

VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

3D Relative Risk Profile Comparison
Potential Grounding Accident Frequency

CASE T – GW 487 – KM 348 – DP 415

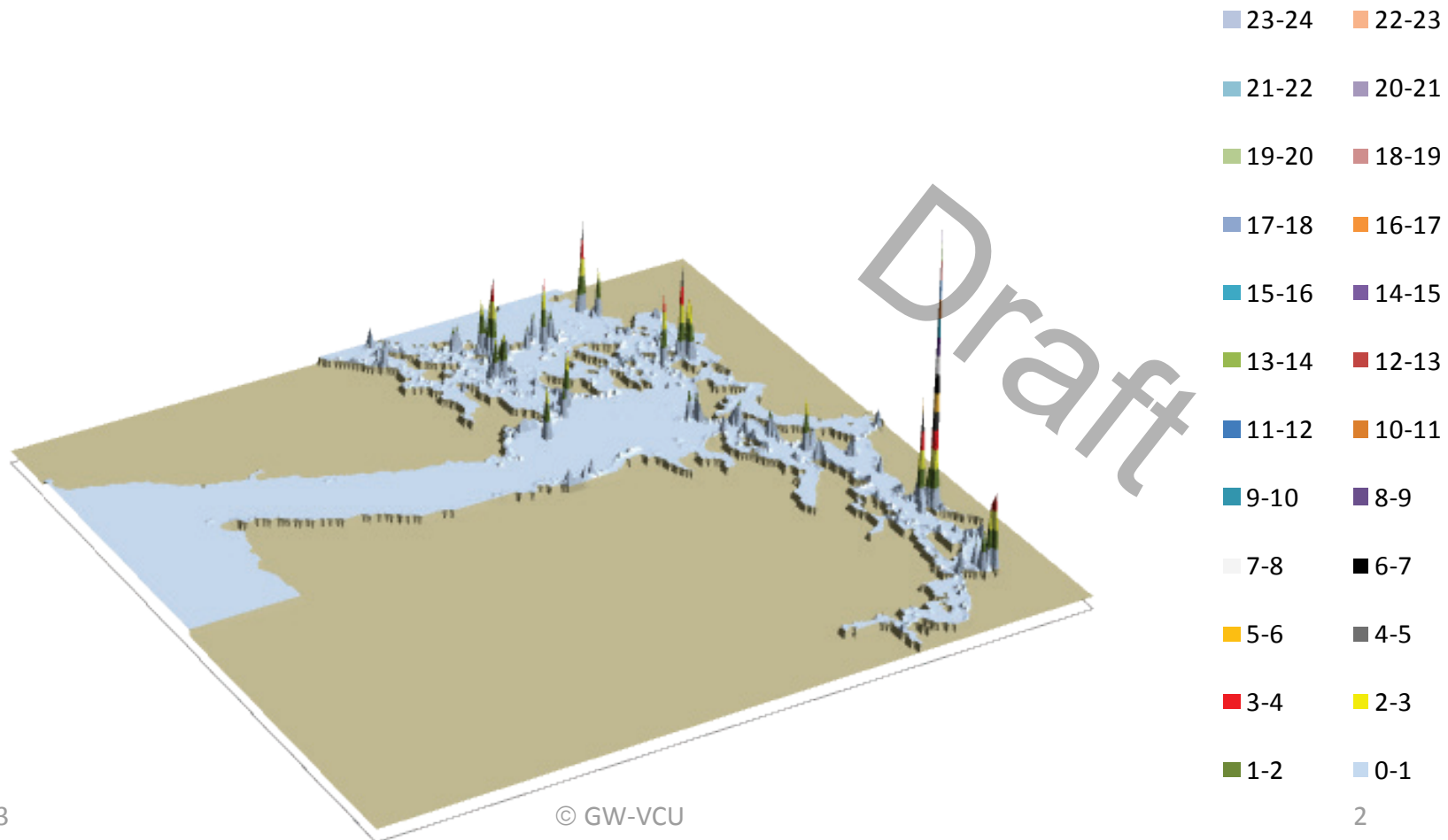
Dr. J. Rene van Dorp and Dr. Jason R.W Merrick

