

Presentation of 1975 and 1977 Reported Boating  
Fatalities Preventable By a "Kill Switch"

MARCH 1979

1. **BACKGROUND:** The question of kill switches, dead man throttles, and other means of stopping runaway boats was raised as a National Boating Safety Advisory Council (NBSAC) member item in early 1976. In 1975, the Coast Guard's Marine Safety Technology Division of the Office of Research and Development estimated that 18 fatalities on jonboats and 99 fatalities on other types of boats could be prevented by such means, using sampling theory and engineering judgment. A more detailed and rigorous look at this problem was requested by the Boating Technical Division of the Office of Boating Safety and the required analysis was completed by the Office's Policy Planning and Information Analysis Staff. This presentation will highlight the results of this analysis which is based on 1975 and 1977 fatal accidents reported to the Coast Guard.

2. **OBJECTIVE:** To determine the magnitude of the number of reported boating fatalities for the years 1975 and 1977 involving runaway boats where the operator was incapacitated, fell or was thrown from the boat.

3. **METHODOLOGY:** A computer scan of the fatal boating accident master file in Coast Guard Headquarters was performed. This scan was made to include all fatal accidents involving motorboats in the following accident types: falls overboard, struck by boat or propeller, other and unknown. Also, all fatal accidents involving motorboats with no uninjured operator in the boat were included and those having the following accident descriptors:

- Exhaustion, lack of swimming ability;
- Runaway boat;
- Boat found upright, drifting;
- Standing in boat, starting engine; and
- Start in gear.

For the years 1975 and 1977 combined, there were a total of 2,224 fatal boating accidents reported to the Coast Guard. The computer scan produced 1,211 fatal accidents or 52% and 57% of the totals for 1975 and 1977, respectively. These numbers indicate that the computer scanning process was comprehensive enough to identify even those accidents with little detail. The 1,211 fatal accidents produced by the scan were then processed through the decision tree shown on page 2. It is important to note that the decision tree does not consider the swimming ability of the fatality victim. Of the 1,211 fatal accidents that entered the decision tree, 180 were collected from the "accept" nodes. Of these 180, thirty (30) were clearly preventable by a recent equipment development which prevents starting in gear. The potential saves related to kill switches were thereby reduced to 150. The fatality victims in these 150 accidents then had to be sorted according to swimming ability. Due to the time and distance needed to stop a boat, only swimmers could be accepted as potential saves.\* The sort by swimming ability produced 25

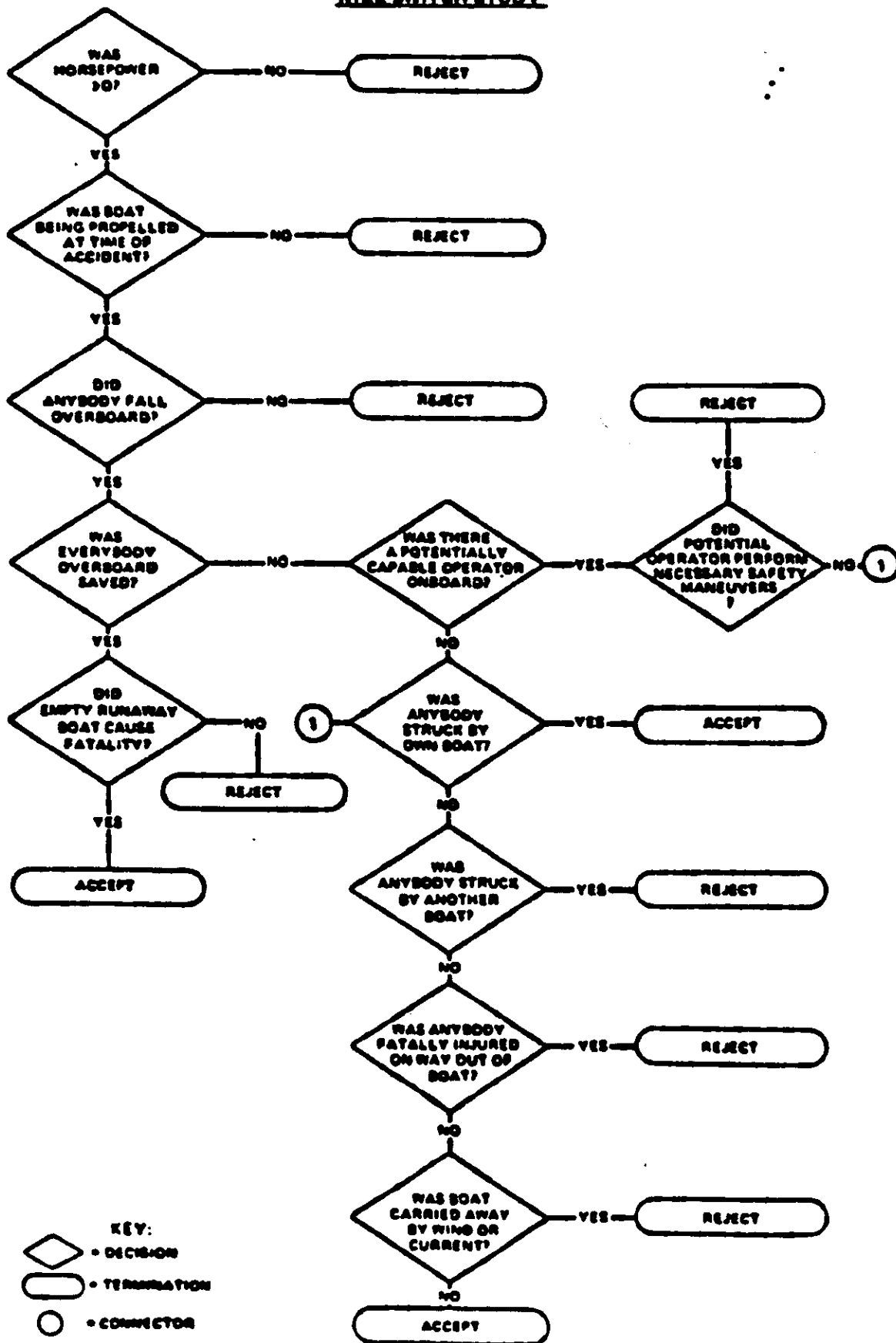
\* - One might ask if the use of PFDs has any effect on these types of accidents. The generally low wear rate of PFDs, together with the fact that all the drownings accepted by the decision tree did not involve PFD wear, permits the assumption that PFDs had little or no effect on the final accidents selected.

