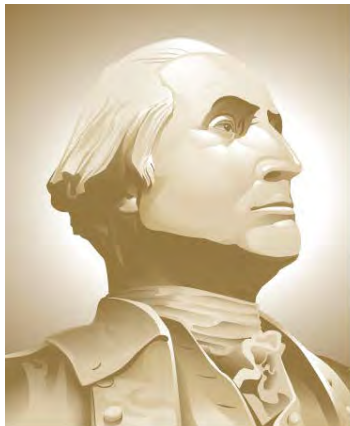


# VTRA 2010 TRAFFIC DENSITIES BY CARGO – FV and TANK- FV

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**CASE T: Gateway, Kinder Morgan, Delta Port**

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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	OTHERSPECIFCSERV	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 T: GW 487, KM 348, DP 348 and 67:**

**BASE CASE 2010 TRAFFIC WITH  
FOLLOWING WHAT-IF FOCUS VESSELS**

487 Gateway Bulk Carriers + Bunkering Barges

348 Kinder Morgan Tankers + Bunkering Barges

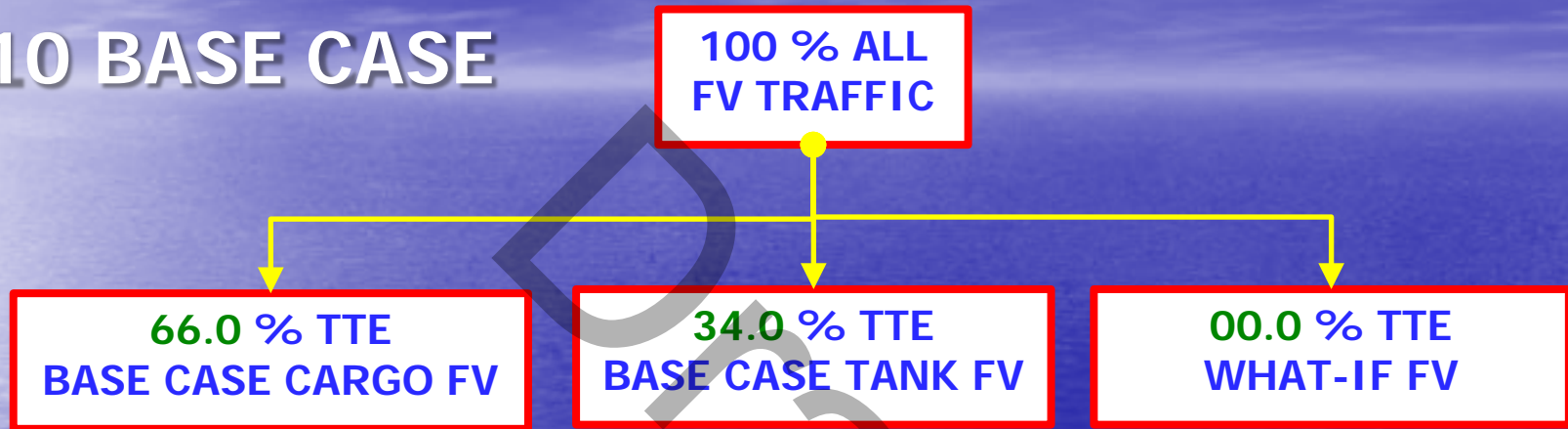
348 Delta Port Bulk Carriers + Bunkering Barges

