Human Factors Summary
Tennessee 2015 boating season

An analysis of 15 **fatal** boating incidents from January 1 through September 30, 2015 was conducted using the Human Performance Factors Supplement Form that was developed by a charge team of the NASBLA Engineering, Reporting & Analysis Committee (ERAC) and incorporated into "Human Performance Investigation in Recreational Boating Accidents: Best Practices for Gathering and Examining Human Factors Data (October 2014)."

The zip file labeled **Human Factors_TN_2015**.zip contains the following for each of the incidents: a Human Factors narrative, a copy of the Tennessee Boating Accident Report Form, and a copy of the Human Performance Factors Supplement.

INCIDENT TYPE SUMMARY:

Type	**Number of incidents**	
Voluntarily left vessel	4	
Fall Overboard	4	(1 was paddle craft)
Capsizing	3	(2 were paddle craft)
Collision	2	
Towed water sport	1	
Grounding	1	

Alcohol/Drug use

Number of incidents where Drugs/Alcohol was used by the victim or operator: **10** (66%)

Life jacket use

Number of incidents where cause of death was drowning and no life jacket was worn: **10** (66%)

Boater Education

Number of incidents where formal education was not present or was unknown: **15** (100%)

Operator experience

Number of incidents where the vessel was borrowed or rented, or the operator had minimal experience: **7** (46%)

ANALYSIS

A number of factors limited the recording of data outside the normal BAR form for human performance factors (HPF). The limitations of the current HPF form are as follows:

1. The form seems to be designed primarily for **motorboats**. There were three (3) fatal incidents involving non motorized craft this year and involved a fall overboard or a capsizing. The primary causes in these were inexperience, hazardous water (Mississippi river in February), and failure to wear a life jacket. This information is captured in the current BAR form.

2. The form seems to be designed for **collision** type incidents where an operator may have failed to take appropriate action to avoid the collision. Only **three (3)** of the 15 incidents would be in this category. Two of these have alcohol/drugs as a primary contributing factor and are in the process of criminal prosecution. Because of this the operators are reluctant to give detailed statements about their actions. One involved a single operator who died as a result of a grounding and ejection. There were no witnesses, but low water levels and apparent lack of lookout contributed to the incident. The operator cannot be interviewed about any possible distractions.

3. The form is designed to capture data from a **single** vessel. In the event of a two boat collision there is no way to record information from both operators.

4. The form is designed to capture performance factors from a boat **operator**. Six (6) of the 15 incidents (40%) involved a fall overboard, voluntary swim, or fall from a watersport device from a **passenger** who died. The operator did not contribute to the incident.

5. Lack of formal boater education continues to be identified in most incidents. There was no education or it was unknown in 15 out of the 15 incidents (100%). It is difficult to determine if this is a contributing factor. Some operators or victims know safe practices but choose to disregard them.

6. Inexperienced operators and borrowed/rented vessel operators continue to be a focus of investigations. Lack of experience in boating or unfamiliarity with a particular vessel increases the risk of being involved in a boating incident. Seven (7) of the 15 incidents (46%) fell into this category.

RECOMMENDATIONS FOR FUTURE USE OF THE SUPPLEMENT FORM:

1. Consider converting the form to a fillable PDF for legibility and electronic sharing.

2. Consider that the operator may not have contributed to the incident. Provide a way to capture HPF for those cases where occupant behavior was a cause of the incident, **or** develop guidelines for using the form only during investigations in which the operator contributed to the incident.

3. Update the form to capture data from two vessels **or** indicate the form is for one vessel only and provide a way to designate each vessel.

4. Provide more clear guidance on when the form should be used. It seems that the form is designed to record information about operators of motorboats that are involved in a collision or grounding. It is aimed at determining errors in judgment or perception, or some type of distraction by the operator while the vessel is underway. **Only three (3) out of 15** fatal incidents would fall into this category for Tennessee in 2015.

5. On page 3 of the form, rename the space at the bottom of the page **Narrative**. This will allow for a summary of the case and the human factor analysis.

CONCLUSION:

No additional human performance factors were identified in any of the 15 fatal boating incidents in 2015 that are not already captured in the current BAR. The number of incidents where alcohol/drugs were used **or** a lifejacket could have prevented a drowning was **14** out of the 15 incidents analyzed (93%). The remaining incident was caused primarily by hazardous waters near a dam where the victim drowned while wearing a life jacket. These contributing factors are captured by our current BAR form and investigation guidelines.

Tennessee has aggressive life jacket wear and alcohol awareness/BUI campaigns in place to address the primary factors in boating related deaths.

There is a statutorily mandated boater education requirement in Tennessee for **operators** born after 1/1/1989. We have the infrastructure and enforcement in place to carry out this campaign.

Currently, renters of vessels are exempt from the mandatory education requirement. Also, Tennessee does not have a statewide on-the-water training course where boaters can gain experience before operating on their own. These two components of the boating safety program should be pursued in the future.