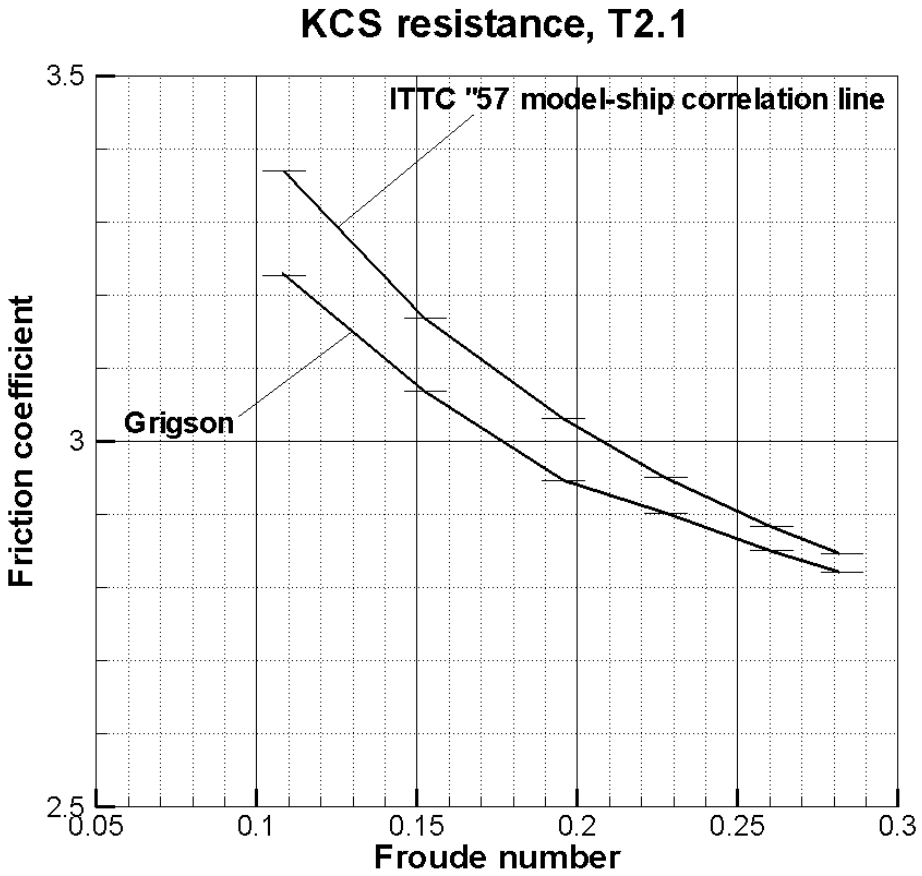
Tokyo 2015 Workshop on CFD in Ship Hydrodynamics