67 Delta Port Container Ships + Bunkering Barges

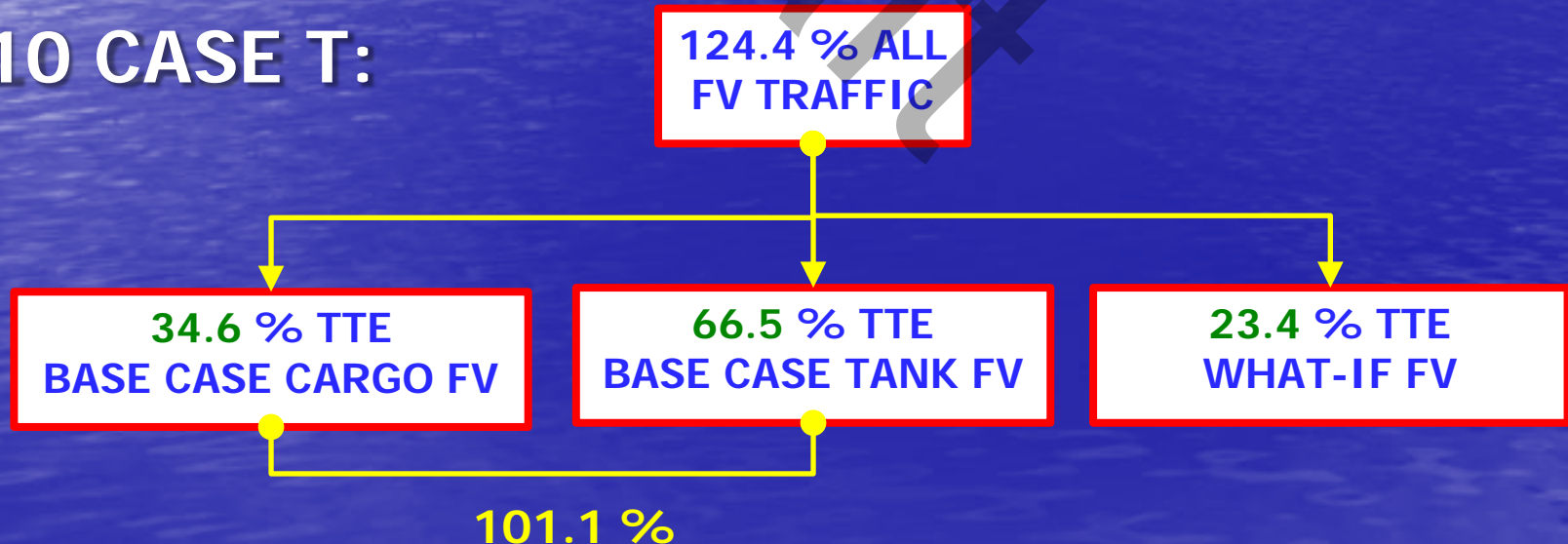
# A TAXONOMY OF 2010 FOCUS VESSEL POTENTIAL TOTAL TIME OF EXPOSURE

TTE : TOTAL TIME OF EXPOSURE - PER YEAR

## 2010 BASE CASE

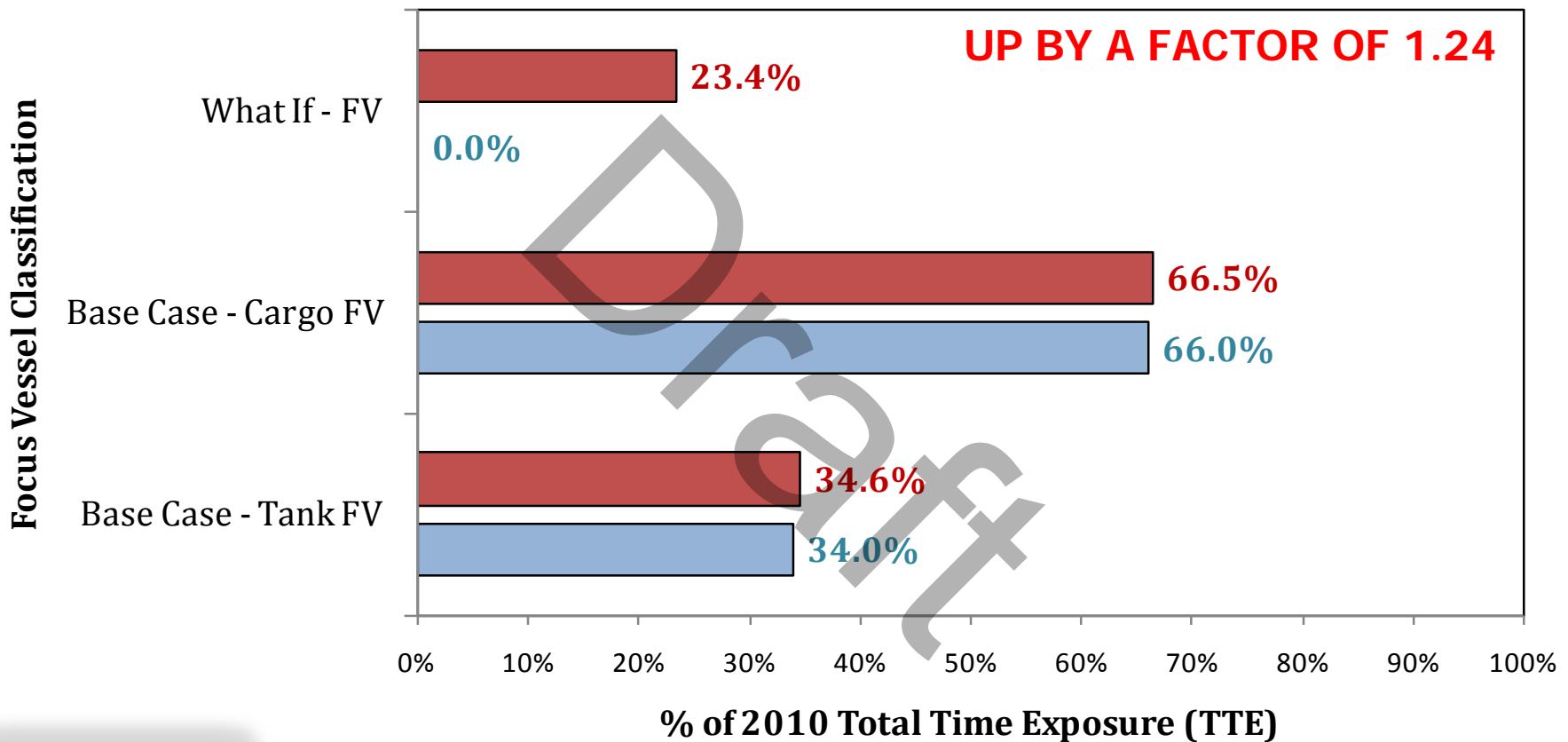


## 2010 CASE T:



# CASE T: GW 487, KM 348, DP 348 and 67:

## VTRA 2010 - Total Time of Exposure (TTE)



UP BY A FACTOR OF 1.24



■ T: GW - KM - DP - 124.4%    ■ P: BASE CASE 2010 - 100.0%

**TTE = TOTAL TIME EXPOSURE:**

TOTAL AMOUNT OF ANNUAL TIME A VESSEL IS MOVING IN THE VTRA STUDY AREA

