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## Report of the Week

The airbag deployed when?  
08/12/2010

**Report Number:** 10-0000990

Report Date: 07/20/2010 08:58

### Synopsis

Airbag deploys during flash flood.

### Demographics

Department type: Combination, Mostly paid

Job or rank: Captain

Department shift: Other: 24on 24off 24on 24off 24on 96off

Age: 34 - 42

Years of fire service experience: 14 - 16

Region: FEMA Region II

Service Area: Suburban

### Event Information

Event type: Non-fire emergency event: auto extrication, technical rescue, emergency medical call, service calls, etc

Event date and time: 07/14/2010 15:00

Hours into the shift:

Event participation: Involved in the event

Weather at time of event: Cloudy and Rain

Do you think this will happen again?

What were the contributing factors?

- Other

What do you believe is the loss potential?

- Minor injury

### Event Description

While responding to several rescues involving occupants trapped in vehicles during a flash flood, we utilized several different tactics to remove the occupants from harm. On this particular event, we found an occupant stuck in her vehicle in knee deep water. Due to the weather and the debris on the street under the water, we determined the best way to remove the occupant from the hazard was to have her place her vehicle in neutral and push the car approximately twenty feet in reverse to higher, dry ground. Three firefighters took a position on the hood and I took a position to lean down and push on the driver's side "B" post. There was no impact to the vehicle, it was just stalled and stuck in the water. We began to push the vehicle in reverse and, instantly, the steering wheel air bag deployed. I immediately received hearing loss in my left ear from the detonation blast that triggers the air bag and it stunned me. I was taken to the ER for evaluation and followed up with a specialist to determine if there was permanent hearing damage. It was found that the damage was only going to be temporary and would only last a couple of weeks. The specialist advised that this could very well have caused permanent damage. The occupant, fortunately, was not injured in this event.

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## Lessons Learned

After the incident, we did extensive research and found that the Air Bag Control Unit (ABCU), which reads the sensors and triggers the air bags, is commonly located under the floor mats or driver's seat. This puts it in a low lying place and is subject to water damage. Water damage has been known to trigger air bag deployment. This can happen instantaneously or even days or weeks after the initial water damage. There are documented cases where air bags have deployed after vehicles were subjected to flooding. There are no cases where a firefighter has been injured in these circumstances that I could determine. Air bag deployment can result in noise levels of 165 to 175dB and they deploy at 3,000 to 4,000 lbs per square inch. This can cause severe hearing damage if your head is near the air bag and, if impacted, can cause severe injury or death. Manufacturers recommend that if a vehicle is involved in a flood, immediately disconnect the battery and have it towed. We are changing our SOG's to reflect this and to protect the occupants by immediately removing them from the vehicle.

## Discussion Questions

A vehicle with un-deployed airbags must be treated with caution and requires precise technical knowledge to ensure the safety of patients and responders. Though similar in function, Supplemental Restraint Systems can vary greatly between vehicle manufacturers, vehicle types, production year models, and available options. To complicate the situation even further, there are pyrotechnic seatbelt pre-tensioners and back-up power supplies that must be dealt with. As emergency responders, in order to protect ourselves and our co-workers, we must constantly educate ourselves to stay current with these safety systems.

Report [10-990](#) is particularly noteworthy as there was no impact involved with the deployment of the airbag. Once you have read the entire account of [10-990](#) and the related reports, consider the following:

1. In addition to water, what other factors can trigger an airbag to deploy?
2. What are some indicators that a vehicle is equipped with an airbag system? (Hint: SIR, SRS, SIPS)
3. Are the personnel in your organization familiar with the 5-10-20 Rule?
4. Why should an extrication tool or other equipment never be placed between an un-deployed airbag and person?
5. If you have had an incident involving an accidental airbag deployment, have you notified the National Highway Traffic Safety Administration? (see link)

[Public Safety Community Letter](#)

## Related Reports

[05-185](#)   [07-1128](#)   [09-650](#)   [10-316](#)   [10-333](#)

Note: The questions posed by the reviewers are designed to generate discussion and thought in the name of promoting firefighter safety. They are not intended to pass judgment on the actions and performance of individuals in the reports.

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