November 2013



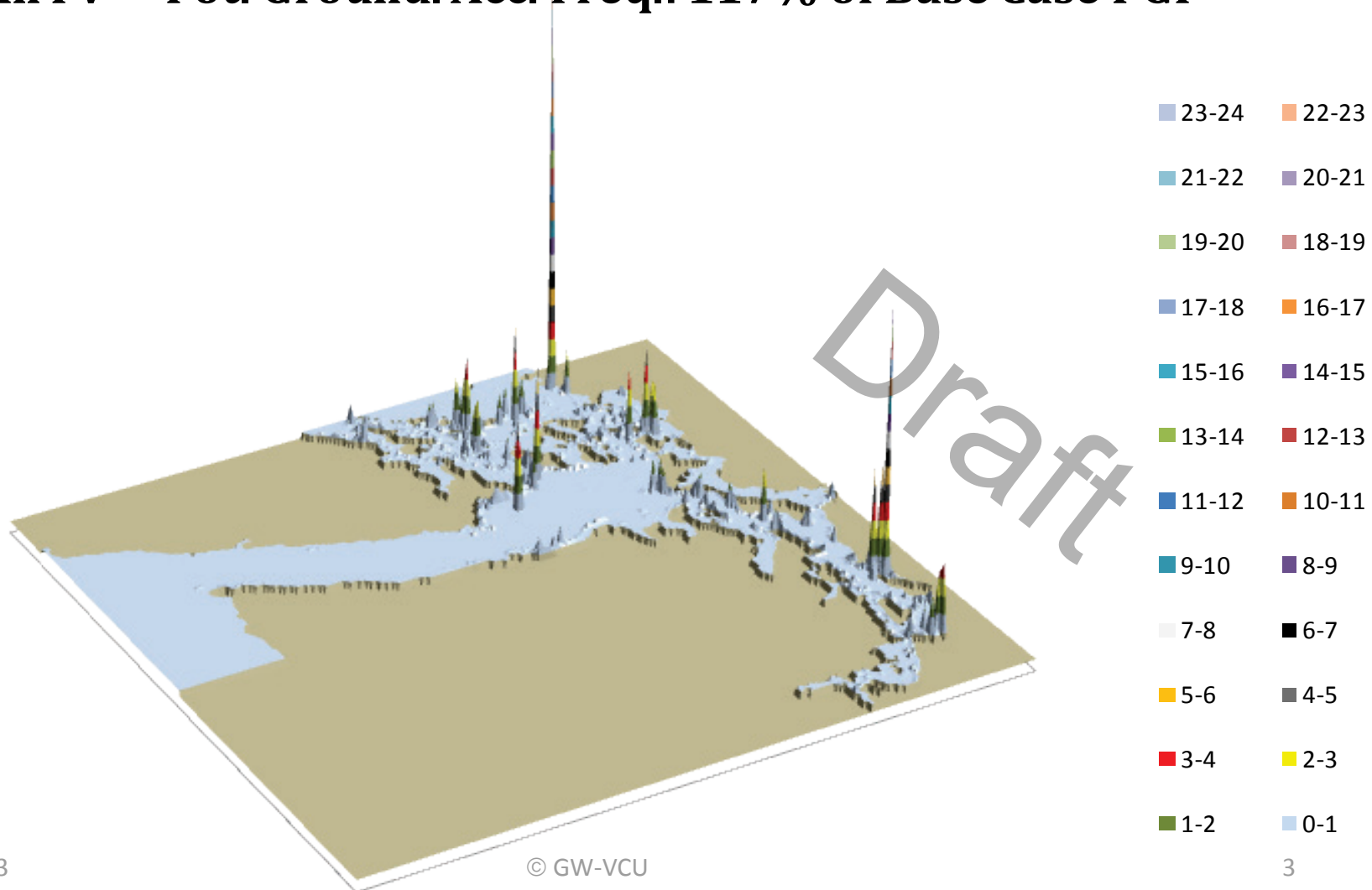
VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

P: Base Case 3D Risk Profile All FV - Pot. Ground. Acc. Freq.: 100% of Base Case PGF



VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

T: GW - KM - DP 3D Risk Profile All FV - Pot. Ground. Acc. Freq.: 117% of Base Case PGF



VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

P: VTRA 2010 - BASE CASE

100.0%

0.3%

58.4%

41.1%

Factor x Average
of Accidents

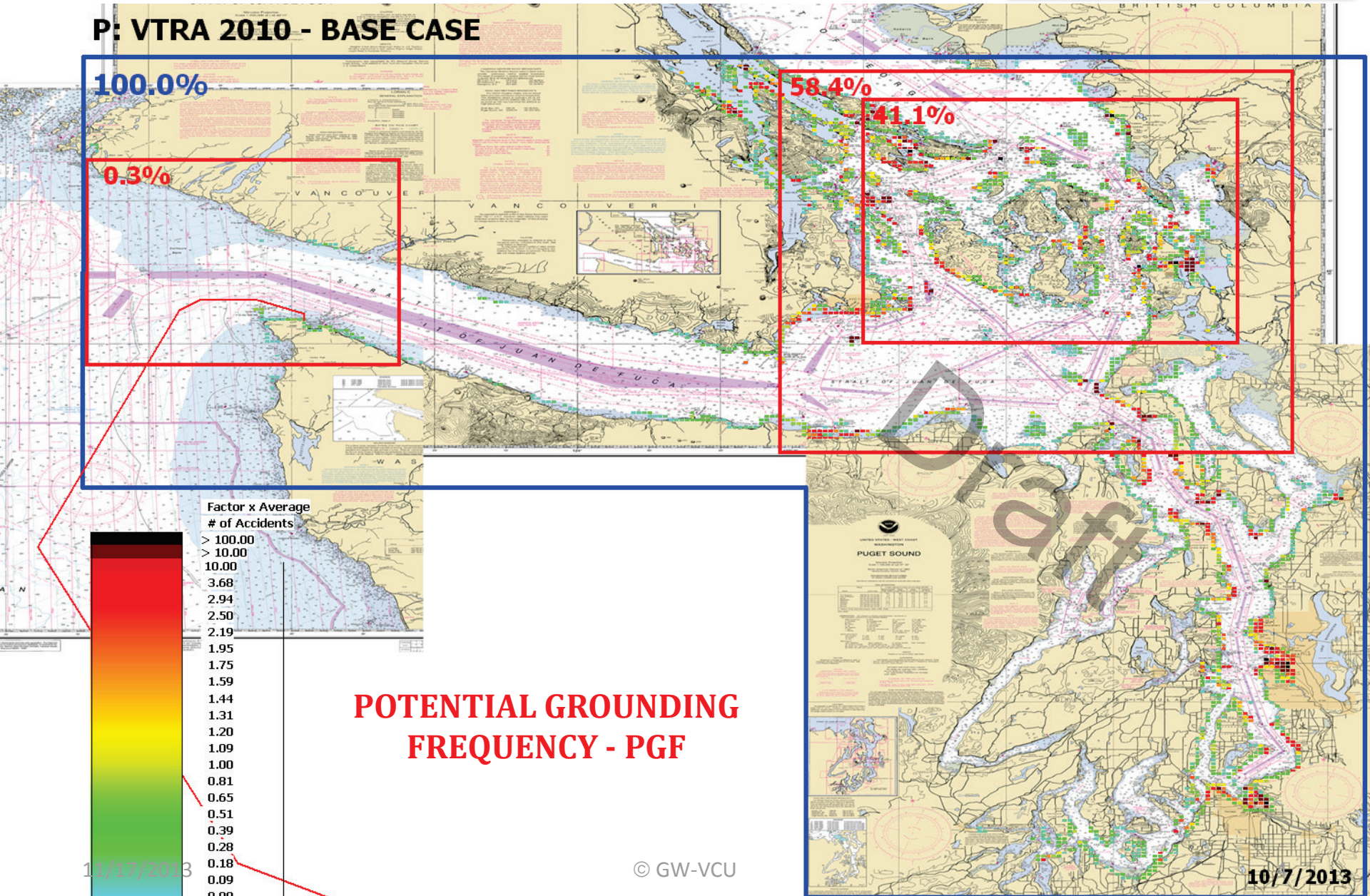
- > 100.00
- > 10.00
- 10.00
- 3.68
- 2.94
- 2.50
- 2.19
- 1.95
- 1.75
- 1.59
- 1.44
- 1.31
- 1.20
- 1.09
- 1.00
- 0.81
- 0.65
- 0.51
- 0.39
- 0.28
- 0.18
- 0.09
- 0.00