**Subj: Kill Switch Study**

fatality victims of unknown swimming ability. These were distributed into swimmers and non-swimmers, by assuming that 30% of these victims could actually swim well enough to recover from the type of accident being examined. The 30% figure is based on the combined judgment of several people and groups involved in water safety programs.\* The final count of potential saves is 95 fatal victims (55 in 1975 & 40 in 1977). This total includes known swimmers and 30% of the victims of unknown swimming ability. This is the basis for generating the benefit analysis.

\* - The number of fatal victims of unknown swimming ability was small enough that a more liberal distribution of 50% of these as swimmers does not significantly affect the benefit analysis. This is illustrated on page 14 of this study.

**ACCIDENT SCREENING PROCESS  
FOR  
KILL SWITCH STUDY**



**KEY:**  
 ◊ = DECISION  
 ▭ = TERMINATION  
 ○ = CONNECTOR

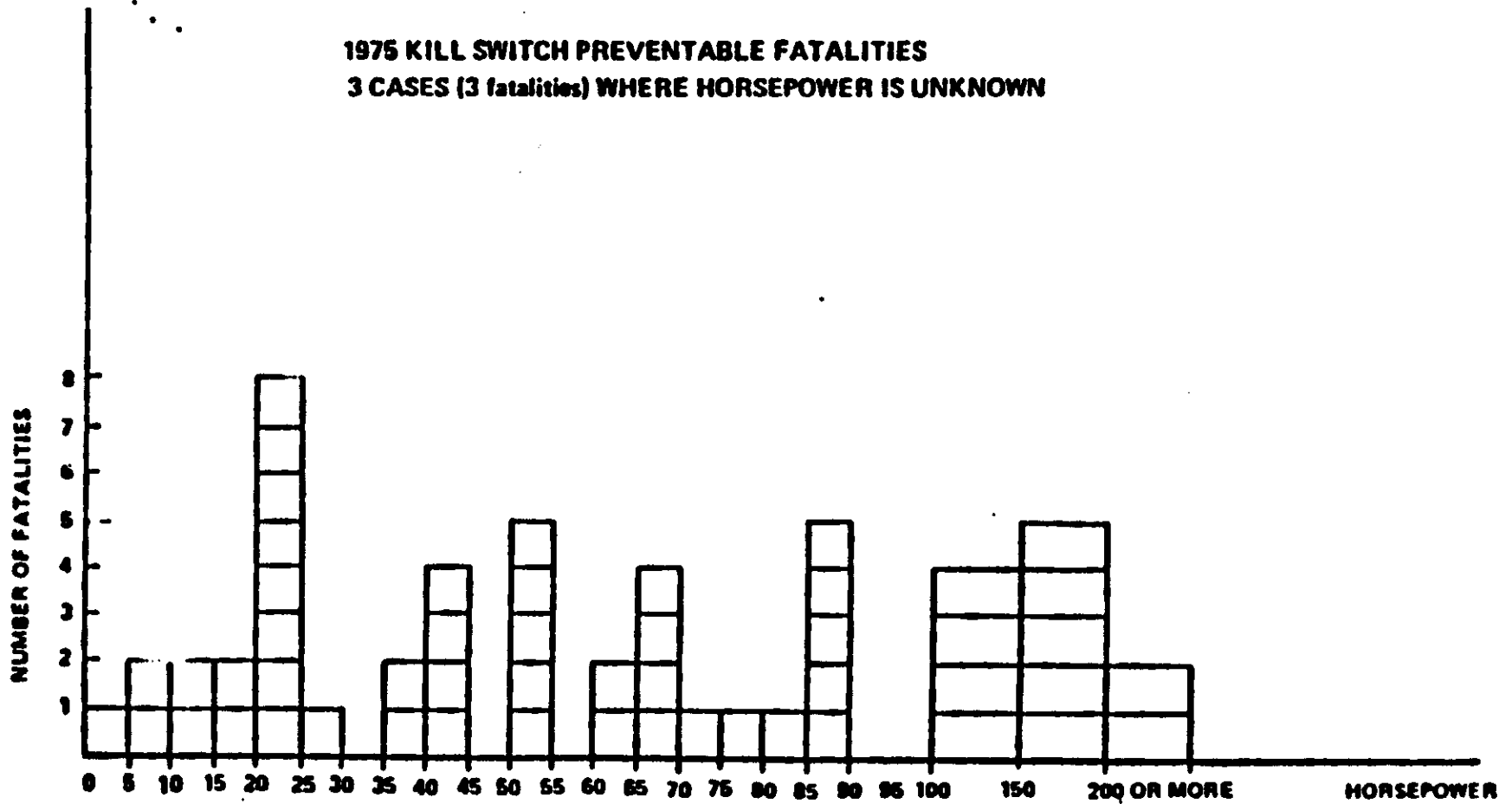
TABLE I: 1975 Reportable Fatal Accidents Preventable by a "Kill Switch"

