INSPECTION SHEET

Date of inspection 23 , June , 1999
Weather: Cloudy

Equipment	Primary Sedimentation Tanks No.1~No.2* 380 V 0.75 kw 4 pole *Numbering is from right to left by Arab. rule. Manufacturer: Degremont France		
Location	Primary sedimentation tank	Facilities	

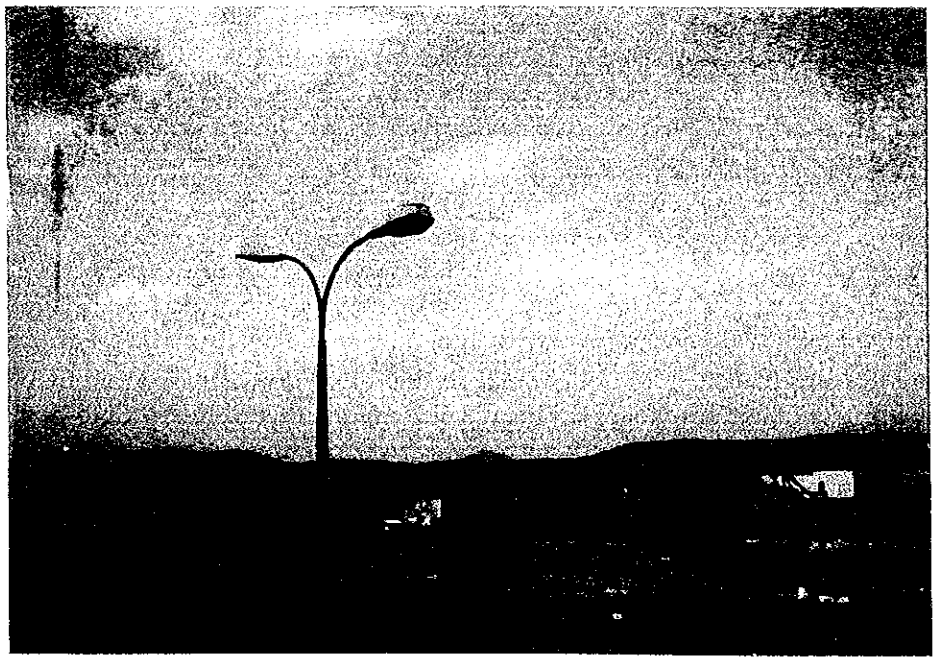
Result of inspection						
	Physical inspection			Functional inspection		
Degree of problem	Operating condition	—		Capacity	—	
	Stain/Corrosion	△		Safety measure	×	
	Painting	×		Other		
	Lubricant	×				
	Deformation/Crack	△				
	Damage	×				
	Abnormal sound	—				
	Overheat	—				
	Wear	△				
Decision B						

Remark: Drive motors of mechanisms are dismounted and taken away.
Drive heads for mechanisms are both damaged, therefore drive motors and drive heads should be replaced with new one. Some diagonal beams corroded very severely should be replaced with new one. Certain quantity of bolts and nuts are corroded severely and all the bolts and nuts for mechanisms need to be replaced with stainless steel.
Blade rakes for all parts should be renewed.

FACILITY SURVEY PHOTO

LOCATION : PRIMARY SEDIMENTATION TANK No.1 No.2
PHOTO No. 4-M 1

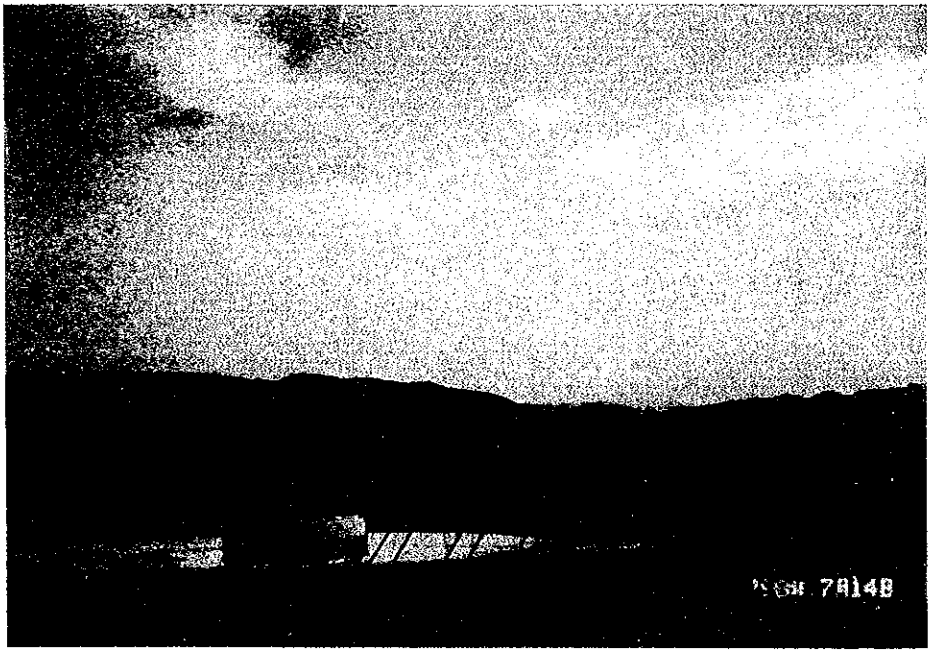
LOCATION : PRIMARY SEDIMENTATION TANK
PHOTO No. 4-M 2



FACILITY SURVEY PHOTO

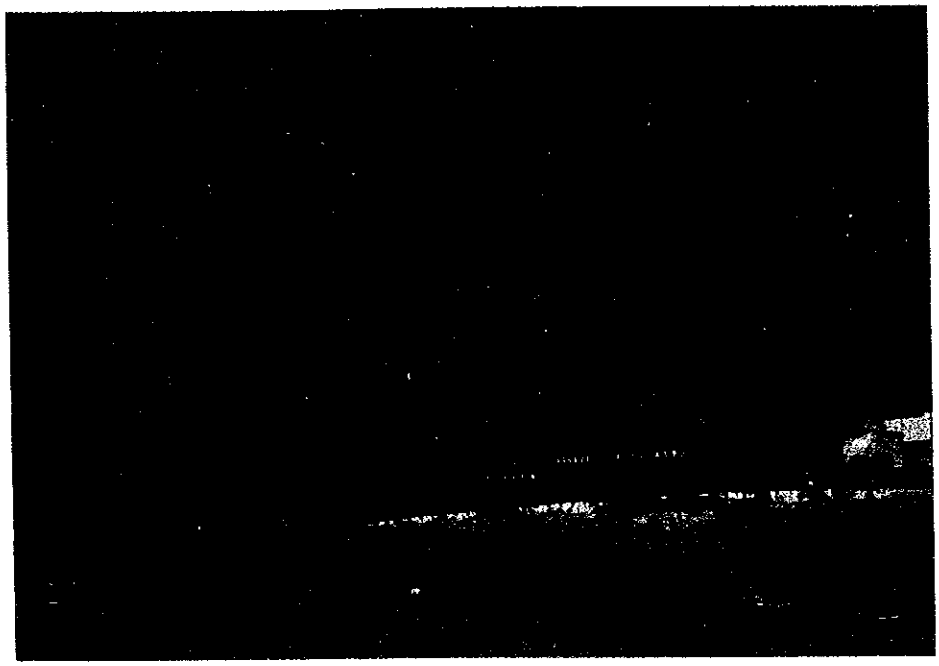
LOCATION :	PRIMARY SEDIMENTATION TANK No.1~No.2
PHOTO No.	4-M 3

LOCATION :	PRIMARY SEDIMENTATION TANK
PHOTO No.	4-M 4

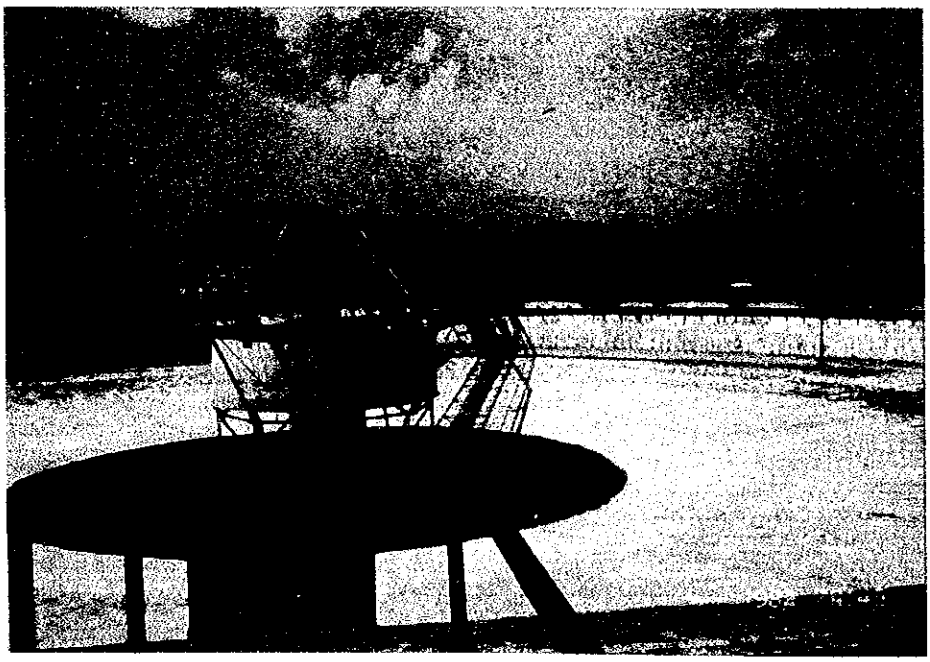


FACILITY SURVEY PHOTO

LOCATION : PRIMARY SEDIMENTATION TANK No.1 No.2	
PHOTO No.	4-M 5



LOCATION : PRIMARY SEDIMENTATION TANK	
PHOTO No.	4-M 6



INSPECTION SHEET

Date of inspection from 17 June to 5 July, 1999
Weather: Almost days were fine.

Equipment	Aeration turbines No.1~No.36* *Numbering is from right to left	380 V 37kw 4 pole Manufacturer: Degremont France	
Location	Aeration tank	Facilities	

Result of inspection						
	Physical inspection			Functional inspection		
Degree of problem	Operating condition	○	※1	Capacity	○	
	Stain/Corrosion	△		Safety measure	×	
	Painting	△		Other		
	Lubricant	△				
	Deformation/Crack	△				
	Damage	△				
	Abnormal sound	△				
	Overheat	○				
	Wear	△				
Decision B						

※1 : There are 36 sets of 37 kw aeration turbines existing, among them 3 sets of turbine are without drive motors, 2 sets are inclined installation, 2 sets of oil piping are broken and 10 sets of couplings between drive motors and reducers for turbines are broken. Therefore remaining 19 sets of aerator turbines were carried out two hours of continuous load operation test.

The result of the turbines load testing shows that 19 out of 33 aeration turbines are concluded as usable.

Concerning to more detailed information, see **5. 3 Aeration Test Load Inspection Sheets in Final Report of The Field Survey and Assessment of The Sarajevo Wastewater Treatment Plant done by USB Kedley in Volume IV: Appendix D.**

INSPECTION SHEET

Date of inspection 23 , June ,1999
Weather : Cloudy

Equipment	Aeration tank manual gates No.1~No.22 * V kw pole Manufacturer: Laurent- Ramus		
Location	Aeration tank	Facilities	

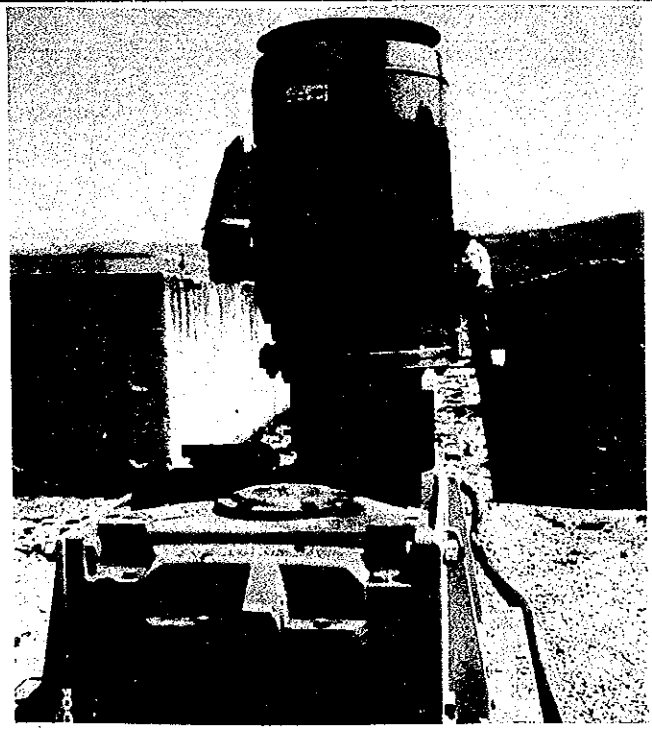
Result of inspection						
	Physical inspection			Functional inspection		
Degree of problem	Operating condition	△		Capacity	○	
	Stain/Corrosion	△		Safety measure	×	
	Painting	△		Other		
	Lubricant	×				
	Deformation/Crack	△				
	Damage	△				
	Abnormal sound	△				
	Overheat	△				
	Wear	△				
Decision B						

*Numbering is from right to left in Arab. rule and from top to bottom system.

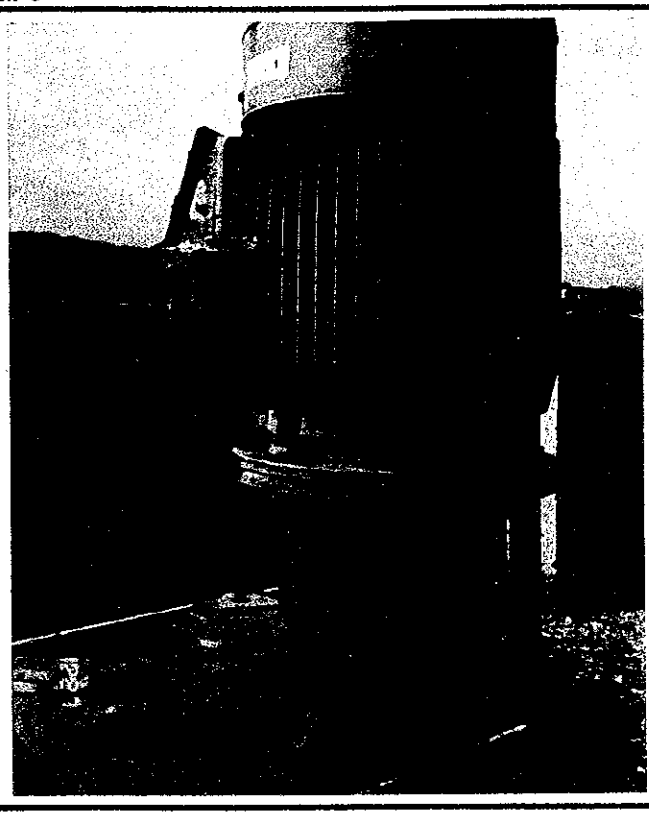
Remark : Almost all the manual drive sluice gate can operate downwards and upwards by turning sluice gate handle by manual, however almost gates need more than 15 kg of man power which figure designated by Japan Sewerage Standard.
All the manual drive sluice gates need to be replaced all of bolts and nuts and retainers with new ones and need to be readjusted.