POTENTIAL GROUNDING FREQUENCY - PGF

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VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

T: VTRA 2010 - GW 487- KM 348 - DP Cont. 67 and Bulk 348 - ALL FV

116.7%

73.8%

54.0%

0.3%

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

POTENTIAL GROUNDING
FREQUENCY - PGF

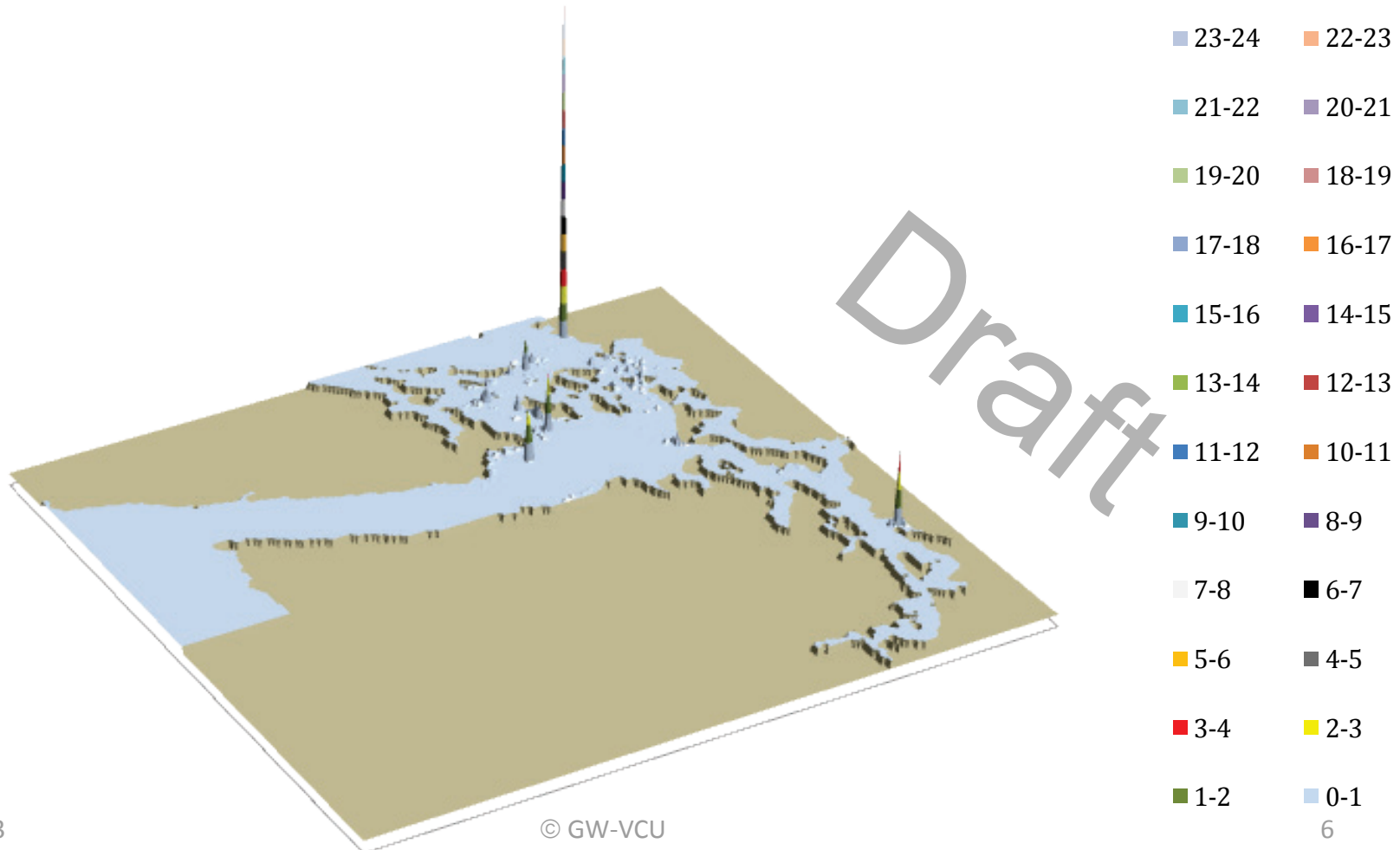
11/17/2013

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11/16/2013

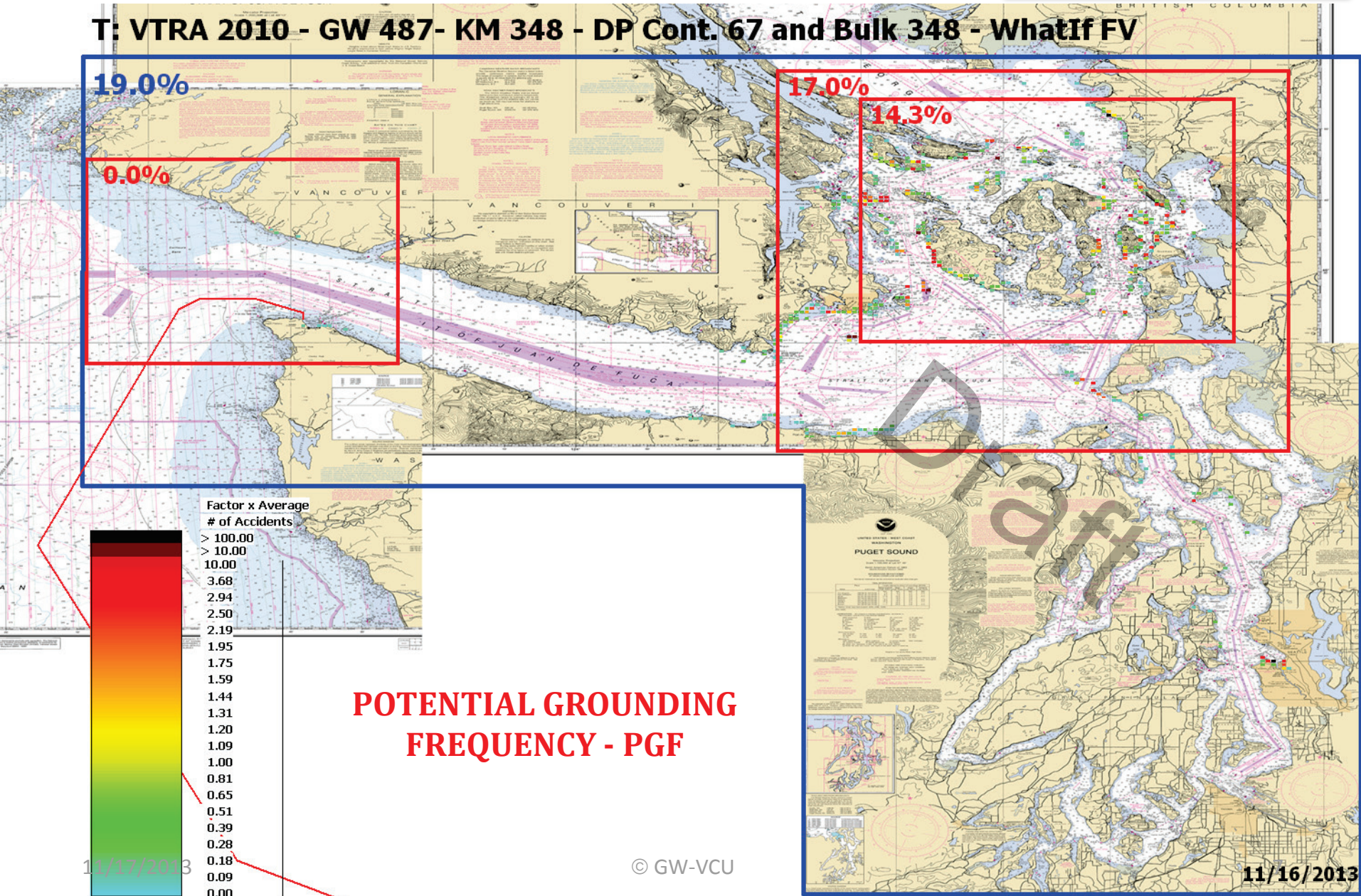
VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