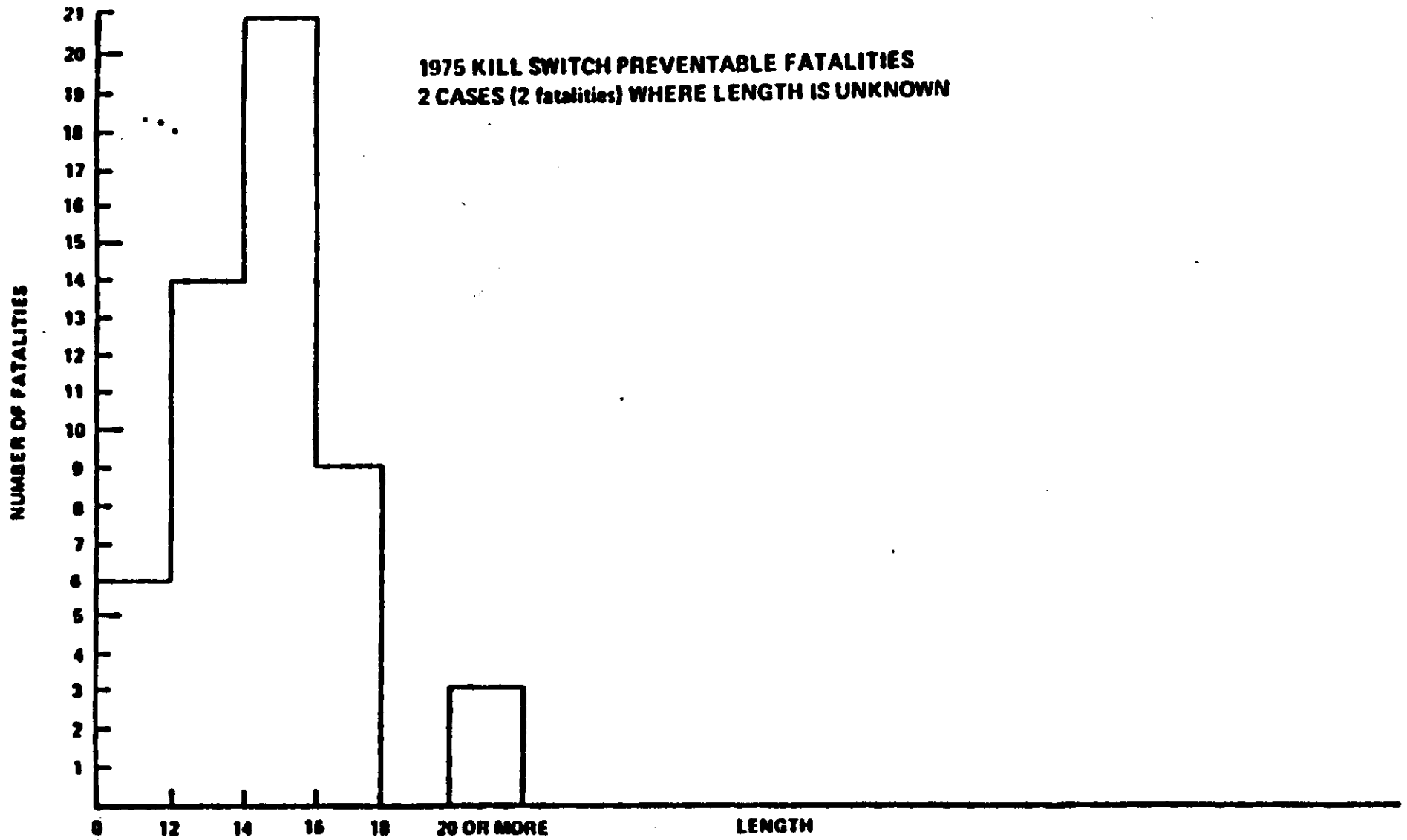
No. of deaths	Case No.	State	Type of Propulsion	Boat Length	Horsepower
1	01007	AL	Out	14'	18
1	01068	AL	Out	14'	20
1	02039	AK	Out	23'	50
1	04001	AR	Out	17'	70
1	04017	AR	Out	14'	20
1	04021	AR	Out	14'	25
1	04030	AR	Out	18'	65
1	04034	AR	Out	15'	40
1	05136	CA	Out	11'	5
1	05557	CA	In/Gas	16'	165
2	05694	CA	In/Gas	27'	650
1*	13572	FL	Out	14'	60
1	13383	FL	Out	16'	40
1	14026	GA	Out	UNK	UNK
1	14024	GA	Out	12'	20
1	17026	IL	Out	16'	35
1	21058	KY	Out	12'	10
1	22009	LA	Out	16'	65
1	22008	LA	Out	14'	10
1	22011	LA	Out	14'	20
2	22203	LA	Out	16'	150
1	22209	LA	Out	16'	85
1	22048	LA	Out	16'	85
1	22007	LA	Out	16'	50
1	22210	LA	Out	15'	65
1	22186	LA	Out	16'	40
1	26027	MA	Out	16'	40
1	26036	MA	Out	16'	100
1	27406	MI	Out	18'	85
1	27186	MI	In/Out	17'	175
1	31008	MO	Out	14'	20
1	31208	MO	Out	17'	85
1	35997	NH	Out	18'	UNK
2*	38000	NH	Out	16'	105
1	36180	NJ	Out	18'	50
1	41011	NC	Out	12'	3
1	41027	NC	Out	14'	20
1	41184	NC	Out	18'	150
1	39223	NY	Out	14'	35
1	44996	OR	Out	14'	50
1	63012	PR	Out	13'	15
1	48087	SC	Out	15'	60
1	48095	SC	Out	12'	20
1	48112	SC	Out	13'	20

