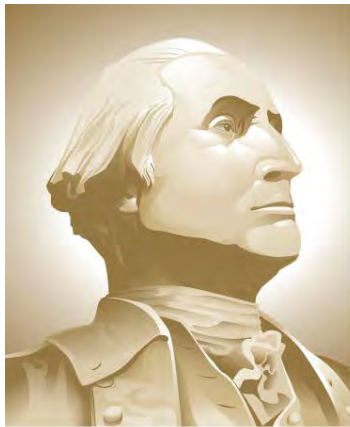


# VTRA 2010 POTENTIAL GROUNDING FREQUENCY BY ALL FV, CARGO – FV and TANK- FV

Presentation by: J. Rene van Dorp



THE GEORGE  
WASHINGTON  
UNIVERSITY

WASHINGTON, DC

VCU

## 2010 BASE CASE

**GWU Personnel:** Dr. J. Rene van Dorp

**VCU Personnel:** Dr. Jason R. W. Merrick

## AUGUST 20, 2013

PRELIMINARY

# Table. Focus Vessel (FV) Classification for the 26 VTOSS vessel type classification used in the GW/VCU MTS simulation model.

**NON – FV** : Those vessels that are only considered as Interacting Vessels (IV) with Focus Vessels (FV) in this study

**CARGO – FV** : Bulk Carriers, Container Vessels, Other Cargo Vessels

**TANK – FV** : Oil Barge, Oil Tankers, Chem-Carrier, ATB

**Note:** Focus Vessels (FV's) are also considered as Interacting Vessels (IV's) when interacting with another Focus Vessel.

#	VESSEL TYPE	FOCUS VESSEL?	#	VESSEL TYPE	FOCUS VESSEL?
1	BULKCARRIER	<b>CARGO - FV</b>	14	PASSENGERSHIP	NO
2	CHEMICALCARRIER	<b>TANK - FV</b>	15	REFRIGERATEDCARGO	<b>CARGO-FV</b>
3	CONTAINERSHIP	<b>CARGO - FV</b>	16	RESEARCHSHIP	NO
4	DECKSHIPCARGO	<b>CARGO - FV</b>	17	ROROCARGOSHIP	<b>CARGO-FV</b>
5	FERRY	NO	18	ROROCARGOCONTSHIP	<b>CARGO-FV</b>
6	FERRYNONLOCAL	NO	19	SUPPLYOFFSHORE	NO
7	FISHINGFACTORY	NO	20	TUGTOWBARGE	NO
8	FISHINGVESSEL	NO	21	UNKNOWN	NO
9	LIQGASCARRIER	<b>TANK - FV</b>	22	USCOASTGUARD	NO
10	NAVYVESSEL	NO	23	VEHICLECARRIER	<b>CARGO-FV</b>
11	OILTANKER	<b>TANK - FV</b>	24	YACHT	NO
12	OTHERSPECIALCARGO	<b>CARGO - FV</b>	25	ATB	<b>TANK - FV</b>
13	OTHERSPECIFICSERV	NO	26	OIL BARGE	<b>TANK - FV</b>

