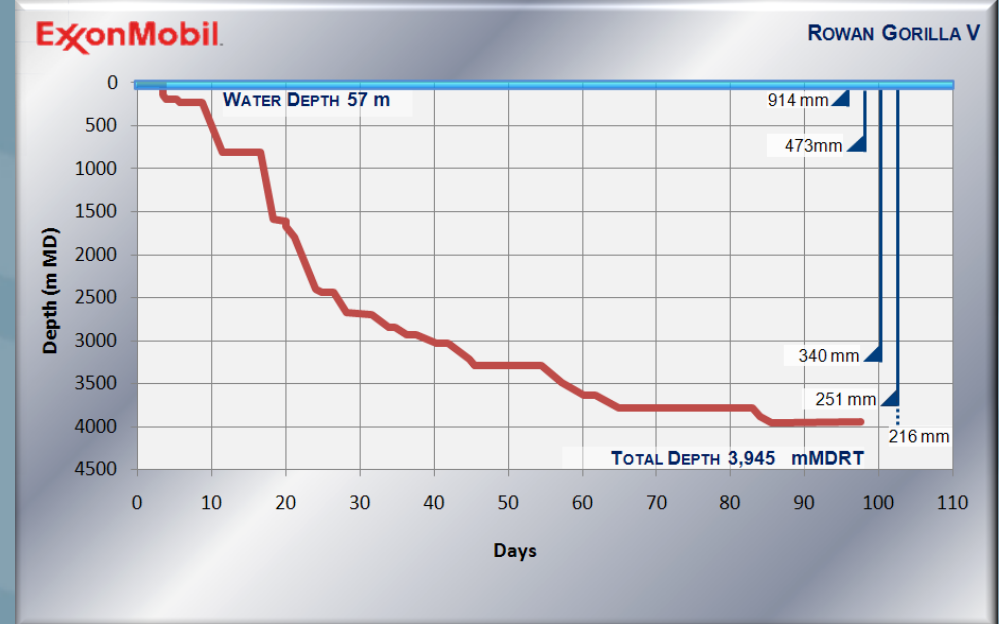
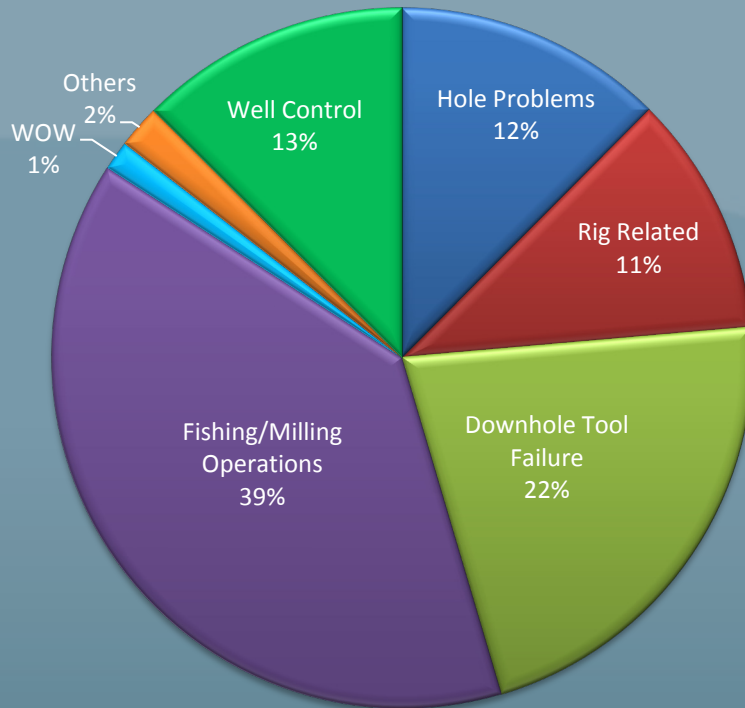