# CASE T: GW 487, KM 348, DP 348 and 67:

## **FINDINGS - TTE:**

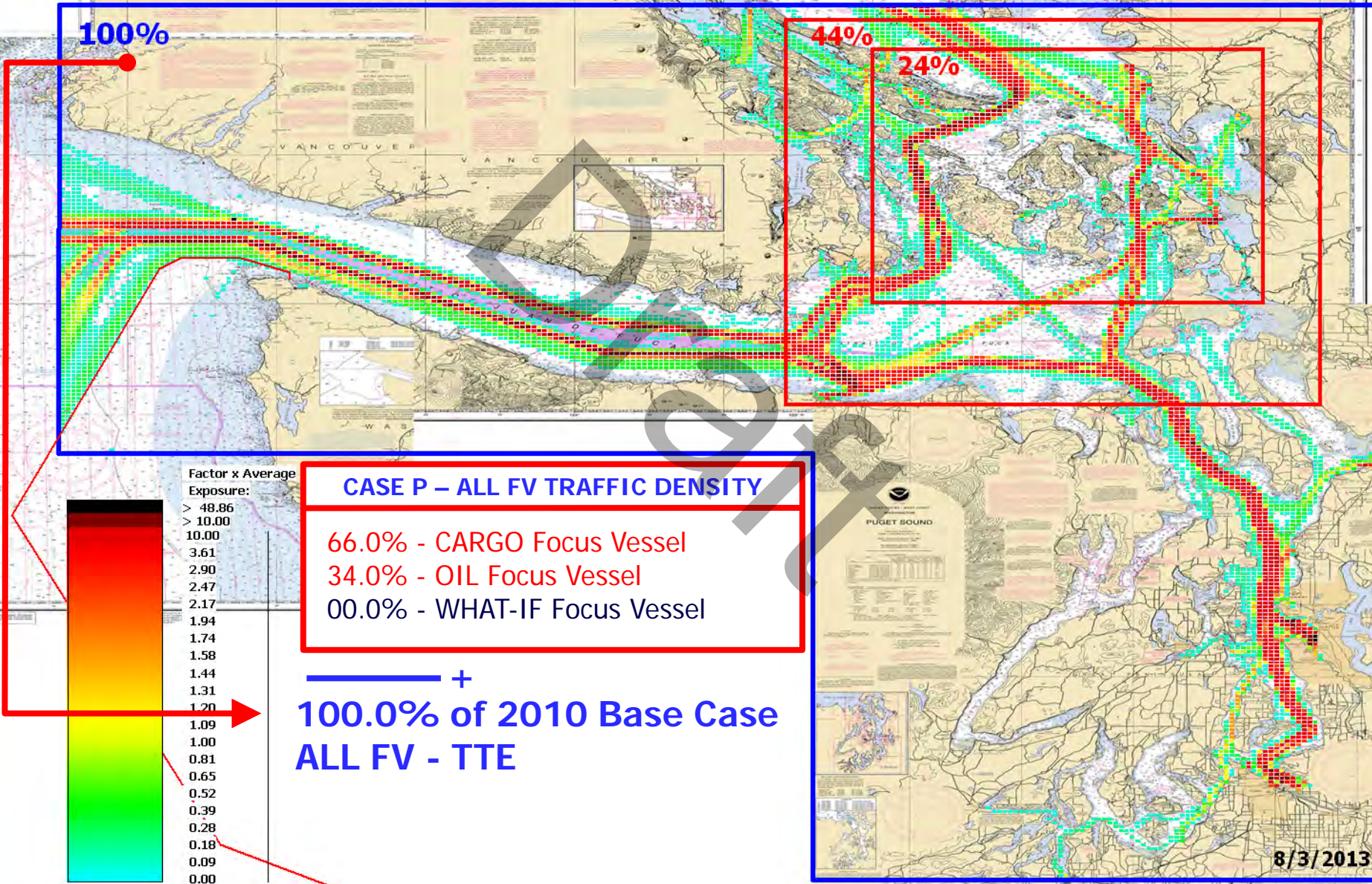
1. Base Case Cargo Focus vessels travel about same amount of time when including additional Gateway, Kinder Morgan and Delta Port Vessels.
2. Base Case Cargo Focus vessels travel about same amount of time when including additional Gateway, Kinder Morgan and Delta Port Vessels.
3. Case T What-If Focus Vessels add about 23.4% of Focus Vessel Traffic to the 2010 – Base Case.