Towards a critical assessment of ship viscous flow computations…

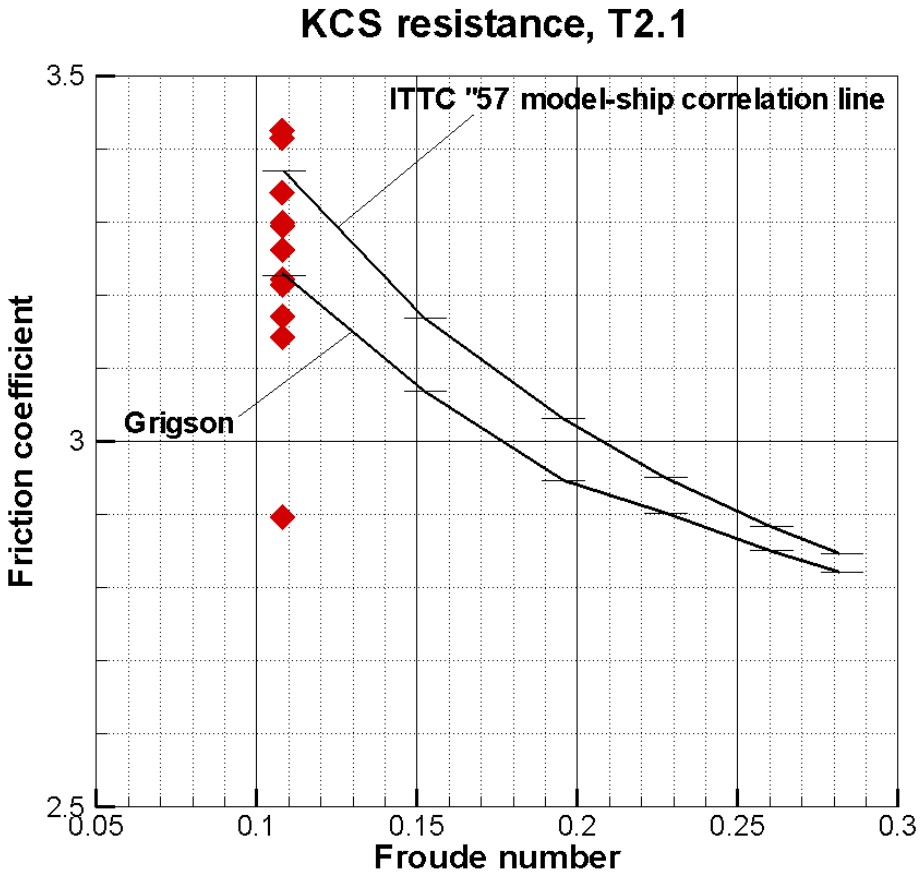
Plate friction correlation lines

Fn	Rn	1000 x $Cf_{0,ITTC57}$	1000 x $Cf_{0,Grigson}$
0.108	5.23×10^6	3.369	3.226
0.152	7.33×10^6	3.169	3.069
0.195	9.42×10^6	3.031	2.946
0.227	1.10×10^7	2.951	2.902
0.260	1.26×10^7	2.883	2.850
0.282	1.36×10^7	2.846	2.821

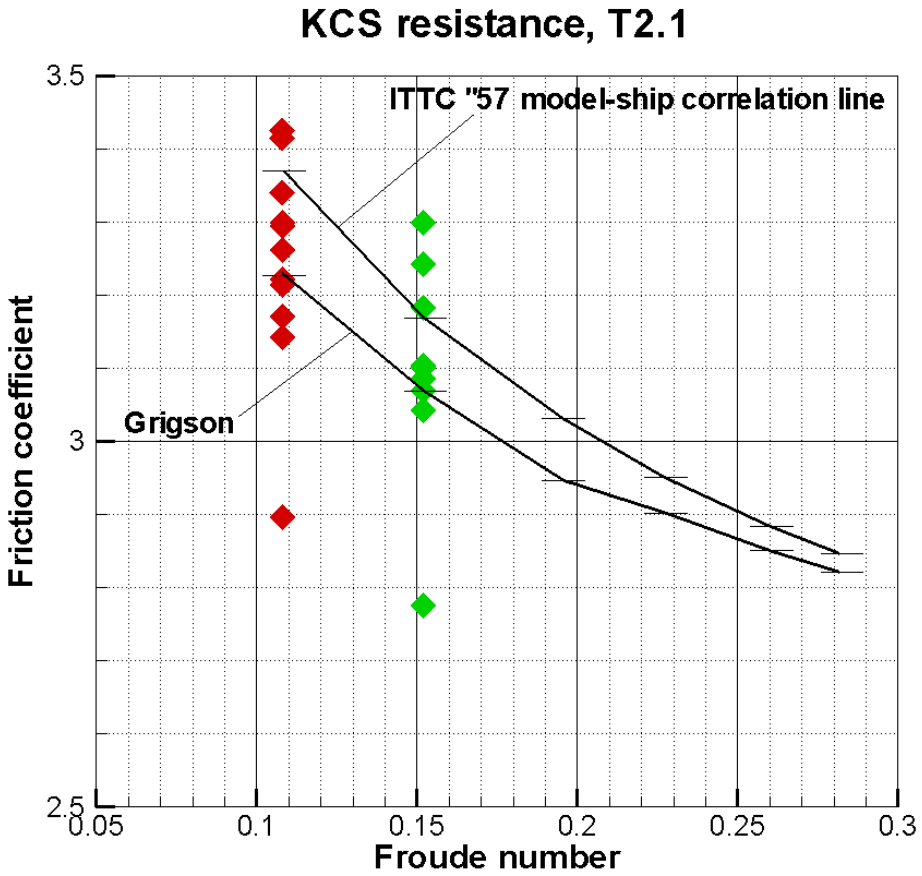
Apart from the comparison with the measured resistance, the predicted frictional resistance can (should?) be compared with typical friction lines, such as the ITTC"57 model-ship correlation line or the Grigson line or others…
One would expect a predicted frictional resistance coefficient that is *a few per cent higher* than the friction lines due to the mean over-speed along the hull.