## NPT- End of Well



## AVENUES FOR IMPROVEMENT

- Design for large hole string vibrations
- Hole cleaning in large hole sections

## REASONS FOR NPT

- Fishing in large hole sections
- Washouts while drilling in large hole sections

## TIME DISTRIBUTION, DAYS

## END OF WELL

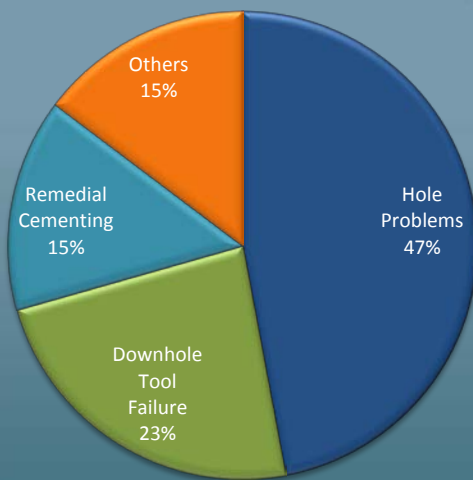
Total Time	97.51
NPT	12.5
Total Time less NPT	85.0
% NPT	13%

## 4.0 GEOPRESSURED SHELF WELL

A single well, Onondaga B-84, exists in this category during this period. Therefore, an average well curve and a Technical Limit could not be developed. The difference between geopressure and overpressure is based on the need to use 2,080 kg/m<sup>3</sup> density drilling fluid in the final section of the well. The overpressure complicated the well design and execution resulting in 60 days of NPT over a well duration of 180 days. While well control problem time was not specifically reported the consequences being hole problems, downhole tool failure and remediation cementing were largely attributed to the high mud densities required. At 34% NPT, Onondaga B-84 stands out as one of the more challenging wells in the Nova Scotia offshore.

### 4.1 Onondaga B-84 Performance

- A single well - Onondaga B-84
- Required 2080 kg/m<sup>3</sup> density drilling fluid in the final section

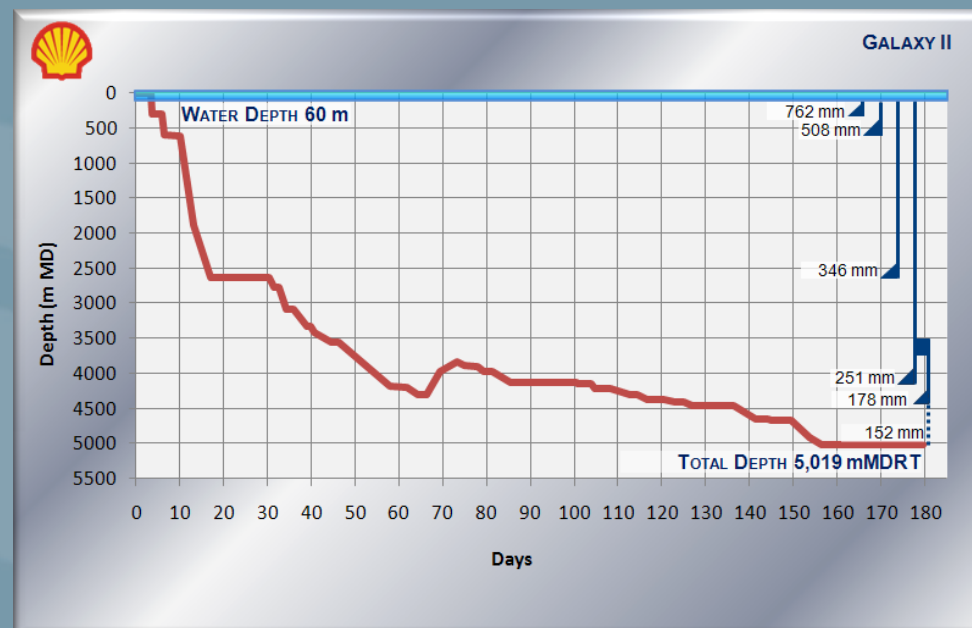


- Well duration of 180 days with 60 days NPT (34%) NPT.
- One of the more challenging wells in the Nova Scotia offshore.