**TTE = TOTAL TIME EXPOSURE:**

TOTAL AMOUNT OF ANNUAL TIME A VESSEL IS MOVING IN THE VTRA STUDY AREA

# P: ALL FV Traffic Density

P: VTRA 2010 - BASE CASE - All FV



**CASE P – ALL FV TRAFFIC DENSITY**

66.0% - CARGO Focus Vessel  
34.0% - OIL Focus Vessel  
00.0% - WHAT-IF Focus Vessel

+  
**100.0% of 2010 Base Case  
ALL FV - TTE**

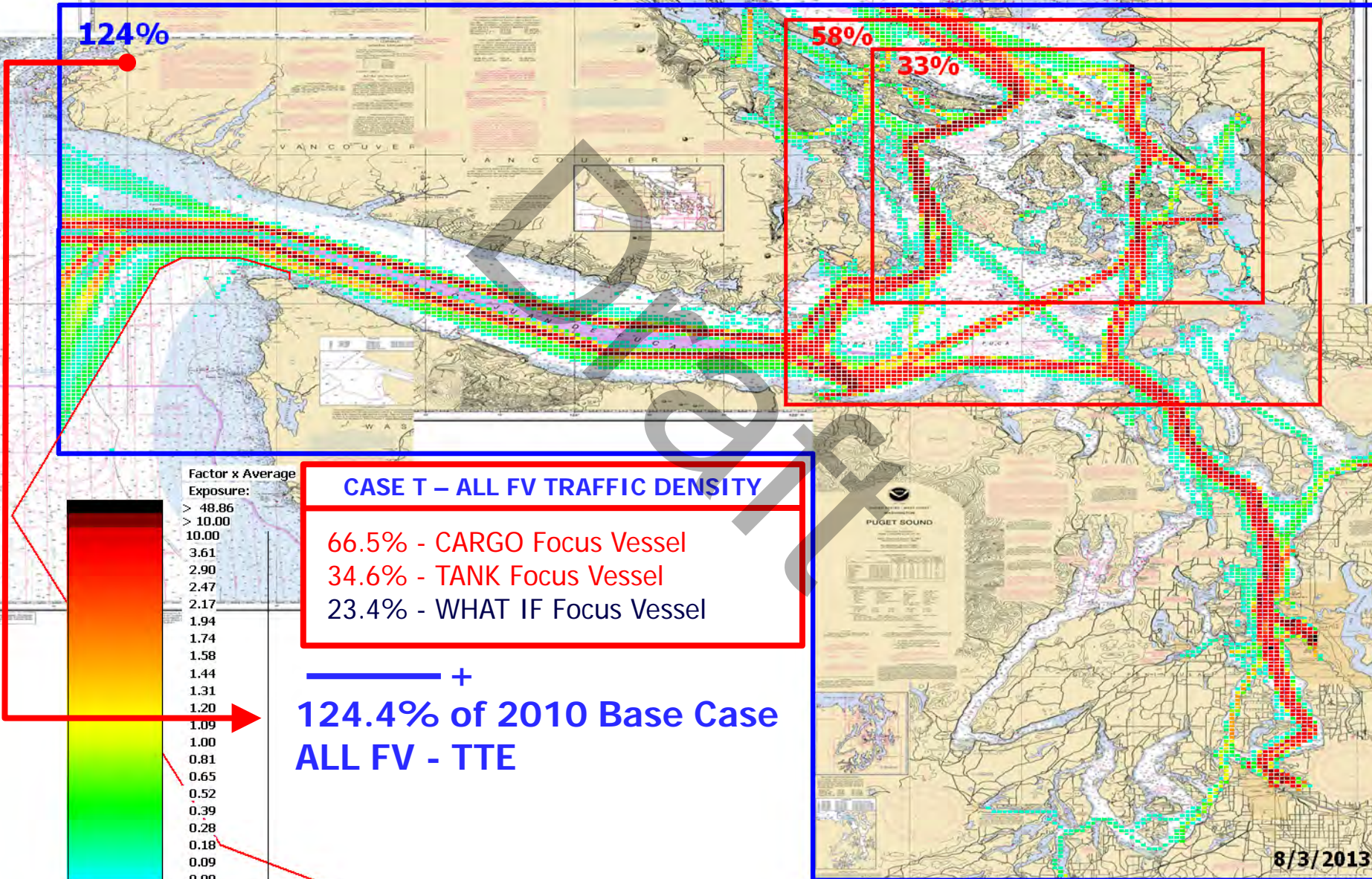
Factor x Average Exposure:

> 48.86
> 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



# T: ALL FV Traffic Density

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



124%

58%

33%

## CASE T - ALL FV TRAFFIC DENSITY

- 66.5% - CARGO Focus Vessel
- 34.6% - TANK Focus Vessel
- 23.4% - WHAT IF Focus Vessel