No. of deaths	Case No.	State	Type of Propulsion	Boat Length	Horsepower
1	50085	TN	Out	14'	50
1	51055	TX	Out	16'	85
1	51065	TX	Out	UNK	UNK
1	51134	TX	Out	16'	105
1	51399	TX	Out	15'	65
1	51343	TX	Out	12'	9
1	51345	TX	Out	15'	80
1	55053	VA	Out	18'	75
<b>SUM</b>	<b>55</b>				

\*More victims died in these accidents but the number given is only those who had known swimming ability

**1975 KILL SWITCH PREVENTABLE FATALITIES**  
**3 CASES (3 fatalities) WHERE HORSEPOWER IS UNKNOWN**





**TABLE IV: Fatalities by Horsepower- All Boats\***

<u>Year/Horsepower</u>	<u>less than 25</u>	<u>25-74</u>	<u>75 or more</u>	<u>Total</u>
1975	15 (29%)	19 (36.5%)	18 (34.5%)	52 (100.0%)
1977	12 (32.5%)	12 (32.5%)	13 (35%)	37 (100.0%)

**TABLE V: Fatalities by Horsepower - Outboard Boats\***

<u>Year/Horsepower</u>	<u>less than 25</u>	<u>25-74</u>	<u>75 or more</u>	<u>Total</u>
1975	15 (31.3%)	19 (39.6%)	14 (29.1%)	48 (100.0%)
1977	12 (37.5%)	12 (37.5%)	8 (25%)	32 (100.0%)

**TABLE VI: Percent of fatalities by horsepower category by year\***

<u>Powering Category</u>	<u>1975</u>	<u>1977</u>
100 or more horsepower	21%	29%
75 or more horsepower	35%	35%
50 or more horsepower	58%	57%
25 or more horsepower	71%	68%

\* Excluding boats of unknown horsepower from Tables I and II.