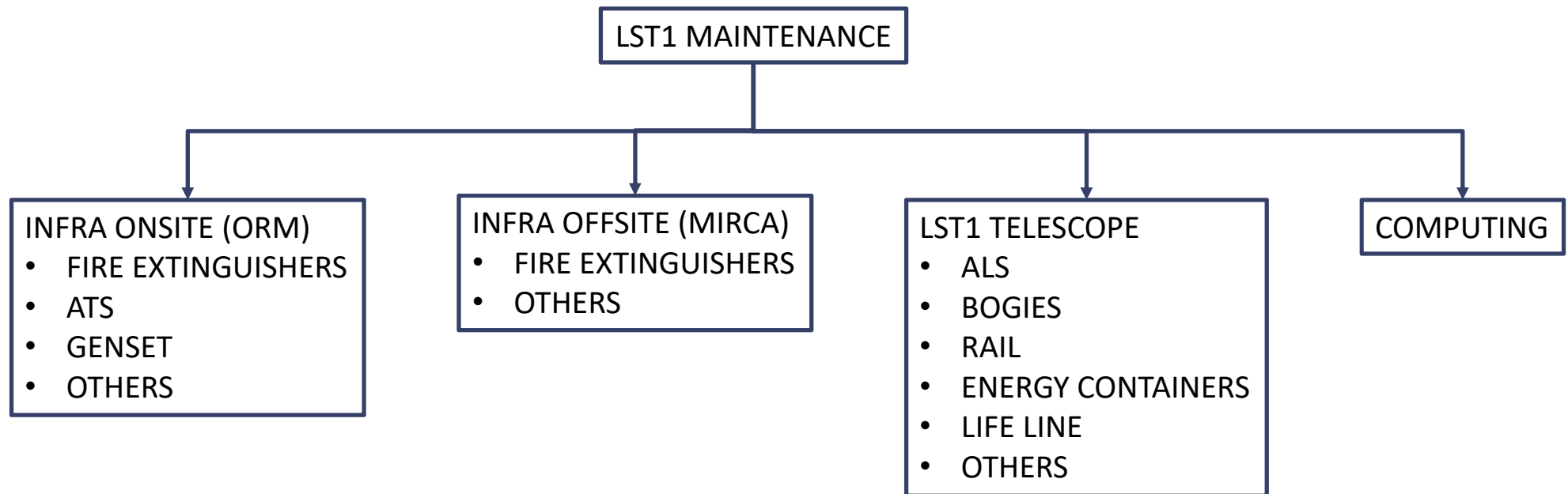


TRACKING CURRENT MAINTENANCE NEEDS



LST1 - MAINTENANCE



LST1 - INFRA MAINTENANCE (ONSITE AND OFFSITE)

INFRA MAINTENANCE

- Fire Extinguishers
- A/C
- Pest control
- Plant control
- Safety equipment *
- Cherry Picker
- ATS
- GENSET
- IT container
- Insurances
- Cleaning
- Alarm by Securitas Direct

	2019												2020											
	ENE.	FEB.	MAR.	ABR.	MAY.	JUN.	JUL.	AGO.	SEP.	OCT.	NOV.	DIC.	ENE.	FEB.	MAR.	ABR.	MAY.	JUN.	JUL.	AGO.	SEP.	OCT.	NOV.	DIC.
INFRA ONSITE																								
FE-LST-CC/DRIVE/TOWER/EXT									1												2			
FE-LST-UC1/UC2/UC3/UC4	1												1											
A/C C.C.															1	1	1	1	2	2	2	2	2	2
PEST CONTROL		1		1	1		1		1		1	1				1		1						
PLANT CONTROL										1									2					
LIFE LINE						1												1						
EPIS						1				1								1			2	2		
CHERRY PICKER (CTA)		5	5		5	3			3			3	1, 5			5	3		2					2
CENTRO DE TRANSFORMACION (IAC)																		4						
IT CONTAINER																								
IT-Visual, electronic, power and ambient inspection														1										
IT Cooling system											1								4					
IT-Fire extinguisher system								1			1								1					
FUJITSU											1					1								
INSURANCE - ORM										1												2		
ENERGY STORAGE (HITACHI)			5	5	1					1										2				
GENSET																					2			
UC																					2			
UC-FIRE EXTINGUISHER SYSTEM																								
UC-PAC																								
UC-ELECTRONIC																								
INFRA OFFSITE (MIRCA)																								
FE-MIRCA								1												2				
INSURANCE - MIRCA							1												4					
QUIRON-EVALUATION RISK Mirca									1															