### 4.2 Well in Category

As follows:

## NPT - End of Well



## AVENUES FOR IMPROVEMENT

- Overpressure Management
- ROP Optimization in Over Pressured Section

## REASONS FOR NPT

- Well Control and Loss Circulation
- Turbine Failure
- Centralizer Failure

## TIME DISTRIBUTION, DAYS

	END OF WELL
Total Time	176
NPT	60
Total Time less NPT	116
% NPT	34%

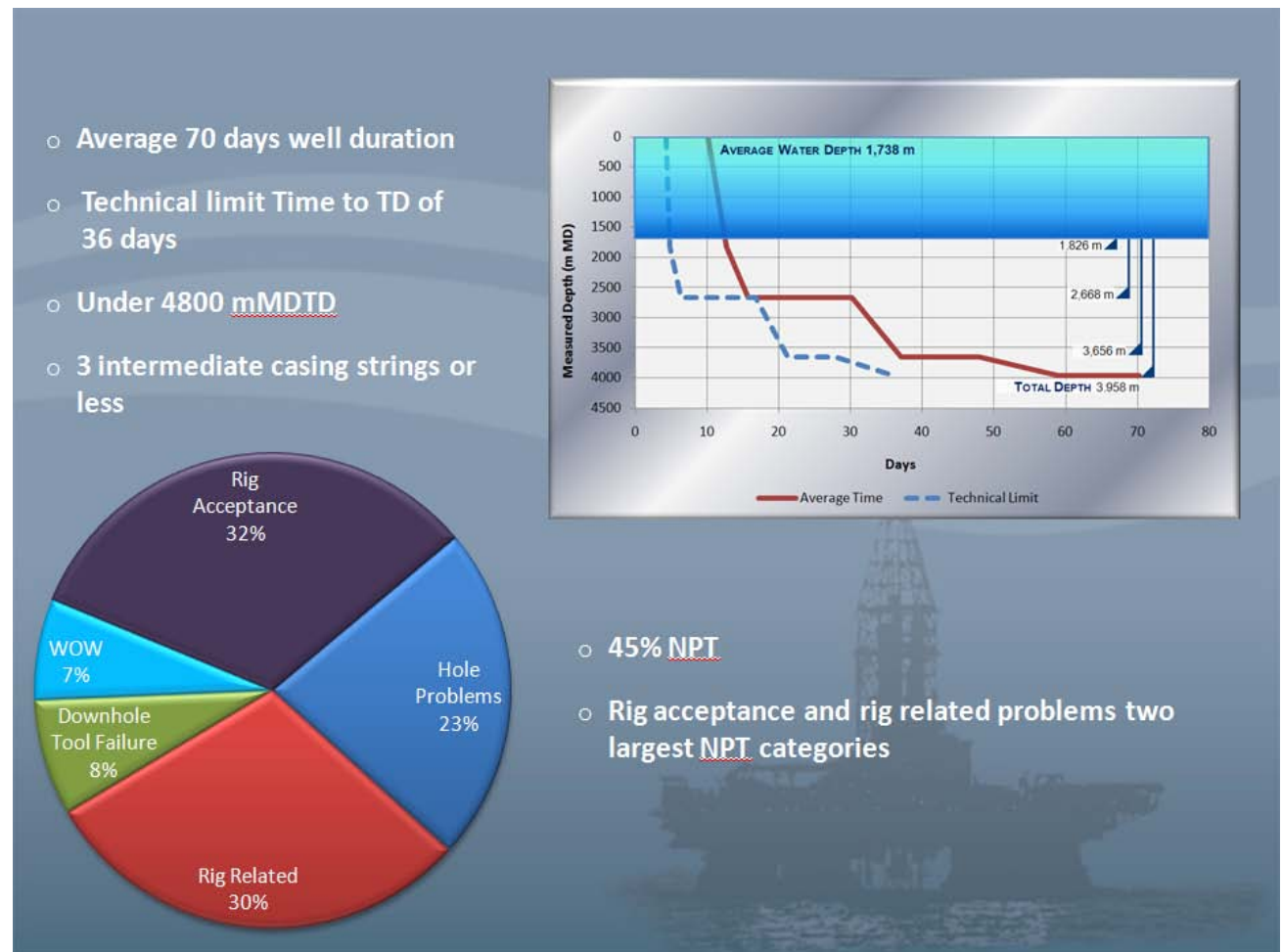
## 5.0 DEEP WATER LOW COMPLEXITY WELLS

The low complexity descriptor and split in deep water wells was made at three intermediate casing strings. The wells in this category were under 4,800 mMD which would have been a major factor to the lower number of intermediate strings.

