohol level of 0.29 grams of alcohol per 100 milliliters of blood and 0.16 grams of alcohol per 67 liters of urine.

#### **RECOMMENDATIONS**

- Tractors should be equipped with roll-over protection structure (ROPS) and seat belt; the local county extension agent, local equipment dealer or equipment manufacturer should be contacted to see if a retro-fit ROPS/seat belt system is available.
- Equipment operators should not consume alcohol before operating the equipment.

## INTRODUCTION

On August 31, 2002, a 70-year old male part-time farmer was fatally injured when his 30 or more year old Farm All 656 tractor equipped with a front-end loader rolled over on top of him. The tractor was not equipped with a roll-over protection structure (ROPS). MIFACE investigators became aware of this incident from a newspaper clipping. The victim's wife was contacted and she agreed to permit an investigation. On December 2, 2002, the MIFACE investigators met with the victim's wife and another individual who was a good friend of the victim. The MIFACE investigators obtained a copy of the death certificate, medical examiner's report and police report as part of this investigation. All photographs used in this report were taken by the responding police agency.

The victim had been farming for approximately 42 years. He grew corn and hay, harvesting approximately 37 acres. Hay was the primary source of sales for his farm. He had other employment as an appliance repairman.

## INVESTIGATION

On August 31, 2002, a 70-year old male part-time farmer was fatally injured when his tractor rolled over on top of him. The Farm-All 656 tractor, equipped with a front-end loader was built in the late 1960s-early 1970s. The victim purchased the used tractor at an auction sale. After purchasing the tractor, he had it repaired at a tractor dealership because it "wasn't working right".

On the day of the incident, the victim was raking his hay. The hay wasn't quite dry, so at approximately 6:00pm, he drove the tractor with the front-end loader attached to assist a neighbor relocate his hay bales to the barn before a predicted rain storm.

To get to the neighbor's barn, the victim traveled on a fairly heavily traveled, paved, asphalt, 2-lane road that went up a hill. The road had a narrow, paved shoulder. Hidden by grass/weed growth approximately 5-6 feet on the right shoulder was a steep 3-foot ditch. He had traveled eastbound up the hill approximately 500 feet when the tractor wheels left the right shoulder (See Figure 2). He attempted to re-enter the roadway but was unable to do so and entered the ditch. The tractor flipped over, probably striking the victim as it overturned (See Figure 3).

A passing motorist saw the overturned tractor and called 911. Emergency response arrived and the victim was declared dead at the scene.



Figure 2 – View from hill crest



Figure 3 – Shoulder/ditch overgrowth

The victim's wife sent the tractor to a qualified farm repair shop to get the tractor fixed after the overturn. The MIFACE investigator spoke with an individual involved in the tractor repair. The individual stated that all mechanical items, such as brakes, steering and the tractor's hydraulics were in proper working order. The individual indicated that the tractor first rolled onto the frame of the front-end loader, then landed on top of the hood fenders. The individual straightened the sheet metal and steering wheel to put the tractor back into service.

The autopsy report stated that the left kidney had a large cyst that had apparently ruptured and that there was bleeding and associated swelling in the fat surrounding the kidney. It is unknown when this cyst ruptured, but if it ruptured while he was driving, it may have been a factor in this incident.

Toxicology results indicated that the victim had consumed alcohol prior to driving the tractor to the neighbor's barn.

When MIFACE researchers visited the incident site and viewed the police photographs of the incident, several observations about the roadway were noted. See Figure 4.

- The gravel shoulder was narrow, which may have caused the victim to travel with half of the vehicle's tires on black top and the other half on a gravel surface. This could have reduced his ability to maneuver the tractor.
- The ditch edge was unable to be seen due to the overgrowth in the ditch and the extent of the shoulder mowing. The shoulder/ditch edge could be defined with appropriate mowing.
- The white edge or fog line that help travelers stay on the road at night was worn and faded, thus it may have been difficult for the victim to get a good visual orientation separating the road from the shoulder areas.
- There were no delineator posts/shoulder edge marking for the roadway. These devices could be used along the shoulder of the road to: mark hazards such as ditches, establish the maximum safe area that a vehicle could travel onto that shoulder, and, provide a line of visual perspective that shows where the shoulder ends and where the hazard, such as the ditch slope, begins.

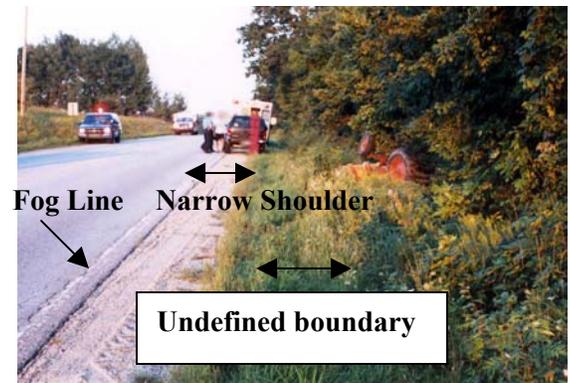


Figure 4

## Cause of Death

The cause of death as listed on the death certificate was severe head trauma secondary to tractor rollover. Toxicological testing at autopsy indicated he was legally drunk with a blood alcohol level of 0.29 grams of alcohol per 100 milliliters blood and 0.16 grams alcohol per 67 liters of urine.