OK1

NEXT INSPECTION2

PENDING3

ON GOING4

REPAIR5

PLANNING OF ACTIVITIES

OK	1
NEXT INSPECTION	2
PENDING	3
ON GOING	4
REPAIR	5

PLANNING OF ACTIVITIES

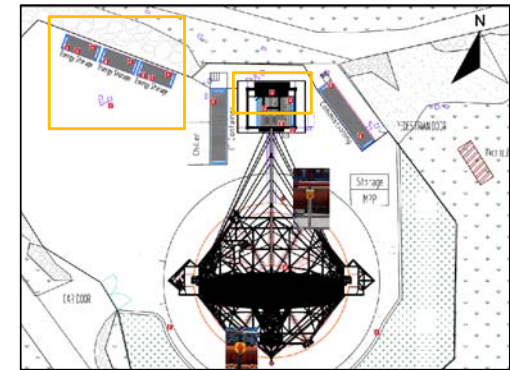
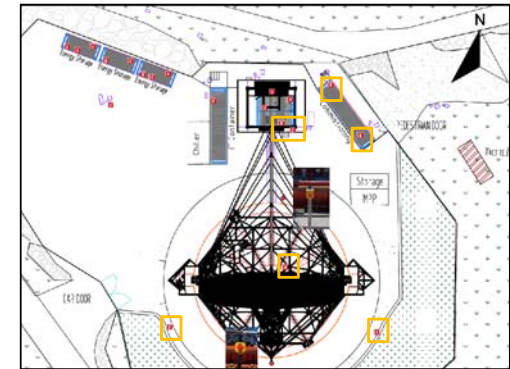
* Life Line is not INFRA

LST1 - INFRA ONSITE MAINTENANCE

Fire Extinguishers (2 batches)

NAME	PURCHASE	LAST INSPECTION				
		Cost	Manpower	Duration (min)	Date	Certificate
BATCH 1 (8)						
TOTAL	18/09/2018	72.00 €	1 person	80.00	27/09/2019	909128
BATCH 2 (12)						
TOTAL	2017	108.00 €	1 person	120.00	15/01/2020	1033

- Hired company: Extinpalma
- 1 inspection/year
- Do we need to stop the telescope? NO
- Preventive maintenance
- Payment per visit
- Standard: REAL DECRETO 513/2017, of 22nd May



LST1 - INFRA ONSITE MAINTENANCE

PEST CONTROL

PEST CONTROL						
COMPANY: APINSA						
CONTRACT 1:	27/09/2018	to	26/09/2019	COST:	449.40 €	(one year)
CONTRACT 2:	27/09/2019	to	26/09/2020	COST:	447.30 €	(one year)

COMMENT: We don't need to stop the telescope

LOCATION	INSPECTION	CERTIFICATE	REMARKS	COST	MANPOWER	DURATION
LST1	27/09/2018	38260	OK	449.40 €	1 PERSON	1 hour
LST1	18/10/2018	38261	OK		1 PERSON	1 hour
LST1	14/02/2019	38262	OK		1 PERSON	1 hour
LST1	24/04/2019	38263	OK		1 PERSON	1 hour
LST1	29/05/2019	38264	OK		1 PERSON	1 hour
LST1	15/07/2019	38265	OK		1 PERSON	1 hour
LST1	20/09/2019	66779	OK		1 PERSON	1 hour
LST1	12/11/2019	66780	OK	447.30 €	2 PEOPLE	30 min
LST1	19/12/2019	75591	OK		1 PERSON	1 hour
LST1	24/04/2020	66781	OK		1 PERSON	1 hour
LST1	23/06/2020	66782	OK		1 PERSON	1 hour
LST1	23/07/2020					
LST1	22/08/2020					
LST1	21/09/2020					
LST1	21/10/2020					
LST1	20/11/2020					

- Preventive maintenance

Juan L. Bolaños Suárez
Comerciante en

APINSA
CONTROL INTEGRAL DE PLAGAS
55 AÑOS A SU SERVICIO

Calle A. Santa Trinidad, 5
38711 San José de Broa (provincia de Santa Cruz de Tenerife)
Tel: 922 151 234
Inscrito en el RCEB con nº 0401 CAC M37

Certificado de Servicio Nº 38264

Actividad: Control de Plagas y Bioseguridad

DATOS DEL CLIENTE Y SU LOCAL

Nombre: Bta
Nº de Teléfono: 922 151 234
Dirección: Observatorio Roque de los Muchachos
Localidad: 38711 Santa Cruz de Tenerife
Actividad: Turismo
Teléfono: 922 151 234

DATOS DEL SERVICIO

☒ Vigilancia / Monitorización ☐ Tratamiento biológico

TRATAMIENTOS

☐ Tratamiento para el Control de Ratones
Tratamiento para ratones y otros roedores de la población de ratones.
Zonas a tratar: 3 comedores.
Método de Control: Ruido Químico

