

# **SIMM – Structural Inspection and Maintenance Management – for Shafts and Conveyances**

**Geoff Krige**

## Overview of Presentation

- **Introduction**
- **Why SIMM?**
- **How?**
- **What value add?**

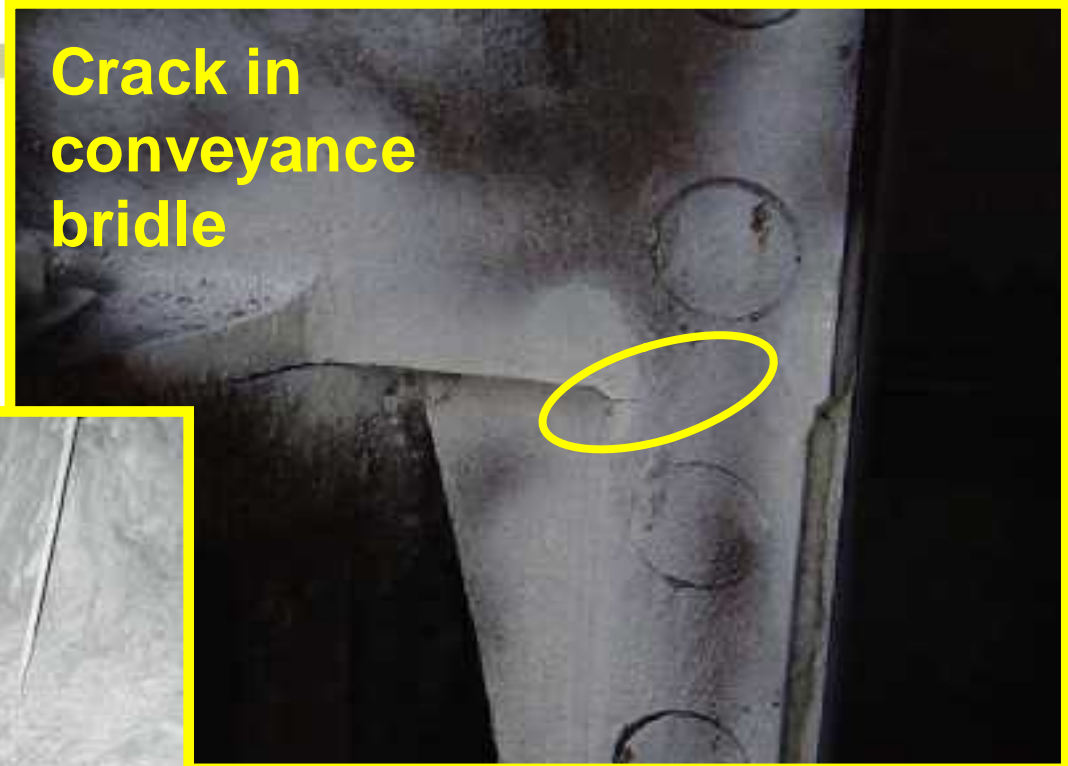
## Why SIMM?

- **Safety**
- **Consistency**
- **Best practice**

# SIMM for Shafts and Conveyances

**Safety**

**Crack in  
conveyance  
bridle**



**Danger of  
column  
collapsing**

# SIMM for Shafts and Conveyances

Consistency



# SIMM for Shafts and Conveyances

## Consistency



16/7/99	All	In order	ca
	Air column	59 level leak	ca
23/7/99	All rest	In order	ca
	Air column	59 level leak	ca
	62 level	Loose nut removed	
	Rest	In order	
30/7/99	Air column	As per check	ca
		Checked - OK	
	All other	In order	