## RECOMMENDATIONS/DISCUSSION

- Tractors should be equipped with roll-over protection structure (ROPS) and seat belt; the local county extension agent, local equipment dealer or equipment manufacturer should be contacted to see if a retro-fit ROPS/seat belt system is available.

Roll-over protection structures (ROPS) have been required by federal and state law for all tractors used in agricultural operations that were built after October 25, 1976. There are two basic types of ROPS for farm tractors: protective frames (two- or four- post structures attached to the tractor chassis) and protective enclosures (cabs or enclosures built around a protective frame).

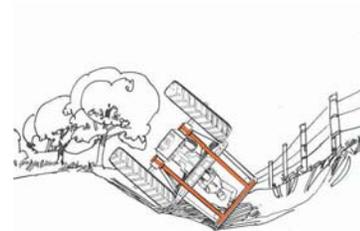


Figure 5 – Operator  
Zone of Protection

ROPS are designed to help limit a tractor overturn to 90 degrees and to provide the operator a “zone of protection” (See Figure 5). The operator must stay within this zone. The operator may not be protected by the ROPS during an overturn if the operator is not wearing a seatbelt; the operator may be totally or partially thrown off the tractor. The seatbelt keeps the operator within the "zone of protection" provided by the ROPS. Even inside a cab, seat belts are important to keep the operator from being thrown against the frame, through a window, or out a door.

Therefore, when an older tractor is retrofitted with a ROPS, attention must be paid for ensuring approved seat belts are also installed. In some cases, seat belts may be included with the ROPS package.

Seat belts should not be used on tractors that do not have ROPS.

Many older tractors can be retrofitted with a ROPS/seat belt system by a qualified dealer. An Internet resource to obtain approximate costs for retrofitting an older tractor with a ROPS/seat belt may be found from the Marshfield Clinic:

<http://www.marshfieldclinic.org/nfmc/cgi-bin/default.idc>

This information resource lists manufacturers, models, and approximate costs of obtaining retrofit ROPS for tractors. Another option for owners of older tractors to obtain information about ROPS retrofits is to contact their local extension office or tractor dealership. ROPS should be certified to meet the standards and regulations of various agencies that ensure that the frame or enclosure is designed to provide overturn protection- ROPS should not be manufactured in the farm machine shop. Tractor owners should check the manufacturer’s literature or look for a label on the frame or enclosure stating it meets roll-over protection standards.

The Farm All tractor could have had a retrofitted ROPS/seatbelt system installed for approximately \$600.00.

- Equipment operators should not consume alcohol before operating the equipment.

A person's coordination, reflexes, and judgment are affected by alcohol. Blood alcohol levels can be affected by age, gender, physical condition, amount of food consumed, number of drinks consumed and by other drugs or medication.

Blood alcohol concentration is defined in terms of the weight of alcohol in a volume of blood; usually grams of alcohol in 100 milliliters of blood. It is often reported as a percent. The victim's blood alcohol level was .29 grams alcohol in 100 milliliters blood, the equivalent of 0.29%.

The victim's blood alcohol level would suggest that his coordination, judgment and perception were severely impaired. This impairment can make the operation of equipment extremely hazardous to both the operator as well as bystanders. Therefore, equipment operators should not use alcohol or other drugs (including many over-the-counter medications) that could affect their ability to safely operate the equipment.

## **REFERENCES**

Farm and Ranch Safety Management John Deere and Company, Fourth Edition

MIOSHA, Part 51 Agricultural Tractors, Adoption of Federal Standards. OSHA Safety and Health Standards for Agriculture, 1928.51, Roll-over protective Structures (ROPS) for tractors used in agricultural operations

US Department of Transportation, National Highway Traffic Safety Administration, Computing a BAC Estimate. [www.nhtsa.dot.gov/people/injury/alcohol/bacreport.html](http://www.nhtsa.dot.gov/people/injury/alcohol/bacreport.html)

A Guide to Agricultural Tractor Rollover Protective Structures, A Publication of the National Farm Medicine Center, Marshfield, Wisconsin.  
<http://www.marshfieldclinic.org/nfmc/cgi-bin/default.idc>

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4/21/03

# MIFACE Investigation Report Evaluation

## # 02 MI 120

To improve the quality of the MIFACE program and our investigation reports, we would like to ask you a few questions regarding this report.

Please rate the following on a scale of:

Excellent	Good	Fair	Poor
1	2	3	4

**What was your general impression of this MIFACE investigation report?**

1    2    3    4

**Was the report...**

Objective?	1	2	3	4
Clearly written?	1	2	3	4
Useful?	1	2	3	4

**Were the recommendations ...**

Clearly written?	1	2	3	4
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Useful?	1	2	3	4

**How will you use this report? (Check all that apply)**

- Distribute to employees/family members
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- Will not use it
- Does not apply to my operation
  
- Other (specify) \_\_\_\_\_

**Thank You!**

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