Of the three wells in this category: one well, Annapolis B-24, experienced 95.5 days of NPT, which significantly distorted the average for the group. Sixty seven days were attributable to rig problems and 25 days of well control time forced the well to be abandoned without being evaluated. With B-24 included, this group averaged 54% NPT. By removing B-24, the NPT drops to 45%. Well control was not a problem in the remaining two wells; however, rig acceptance and rig related problems were the two largest categories of NPT in these wells.

This group averaged 70 days duration however, a technical limit of 36 days to TD demonstrates the level of improvement possible, similar to the Normal pressure shelf wells.

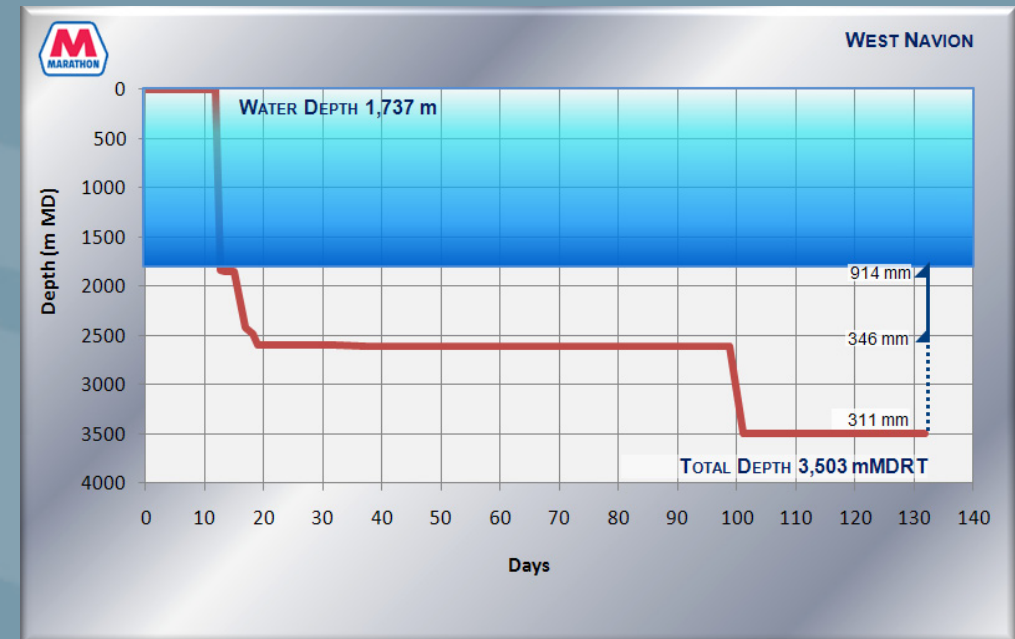
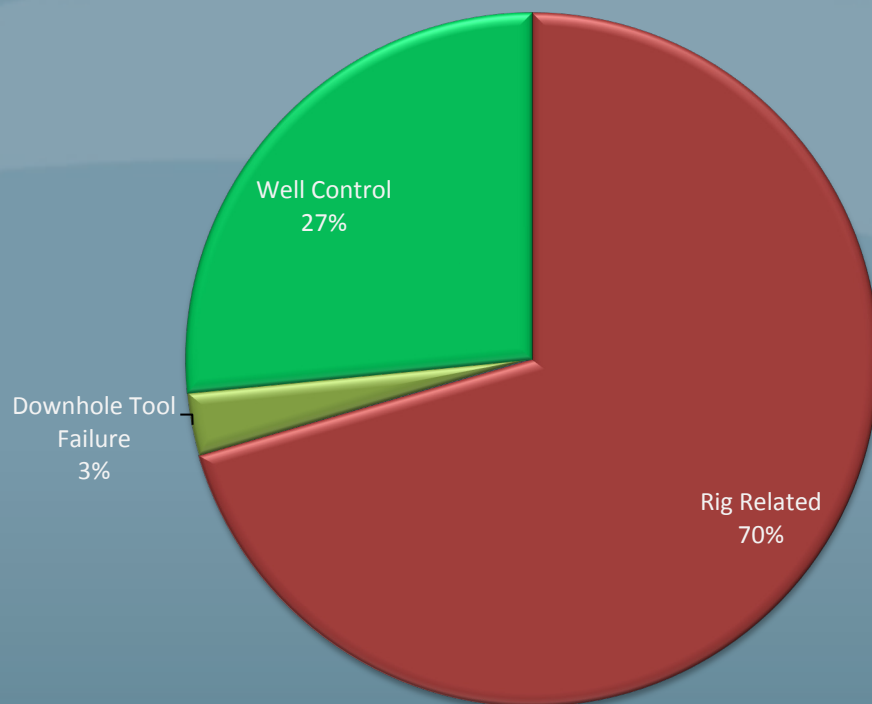
### 5.1 Average and Technical Limit Performance