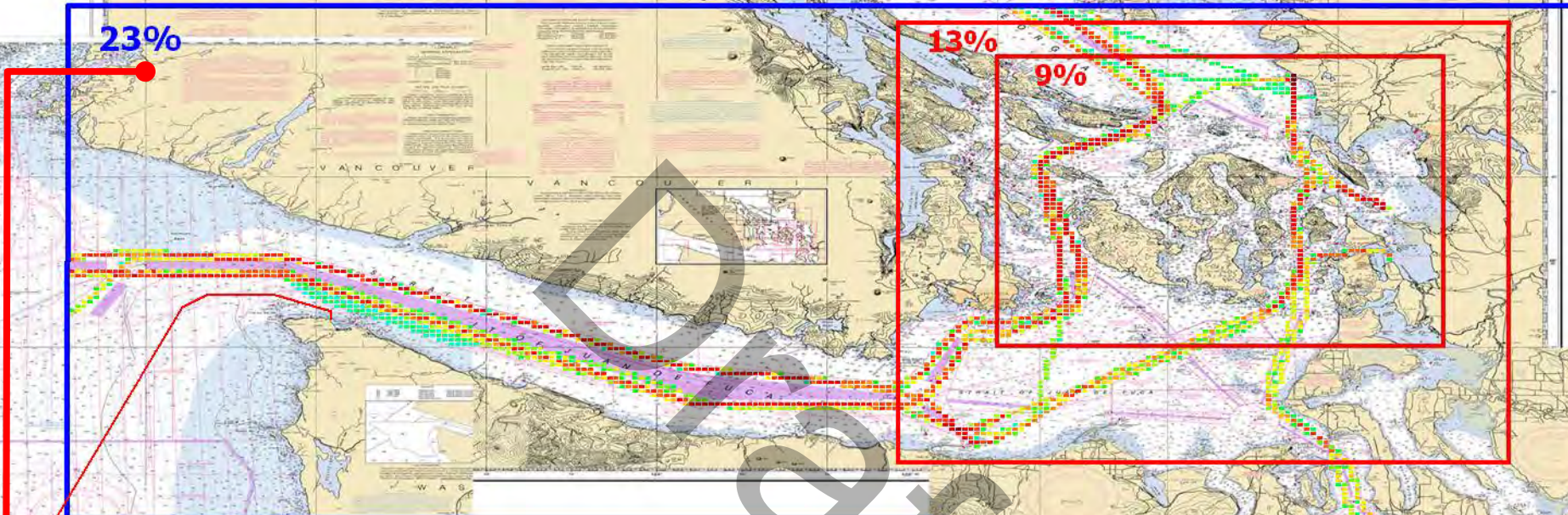
+  
124.4% of 2010 Base Case  
ALL FV - TTE



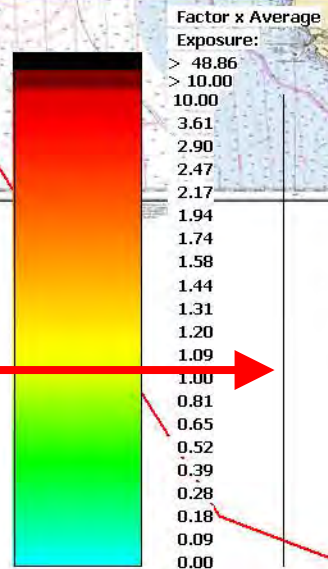
# T: WHAT-IF FOCUS VESSEL Traffic Density



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



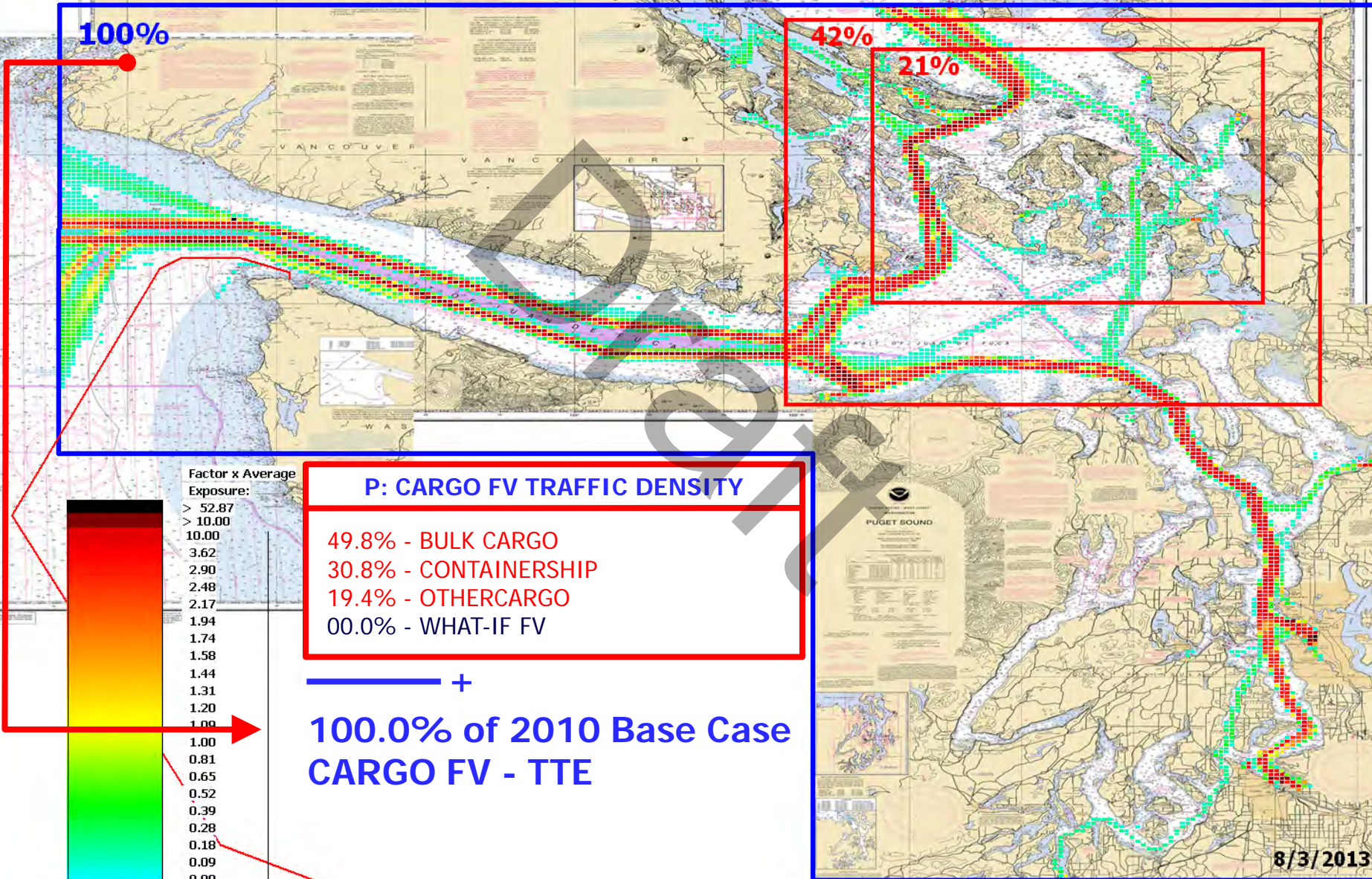
**T : WHAT-IF FV TRAFFIC DENSITY**  
12.4% - BULK CARGO  
01.8% - CONTAINERSHIP  
06.5% - TANKER  
02.6% - OILBARGE



— +  
**23.4% of 2010 Base Case  
ALL FV - TTE**

**P: BASE CASE CARGO FV**  
**Traffic Density**

**P: VTRA 2010 - BASE CASE - Cargo FV**



**P: CARGO FV TRAFFIC DENSITY**

- 49.8% - BULK CARGO
- 30.8% - CONTAINERSHIP
- 19.4% - OTHERCARGO
- 00.0% - WHAT-IF FV

**100.0% of 2010 Base Case CARGO FV - TTE**

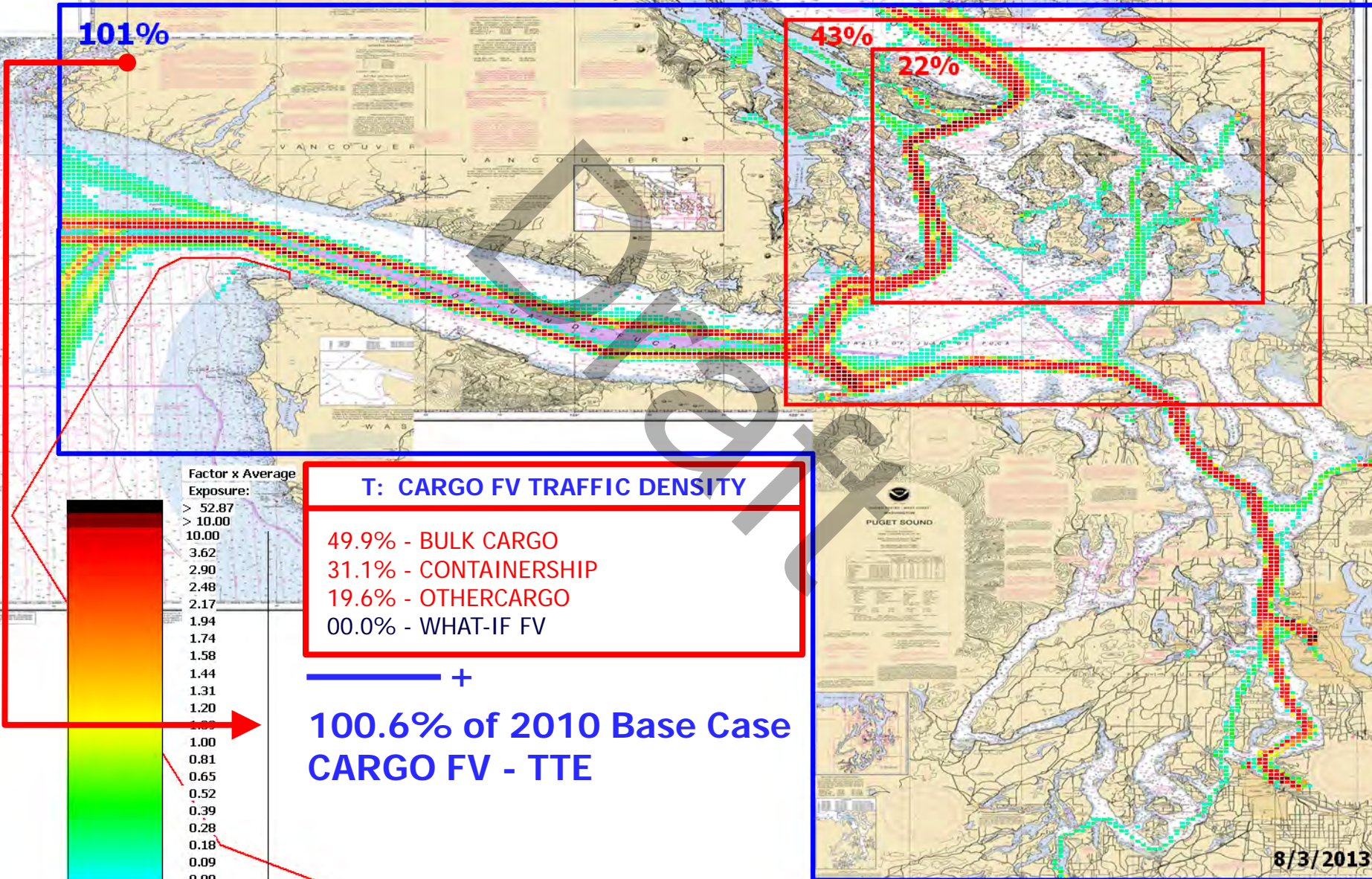
Factor x Average Exposure:

> 52.87
> 10.00
10.00
3.62
2.90
2.48
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

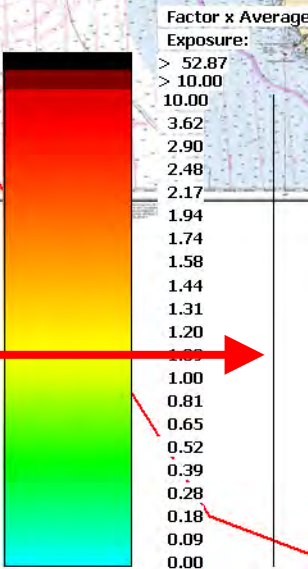
# T: BASE CASE CARGO FV Traffic Density



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



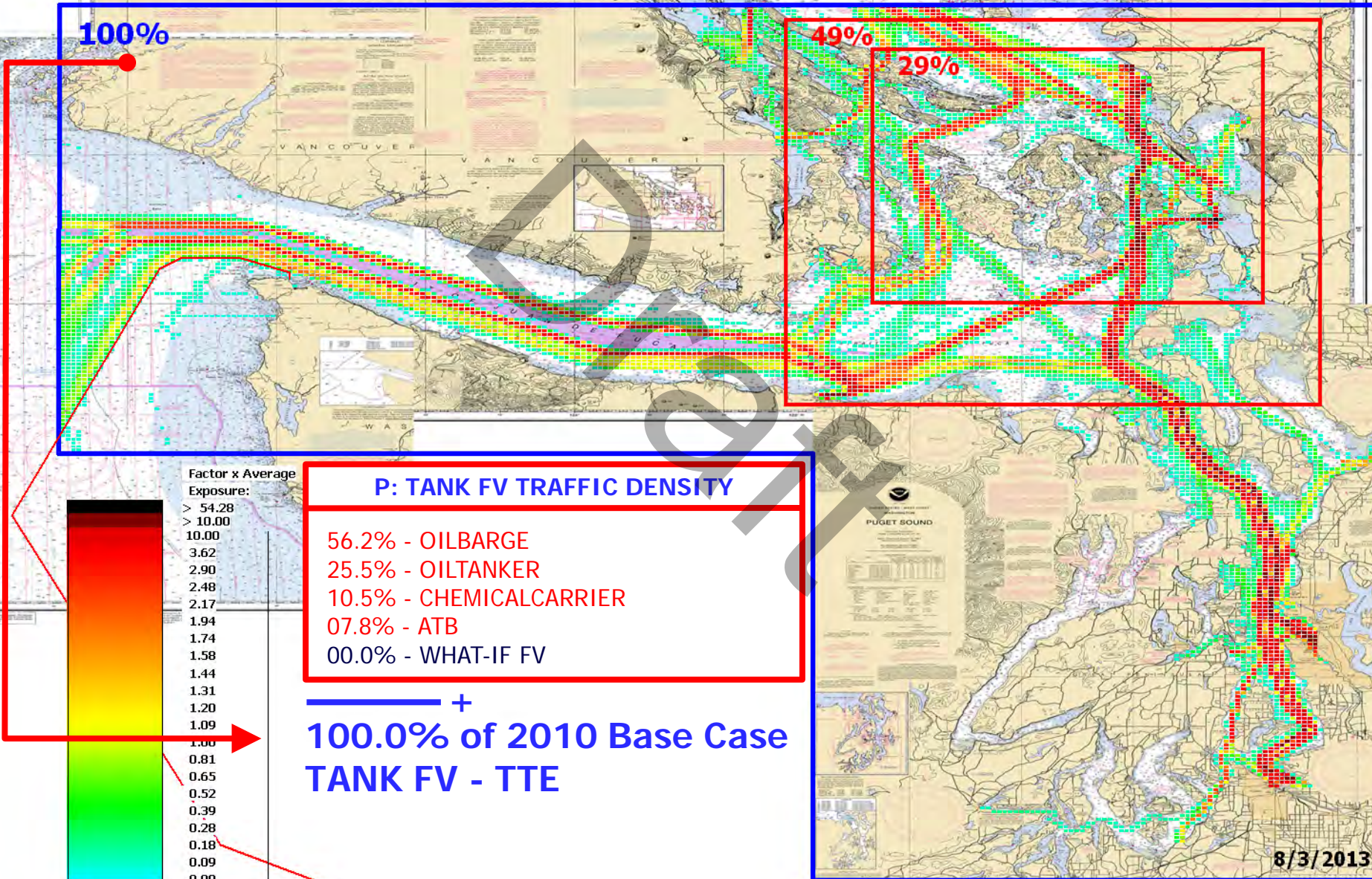
**T: CARGO FV TRAFFIC DENSITY**  
49.9% - BULK CARGO  
31.1% - CONTAINERSHIP  
19.6% - OTHERCARGO  
00.0% - WHAT-IF FV



