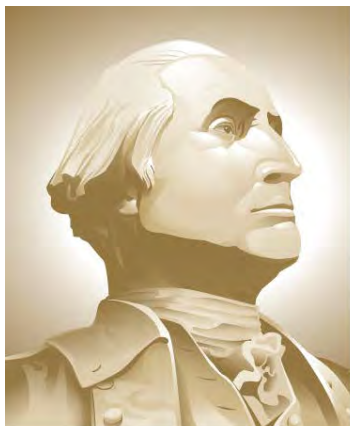


VTRA 2010 CASE Q RESULTS BY ACCIDENT TYPE

Presentation by: J. Rene van Dorp



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CASE Q: Gateway + Bunkering Operations

GWU Personnel: Dr. J. Rene van Dorp

VCU Personnel: Dr. Jason R. W. Merrick

AUGUST 28, 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 Interacting Vessels (IV) with Focus Vessels (FV)

BASE CASE CARGO – FV : Bulk Carriers, Container Vessels, Other Cargo Vessels that travel in VTRA 2010 Base Case

BASE CASE TANK – FV : Oil Barge, Oil Tankers, Chemical Carrier, ATB 's that travel in VTRA 2010 Base Case

WHAT IF – FV : CARGO AND TANK FV'S added to VTRA 2010 Base Case to model What-If Scenario

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

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**.

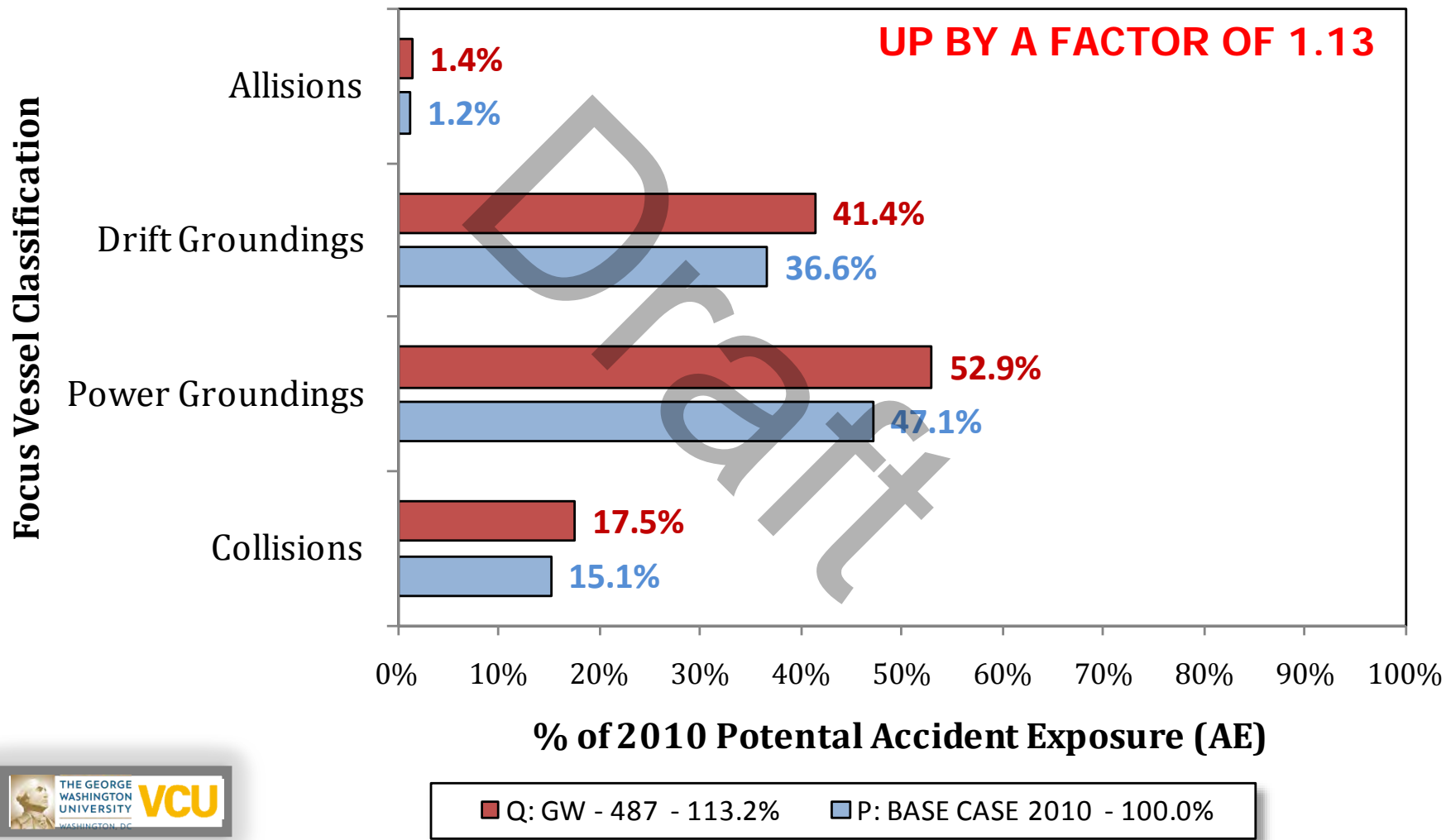
CASE Q: GW 487 + Bunkering Operations:

