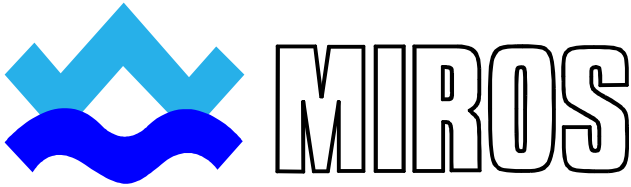


Supplier						
Document No.	SM-100/002/TE					
Document Title	PERFORMANCE VERIFICATION REPORT					
Product	WIND SENSOR SM-100 (Gill 1360)					
Revision No.	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>
Date	05.06.03	17.02.04				
Prepared By	CNE	CNE				
Checked By	SM	SM				
Approved By	SM	SM				

Abstract

The intent of this report is to verify that the changes made to the Gill IS Anemometer (type 1360) by the manufacturer has solved the problem with extremely high wind-gust data in situations with strong wind and substantial precipitation, and that the modification has not resulted in any unwanted loss of data.

Conclusion

The Gill sensor seems to be working satisfactory after the modification and it may be taken into permanent operational use.

Revision History

- 1) Original Issue with 3 months data.
- 2) Updated with 10 months data.

SCOPE

The intent of this report is to verify that the changes made to the Gill IS Anemometer (type 1360) by the manufacturer has solved the problem with extremely high wind-gust data in situations with strong wind and substantial precipitation, and that the modification has not resulted in any loss of data.

DATA BASIS

The new modified Gill-sensor was put into operation on Statoil Heidrun Platform on March 6th 2003. Data from start up in March 2003 up til the end of January 2004 (a total of 10 months) has been used in this analysis.

The 3 sec gust parameter from the Gill sensor (data tag: WIC-012 Mwp2) was compared to the 3 sec gust parameters from Obsermet OMC-150 (data tag: WIB-012 Mwp2) . Both sensors are mounted close to each other on the top of the derrick and the exposure is assumed to be equal.

Highest 3 sec gust for a 10 min period is recorded in the Heidrun MetOcean logging system every 20 minutes, and the data basis for this analysis covers consequently 50% of the theoretical maximum amount of data.

DATA ANALYSIS

Time series of the recorded data from the two sensors are shown in figures 1-4 of this report and the figures are commented on page 6.

The data capture rate for the two sensors are in addition compared in table 1 (se page 7) and commented on the same page.

CONCLUSION

The problems with the sensor seems to be solved.