### 5.2 Wells in Category

As follows:

## NPT - End of Well



## AVENUES FOR IMPROVEMENT

- Rig Inspection and maintenance
- Well Control Practices

## REASONS FOR NPT

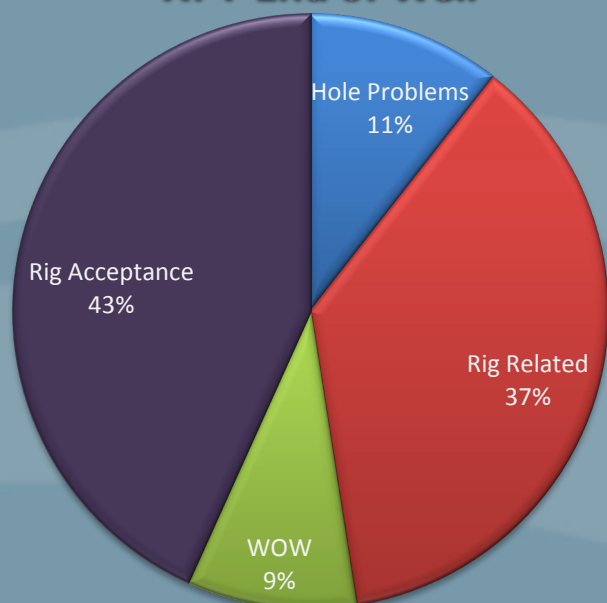
- Repair of Cracks in Marine Riser
- Sheave Bearing Failure on Ram Rig
- Gas Influx

