



CMS Alarm Report – Potential Fault and Technical Advice

Site/Park ID:	Zephyr	Main Bearing:	
WTG No:	20200	Gearbox:	CBG100TE55
WTG Type:	CA100-3000 50 Hz	Generator:	ELGA
Tag:	Zephyr#02	RML No:	RML1001207Q-00

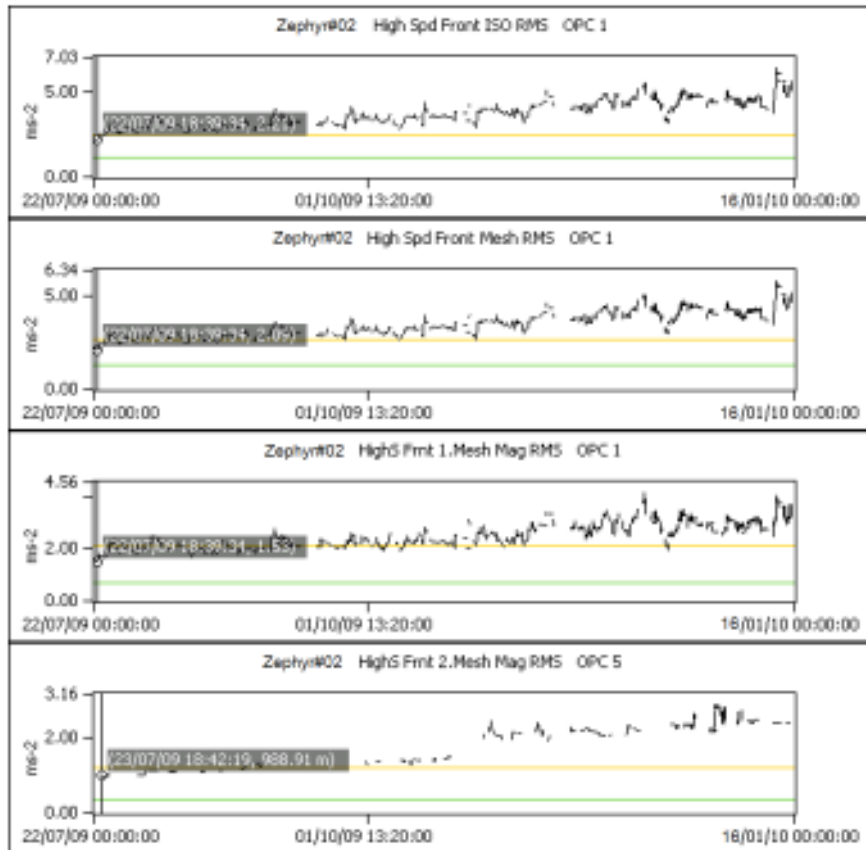
Alarm Indicated

Zephyr#02, 16/01/10 06:08:51 High Speed Stage Front Preliminary Severity Class 2

The following Compass alarms triggered the QSL notice:

- Zephyr#02-#80 OPC:1 High Spd Front RV RMS 06/08/09 07:33:49 YellowAlarm 5,
- Zephyr#02-#82 OPC:5 High5 Fmt 2.Mesh Mag RMS 06/06/09 02:12:54 YellowAlarm 5,
- Zephyr#02-#78 OPC:1 High Spd Front ISO RMS 02/04/09 00:19:28 YellowAlarm 10,
- Zephyr#02-#81 OPC:1 High5 Fmt 1.Mesh Mag RMS 28/03/09 11:02:51 YellowAlarm 5,
- Zephyr#02-#79 OPC:1 High Spd Front Mesh RMS 27/03/09 17:00:11 YellowAlarm 5

Potential Fault and Technical Advice 2nd / 3rd Stage Gearbox OPC: 1/2/3/4/5 **Severity: 2**





Observation

Continuing progressive increase in Gearbox HS Front and HS Rear Overall Vibration level above Alert limit.
Continuing progressive increase in Gearbox HS Front and HS Rear 1st & 2nd Mesh vibration above Alert limit

No significant change in Gearbox HS Front and HS Rear 3rd Mesh vibration.
Continuing progressive increase in Intermediate Stage Gearbox 1st & 2nd Mesh vibration.
No significant change in 1st or 2nd Magnitude vibration levels.
No change in Intermediate or HS Front and HS Rear Gearbox High Frequency Band Pass (HFBP) vibration.

