

Failure ??

Rope failure

A rope will not fail as long as its strength is greater than any tensile load applied to it

Rope loads

- are rope loads known?
- are they predictable?
- can rope loads be controlled?
- how do you control rope loads?

Rope loads

- normal rope loads for a rock winder
- rope loads during emergency braking
- and the rope loads when something goes wrong – brake control failure in this case

- OL 1 PFH ch 9 ich 13 COL end ol1 OL end sum
 - OL 2 zero ch 10 ich 14 CUL end ol2 OLrope delta
 - UL 1 speed ch 11 ich 15 DIO end ul1 UL end sum
 - UL 2 ch 8 ch 12 ich 16 end ul2 ULrope delta
- values 8:16 values sum and delta

select
input
folder

continue

R07 May30

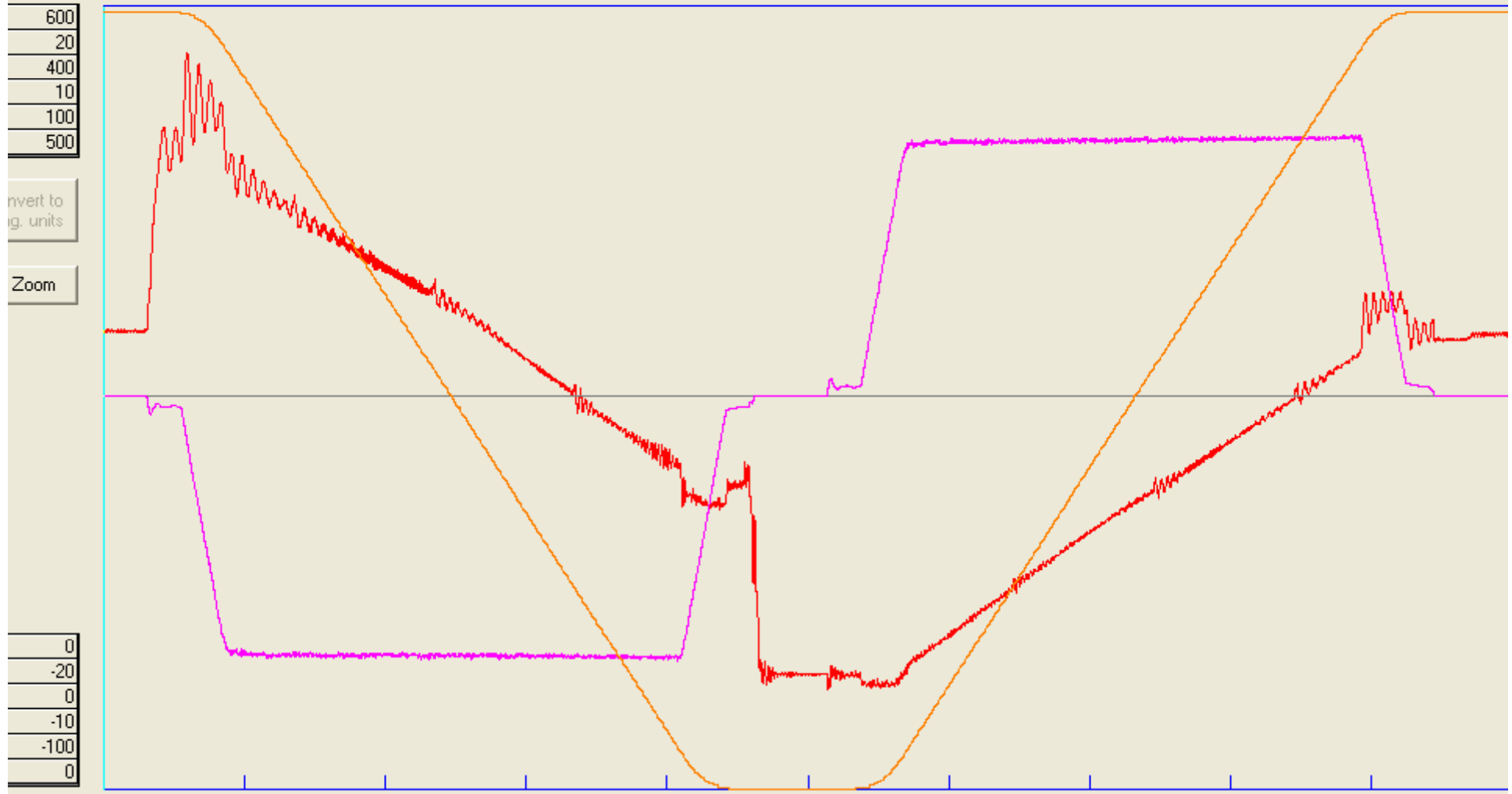
C:\Ropes\R07 May30 + Info SD Rock.txt

New time values

<<< Back

esc

Forward >>>



1:30:00
108000

	OL1	OL2	UL1	UL2	col	cul	spd	di1	di2	do1	zer	PFH
value	349.7	376.0	84.3	95.0	397	0	0.01	7	0	0	0.001	6.074
average					2996 m	0 m		3025 m	3015 m	29 m	19 m	