## TIME DISTRIBUTION, DAYS

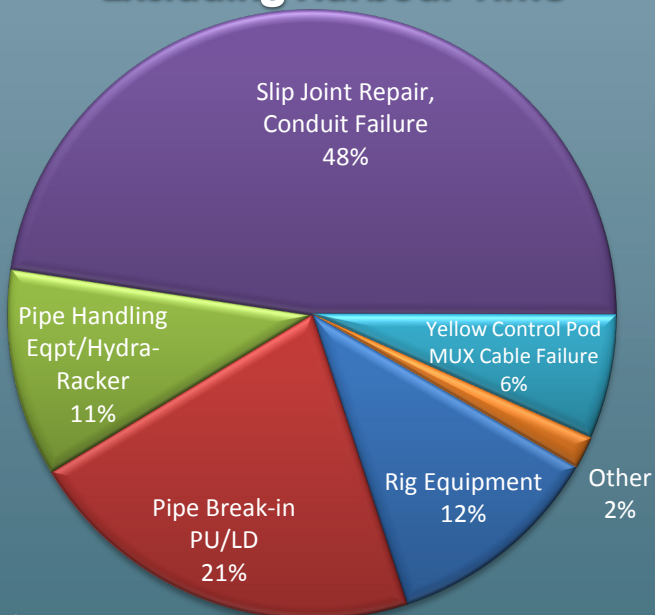
	END OF WELL
Total Time	126.8
NPT	95.5
Total Time less NPT	31.3
% NPT	75%



## NPT-End of Well



## Torbrook NPT Breakdown Excluding Harbour Time



## AVENUES FOR IMPROVEMENT

- Rig Inspection and Acceptance Criteria
- Hole Conditioning Prior to Logging

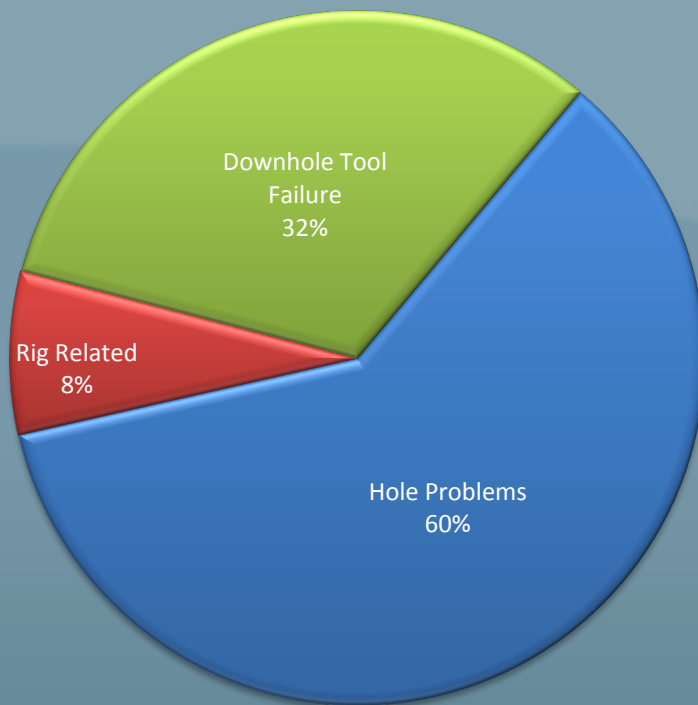
## REASONS FOR NPT

- Rig Non Acceptance following Contract Start
- Rig Repair
- WOW

## TIME DISTRIBUTION, DAYS

TIME DISTRIBUTION, DAYS	END OF WELL
Total Time	74.2
NPT	2.0
Total Time less NPT	73.8
% NPT	3%

