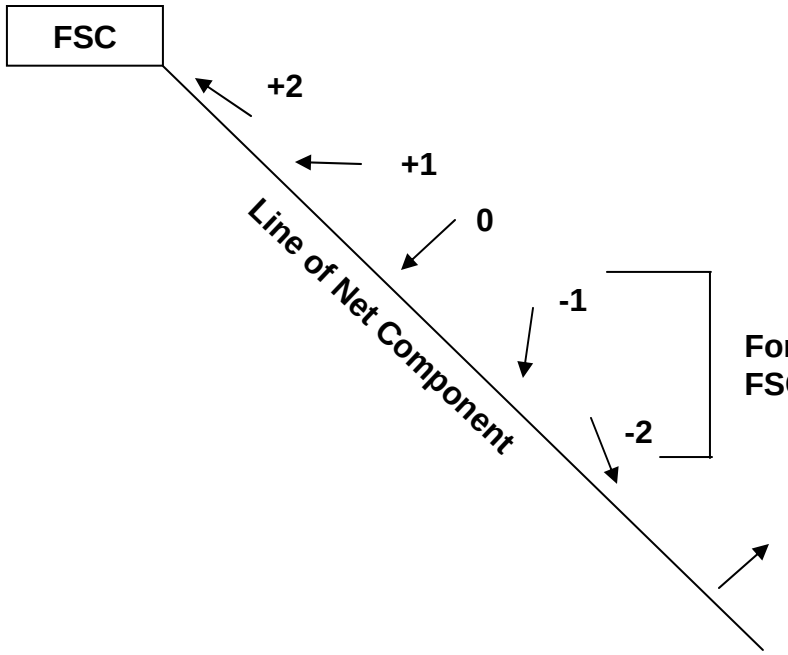
SWIFT FSC GUIDE NET ARRANGEMENTS

- The guide net arrangement consists of three major net components
  - Guide Net from FSC to south bank
  - Lead Net from FSC to near the center of the ‘gyre’ in reservoir
  - Phase 2 Net from FSC to dam (not proposed with initial installation)
- Two layouts are considered for each component
- The net arrangements are overlaid on the previous CFD model results and the reservoir bathymetry to assess the interaction between the net layout and the reservoir velocity vectors for 12 different reservoir level and operating condition combinations. The CFD backgrounds are from previous CFD runs and do not include any influence of the nets being present in the flow fields.
- Value judgments are made for each net component layout relative to the near field velocity vector direction

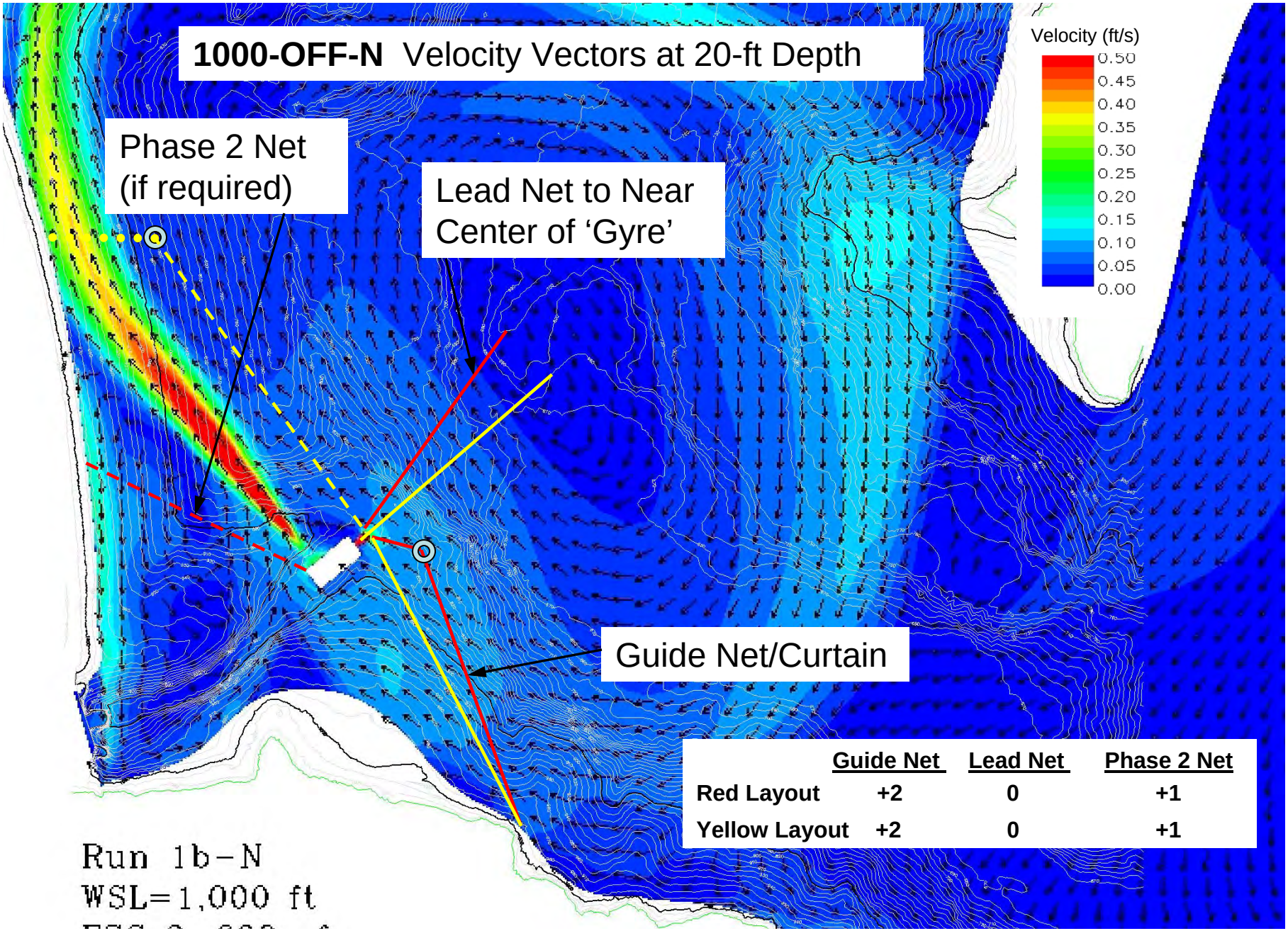
Rating System for Net/Velocity Vector Interaction