Interpretation

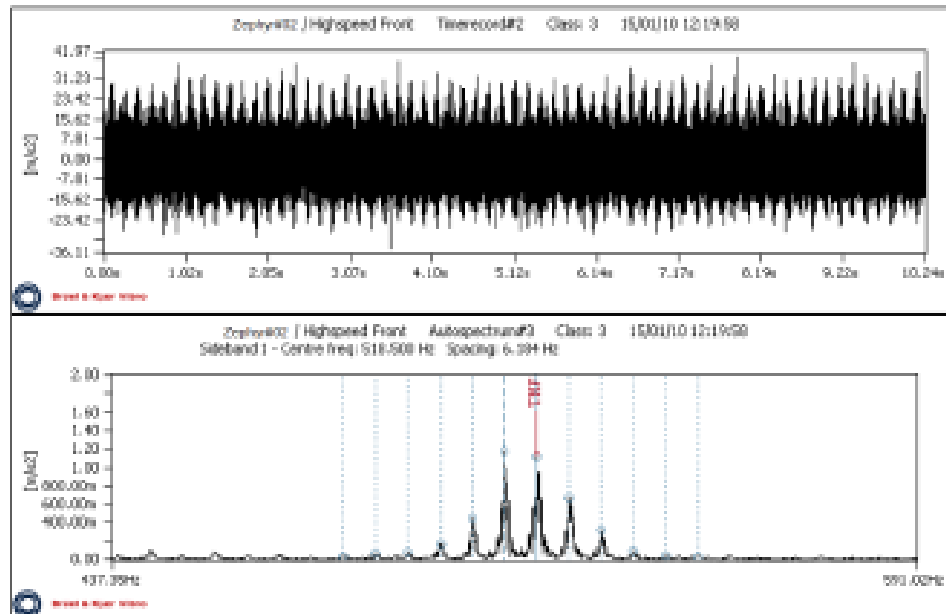
This is a continuation of existing reports issued 07/08/09 (RML090807Q-03) and 16/04/08 (RML080416Q-01) and 23/11/07 (RML071123Q-06) .

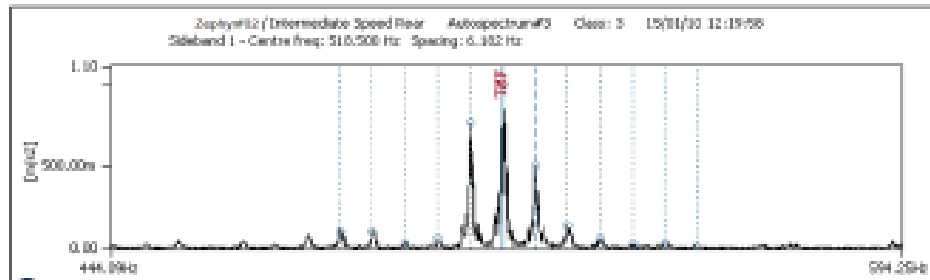
The unchanged HFBP at the Gearbox Intermediate and HS Front and HS Rear indicates that there is no problem with the bearings.

The progressive increase in Gearbox Intermediate and HS Front and HS Rear 1st & 2nd Mesh vibration indicates a general deterioration in the condition of the Intermediate and High Speed stage gear teeth. The vibration levels are currently acceptable and do not give immediate cause for concern, but are progressively deteriorating.

Detailed analysis has shown the presence of significant sidebands around the High Speed Stage Toothmesh frequency. The sidebands are at the Intermediate Shaft speed (6.184Hz) indicating that the damage is on the Intermediate Shaft output pinion.

Due the presence and relative size of the Toothmesh Sidebands the alarm is confirmed as Severity 2.





Assessment of Maintenance Needs

The Gearbox Intermediate and High Speed stages should be visually inspected as soon as possible. Particular attention should be paid to the condition of the Intermediate output pinion gear teeth. BKV will close monitor the Gearbox to identify any further deterioration.

Alarm Class Description

Severity	Type	Description	Recommended Action
1	Danger	Severe progressing alarm	Immediate action. Operating the turbine has serious risk of functional loss and possible severe consequential damage.
2	Alert	Considerable progressing alarm	Action as soon as possible. Recommended within 2 weeks.
3	Alert	Progressing alarm	Action when convenient. Recommended within 2 months.
4	Alert	Small or none progressing alarm	Action at next service.
5	Good	No abnormalities detected	No action required
6	System	Hardware system problem	Correct as soon as possible