FECHA Y HORA

Fecha de realización del servicio: 20/11/2020 11:30 - 12:30
Fecha próxima revisión: 20/11/2020

CONFIRMADO

Contrato Nº: CUP-622-2226. Cierre: 20/11/2020

PRODUCTOS UTILIZADOS

Producto comercial	Nº registro	Plazo seguridad	Última aplicación	Modificación %	Comentarios	Zonas
No hay productos utilizados						

NOTA FINAL:

Productos en buen estado

La empresa de servicio se comprometió a realizar y ejecutar los trabajos. El cliente da su conformidad al tratamiento y cumple las condiciones e instrucciones de los productos, respetando el plazo de seguridad, siendo este último el tiempo que ha de transcurrir desde la finalización de la aplicación de productos químicos hasta el momento en que se puede volver a utilizar el espacio tratado.



LST1 – INFRA ONSITE MAINTENANCE

PLANT CONTROL

PLANTS CONTROL					
COMPANY:		DULJORAJ			
LOCATION	DATE	COMPANY	COST	MANPOWER	DURATION (HOURS)
LST1	NOV.2019	DULJORAJ	2,319.57 €	4 PEOPLE	48

- We don't need to stop the telescope
- Preventive maintenance (fire control)

Next activity: this summer



LST1 - INFRA ONSITE MAINTENANCE

PPE-EPIS

ITEM	Serial Nº	Manufacture date	Purchase date	First use	Inspection 1			
					INSPECTOR	COST	STATUS	
HARNES AVAO® BOD CROLL®FAST versión internacional. Size 0			2018 SEP	2018-DEC	Arquitectura Vertical	€ 14,00	OK (14-10-2019)	
HARNES (PATRICIA)		17H0083573514						2017 AUGUST
CROLL		17E0078115371						2017 MAY
HARNES AVAO® BOD CROLL®FAST versión internacional. Size 1			2018 SEP	2018-sep	Arquitectura Vertical	€ 14,00	OK (14-10-2019)	
HARNES (DANIEL M)		18G0141994570						2018 JULY
CROLL		18F0141879151						2018 JUNE
ABSORBICA Y 80 MGO			2018 SEP	XXX	Arquitectura Vertical	€ 9,00	OK (14-10-2019)	
Rope		17E0080730094						2017 MAY
Hook		16298J7758						25-oct-16
Hook		16298J7774						25-oct-16
ABSORBICA Y 80 MGO			2018 SEP	2018-oct	Arquitectura Vertical	€ 9,00	OK (14-10-2019)	
Rope		17E0080730101						2017 MAY
Hook		16298J7958						25-oct-16
Hook		16298J7957						25-oct-16
GRILON			2018 OCT	2018-oct	Arquitectura Vertical	€ 8,80	OK (14-10-2019)	
ROPE		18G0146863772						2018 JULY
POLEA		18F0144490430						2018 JUNE
Eslinga. ANNEAU 80cm	18073GK8399	14-mar-18	2018 SEP	2018-oct	Arquitectura Vertical	€ 3,00	OK (14-10-2019)	
Eslinga. ANNEAU 80cm ANNEAU	18073GK8400	14-mar-18	2018 SEP	2018-oct	Arquitectura Vertical	€ 3,00	OK (14-10-2019)	
Eslinga. 150 cm ANNEAU	17311GS8329	07-nov-17	2018 SEP	2018-oct	Arquitectura Vertical	€ 3,00	OK (14-10-2019)	



UNE-EN 795:2012 (Ratificada)
 Equipos de protección individual contra caídas. Dispositivos de anclaje (Ratificada por AENOR en octubre de 2012.)
 Personal fall protection equipment - Anchor devices (Endorsed by AENOR in October of 2012.)
 Équipement de protection individuelle contre les chutes - Dispositifs d'ancrage (Intérimée par l'AENOR en octobre 2012.)