cursor

108000
1:30:00

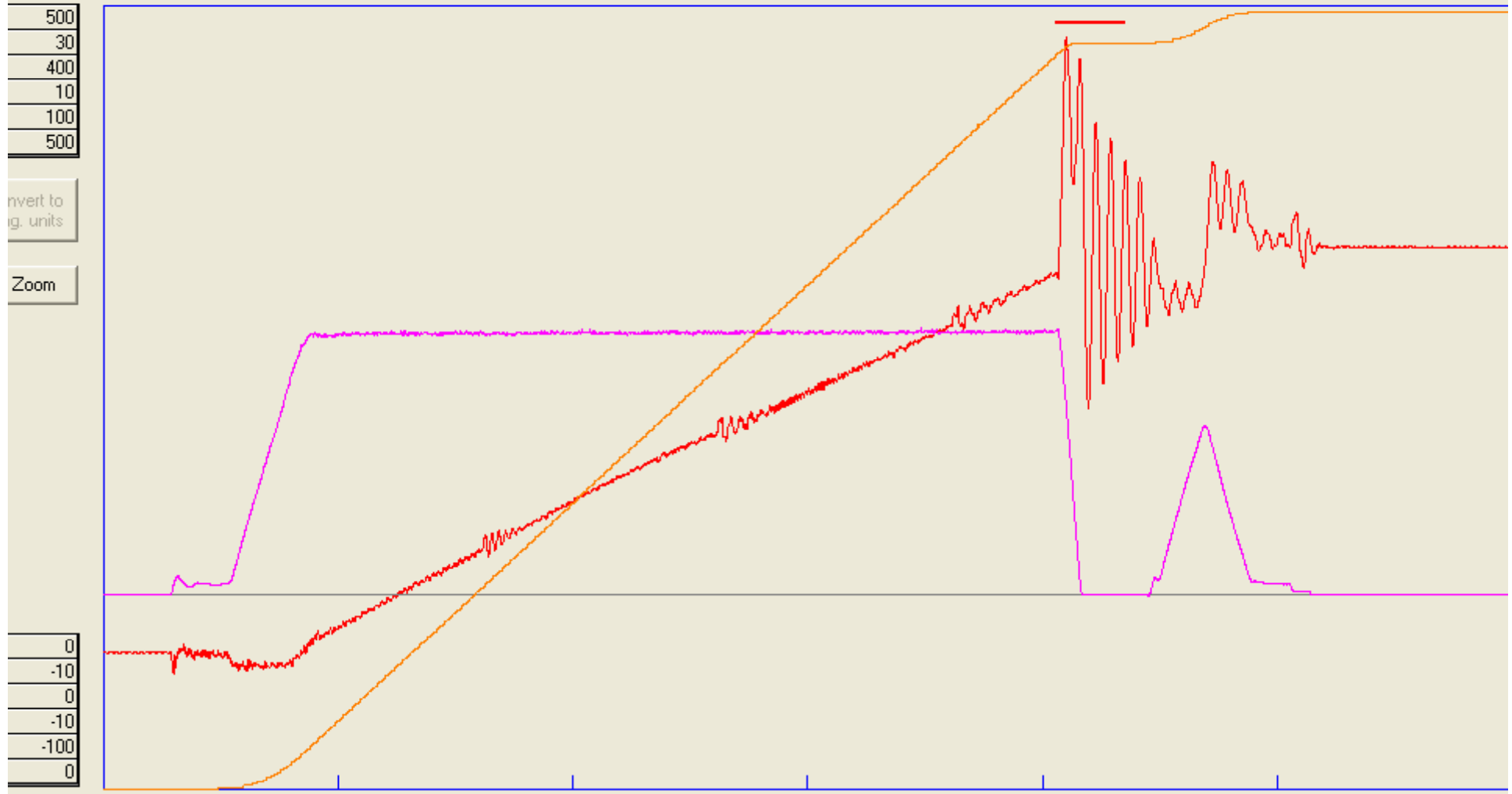
X-wire

1:4
120

average display save erase

OL 1 PFH ch 9 ich 13 COL end ol1 OL end sum
 OL 2 zero ch 10 ich 14 CUL end ol2 OLRope delta
 UL 1 speed ch 11 ich 15 DIO end ul1 UL end sum
 UL 2 ch 8 ch 12 ich 16 end ul2 ULRope delta
 values 8:16 values sum and delta

select input folder **R07 May30** en
 continue C:\Ropes\R07 May30 + Info SD Rock.txt New time values
<<< Back esc Forward >>>



14:25:00
1038000

minutes

	OL1	OL2	UL1	UL2	col	cul	spd	di1	di2	do1	zer	PFH
value												
average												

14:3
104

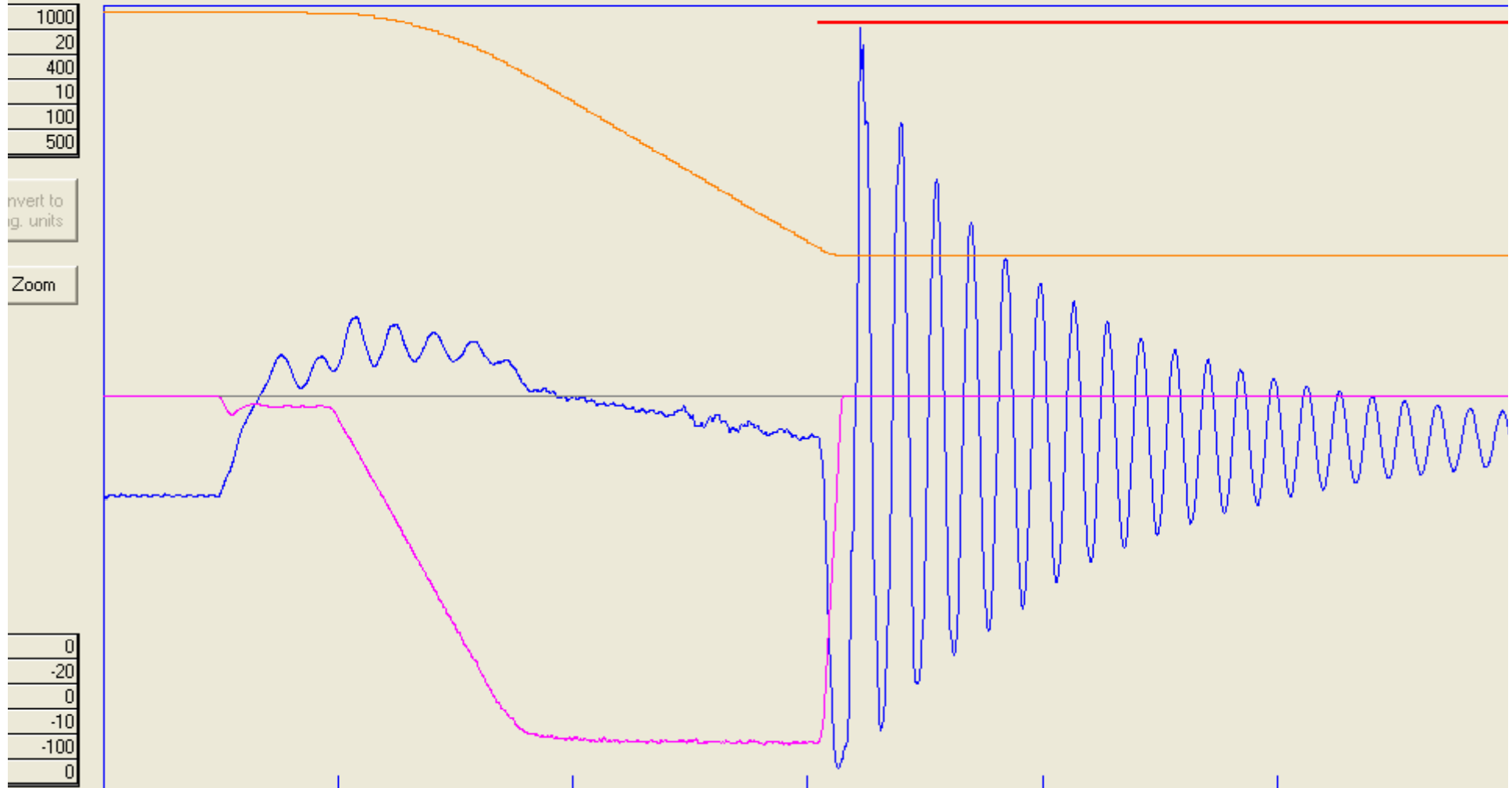
cursor X-wire

 average display save erase

OL 1 PFH ch 9 ich 13 COL end ol1 OL end sum
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 values 8:16 values sum and delta