FACILITY SURVEY PHOTO

LOCATION : AERATION TANK No.1 ~ No.36
PHOTO No. 5-M 5

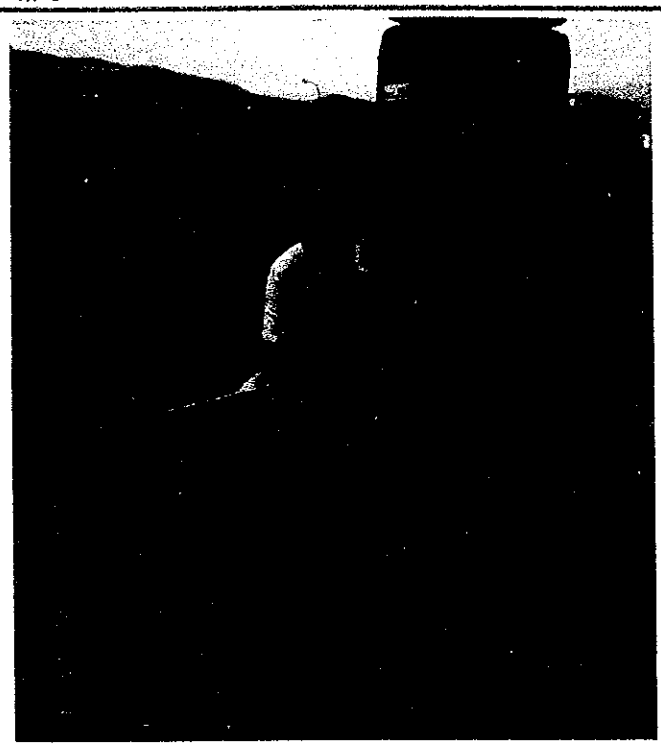


LOCATION : AERATION TANK
PHOTO No. 5-M 6



FACILITY SURVEY PHOTO

LOCATION : AERATION TANK No.1 No.36
PHOTO No. 5-M 3

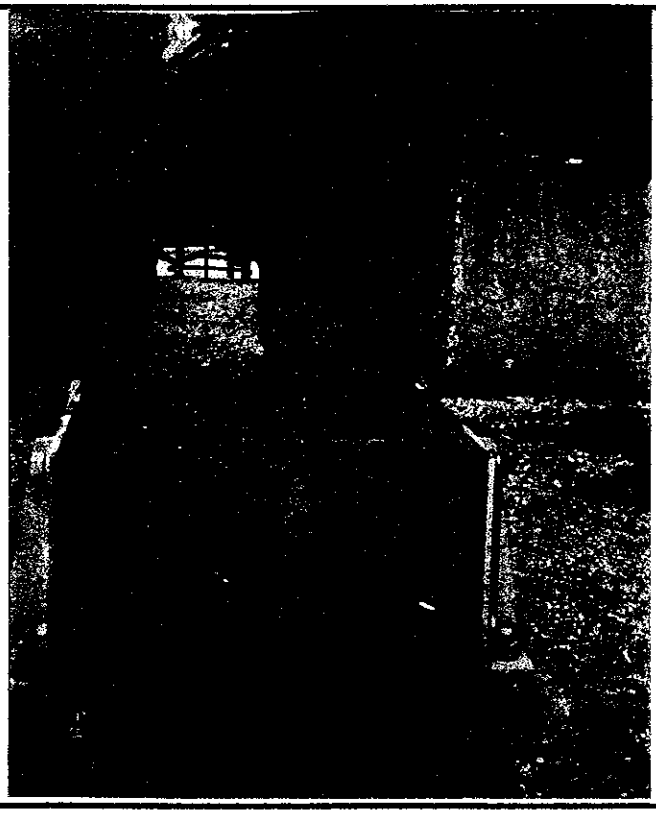


LOCATION : AERATION TANK
PHOTO No. 5-M 4

FACILITY SURVEY PHOTO

LOCATION : AERATION TANK No.1 No.36
PHOTO No. 5-M 9

LOCATION : AERATION TANK
PHOTO No. 5-M 10



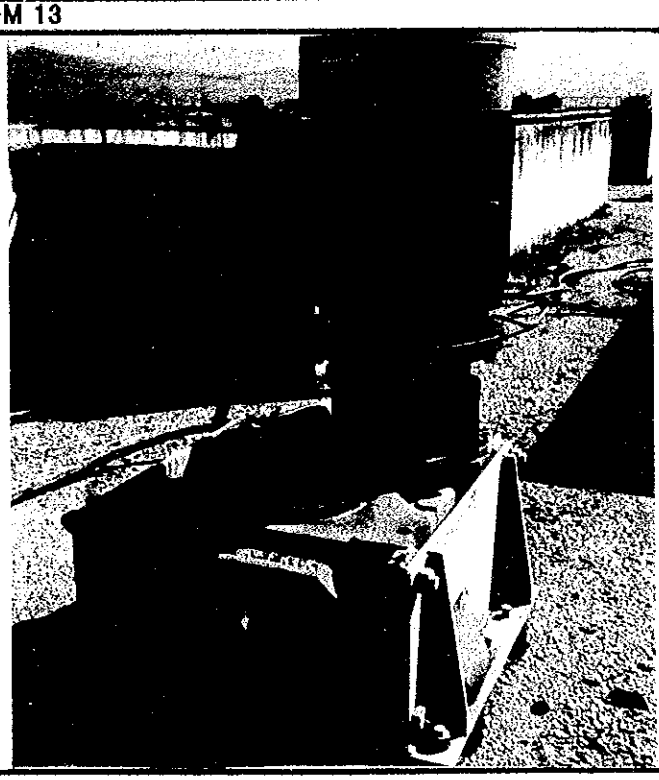
FACILITY SURVEY PHOTO

LOCATION : AERATION TANK No.1~No.36
PHOTO No. 5-M 11

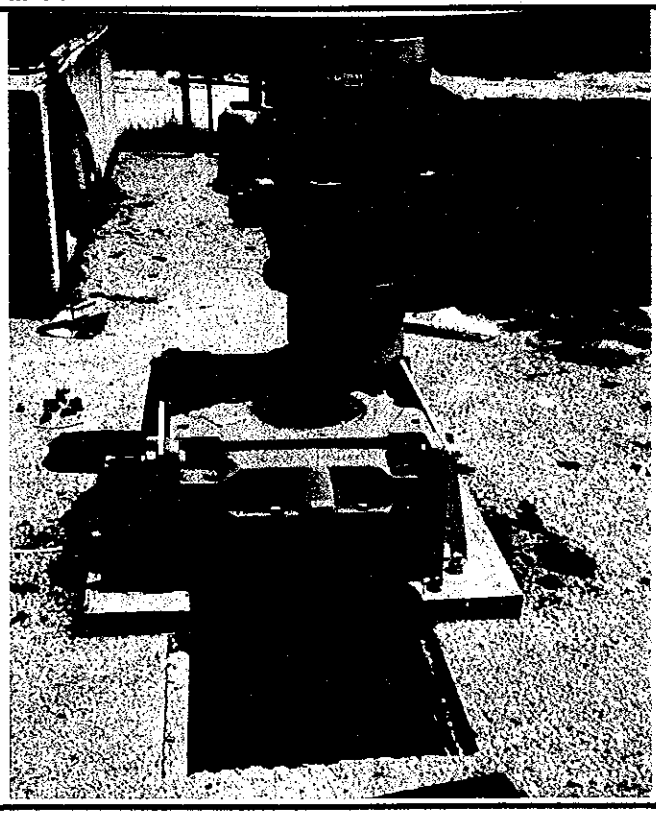
LOCATION : AERATION TANK
PHOTO No. 5-M 12

FACILITY SURVEY PHOTO

LOCATION : AERATION TANK No.1 No.36	
PHOTO No.	5-M 13

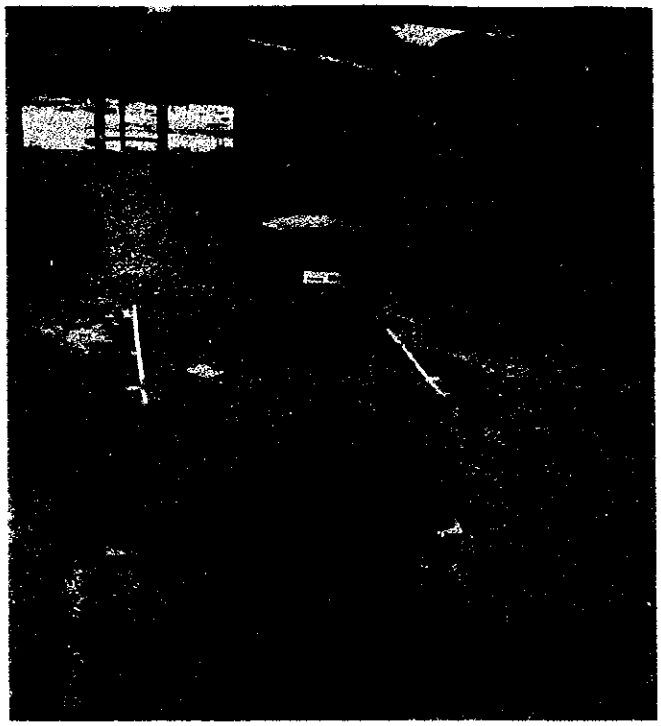


LOCATION : AERATION TANK	
PHOTO No.	5-M 14

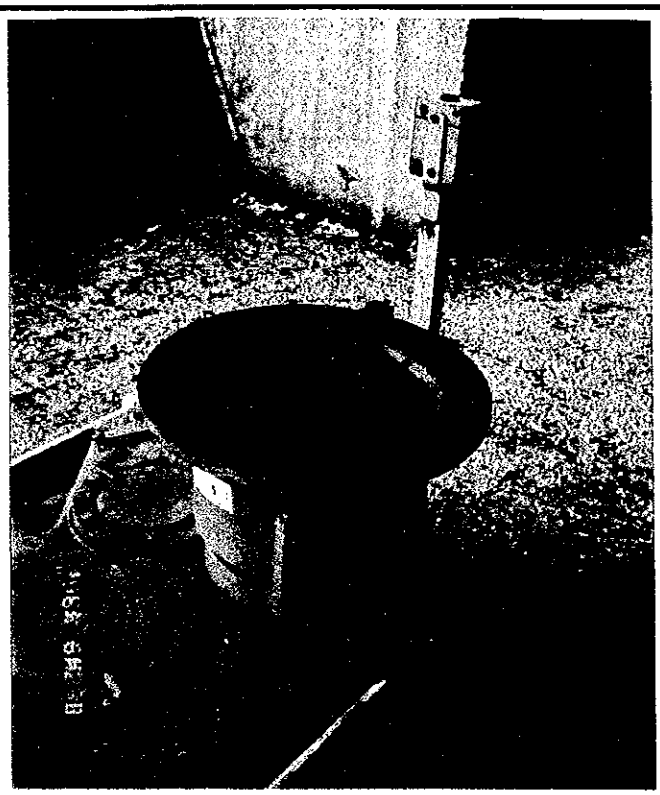


FACILITY SURVEY PHOTO

LOCATION : AERATION TANK No.1~No.36
PHOTO No. 5-M 1

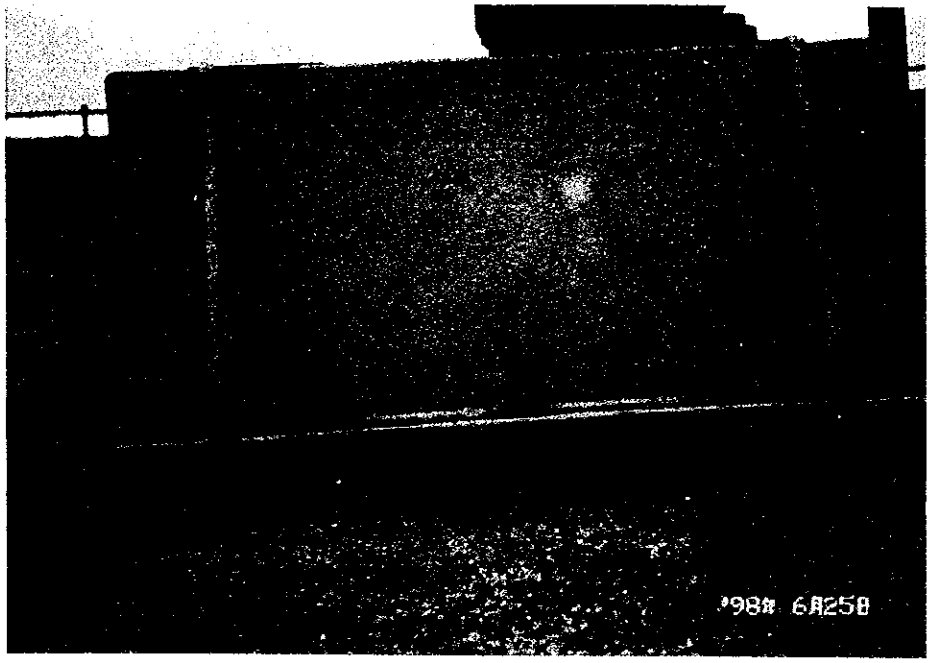


LOCATION : AERATION TANK
PHOTO No. 5-M 2



FACILITY SURVEY PHOTO

LOCATION : AERATION TANK No.1~No.36
PHOTO No. 5-M 7



LOCATION : AERATION TANK
PHOTO No. 5-M 8

INSPECTION SHEET

Date of inspection 23, June ,1999
Weather : Cloudy

Equipment	Final settling tanks No.1~No.4* 380 V 0.75 kW 4 pole Manufacturer: Degremont France		
Location	Final Sedimentation Tank	Facilities	

Result of inspection						
	Physical inspection			Functional inspection		
Degree of problem	Operating condition	—		Capacity	—	
	Stain/Corrosion	△		Safety measure	×	
	Painting	△		Other		
	Lubricant	×				
	Deformation/Crack	△				
	Damage	×				
	Abnormal sound	—				
	Overheat	—				
	Wear	△				
Decision B						

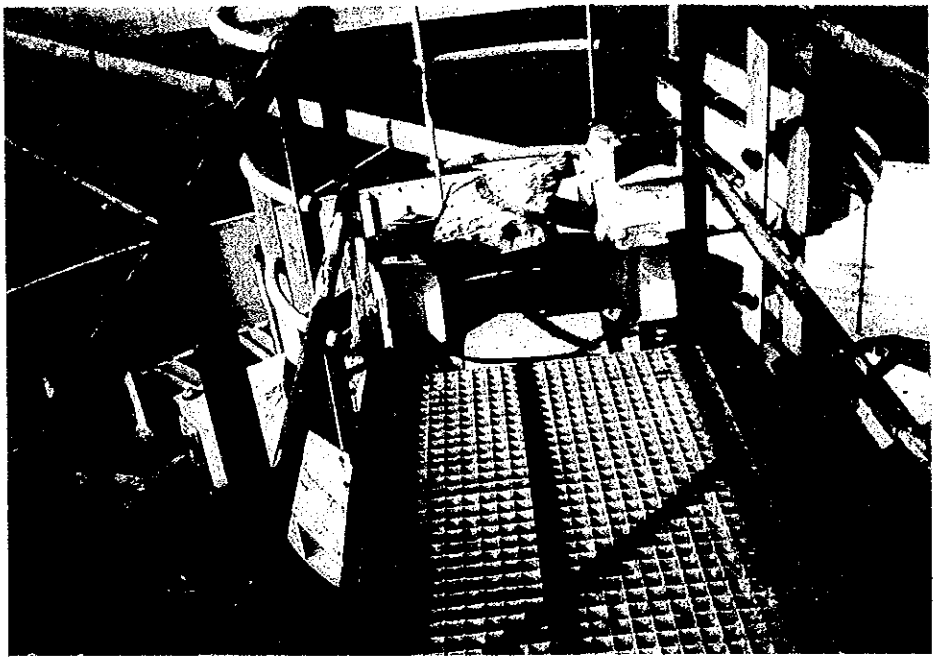
*Numbering is from right to left by Arab. rule and from top to bottom system.

Remark 1: Drive motors of all four final sedimentation tanks are dismounted and taken away and all drive heads are not complete.
The structures of mechanism are partly attacked by rust and almost bolts and nuts are corroded heavily.
The structures of mechanism need to be cleaning, protection of corroded part, replacing of all the bolts and nuts with stainless steel and replacing central sliding sleeves with new ones.
Whole structures of mechanism need repetition of the anti rust protection painting.
The drive units need to be replaced with new ones.

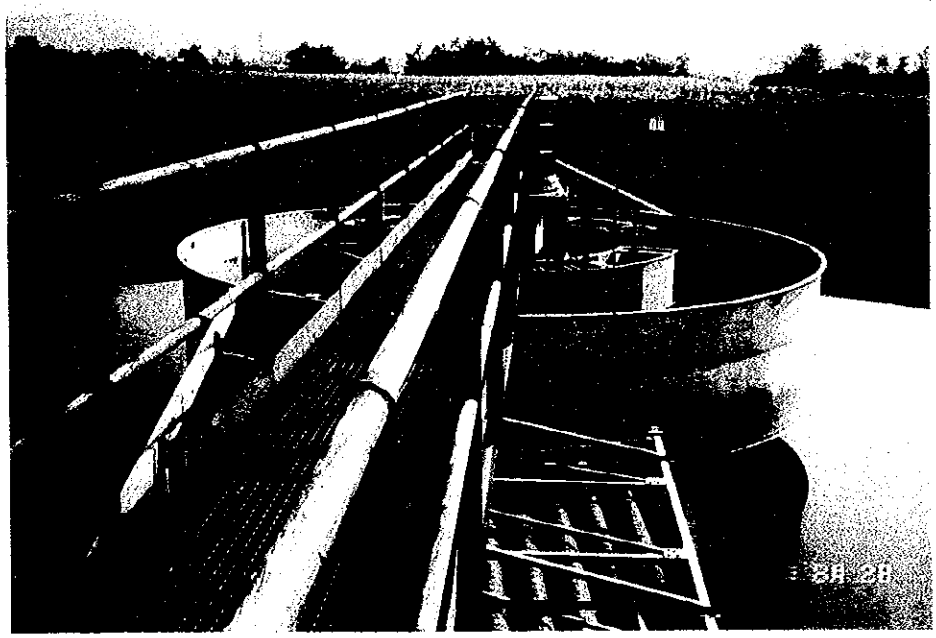
Remark 2: The measurement of painting thickness were carried out on top of all four corners of rectangular mechanisms according to ISO Standard 2808/91 by ENERGOINVEST experts on 1 July, 1999. The middle value of painting thickness shows from 145 micron to 223 micron. Concerning to the precise results. See Report on Measurement of Painting Thickness attached.