# IMPORTANT:

THE OPERATIVE WORD IN PRESENTING THESE ANALYSIS RESULTS IS THE USE OF THE WORD

# POTENTIAL

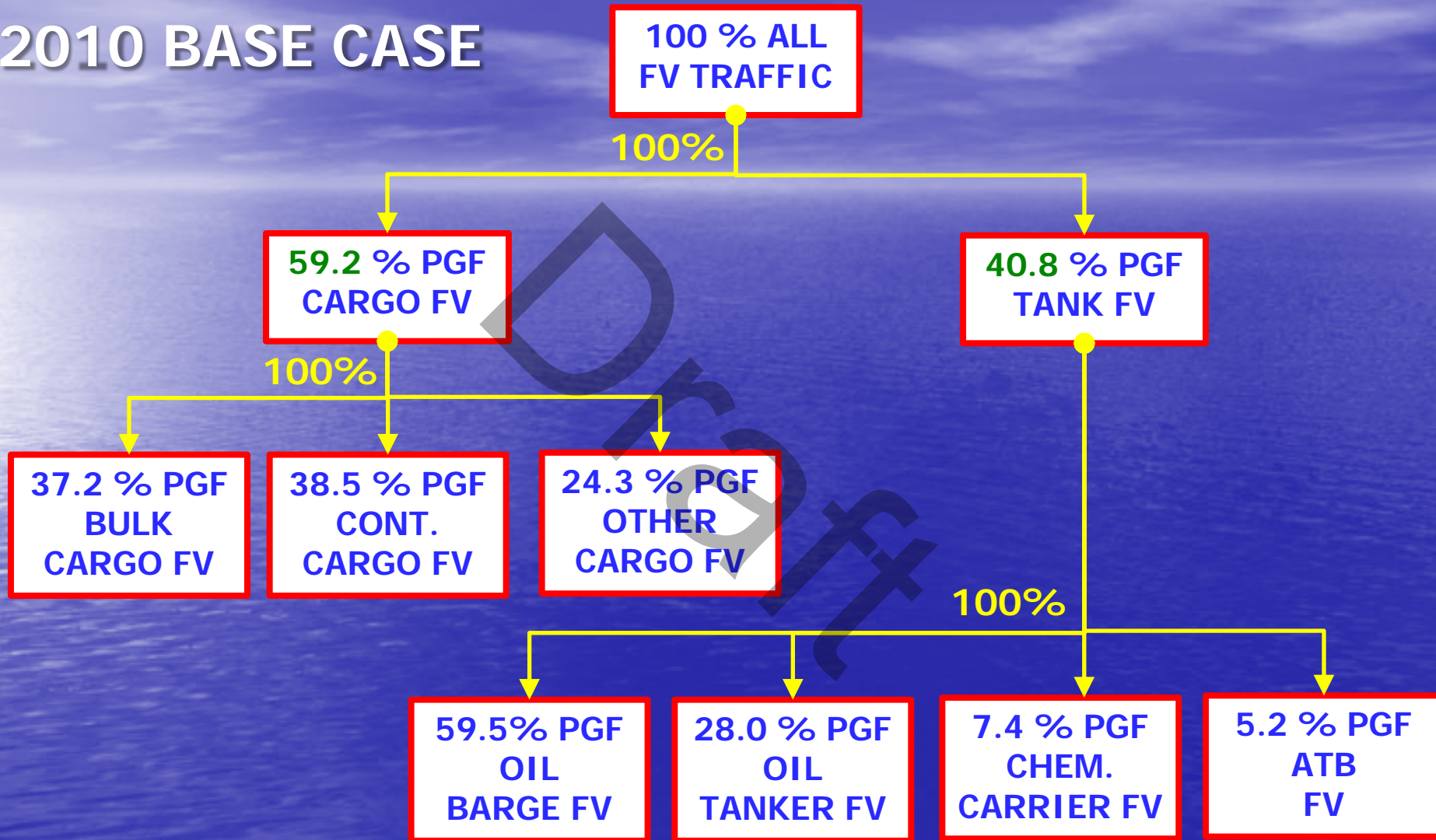
TO INDICATE THAT THESE ANALYSIS RESULTS DO NOT FOLLOW FROM AN HISTORICAL DATA ANALYSIS, BUT THROUGH THE USE OF AN ANALYSIS TOOL THAT EVALUATES SUCH **POTENTIAL**.

THE 2010 YEAR IS CONSIDERED **THE BASE CASE YEAR** AND A BASE CASE YEAR POTENTIAL IS EVALUATED.

NEXT, **WHAT-IF SCENARIOS** ARE DEVELOPED FROM THE BASE CASE BY ADDING ADDITIONAL HYPOTHETICAL TRAFFIC AND A WHAT-IF POTENTIAL IS EVALUATED AND COMPARED **RELATIVE TO THE BASE CASE** TO INFORM **RISK MANAGEMENT**.

# A TAXONOMY OF 2010 FOCUS VESSEL POTENTIAL ANNUAL GROUNDING FREQUENCY

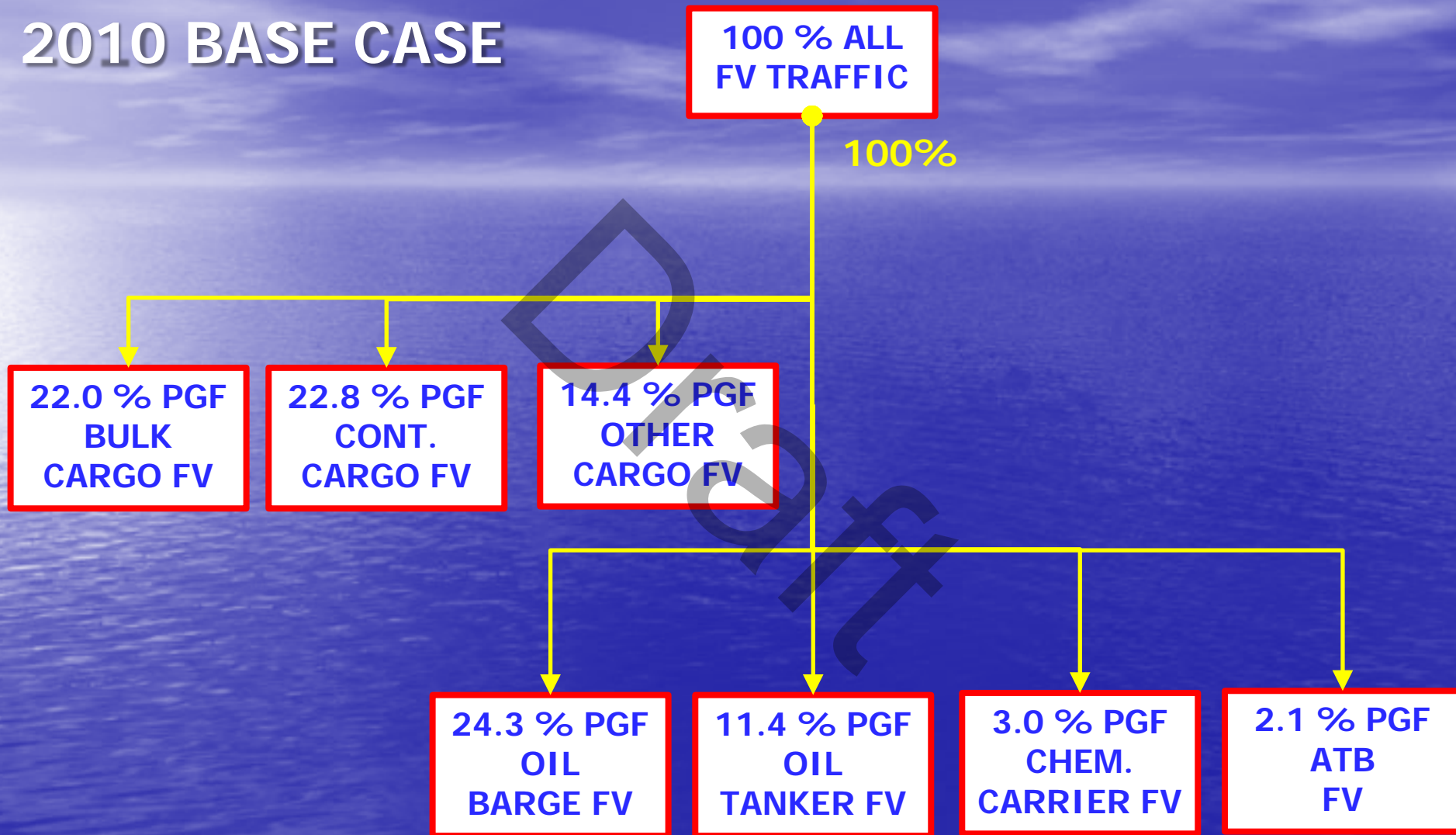
## 2010 BASE CASE



**PGF : POTENTIAL GROUNDING FREQUENCY - PER YEAR**  
INCLUDES POWERED, DRIFT GROUNDINGS AND ALLISIONS

# A TAXONOMY OF 2010 FOCUS VESSEL POTENTIAL