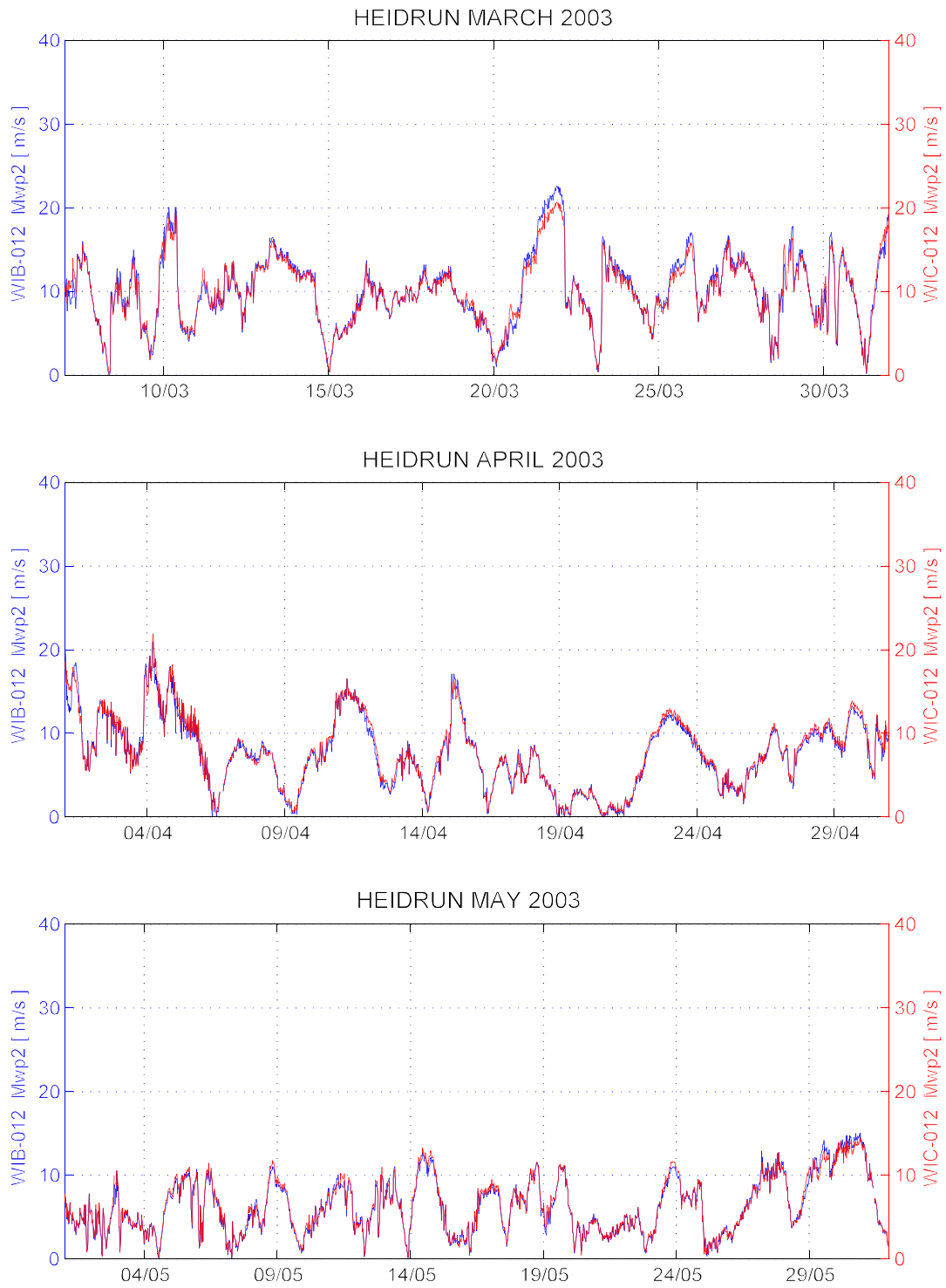


Figure 1

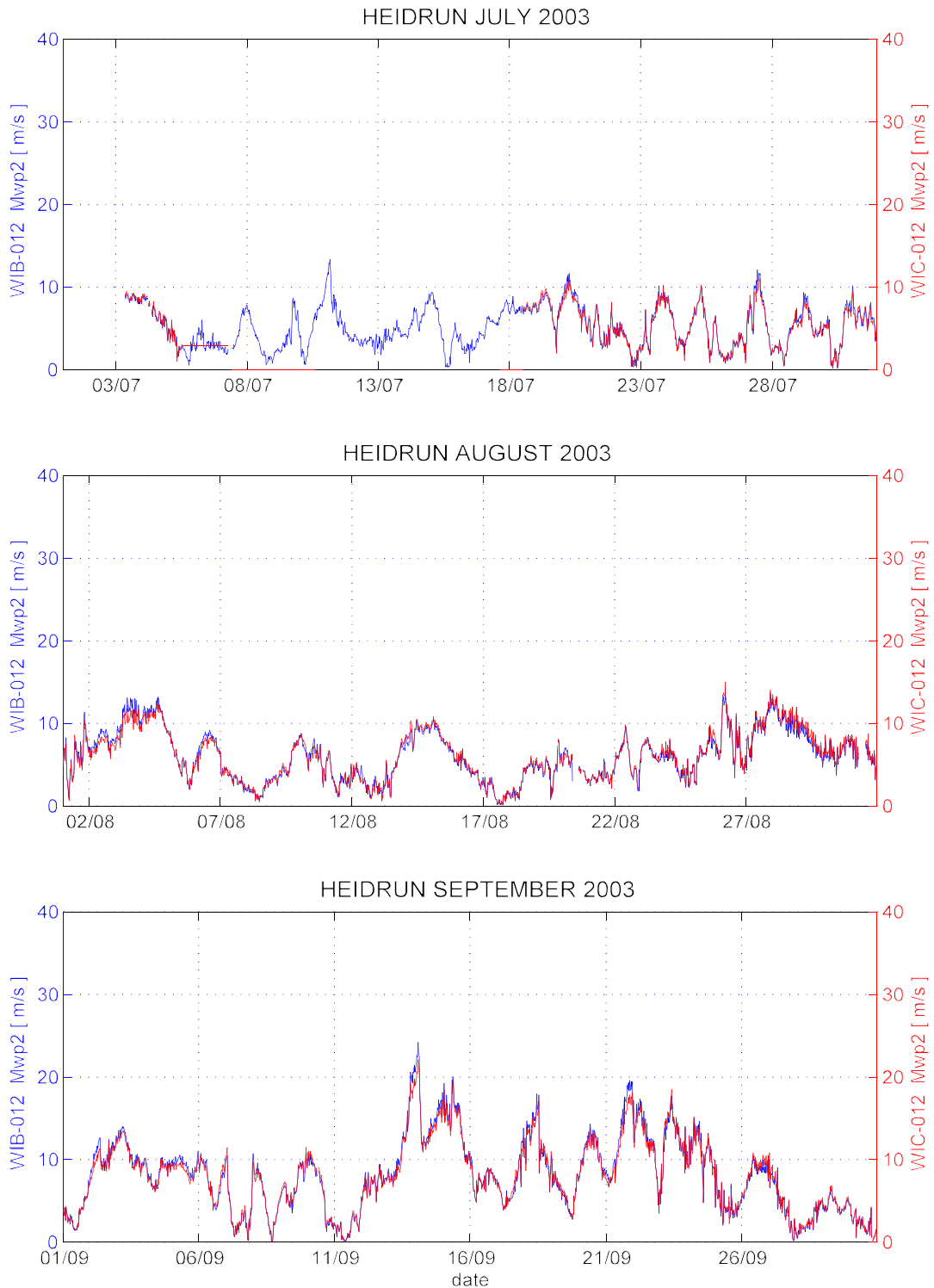


Figure 2

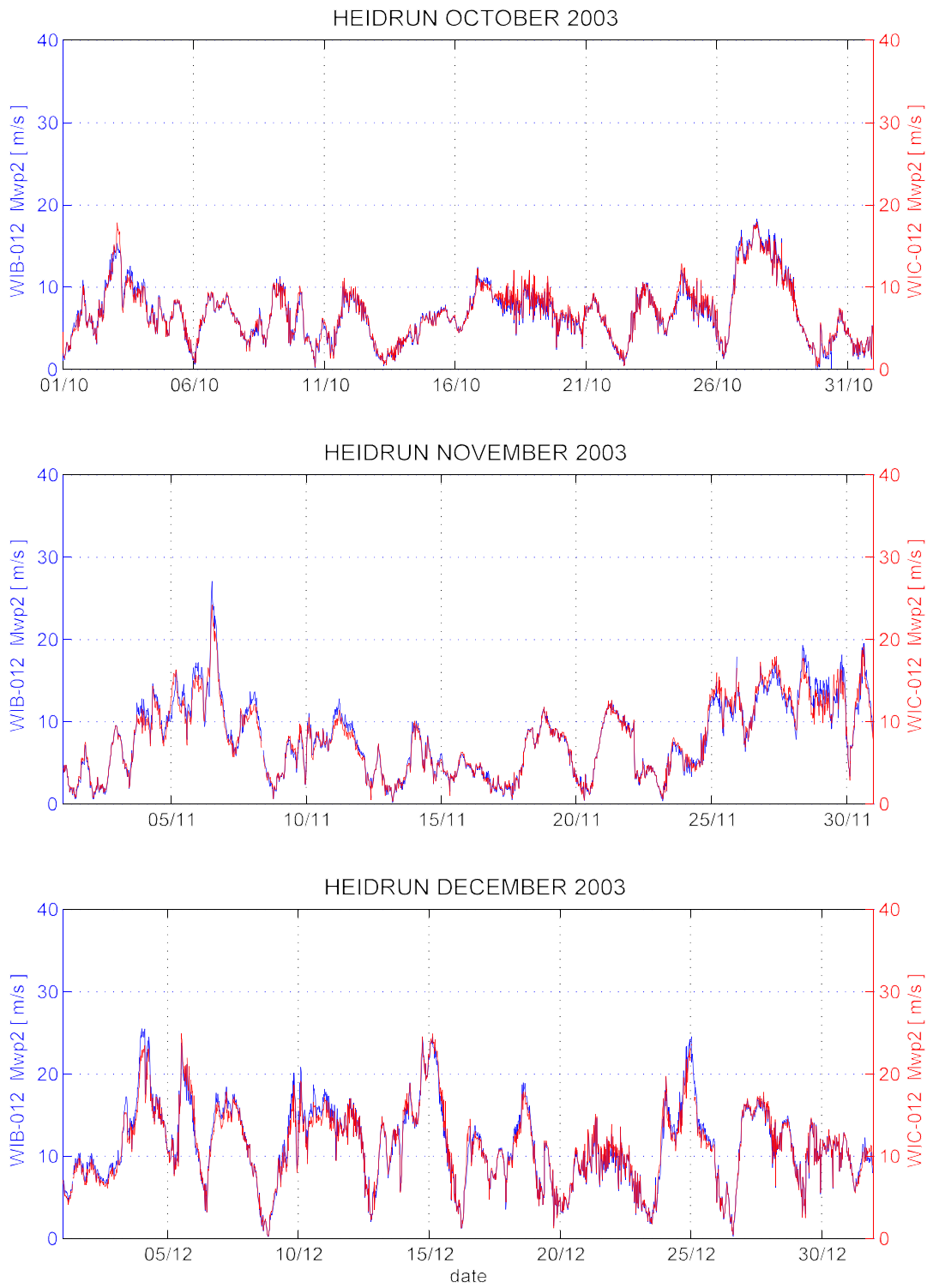


Figure 3

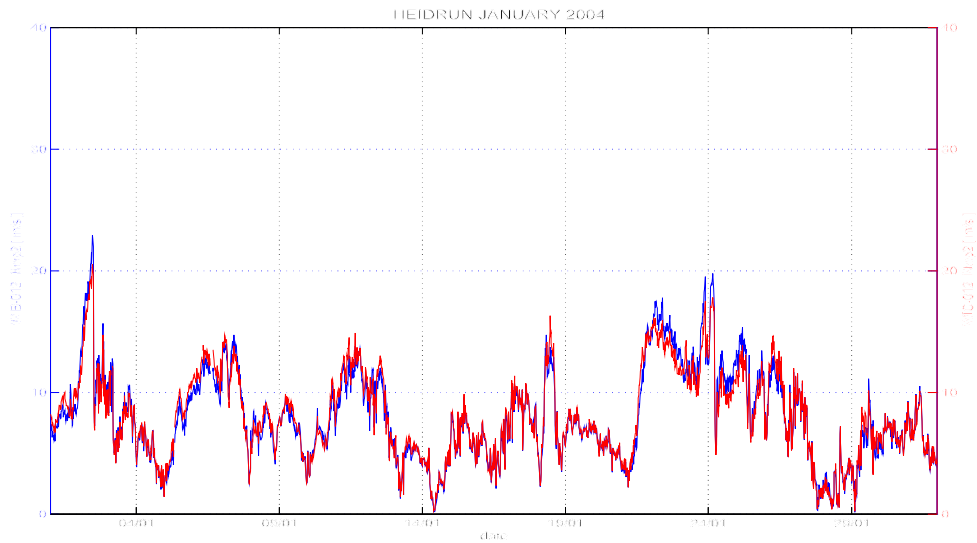


Figure 4

SPIKE ANALYSIS

No spikes are detected and the two wind sensors shows reasonable agreement for the gust parameters. It is reasonable to assume that the problem with extremely high gust presentation from the prewise model of the Gill IS Anemometer is solved on the revised version.

The loss of Gill data in July is caused by a logging problem, not the sensor itself.

It should be noted that the Gill data is more dynamic than the Obsermet data. The Gill sensor is probably more responsive to rapid changes in wind speed and provides more accurate gust values.

Table 1: Data Capture Rates

Month	Capture Rate Obsermet	Capture Rate Gill	Deviation