T: GW - KM - DP 3D Risk Profile What-If FV - Pot. Grou. Acc. Fr.: 19% of Base Case PGF



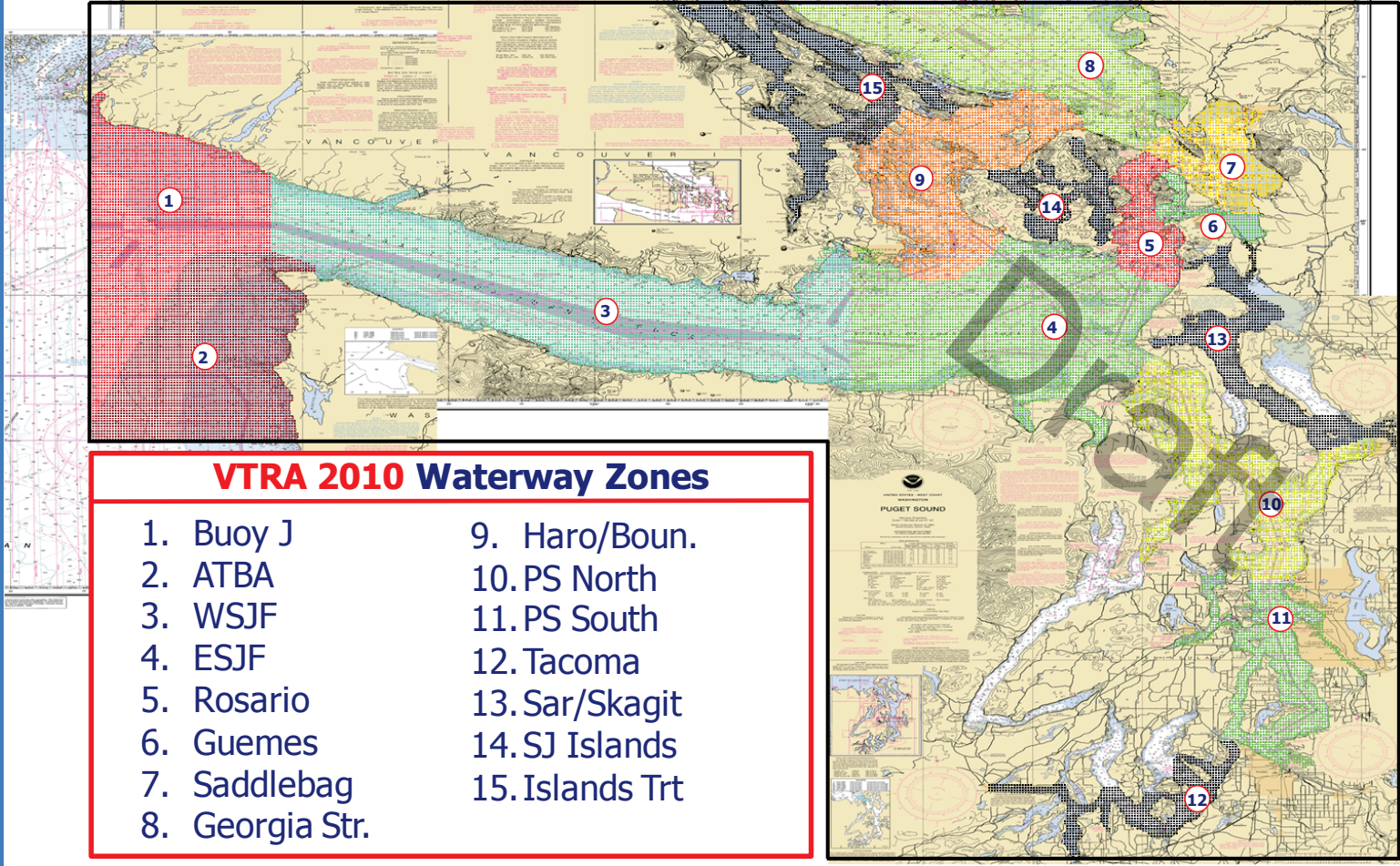
VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