KCS resistance, T2.1
ITTC "57 model-ship correlation line
Grigson
Friction coefficient
Froude number
3.5
3
2.5
0.05
0.1
0.15
0.2
0.25
0.3

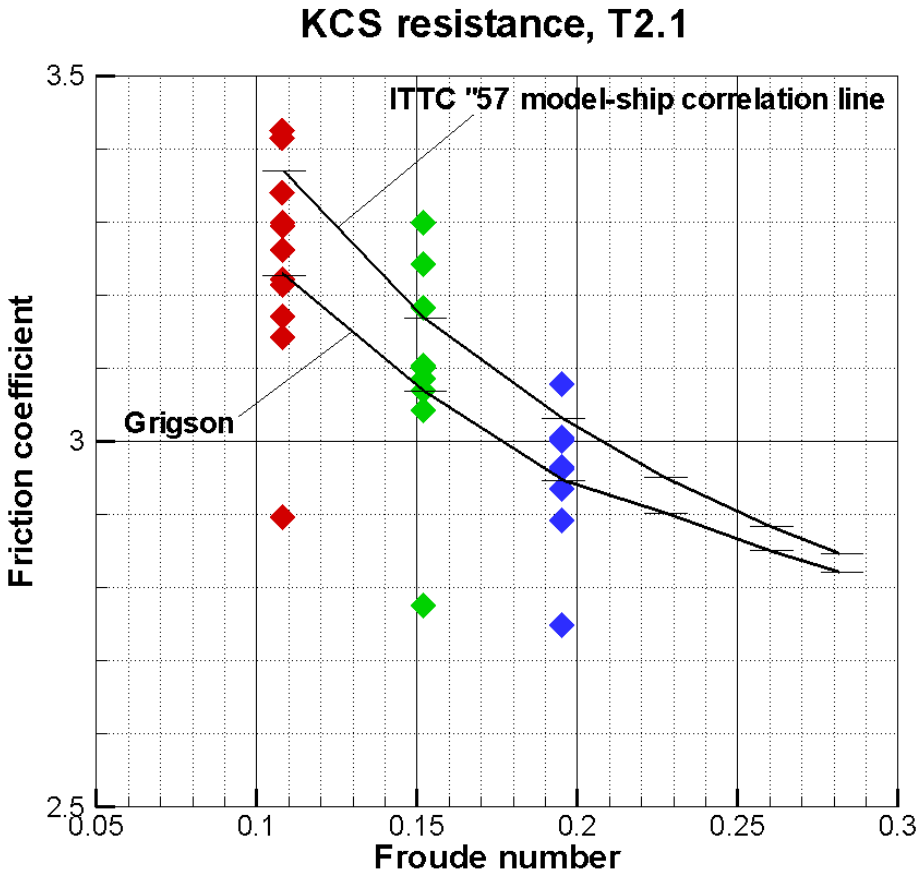
adding the results of Fn=0.108…