FACILITY SURVEY PHOTO

LOCATION : FINAL SEDIMENTATION TANK No.1 No.4	
PHOTO No.	6-M 1

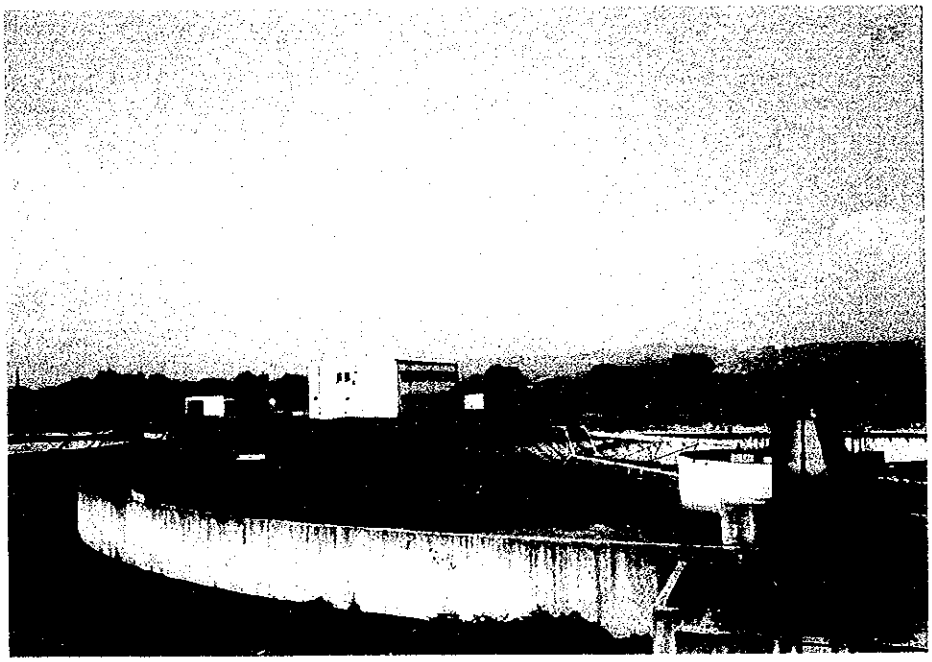


LOCATION : FINAL SEDIMENTATION TANK	
PHOTO No.	6-M 2

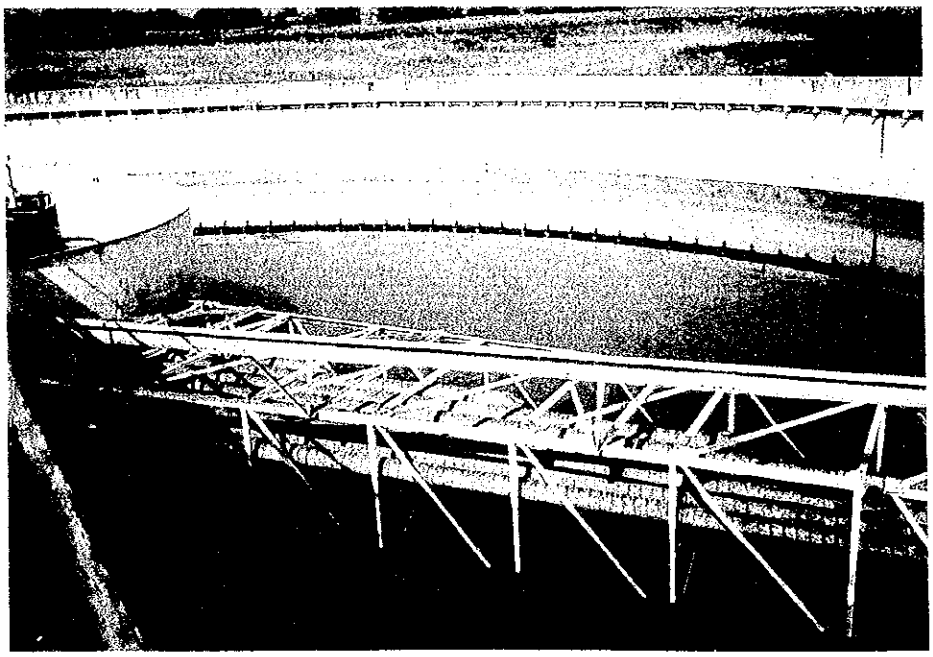


FACILITY SURVEY PHOTO

LOCATION : FINAL SEDIMENTATION TANK No.1 ~ No.4	
PHOTO No.	6-M 3

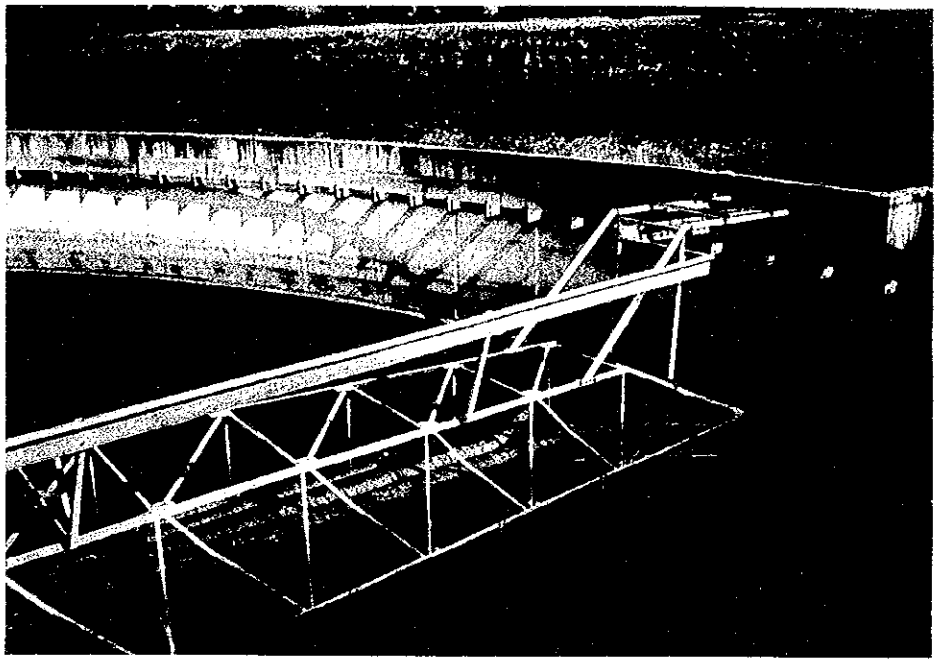


LOCATION : FINAL SEDIMENTATION TANK	
PHOTO No.	6-M 4

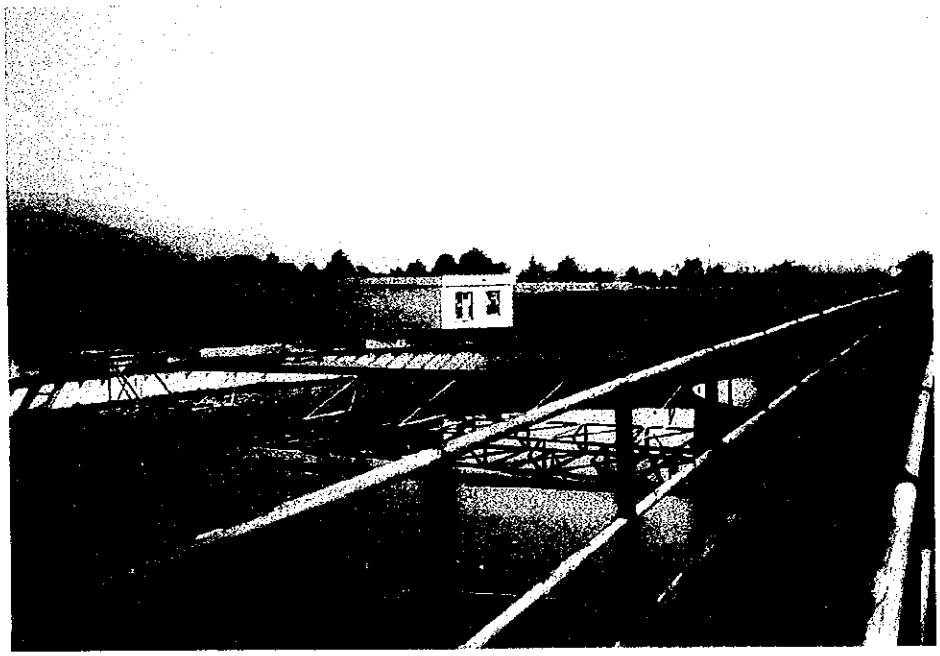


FACILITY SURVEY PHOTO

LOCATION : FINAL SEDIMENTATION TANK No.1~No.4	
PHOTO No.	6-M 5



LOCATION : FINAL SEDIMENTATION TANK	
PHOTO No.	6-M 6



INSPECTION SHEET

Date of inspection 23 , June ,1999
Weather : Cloudy

Equipment	Recycled Sludge Pump (Archimedean spiral) No.1~No.2* 380 V 100 kw 4 pole Manufacturer: Flayt		
Location	Recycled Sludge Pumping Station	Facilities	

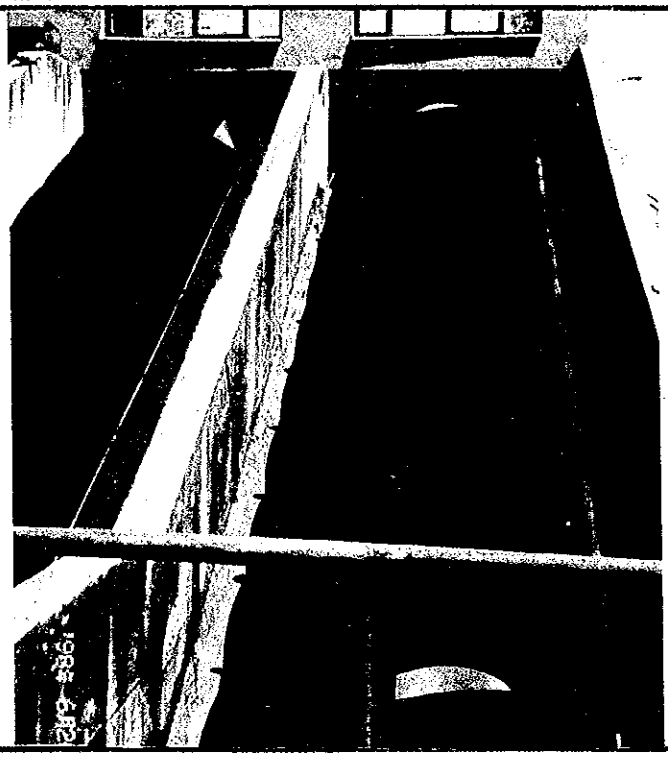
Result of inspection						
	Physical inspection			Functional inspection		
Degree of problem	Operating condition	—		Capacity	—	
	Stain/Corrosion	△		Safety measure	×	
	Painting	△		Other		
	Lubricant	×				
	Deformation/Crack	△				
	Damage	×				
	Abnormal sound	—				
	Overheat	—				
	Wear	△				
Decision B						

* Numbering is from top to bottom system.

Remark : Drive units and foot bearings including all necessary auxiliaries for grease lubrication need to be replaced.
The screws and shafts need to repeat anti rust protection painting and to be readjusted.

FACILITY SURVEY PHOTO

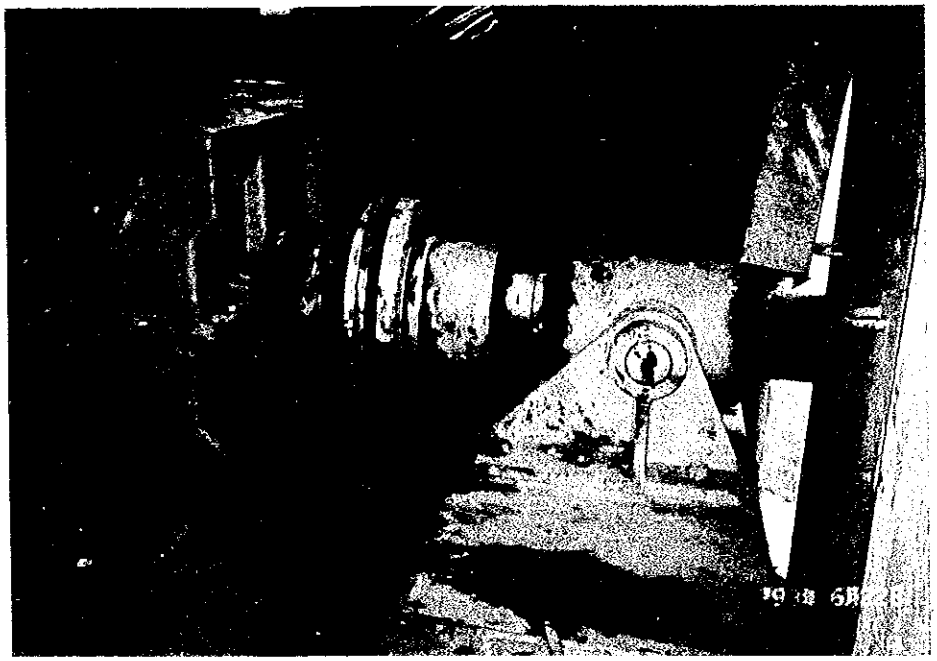
LOCATION : RECYCLED PUMPING STATION (SCREW PUMP) No.1~No.2
PHOTO No. 8-M 1



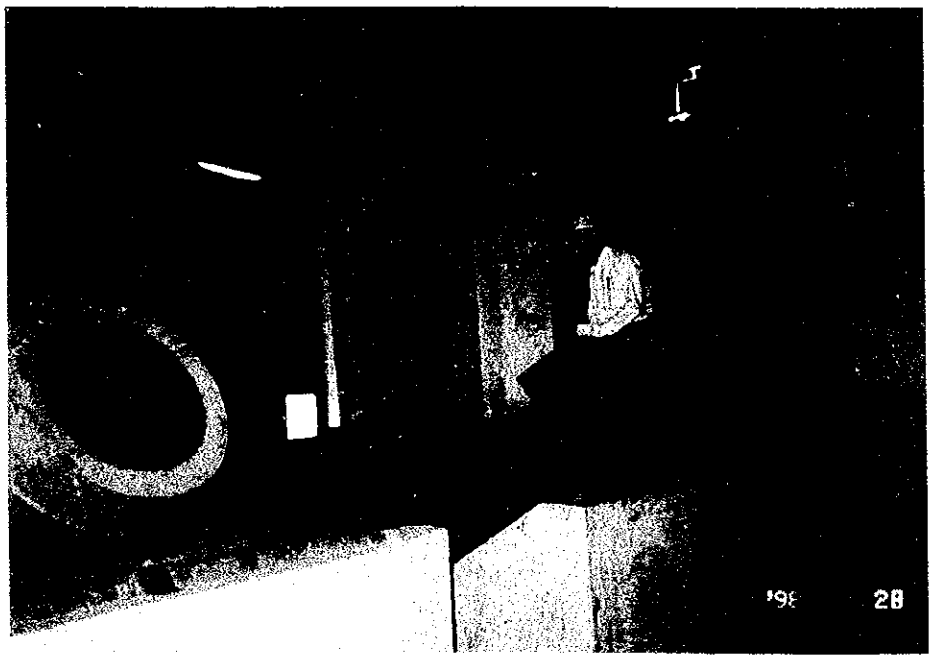
LOCATION : RECYCLED PUMPING STATION (SCREW PUMP) No.1~No.2
PHOTO No. 8-M 2

