


ITSC/OCC/SOP/NOP02.004	Monitoring & Reporting of Equipment & System Faults
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 ITSO Division	Division/Section: ITSO Division /ITSO OCC Traffic Operations	Rev No. 2
	Document No: ITSO/OCC/SOP/NOP02.004	Effective Date: Xx Dec 2020
	<h1>Monitoring & Reporting of Equipment & System Faults</h1>	

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DOCUMENT CONTROL

REV	DOCUMENT TITLE & COPY NUMBER	Date	Prepared by	Reviewed by	Approved by
0	Monitoring & Reporting of Equipment & System Faults Copy____of ____	15 th December 2009	Benson Khoe (SOE)	Alfred Loh (SOE)	Soh Ling Tim (MOPN)
1	Monitoring & Reporting of Equipment & System Faults Copy____of ____	XX October 2013	Chiam Zhi Wei (DysOE) Chua Teck Leong (AOM, ITSO OCC)	Ng Soon Han, Frankie (DOM, ITSO OCC)	Yeo Se Lay (SM,Ops)
2	Monitoring & Reporting of Equipment & System Faults Copy____of ____	XX December 2020	Daniel Wu (AOM) Lye Keng Fatt (DM, ITSO OCC)	Ng Soon Han, Frankie (Mgr, ITSO OCC)	Yeo Se Lay (DDIT)

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AMENDMENT HISTORY RECORD

Rev. No.	Effective Date of Change	Section & Sub-Section Amended	Amendments/ References	Party Requesting for Change
1	XX Oct 2013	Whole Document	Due to organization change of division name from ITSC to ITSO.	DOM, ITSO OCC
2	XX Dec 2020	Whole Document	Due to change of Staff Designations in ITSO OCC. Delete SOE, insert DM Delete DySOE, insert DyAM	Mgr, ITSO OCC

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Section 1. Description

1.1.1 Describes in brief the monitoring of the various systems in ITSO OCC and the process of handling fault.

1.1.2 All system / equipment faults shall be reported to the Fault Coordinator except road furniture damage, which will be reported by the DM, DyAM or OE. FC will verify and report the fault respectively.

1.1.3 Whereas the monitoring of equipment status although the FC is mainly responsible but by virtue all ITSO OCC personnel uses these equipment, all ITSO OCC personnel shall assist in this area of fault monitoring.

1.1.4 FC shall monitor all equipments and systems failure, error and fault in ITSO OCC and issue corrective maintenance work orders to respective contractors

1.1.5 Depending on the severity of fault or failure that causes impact to ITSO OCC operations, FC shall inform the Duty DM and DyAM. At the same time FC shall inform the respective and relevant LTA maintenance officer in the order of correct escalations.

1.1.6 FC shall follow up with the fault and failure of the system or equipment until full rectification has been done.

Section 2. Personnel Involved

2.1.1 All OCC operations staff.

Section 3. Process

Sub-section 3.1 Systems & Equipment Fault Monitoring and Reporting

3.1.1 The details of the various equipment and systems used and monitored by ITSO OCC can found in ITSC/OCC/SOP/GEN01.003

3.1.2 When a fault is first detected, the person who first detected the fault shall report it to the FC.

3.1.3 FC shall determine the equipment or system having fault falls into which category (Refer to flow chart in Attachment 2 for details). Note for any traffic lights within Changi Airport boundary is under the charge of CAAS. Any faults involving these traffic lights to direct it to CAAS on contact number 6542 1122

3.1.4 The FC shall call contractor and send corrective maintenance work order (refer to ITSC/OCC/WM/SYS03.006), as for other category only a phone call would suffice (refer to Attachment 1).

3.1.5 Contractors shall acknowledge the fault work order and rectify the fault within the specified response and downtime.

3.1.6 Once fault has been fully rectified, FC shall verify the equipment serviceability status, acknowledge rectification completion and record down the rectified timing.