f t in e y u

LST1 - INFRA ONSITE MAINTENANCE

PPE-EPIS

ITEM	Serial N°	Manufacture date	Purchase date	First use	Inspection 1		
					INSPECTOR	COST	STATUS
CARABINER OK	18E0136072 530	may-18	2018 SEP	2018-oct	Arquitectura Vertical	€ 5,00	OK (14-10-2019)
CARABINER OK	18E0136072 493	01-may-18	2018 SEP	2018-oct	Arquitectura Vertical	€ 5,00	OK (14-10-2019)
CARABINER OK	18E0136072 583	may-18	2018 SEP	2018-oct	Arquitectura Vertical	€ 5,00	OK (14-10-2019)
CARABINER OK	18E0136072 449	01-may-18	2018 SEP	2018-oct	Arquitectura Vertical	€ 5,00	OK (14-10-2019)
CARABINER OK	18E0136072 407	may-18	2018 SEP	2018-oct	Arquitectura Vertical	€ 5,00	OK (14-10-2019)
CARABINER OK	18E0136072 424	01-may-18	2018 SEP	2018-oct	Arquitectura Vertical	€ 5,00	OK (14-10-2019)
CARABINER OK	18E0136072 484	may-18	2018 SEP	2018-oct	Arquitectura Vertical	€ 5,00	OK (14-10-2019)
CARABINER OK	18E0136072 534	01-may-18	2018 SEP	2018-oct	Arquitectura Vertical	€ 5,00	OK (14-10-2019)
Rope 60m, Industrie 10.5mm	B01L109818	2018	2018 SEP	XXX	Arquitectura Vertical	€ 15,00	OK (14-10-2019)

LST1 - INFRA ONSITE MAINTENANCE

PPE-EPIS

ITEM	Serial N°	Manufacture date	Purchase date	First use	Inspection 1			Inspection 2		
					INSPECTOR	COST	STATUS	INSPECTOR	COST	STATUS
Helmet 1 - VERTEX BEST	18E0136758714	01/05/2018	2018 JUNE	18 JUNE	LST TEAM	LST TEAM	OK (9-8-19)	LST TEAM	LST TEAM	ok 18-6-20
Helmet 3 - VERTEX BEST	18E0136758644	01-may-18	2018 JUNE	18 JUNE	LST TEAM	LST TEAM	OK (24-6-19)	LST TEAM	LST TEAM	ok 18-6-20
Helmet 4 - VERTEX BEST	18E0136758673	may-18	2018 JUNE	18 JUNE	LST TEAM	LST TEAM	OK (24-6-19)	LST TEAM	LST TEAM	ok 18-6-20
Helmet 5 - VERTEX BEST	18E136758645	01-may-18	2018 JUNE	18 JUNE	LST TEAM	LST TEAM	OK (24-6-19)	LST TEAM	LST TEAM	ok 18-6-20
Helmet 6 - VERTEX BEST	15182IA7353	01-jul-15	????	2018-may	LST TEAM	LST TEAM	OK (31-5-19)	LST TEAM	LST TEAM	ok 18-6-20
JAG SYSTEM			2018 OCT	2018-nov	Arquitectura Vertical	€ 30,00	OK (14-10-2019)			OK/NO OK Date: Sign:
ANTICAIDAS	IRUDEK-01-4136-225-00A	2018 MARCH	2018 SEP	2018-nov	Arquitectura Vertical	€ 24,00	OK (14-10-2019)			OK/NO OK Date: Sign:
Helmet 7 - VERTEX VENT	19H0206262454	2019 AUG	01/09/2019	01/09/2019						OK/NO OK Date: Sign:
Helmet 8 - VERTEX VENT	19H0206262499	2019 AUG	01/09/2019	01/09/2019						OK/NO OK Date: Sign:
Helmet 9 - VERTEX VENT	19H0206262427	2019 AUG	01/09/2019	01/09/2019						OK/NO OK Date: Sign:
Helmet 10 - VERTEX VENT	19H0206262428	2019 AUG	01/09/2019	01/09/2019						OK/NO OK Date: Sign:

LST1 - INFRA ONSITE MAINTENANCE

CHERRY PICKER

Four PREVENTIVE inspections per year by **OPEIN** in 2018

- Cost: ~1900 € /year

Opein is the authorized service company of Genie in Canary Island
CTA is going to do a new maintenance contract this year

PROJECT:		TELESCOPE LST1				
EQUIPMENT:		CHERRY PICKER				
INSPECTIO	INSPECTO	ACTIVITY	REMARK	MAMPOWER (nº people)	TIME (h)	Pers-h
19/07/2018	OPEIN	REPAIR	Reparation	1	3	3.00
28/09/2018	OPEIN	REPAIR	Reparation	1	3	3.00
19/10/2018	OPEIN	REPAIR	Installation new basket	1	5	5.00
29/10/2018	OPEIN	REPAIR	Calibration and refill. The cherry picker is fine for working	1	3	3.00
15/11/2018	OPEIN	REPAIR	Last inspection after the incident with the basket	1	3	3.00
13/12/2018	OPEIN	MAINT.	Maintenance per contract	1	3	3.00
05/02/2019	OPEIN	REPAIR. GENERAL INSPECTION	Repair. Several problems	3	4	1.33
04/03/2019	OPEIN	REPAIR	Repair. To check the loss of hydraulic	1	3	3.00
29/05/2019	OPEIN	REPAIR	Repair. The machine was blocked	1	3	3.00
07/01/2020	OPEIN	REPAIR. GENERAL INSPECTION	General inspection after several problems	2	4	2.00
15/01/2020	OPEIN	MAINT.	Maintenance (oil, filters...)	1	7	7.00
24/04/2020	OPEIN	REPAIR	New battery	1	3	3.00