FACILITY SURVEY PHOTO

LOCATION : RECYCLED SLUDGE PUMPING STATION	
PHOTO No.	8-M 3



LOCATION : RECYCLED SLUDGE PUMPING STATION	
PHOTO No.	8-M 4



INSPECTION SHEET

Date of inspection 23, June, 1999
Weather : Cloudy : Cloudy

Equipment	Torque Flow Type Sludge Pumps No.1~No.2* 380 V 15 kW 4 pole Manufacturer: Unitec		
Location	Primary Sludge Pumping Station	Facilities	

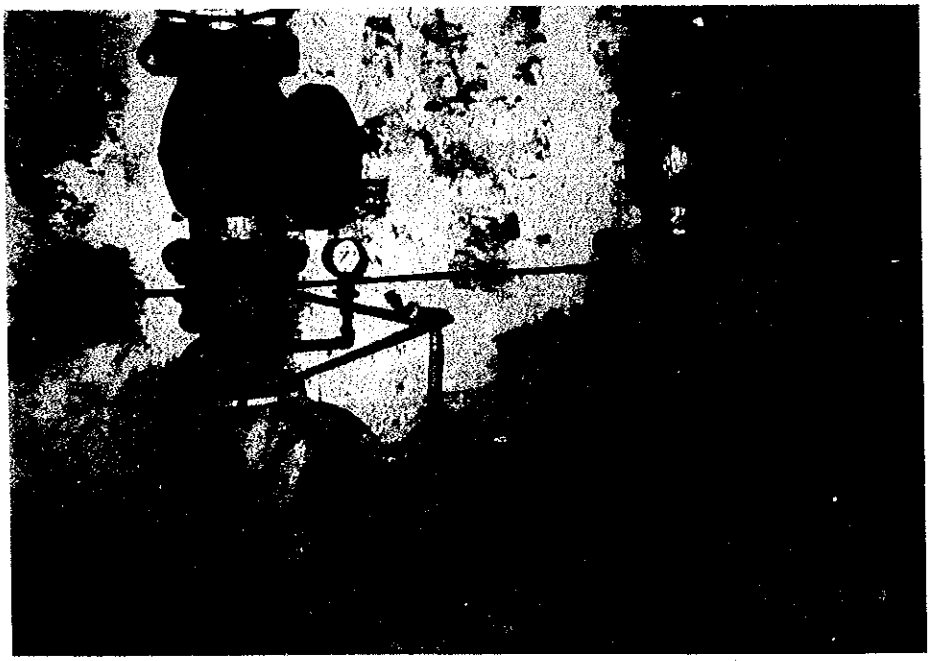
Result of inspection						
	Physical inspection			Functional inspection		
Degree of problem	Operating condition	—		Capacity	—	
	Stain/Corrosion	×		Safety measure	×	
	Painting	×		Other		
	Lubricant	×				
	Deformation/Crack	×				
	Damage	×				
	Abnormal sound	—				
	Overheat	—				
	Wear	—				
Decision A						

* Numbering is from top to bottom system.

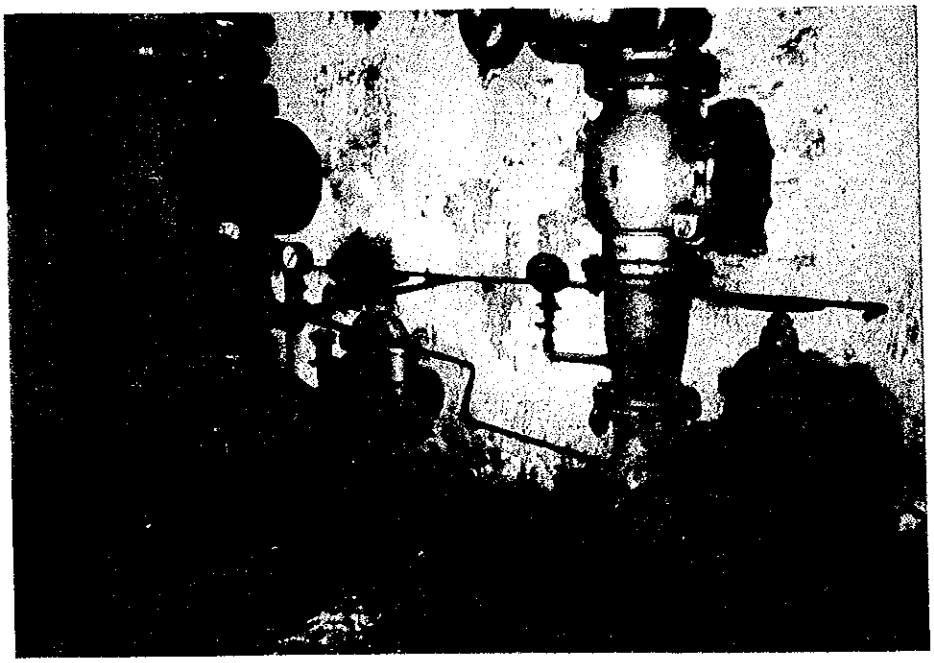
Remark : These pumps are damaged severely and no drive motors exist. Therefore all pumps including necessary auxiliaries with drive motors need to be renewed.

FACILITY SURVEY PHOTO

LOCATION : PRIMARY SLUDGE PUMPING STATON : TORQUE FLOW TYPE	
PHOTO No.	9-M 1



LOCATION : PRIMARY SLUDGE PUMPING STATION : TORQUE FLOW TYPE	
PHOTO No.	9-M 2



INSPECTION SHEET

Date of inspection 23 ,June ,1999
Weather : Cloudy

Equipment	Sludge Thickener with Picket No.1~No.2* 380 V 1.5 kW 4 pole Manufacturer: Degremont France		
Location	Sludge Thickener	Facilities	

Result of inspection						
	Physical inspection			Functional inspection		
Degree of problem	Operating condition	—		Capacity	—	
	Stain/Corrosion	△		Safety measure	×	
	Painting	△		Other		
	Lubricant	×				
	Deformation/Crack	△				
	Damage	×				
	Abnormal sound Overheat	— —				
	Wear	△				
Decision B						

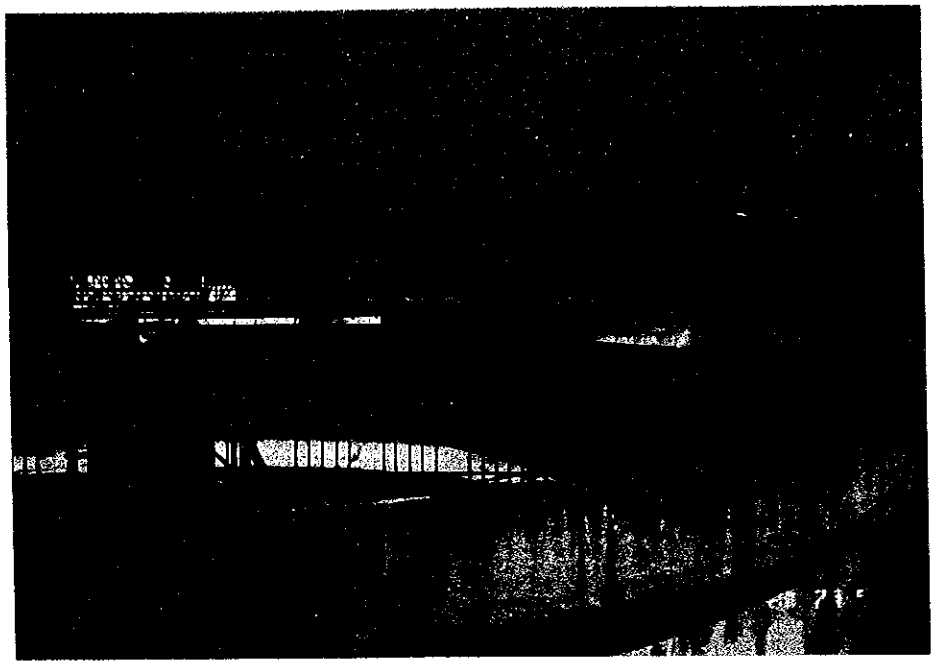
* Numbering is from top to bottom system.

Remark 1 : The drive motors of the sludge thickeners were found missing, and drive heads incomplete. The structure's mechanisms are partly attacked by rust and certain numbers of bolts and nuts are corroded heavily. The structure's mechanisms need to be cleaning, protection of corroded parts, painting and adjustment.
All bolts and nuts need to be replaced with stainless steel.
Drive units need to be replaced with new ones.

Remark 2 : The measurement of painting thickness were carried out on top of four corners of rectangular mechanisms according to ISO Standard 2808/91 on 1 July, 1999 by ENERGOINVEST experts. The painting thickness middle value shows from 87 micron to 106 micron.
Concerning to detailed results. See Report on Measurement of Painting Thickness attached.

FACILITY SURVEY PHOTO

LOCATION : SLUDGE THICKENER No.1 No.2	
PHOTO No.	10-M 1



LOCATION : SLUDGE THICKENER No.1 No.2	
PHOTO No.	10-M 2

INSPECTION SHEET

Date of inspection 23,June,1999
Weather : Cloudy

Equipment	Torque Flow Type Sludge Pumps No.1~No.2* 380 V 15 kW 4 pole Manufacturer: Unitec		
Location	Thickened Sludge Pumping Station	Facilities	

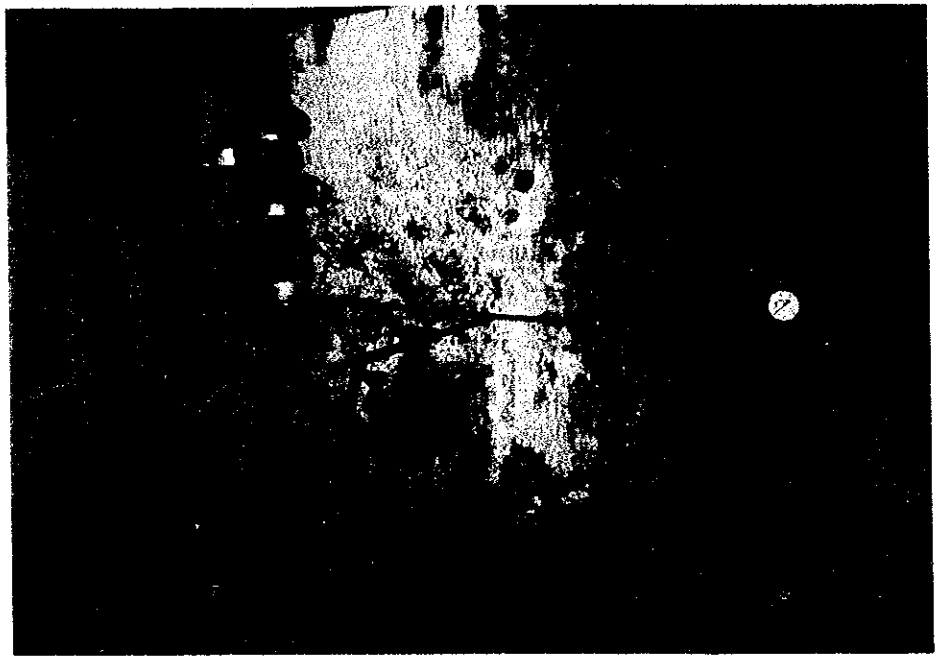
Result of inspection						
	Physical inspection			Functional inspection		
Degree of problem	Operating condition	—		Capacity	—	
	Stain/Corrosion	×		Safety measure	×	
	Painting	×		Other		
	Lubricant	×				
	Deformation/Crack	×				
	Damage	×				
	Abnormal sound	—				
	Overheat	—				
	Wear	×				
Decision A						

* Numbering is from top to bottom system.

Remark : These pumps are damaged severely and no drive motors exist. Therefore all pumps including necessary auxiliaries with drive motors to be renewed.

FACILITY SURVEY PHOTO

LOCATION : THICKENED SLUDGE PUMPING STATION
PHOTO No. 11-M 1



LOCATION : THICKENED SLUDGE PUMPING STATION
PHOTO No. 11-M 2

FACILITY SURVEY PHOTO

LOCATION : SLUDGE DIGESTER : TORQUE FLOW TYPE PUMP No.1~No.3	
PHOTO No.	12-M 1

LOCATION : SLUDGE DIGESTER : TORQUE FLOW TYPE PUMP No.1~No.3	
PHOTO No.	12-M 2

INSPECTION SHEET

Date of inspection 23,June,1999
Weather : Cloudy

Equipment	Torque Flow Type Sludge Pumps No.1~No.3* 380V 18.5 kW 4 pole Manufacturer: Unitec		
Location	Boiler House	Facilities	

Result of inspection						
	Physical inspection			Functional inspection		
Degree of problem	Operating condition	—		Capacity	—	
	Stain/Corrosion	×		Safety measure	×	
	Painting	×		Other		
	Lubricant	×				
	Deformation/Crack	×				
	Damage	×				
	Abnormal sound	—				
	Overheat	—				
	Wear	×				
Decision A						

* Numbering is from right to left in Arab. rule.

Remark : These pumps are damaged very severely. All pumps with necessary auxiliaries with drive motor to be replaced with new ones.

FACILITY SURVEY PHOTO

LOCATION : BOILER HOUSE : SLUDGE HEAT EXCHANGER
PHOTO No. 13-M 1

LOCATION : BOILER HOUSE : HEAT EXCHANGER
PHOTO No. 13-M 2

INSPECTION SHEET

Date of inspection 23,June,1999
Weather : Cloudy

Equipment	Digested Gas Compressors No.1~No.6* 380 V 30/37 kW 4 pole Manufacturer:		
Location	Gas Compressors Station	Facilities	

Result of inspection						
	Physical inspection			Functional inspection		
Degree of problem	Operating condition	—		Capacity	—	
	Stain/Corrosion	×		Safety measure	×	
	Painting	△		Other		
	Lubricant	×				
	Deformation/Crack	△				
	Damage	×				
	Abnormal sound	—				
	Overheat	—				
	Wear	×				
Decision A						

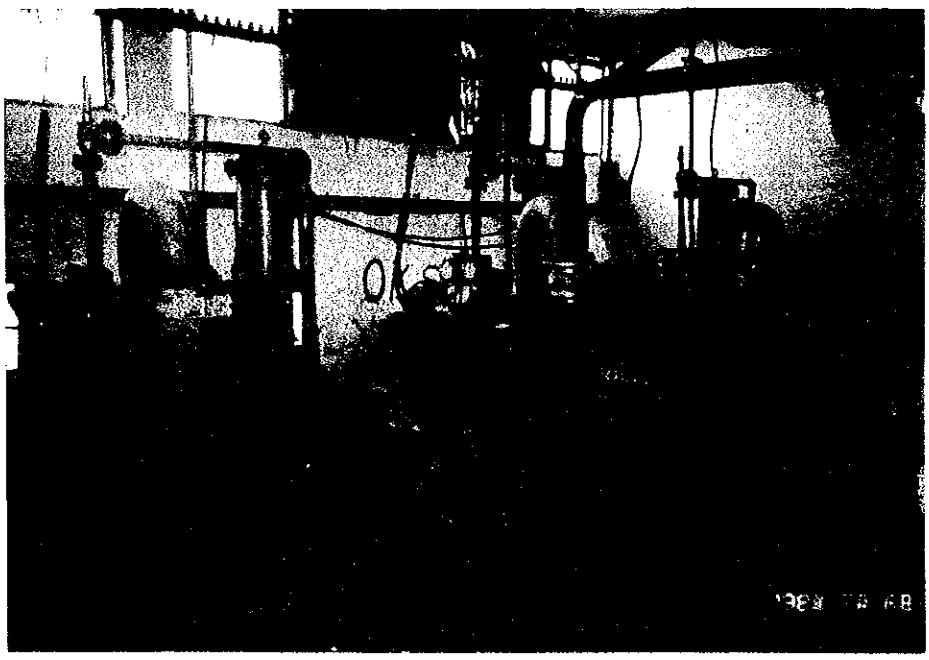
* Numbering is from right to left in Arab. rule and from top to bottom system.

Remark : Digested gas is recirculated for sludge mixing and three compressors of 37 kw were used for that purpose. Digested gas from gas storage tank is transported to power generation and another three compressors of 30 kw were used for that purpose. These six gas compressors are damaged extraordinarily. Because of the complexity of these compressors transporting the very explosive gas, therefore all the compressors with necessary auxiliaries to be replaced with new ones.

FACILITY SURVEY PHOTO

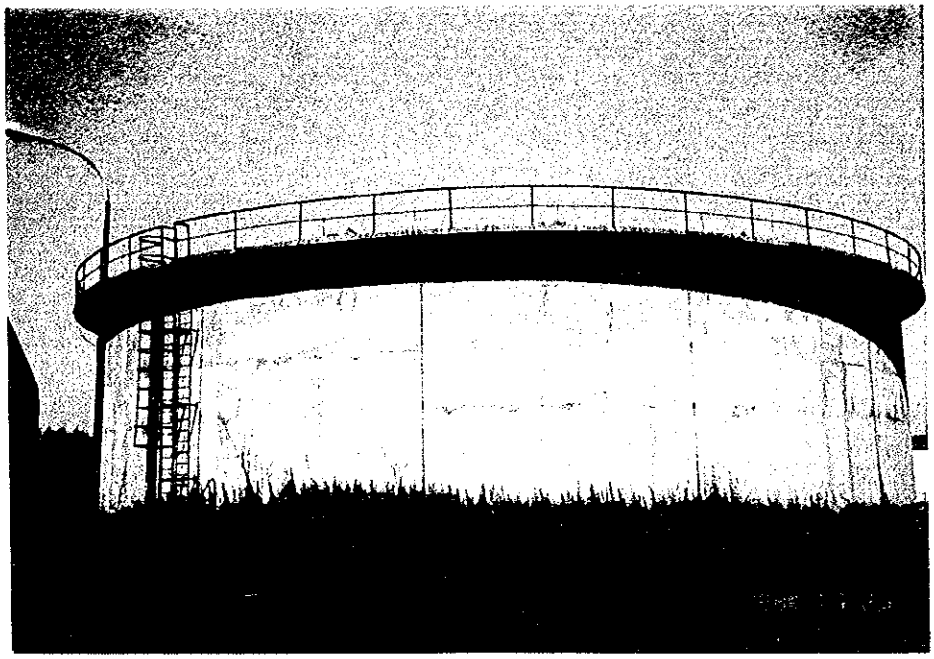
LOCATION : GAS COMPRESSOR STATION : GAS COMPRESSOR No.1~No.6
PHOTO No. 14-M 1

LOCATION : GAS COMPRESSOR STATION : GAS COMPRESSOR No.1~No.6
PHOTO No. 14-M 2

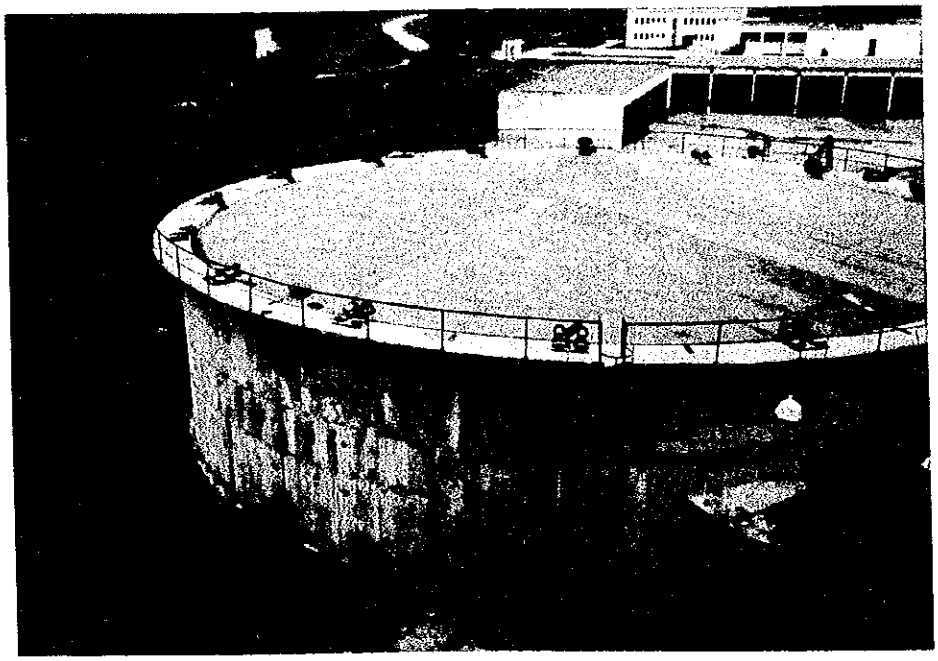


FACILITY SURVEY PHOTO

LOCATION : GAS STORAGE TANK	
PHOTO No.	15-M 1



LOCATION : GAS STORAGE TANK	
PHOTO No.	15-M 2



INSPECTION SHEET

Date of inspection 23 , June ,1999
Weather : Cloudy

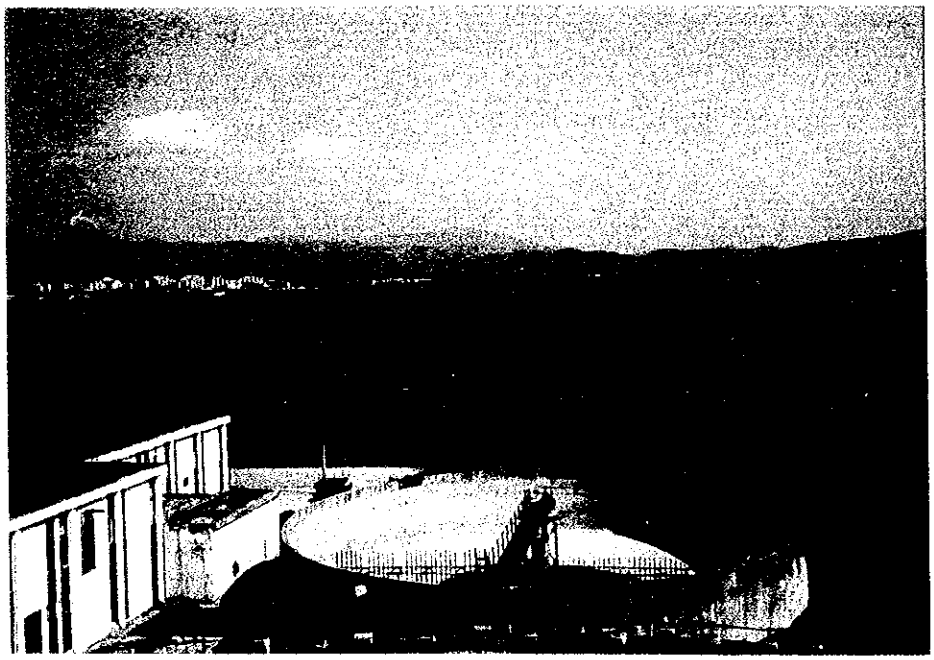
Equipment	Homogenized Sludge Thickener with Picket 380 V 1.5 kW 4 pole Manufacturer: Degremont France		
Location	Homogenized Sludge Holding Tank	Facilities	

Result of inspection						
	Physical inspection			Functional inspection		
Degree of problem	Operating condition	—		Capacity	—	
	Stain/Corrosion	△		Safety measure	×	
	Painting	△		Other		
	Lubricant	×				
	Deformation/Crack	△				
	Damage	×				
	Abnormal sound	—				
	Overheat	—				
	Wear	△				
Decision B						

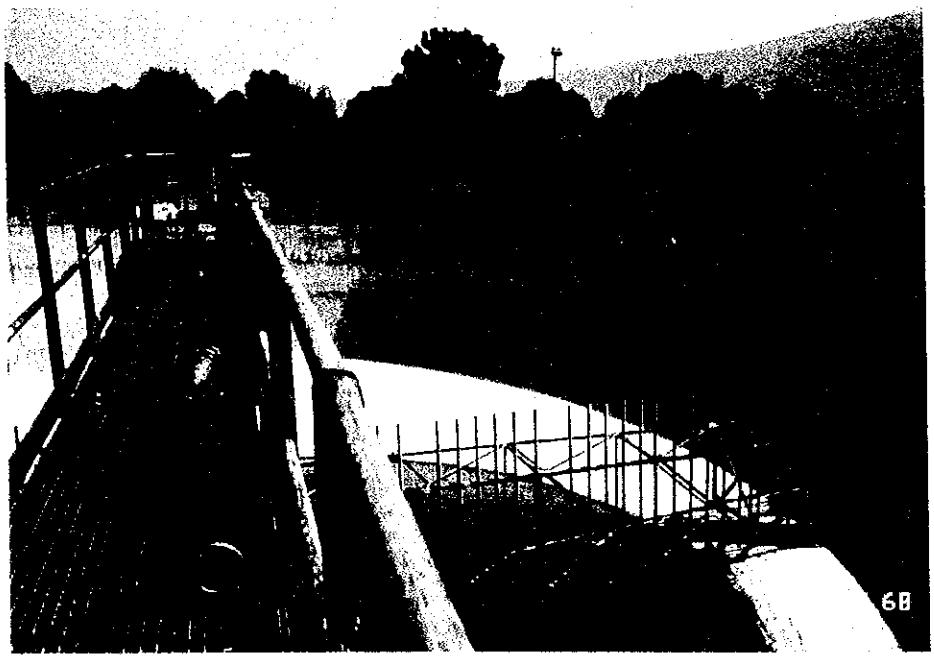
Remark : Drive motor of the thickener is dismounted and taken away and drive head is not complete.
The structure of mechanism is partly attacked by rust , most of bolts and nuts are corroded severely.
The structure of mechanism need to be cleaning, protection of corroded parts, replacing of all the bolts and nuts with stainless steel.
The drive head needs to be replaced with new one.

FACILITY SURVEY PHOTO

LOCATION : HOMOGENIZED SLUDGE HOLDING TANK	
PHOTO No.	16-M 1



LOCATION : HOMOGENIZED SLUDGE HOLDING TANK	
PHOTO No.	16-M 2



FACILITY SURVEY PHOTO

LOCATION :	HOMOGENIZED SLUDGE HOLDING TANK
PHOTO No.	16-M 3

INSPECTION SHEET

Date of inspection 23,June,1999
Weather : Cloudy

Equipment	Moineaau Pumps No.1~No.5* 380 V 1.5 kW 4 pole Manufacturer: PCM-Moineaau		
Location	Sludge Pumping Station	Facilities	

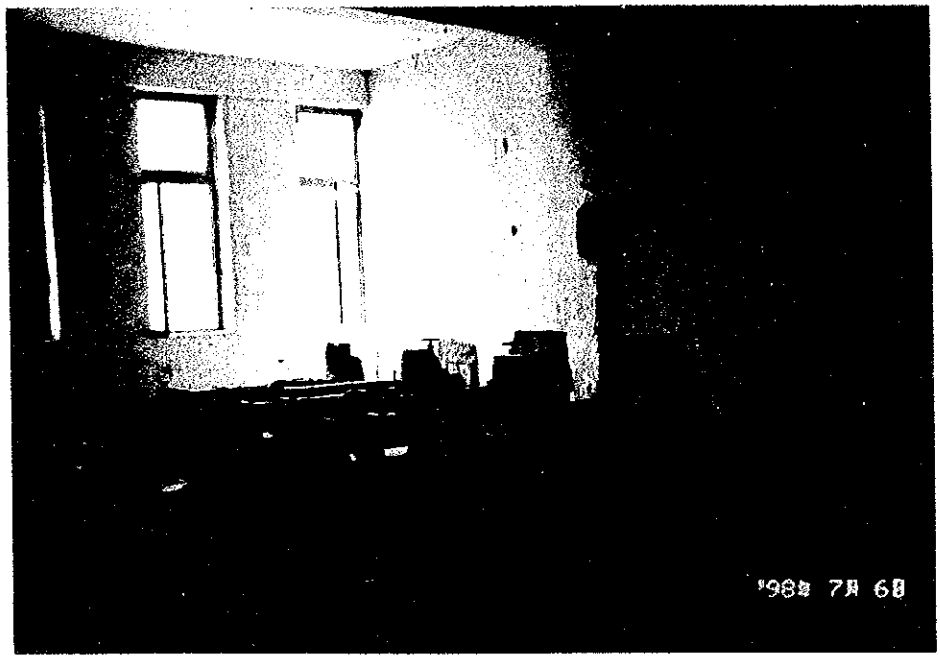
Result of inspection						
	Physical inspection			Functional inspection		
Degree of problem	Operating condition	—		Capacity	—	
	Stain/Corrosion	△		Safety measure	△	
	Painting	△		Other		
	Lubricant	×				
	Deformation/Crack	×				
	Damage	×				
	Abnormal sound	—				
	Overheat	—				
	Wear	×				
Decision A						

* Numbering is from top to bottom system.

Remark : Pumps have the eccentric rotors, driven by electrical motor through reducer, so the numbers of turns can be regulated.
All the drive motors, a part of transmission mechanisms and reducers are dismounted.
Almost parts except pump casings are not exist. Therefore all the pumps of five sets need to be replaced with new ones.

FACILITY SURVEY PHOTO

LOCATION : SLUDGE PUMPING STATION :MOINEAU PUMP No.1~No.5	
PHOTO No.	17-M 1



INSPECTION SHEET

Date of inspection 23 ,June ,1999
Weather : Cloudy

Equipment	Sludge Belt Filter press No.1~No.5* 380V 1.5kW 4 pole Manufacturer: Degremont-Press Deg France		
Location	Sludge Dehydration	Facilities	

Result of inspection						
	Physical inspection			Functional inspection		
Degree of problem	Operating condition	—		Capacity	—	
	Stain/Corrosion	△		Safety measure	△	
	Painting	△		Other		
	Lubricant	×				
	Deformation/Crack	△				
	Damage	×				
	Abnormal sound	—				
	Overheat	—				
	Wear	△				
Decision A						

* Numbering is from top to bottom system.

Remark : All five presses are devastated, electrical motors and transmission mechanisms, part of automatics, filter clothes are dismounted. Pipe lines of the air automatics are cut.
Therefore all the five filter presses need to be replaced with new ones.

INSPECTION SHEET

Date of inspection 23,June,1999
Weather : Cloudy

Equipment	Overhead Bridge Crane for Filter Press 380V 6/2 kW 4 pole Manufacturer: Vulkan Rijeka		
Location	Sludge Dehydration	Facilities	

Result of inspection						
	Physical inspection			Functional inspection		
Degree of problem	Operating condition	—		Capacity	—	
	Stain/Corrosion	△		Safety measure	△	
	Painting	△		Other		
	Lubricant	×				
	Deformation/Crack	△				
	Damage	×				
	Abnormal sound	—				
	Overheat	—				
	Wear	△				
Decision B						

Remark : Facility of filter presses is served by the overhead bridge crane, serving for mounting an dismounting of the same. The crane is bridge type of standard construction, made of carbon steel with anti rust protection, provided with steel wire and lifting hook. The crane is commanded from the ground through switch cabinet and hand mobile command.

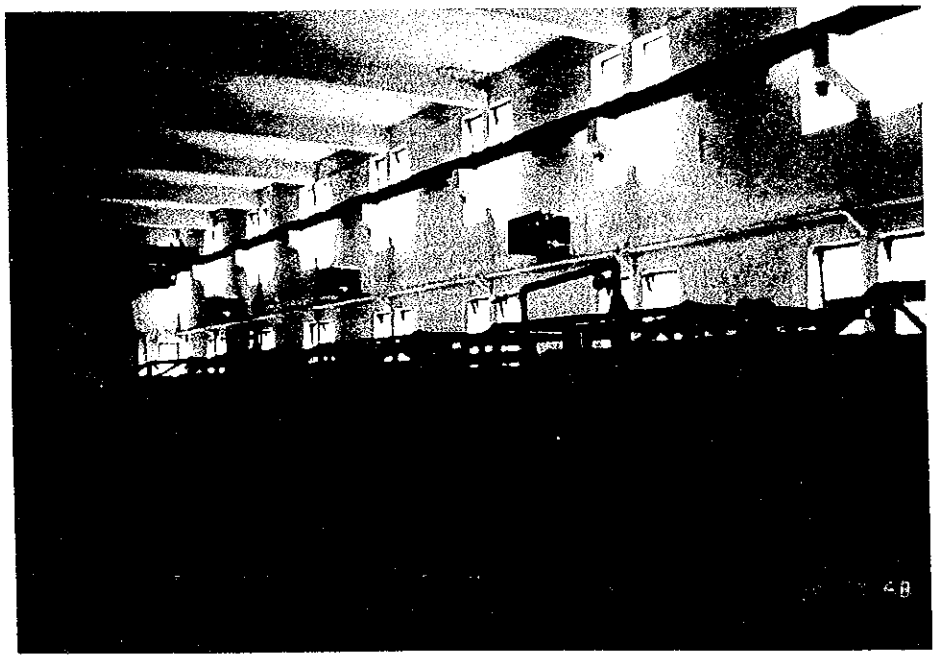
Drive motor for main and 2 of auxiliary drives are taken away. However the crane is in good condition, need to be cleaned, repetition of rust protection and readjusted.

Cables from the ground command and from switch cabinet are devastated and not complete, therefore replacement with new ones are needed with necessary auxiliaries.

FACILITY SURVEY PHOTO

LOCATION : SLUDGE DEHYDRATION : BELT FILTER PRESS No.1~No.5
PHOTO No. 18-M 1

LOCATION : SLUDGE DEHYDRATION : BELT FILTER PRESS No.1~No.5
PHOTO No. 18-M 2



INSPECTION SHEET

Date of inspection 23,June,1999
Weather : Cloudy

Equipment	Air Blower for Aerated Grit Chamber No.1~No.3* 380V 10kW 4 pole Manufacturer: AERZENERT-AERZEN		
Location	Air Blower Room	Facilities	

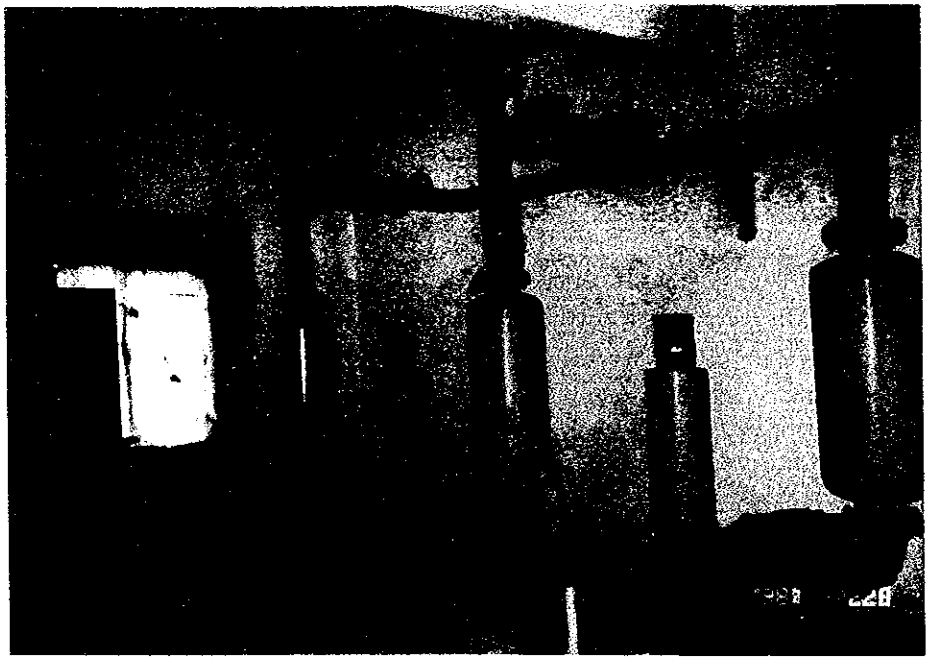
Result of inspection						
	Physical inspection			Functional inspection		
Degree of problem	Operating condition	—		Capacity	—	
	Stain/Corrosion	△		Safety measure	△	
	Painting	△		Other		
	Lubricant	×				
	Deformation/Crack	△				
	Damage	×				
	Abnormal sound	—				
	Overheat	—				
	Wear	△				
Decision A						

* Numbering is from right to left in Arab. rule.

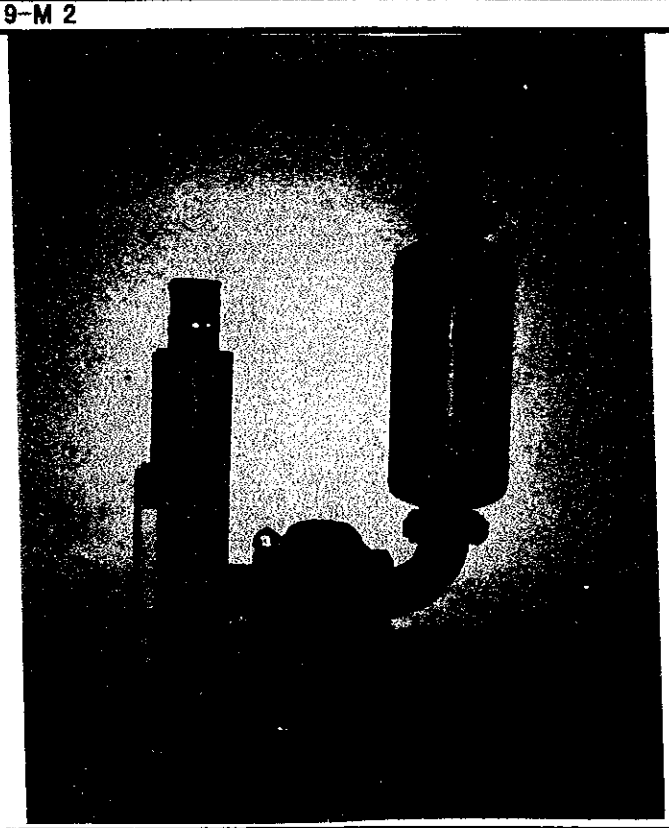
Remark : There are no motors exist, with a part of flexible coupling which is placed on motor. The blowers are damaged severely therefore all these blowers need to be replacd with new ones including necessary auxiliaries.

FACILITY SURVEY PHOTO

LOCATION : AIR BLOWER ROOM : AIR BLOWER FOR AERATED GRIT CHAMBER	
PHOTO No.	19-M 1



LOCATION : AIR BLOWER ROOM :AIR BLOWER FOR AERATED GRIT CHAMBER	
PHOTO No.	19-M 2



INSPECTION SHEET

Date of inspection 23,June,1999
Weather : Cloudy

Equipment	Diesel Engine for Power Generation * V 900 kW pole Manufacturer: Diesel Sacm France		
Location	Power Station	Facilities	

Result of inspection						
	Physical inspection			Functional inspection		
Degree of problem	Operating condition	—		Capacity	—	
	Stain/Corrosion	△		Safety measure	△	
	Painting	△		Other		
	Lubricant	×				
	Deformation/Crack	△				
	Damage	×				
	Abnormal sound	—				
	Overheat	—				
	Wear	△				
Decision A						

* Numbering is from right to left in Arab. rule.

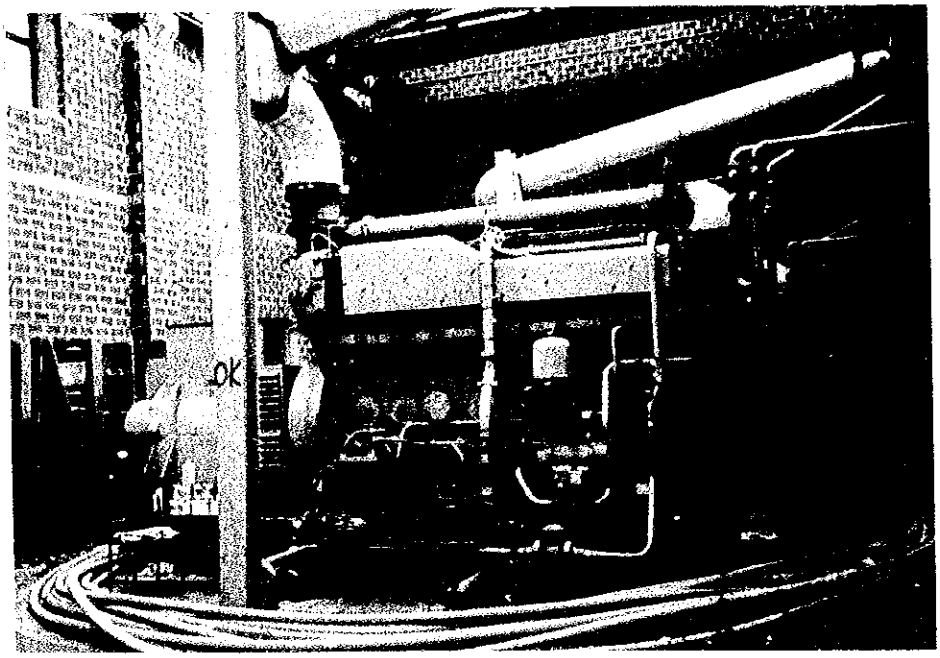
Remark : These diesel engines were manufactured 19 years ago in 1980. During that period the operating time was extremely cut short due to:

- the test period it was commissioned.
- suffered many operational interruption due to lack of gas production.
- the whole plant stopped operation in April 1992 and never started again since then.

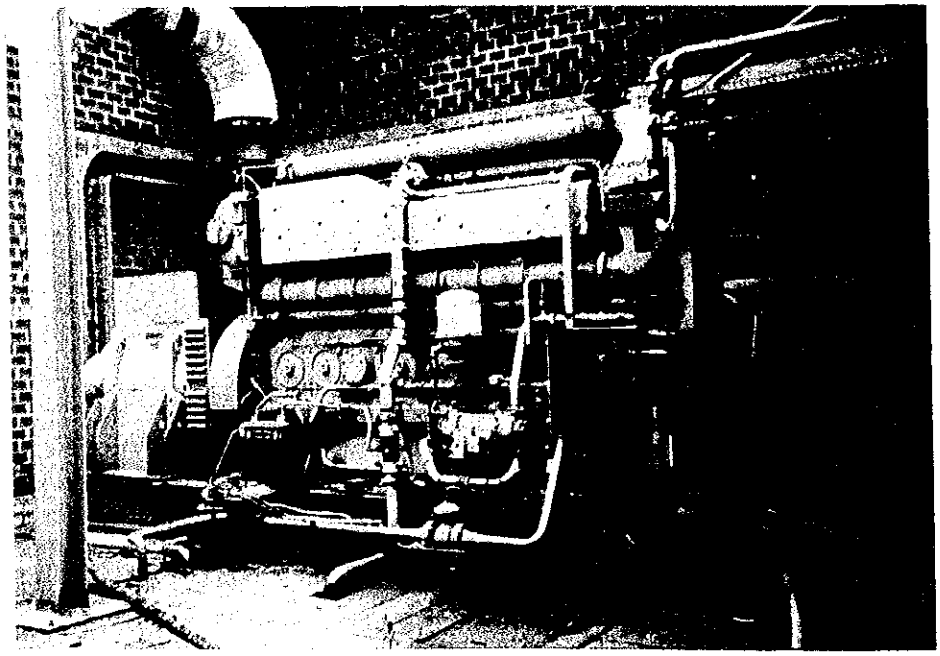
Due to the long stand-still condition and disastrous conservation since April 1992, these machines were found to be suffered extensive damages which make their replacement with new units safer and more cost effective than refurbishment.

FACILITY SURVEY PHOTO

LOCATION : POWER STATION : DIESEL ENGINE FOR POWER GENERATION	
PHOTO No.	20-M 1



LOCATION : POWER STATION : DIESEL ENGINE FOR POWER GENERATION	
PHOTO No.	20-M 2



INSPECTION SHEET

Date of inspection 23,June,1999
Weather : Cloudy

Equipment	Service Water Pumps No.1~No.4* 380 V 37/22 kW 2 pole Manufacturer: Litostroi Slovenija		
Location	Service Water Pumping Station	Facilities	

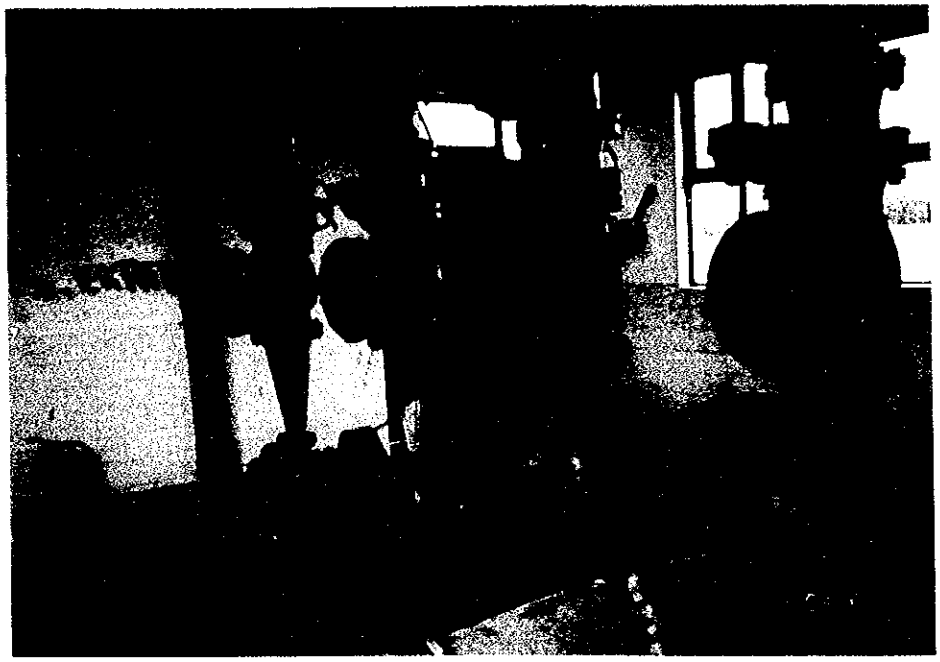
Result of inspection						
	Physical inspection			Functional inspection		
Degree of problem	Operating condition	—		Capacity	—	
	Stain/Corrosion	×		Safety measure	×	
	Painting	×		Other		
	Lubricant	×				
	Deformation/Crack	△				
	Damage	×				
	Abnormal sound	—				
	Overheat	—				
	Wear	△				
Decision A						

* Numbering is from right to left in Arab. rule.

Remark : There are four pumps in the Service Water Pumping Station; two of them are 37 kw and another two are 22 kw. The bigger pumps are with motors and the smaller pumps are without motor. These four pumps are damaged severely including accessories therefore all four pumps including auxiliaries need to be renewed. The small pumps need new motors and the bigger pumps' motors can be used with small repairs such as replacement of bearings and rewindings.

FACILITY SURVEY PHOTO

LOCATION : SERVICE WATER PUMPING STATION	
PHOTO No.	No.24-M 1



LOCATION : SERVICE WATER PUMPING STATION	
PHOTO No.	24-M 2

REPORT ON MEASUREMENT OF PAINTING THICKNESS (Translation)

ORDER PERSON : USB KEDLEY - SARAJEVO

TESTING SUBJECT: SLUDGE THICKENER No.1 10/1
SLUDGE THICKENER No.2 10/2
FINAL SEDIMENTATION TANK 6/1
FINAL SEDIMENTATION TANK 6/2
FINAL SEDIMENTATION TANK 6/3
FINAL SEDIMENTATION TANK 6/4

METHOD OF TESTING: According to ISO Standard 2808/91 JUS C.A6.030
INSTRUMENT: Positector 2000

TESTING RESULT:

Remark	Value (μm)	Middle value (μm)
Sludge Thickener 10/1	108, 110, 100; 102, 100, 58; 92, 94, 122; 108, 104;	106, 86.67; 102.67; 106. 00;
Sludge Thickener 10/2	82, 84, 80; 62, 82, 84, 204;	81.33; 108.00;
Final Sedimentation Tank 6/1	158, 171, 164, 166; 200, 176, 200; 200, 190, 152; 200, 188, 180	164.75; 192.00; 181.33; 189.33;
Final Sedimentation Tank 6/2	180, 216, 218; 208,192, 222; 196,190, 180; 216, 232,220;	204.67; 207.33; 188.67; 222.67;
Final Sedimentation Tank 6/3	132, 206, 196; 214, 168, 220 ; 114, 124, 136; 200, 172;	178.00; 200.67; 124.67; 187.00;
Final Sedimentation Tank 6/4	154, 130, 148; 144, 158, 174; 142, 136, 156; 200, 148;	144.00; 158.67; 144.67; 174.00

Datum: 01. 07. 1999.
Sarajevo
ENERGOINVEST

Testing was done by Laboratory Members
Haskovic Hedija Signed Autograph
Hodzac-Ninkovic Mirjana Signed Autograph

INSTITUT ZA MATERIJALE I KVALITET -IMQ
LABORATORIJ ZA ANTIKOROZIONU ZAŠTITU
Sarajevo, Tvornička 3

ENERGOINVEST

I Z V J E Š T A J Br. 02/99.

O MJERENJU DEBLJINE PREMAZA

NARUČILAC: USB KEDLY - SARAJEVO

PREDMET ISPITIVANJA: Zgušnjač ulja 10/1
Zgušnjač ulja 10/2
Objekat 6/1
Objekat 6/2
Objekat 6/3
Objekat 6/4

NAČIN ISPITIVANJA: Prema standardu ISO 2808/91
JUS C.A6.030

INSTRUMENT: Positector 2000

Rezultati ispitivanja:

Oznaka	Vrijednost (µm)	Srednja vrijednost (µm)
Zgušnjač ulja 10/1	108,110,100; 102,100, 58; 92, 94,122; 108,104;	106, 86,67; 102,67; 106,00;
Zgušnjač ulja 10/2	82, 84, 80; 62, 82, 84,204;	81,33; 108,00;
Objekat 6/1	158,171,164,166; 200,176,200; 200,190,152; 200,188,180;	164,75; 192,00; 181,33; 189,33;
Objekat 6/2	180,216,218; 208,192,222; 196,190,180; 216,232,220;	204,67; 207,33; 188,67; 222,67;

Datum. 01.07.1999.
Sarajevo

Ispitivanje izvršio:
Hasković Hedija

Rukovodilac laboratorije:
Hodžić-Ninković Mirjana

INSTITUT ZA MATERIJALE I KVALITET -IMQ
LABORATORIJ ZA ANTIKOROZIONU ZAŠTITU
Sarajevo, Tvornička 3

ENERGOINVEST

Oznaka	Vrijednost (µm)	Srednja vrijednost (µm)
Objekat 6/3	132, 206, 196; 214, 168, 220; 114, 124, 136; 200, 172;	178,00; 200,67; 124,67; 187,00;
Objekat 6/4	154, 130, 148; 144, 158, 174; 142, 136, 156; 200, 148;	144,00; 158,67; 144,67; 174,00;

Datum: 01.07.1999.
Sarajevo

Ispitivanje izvršio:
Hasković Hedija

Rukovodilac laboratorije:
Hodžić-Ninković Mirjana

APPENDIX
J

INSPECTION SHEETS ELECTRICAL ASPECTS

Appendix J

INSPECTION SHEET AND PHOTO DOCUMENTATUON

(Electric Equipment)

Location 0; Stop Plank
1; Raw Water Pumping Station
2; Screening Station
3; Aerated Grit Chamber
4; Primary Sedimentation Tank
5; Aeration Tank
6; Final Sedimentation Tank
7; Flow Metering and others
8; Recycled Sludge Pumping Station
9; Primary Sludge Pumping Station
10; Sludge Thickener
11; Thickened Sludge Pumping Station

13; Boiler House
14; Compressor Station Ⅰ

16; Homogenized Sludge Holding Tank
17; Sludge Pumping Station
18; Sludge Dehydration
19; Compressor Station Ⅱ
20; Power Station
21; Substation

23; Administration
24; Service Water Pumping Station

26; Outdoor Lighting

INSPECTION SHEET

Date of inspection 8, June, 1999

Weather Fine

Equipment	Induction motor		
Location	Stop plank	Facilities	Stop plank

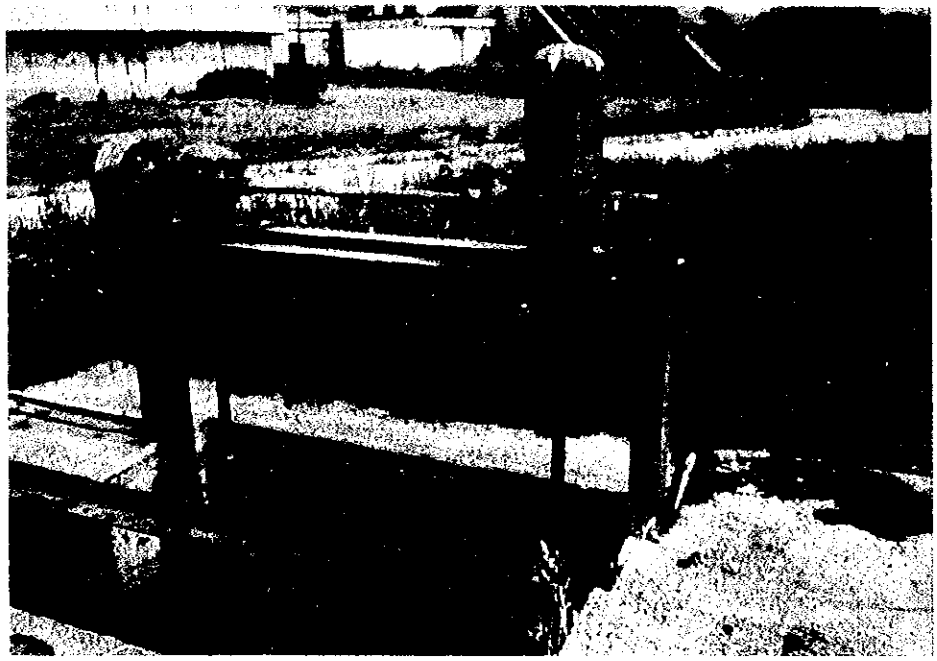
Result of inspection	
Degree of problem	There is no motor. (Nos. 1) That motor was removed and was taken away.
Decision	A

Equipment	Cable		
Location	Stop plank	Facilities	Stop plank

Result of inspection	
Degree of problem	There are no cables. All cables were cut and were taken away.
Decision	A

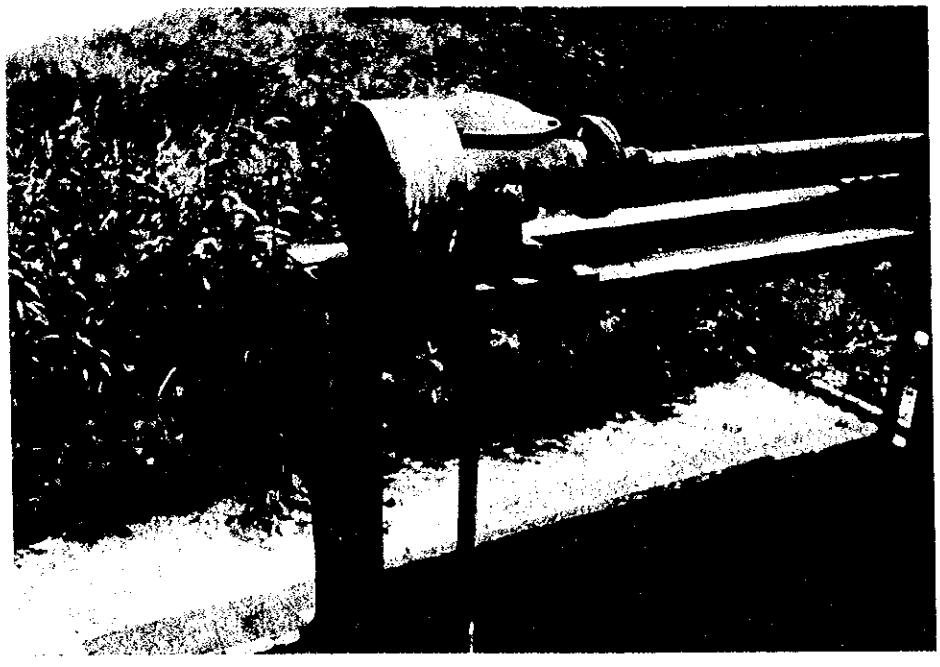
Location ; Stop Plank

Photo No. 0−E1 | Out look of stop plank



Location ; Stop Plank

Photo No. 0−E2 | Drive reducer



−Motor was removed and taken away.
−Cables were cut and taken away.

INSPECTION SHEET

Date of inspection 2, June, 1999

Weather Fine

Equipment	Local control panel Manufacturer ;Fector Diaman		
Location	Raw water pumping station	Facilities	Raw water pump Screen

Result of inspection						
	Physical inspection			Functional inspection		
Degree of problem	Figure	×	＊1	Operation of switch	×	＊4
	Stain／Corrosion	×		Function of indicater	×	
	Looseness of instrument	×	＊2	Accuracy of meter	×	
	Looseness of terminals	×		Charging of power	×	
	Arrangement of wire	×	＊3	Sequence control function	×	
	Discoloration of wire	×				
	Insulation resistance	×				
Decision		A				

＊1 METAL ENCLOSED PANELS is existing. But stain and corrosion is progressing.

＊2 ELECTRIC INSTRUMENTS／PARTS were almost removed and were taken away.

＊3 ALL WIRING of panel inside was cut and was taken away.

＊4 NO FUNCTION to be carried out is existing.

INSPECTION SHEET

Date of inspection 22, June, 1999

Weather Cloudy

Equipment	Induction motor 380V 160kW 4pole 256247, 1980 Manufacturer ;Electro Mechaniqu		
Location	Raw water pumping station	Facilities	Raw water pump

Result of inspection						
	Physical inspection			Functional inspection		
Degree of problem	Figure	○	＊1	Current	—	＊3
	Stain／Corrosion	△		Rotating speed	—	
	Conductivity of stator coil	○		Others	—	
	Insulation resistance	○	＊2			
	Partial discharge	—	＊3			
	Vibration	—				
	Abnormal sound	—				
	Overheat	—				
Decision		B ＊4				

＊1 CASING is no damare.

＊2 Insulation resistance measuring data;

U—V >100MΩ U—E >100MΩ

V—W 〃 V—E 〃

W—U 〃 W—E 〃

＊3 Mechanical load facility exists, but is not arranged. So, on—load test can not be performed.

＊4 This motor is not operated for 7 years from 1992. So, OVERHAUL including change of bearing shall be applied.

INSPECTION SHEET

Date of inspection 22, June, 1999

Weather Cloudy

Equipment	Induction motor 380V 160kW 4pole 256248, 1980 Manufacturer ;Electro Mechaniqu		
Location	Raw water pumping station	Facilities	Raw water pump

Result of inspection						
	Physical inspection			Functional inspection		
Degree of problem	Figure	○	＊1	Current	—	＊3
	Stain／Corrosion	△		Rotating speed	—	
	Conductivity of stator coil	○		Others	—	
	Insulation resistance	○	＊2			
	Partial discharge	—	＊3			
	Vibration	—				
	Abnormal sound	—				
	Overheat	—				
Decision	B ＊4					

＊1 CASING is no damare.

＊2 Insulation resistance measuring data;

U−V >100MΩ U−E >100MΩ

V−W 〃 V−E 〃

W−U 〃 W−E 〃

＊3 Mechanical load facility exists, but is not arranged. So, on−load test can not be performed.

＊4 This motor is not operated for 7 years from 1992. So, OVERHAUL including change of bearing shall be applied.

INSPECTION SHEET

Date of inspection 22, June, 1999

Weather Cloudy

Equipment	Induction motor 380V 160kW 4pole 256249, 1980 Manufacturer ;Electro Mechaniqu		
Location	Raw water pumping station	Facilities	Raw water pump

Result of inspection						
	Physical inspection			Functional inspection		
Degree of problem	Figure	○	＊1	Current	—	＊3
	Stain／Corrosion	△		Rotating speed	—	
	Conductivity of stator coil	○		Others	—	
	Insulation resistance	○	＊2			
	Partial discharge	—	＊3			
	Vibration	—				
	Abnormal sound	—				
	Overheat	—				
Decision	B ＊4					

＊1 CASING is no damare.

＊2 Insulation resistance measuring data;

U—V >100MΩ U—E >100MΩ

V—W 〃 V—E 〃

W—U 〃 W—E 〃

＊3 Mechanical load facility exists, but is not arranged. So, on—load test can not be performed.

＊4 This motor is not operated for 7 years from 1992. So, OVERHAUL including change of bearing shall be applied.

INSPECTION SHEET

Date of inspection 22, June, 1999

Weather Cloudy

Equipment	Induction motor 380V 160kW 4pole 256250, 1980 Manufacturer ;Electro Mechaniqu		
Location	Raw water pumping station	Facilities	Raw water pump

Result of inspection						
	Physical inspection			Functional inspection		
Degree of problem	Figure	○	＊1	Current	—	＊3
	Stain／Corrosion	△		Rotating speed	—	
	Conductivity of stator coil	○		Others	—	
	Insulation resistance	○	＊2			
	Partial discharge	—	＊3			
	Vibration	—				
	Abnormal sound	—				
	Overheat	—				
Decision	B ＊4					

＊1 CASING is no damare.

＊2 Insulation resistance measuring data;

U—V >100MΩ U—E >100MΩ

V—W 〃 V—E 〃

W—U 〃 W—E 〃

＊3 Mechanical load facility exists, but is not arranged. So, on—load test can not be performed.

＊4 This motor is not operated for 7 years from 1992. So, OVERHAUL including change of bearing shall be applied.

INSPECTION SHEET

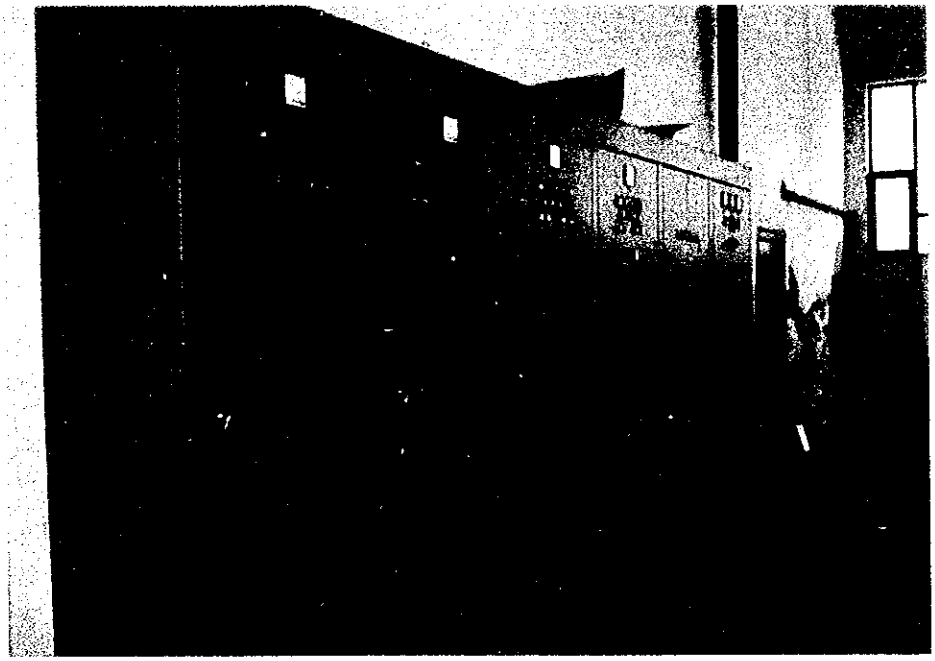
Date of inspection 2, June, 1999

Weather Fine

Equipment	Cable		
Location	Raw water pumping station	Facilities	Raw water pump

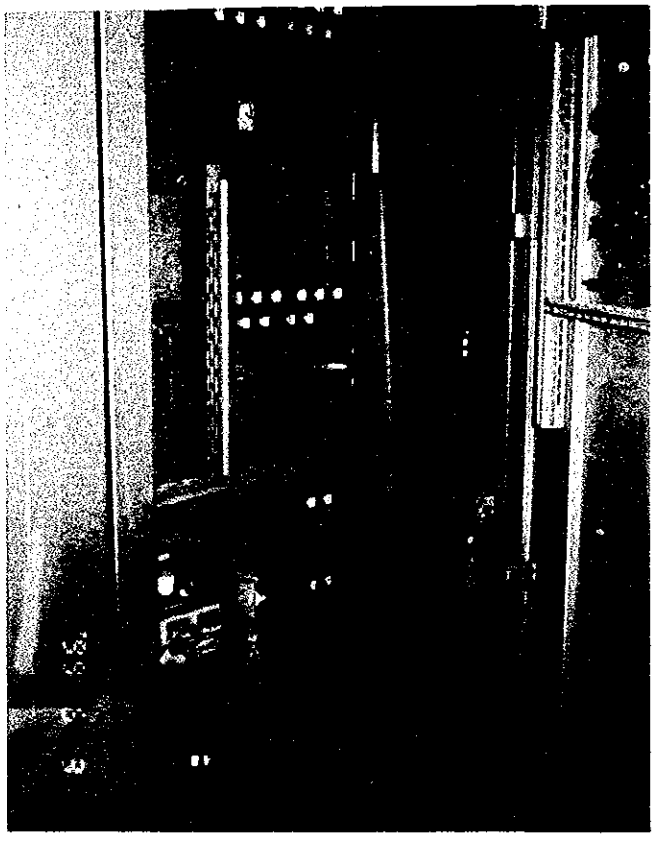
Result of inspection	
Degree of problem	There are no cables. All cables were cut and were taken away.
Decision	

Location ; Raw Water Pumping Station	
Photo No. 1—E1	Out look of local control panel



—Stain and corrosion is progressing.

Location ; Raw Water Pumping Station	
Photo No. 1—E2	Insise of local control panel



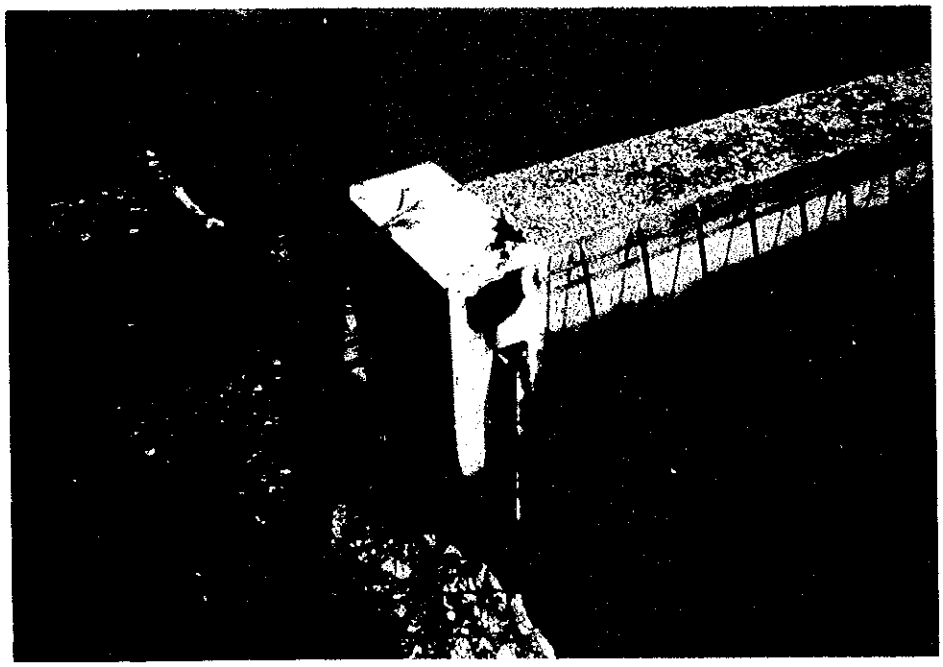
—Main instruments/parts were removed and taken away.

—All wiring and cables were cut and taken away.

Location ; Raw Water Pumping Station	
Photo No. 1-E3	Out look of motor(160kW)

-Casings of all motoes are not damaged
-Cables were cut and taken away.

Location ; Raw Water Pumping Station	
Photo No. 1-E4	Out look of level metering



-Measuring instrument was destroied.
-Cables were cut and taken away.

INSPECTION SHEET

Date of inspection 2, June, 1999

Weather Fine

Equipment	Induction motor		
Location	Screening station	Facilities	Stop plank

Result of inspection	
Degree of problem	There are no motors. (Nos. 2) Those motors were removed and were taken away.
Decision	A

Equipment	Cable		
Location	Screening station	Facilities	Stop plank

Result of inspection	
Degree of problem	There are no cables. All cables were cut and were taken away.
Decision	A

INSPECTION SHEET

Date of inspection 2, June, 1999

Weather Fine

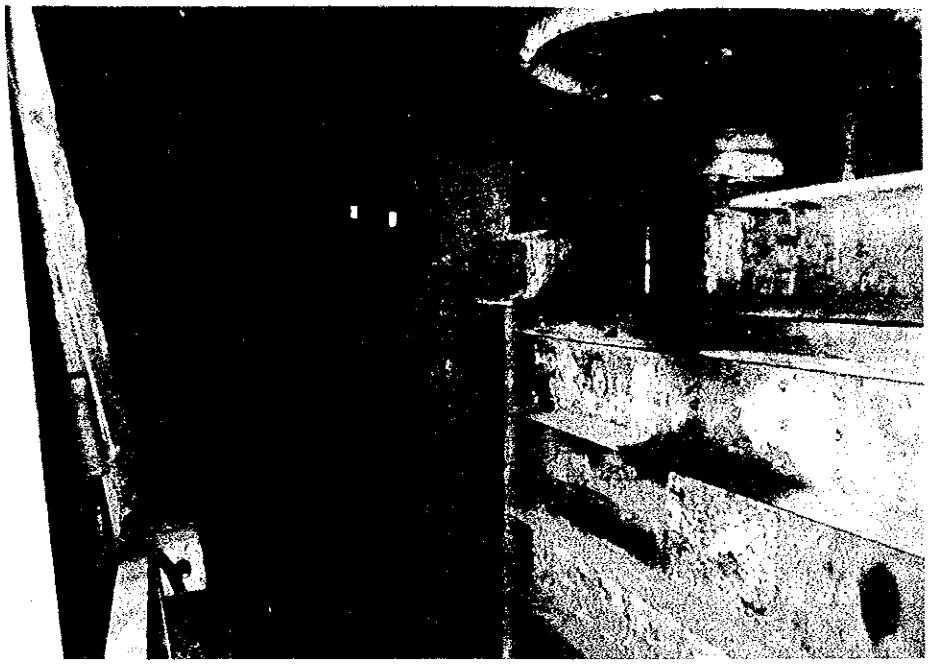
Equipment	Induction motor		
Location	Screening station	Facilities	Bar screen

Result of inspection	
Degree of problem	There are no motors. (Nos. 8) Those motors were removed and were taken away.
Decision	A

Equipment	Cable		
Location	Screening station	Facilities	Bar screen

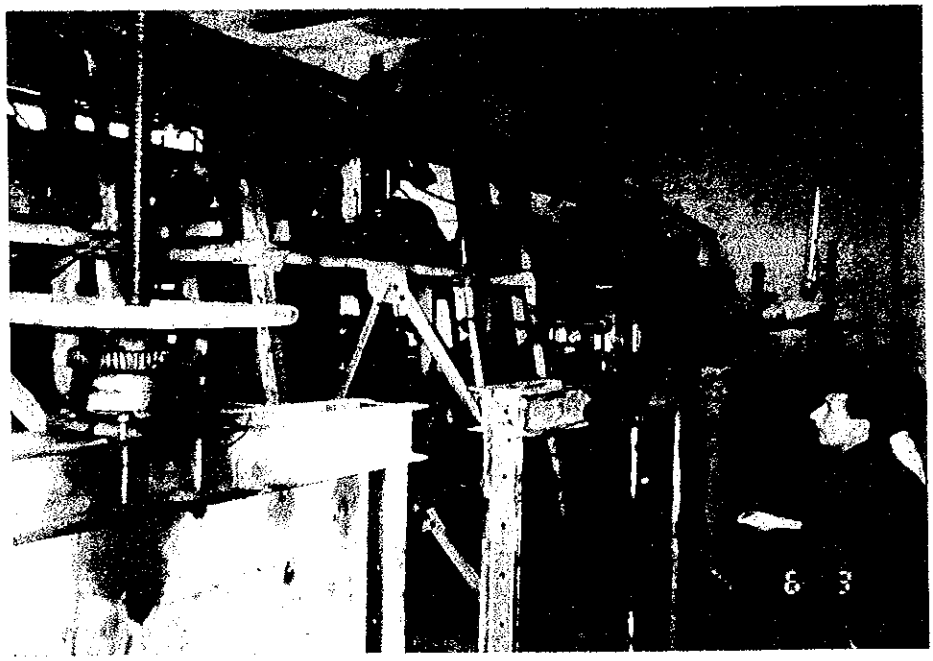
Result of inspection	
Degree of problem	There are no cables. All cables were cut and were taken away.
Decision	A

Location ; Screening Station	
Photo No. 2−E1	Out look of stop plank



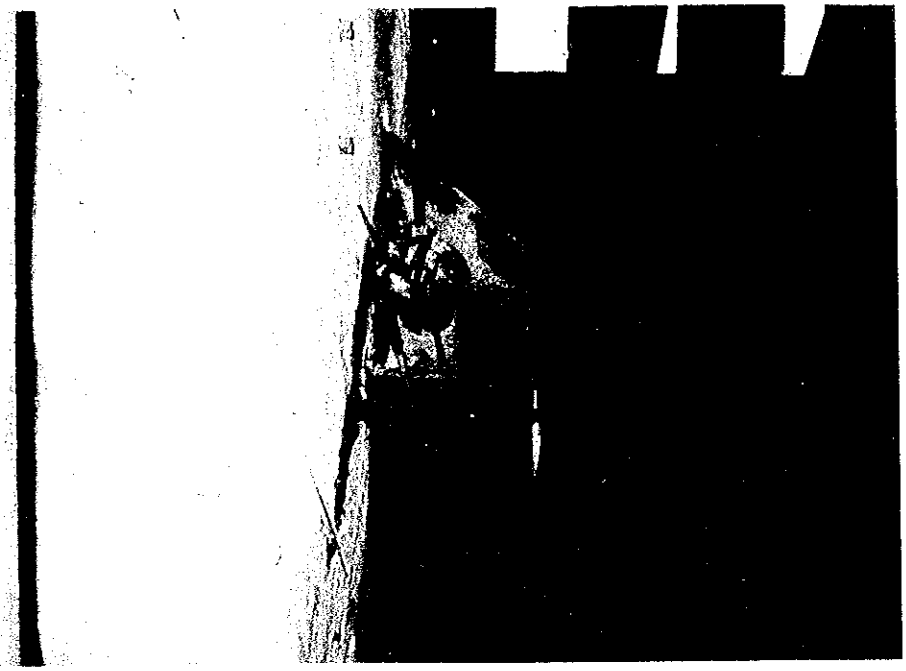
−Motor was removed and taken away.
−Cables were cut and taken away.

Location ; Screening Station	
Photo No. 2−E2	Out look of bar screen



−Motors were removed and taken away.
−Cables were cut and taken away.

Location ; Screening Station	
Photo No. 2—E3	Out look of level metering



—Measuring instrument was destroied.
—Cables were cut and taken away.

INSPECTION SHEET

Date of inspection 1, June, 1999

Weather Fine

Equipment	Induction motor		
Location	Aereted grit chamber	Facilities	Mechanism

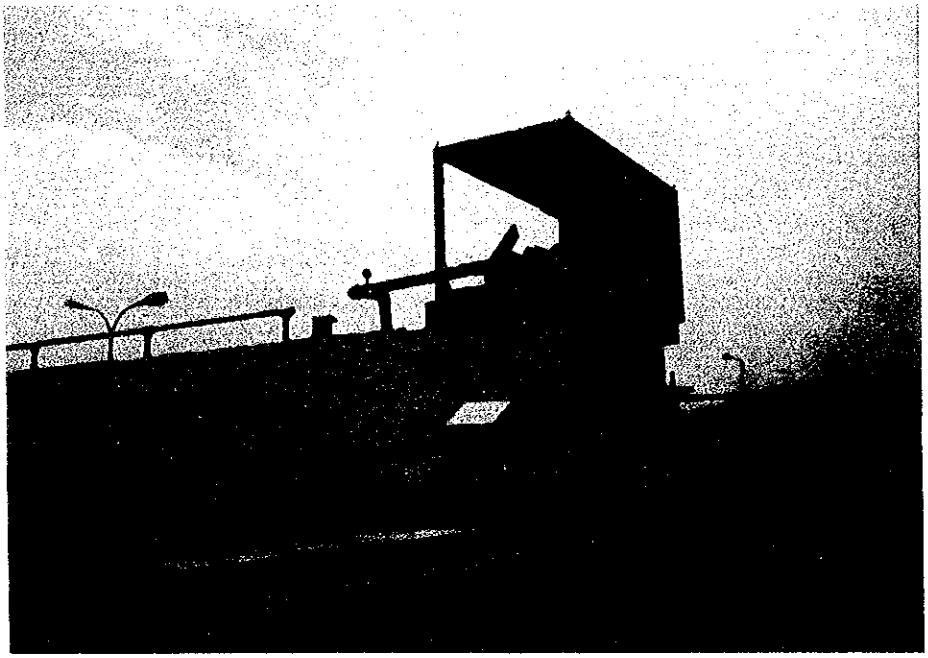
Result of inspection	
Degree of problem	There are no motors. (Nos. 4) Those motors were removed and were taken away.
Decision	A

Equipment	Cable		
Location	Aereted grit chamber	Facilities	Mechanism

Result of inspection	
Degree of problem	There are no cables. All cables were cut and were taken away.
Decision	A

Location ; Aerated Grit Chamber

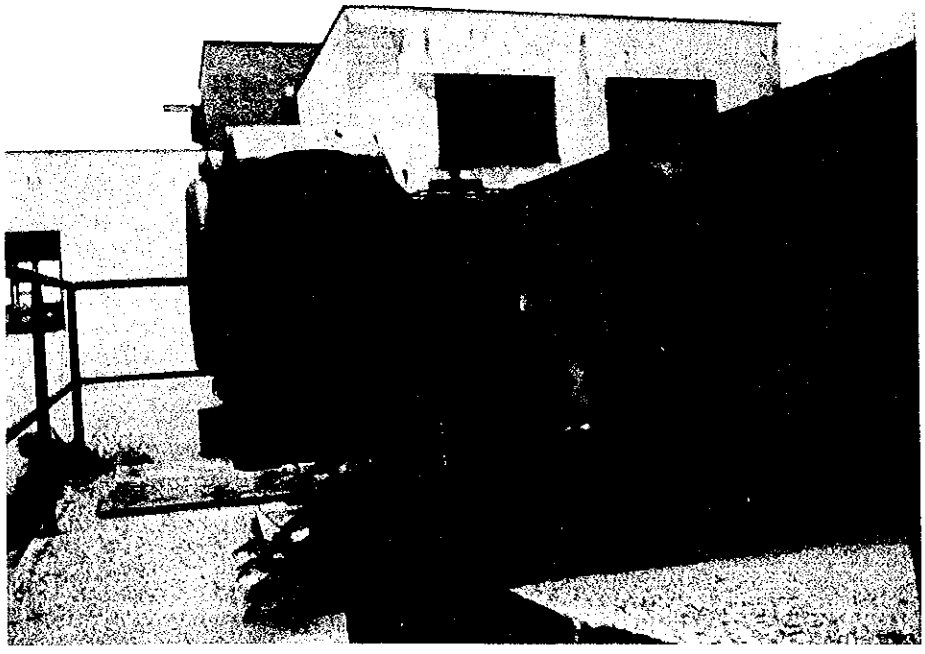
Photo No. 3—E1 | Sand trap bridge



—Motors were removed and taken away.
—Cables for all motors were cut and taken away.

Location ; Aerated Grit Chamber

Photo No. 3—E2 | Rake classifier



—Motor was removed and taken away.
—Cables for motor were cut and taken away.

INSPECTION SHEET

Date of inspection 1, June, 1999

Weather Fine

Equipment	Induction motor		
Location	Primary sedimentation tank	Facilities	Mechanism

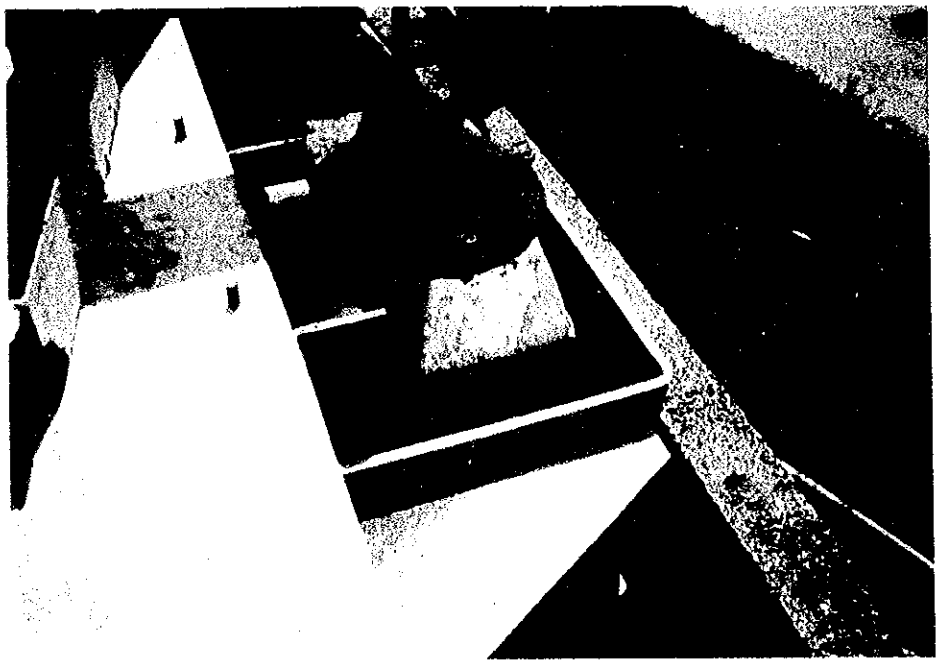
Result of inspection		
Degree of problem	There are no motors. (Nos. 2) Those motors were removed and were taken away.	
Decision		A

Equipment	Cable		
Location	Primary sedimentation tank	Facilities	Mechanism

Result of inspection		
Degree of problem	There are no cables. All cables were cut and were taken away.	
Decision		A

Location ; Primary Sedimentation Tank	
Photo No. 4−E1	Out look of sedimentation tank

Location ; Primary Sedimentation Tank	
Photo No. 4−E2	Drive reducer



−Motor was removed and taken away.
−Cables were cut and taken away.