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3.1.7 In the event the failure or fault which caused severe impact to operations are not rectified within the specified response and downtime, FC shall inform DM and DyAM and inform the respective and relevant LTA maintenance officer in the order of correct escalations

Section 4. Abbreviations

FC Fault Coordinator
 ITSO Intelligent Transport Systems
 Operations
 OCC Operations Control Center
 OE Operations Executive
 DM. Deputy Manager
 DyAM Deputy Assistant Manager

Section 5. References & Attachments

1. Intelligent Transport Systems Center (Operations), Integrated Standard Operating Procedures

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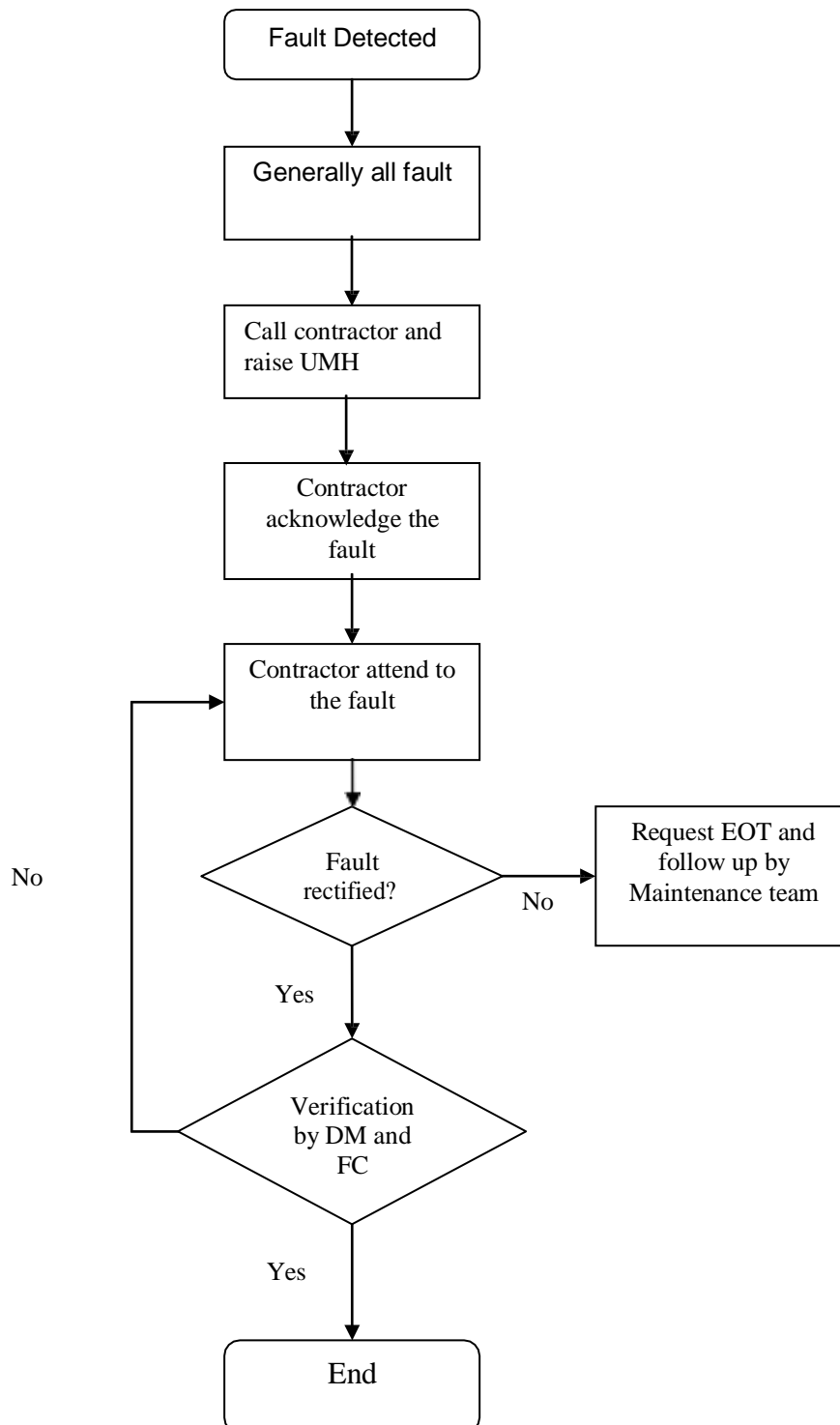
ATTACHMENT 1 - GLIDE REGIONAL COMPUTER (RC) CABIN LIST

Region	Location	CCT Ref No	Cabin Tel	Contact Numbers
RC1, RC2, RC4, RC17	ITS Centre 3 rd Storey Computer Room	0474261 (2 Mbps)		ATS Traffic Pte Ltd (RC3-RC19)
RC3	Jln Bt Merah / CTE Flyover	0474262 (64 kbps)	62703203	Contractors: YA Lim HP: 92285205
RC5	Braddell Rd / Lor 6 Toa Payoh F/O	0474269 (64 kbps)	62580369	Mansor HP: 81613117
RC6	Fort Rd / ECP F/O	0474271 (64 kbps)	63464996	Philip HP: 96159898
RC7	Braddell Rd / CTE F/O	0474276 (64 kbps)	62838781	TYCO Engineering (RC1-RC2) CM/VAX/Corba
RC8, RC16	Jurong Town Hall Rd / PIE F/O	0474278 (64 kbps)	65601634	Contractors: Leow HP: 93691751
RC9, RC10, RC15	Lentor Ave / SLE F/O	0474315 (128 kbps)	65528854	Ridzuan HP: 96195248
RC11, RC12	Loyang Ave / TPE F/O	0474317 (64 kbps)	67828517	LTA: Chong Shaw Feng HP: 96565106
RC13, RC14	Mandai Rd / BKE F/O	0474321 (64 kbps)	63660264	Wai Keat HP: 91724641 Lincoln Wong HP: 93200430

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ATTACHMENT 2

General Overview Fault Reporting Flowchart



ATTACHMENT 3 - TECHNICAL ALARM LIST (i-TRANSPORT SYSTEM)

Technical Alarm			
S/no	Equipment class	description	attributes
1	TID / TMD	graphic module defect	dsp
		module line 1 defect	ds1
		module line 2 defect	ds2
2	TED / TTD	module line 1 defect	ds1
		module line 2 defect	ds2
		module line 3 defect	ds3
3	TSD	graphics module defect	dsp
4	LUS	arrow bubble defect	daa
		amber cross bubble defect	dab
		red cross bubble defect	dac
5	VT900 (video track)	checksum failure	dac
		SSYFAIL on VME Module Slot	das
6	Video incident detector	detection zone failed	daz
		camera failed	dac
7	Video matrix	communication defect between FELS and Matrix	dsc
8	Jet fan	tripped	dst
		thermal overload	dso

		running fault	dsr
		control fault	dsc
		box fan capacity shortage	dsb
9	Tunnel section	box fan capacity shortage	dss
10	Carbon Monoxide Meter - internal	meter fault	dsm
11	Carbon Monoxide Meter - external	meter fault	dsm
12	Visibility Meter	meter fault	dsm
13	Fan Panel	emergency fan panel powered indicator	dsp
14	Split Aircon	control fault	dsf
		tripped	dst
15	Photometer and Boost Lighting Control	general fault	dsg
		light level indicator fault	dsl
16	Boost Lighting Switching Unit	control indicator fault	dsc
		boost light switch unit powered	dsp
17	Tunnel Main Pump	control fault	dsf
		tripped	dst
		high bearing temperature	dsb
18	Tunnel Main Sump	main sump not powered	dsp
		level switch failure	dss
		level switch storage chamber main sump	dsc

		circuit breaker undefined	dsc
		protection relay tripped and circuit breaker closed	dsb
30	High Voltage Transformer Feeder	protection relay tripped	dst
		circuit breaker undefined	dsc
		protection relay tripped and circuit breaker closed	dsb
31	High Voltage DC Power Device	battery low alarm	dsb
		battery charger failure	dsc
		DC bus bar under-voltage	dsv
32	LV MDB Incoming Feeder	protection relay tripped	dst
		circuit breaker undefined	dsc
		protection relay tripped and circuit breaker closed	dsb
33	LV MDB Outgoing Feeder	protection relay tripped	dst
		circuit breaker undefined	dsc
		protection relay tripped and circuit breaker closed	dsb
		control fault	dsf
34	LV DC Power Device	battery low alarm	dsb
		battery charger failure	dsc
35	LV Diesel Generator	generator running	dsr
		battery charger low	dsb
		protection relay tripped	dst
		circuit breaker undefined	dsu
		generator fault	dsg
		battery charger failure	dsc
36	LV Automatic Transfer Switch	circuit breaker undefined	dsc

19	De-watering Pump	control fault	dsf
		tripped	dst
20	Cleaning Pump	control fault	dsf
		tripped	dst
21	Vehicle Door	vehicle door not closed	dsc
22	Pedestrian Door	pedestrian door not closed	dsc
23	Emergency Staircase	tunnel door opened	dst
		street door opened	dss
24	Pressurization Fan	control fault	dsc
		pressurization fan tripped	dsp
25	ES Normal Fan	normal fan tripped	dst
26	HV Public Utility Incoming Feeder Power and Breaker	HV incoming feeder protection relay tripped	dst
		HV PUB incoming feeder circuit breaker undefined	dsb
		protection relay tripped and circuit breaker closed	dsc
27	High Voltage Bus Coupler	all three circuit breakers are closed	dsa
		circuit breaker undefined	dsc
28	High Voltage Outgoing Feeder	protection relay tripped	dst
		circuit breaker undefined	dsc
		protection relay tripped and circuit breaker closed	dsb
29	High Voltage Incoming Feeder from other Building	protection relay tripped	dst

