

# Guideline Tensioner Incident



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**Perth 5<sup>th</sup> March 2009**

**Songa**  
**Offshore**

# Guideline Tensioner Incident

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- 1. The Songa Mercur**
- 2. What is a Guideline Tensioner?**
- 3. The incident**
- 4. Internal investigation**
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- 6. Corrective actions**

# The Songa Mercur

## Songa Mercur History

2005	Purchased in USA
2006	Shipyard in Singapore
2007	Arrived in Australia
2007	Commenced work
April 2008	Date of incident



# What is a Guideline Tensioner?

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A **guideline tensioner** is a hydro-pneumatic device used on an offshore drilling rig that keeps a positive pulling force on the guidelines from the platform to a template on the seabed.

# The Incident

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## What happened?

At 01:00am on 7 April 2008 the:

- No. 3 Guideline Tensioner Wire broke; and
- The Guideline Tensioner Assembly
  - broke its mounting bolts; &
  - fell to the moonpool deck.

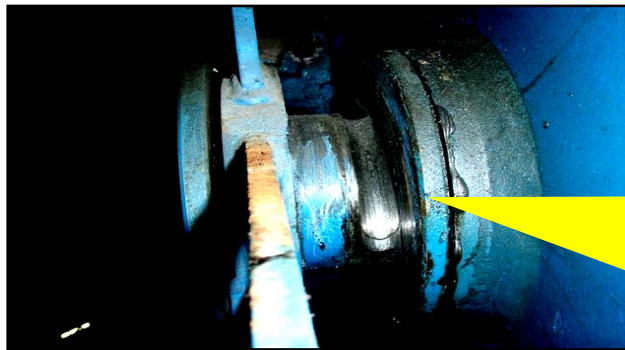
The Guideline Tensioner assembly weighed approximately 1900 kgs



# The Incident

## Why did it happen?

**1. The cable was not located on sheave correctly.**



The Guideline Tensioner wire jumped off the sheave and wore a groove on the bearing shaft

**2. A foreign object (bolt) caused a hydraulic lock within the Guideline Tensioner piston.**



A bolt lodged in the orifice plate preventing the hydraulic fluid passing through the orifice

# The Incident

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## How did it happen?

- When the Guideline Tensioner Wire broke, it released the tension on the wire, causing the piston to extend rapidly.
- During this rapid extension, a foreign object within the cylinder oil orifice caused a hydraulic lock.
- The resulting shock load was transferred to the base plate bolts causing the:
  - bolts to shear; and
  - Guideline Piston Assembly to fall approximately 3 metres onto Moonpool deck.
- The lower sheave of the piston assembly slid underneath the air tugger winch & the upper end of the piston came to rest on the BOP umbilical cord reel.

# The Incident

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## The Guideline Tensioner after the fall



## Slide 9

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**SO4**

I have over layed this picture remove it to veiw the original which includes personnell, this gives the option on which one to use.

Comments by Mark Murray

Songa Offshore, 26/02/2009

# The Internal Investigation

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## Causal Factor 1

A decision was made not to overhaul the Guideline Tensioner in Singapore shipyard due to no previous record of problems with this equipment.

### Root causes:

- Procedures need improvement.
- Communications need improvement.
- Standards, policies and admin controls need improvement.

# The Internal Investigation

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## Causal Factor 2

Daily checks were not done due to other priorities and the perception that the Guideline Tensioner *'do not give problems'*

### Root causes

- Human engineering – complex system – monitoring too many items – knowledge base decision required
- Work direction – walk through needs improvement
- Procedures – need improvement – not followed, not used

# The Internal Investigation

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## Causal Factor 3

The diameter of the wire was  $\frac{3}{4}$  inch. The clearance between the jumper bars and the sheave was also  $\frac{3}{4}$  inch. This allowed the wire to slip into the space between jumper bars/sheave.

S07

**Root cause**

**Design gap too large**

**S07**

Do we need to reference the fact that it Russian built, does this have any relevance to why it happened?

Comment by M Murray

Songa Offshore, 26/02/2009

# Corrective Actions

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## Causal Factor 1

A decision was made not to overhaul the Guideline Tensioner in Singapore shipyard due to no previous record of problems with this equipment.

## Corrective actions

- Develop a policy to ensure that new fleet acquisitions will have project management procedures that strategically address the needs of Subsea equipment.
- Develop a policy to ensure that new fleet acquisitions will have accurate records of the project management programme for Subsea equipment on each rig.
- Implement a corporate policy that requires a full rig condition survey for all new acquisitions into the Songa fleet. **Note: A full Rig Condition Survey was completed by rig inspection company**

# Corrective Actions

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## Causal Factor 2

Daily checks were not done due to other priorities & the perception that the Guideline Tensioner '*do not give problems*'

## Corrective actions

- Conduct Risk Assessment and prioritise workload.
- Incorporate into subsea equipment daily checklist (NS5)
- Review current subsea equipment inspection procedures with the subsea engineering team
- Develop a Rig Specific Procedure (RSP) for inspections & handovers of subsea equipment

# Corrective Actions

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## Causal Factor 3

The diameter of the wire was  $\frac{3}{4}$  inch. The clearance between the jumper bars & the sheave was also  $\frac{3}{4}$  inch. This allowed the wire to slip into the space between jumper bars/sheave.

### Corrective actions

- Relocate jumper bars to close the clearance between sheave and jumper bar
- Fit drops protection on the Guideline Tensioner
- Notify all Songa rigs of incident
- Check all guideline tensioners across the fleet

# NOPSA Investigation

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**The incident was reported to NOPSA who conducted an independent investigation**

**As a result of the investigation, NOPSA immediately issued a Prohibition Notice**

**Songa provided a plan on how they would operate without using the Guideline Tensioner**

**On receiving the plan, NOPSA lifted the prohibition notice and issued 2 Improvement Notices**

# NOPSA Investigation

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## Improvement Notice 1

Failure to ensure that all members of the workforce are provided with the OEM information in appropriate languages necessary for them to carry out their activities in a manner that does not adversely effect the health and safety of persons at the facility.

## Response

Tasks	Status
Document controller on board	Completed
Cataloguing	Completed
Remove Russian signage	Completed
Discard redundant manuals	Completed
Complete translation of Russian documents & drawings	Completed

# NOPSA Investigation

## Improvement Notice 2

Failure to ensure that members of the workforce are provided with instruction and training in the maintenance management software necessary for them to carry out their activities in a manner that does not adversely affect the health and safety of the persons at the facility.

## Response

Tasks	Status
Included the maintenance procedure from the translated manual into the maintenance management system	Completed
Provided advanced training & competency assessment in the maintenance management system for supervisory staff.	Completed

# Moving Forward

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The problems identified during the investigations have been resolved at a systematic level.

This has included:

- The equipment has been disassembled, inspected & overhauled
- The system has been checked
- Documentation has been technically translated into English
- The original manufacturer has been identified
- Other fleet operations have been advised of the potential problem and have taken recommended preventative actions

# Conclusion

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**Songa has recognised that potential severity of this incident & taken corrective actions to prevent a recurrence on all Songa operations**