ANNUAL GROUNDING FREQUENCY

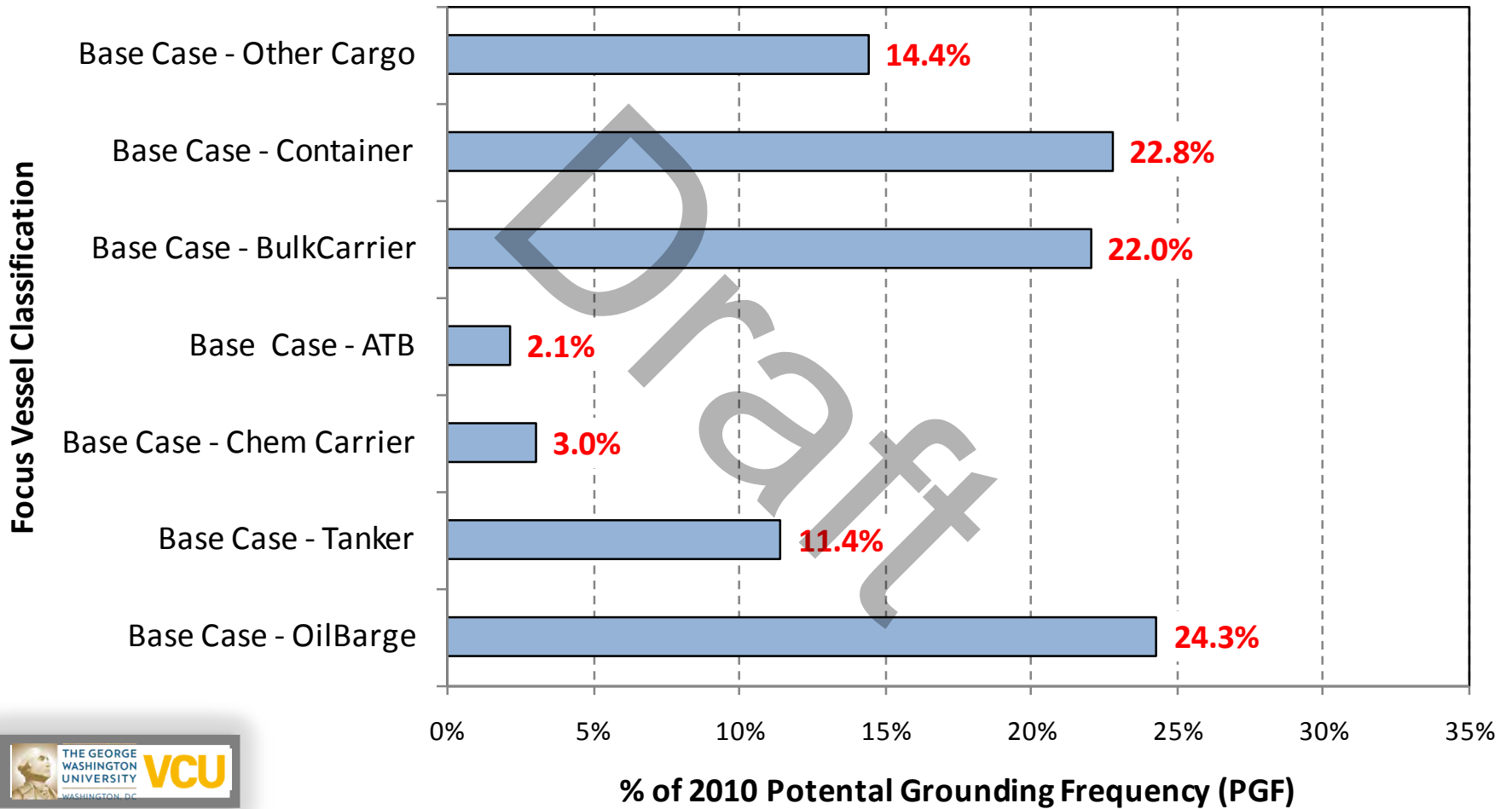
## 2010 BASE CASE



**PGF : POTENTIAL GROUNDING FREQUENCY - PER YEAR**  
INCLUDES POWERED, DRIFT GROUNDINGS AND ALLISIONS

# 2010 BASE CASE

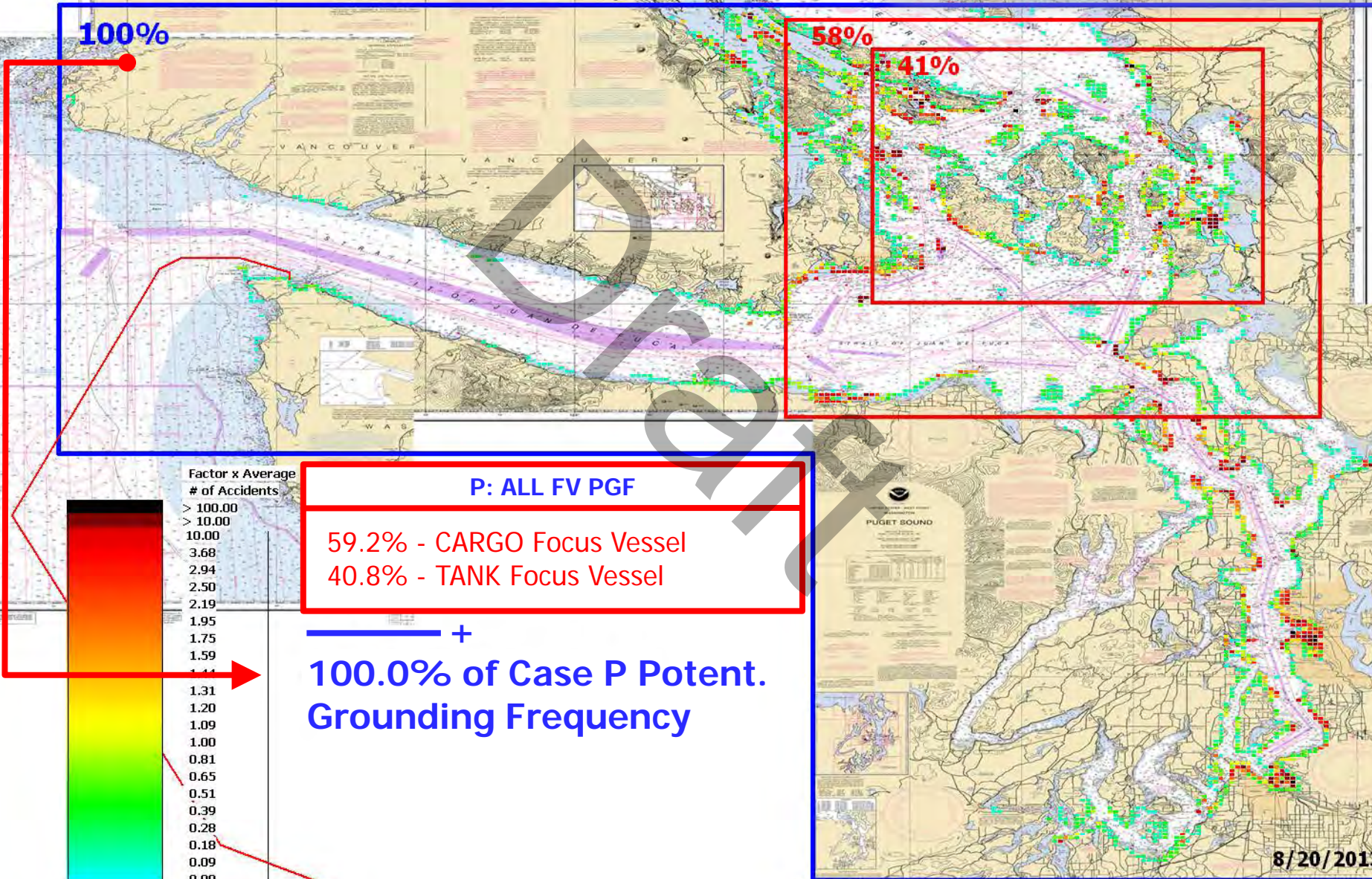