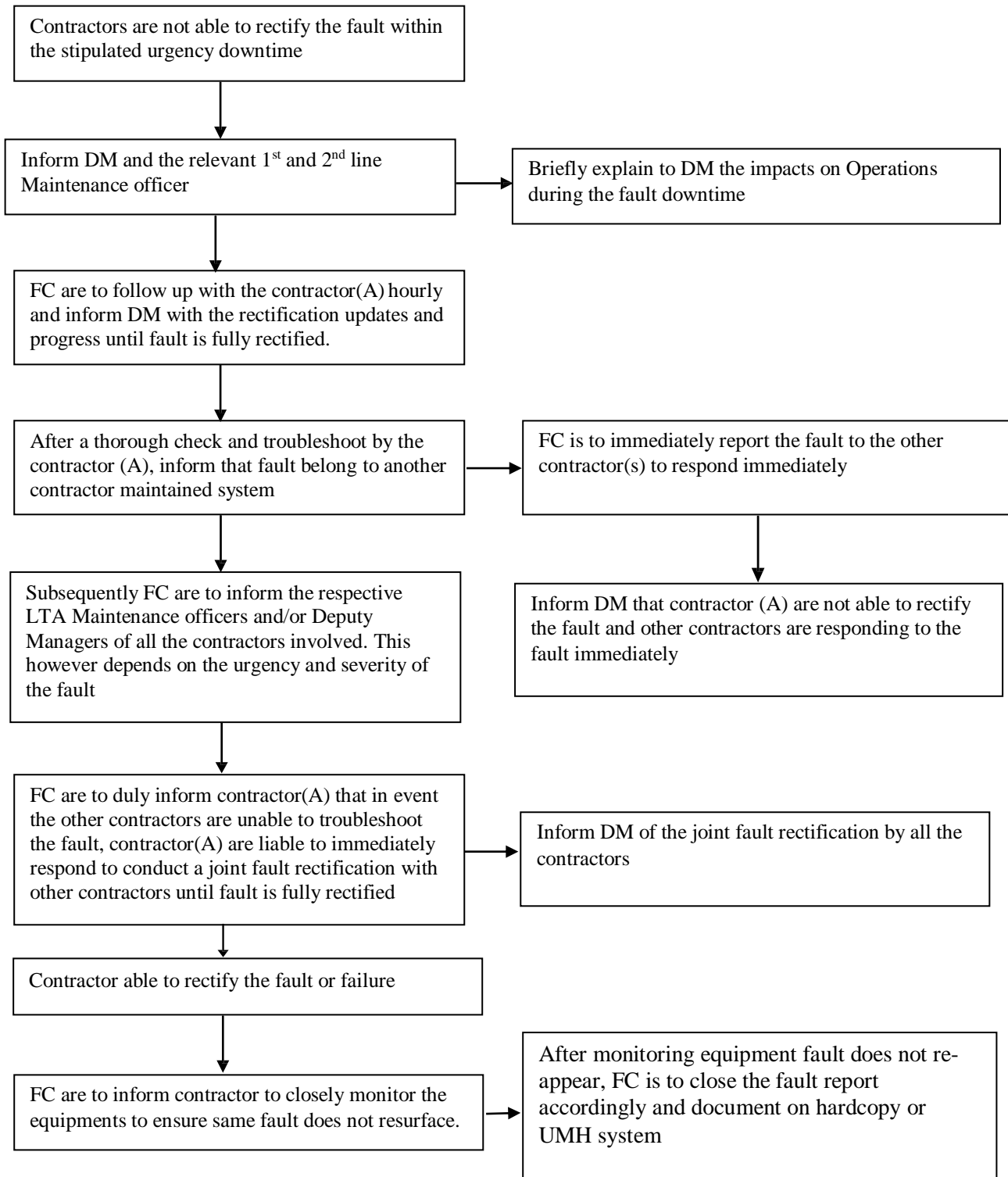
37	LV Manual Transfer Switch	circuit breaker undefined	dsc
38	LV Emergency Panel Outgoing Feeder	protection relay tripped	dst
		circuit breaker undefined	dsc
		protection relay tripped and circuit breaker closed	dsb
39	LV UPS	UPS battery low	dsb
		UPS high temperature indicator	dst
		UPS charger failure	dsc
		UPS room fan coil stopped	dss
40	LV UPS Normal Circuit Breaker	circuit breaker undefined	dsc
41	LV UPS Maintenance Circuit Breaker	circuit breaker undefined	dsc
42	LV Annunciator Panel	Panel alarm	dsf
43	LV Bus Coupler	alarm	dsa
		circuit breaker undefined	dsc