BASE CASE 2010 TRAFFIC WITH FOLLOWING WHAT-IF FOCUS VESSELS

487 Gateway Bulk Carriers + Bunkering Barges

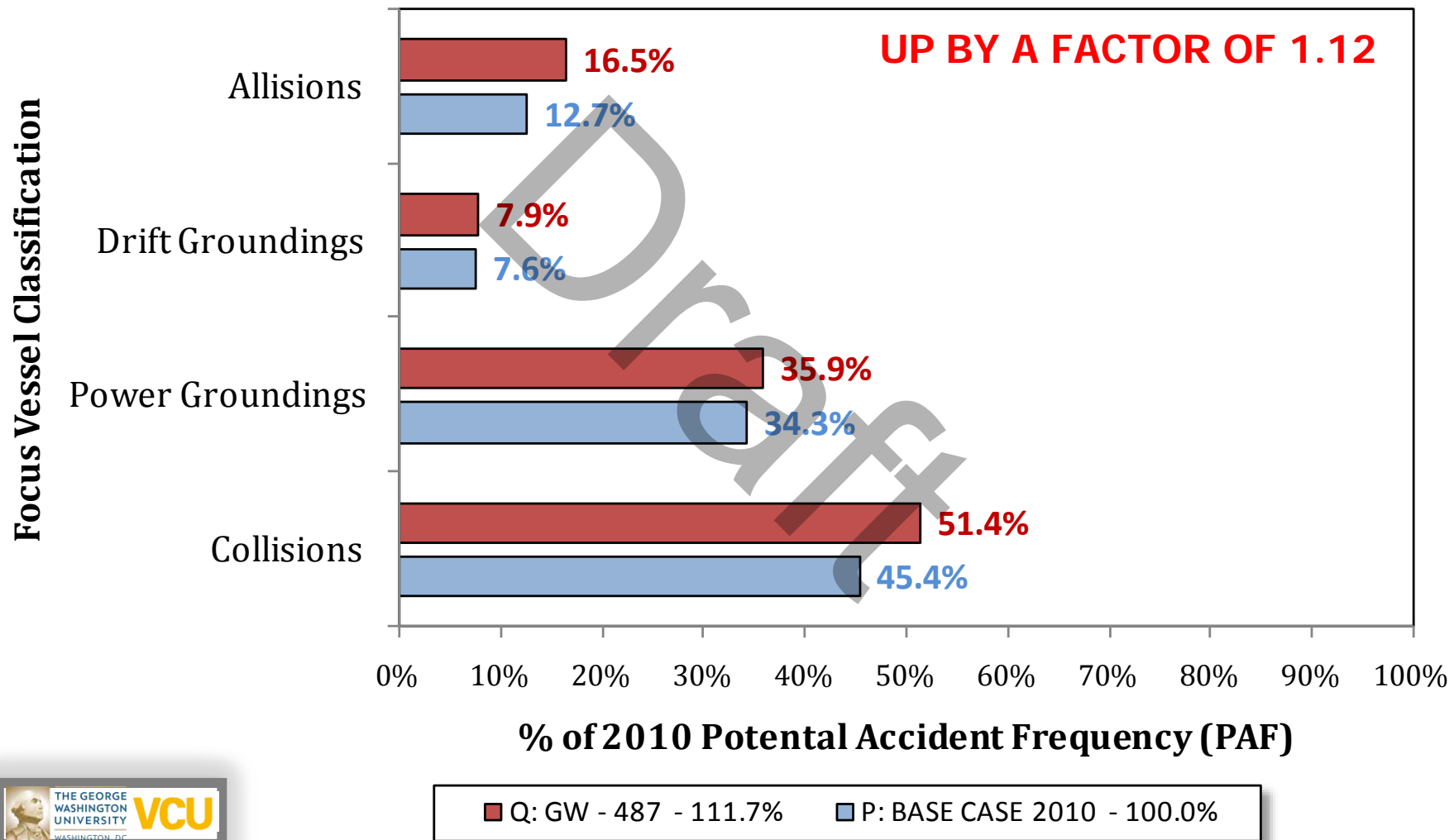
CASE Q: GW 487 + BUNKERING

VTRA 2010 - ACCIDENT EXPOSURE



CASE Q: GW 487 + BUNKERING

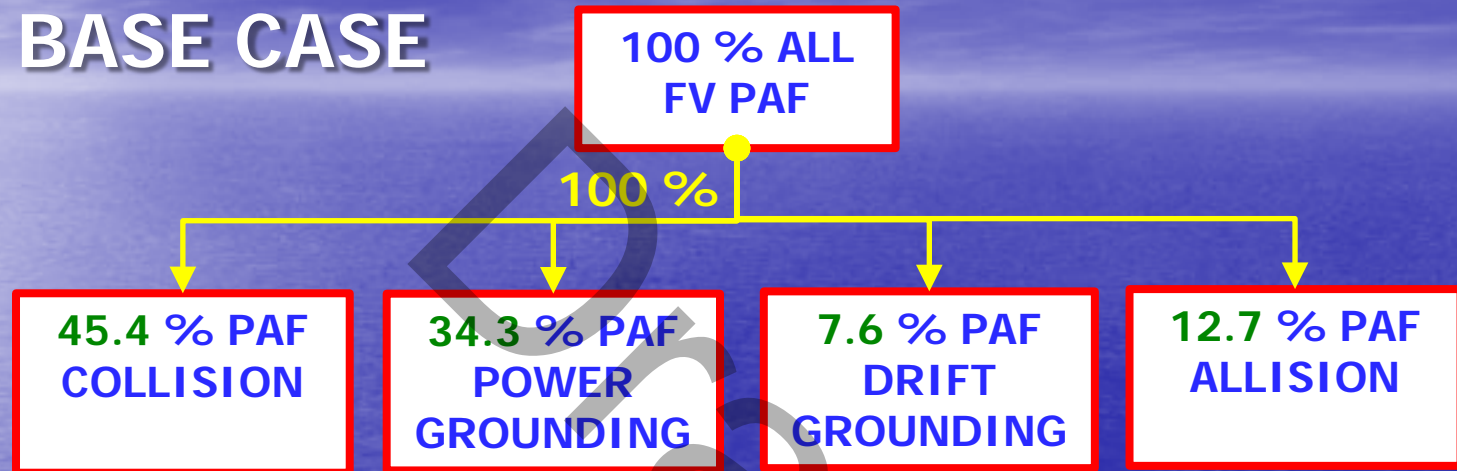
VTRA 2010 - ACCIDENT FREQUENCY



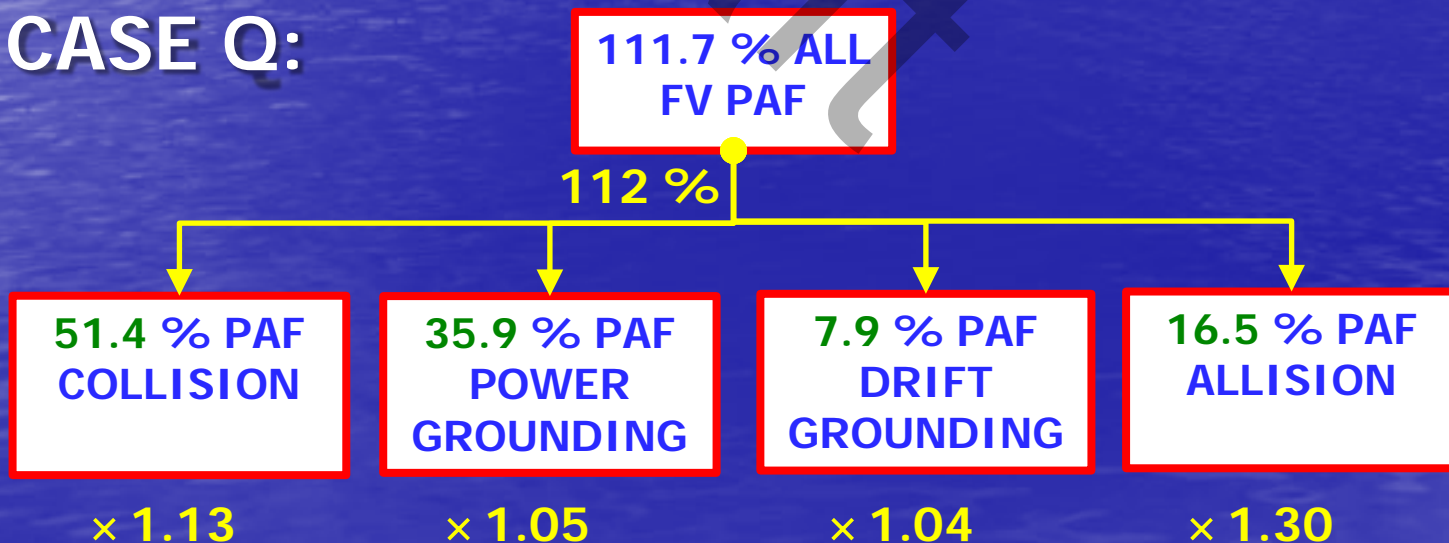
A TAXONOMY OF 2010 FOCUS VESSEL POTENTIAL ANNUAL ACCIDENT FREQUENCY

PAF : POTENTIAL ACCIDENT FREQUENCY - PER YEAR

2010 BASE CASE

