

VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

3D Relative Risk Profile Comparison
Oil Time Exposure

CASE S – DP 415 + Bunkering

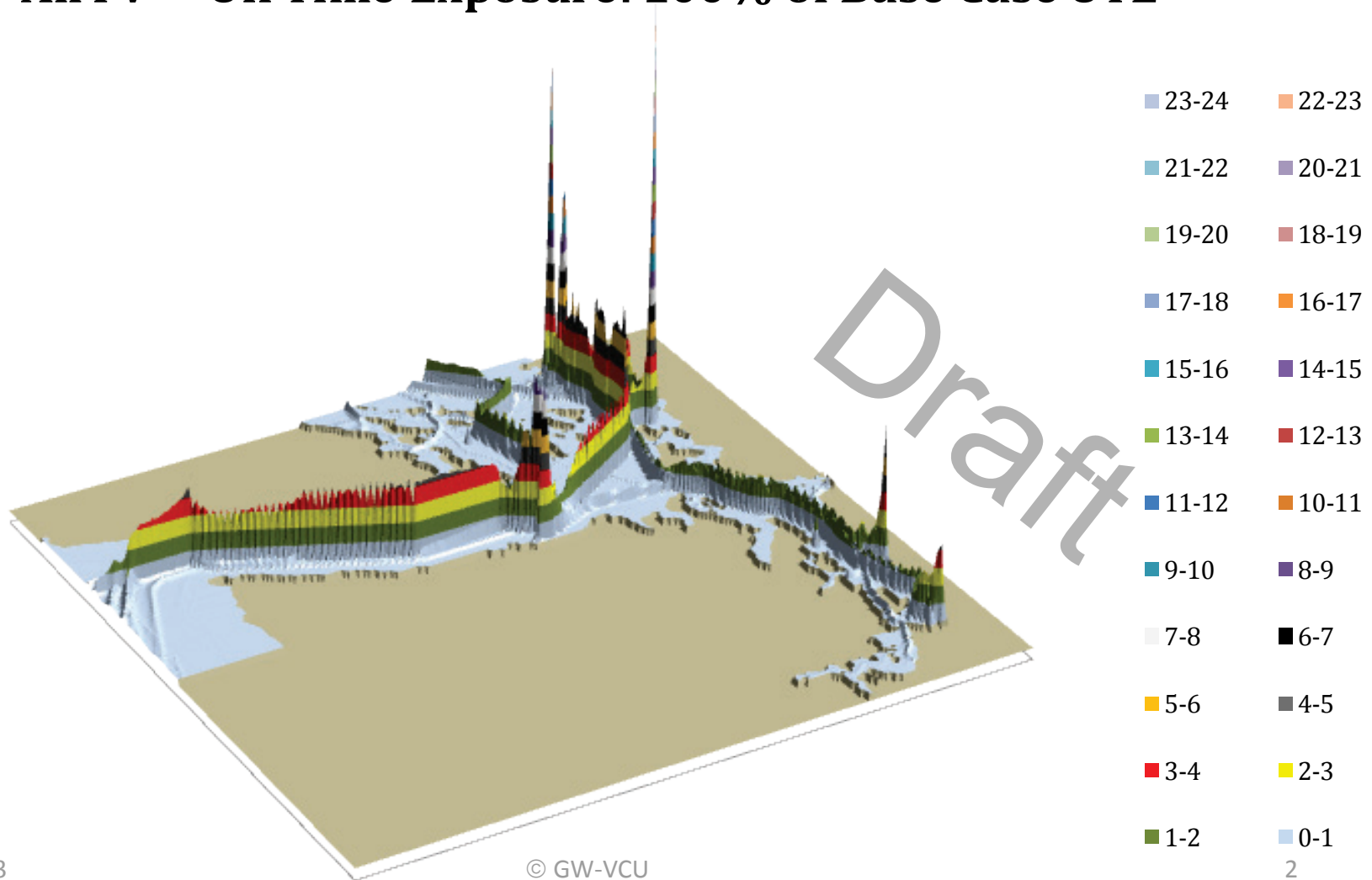
Dr. J. Rene van Dorp and Dr. Jason R.W Merrick

November 2013



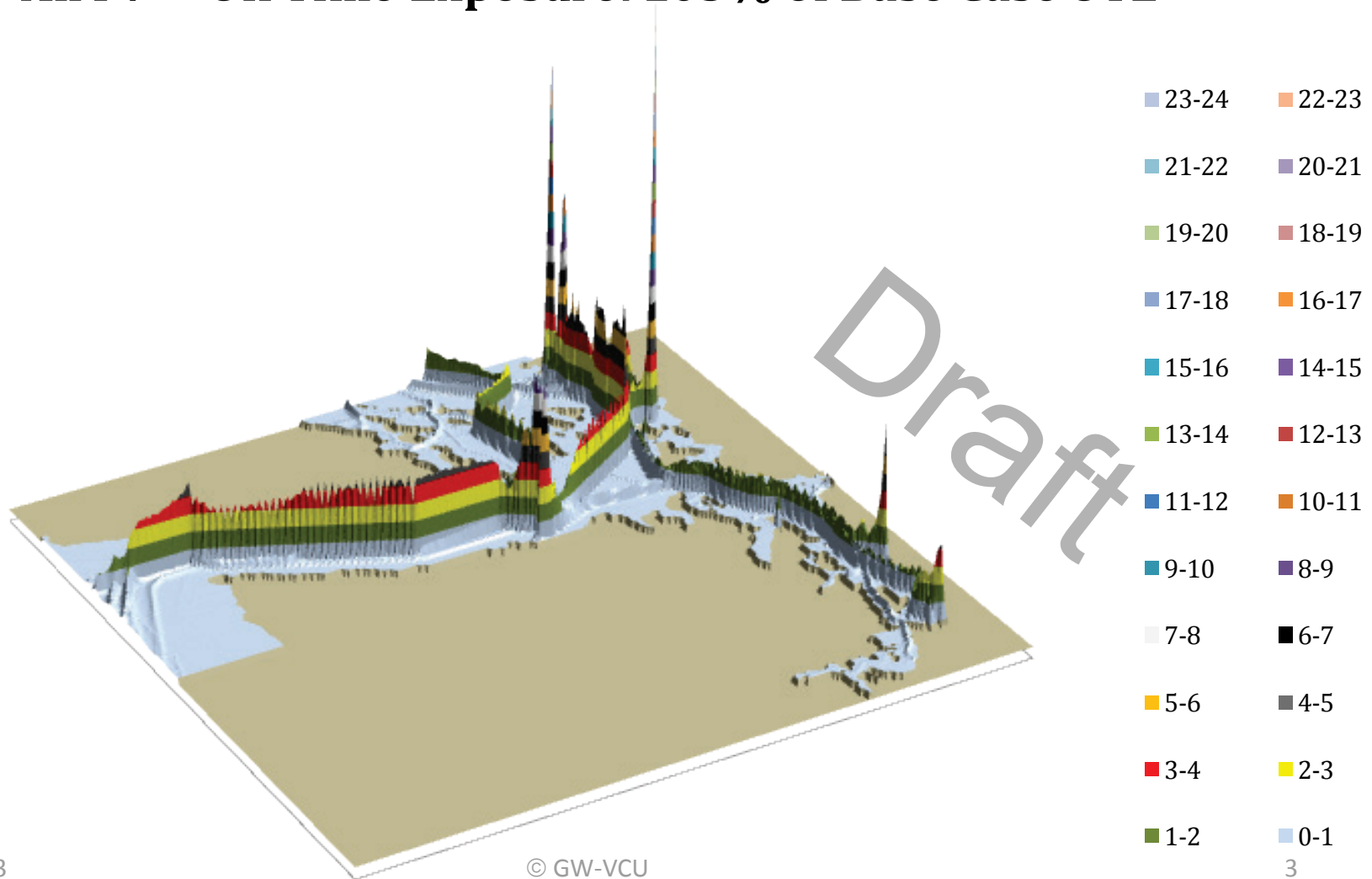
VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

P: Base Case 3D Risk Profile All FV - Oil Time Exposure: 100% of Base Case OTE



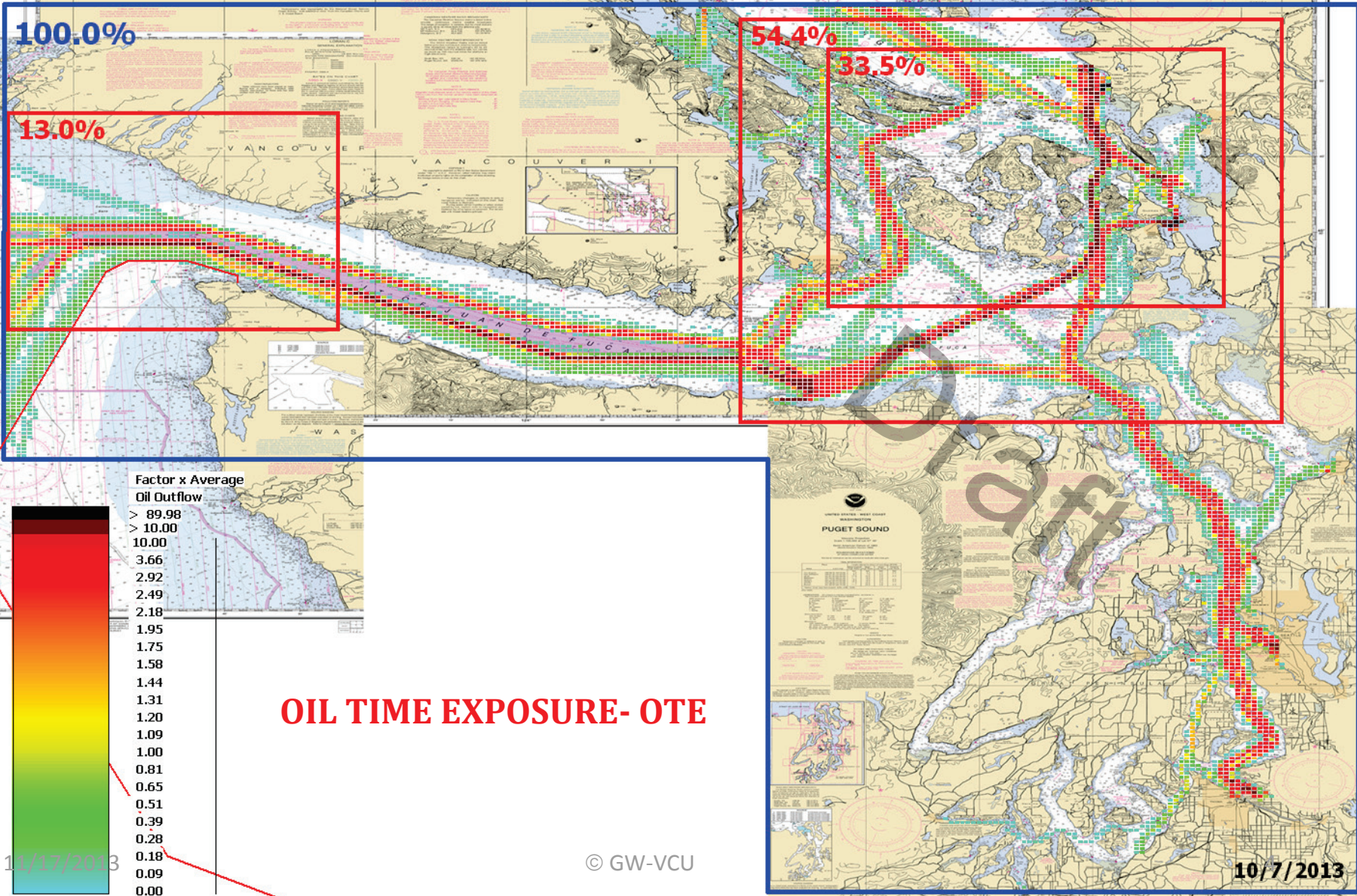
VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

S: DP 415 3D Risk Profile All FV - Oil Time Exposure: 103% of Base Case OTE



VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

P: VTRA 2010 - BASE CASE - All FV



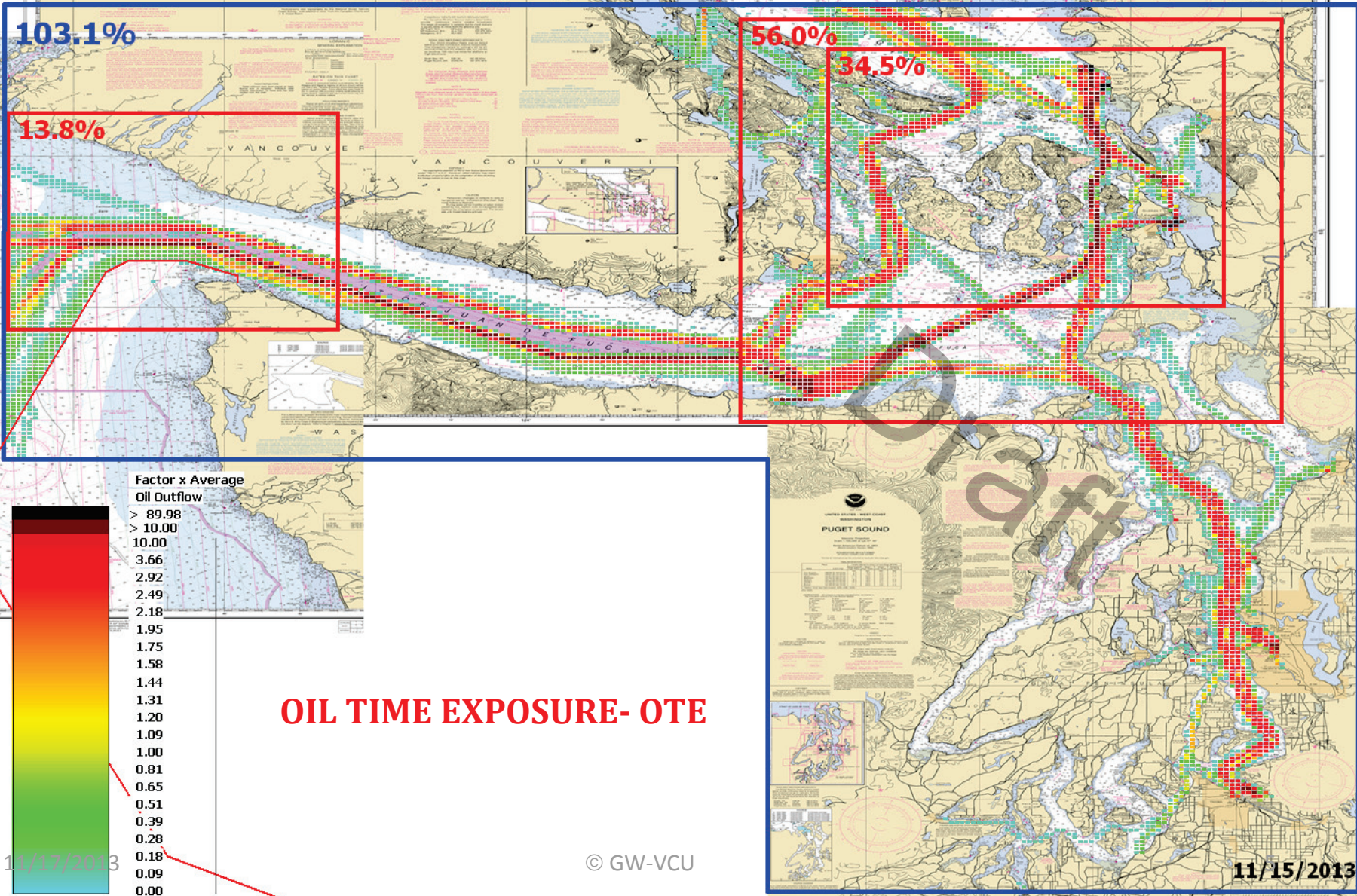
11/17/2013

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VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

S: VTRA 2010 - Delta Port - Cont. 67 and Bulk 348 - All FV



OIL TIME EXPOSURE- OTE

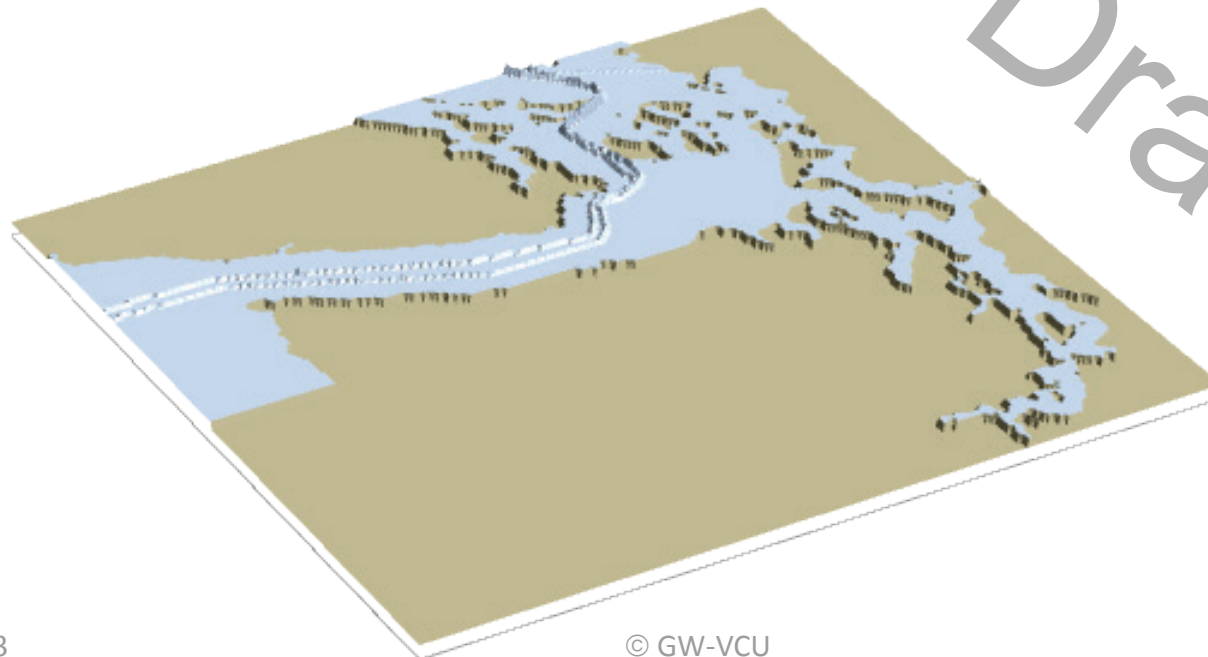
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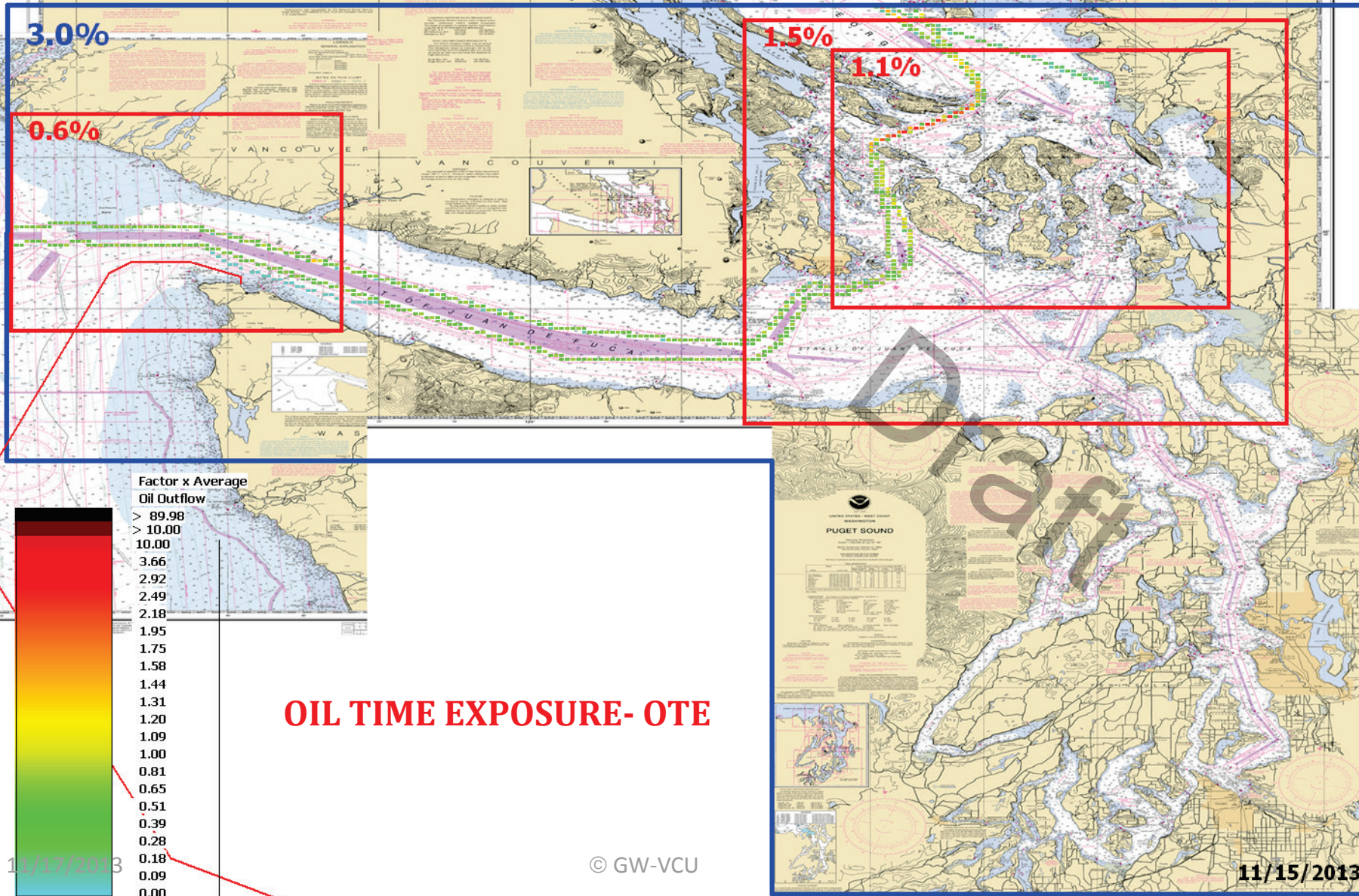
VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

S: DP 415 3D Risk Profile What-If FV - Oil Time Exposure: 3% of Base Case OTE



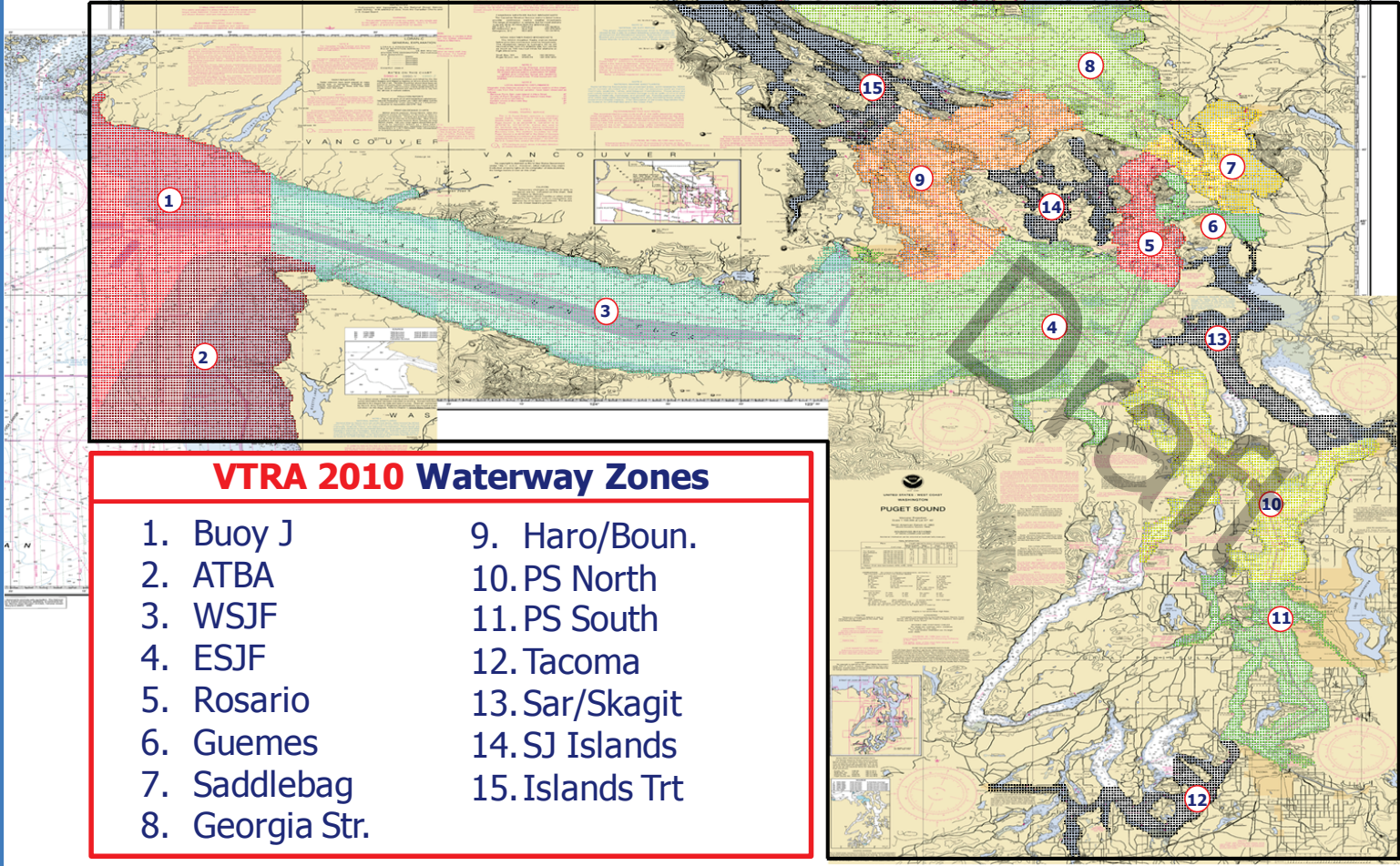
VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

S: VTRA 2010 - Delta Port - Cont. 67 and Bulk 348 - WhatIf FV



VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

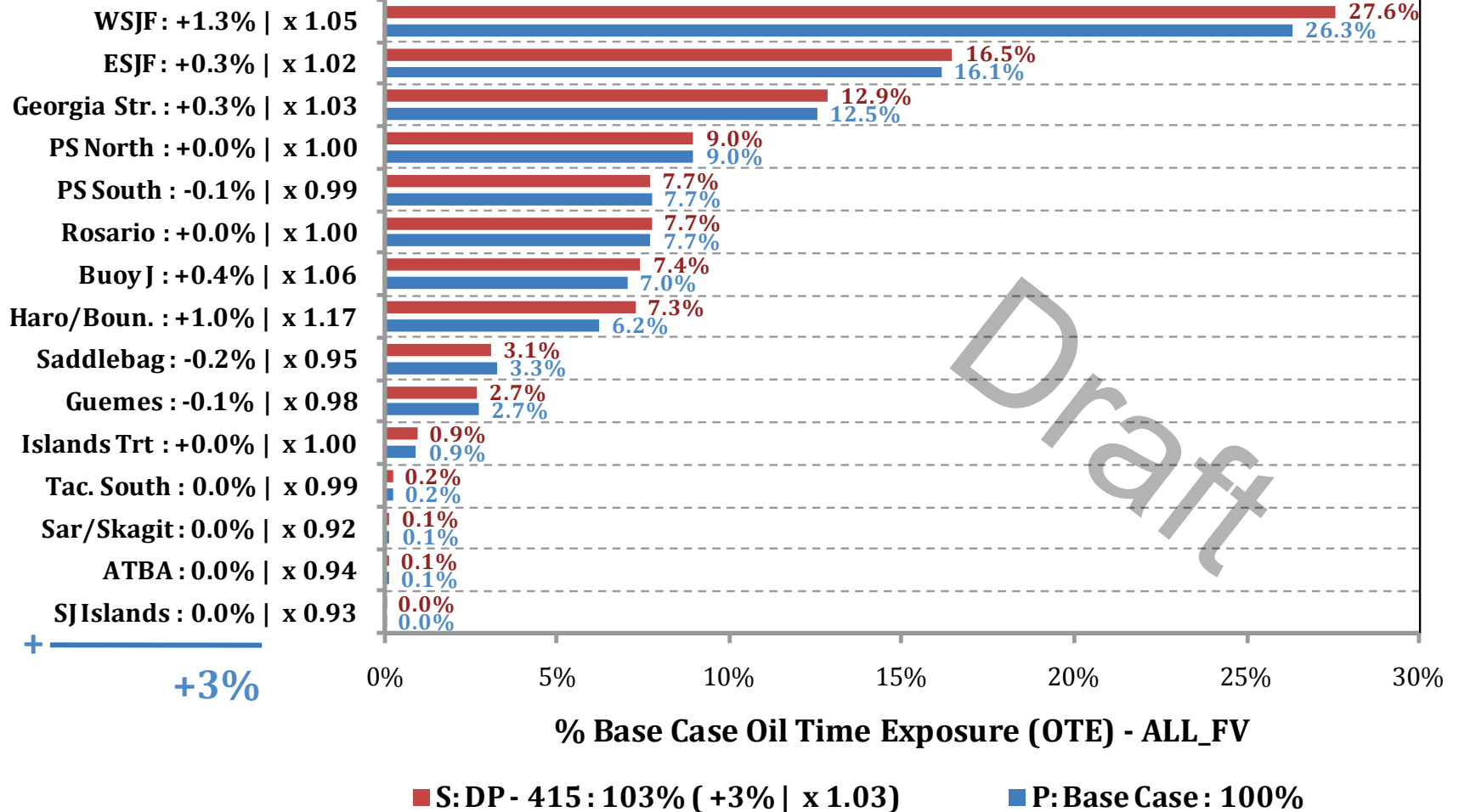
DEFINITION OF 15 WATERWAY ZONES



VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

% Base Case Oil Time Exposure - ALL_FV

Waterway Zone:



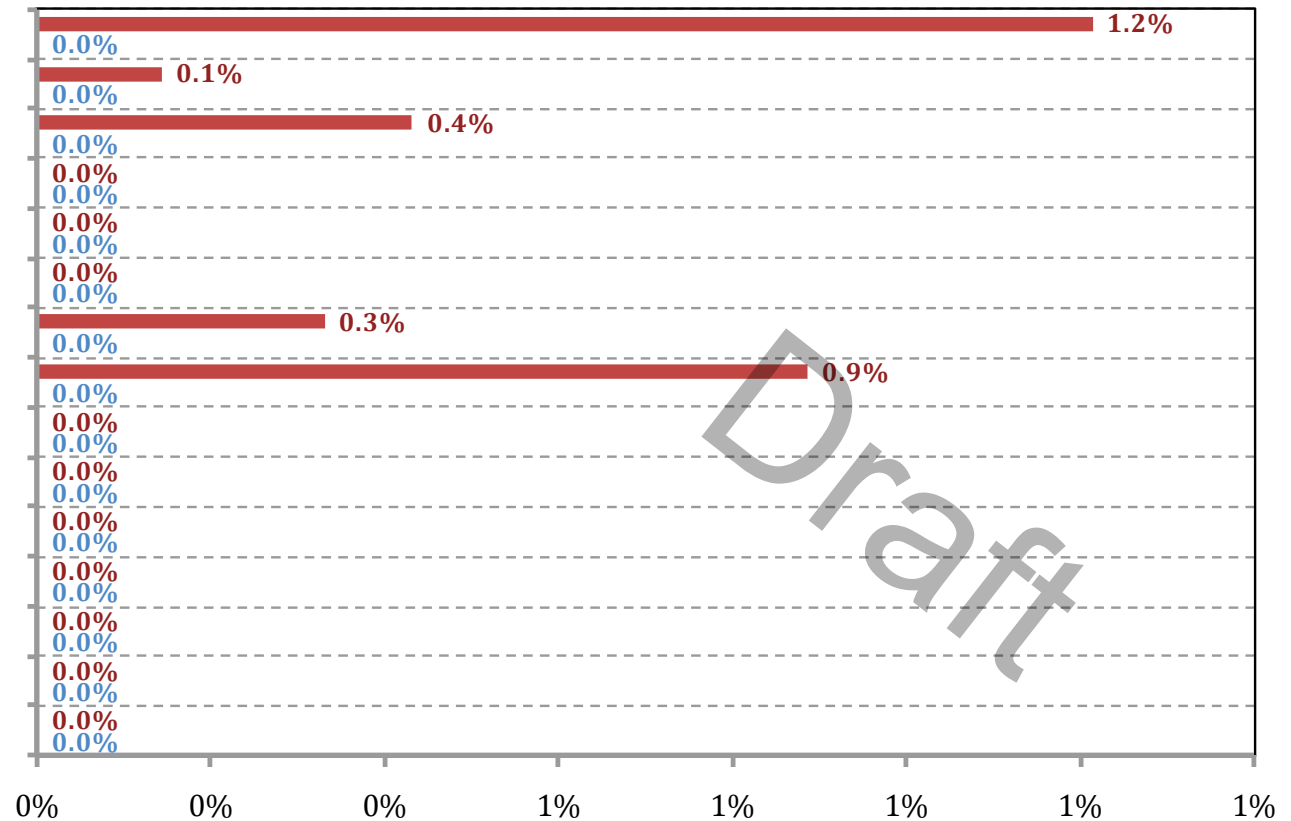
VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

% Base Case Oil Time Exposure - WhatIf

Waterway Zone:

- WSJF: +1.2%
- ESJF: +0.1%
- Georgia Str. : +0.4%
- PS North : 0.0%
- PS South : 0.0%
- Rosario : 0.0%
- Buoy J : +0.3%
- Haro/Boun. : +0.9%
- Saddlebag: 0.0%
- Guemes : 0.0%
- Islands Trt : 0.0%
- Tac. South : 0.0%
- Sar/Skagit: 0.0%
- ATBA : 0.0%
- SJIslands : 0.0%

+ **+3%**



% Base Case Oil Time Exposure (OTE) - WhatIf

■ S: DP - 415 : 3% (+3%)

■ P: Base Case : 0%