## NPT - End of Well



## AVENUES FOR IMPROVEMENT

- Primary Cementing Equipment and Practices
- Retainer Drilling Methods

## REASONS FOR NPT

- Loss circulation and casing shoe integrity
- Drilling out 298 mm Retainer

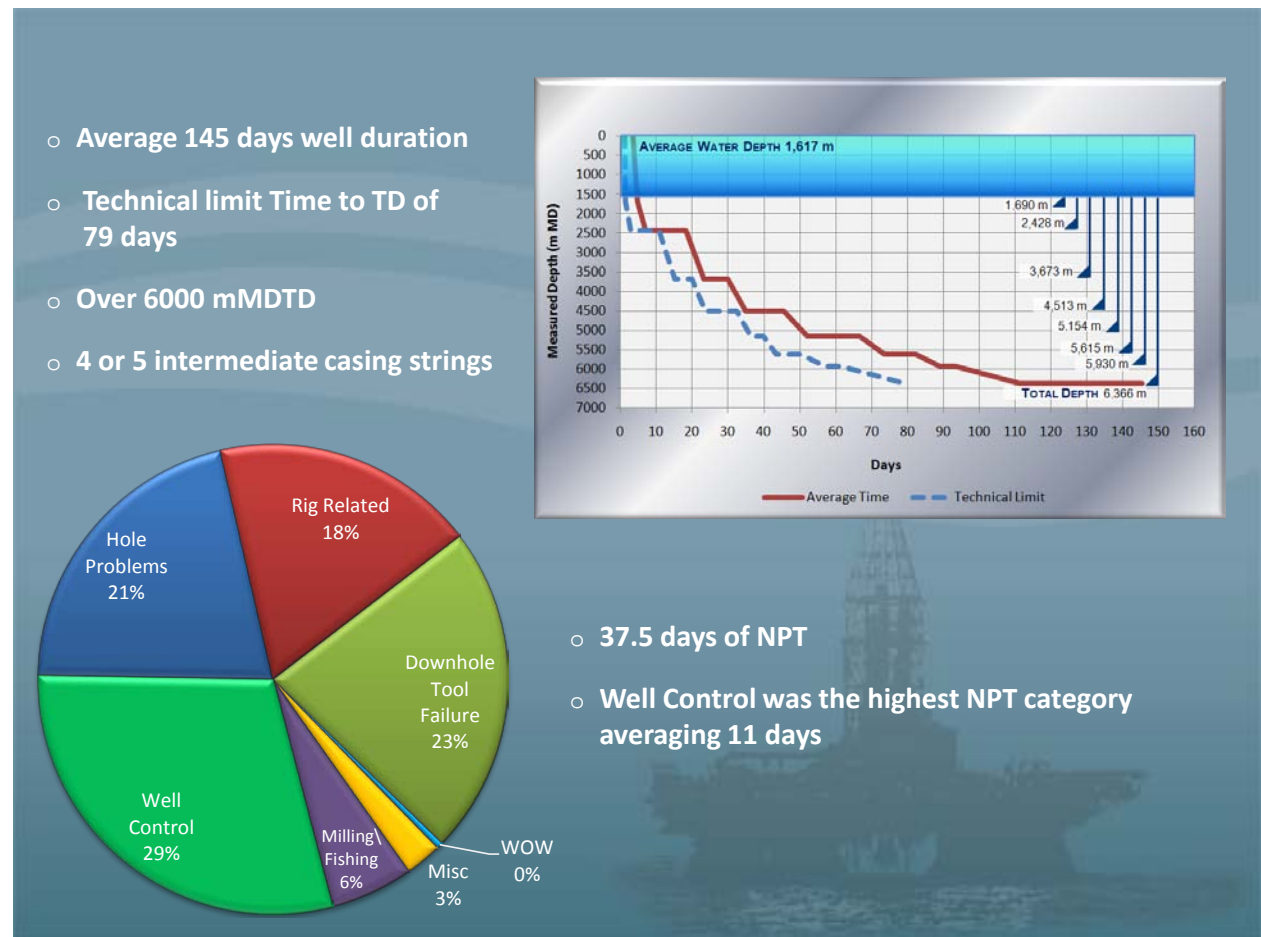
## TIME DISTRIBUTION, DAYS

	END OF WELL
Total Time	67.2
NPT	16.0
Total Time less NPT	51.2
% NPT	24%

## 6.0 DEEP WATER HIGH COMPLEXITY WELLS

The high complexity wells are a significant departure from the lower category all drilled to over 6,000 mMD and utilizing 4 or 5 intermediate casing strings. The wells averaged 37.5 days of NPT with well control average of 11 days being the highest NPT category. Downhole Tool Failure, Hole Problems and Rig Related problems made up the bulk of the remaining problem time. These wells averaged 145 days duration with a Technical Limit to TD time of 79 days.

### 6.1 Average and Technical Limit Performance



### 6.2 Wells in Category

As follows: