

# Water Services LTD

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## Cooling water system service report

Plant : ΓΙΟΥΛΑ ΑΕ Code  
 System : ΠΥΡΓΟΣ ΨΥΞΗΣ 0

### Report

Attention : κ. Ντάσιου  
 cc :  
 Service Eng.:

### Dates

Sampling : 5/12/2003  
 Proceed : 6/12/1999  
 Reporti : 02-May-2004

Parameter		Make-up	Cooling w: NC		Difference
pH		7.9	9		
TDS	ppm CaCO3	260	1080	4.15	92
pA	ppm CaCO3	0	90		
mA	ppm CaCO3	140	440	3.14	-93
Cl	mg/l	28	209.45	7.44	102
TH	ppm CaCO3	7.2	16	2.18	-12
CaH	ppm CaCO3	3.6	10	2.57	-5
MgH	ppm CaCO3	3.6	6	1.77	-7
SO4	mg/l	N/A	N/A	--	
SiO2	mg/l	N/A	N/A	--	
Fe	mg/l	N/A	N/A	--	
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Selected Cycles of Concentration (NC) : **1.00**

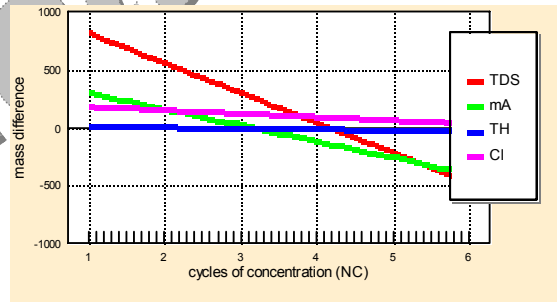
Material balance : 92 ppm Na2SO4

### CALCULATION OF INDEXES

	actual	calculat.
pHs	7.45	7.20
pH	9.00	9.25
RYZNAR	5.90	5.15
LANGELIER	1.55	2.05

### MAIN COMMENT

SYSTEM CONDITION  
 unsatisfactory



### Microbiological data

Aerobic population	1000	M.O./ml
Fungi :	NEGATIVE	M.O./ml
Anaerobic populat	1000000	M.O./ml
Slime :	1000000	M.O./ml
Sulfate reducing ba	100	M.O./ml

### Comments

Microbial growth under control
No determination
Undesirable growth
Undesirable growth
Excessive and dangerous growth

**Excessive and dangerous microbial growth is in progress.**

## COMMENTS

### SYSTEM CONDITION

**unsatisfactory**

The system is presenting SCALE FORMING tendencies.

SIGNIFICANT Deposition HAS ALREADY take place.

Excessive and dangerous microbial growth is in progress.

### IN MORE DETAILS

Concentration rate (NC) is within the system's design limits.( limit :3.30-4.30, calculated 3.80).

No crystal distortion activities is observed from analysis examination.

Analysis identifies sequestrant activity in the range of 12 ppm CaCO<sub>3</sub>

Analysis identifies deposition probability of 12 ppm CaCO<sub>3</sub>

No scale dissolution is observed from analysis examination.

Analysis identifies equivalent corrosion due to micro-organisms of 58 ppm HCl

Steel general corrosion rate : No data available.

Steel pitting tendency : No data available.

## SUGGESTIONS

Indication of uncontrolled microbial growth from the material balance is observed. A

Please keep the blow-down adjusted as it is

We suggest to continue the operation of the system as it is till the next service