T: VTRA 2010 - GW 487- KM 348 - DP Cont. 67 and Bulk 348 - WhatIf FV



VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

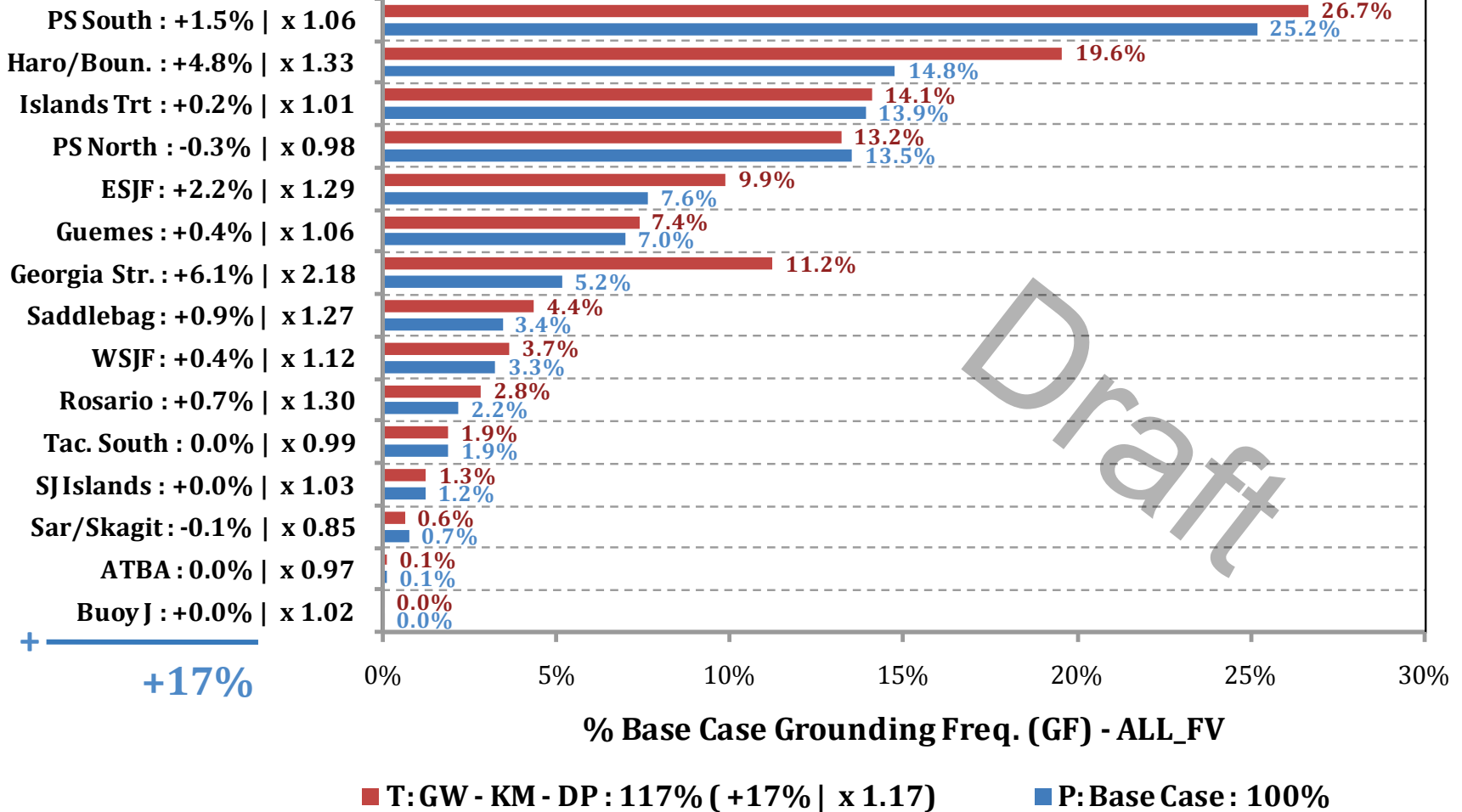
DEFINITION OF 15 WATERWAY ZONES



VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

% Base Case Grounding Frequency - ALL_FV

Waterway Zone:



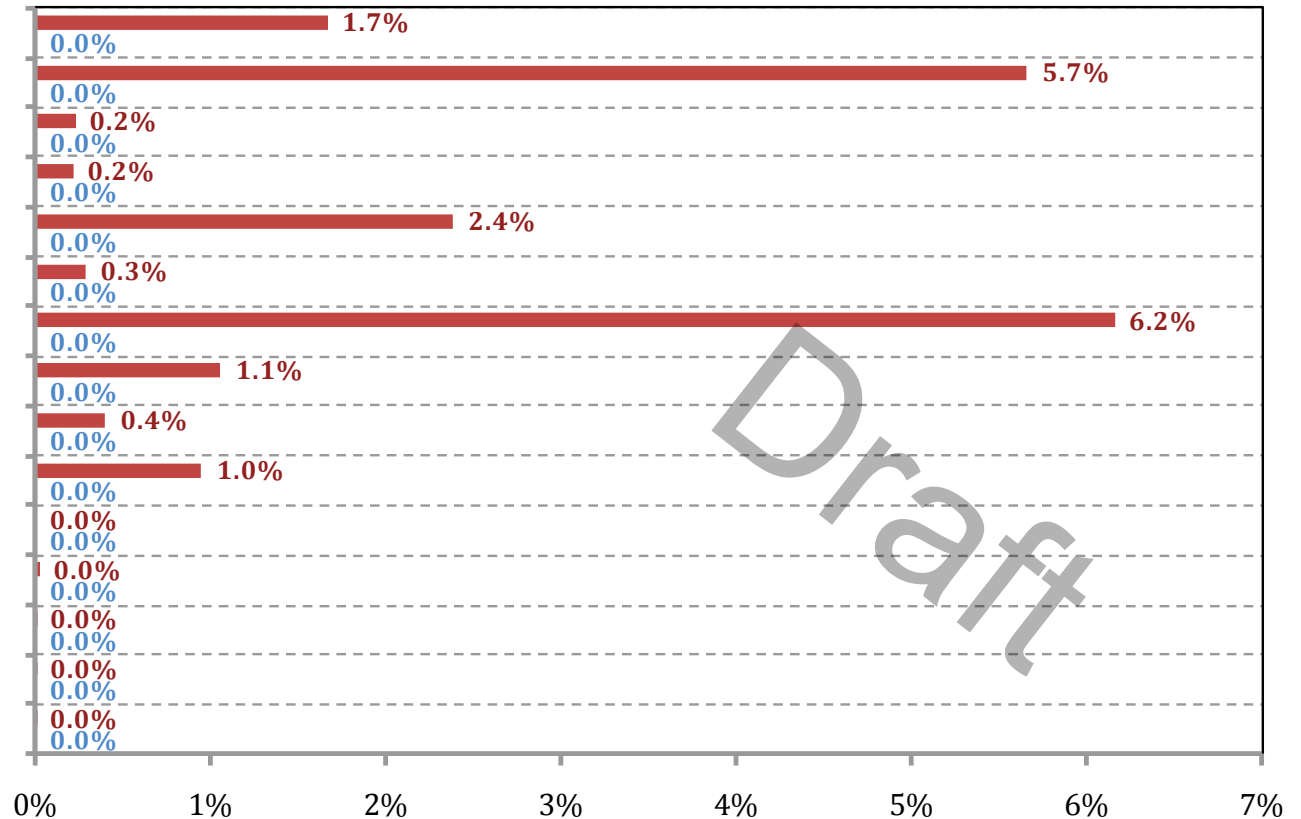
VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

% Base Case Grounding Frequency - WhatIf

Waterway Zone:

- PS South : +1.7%
- Haro/Boun. : +5.7%
- Islands Trt : +0.2%
- PS North : +0.2%
- ESJF : +2.4%
- Guemes : +0.3%
- Georgia Str. : +6.2%
- Saddlebag : +1.1%
- WSJF : +0.4%
- Rosario : +1.0%
- Tac. South : +0.0%
- SJ Islands : +0.0%
- Sar/Skagit : +0.0%
- ATBA : +0.0%
- Buoy J : +0.0%

+19%



% Base Case Grounding Freq. (GF) - WhatIf

■ T: GW - KM - DP : 19% (+19%)

■ P: Base Case : 0%