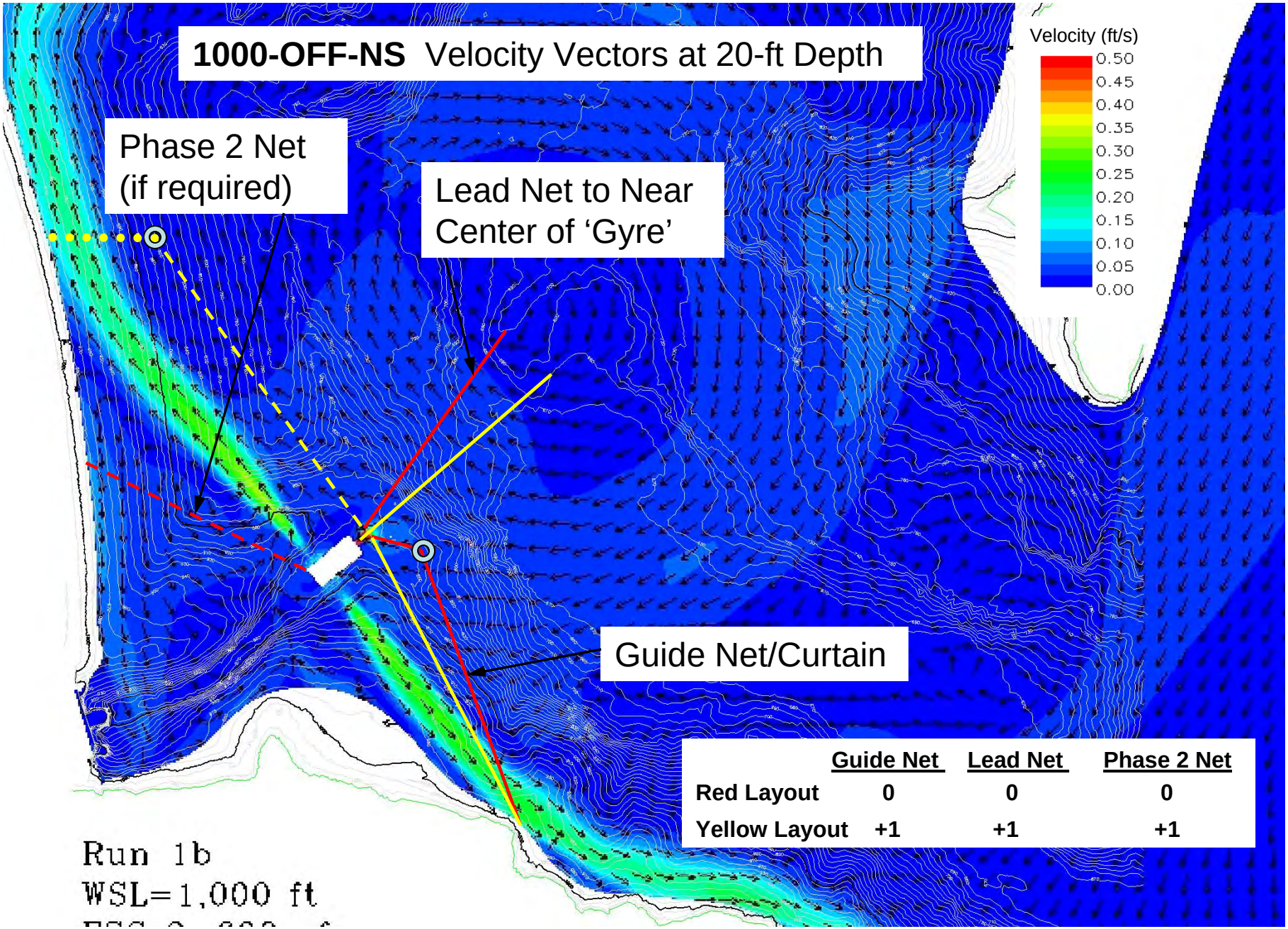
For Phase 2 net if vectors away from FSC lead into gyre then rating is +1.

Rating depends on where the current leads.

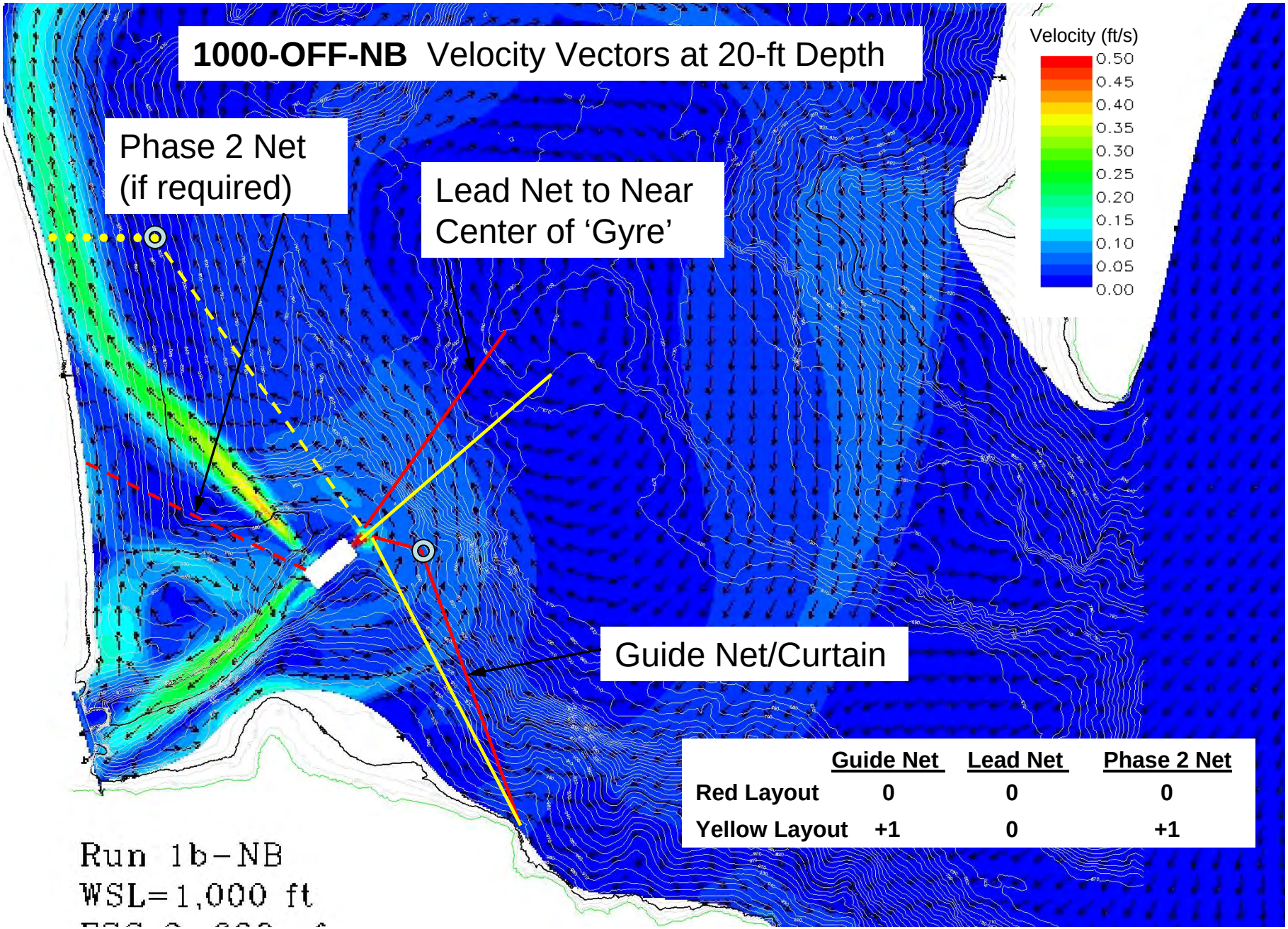
(For example, if it leads entirely upstream it would be negative whereas if it leads into the 'gyre' it may be neutral or even positive.)



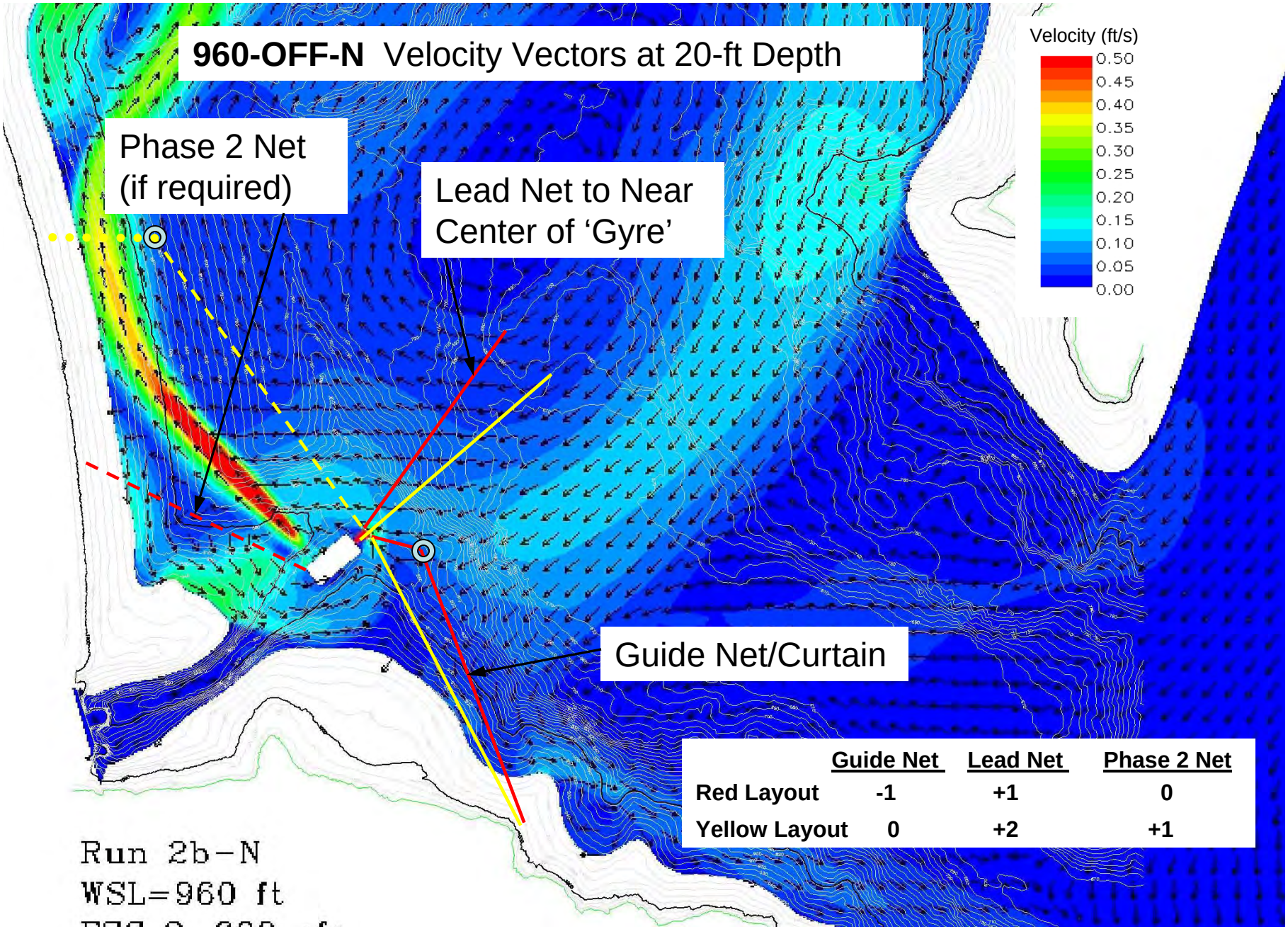
	Guide Net	Lead Net	Phase 2 Net
Red Layout	**+2**	**0**	**+1**
Yellow Layout	**+2**	**0**	**+1**



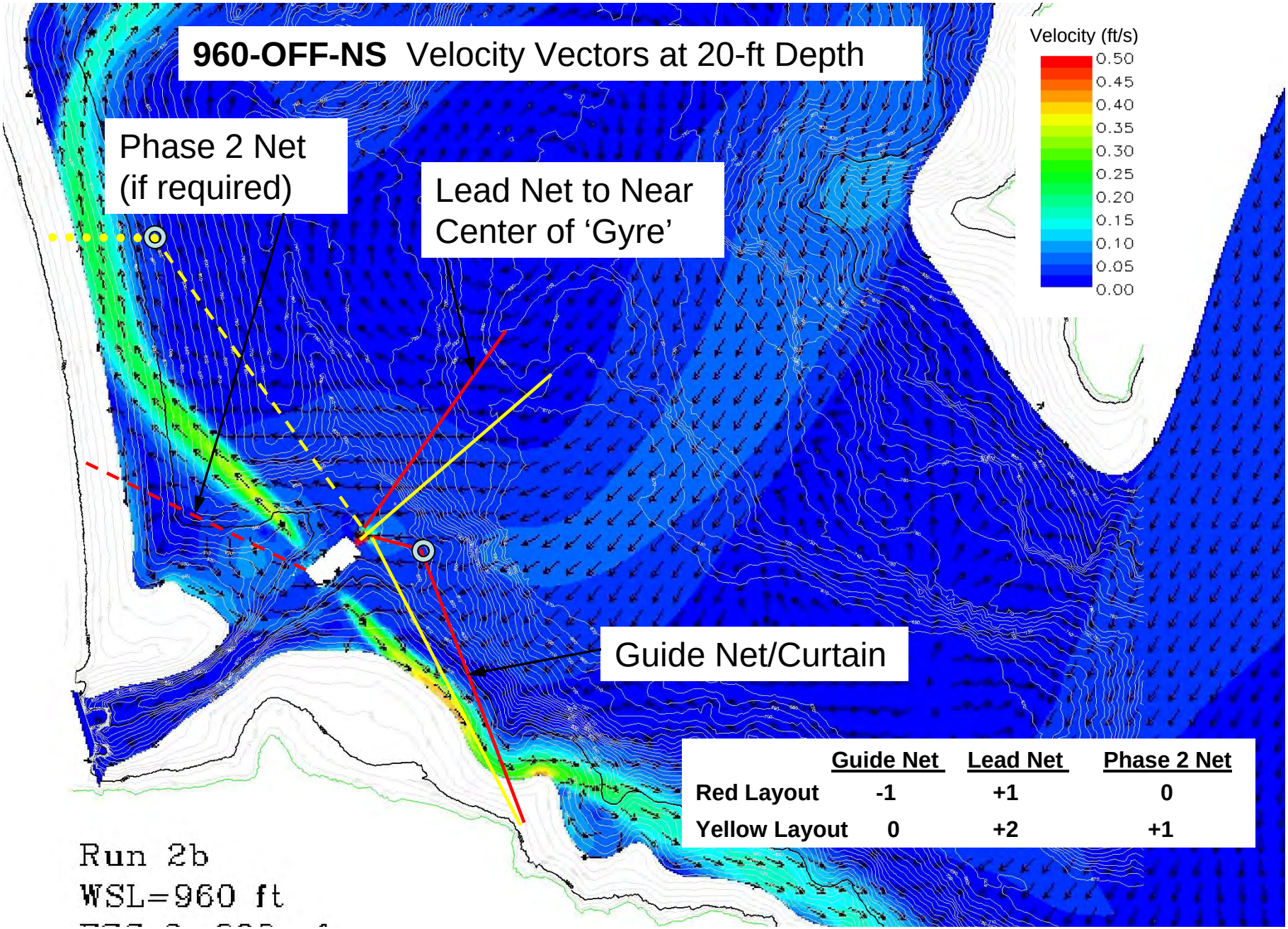
	Guide Net	Lead Net	Phase 2 Net
Red Layout	**0**	**0**	**0**
Yellow Layout	**+1**	**+1**	**+1**