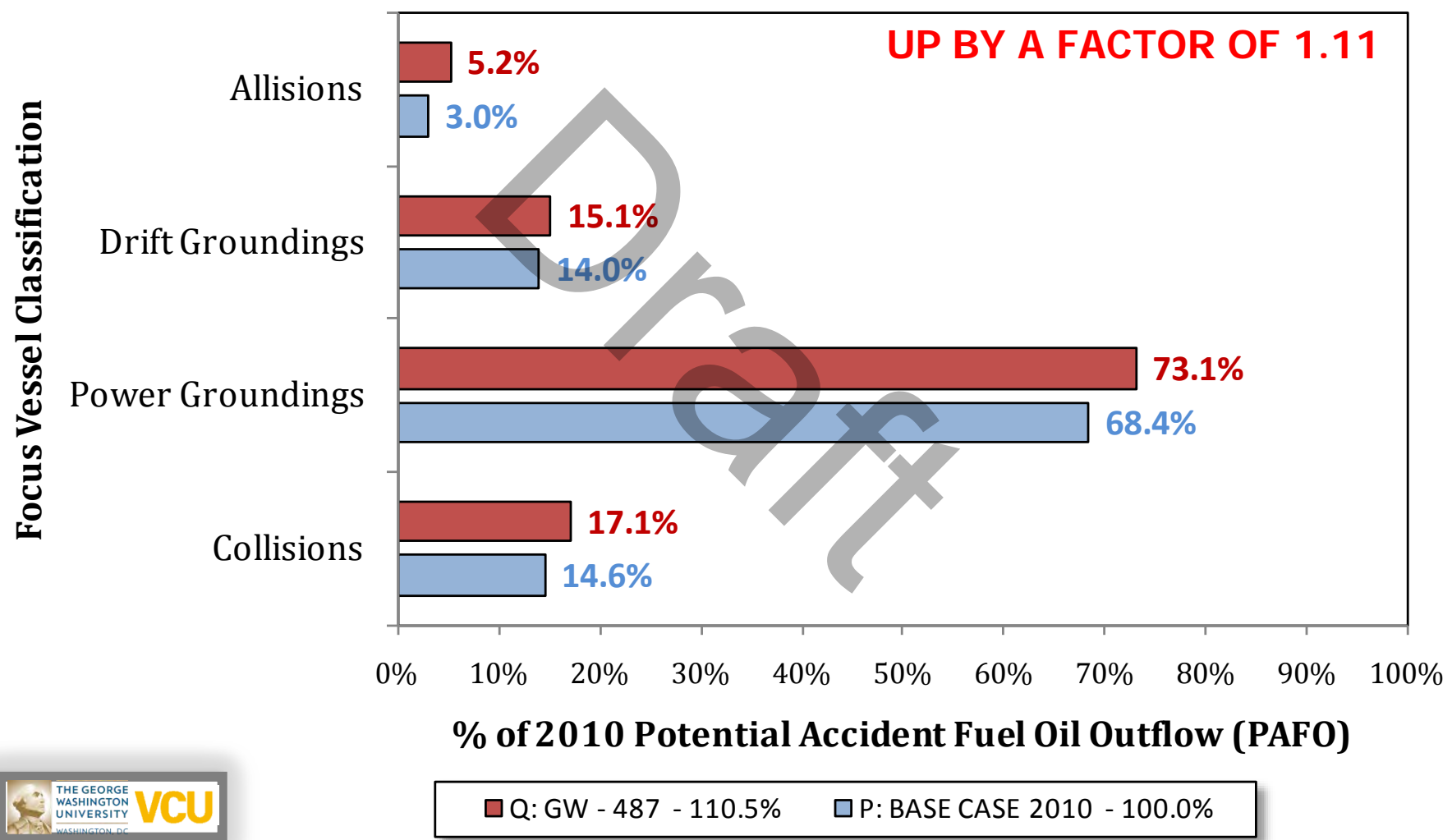


2010 CASE Q:



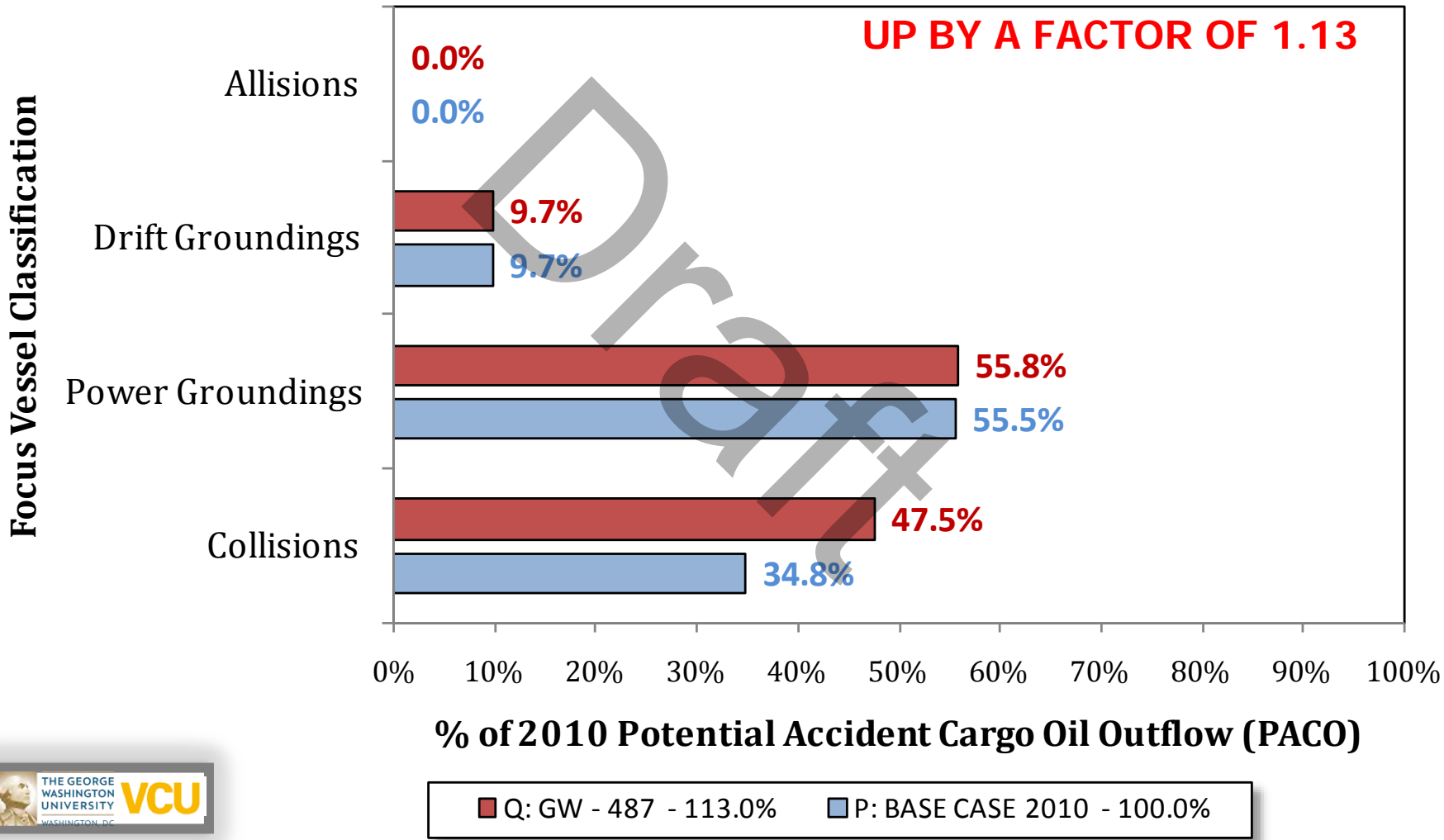
CASE Q: GW 487 + BUNKERING

VTRA 2010 - ACCIDENT FUEL OIL LOSS



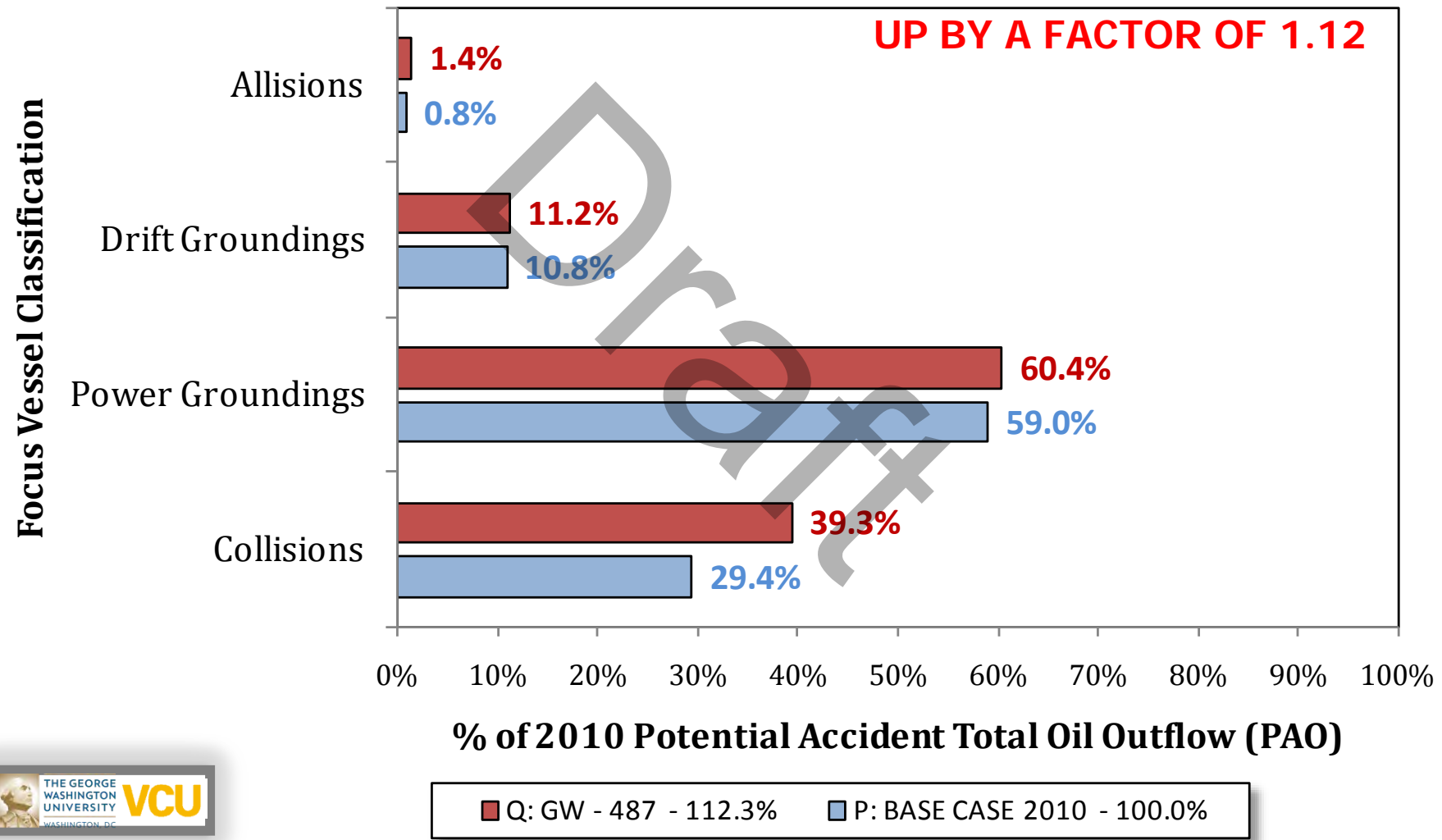
CASE Q: GW 487 + BUNKERING

VTRA 2010 - ACCIDENT CARGO OIL LOSS



CASE Q: GW 487 + BUNKERING

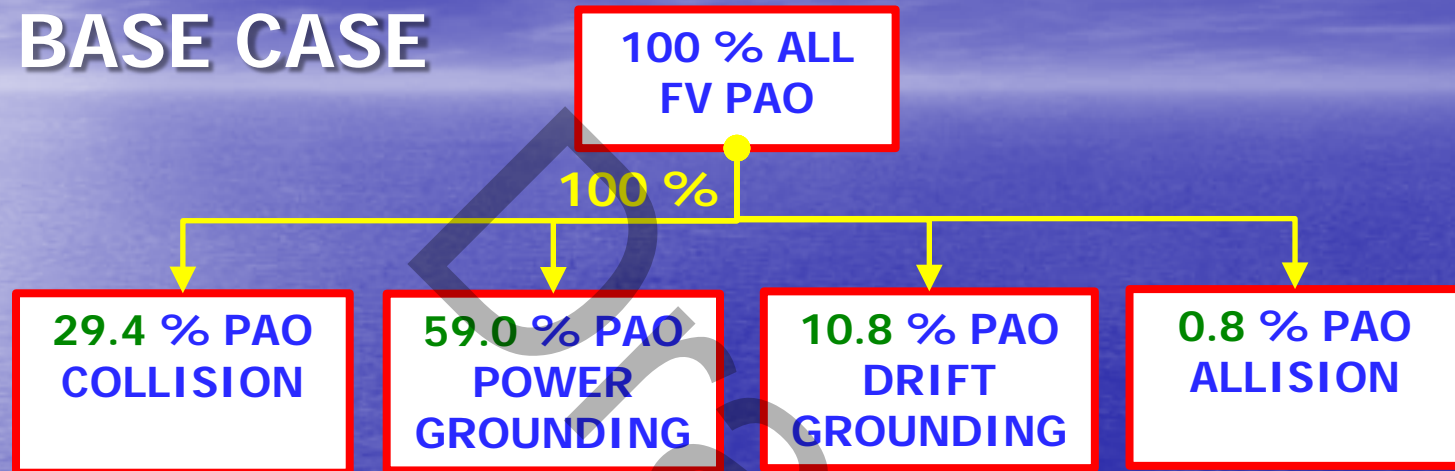
VTRA 2010 - ACCIDENT OIL LOSS (CARGO + FUEL)



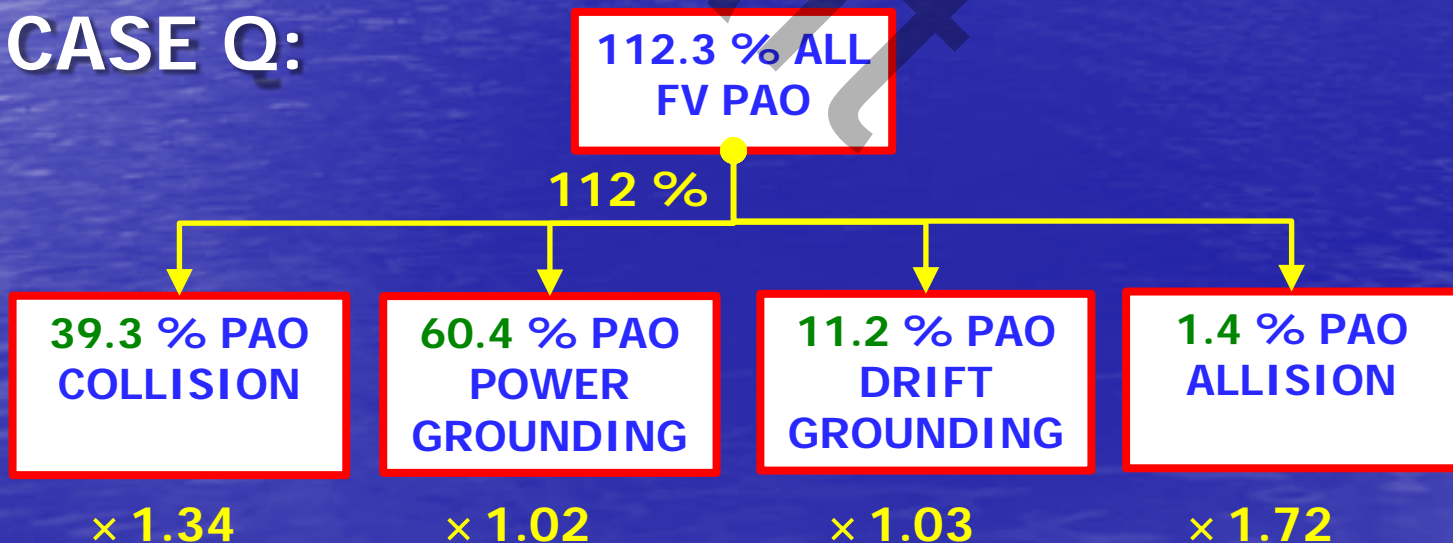
A TAXONOMY OF 2010 FOCUS VESSEL POTENTIAL ANNUAL ACCIDENT OIL (CARGO + FUEL) LOSS

PAF : POTENTIAL ACCIDENT OIL LOSS - PER YEAR

2010 BASE CASE

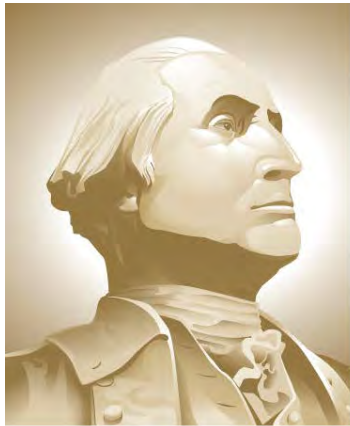


2010 CASE Q:



VTRA 2010 CASE Q RESULTS – COLLISION EXPOSURE AND ACCIDENT GEOGRAPHIC PROFILES

Presentation by: J. Rene van Dorp



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CASE Q: Gateway + Bunkering Operations

GWU Personnel: Dr. J. Rene van Dorp

VCU Personnel: Dr. Jason R. W. Merrick

AUGUST 28, 2013

P: All FV TOTAL VESSEL TIME EXPOSURE (VTE)



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P: VTRA 2010 - BASE CASE - All FV

100%

45%

24%

Factor x Average
Exposure:

> 48.98
> 10.00
10.00
3.61
2.90
2.47
2.17
1.94
1.74
1.58
1.44
1.31
1.20
1.09
1.00
0.81
0.65
0.52
0.39
0.28
0.18
0.09
0.00

CASE P - ALL FV TRAFFIC DENSITY

32.6% - BULK CARGO
20.2% - CONTAINERSHIP
12.8% - OTHER CARGO
19.3% - OIL BARGE
08.8% - TANKER
03.5% - CHEMICAL CARRIER
02.7% - ATB
00.0% - WHAT-IF FV

100.0% of 2010 Base Case
ALL FV - VTE



Q: All FV TOTAL VESSEL TIME EXPOSURE (VTE)

Q: VTRA 2010 - GATEWAY 487 - All FV

113%

52%

28%

Factor x Average
Exposure:

> 48.98
> 10.00
10.00
3.61
2.90
2.47
2.17
1.94
1.74
1.58
1.44
1.31
1.20
1.09
1.00
0.81
0.65
0.52
0.39
0.28
0.18
0.09
0.00

CASE Q - ALL FV TRAFFIC DENSITY

34.0% - BULK CARGO
20.3% - CONTAINERSHIP
12.9% - OTHER CARGO
19.2% - OIL BARGE
08.7% - TANKER
03.6% - CHEMICAL CARRIER
02.7% - ATB
11.8% - WHAT-IF FV

113.0% of 2010 Base Case
ALL FV - VTE

Q: WHAT-IF FV TOTAL VESSEL TIME EXPOSURE (VTE)



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Q: VTRA 2010 - GATEWAY 487

12%

7%

4%

Factor x Average
Exposure:

> 48.98
> 10.00
10.00
3.61
2.90
2.47
2.17
1.94
1.74
1.58
1.44
1.31
1.20
1.09
1.00
0.81
0.65
0.52
0.39
0.28
0.18
0.09
0.00

CASE Q - ALL FV TRAFFIC DENSITY

09.1% - BULK CARGO
00.0% - CONTAINERSHIP
00.0% - TANKER
02.6% - OILBARGE

— +
**11.8% of 2010 Base Case
ALL FV - VTE**

P: ALL FV POTENTIAL COLLISION EXPOSURE (PCE)



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P: VTRA 2010 - BASE CASE - All FV

100%

49%

27%

Factor x Average
Exposure:

> 38.18
> 10.00
10.00
3.58
2.88
2.46
2.16
1.93
1.74
1.58
1.43
1.31
1.20
1.09
1.00
0.81
0.66
0.52
0.39
0.28
0.18
0.09
0.00

CASE P : POT. COLL. EXPOSURE (PCE)

26.2% - BULK CARGO
31.0% - CONTAINERSHIP
13.9% - OTHER CARGO
16.9% - OIL BARGE
07.1% - TANKER
02.9% - CHEMICAL CARRIER
01.9% - ATB
00.0% - WHAT-IF FV

100.0% of 2010 Base Case
ALL FV - CE

Q: All FV POTENTIAL COLLISION EXPOSURE (PCE)



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Q: VTRA 2010 - GATEWAY 487 - All FV

116%

58%

33%

Factor x Average
Exposure:

> 38.18
> 10.00
10.00
3.58
2.88
2.46
2.16
1.93
1.74
1.58
1.43
1.31
1.20
1.09
1.00
0.81
0.66
0.52
0.39
0.28
0.18
0.09
0.00

CASE Q : POT. COLL. EXPOSURE (PCE)

27.9% - BULK CARGO
32.3% - CONTAINERSHIP
14.5% - OTHER CARGO
17.2% - OIL BARGE
07.7% - TANKER
03.1% - CHEMICAL CARRIER
01.9% - ATB
11.3% - WHAT-IF FV

115.8% of 2010 Base Case
ALL FV - CE

Q: WHAT-IF FV POTENTIAL COLLISION EXPOSURE (PCE)



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Q: VTRA 2010 - GATEWAY 487

11%

7%

5%

Factor x Average
Exposure:

> 38.18
> 10.00
10.00
3.58
2.88
2.46
2.16
1.93
1.74
1.58
1.43
1.31
1.20
1.09
1.00
0.81
0.66
0.52
0.39
0.28
0.18
0.09
0.00

CASE Q : POT. COLL. EXPOSURE (PCE)

7.6% - BULK CARGO
0.0% - CONTAINERSHIP
0.0% - TANKER
3.6% - OILBARGE

+
11.3% of 2010 Base Case
ALL FV - CE

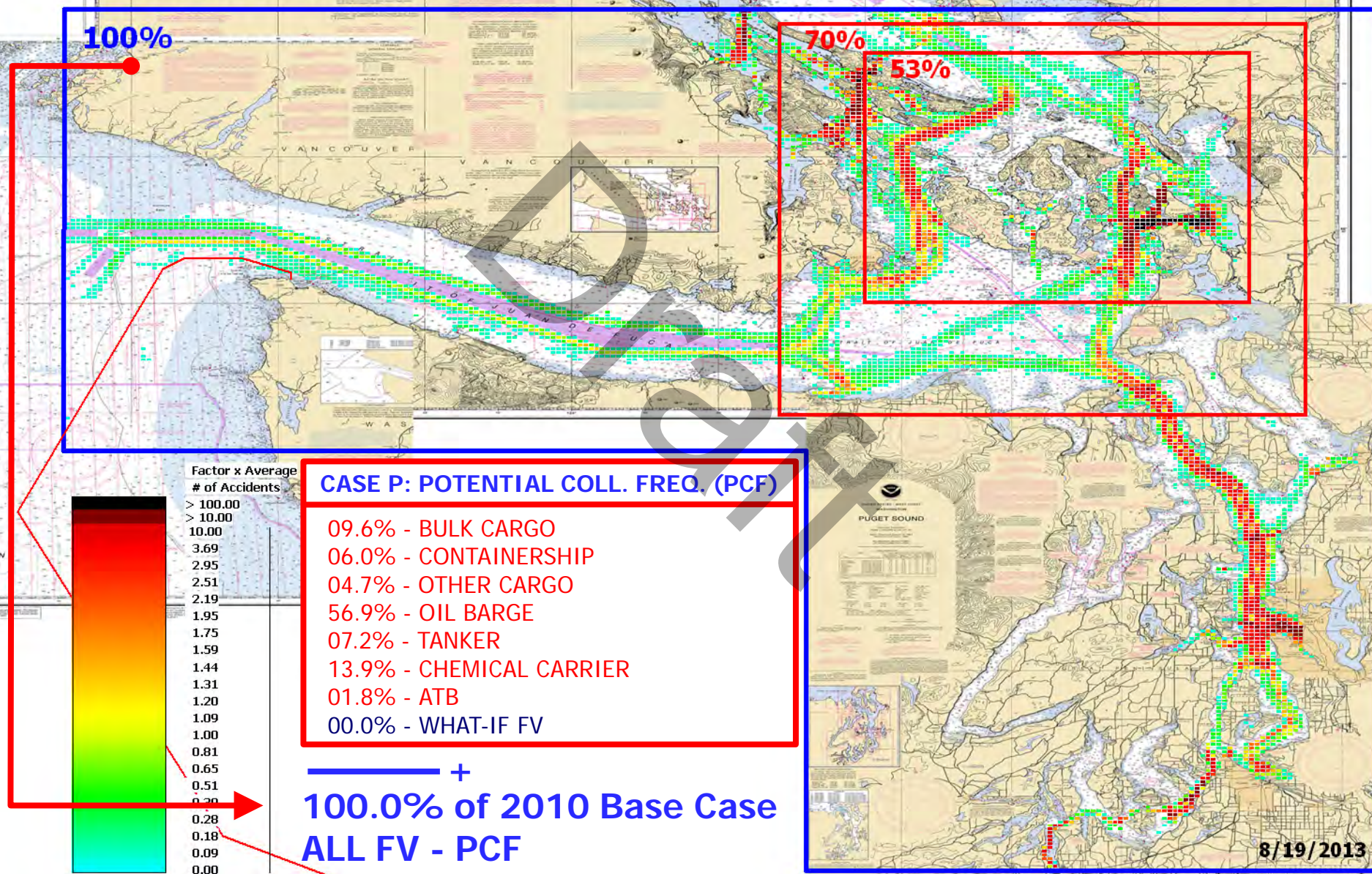
P: ALL FV POTENTIAL COLLISION FREQUENCY (PCF)



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P: VTRA 2010 - BASE CASE - All FV





Q: ALL FV POTENTIAL COLLISION FREQUENCY (PCF)

Q: VTRA 2010 - GATEWAY 487 - All FV

113%

80%

63%

Factor x Average
of Accidents

> 100.00
> 10.00
10.00
3.69
2.95
2.51
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

CASE Q: POTENTIAL COLL. FREQ. (PCF)

09.7% - BULK CARGO
06.1% - CONTAINERSHIP
05.2% - OTHER CARGO
58.0% - OIL BARGE
07.2% - TANKER
13.6% - CHEMICAL CARRIER
01.9% - ATB
11.5% - WHAT-IF FV

— +
113.3% of 2010 Base Case
ALL FV - PCF

Q: WHAT-IF FV POTENTIAL COLLISION FREQUENCY (PCF)



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Q: VTRA 2010 - GATEWAY 487

12%

9%

9%

Factor x Average
of Accidents

> 100.00
> 10.00
10.00
3.69
2.95
2.51
2.19
1.95
1.75
1.59
1.44
1.31
1.18
1.09
1.00
0.81
0.65
0.51
0.39
0.28
0.18
0.09
0.00

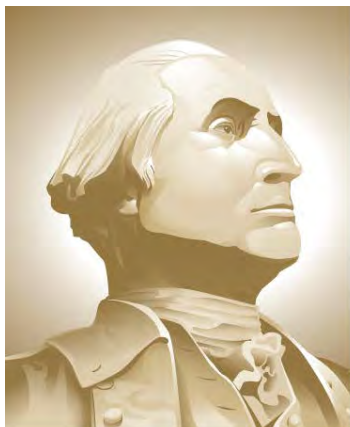
CASE Q: POTENTIAL COLL. FREQ. (PCF)

1.8% - BULK CARGO
0.0% - CONTAINERSHIP
0.0% - TANKER
9.7% - OILBARGE

**+
11.5% of 2010 Base Case
ALL FV - PCF**

VTRA 2010 CASE Q RESULTS – COLLISION OIL (CARGO + FUEL), CARGO AND FUEL OIL GEOGRAPHIC PROFILES

Presentation by: J. Rene van Dorp



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CASE Q: Gateway + Bunkering Operations

GWU Personnel: Dr. J. Rene van Dorp

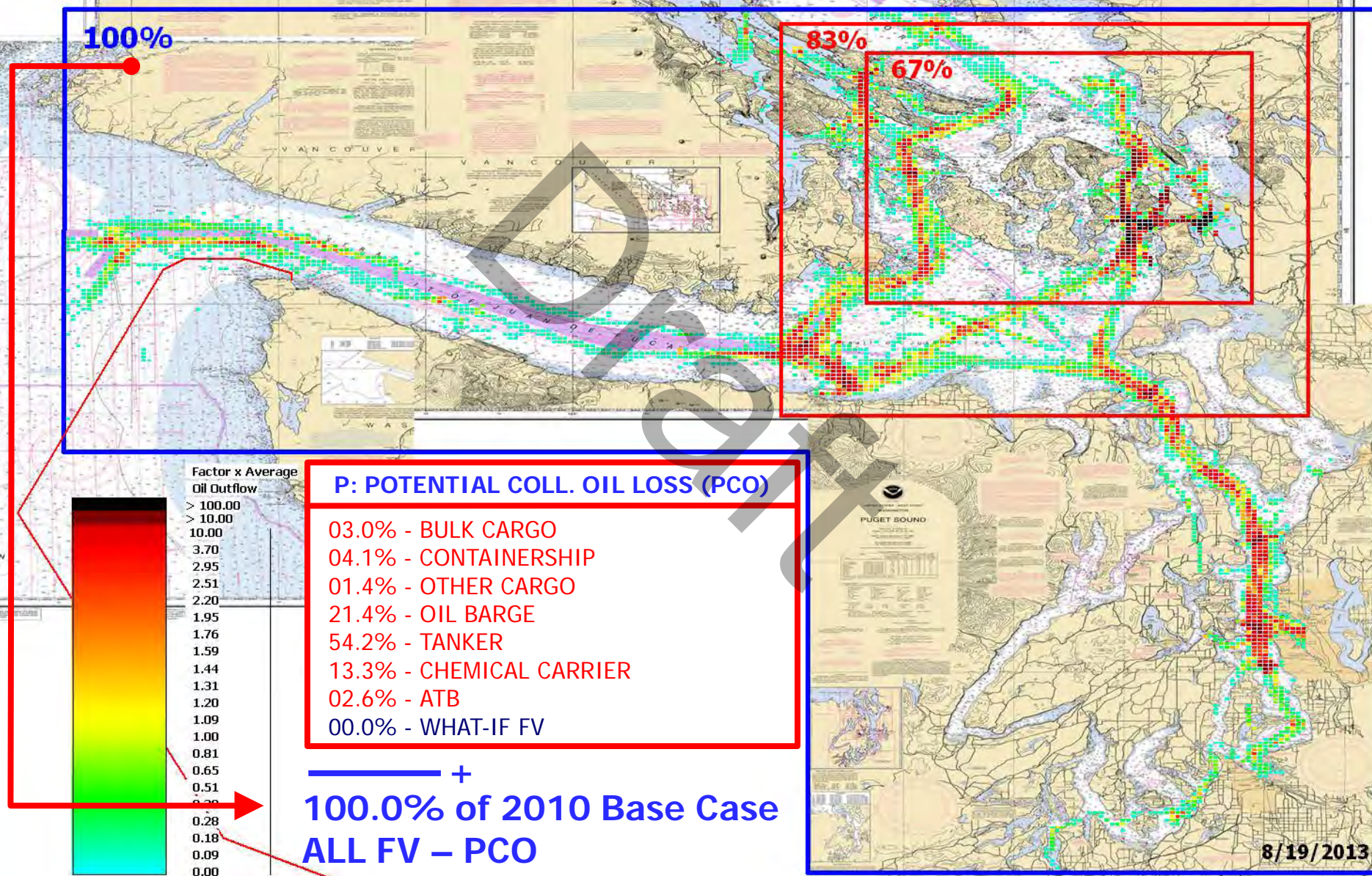
VCU Personnel: Dr. Jason R. W. Merrick

AUGUST 28, 2013



P: ALL FV POTENTIAL COLLISION OIL (FUEL + CARGO) LOSS (PCO)

P: VTRA 2010 - BASE CASE - All FV





Q: ALL FV POTENTIAL COLLISION OIL (FUEL + CARGO) LOSS (PCO)

Q: VTRA 2010 - GATEWAY 487 - All FV

134%

114%

98%

Factor x Average
Oil Outflow

> 100.00
> 10.00
10.00
3.70
2.95
2.51
2.20
1.95
1.76
1.59
1.44
1.31
1.20
1.09
1.00
0.81
0.65
0.51
0.38
0.28
0.18
0.09
0.00

Q: POTENTIAL COLL. OIL LOSS (PCO)

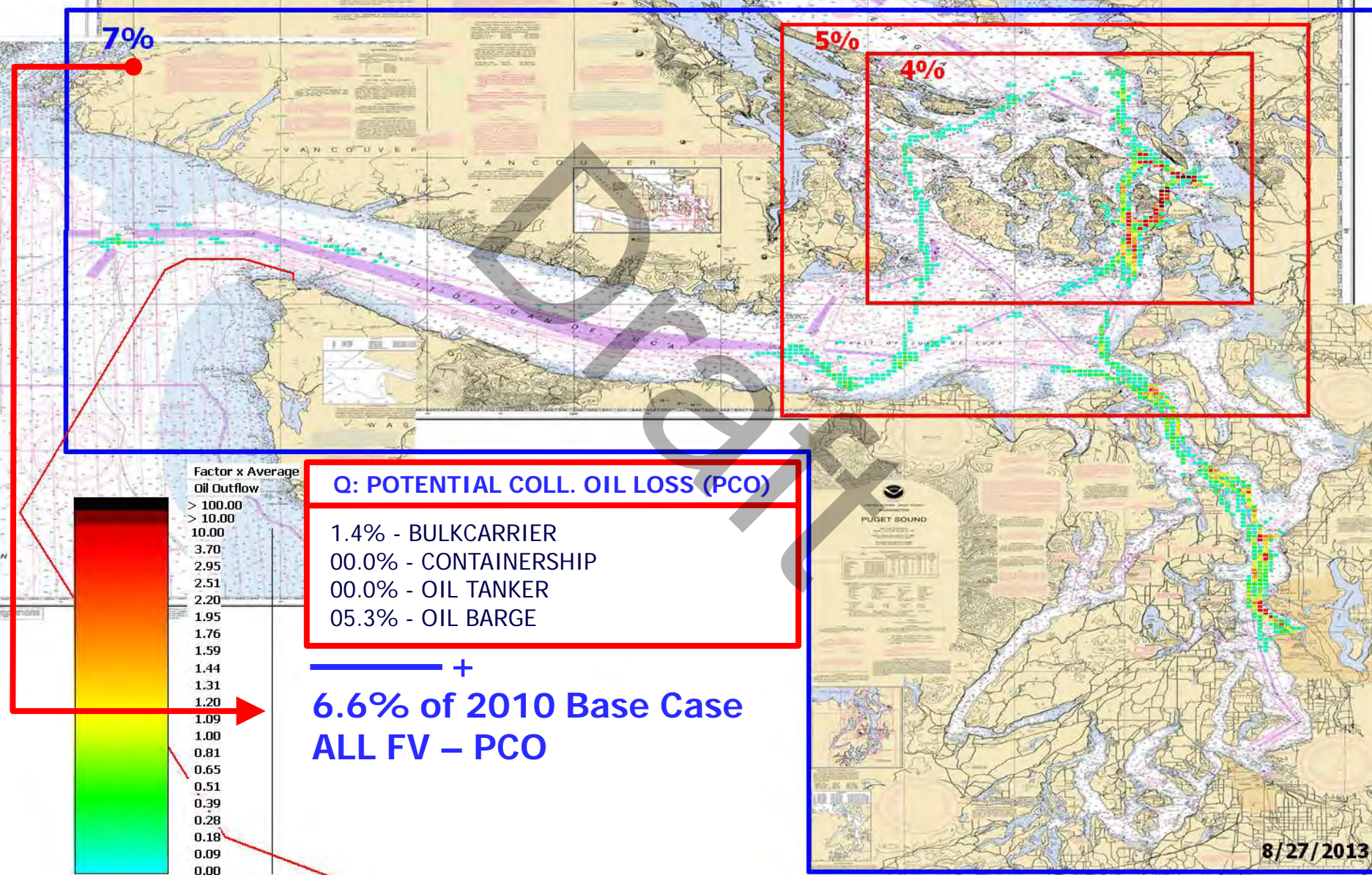
03.0% - BULK CARGO
04.0% - CONTAINERSHIP
01.5% - OTHER CARGO
18.6% - OIL BARGE
87.2% - TANKER
07.0% - CHEMICAL CARRIER
05.9% - ATB
06.6% - WHAT-IF FV

**133.8% of 2010 Base Case
ALL FV – PCO**



Q: WHAT-IF FV POTENTIAL COLLISION OIL (FUEL+CARGO) LOSS (PCO)

Q: VTRA 2010 - GATEWAY 487



P: ALL FV POTENTIAL COLLISION FUEL OIL LOSS (PCFO)



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P: VTRA 2010 - BASE CASE

13%

9%

6%

Factor x Average
Oil Outflow

> 100.00
> 10.00
10.00
3.70
2.95
2.51
2.20
1.95
1.76
1.59
1.44
1.31
1.20
1.09
1.00
0.81
0.65
0.51
0.39
0.20
0.18
0.09
0.00

P: POT. COLL. FUEL OIL LOSS (PCFO)

- 2.1% - BULK CARGO
- 2.6% - CONTAINERSHIP
- 1.0% - OTHER CARGO
- 5.0% - OIL BARGE
- 1.2% - TANKER
- 1.0% - CHEMICAL CARRIER
- 0.2% - ATB
- 0.0% - WHAT-IF FV

+
13.2% of 2010 Base Case
ALL FV – PCO



Q: ALL FV POTENTIAL COLLISION FUEL OIL LOSS (PCFO)

Q: VTRA 2010 - GATEWAY 487

15%

11%

7%

Factor x Average
Oil Outflow

> 100.00
> 10.00
10.00
3.70
2.95
2.51
2.20
1.95
1.76
1.59
1.44
1.31
1.20
1.09
1.00
0.81
0.65
0.51
0.39
0.20
0.18
0.09
0.00

Q: POT. COLL. FUEL OIL LOSS (PCFO)

- 2.1% - BULK CARGO
- 2.6% - CONTAINERSHIP
- 1.0% - OTHER CARGO
- 5.0% - OIL BARGE
- 1.8% - TANKER
- 0.9% - CHEMICAL CARRIER
- 0.2% - ATB
- 1.5% - WHAT-IF FV

15.2% of 2010 Base Case
ALL FV – PFO

Q: WHAT-IF FV POTENTIAL COLLISION FUEL OIL LOSS (PCFO)



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Q: VTRA 2010 - GATEWAY 487

Factor x Average
Oil Outflow

> 100.00
> 10.00
10.00
3.70
2.95
2.51
2.20
1.95
1.76
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

Q: POT. COLL. FUEL OIL LOSS (PCFO)

0.7% - BULKCARRIER
0.0% - CONTAINERSHIP
0.0% - OIL TANKER
0.8% - OIL BARGE

+
1.5% of 2010 Base Case
ALL FV – PCO

P: ALL FV POTENTIAL COLLISION CARGO OIL LOSS (PCCO)



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P: VTRA 2010 - BASE CASE

87%

74%

62%

Factor x Average
Oil Outflow

> 100.00
> 10.00
10.00
3.70
2.95
2.51
2.20
1.95
1.76
1.59
1.44
1.31
1.20
1.09
1.00
0.81
0.65
0.51
0.39
0.20
0.18
0.09
0.00

P: POT. COLL. CARGO OIL LOSS (PCCO)

00.9% - BULK CARGO
01.5% - CONTAINERSHIP
00.5% - OTHER CARGO
16.3% - OIL BARGE
52.9% - TANKER
12.4% - CHEMICAL CARRIER
02.3% - ATB
00.0% - WHAT-IF FV

+
86.8% of 2010 Base Case
ALL FV – PCO



Q: ALL FV POTENTIAL COLLISION CARGO OIL LOSS (PCCO)

Q: VTRA 2010 - GATEWAY 487

119%

104%

91%

Factor x Average
Oil Outflow

> 100.00
> 10.00
10.00
3.70
2.95
2.51
2.20
1.95
1.76
1.59
1.44
1.31
1.20
1.09
1.00
0.81
0.65
0.51
0.39
0.20
0.18
0.09
0.00

Q: POT. COLL. CARGO OIL LOSS (PCCO)

00.8% - BULK CARGO
01.4% - CONTAINERSHIP
00.5% - OTHER CARGO
13.5% - OIL BARGE
85.4% - TANKER
06.1% - CHEMICAL CARRIER
05.7% - ATB
05.1% - WHAT-IF FV

+
**118.7% of 2010 Base Case
ALL FV – PCCO**

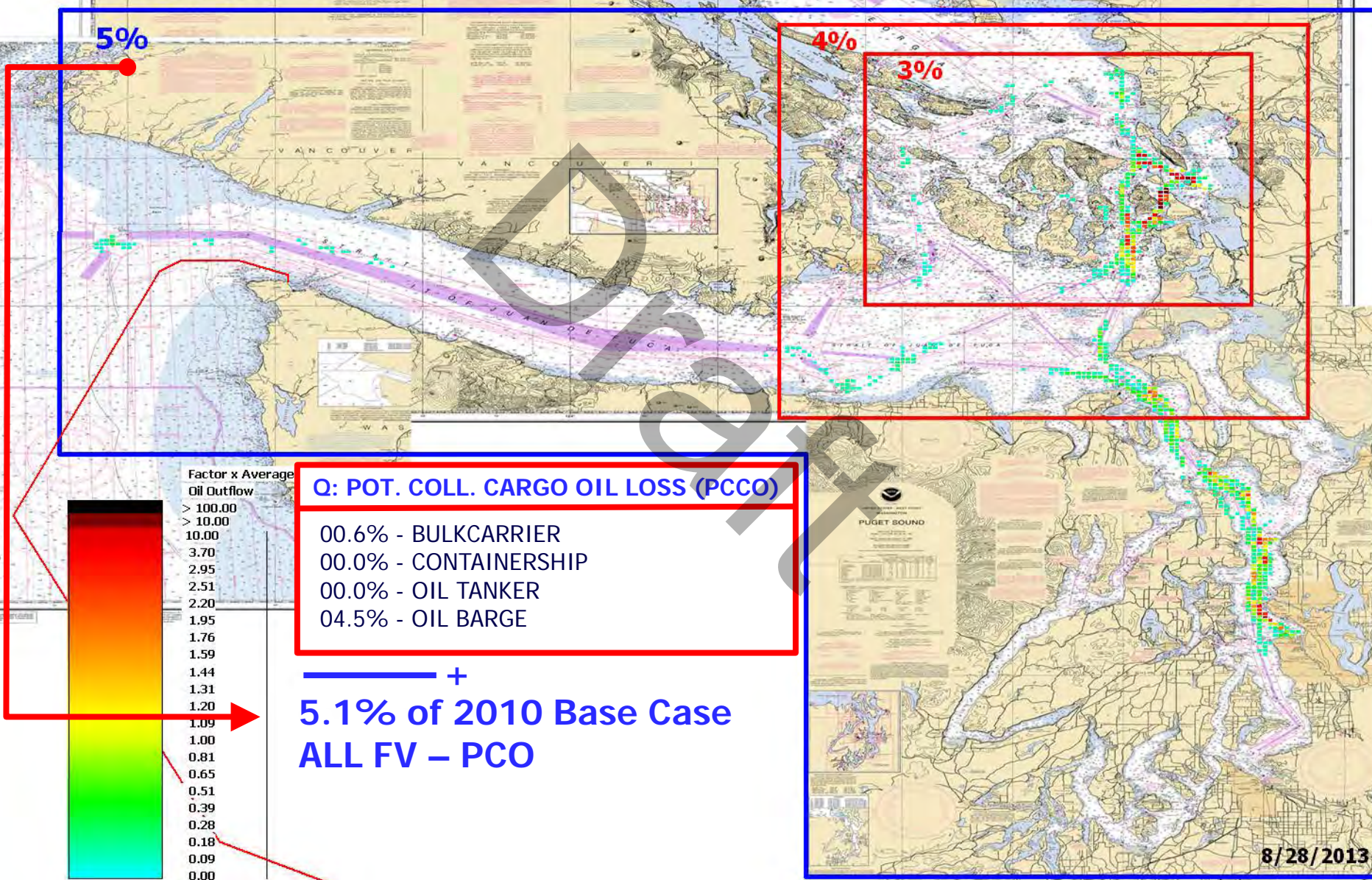
Q: WHAT-IF FV POTENTIAL COLLISION CARGO OIL LOSS (PCCO)



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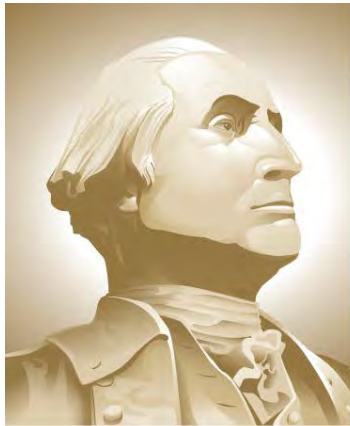
VCU

Q: VTRA 2010 - GATEWAY 487



VTRA 2010 CASE Q RESULTS – GROUNDING EXPOSURE AND ACCIDENT GEOGRAPHIC PROFILES

Presentation by: J. Rene van Dorp



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CASE Q: Gateway + Bunkering Operations

GWU Personnel: Dr. J. Rene van Dorp

VCU Personnel: Dr. Jason R. W. Merrick

AUGUST 28, 2013

P: All FV TOTAL VESSEL TIME EXPOSURE (VTE)



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P: VTRA 2010 - BASE CASE - All FV

100%

45%

24%

Factor x Average
Exposure:

> 48.98
> 10.00
10.00
3.61
2.90
2.47
2.17
1.94
1.74
1.58
1.44
1.31
1.20
1.09
1.00
0.81
0.65
0.52
0.39
0.28
0.18
0.09
0.00

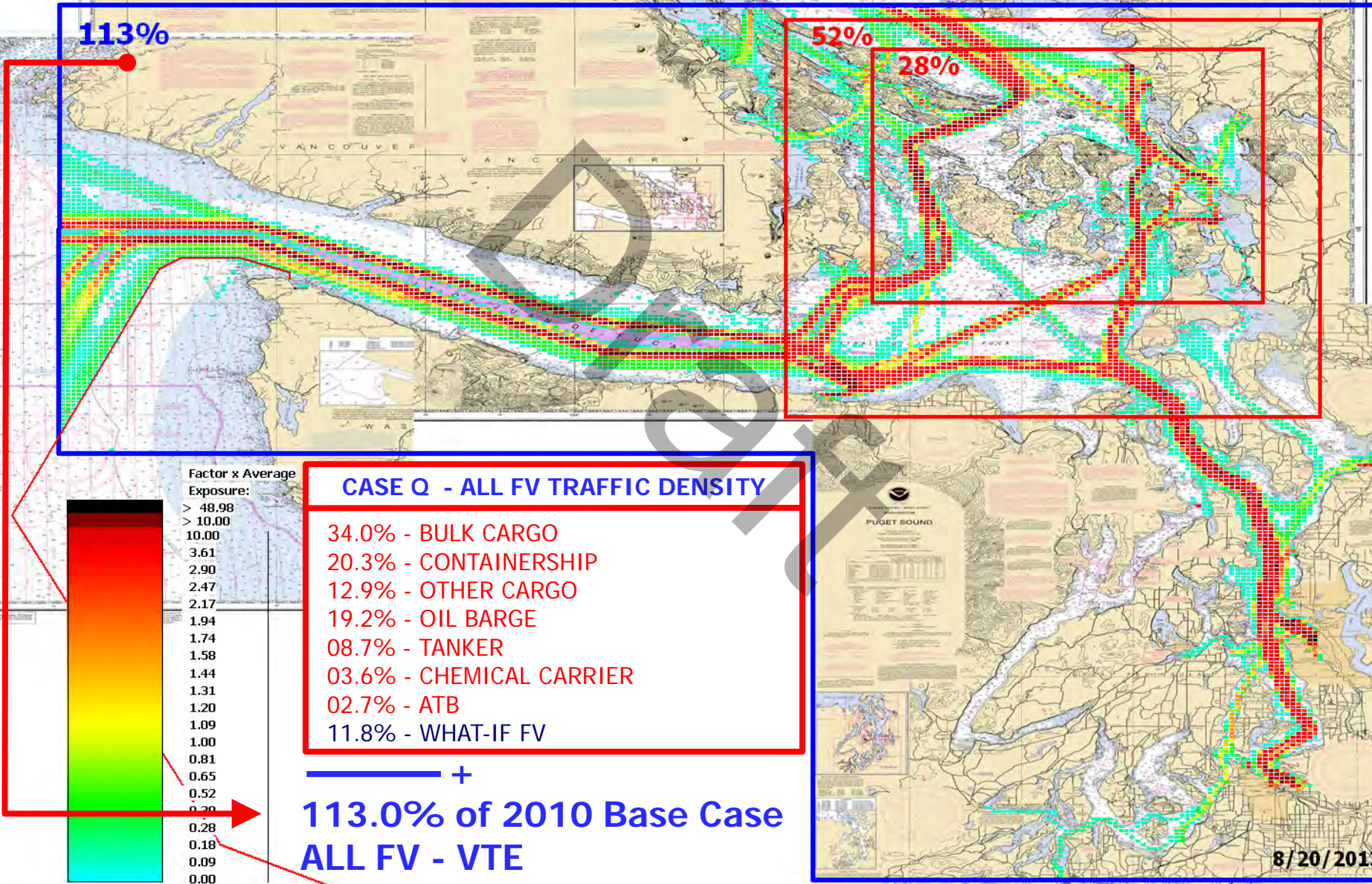
CASE P - ALL FV TRAFFIC DENSITY

32.6% - BULK CARGO
20.2% - CONTAINERSHIP
12.8% - OTHER CARGO
19.3% - OIL BARGE
08.8% - TANKER
03.5% - CHEMICAL CARRIER
02.7% - ATB
00.0% - WHAT-IF FV

100.0% of 2010 Base Case
ALL FV - VTE

Q: All FV TOTAL VESSEL TIME EXPOSURE (VTE)

Q: VTRA 2010 - GATEWAY 487 - All FV



Q: WHAT-IF FV TOTAL VESSEL TIME EXPOSURE (VTE)



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Q: VTRA 2010 - GATEWAY 487

12%

7%

4%

Factor x Average
Exposure:

> 48.98
> 10.00
10.00
3.61
2.90
2.47
2.17
1.94
1.74
1.58
1.44
1.31
1.20
1.09
1.00
0.81
0.65
0.52
0.39
0.28
0.18
0.09
0.00

CASE Q - ALL FV TRAFFIC DENSITY

09.1% - BULK CARGO
00.0% - CONTAINERSHIP
00.0% - TANKER
02.6% - OILBARGE

— +
**11.8% of 2010 Base Case
ALL FV - VTE**

P: ALL FV POTENTIAL GROUNDING EXPOSURE (PGE)



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P: VTRA 2010 - BASE CASE

100%

52%

29%

Factor x Average
Exposure:

> 23.27
> 10.00
10.00
3.50
2.83
2.43
2.14
1.92
1.73
1.57
1.43
1.31
1.19
1.09
1.00
0.82
0.66
0.52
0.39
0.28
0.18
0.09
0.00

P: POT. GROUND. EXPOSURE (PGE)

28.3% - BULK CARGO
21.8% - CONTAINERSHIP
12.9% - OTHERCARGO
22.8% - OIL BARGE
08.7% - TANKER
03.2% - CHEMICAL CARRIER
02.5% - ATB
00.0% - WHAT-IF FV

100.0% of 2010 Base Case
ALL FV - PGE



Q: ALL FV POTENTIAL GROUNDING EXPOSURE (PGE)

Q: VTRA 2010 - GATEWAY 487

113%

60%

34%

Factor x Average
Exposure:

> 23.27
> 10.00
10.00
3.50
2.83
2.43
2.14
1.92
1.73
1.57
1.43
1.31
1.19
1.09
1.00
0.82
0.66
0.52
0.39
0.20
0.18
0.09
0.00

Q: POT. GROUND. EXPOSURE (PGE)

28.3% - BULK CARGO
21.8% - CONTAINERSHIP
12.9% - OTHERCARGO
22.6% - OIL BARGE
08.5% - TANKER
03.2% - CHEMICAL CARRIER
02.5% - ATB
12.9% - WHAT-IF FV

+
112.7% of 2010 Base Case
ALL FV - PGE

Q: WHAT-IF FV POTENTIAL GROUNDING EXPOSURE (PGE)



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Q: VTRA 2010 - GATEWAY 487

13%

8%

5%

Factor x Average
Exposure:

> 23.27
> 10.00
10.00
3.50
2.83
2.43
2.14
1.92
1.73
1.57
1.43
1.31
1.19
1.09
1.00
0.82
0.66
0.52
0.39
0.28
0.18
0.09
0.00

Q: POT. GROUND. EXPOSURE (PGE)

8.9% - BULK CARGO
0.0% - CONTAINERSHIP
0.0% - TANKER
3.9% - OILBARGE

+
12.9% of 2010 Base Case
ALL FV - PGE

P: ALL FV POTENTIAL GROUNDING FREQUENCY (PGF)



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P: VTRA 2010 - BASE CASE

100%

58%

41%

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
0.38
0.28
0.18
0.09
0.00

P: POTENTIAL GROUND. FREQ. (PGF)

22.0% - BULK CARGO
22.8% - CONTAINERSHIP
14.4% - OTHERCARGO
24.3% - OIL BARGE
11.4% - TANKER
03.0% - CHEMICAL CARRIER
02.1% - ATB
00.0% - WHAT-IF FV

100.0% of 2010 Base Case
ALL FV - PGF

Q: ALL FV POTENTIAL GROUNDING FREQUENCY (PGF)



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Q: VTRA 2010 - GATEWAY 487

110%

67%

49%

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
0.38
0.28
0.18
0.09
0.00

Q: POTENTIAL GROUND. FREQ. (PGF)

22.0% - BULK CARGO
22.8% - CONTAINERSHIP
14.4% - OTHERCARGO
23.2% - OIL BARGE
11.4% - TANKER
03.0% - CHEMICAL CARRIER
02.1% - ATB
11.5% - WHAT-IF FV

110.5% of 2010 Base Case
ALL FV - PGF

8/28/2013

Q: WHAT-IF FV POTENTIAL GROUNDING FREQUENCY (PGF)



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Q: VTRA 2010 - GATEWAY 487

11%

9%

9%

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

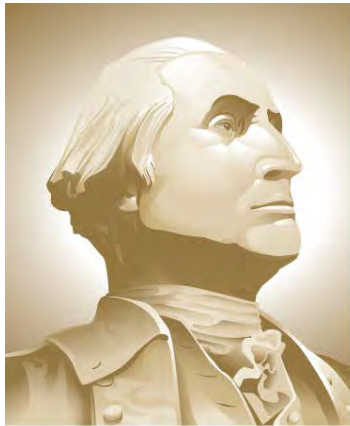
Q: POTENTIAL GROUND. FREQ. (PGF)

07.8% - BULK CARGO
00.0% - CONTAINERSHIP
00.0% - TANKER
03.7% - OILBARGE

+
11.5% of 2010 Base Case
ALL FV - PGF

VTRA 2010 CASE Q RESULTS – GROUNDING OIL (CARGO + FUEL), CARGO AND FUEL OIL GEOGRAPHIC PROFILES

Presentation by: J. Rene van Dorp



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CASE Q: Gateway + Bunkering Operations