## VTRA 2010 - GROUNDING FREQUENCY



# P: ALL FV POTENTIAL GROUND. FREQ. (PGF)



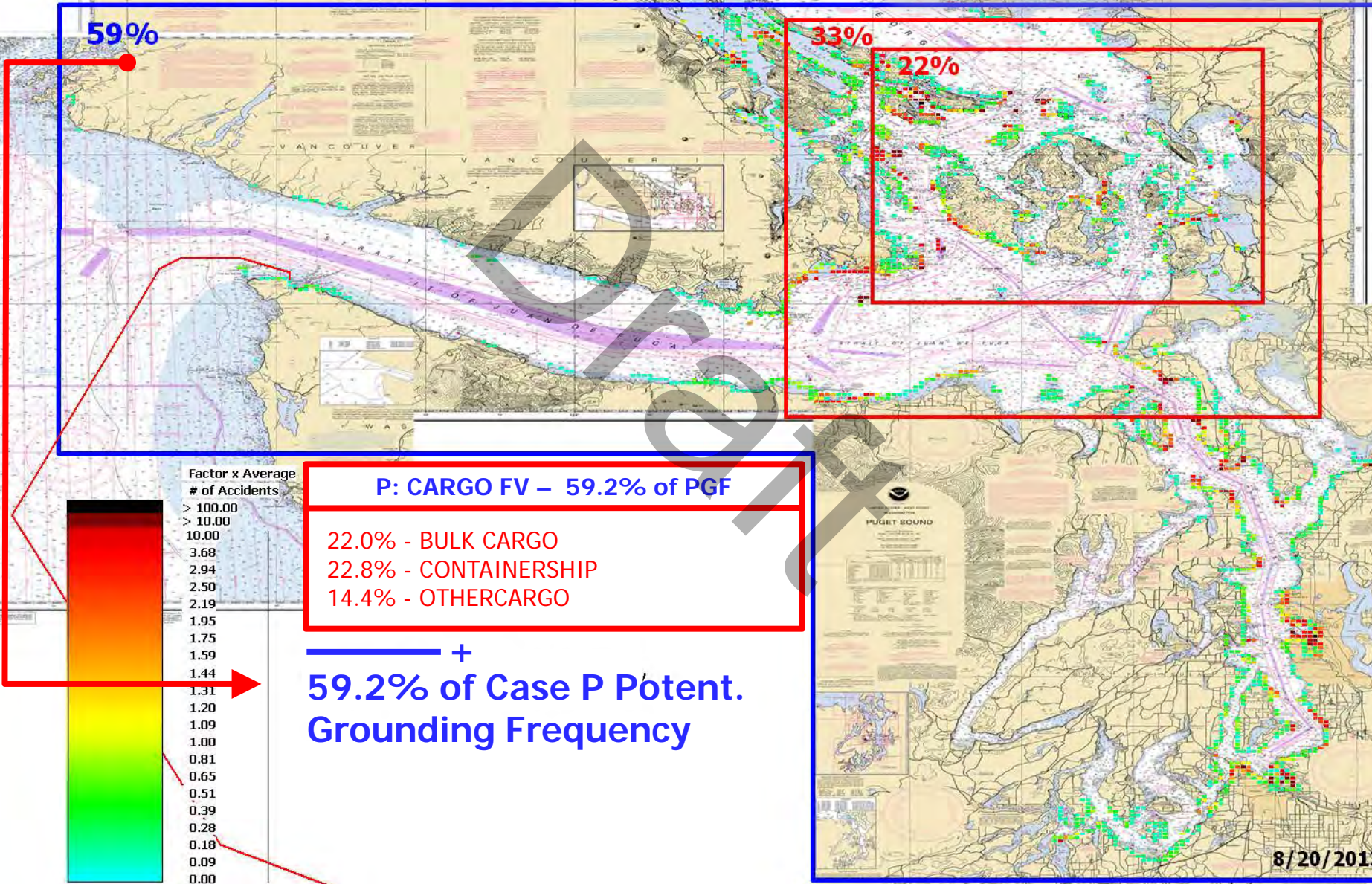
## P: VTRA 2010 - BASE CASE





# P: CARGO FV POTENTIAL GROUND. FREQ. (PGF)

## P: VTRA 2010 - BASE CASE



59%

33%

22%

Factor x Average # of Accidents

> 100.00
> 10.00
10.00
3.68
2.94
2.50
2.19
1.95
1.75
1.59
1.44
1.31
1.20
1.09
1.00
0.81
0.65
0.51
0.39
0.28
0.18
0.09
0.00

**P: CARGO FV – 59.2% of PGF**

- 22.0% - BULK CARGO
- 22.8% - CONTAINERSHIP
- 14.4% - OTHERCARGO

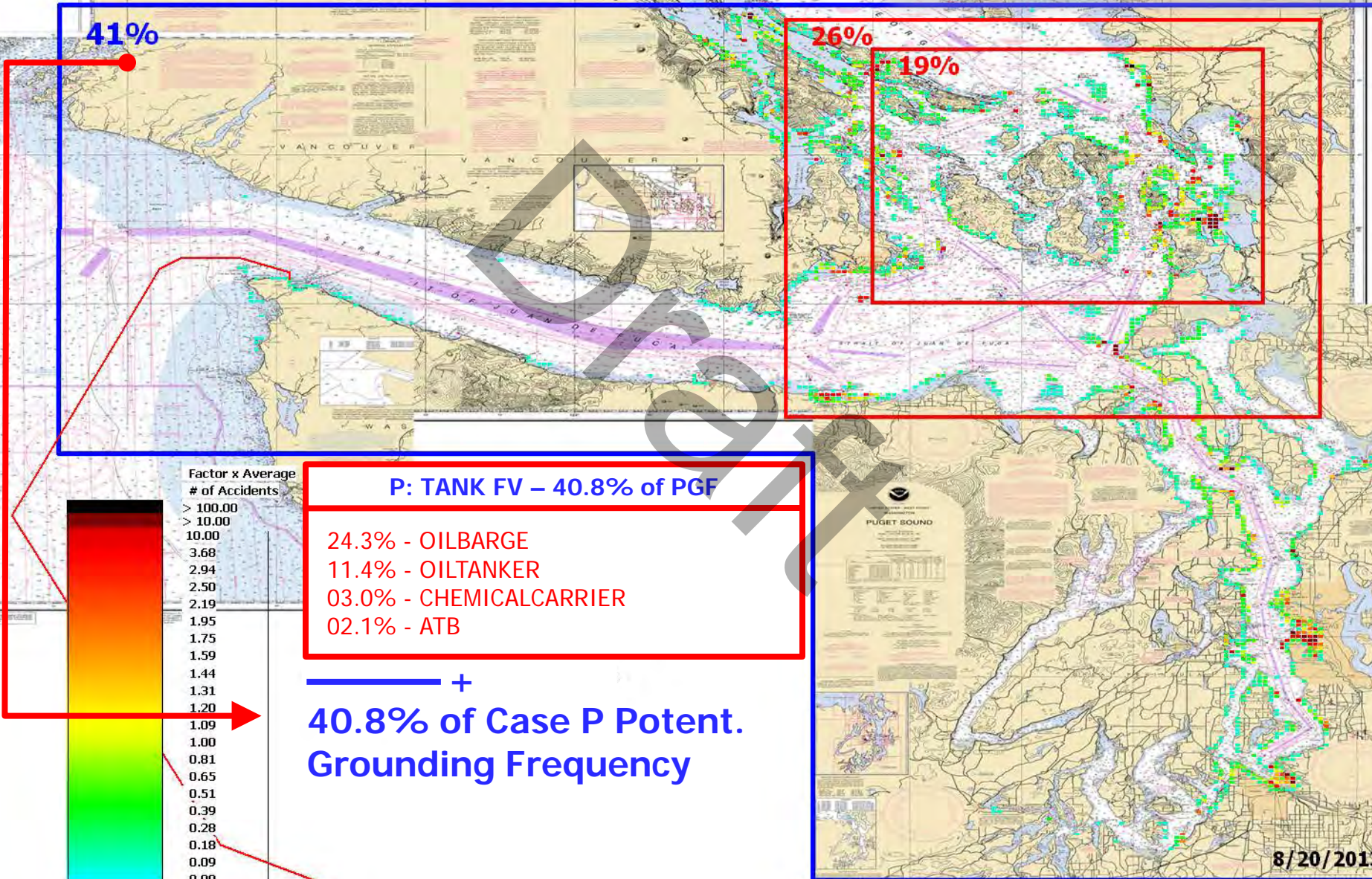
**+ 59.2% of Case P Potent. Grounding Frequency**



# P: TANK FV POTENTIAL GROUND. FREQ. (PGF)

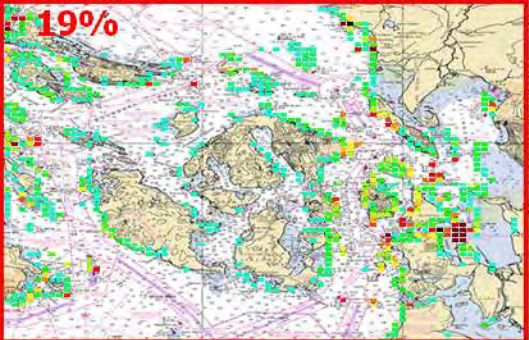


## P: VTRA 2010 - BASE CASE



41%

26%



19%

Factor x Average  
# of Accidents

> 100.00
> 10.00
10.00
3.68
2.94
2.50
2.19
1.95
1.75
1.59
1.44
1.31
1.20
1.09
1.00
0.81
0.65
0.51
0.39
0.28
0.18
0.09
0.00

### P: TANK FV – 40.8% of PGF

- 24.3% - OILBARGE
- 11.4% - OILTANKER
- 03.0% - CHEMICALCARRIER
- 02.1% - ATB

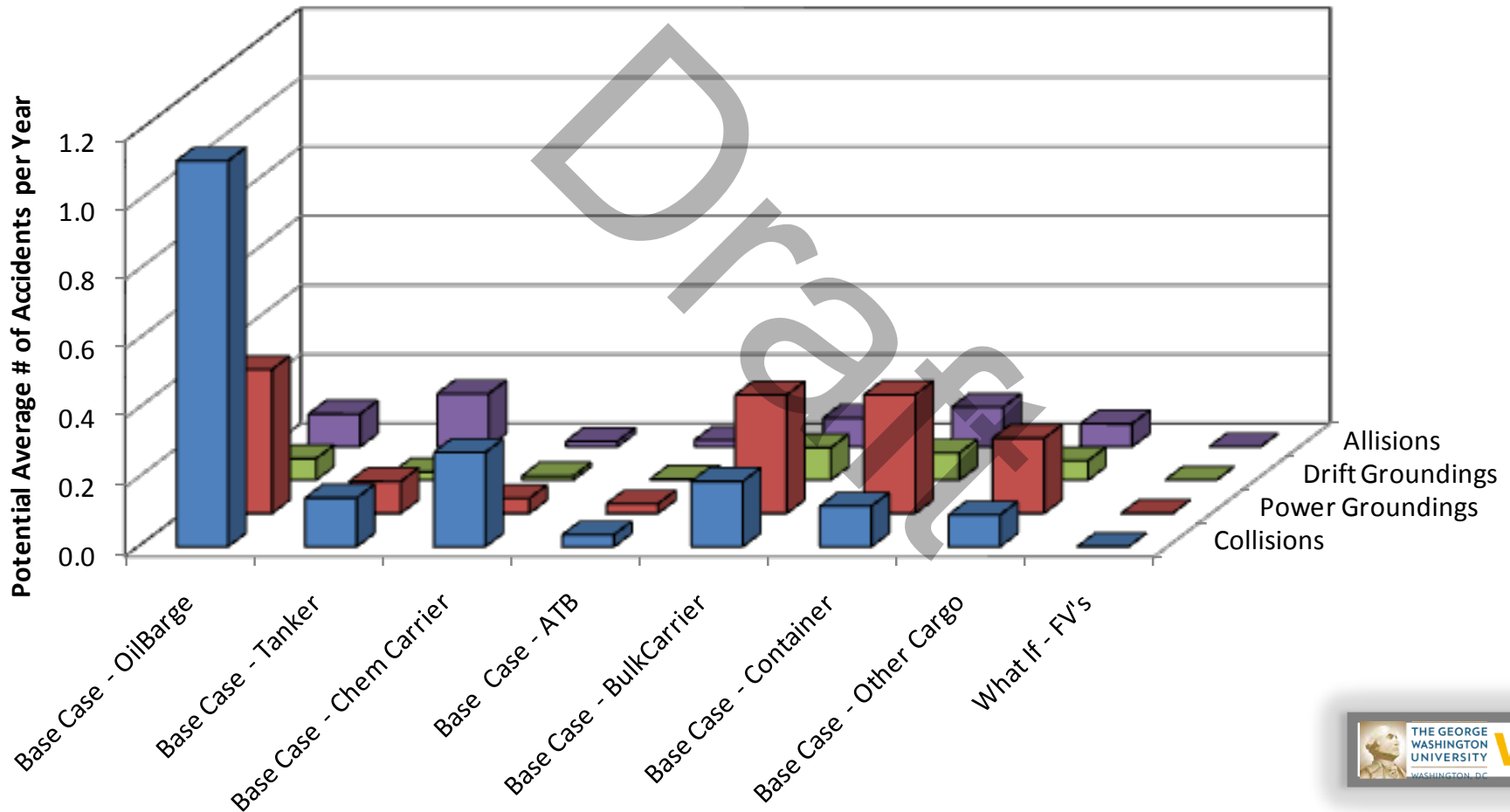
+

**40.8% of Case P Potent.  
Grounding Frequency**

# A TAXONOMY OF 2010 FOCUS VESSEL POTENTIAL ACCIDENT FREQUENCY AND ACCIDENT TYPE

## 2010 BASE CASE

**P - VTRA 2010 : Potential Average # of Accidents per Year**



## P - VTRA 2010 : Potential Average # of Accidents per Year

Focus Vessel	Collisions	Power Groundings	Drift Groundings	Allisions	Total
Base Case - OilBarge	56.9%	28.1%	18.8%	17.3%	39.1%
Base Case - Tanker	7.2%	6.2%	7.2%	28.0%	9.5%
Base Case - Chem Carrier	13.9%	2.9%	3.6%	2.8%	8.0%