## Best practice

- **General structures – structural inspection legal requirement**

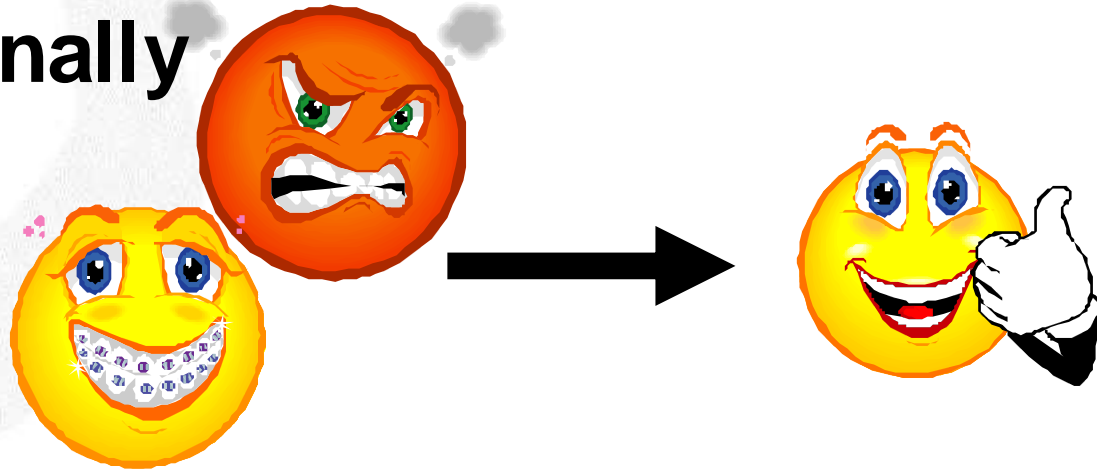
- **Shift focus**

**REACTIVE**



**PLANNED**

- **Driven rationally**



## How?

- **Specification and guidelines**
- **Inspection**
- **Analysis and Report**
- **Follow-up**

# Specification and guidelines



ANGLO AMERICAN		AA SPECIFICATION	282005
		USE OF MINE SHAFT CONVEYANCES	ISSUE 0
			COPYRIGHT
1	SCOPE		3
2	DEFINITIONS		
3	GENERAL REQUIREMENTS		3
3.1	DESIGN		3
3.2	FABRICATION		4
3.3	REPAIR AND RECONDITIONING		4
4	DELIVERY		4
5	STORAGE		4
6	ON-MINE TRANSPORT		4
7	INSTALLATION		5
7.1	PROCEDURES PRIOR TO INSTALLATION		6
7.2	INSTALLATION		5
7.3	PROCEDURES AFTER INSTALLATION		5
7.4	TEST RUN		6
8	OPERATION		6
8.1	SAFETY REQUIREMENTS		6
8.2	PROCEDURE FOR HAVING LONG OR HEAVY LOADS		7
8.3	ACCIDENTAL DAMAGE		7
8.4	RECORDS		7
9	INSPECTIONS AND MAINTENANCE ON THE MINE		7
9.1	GENERAL MAINTENANCE		8
9.2	INSPECTIONS		8
9.3	SCHEDULED MAJOR INSPECTIONS AND RECONDITIONING		8
9.4	MODIFICATIONS		8
10	RECORDS TO BE KEPT		10
11	MARKING		14
11.1	OPERATIONAL INFORMATION		14
11.2	NAMEPLATE		15
	APPENDIX A: RELATED DOCUMENTS		16
	APPENDIX B: RECORD OF AMENDMENTS		15
			16