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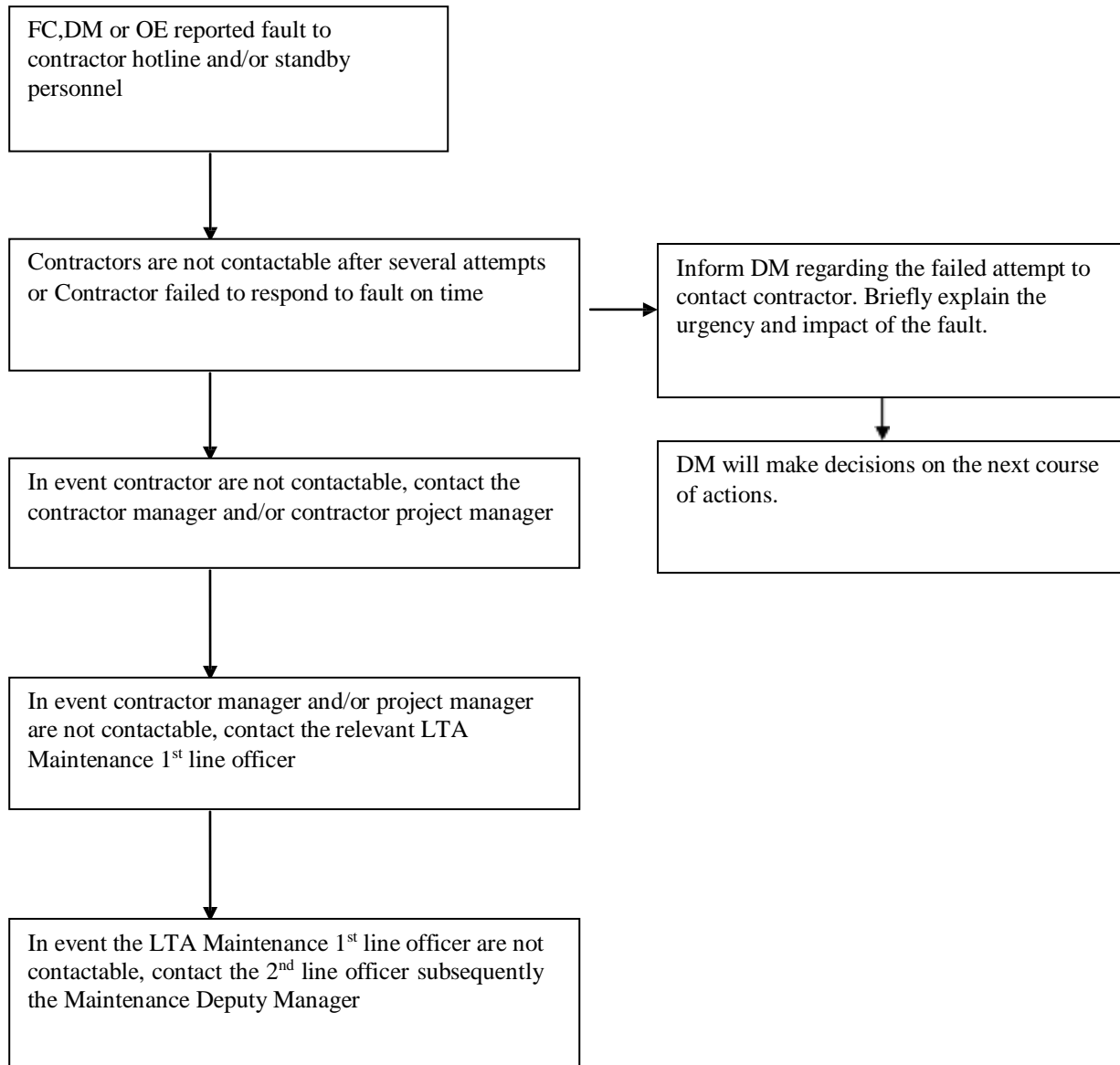
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3	EMAS VMS FAULT FLOWCHART	6
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5	EMAS SURVEILLANCE FAULT FLOWCHART	8
6	FCT TUNNEL EQUIPMENT FAULT FLOWCHART	9
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8	GLIDE RC AND CM FAULT FLOWCHART	11