R07 Nov30

C:\Ropes\R07 Nov30 + Info SD Rock.txt



17:23:00
1251600

	OL1	OL2	UL1	UL2	col	cul	spd	di1	di2	do1	zer	PFH
value												
average												

17:23:00
1251600

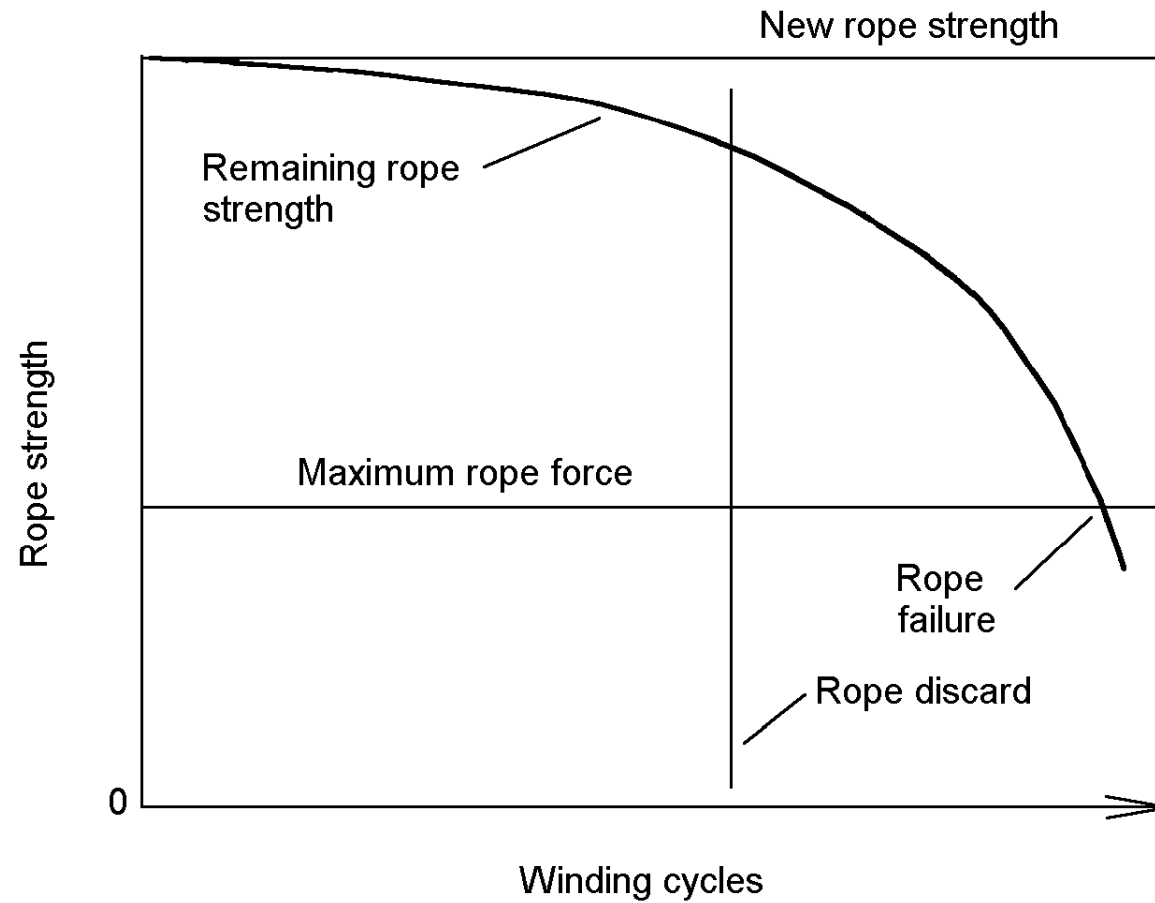
Controlling rope loads

- by specifying (static) safety factors
- at lower static safety factors, the dynamics become important, and you have to control dynamics directly (SABS 0294)

Rope deterioration

- the strength of a running rope reduces with usage or time
- therefore, if a running rope is left in service indefinitely, it will fail

rope strength reduces with usage



Rope deterioration mechanisms

- wear
- repeated loading (fatigue, broken wires, split wires)
- corrosion
- accidental damage