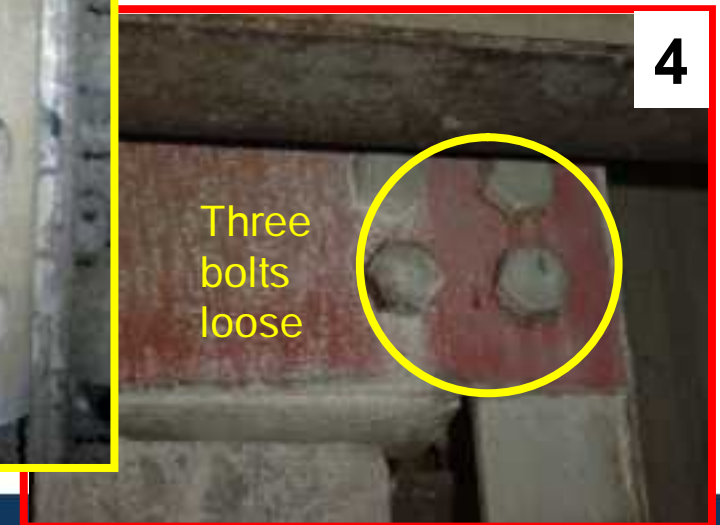
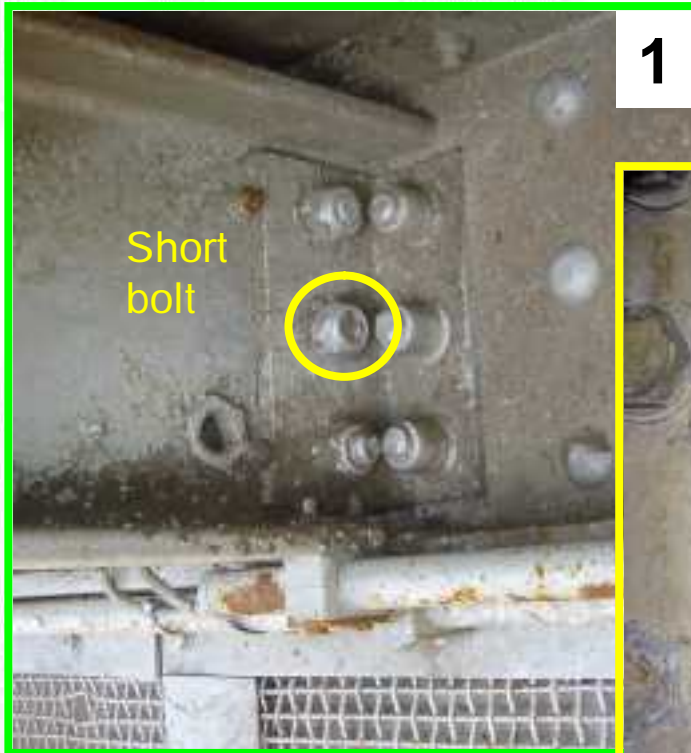
## Specification - Condition Categories

Category	Condition	Strength
0	Excellent	OK: 100 %
1	Slight deterioration	OK: 100 %
2	Some deterioration	Little reduction: 95-100 %
3	Deterioration evident	Some reduction: 75-95 %
4	Severe deterioration	Major reduction: 50-75 %
5	Severe deterioration	No useful strength: <50 %

## Specification - Condition Categories



## Specification - Condition Categories





# SIMM for Shafts and Conveyances

## Specification – Conveyance Service Period

High Cycle Usage

Medium Cycle Usage

Category	High Payload Level	Medium Payload Level	Low Payload Level
Extreme shaft environment	6 months	6 months	9 months
Aggressive shaft environment	18 months	24 months	30 months
Benign shaft environment	24 months	36 months	48 months

Low Cycle Usage



# SIMM for S

## Inspection

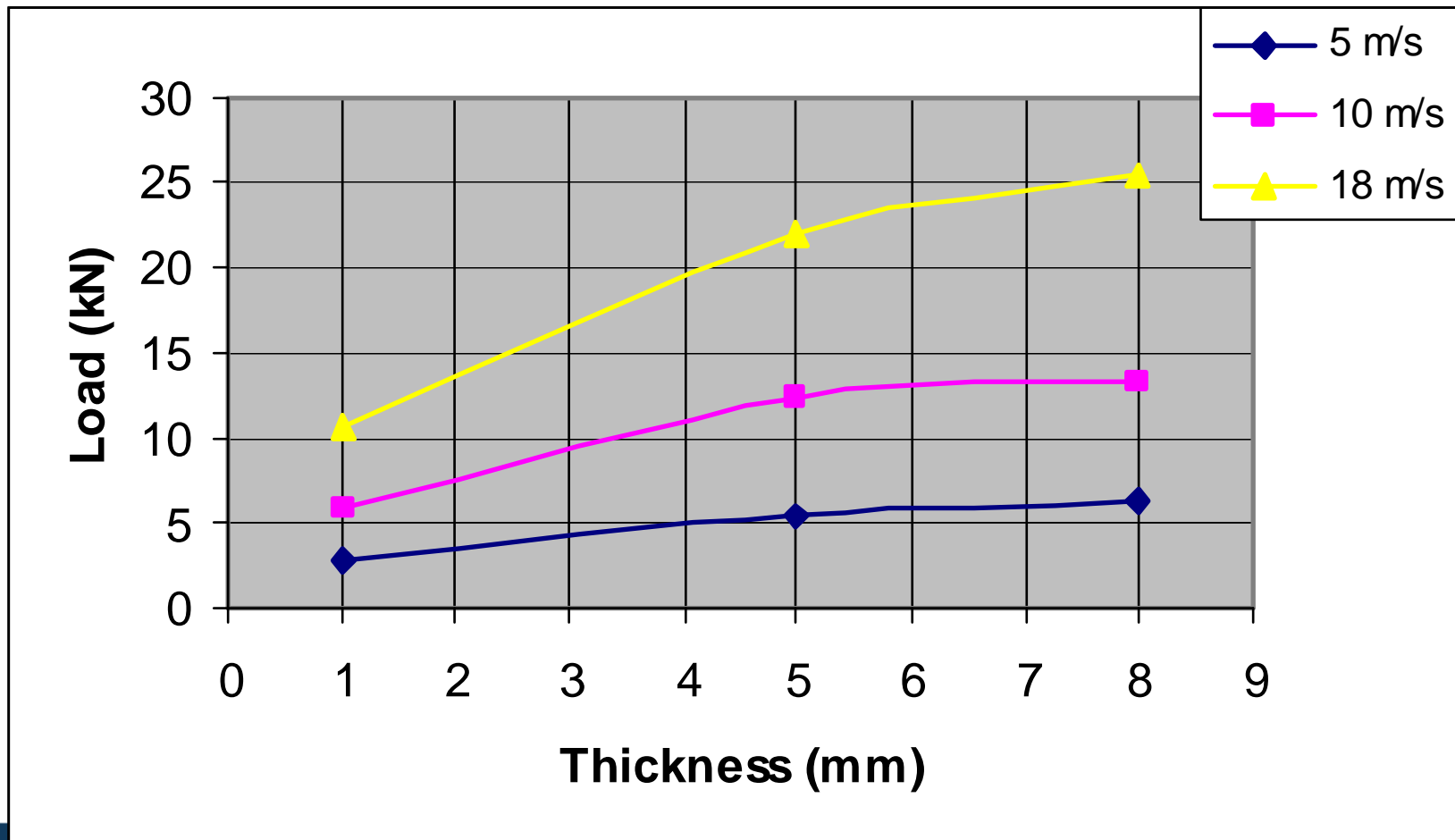


## Analysis and Report

- **Describe current condition**
- **Assess severity**
- **Specify remedial action**
- **Record**