LST1 - INFRA ONSITE MAINTENANCE

GENSET, ENERGY CONTAINERS (4) AND ATS

OCT-2018

JUNE-2020

JULY-2020

GENSET + ENERGY CONTAINERS* by HITACHI

ACTIVITY	DATE	MAMPOWER (PEOPLE)	DURATION
	jun-18	3	8 DAYS
P+R	24-28 SEP 18	8	
R	4-11 MAR 19	4	
R	6 APR 19	1	
P (GENSET+UC)	6-9 MAY 19	10 P (6P=4D, 4P=1D)	
P	11 OCT 19 (GENSET)	3P	2D

ABB
ENERGY CONTAINER* by PEDRO BRITO
EXTINPALMA

GENSET by ERGA

SYSTEM	HIRED COMPANY	FREQUENCY	Cost (preventive)
GENSET	ERGA	1/year	€ 4,739.00
FIRE EXTINGUISHER SYSTEM	EXTINPALMA	4/year	€ 321.00
PAC	PEDRO BRITO	2/year	€ 1,797.60
FLYWHEELS, UPS, ELECTRONIC	ABB	2/year	€ 36,000.00

ATS by IAC

* It is not INFRA

LST1 - INFRA ONSITE MAINTENANCE

IT CONTAINER

SCHNEIDER maintenance contract

- PREVENTIVE and CORRECTIVE maintenance (if applicable) → ~20 k€/year
 - Visual, electronic, power and ambient inspection (1 visit/year)
 - Cooling system (2 visits/year) *This week*
 - Fire extinguisher system (4 visits/year) by Tyco *Last week*
 - EcoStruxure Asset Advisor
 - Technical assistant 24/7



FUJITSU maintenance contract

- PREVENTIVE and CORRECTIVE maintenance (if applicable) → ~17 k€/year

LST1 - INFRA ONSITE MAINTENANCE

INSURANCE, CLEANING and OTHERS

All included insurance by **CHUBB®**

- One incident and they worked very well

INSURANCES LST1	
COMPANY	CHUBB
DURATION	14-10-19 to 14-10-20
TYPE	COST
ALL INCLUSIVE	18,575.10 €
CIVIL RESPONSABILITY	3,386.19 €
TOTAL	21,961.29 €

Cleaning Company · **Clece**

- They clean the commissioning container once/week

A/C from commissioning container by local staff

Puntual corrective maintenance



LST1 - INFRA OFFSITE MAINTENANCE (MIRCA)

Fire Extinguishers

Batch 4: MIRCA STORAGE BUILDING

NAME	PURCHASE	INSPECTION 2				
		Cost	Manpower	Duration (min)	Date	Certificate
BATCH 4 (MIRCA)						
EM1	06/08/2018	9.00 €	1 person	10	06/08/2019	908026
EM2	06/08/2018	9.00 €	1 person	10	06/08/2019	908026
EM3	06/08/2018	9.00 €	1 person	10	06/08/2019	908026
EM4	06/08/2018	9.00 €	1 person	10	06/08/2019	908026
EM5	06/08/2018	9.00 €	1 person	10	06/08/2019	908026
EM6	06/08/2018	9.00 €	1 person	10	06/08/2019	908026
EM7	06/08/2018	9.00 €	1 person	10	06/08/2019	908026
EM8	06/08/2018	9.00 €	1 person	10	06/08/2019	908026
EM9	06/08/2018	9.00 €	1 person	10	06/08/2019	908026
EM10	06/08/2018	9.00 €	1 person	10	06/08/2019	908026
EM11	06/08/2018	9.00 €	1 person	10	06/08/2019	908026
EM12	06/08/2018	9.00 €	1 person	10	06/08/2019	908026
EM13	06/08/2018	9.00 €	1 person	10	06/08/2019	908026
EM14	06/08/2018	9.00 €	1 person	10	06/08/2019	908026
TOTAL		126.00 €	2 people	70.00	06/08/2019	908026

Hired company: Extinpalma

Do we need to stop the telescope? NO

Preventive maintenance

LST1 - INFRA OFFSITE MAINTENANCE (MIRCA)

INSURANCE and OTHERS

Insurance by  **MAPFRE**

INSURANCE MIRCA STORAGE BUILDING	
COMPANY	MAPFRE
TYPE	MULTI RISK
DURATION	18-7-20 to 18-7-21
COST	4,863.63 €

Alarm by

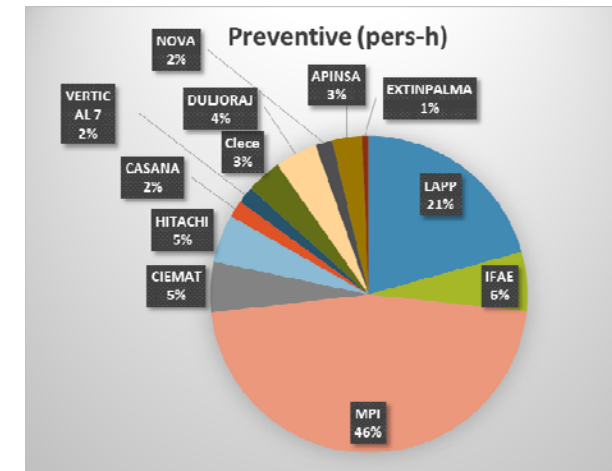
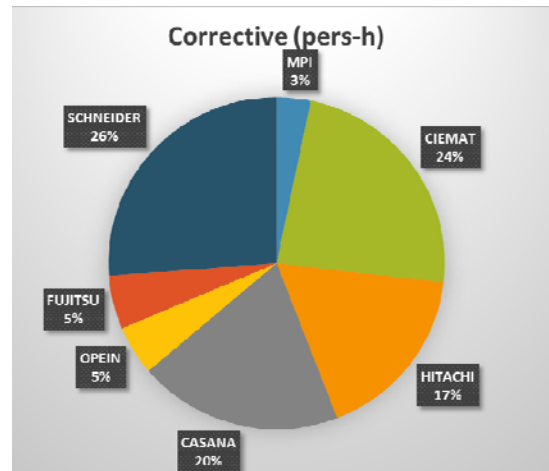
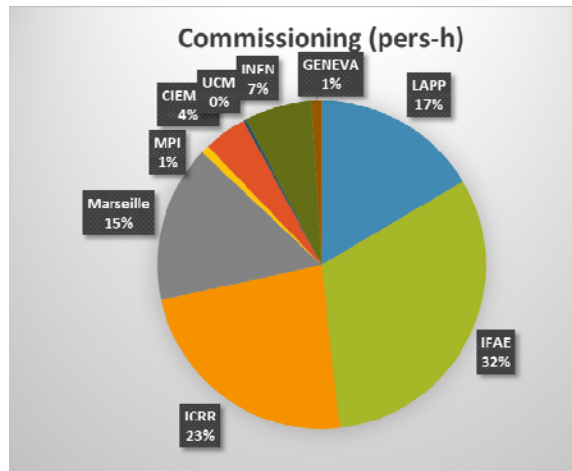


ALARM	
COMPANY:	SECURITAS DIRECT
LOCATION:	MIRCA STORAGE BUILDING
COST	
INSTALATION	647.35 €
MANTEINANCE/MONTH	45 €

Other maintenance from the owner of the building (e.g. to paint the building)

LST1 - MAINTENANCE

Activities in 2019



2019	Hours	Person-h
Commissioning	3368.00	2472.00
Corrective	306.00	152.73
Preventive	375.11	232.27

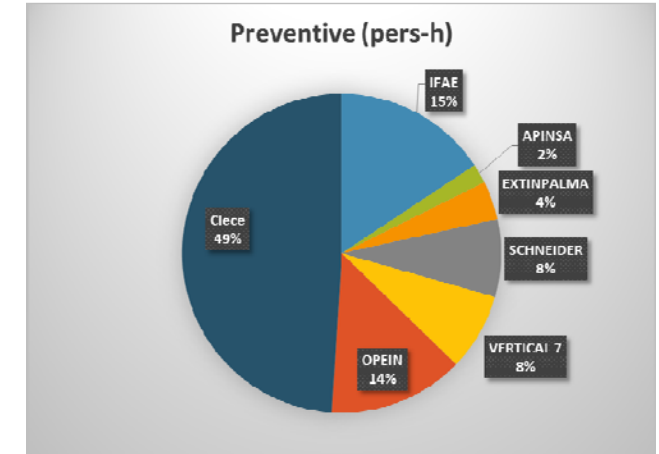
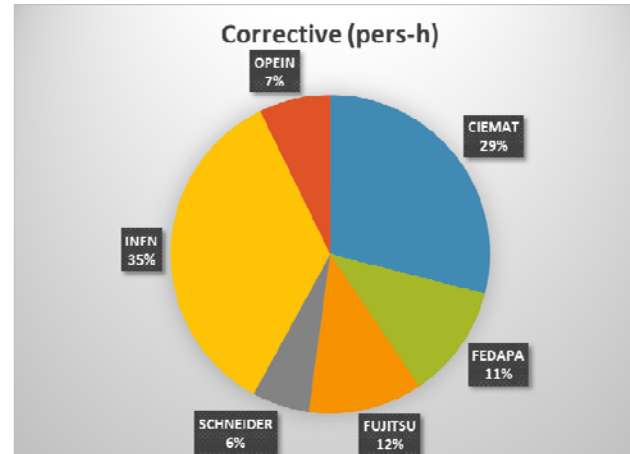
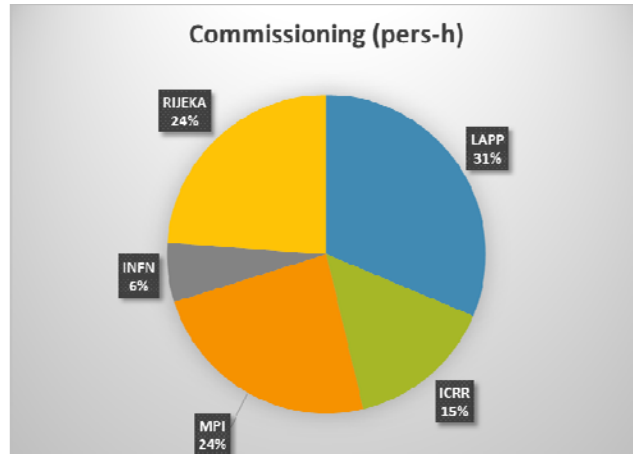
Telescope manager and shifters time is not included here.

Neither most of the work done on remote.

Information from LST1
Commissioning Excel file

LST1 - MAINTENANCE

Activities in 2020



2020	Hours	Person-h
Commissioning	344.00	268.00
Corrective	95.00	71.00
Preventive	79.00	51.00

Information until July 2020

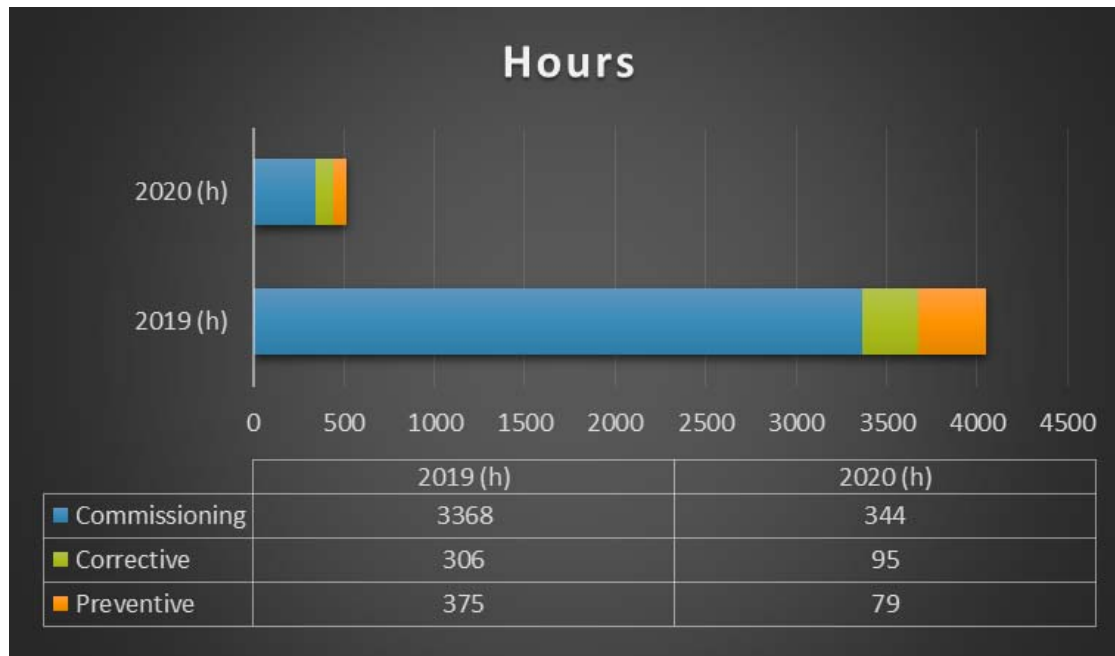
Covid-19: no activities during 2 months

Telescope manager and shifters time is not included here.
Neither most of the work done on remote.