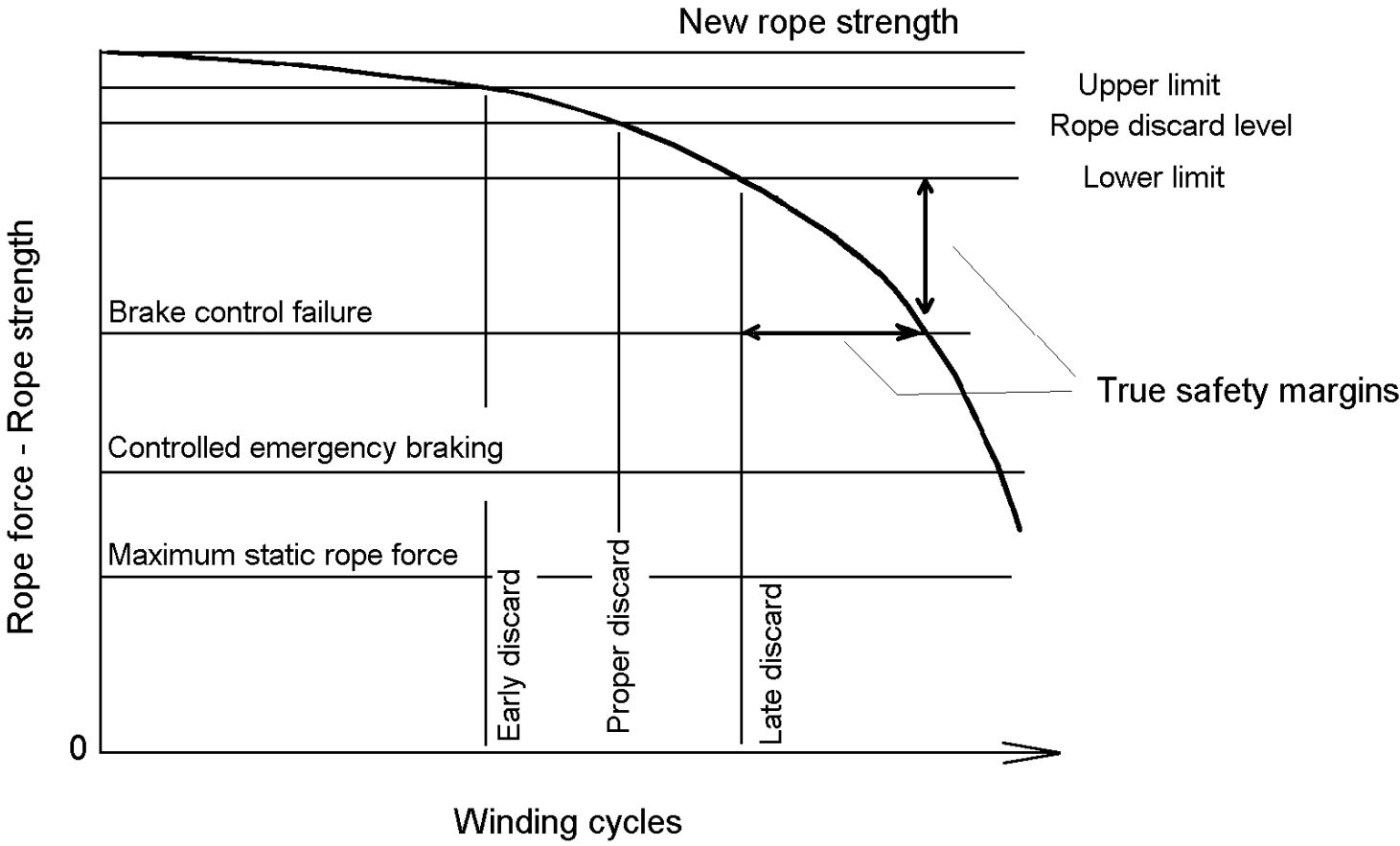
Controlling deterioration

- prevent accidental damage
- prevent corrosion
- prevent (abrasive) wear
- proper winder practice – proper coiling and drum layer cross-overs, pulling in back-ends, minimise contact stresses

Condition assessment

- the rope of licensed winders have to be assessed according to SABS 0293
- the discard criteria are based on an approximate 10% loss in strength
- rope condition assessment with the aid of magnetic rope testing equipment is a powerful tool – i.e. rope deterioration can be measured

a more accurate picture



to prevent rope failure

- control rope deterioration or the rate of deterioration
- control rope loads
- control the occurrence of incidents that can generate abnormal rope loads
- discard ropes timeously