

# VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

3D Relative Risk Profile Comparison  
Oil Time Exposure

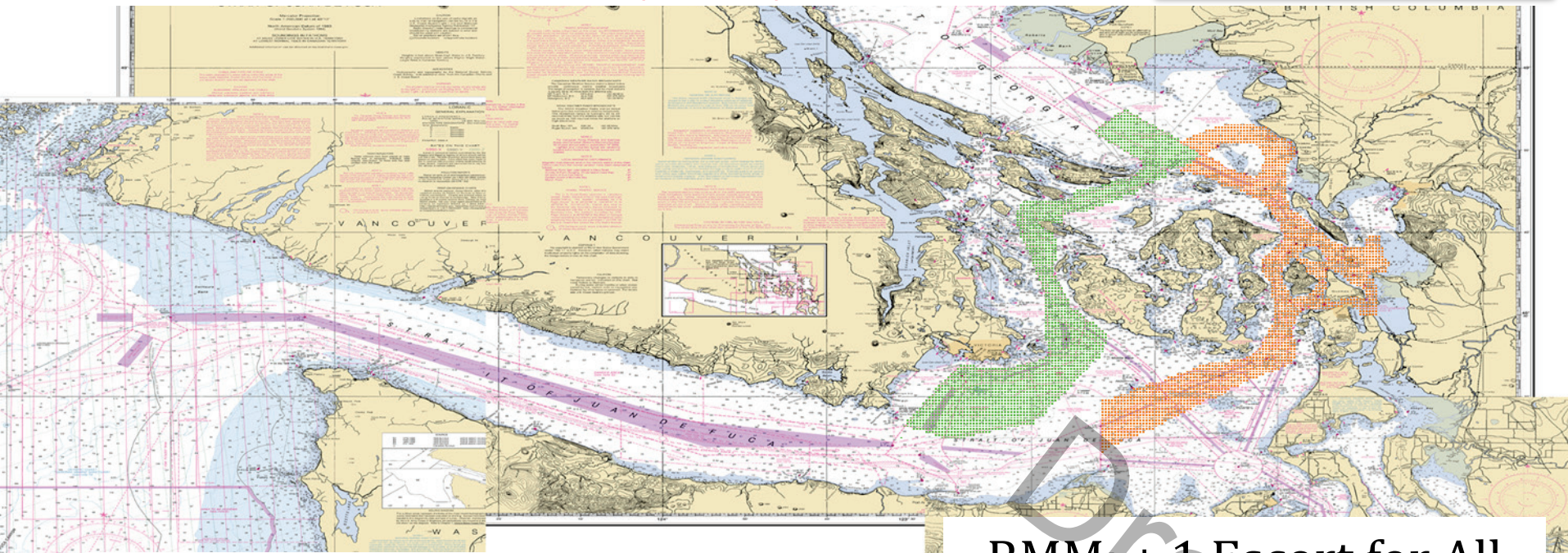
**CASE T: GW – KM – DP & +1 Escort for all  
Focus Vessels on Haro Routes**

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

**November 2013**



# VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

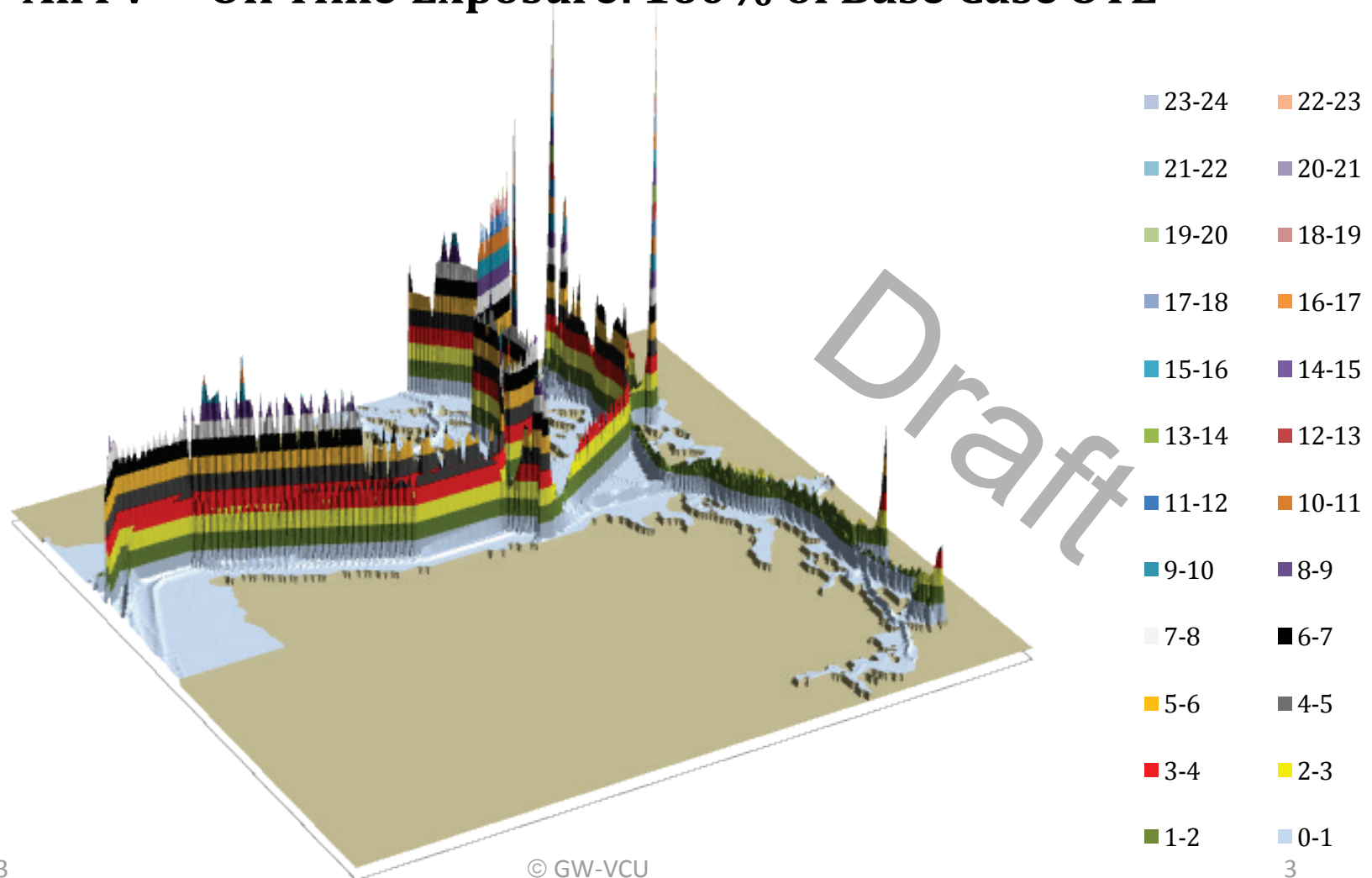


**DEFINITION OF ASSUMED LOCATIONS  
FOR ADDED ESCORT VESSEL  
FOR HARO-BOUNDARY ROUTES (GREEN)  
AND  
FOR ROSARIO ROUTES (ORANGE)**

RMM: + 1 Escort for All  
Focus Vessels  
Haro - Boundary Pass  
Routes (Green)

# VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

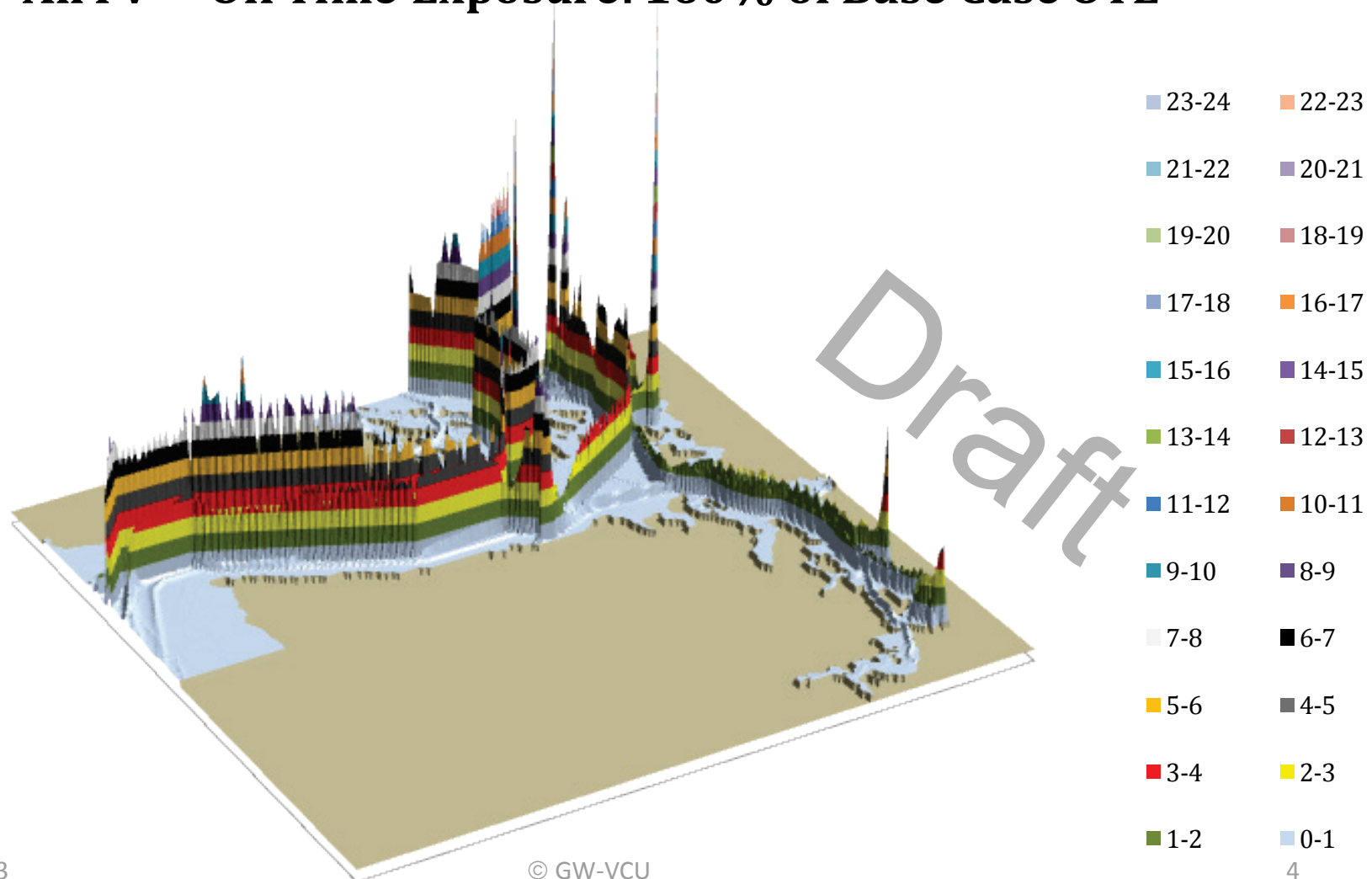
## T: GW - KM - DP 3D Risk Profile All FV - Oil Time Exposure: 160% of Base Case OTE





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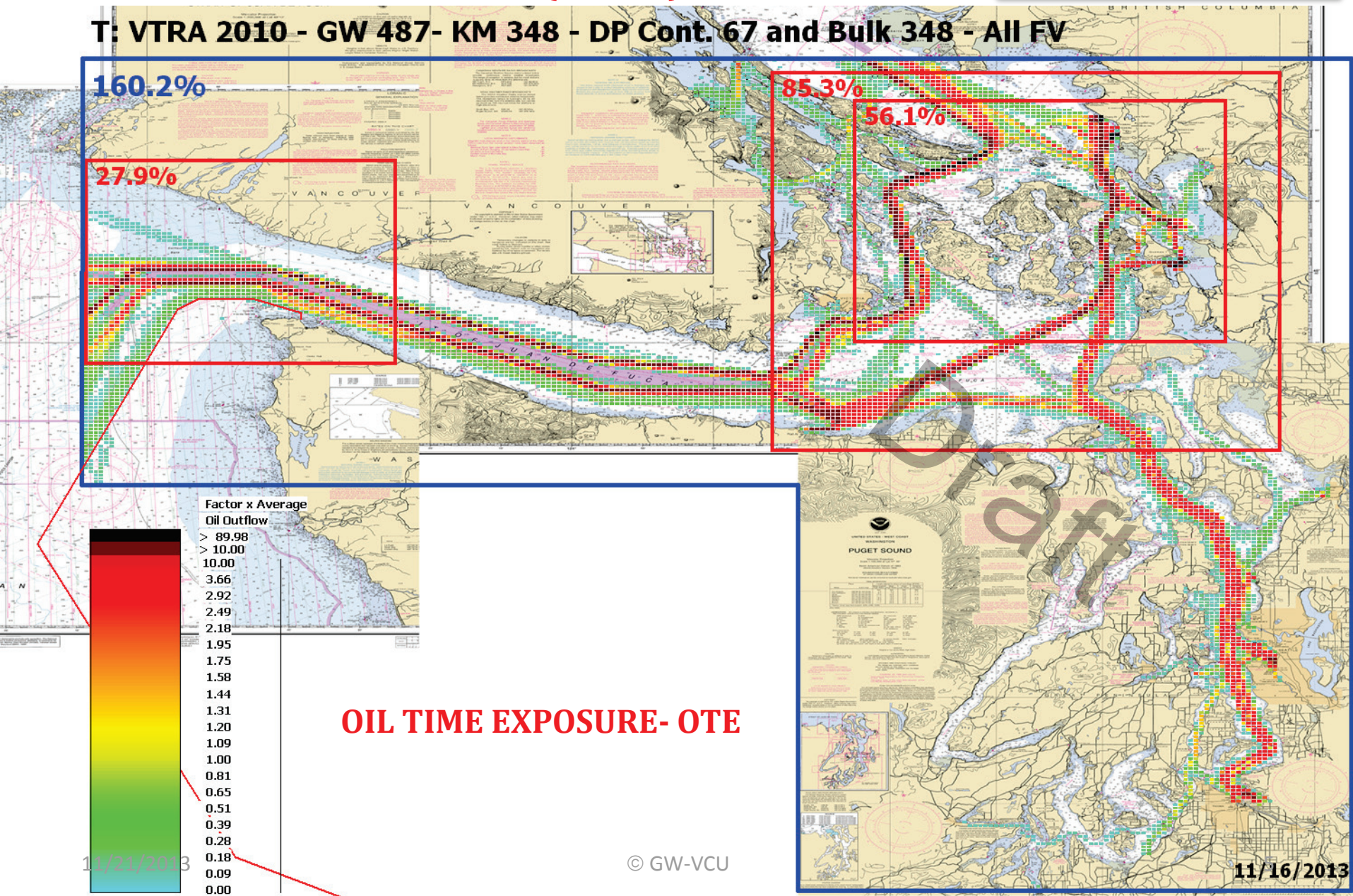
## T: GW - KM - DP & EH 3D Risk Profile All FV - Oil Time Exposure: 160% of Base Case OTE





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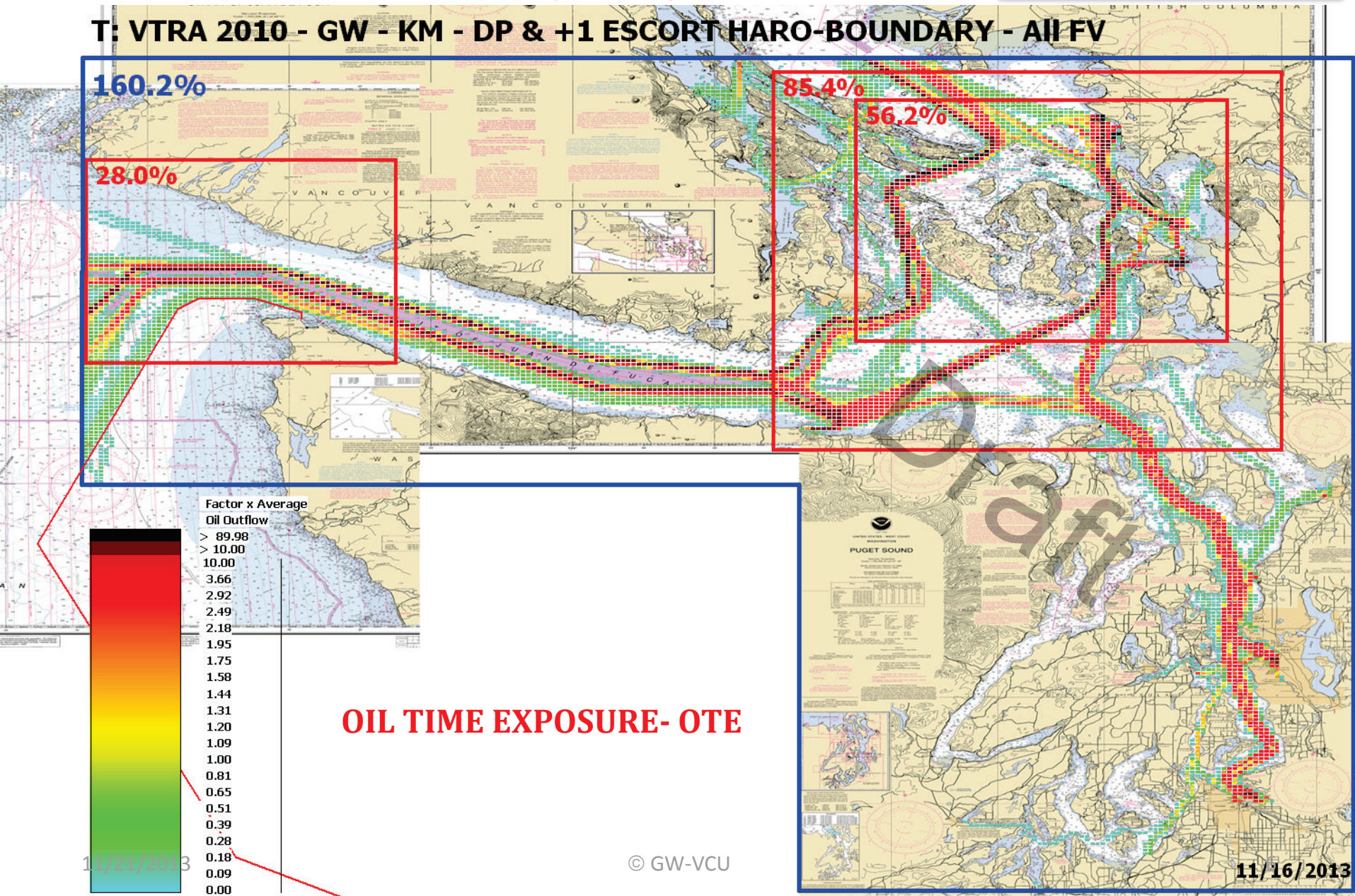
T: VTRA 2010 - GW 487- KM 348 - DP Cont. 67 and Bulk 348 - All FV





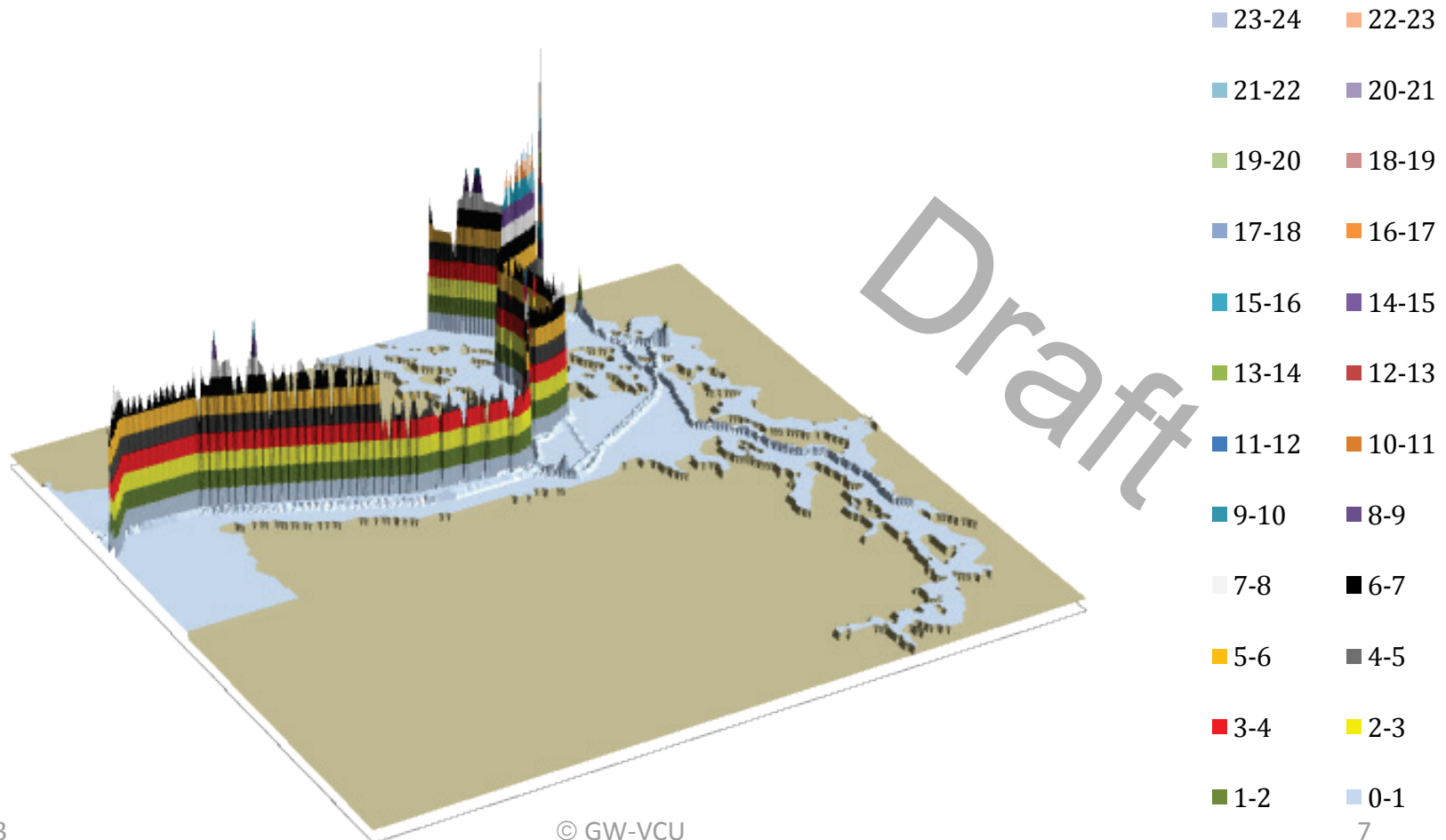
# VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

**T: VTRA 2010 - GW - KM - DP & +1 ESCORT HARO-BOUNDARY - All FV**



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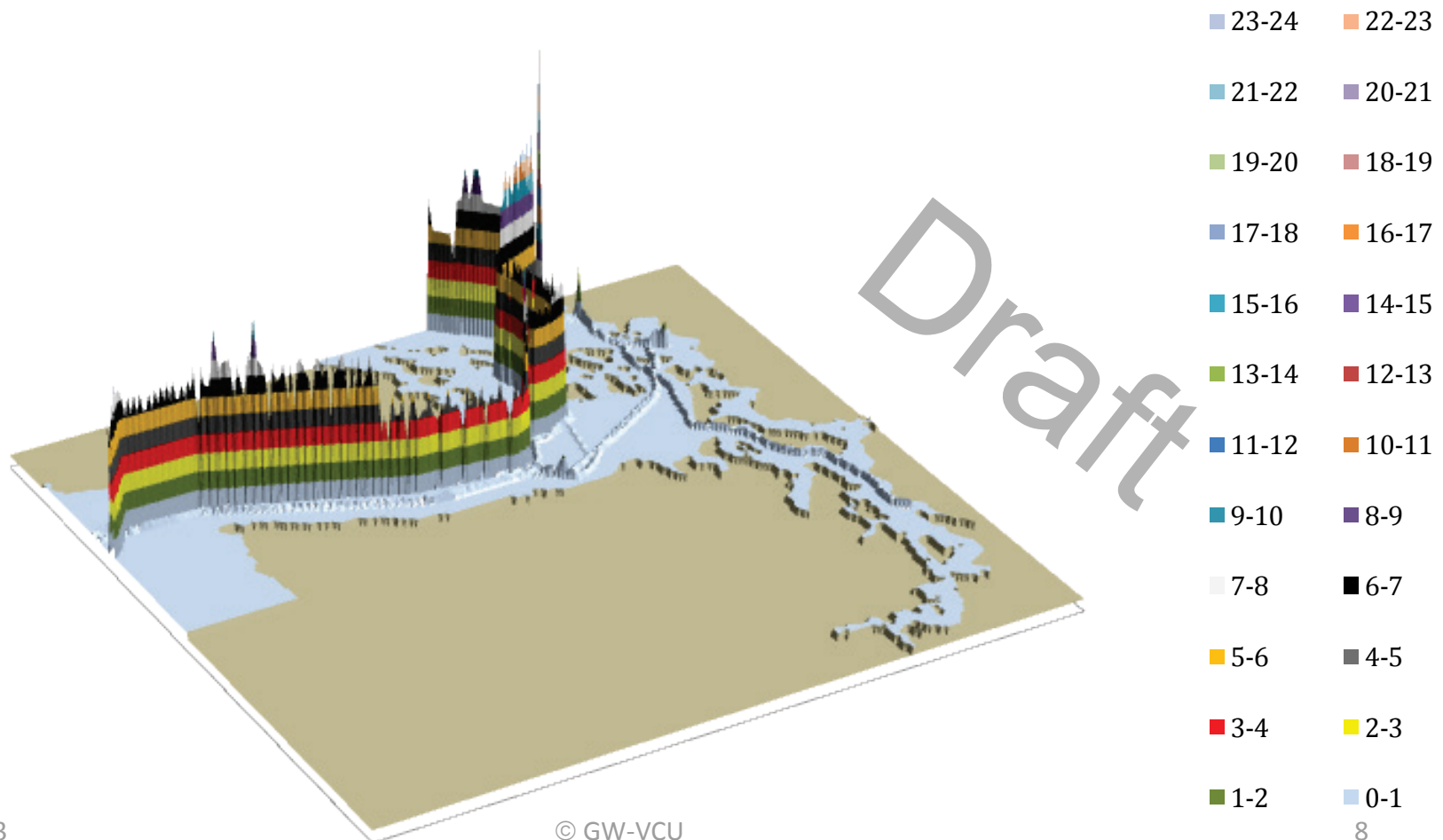
## T: GW - KM - DP 3D Risk Profile What-If FV - Oil Time Exposure: 60% of Base Case OTE





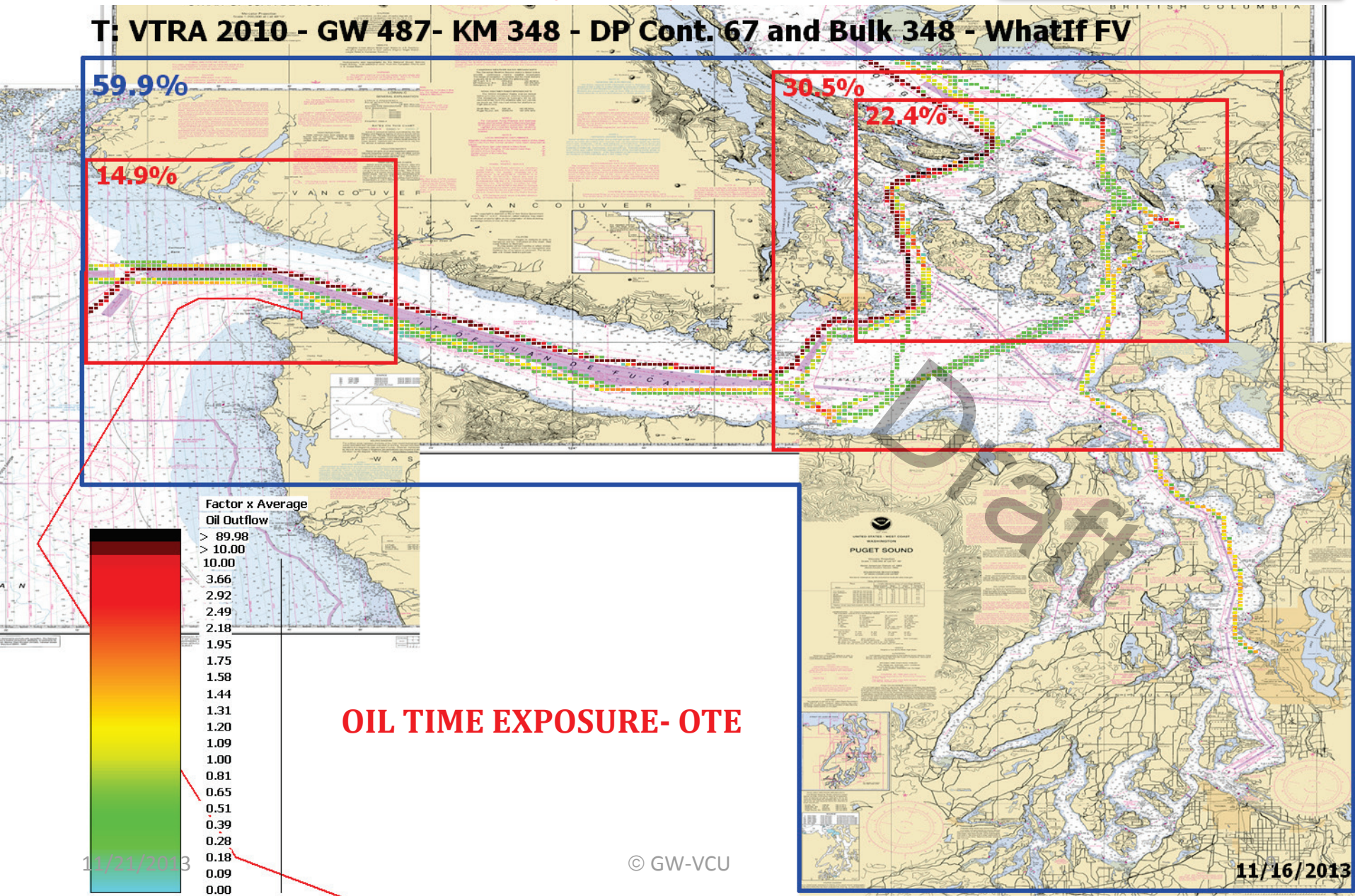
# VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