Information from LST1
Commissioning Excel file

LST1 - MAINTENANCE

Activities in 2019 Vs 2020



2019	2020
12 months	7 months
No incidents	- Storm incident (feb)→ corrective activities - Covid-19 (during 2 months, no activities)
First year of commissioning	Several activities of commissioning are finished

Information from LST1
Commissioning Excel file

LST1 - MAINTENANCE

Tracking and traceability

WASTE MANAGEMENT PROCEDURE

PURCHASE

- Materials
- Spares
- Tools
- Others

PURCHASE ORDER	
[Company Name] [Your Company Name]	
[Order Number] [Date of Order]	
[Item Description] [Quantity]	
[Supplier Name] [Address]	
[Contact Person] [Phone Number]	
[Signature] [Date]	



RECEPTION ON SITE



STORAGE OR INSTALLATION OR CONSUMPTION

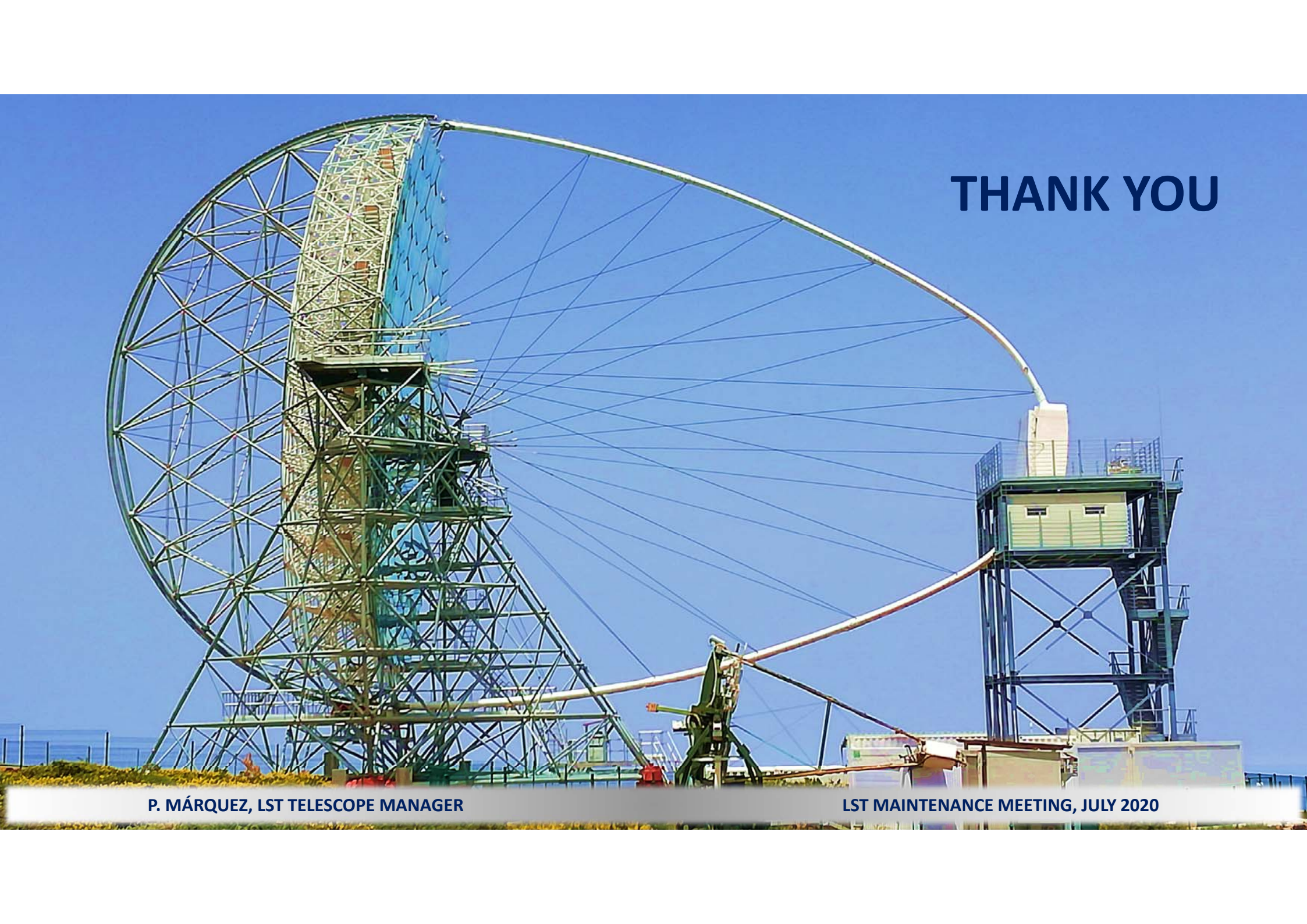


WASTE



INVENTORY

- Items
- Qty
- Location
- Destination
- Reference documents
-



THANK YOU

P. MÁRQUEZ, LST TELESCOPE MANAGER

LST MAINTENANCE MEETING, JULY 2020