Base Case - ATB	1.8%	1.9%	1.0%	3.4%	2.0%
Base Case - All Tank FV's	79.7%	39.1%	30.6%	51.6%	58.5%
Base Case - BulkCarrier	9.6%	23.1%	28.4%	15.2%	16.4%
Base Case - Container	6.0%	23.1%	23.9%	21.0%	15.1%
Base Case - Other Cargo	4.7%	14.6%	17.1%	12.2%	10.0%
Base Case - All Cargo FV's	20.3%	60.9%	69.4%	48.4%	41.5%
Base Case - All FV's	100.0%	100.0%	100.0%	100.0%	100.0%

## P - VTRA 2010 : Potential Average # of Accidents per Year

Focus Vessel	Collisions	Power Groundings	Drift Groundings	Allisions	Total
Base Case - OilBarge	1.11	0.42	0.06	0.09	1.69
Base Case - Tanker	0.14	0.09	0.02	0.15	0.41
Base Case - Chem Carrier	0.27	0.04	0.01	0.02	0.34
Base Case - ATB	0.03	0.03	0.00	0.02	0.08
Base Case - All Tank FV's	1.56	0.58	0.10	0.28	2.52
Base Case - BulkCarrier	0.19	0.34	0.09	0.08	0.71
Base Case - Container	0.12	0.34	0.08	0.11	0.65
Base Case - Other Cargo	0.09	0.22	0.06	0.07	0.43
Base Case - All Cargo FV's	0.40	0.90	0.23	0.26	1.79
Base Case - All FV's	1.96	1.48	0.33	0.55	4.32