+  
**100.6% of 2010 Base Case  
CARGO FV - TTE**

**P: BASE CASE TANK FV**  
**Traffic Density**

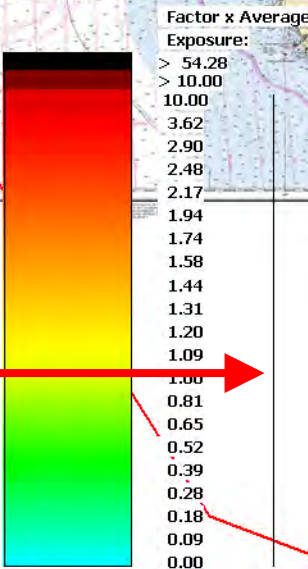
**P: VTRA 2010 - BASE CASE - TANK FV**



**P: TANK FV TRAFFIC DENSITY**

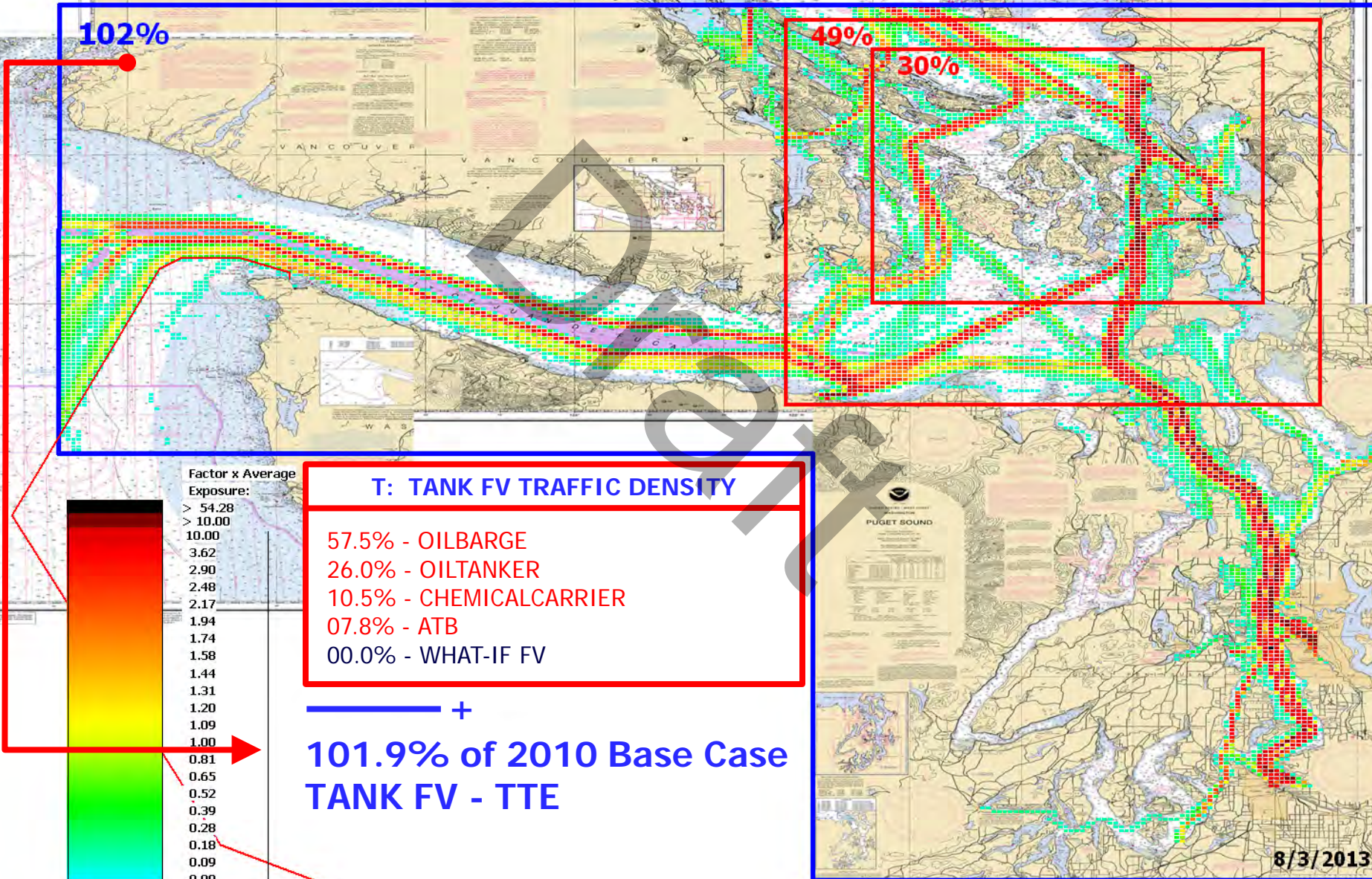
- 56.2% - OILBARGE
- 25.5% - OILTANKER
- 10.5% - CHEMICALCARRIER
- 07.8% - ATB
- 00.0% - WHAT-IF FV

**+ 100.0% of 2010 Base Case TANK FV - TTE**



# T: BASE CASE TANK FV Traffic Density

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



102%

49%

30%

Factor x Average Exposure:

> 54.28
> 10.00
10.00
3.62
2.90
2.48
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

## T: TANK FV TRAFFIC DENSITY

- 57.5% - OILBARGE
- 26.0% - OILTANKER
- 10.5% - CHEMICALCARRIER
- 07.8% - ATB
- 00.0% - WHAT-IF FV

— +  
101.9% of 2010 Base Case  
TANK FV - TTE