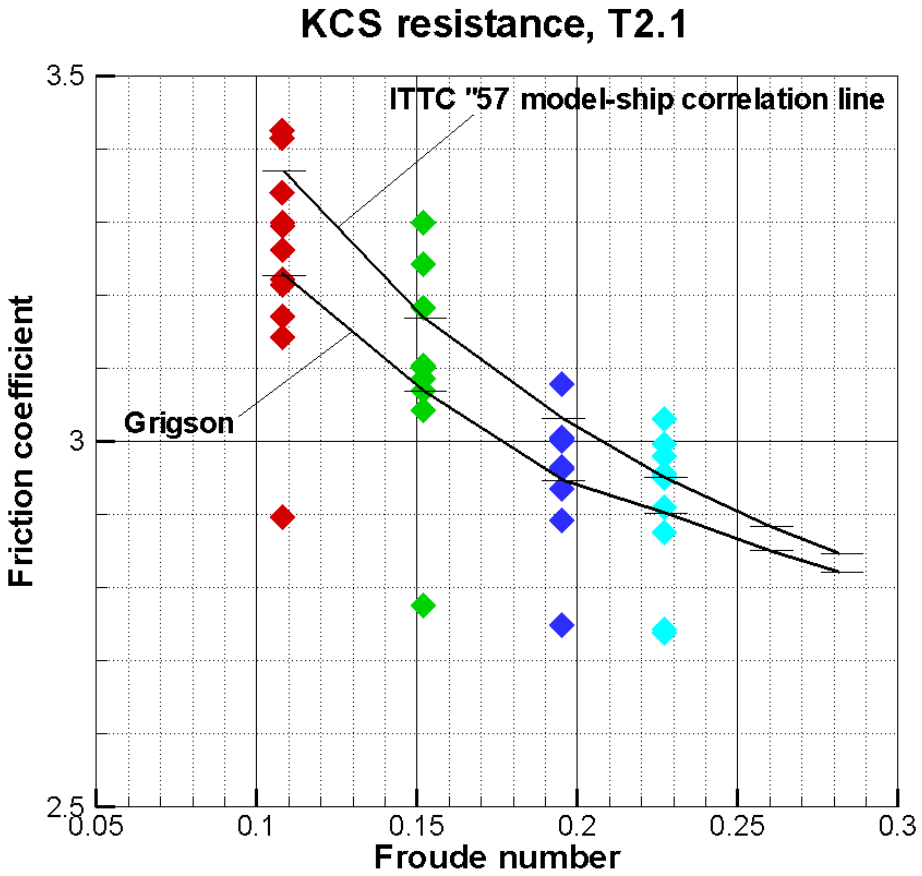
adding the results of Fn=0.152…



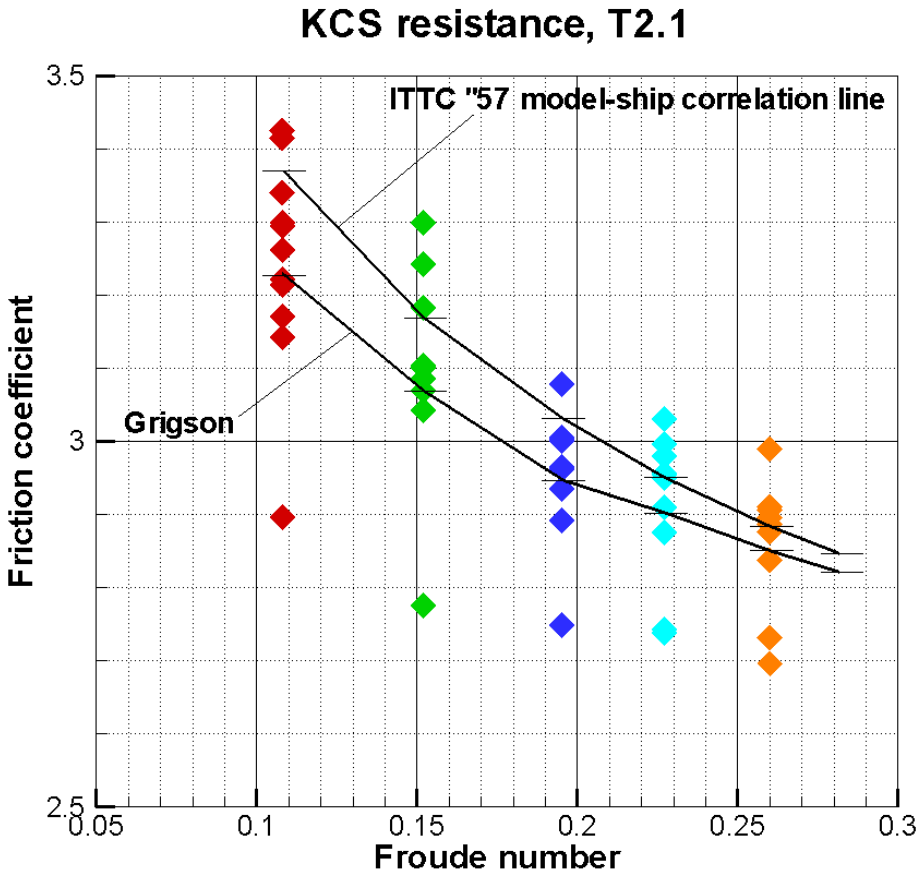
adding the results of Fn=0.195…



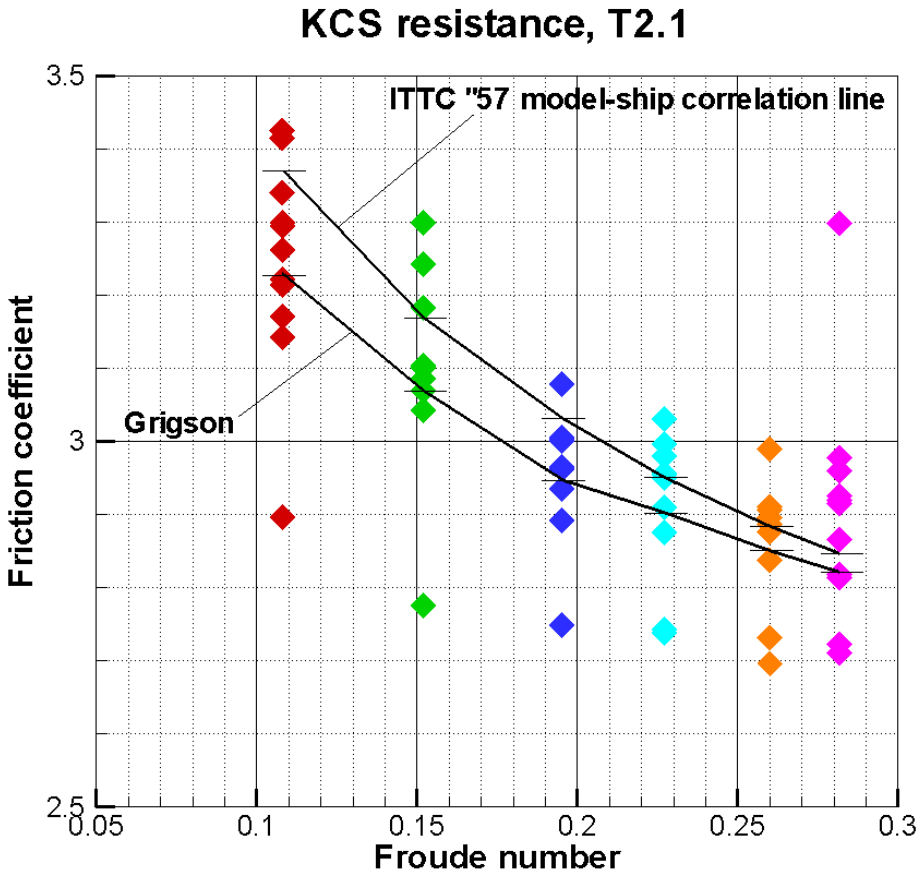