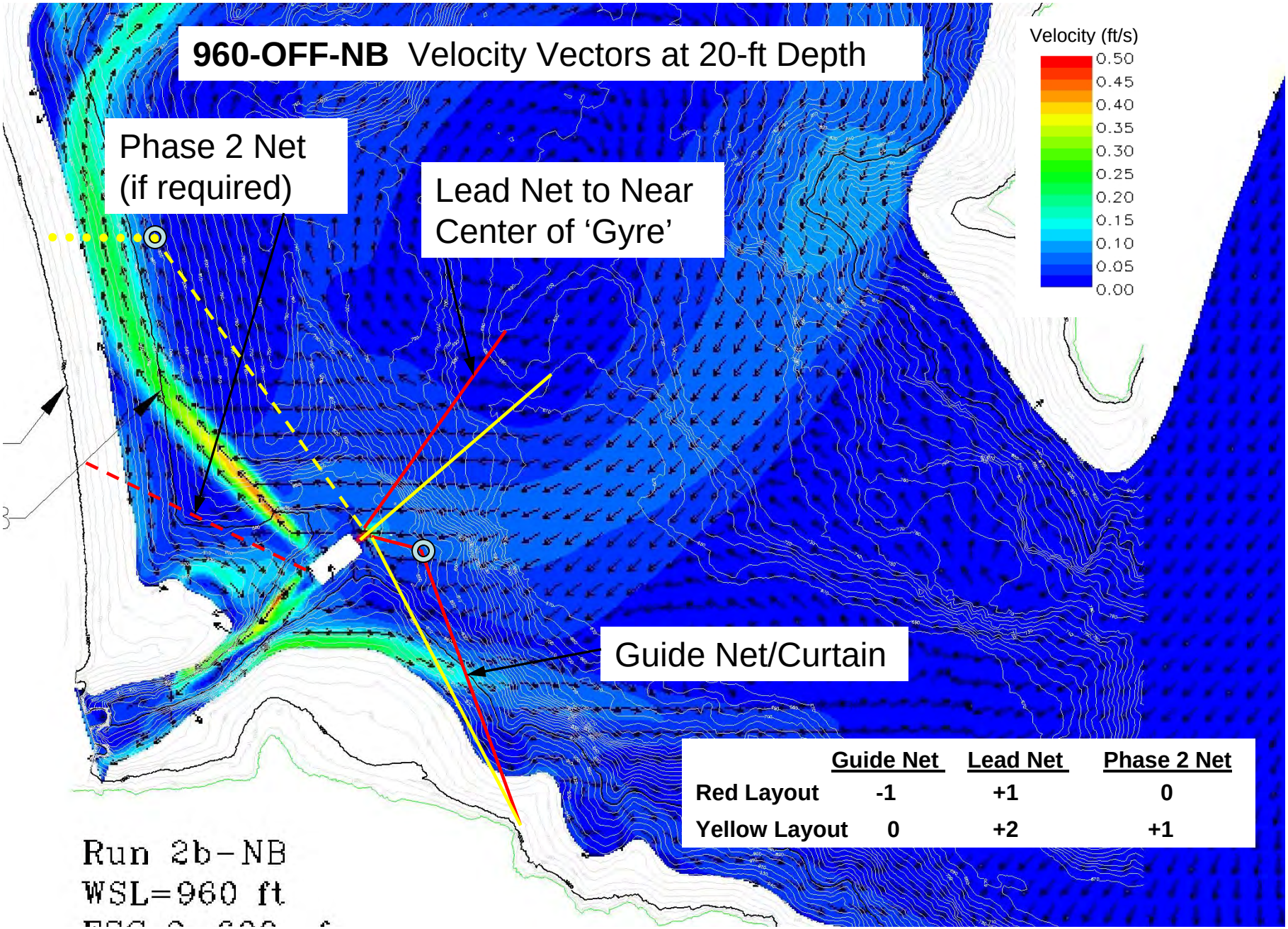
	Guide Net	Lead Net	Phase 2 Net
Red Layout	0	0	0
Yellow Layout	+1	0	+1

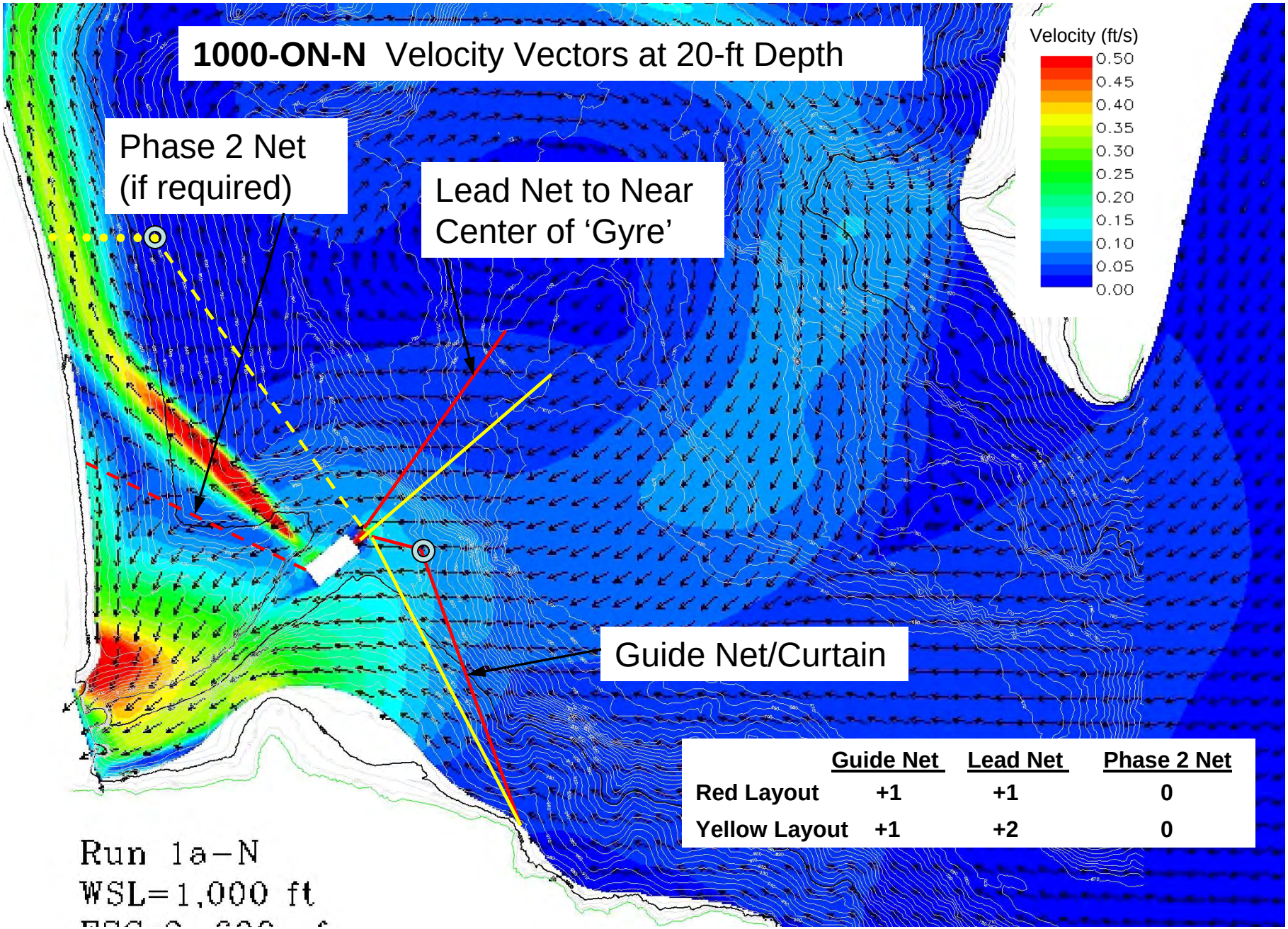


	Guide Net	Lead Net	Phase 2 Net
Red Layout	-1	+1	0
Yellow Layout	0	+2	+1

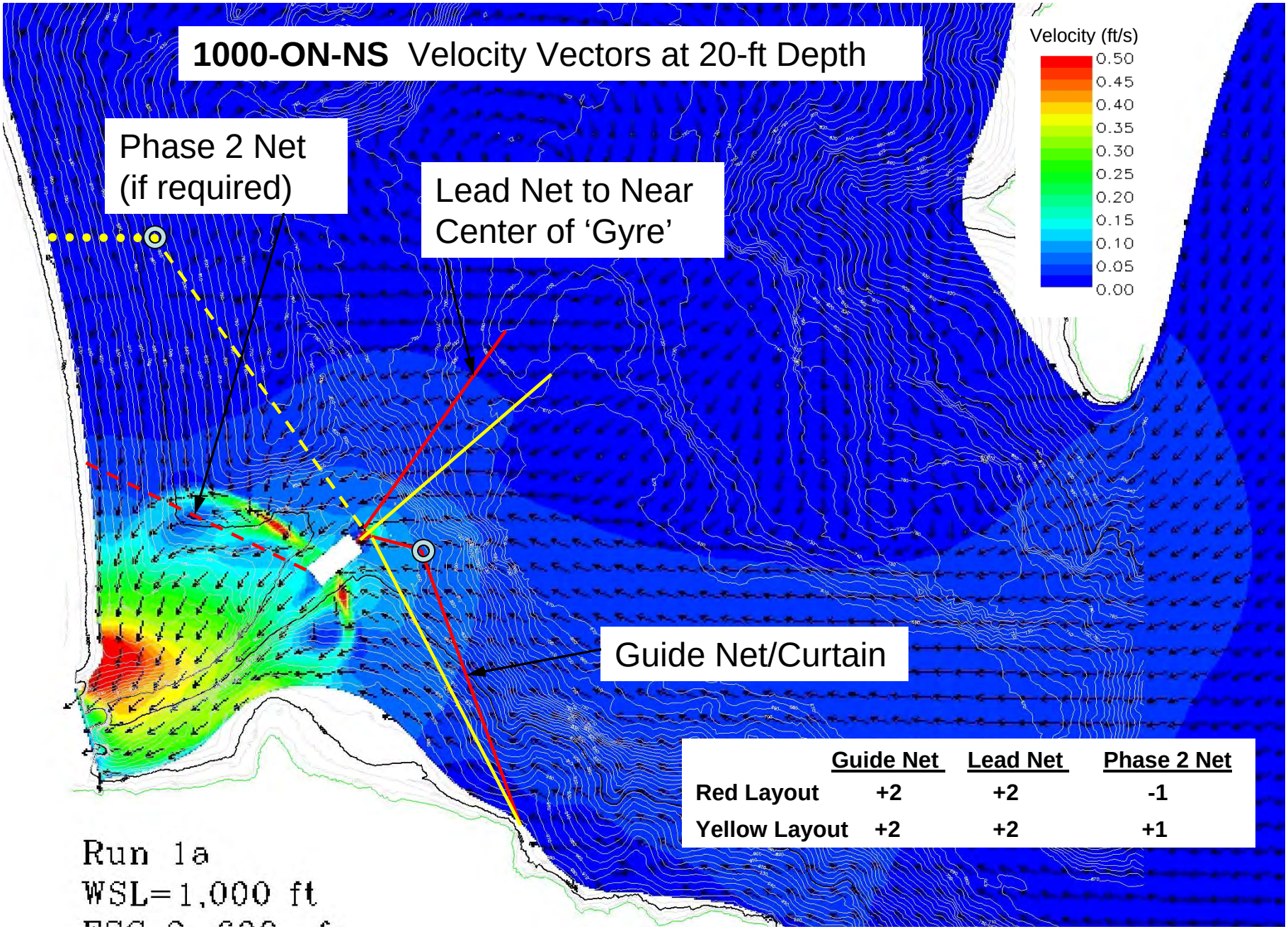


	Guide Net	Lead Net	Phase 2 Net
Red Layout	-1	+1	0
Yellow Layout	0	+2	+1

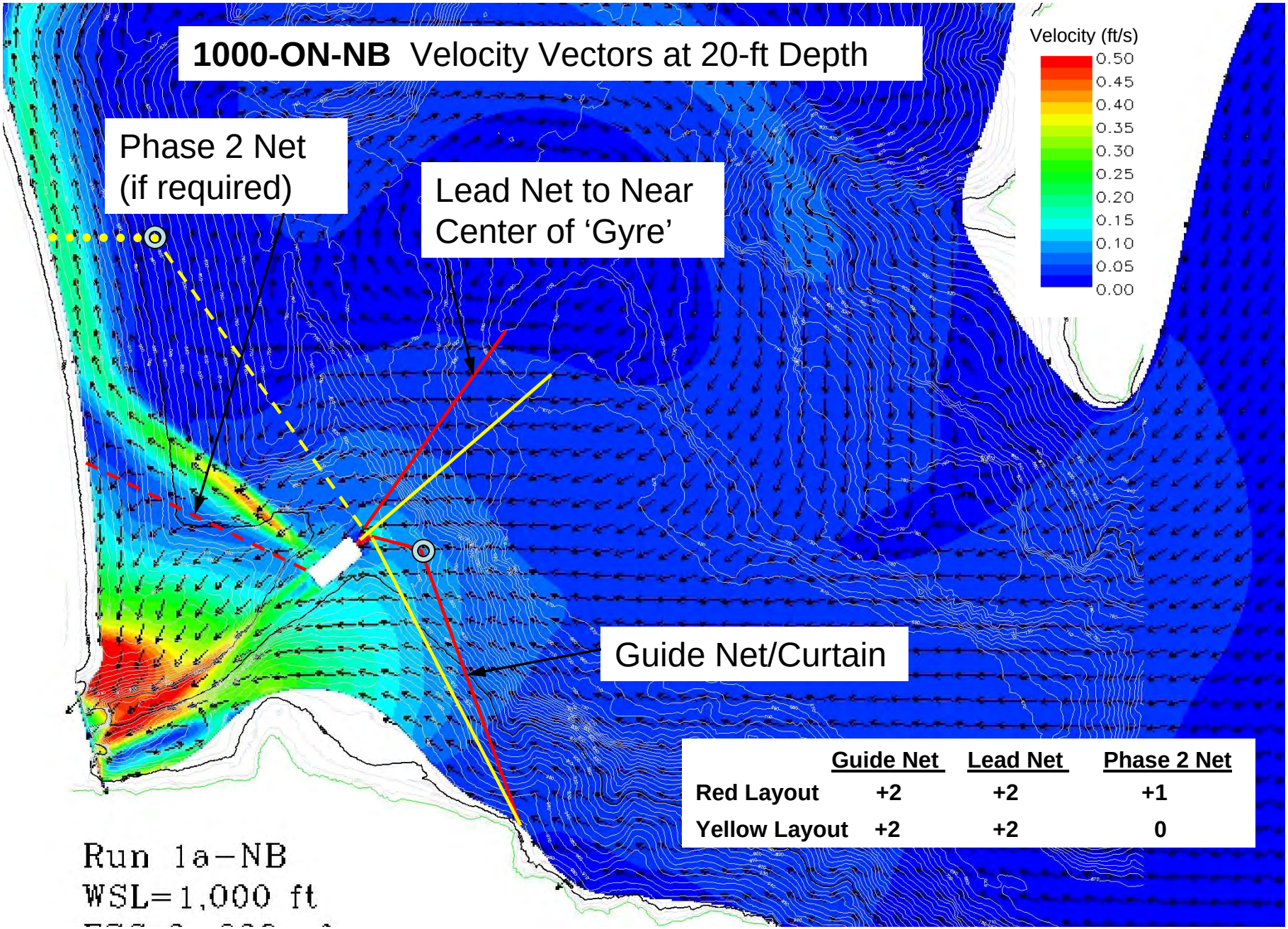

960-OFF-NB Velocity Vectors at 20-ft Depth
Velocity (ft/s)
0.50
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
Phase 2 Net (if required)
Lead Net to Near Center of 'Gyre'
Guide Net/Curtain
Guide Net | Lead Net | Phase 2 Net
Red Layout | -1 | +1 | 0
Yellow Layout | 0 | +2 | +1
Run 2b-NB
WSL=960 ft



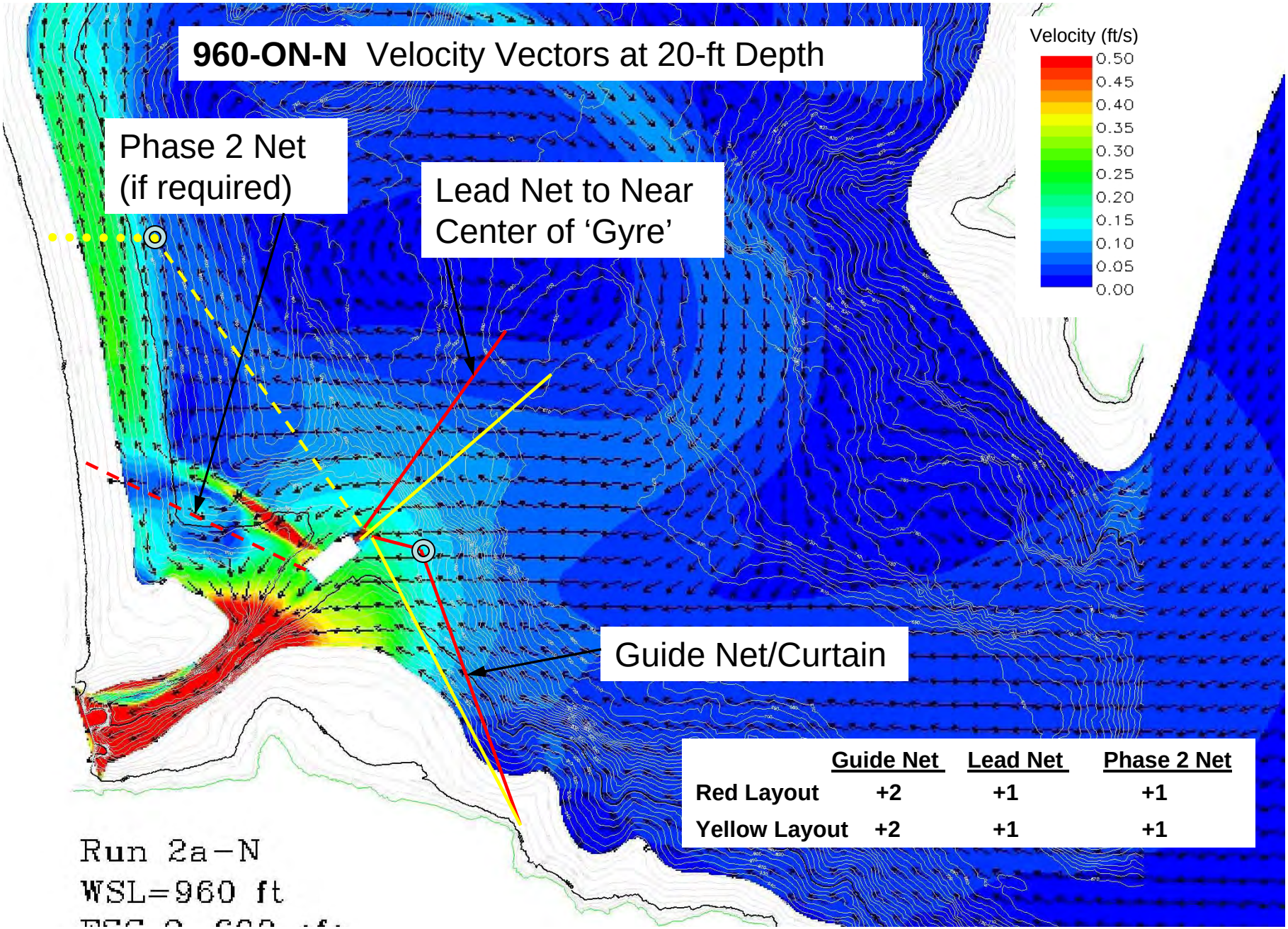
	Guide Net	Lead Net	Phase 2 Net
Red Layout	**+1**	**+1**	**0**
Yellow Layout	**+1**	**+2**	**0**



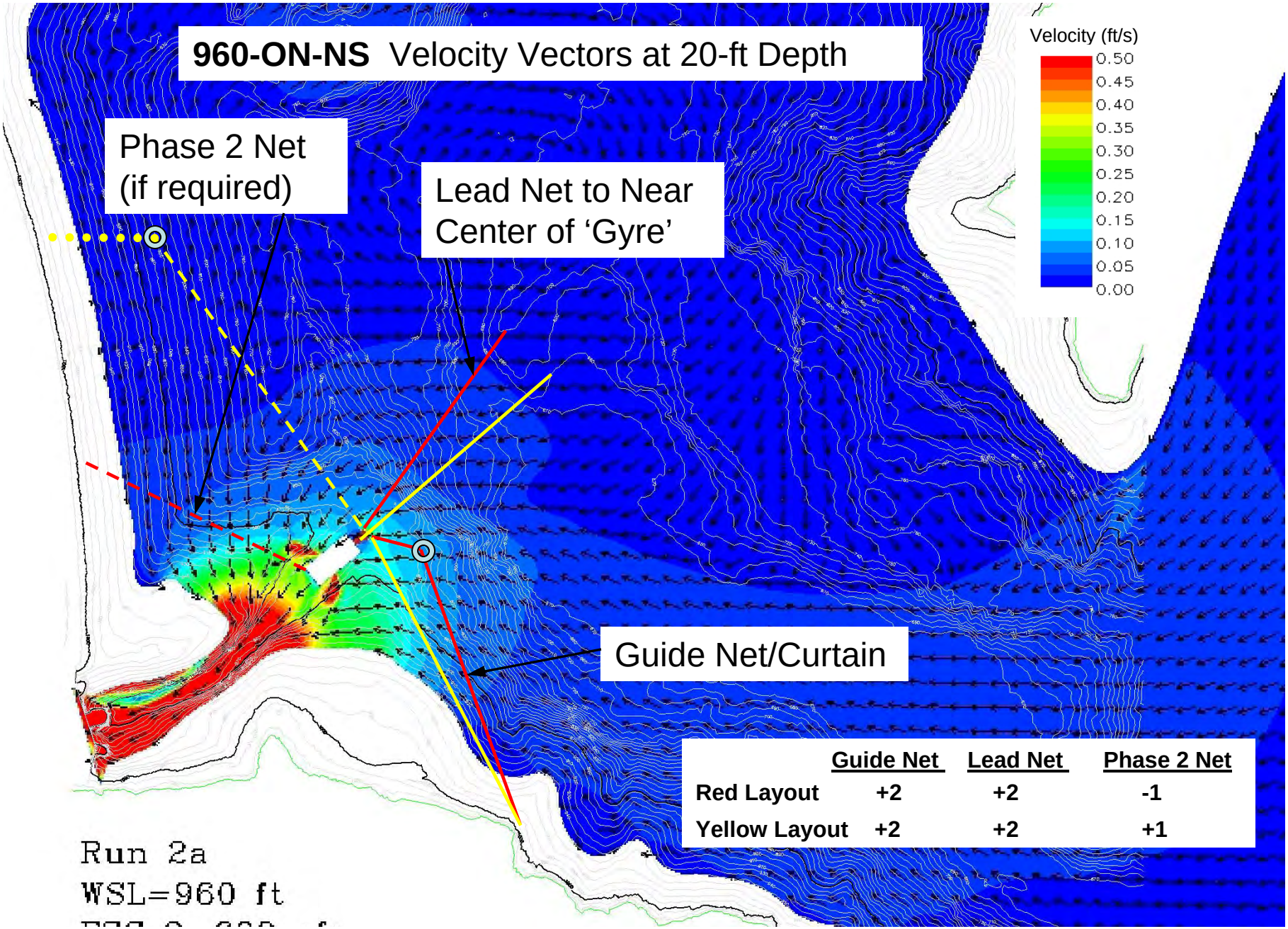
	Guide Net	Lead Net	Phase 2 Net
Red Layout	**+2**	**+2**	**-1**
Yellow Layout	**+2**	**+2**	**+1**



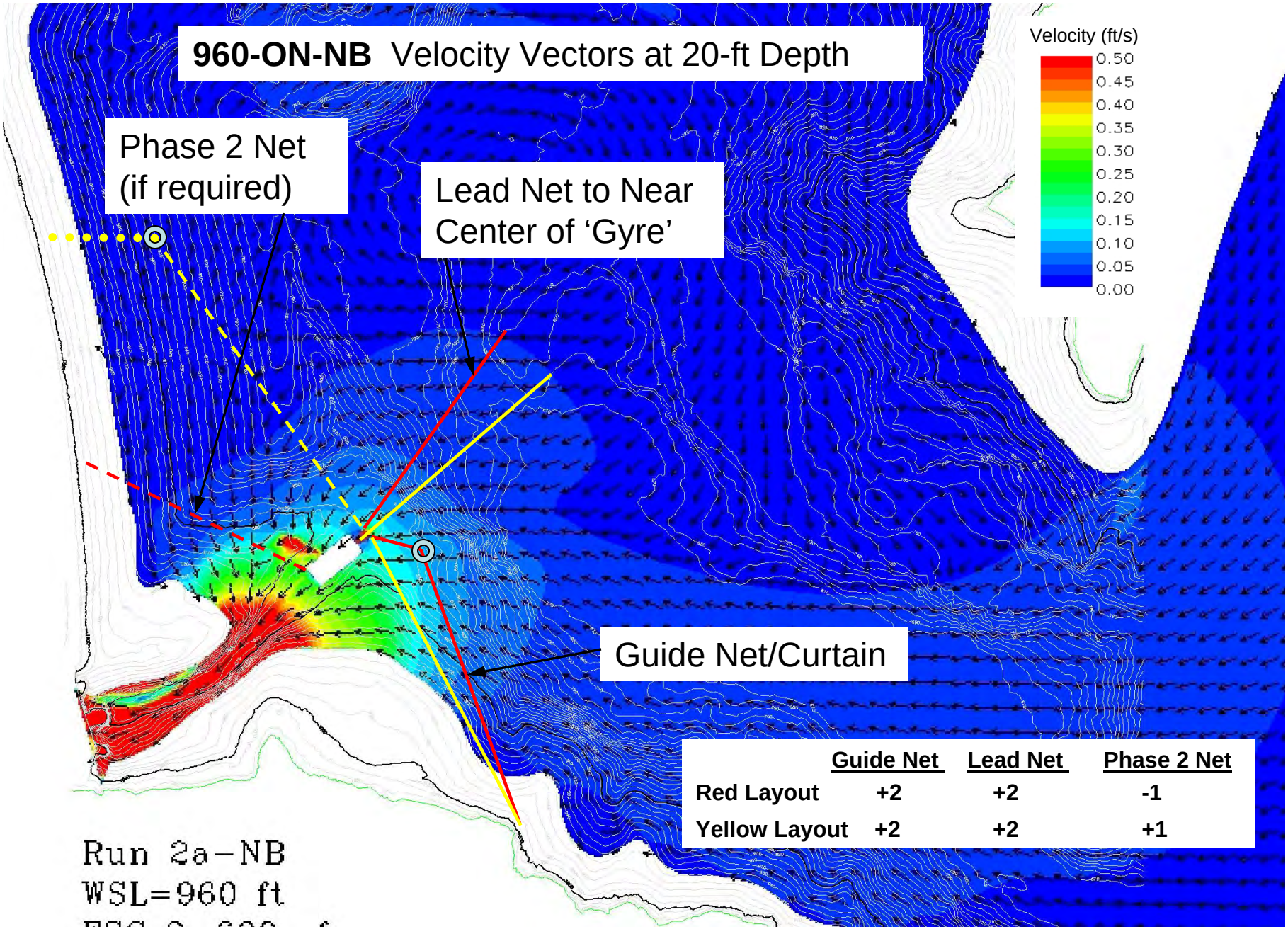
	Guide Net	Lead Net	Phase 2 Net
Red Layout	+2	+2	+1
Yellow Layout	+2	+2	0

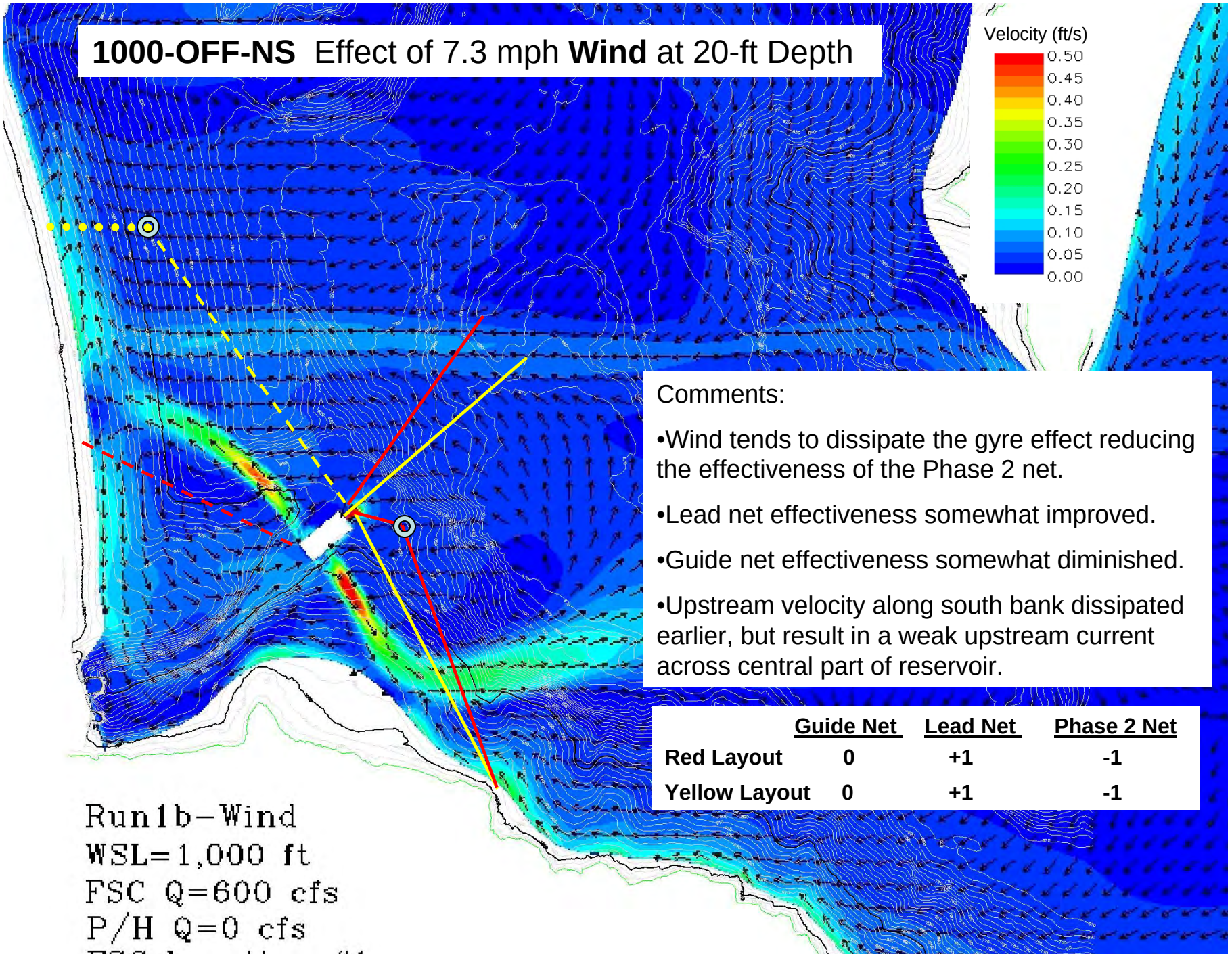


	Guide Net	Lead Net	Phase 2 Net
Red Layout	**+2**	**+1**	**+1**
Yellow Layout	**+2**	**+1**	**+1**



	Guide Net	Lead Net	Phase 2 Net
Red Layout	**+2**	**+2**	**-1**
Yellow Layout	**+2**	**+2**	**+1**


960-ON-NB Velocity Vectors at 20-ft Depth
Velocity (ft/s)
0.50
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
Phase 2 Net (if required)
Lead Net to Near Center of 'Gyre'
Guide Net/Curtain
Guide Net Lead Net Phase 2 Net
Red Layout +2 +2 -1
Yellow Layout +2 +2 +1
Run 2a-NB
WSL=960 ft


1000-OFF-NS Effect of 7.3 mph Wind at 20-ft Depth
Velocity (ft/s)
0.50
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
Comments:
•Wind tends to dissipate the gyre effect reducing the effectiveness of the Phase 2 net.
•Lead net effectiveness somewhat improved.
•Guide net effectiveness somewhat diminished.
•Upstream velocity along south bank dissipated earlier, but result in a weak upstream current across central part of reservoir.
Guide Net
Lead Net
Phase 2 Net
Red Layout 0 +1 -1
Yellow Layout 0 +1 -1
Run1b-Wind
WSL=1,000 ft
FSC Q=600 cfs
P/H Q=0 cfs

Summary Table of Interaction Values
Red Net Layouts

Scenario	Guide Net	Lead Net	Phase 1 Total	Phase 2 Net	Phase 2 Total	Comments
1000-Off-N	+2	0	**+2**	+1	**+3**	**Phase 2 Net Leads to Gyre**
1000-Off-NS	0	0	**0**	0	**0**	**Upstream Current on South Bank**
1000-Off-NS (with wind)	0	+1	**+1**	-1	**0**	**Wind Diminishes Strength of Gyre and Upstream Current on South Bank**
1000-Off-NB	0	0	**0**	0	**0**	**No Vectors Lead to FSC**
960-Off-N	-1	+1	**0**	0	**0**	**South Guide Net Vectors Lead Away**
960-Off-NS	-1	+1	**0**	0	**0**	**Upstream Current on South Bank**
960-Off-NB	-1	+1	**0**	0	**0**	**Guide Net Problems Reduced**
1000-On-N	+1	+1	**+2**	0	**+2**	**Phase 2 Net Leads to Gyre**
1000-On-NS	+2	+2	**+4**	-1	**+3**	**High Phase 2 Net Loading**
1000-On-NB	+2	+2	**+4**	+1	**+5**	**Phase 2 Net Leads to Gyre**
960-On-N	+2	+1	**+3**	+1	**+4**	**Phase 2 Net Leads to Gyre**
960-On-NS	+2	+2	**+4**	-1	**+3**	**High Phase 2 Net Loading**
960-On-NB	+2	+2	**+4**	-1	**+3**	**High Phase 2 Net Loading**

Summary Table of Interaction Values
Yellow Net Layouts

Scenario	Guide Net	Lead Net	Phase 1 Total	Phase 2 Net	Phase 2 Total	Comments
1000-Off-N	+2	0	**+2**	+1	**+3**	**Phase 2 Net Leads to Gyre (All P/H OFF Runs)**
1000-Off-NS	+1	+1	**+2**	+1	**+3**	**Upstream Current on South Bank**
1000-Off-NS (with wind)	0	+1	**+1**	-1	**0**	**Wind Diminishes Strength of Gyre and Upstream Current on South Bank**
1000-Off-NB	+1	0	**+1**	+1	**+2**	**Reverse Flow on Guide Net**
960-Off-N	0	+2	**+2**	+1	**+3**	**South Guide Net Vectors Lead Away**
960-Off-NS	0	+2	**+2**	+1	**+3**	**Upstream Current on South Bank**
960-Off-NB	0	+2	**+2**	+1	**+3**	**South Guide Net Vectors Lead Away**
1000-On-N	+1	+2	**+3**	0	**+3**	**Lack of Direction for Phase 2 Net Flow**
1000-On-NS	+2	+2	**+4**	+1	**+5**	**Generally Good Flow Conditions**
1000-On-NB	+2	+2	**+4**	0	**+4**	**Lack of Direction for Phase 2 Net Flow**
960-On-N	+2	+1	**+3**	+1	**+4**	**Phase 2 Net Leads to Gyre**
960-On-NS	+2	+2	**+4**	+1	**+5**	**Generally Good Flow Conditions**
960-On-NB	+2	+2	**+4**	+1	**+5**	**Generally Good Flow Conditions**