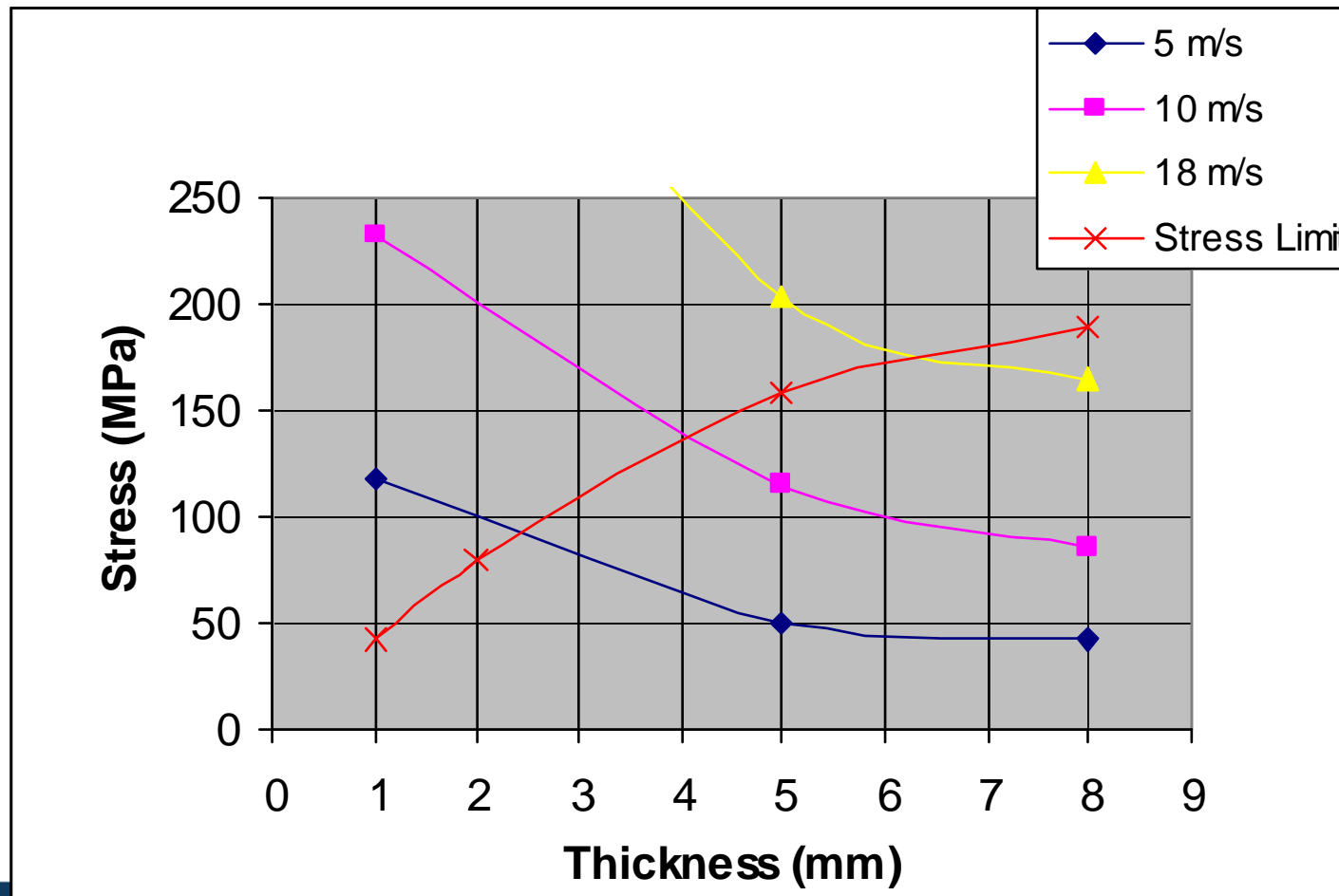
# Assess severity

## Uniform buntion corrosion - Forces



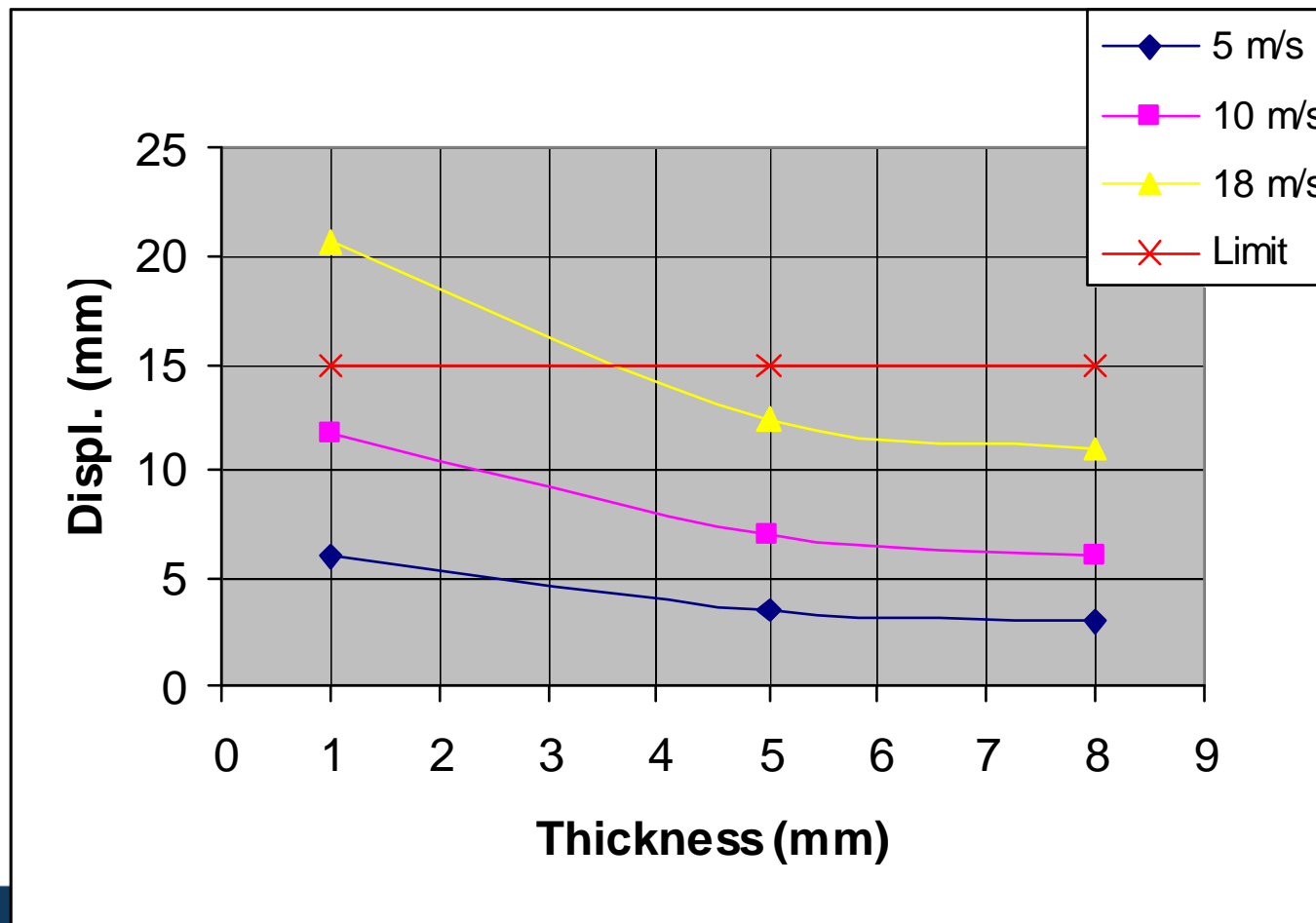
# Assess severity

## Uniform buntton corrosion - Stresses



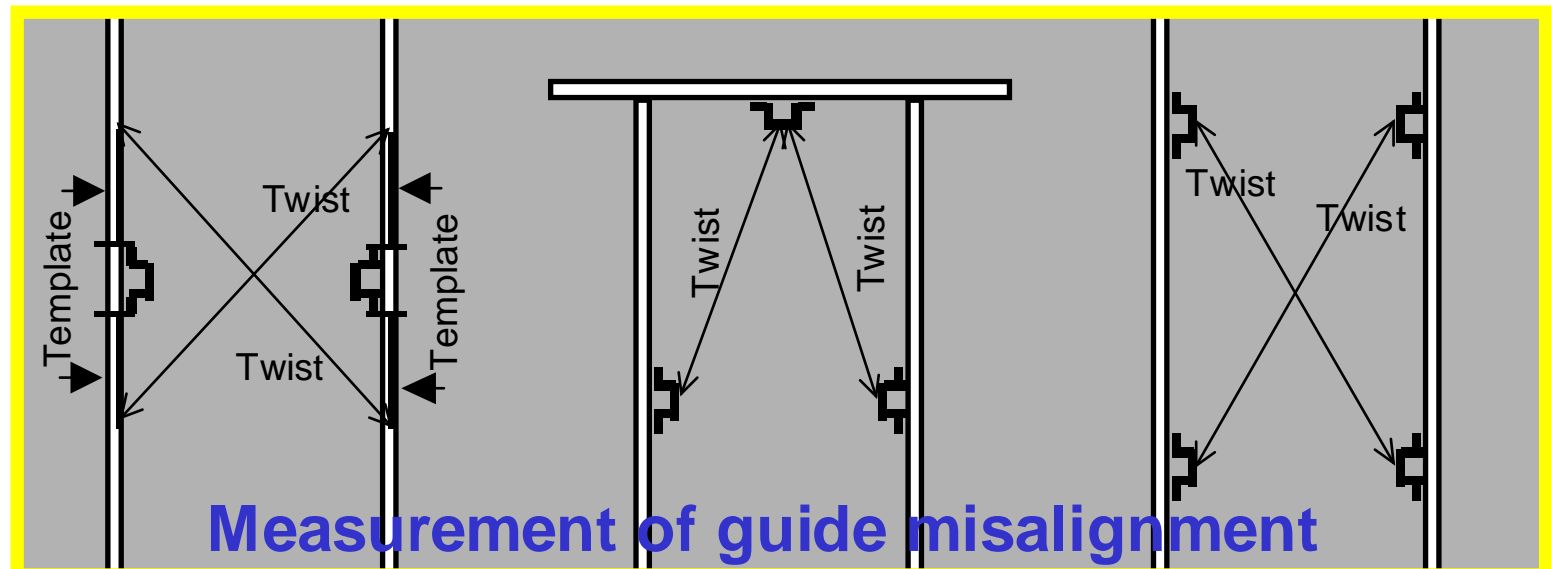