adding the results of Fn=0.227…



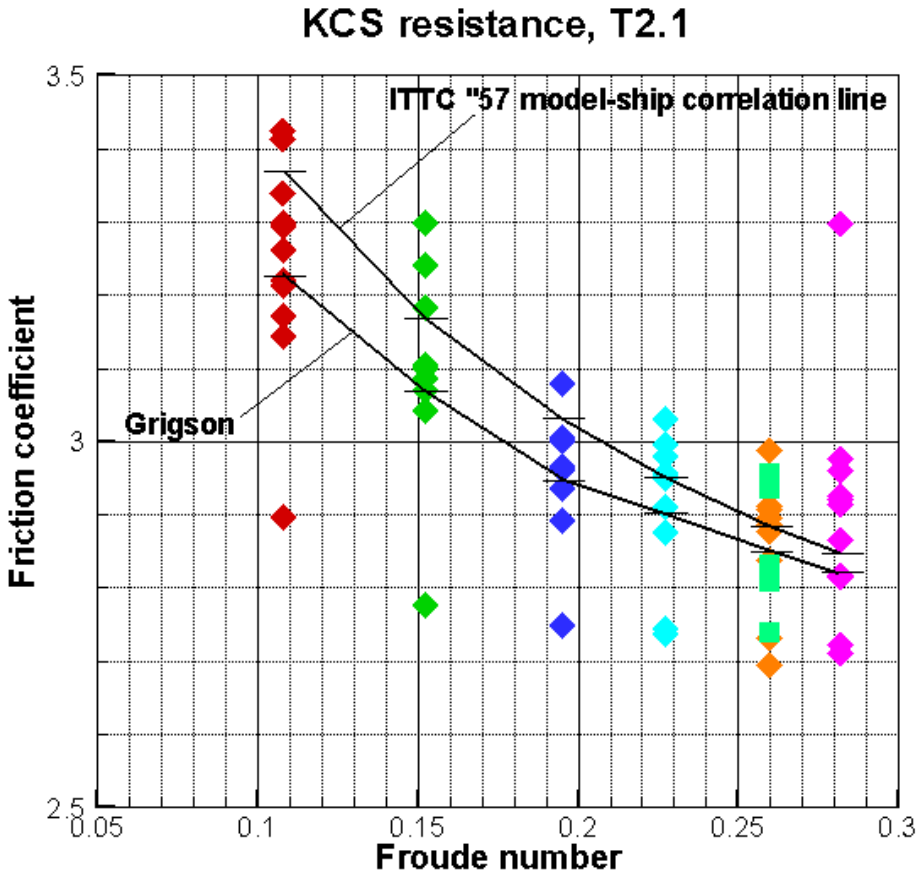
adding the results of Fn=0.260…



…and the results of Fn=0.282



…and the propulsion results (Task 2.5 Fn=0.260, without rudder)



Conclusion