March	80,6	80,3	0,3
April	99,5	99,5	0
May	99,8	99,8	0
July	91,5	68,7	22,8
August	98,3	98,0	0,3
September	99,8	99,8	0
October	99,9	99,9	0
November	99,8	99,7	0,1
December	100	99,3	0,7
January	99,7	99,5	0,2

DATA CAPTURE ANALYSIS

All instances of data loss from the Gill sensor during the analysis period were investigated. The wind speed and precipitation intensity varied, but for most of the instances there were no precipitation (Heidrun is fitted with an precipitation intensity sensor). It is most likely that the loss is caused by logging problems and not the sensor itself. The sensor is working satisfactory in periods with high wind speeds and heavy precipitation.

It should be noted that the logging software version presently used on Heidrun (Miros module MirSip12) requires a high degree of continuity in data capture during a 10 minute period to calculate 3 sec gust. This module has been modified and tested on other sites with a Gill sensor. The modified version is less sensitive to short dropouts of data. This modification has resulted in comparable capture rate for this Gill sensor and other sensors. The Gill sensor do report "invalid data" occasionally in its data format. Raw data has been analysed and the number of dropout instances pr minute is not high enough to give any practical problem.

It should, furthermore, be noted that recording of Gill wind sensor data was disrupted in the logging system in July 2004 (see above table).

Based on the above comments, it should be noted that the data capture rates are reasonably equal for the two sensors. It is, consequently, concluded that the modification of the Gill sensor has not resulted in an unacceptable degradation of data capture.