## T: GW - KM - DP & EH 3D Risk Profile What-If FV - Oil Time Exposure: 60% of Base Case OTE



# VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

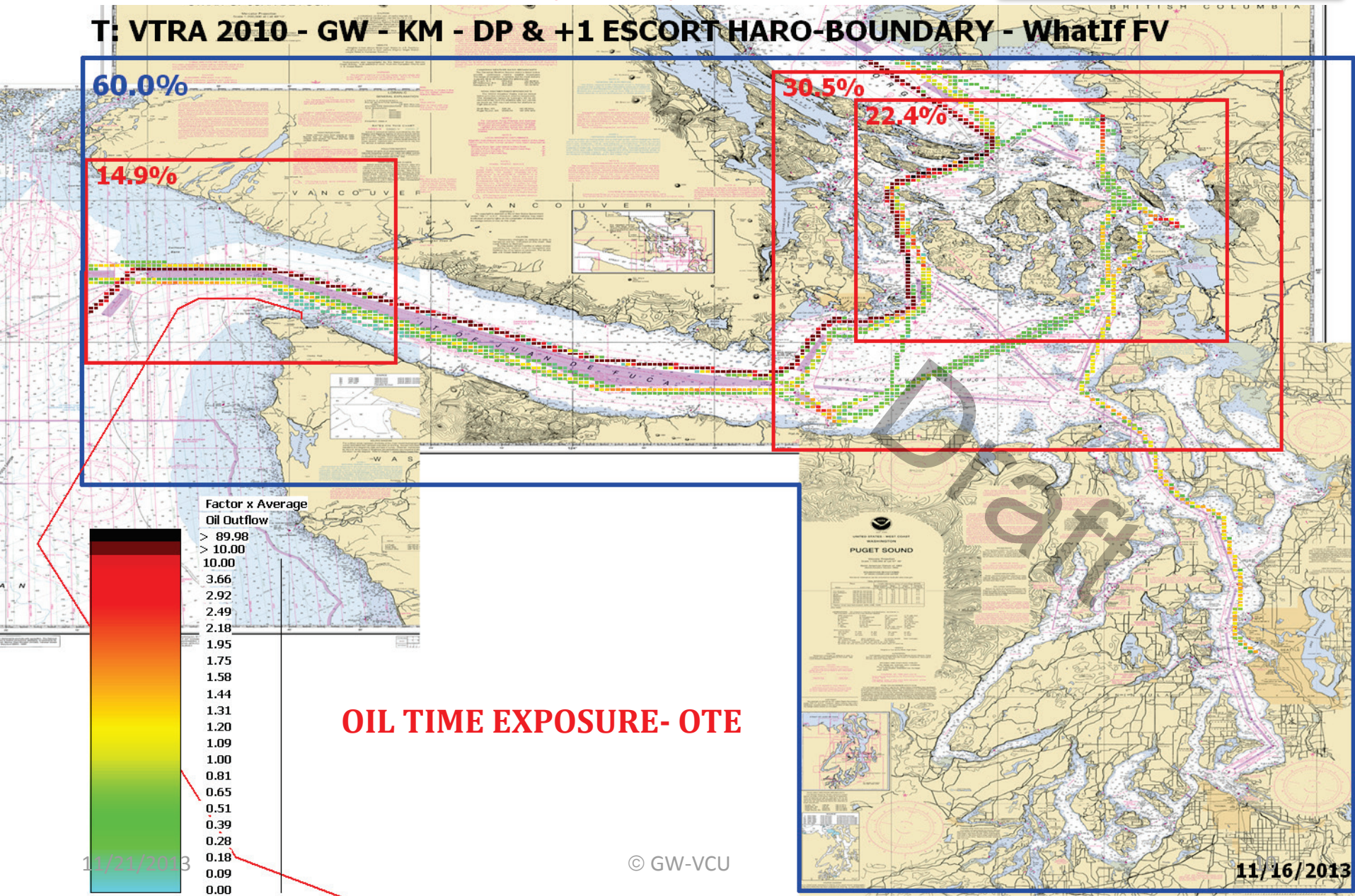
**T: VTRA 2010 - GW 487- KM 348 - DP Cont. 67 and Bulk 348 - WhatIf FV**





# VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

**T: VTRA 2010 - GW - KM - DP & +1 ESCORT HARO-BOUNDARY - WhatIf FV**



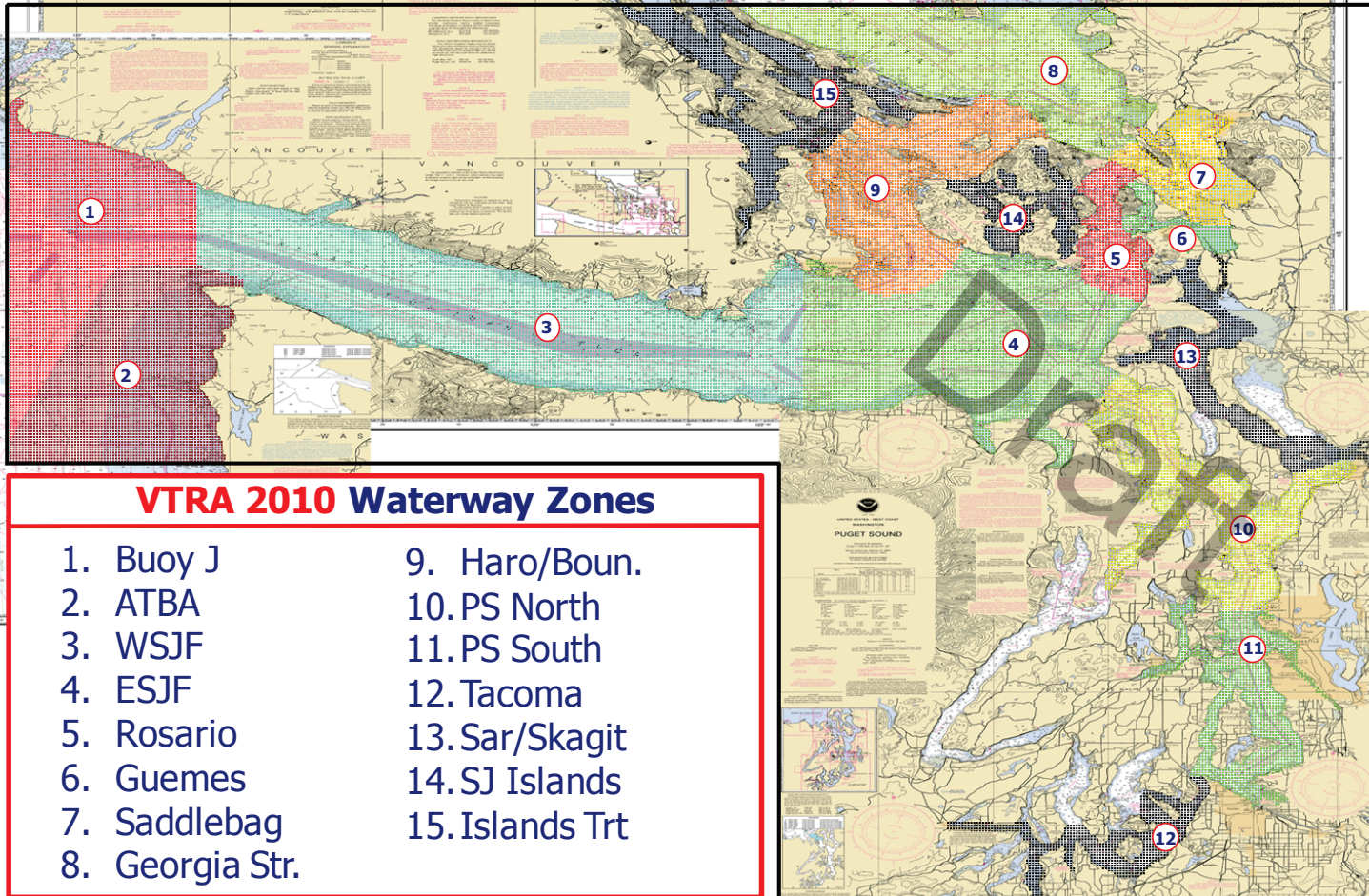
11/21/2013

11/16/2013



# VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

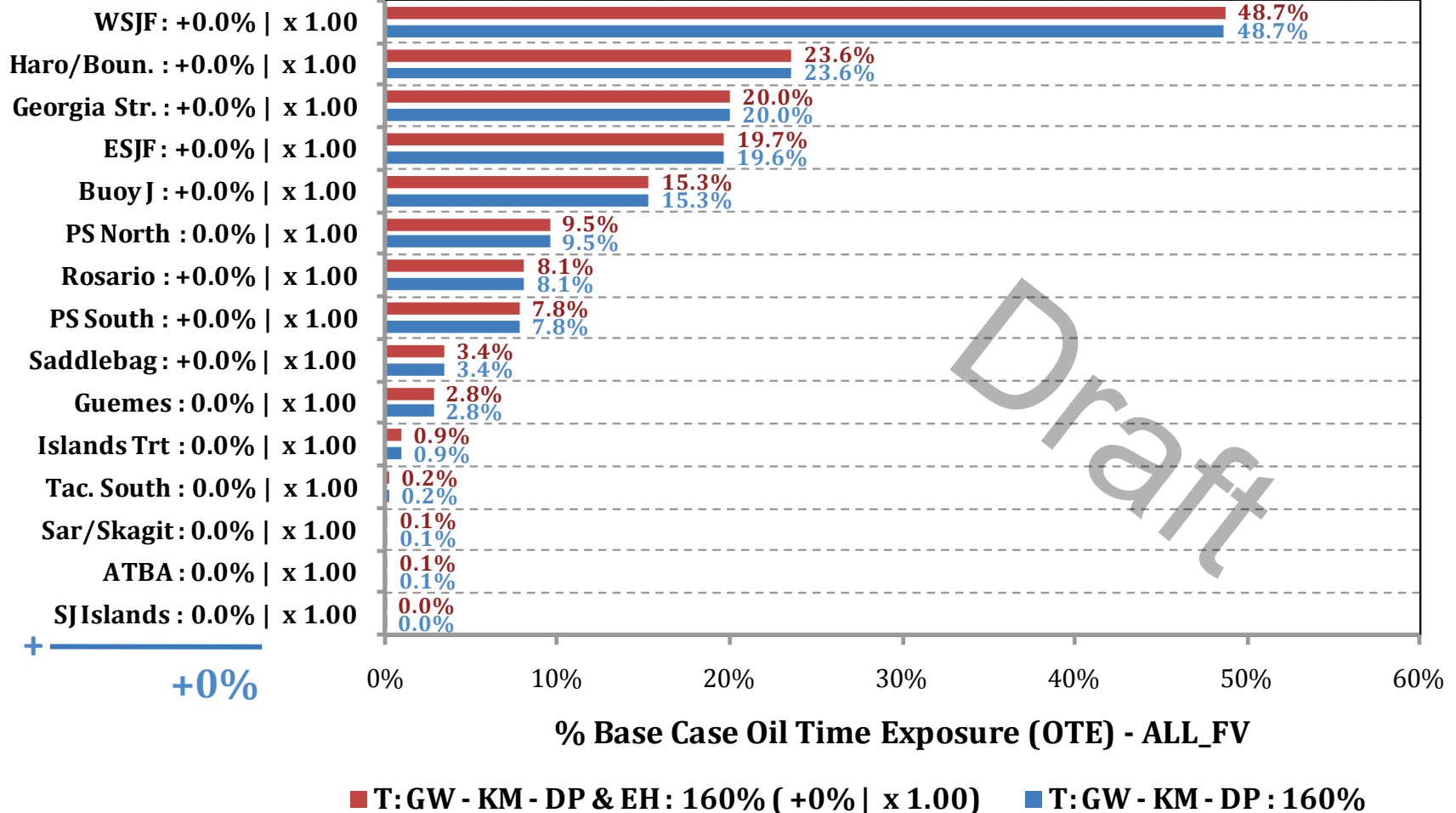
## DEFINITION OF 15 WATERWAY ZONES



# VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

## % Base Case Oil Time Exposure - ALL\_FV

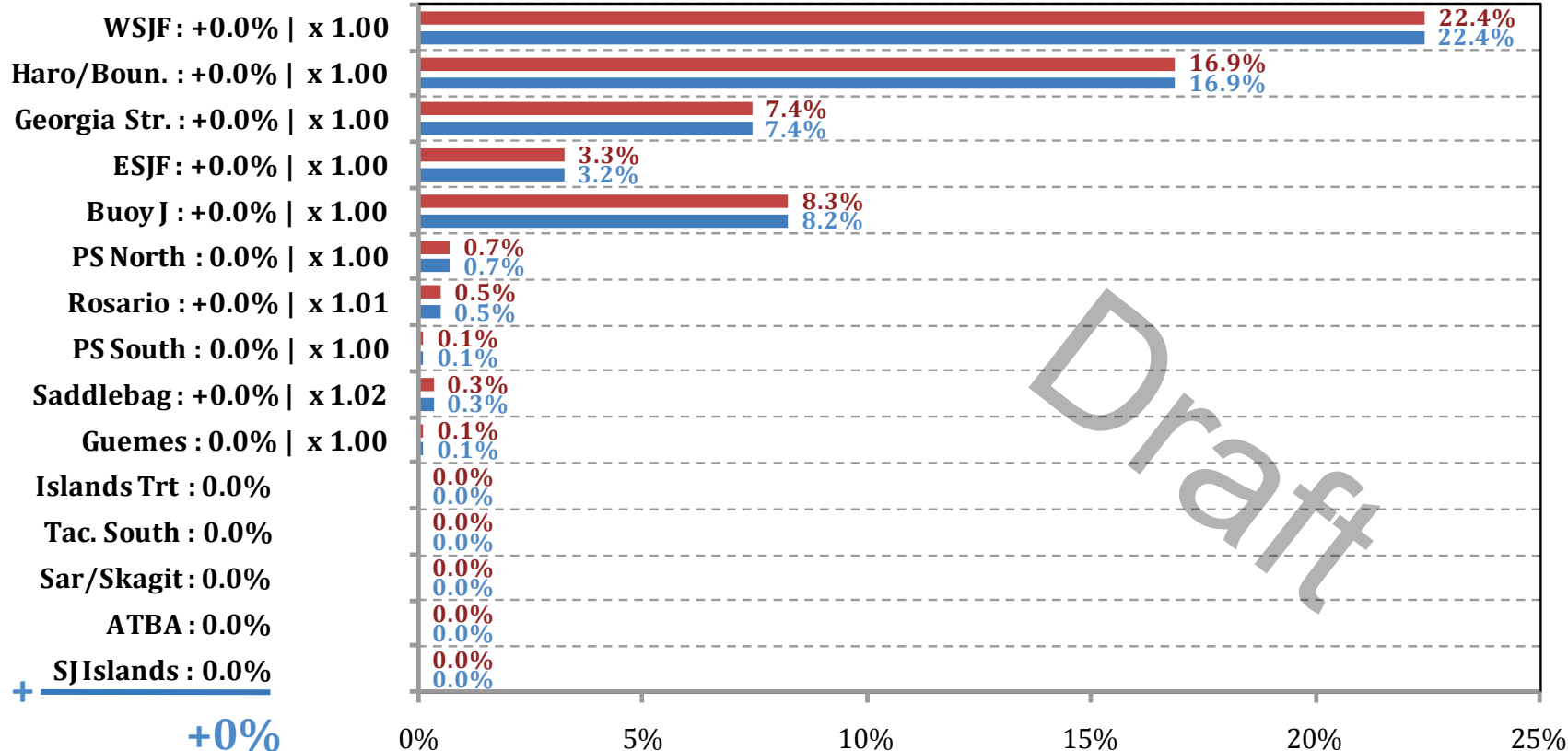
### Waterway Zone:



# VESSEL TRAFFIC RISK ASSESSMENT (VTRA) 2010

## Waterway Zone:

## % Base Case Oil Time Exposure - WhatIf



## % Base Case Oil Time Exposure (OTE) - WhatIf

■ T: GW - KM - DP & EH: 60% (+0% | x 1.00) ■ T: GW - KM - DP: 60%