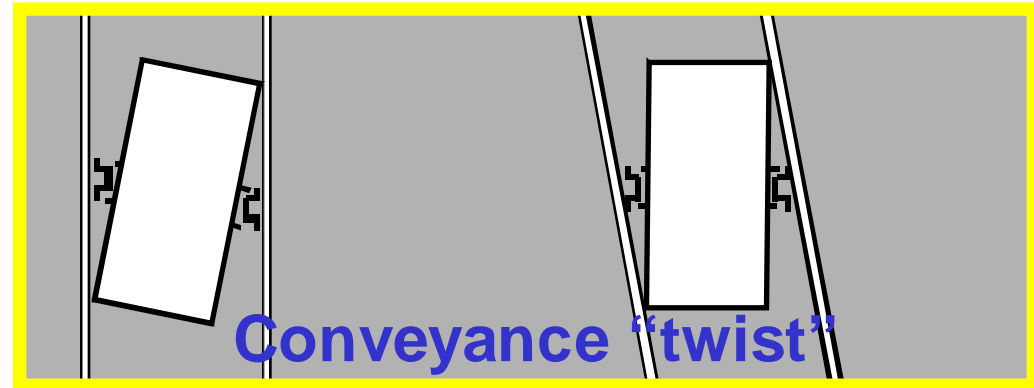
# Assess severity

## Uniform bunton corrosion – Displacement



# Specify remedial action

- Prioritise repairs
- Monitoring



## Record

- **Conveyance age**
- **Events**
- **Repairs**
- **etc**

## What value add?

- **Knowledge facilitates safety**
- **Reduced downtime**
- **Predictive trend assessment**

**Knowledge  
facilitates safety**





# SIMM for Sha

**Reduced downtime**



# SIMM for Shafts and Conveyances

## Trend assessment



Actual Closure Movement Measured