GWU Personnel: Dr. J. Rene van Dorp

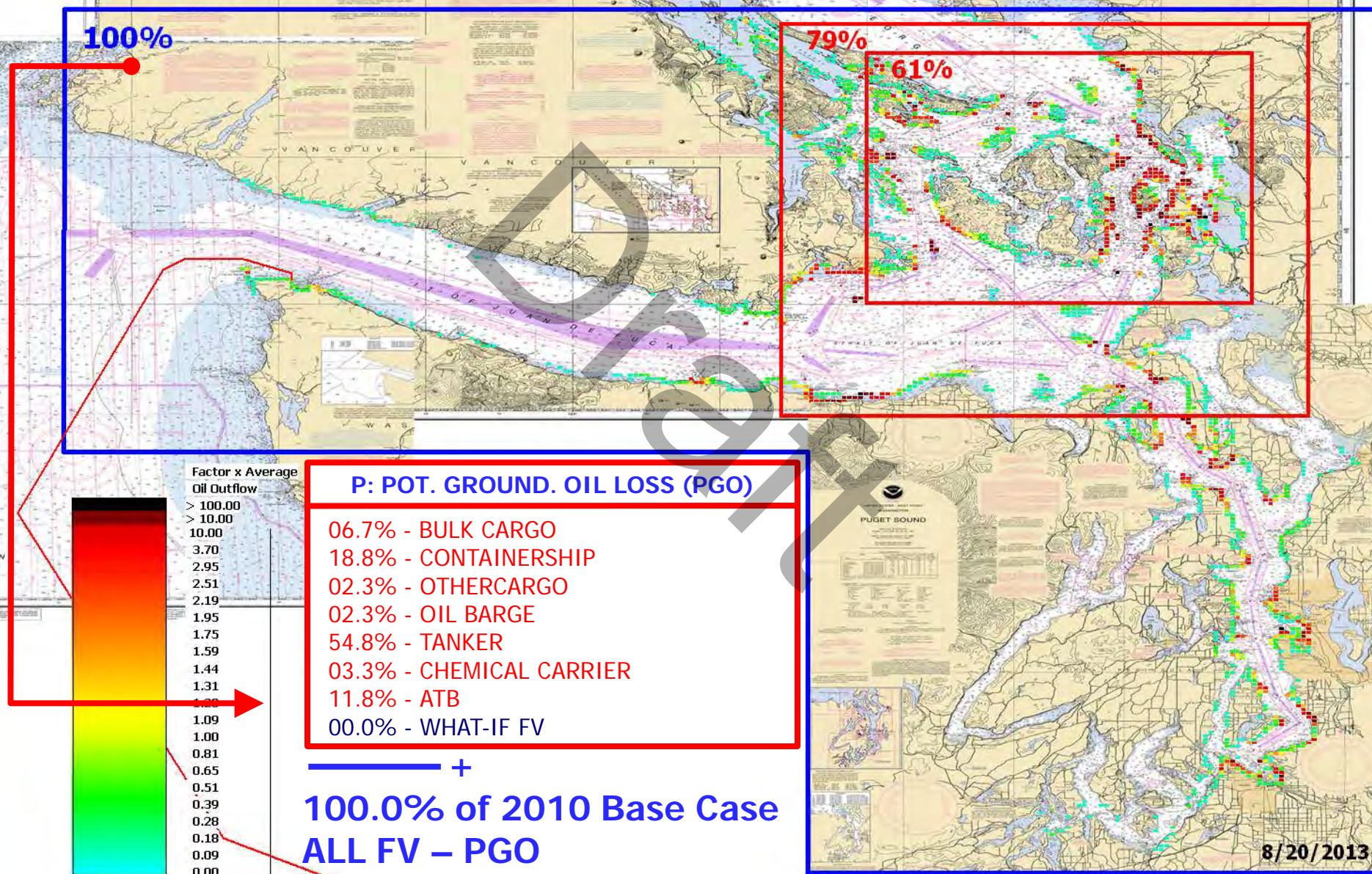
VCU Personnel: Dr. Jason R. W. Merrick

AUGUST 28, 2013



P: ALL FV POTENTIAL GROUNDING OIL (FUEL + CARGO) LOSS (PGO)

P: VTRA 2010 - BASE CASE





Q: ALL FV POTENTIAL GROUNDING OIL (FUEL + CARGO) LOSS (PGO)

Q: VTRA 2010 - GATEWAY 487

103%

82%

64%

Factor x Average
Oil Outflow

> 100.00
> 10.00
10.00
3.70
2.95
2.51
2.19
1.95
1.75
1.59
1.44
1.31
1.22
1.09
1.00
0.81
0.65
0.51
0.39
0.28
0.18
0.09
0.00

Q: POT. GROUND. OIL LOSS (PGO)

06.7% - BULK CARGO
18.7% - CONTAINERSHIP
02.3% - OTHERCARGO
02.2% - OIL BARGE
54.2% - TANKER
03.3% - CHEMICAL CARRIER
12.6% - ATB
03.2% - WHAT-IF FV

103.3% of 2010 Base Case
ALL FV – PGO

Q: WHAT-IF FV POTENTIAL GROUNDING OIL (FUEL + CARGO) LOSS (PGO)

Q: VTRA 2010 - GATEWAY 487

Factor x Average
Oil Outflow

> 100.00
> 10.00
10.00
3.70
2.95
2.51
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

Q: POT. GROUND. OIL LOSS (PGO)

02.9% - BULKCARRIER
00.0% - CONTAINERSHIP
00.0% - OIL TANKER
00.3% - OIL BARGE

3.2% of 2010 Base Case
ALL FV – PGO

P: ALL FV POTENTIAL GROUNDING FUEL OIL LOSS (PGFO)



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P: VTRA 2010 - BASE CASE

32%

20%

13%

Factor x Average
Oil Outflow

> 100.00
> 10.00
10.00
3.70
2.95
2.51
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
0.20
0.18
0.09
0.00

P: POT. GROUND. FUEL OIL (PGFO)

06.7% - BULK CARGO
18.8% - CONTAINERSHIP
02.3% - OTHERCARGO
00.2% - OIL BARGE
02.0% - TANKER
00.2% - CHEMICAL CARRIER
02.0% - ATB
00.0% - WHAT-IF FV

32.0% of 2010 Base Case
ALL FV – PGO

Q: ALL FV POTENTIAL GROUNDING FUEL OIL LOSS (PGFO)



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Q: VTRA 2010 - GATEWAY 487

35%

23%

16%

Factor x Average
Oil Outflow

> 100.00
> 10.00
10.00
3.70
2.95
2.51
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
0.20
0.18
0.09
0.00

Q: POT. GROUND. FUEL OIL (PGFO)

06.7% - BULK CARGO
18.7% - CONTAINERSHIP
02.3% - OTHERCARGO
00.2% - OIL BARGE
02.0% - TANKER
00.2% - CHEMICAL CARRIER
02.1% - ATB
03.0% - WHAT-IF FV

+
35.2% of 2010 Base Case
ALL FV – PGO

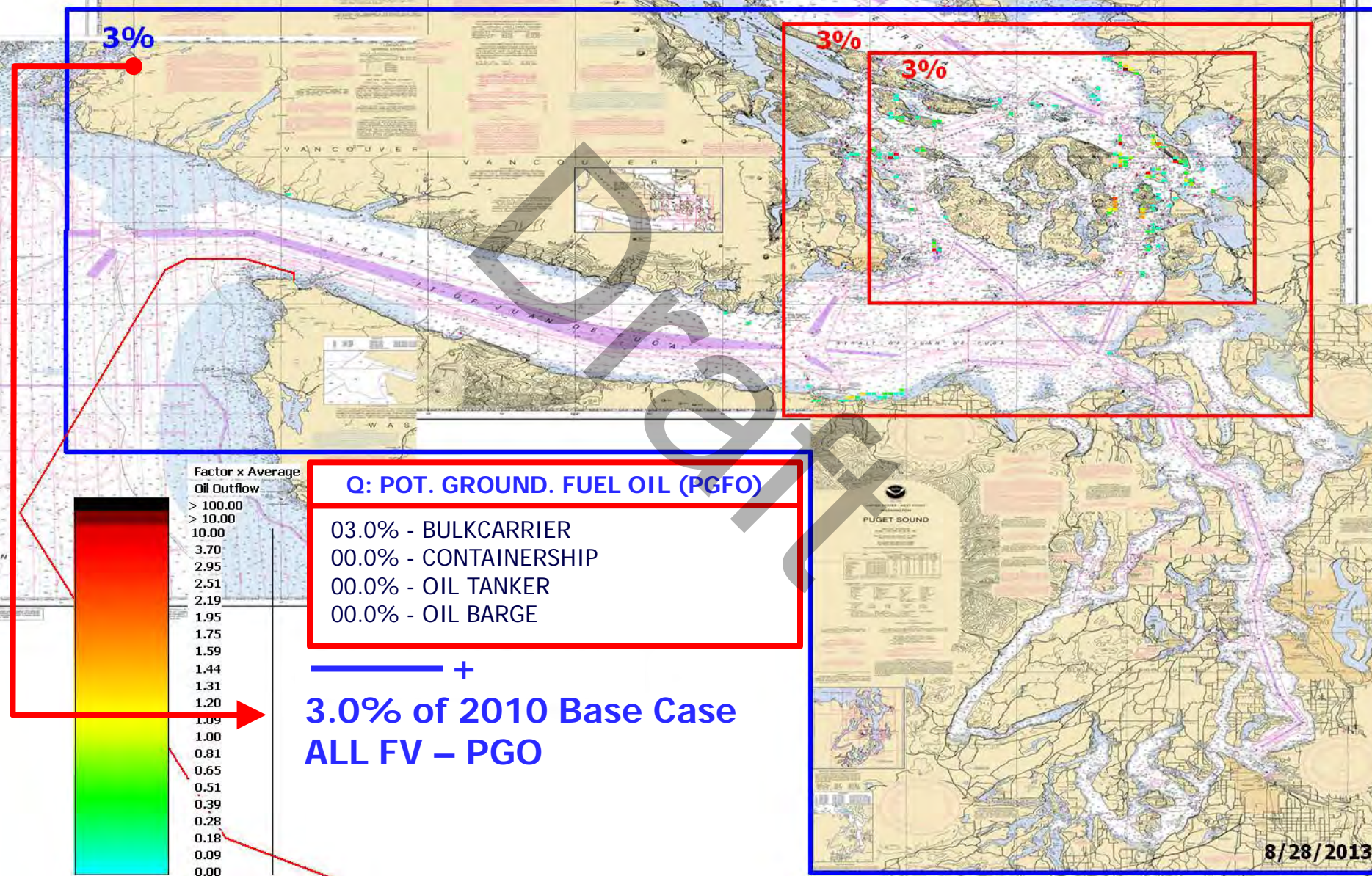
Q: WHAT-IF FV POTENTIAL GROUNDING FUEL OIL LOSS (PGFO)



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Q: VTRA 2010 - GATEWAY 487



P: ALL FV POTENTIAL GROUNDING CARGO OIL LOSS (PGCO)



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P: VTRA 2010 - BASE CASE

68%

59%

47%

Factor x Average
Oil Outflow

> 100.00
> 10.00
10.00
3.70
2.95
2.51
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
0.20
0.18
0.09
0.00

P: POT. GROUND CARGO OIL (PGCO)

00.0% - BULK CARGO
00.0% - CONTAINERSHIP
00.0% - OTHERCARGO
02.1% - OIL BARGE
52.8% - TANKER
03.1% - CHEMICAL CARRIER
09.8% - ATB
00.0% - WHAT-IF FV

+
67.8% of 2010 Base Case
ALL FV – PGO

Q: ALL FV POTENTIAL GROUNDING CARGO OIL LOSS (PGCO)



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Q: VTRA 2010 - GATEWAY 487

68%

59%

48%

Factor x Average
Oil Outflow

> 100.00
> 10.00
10.00
3.70
2.95
2.51
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
0.20
0.18
0.09
0.00

Q: POT. GROUND CARGO OIL (PGCO)

00.0% - BULK CARGO
00.0% - CONTAINERSHIP
00.0% - OTHERCARGO
02.1% - OIL BARGE
52.2% - TANKER
03.2% - CHEMICAL CARRIER
10.5% - ATB
00.3% - WHAT-IF FV

+
68.1% of 2010 Base Case
ALL FV – PGO

Q: WHAT-IF FV POTENTIAL GROUNDING CARGO OIL LOSS (PGCO)



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Q: VTRA 2010 - GATEWAY 487

0%

0%

0%

Factor x Average
Oil Outflow

> 100.00
> 10.00
10.00
3.70
2.95
2.51
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

Q: POT. GROUND. CARGO OIL (PGCO)

00.0% - BULKCARRIER
00.0% - CONTAINERSHIP
00.0% - OIL TANKER
00.3% - OIL BARGE

— +
00.3% of 2010 Base Case
ALL FV – PGO