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10	GLIDE TRAFFIC LIGHT FAULT FLOWCHART	13
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13	UMH FAULT FLOWCHART.....	16
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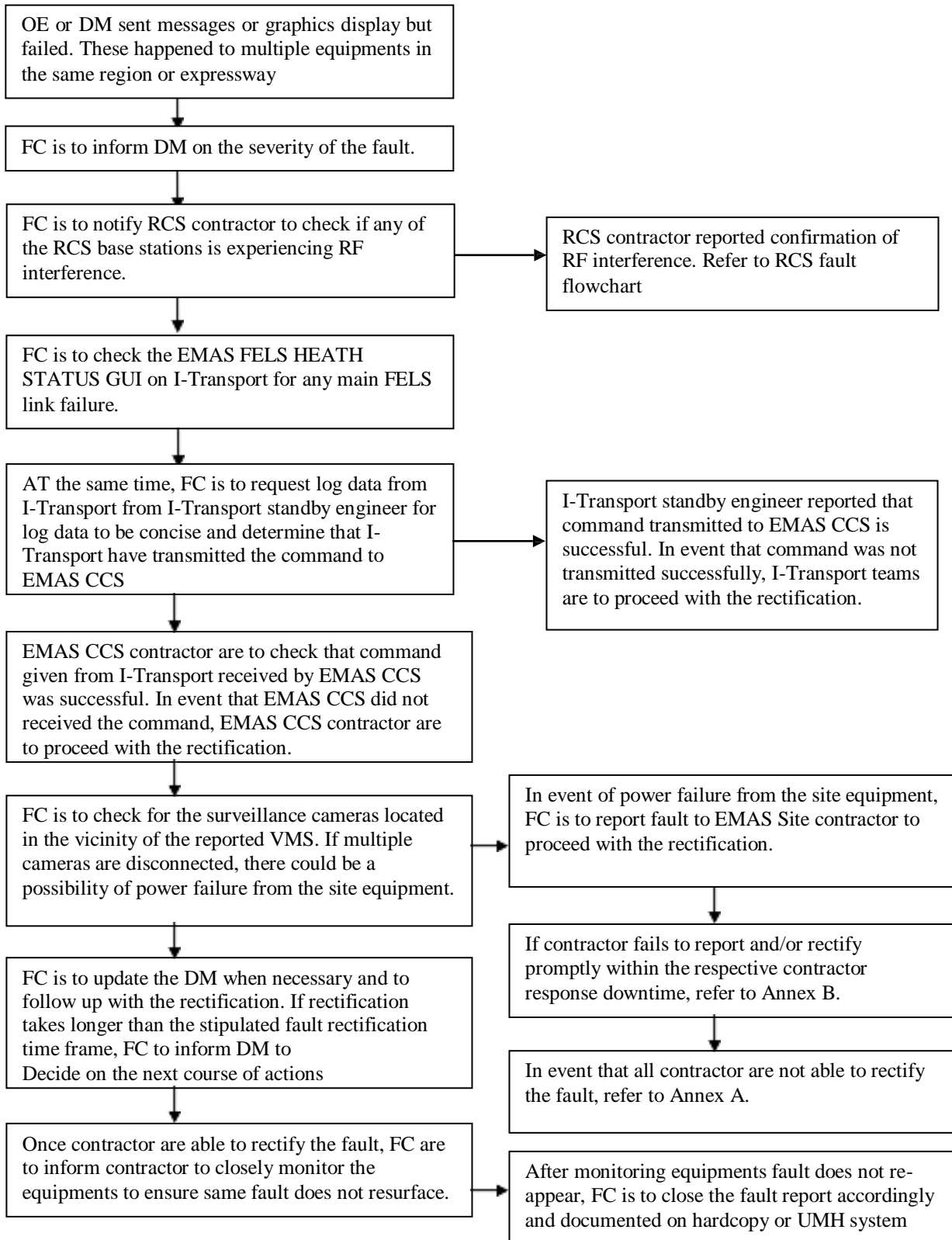
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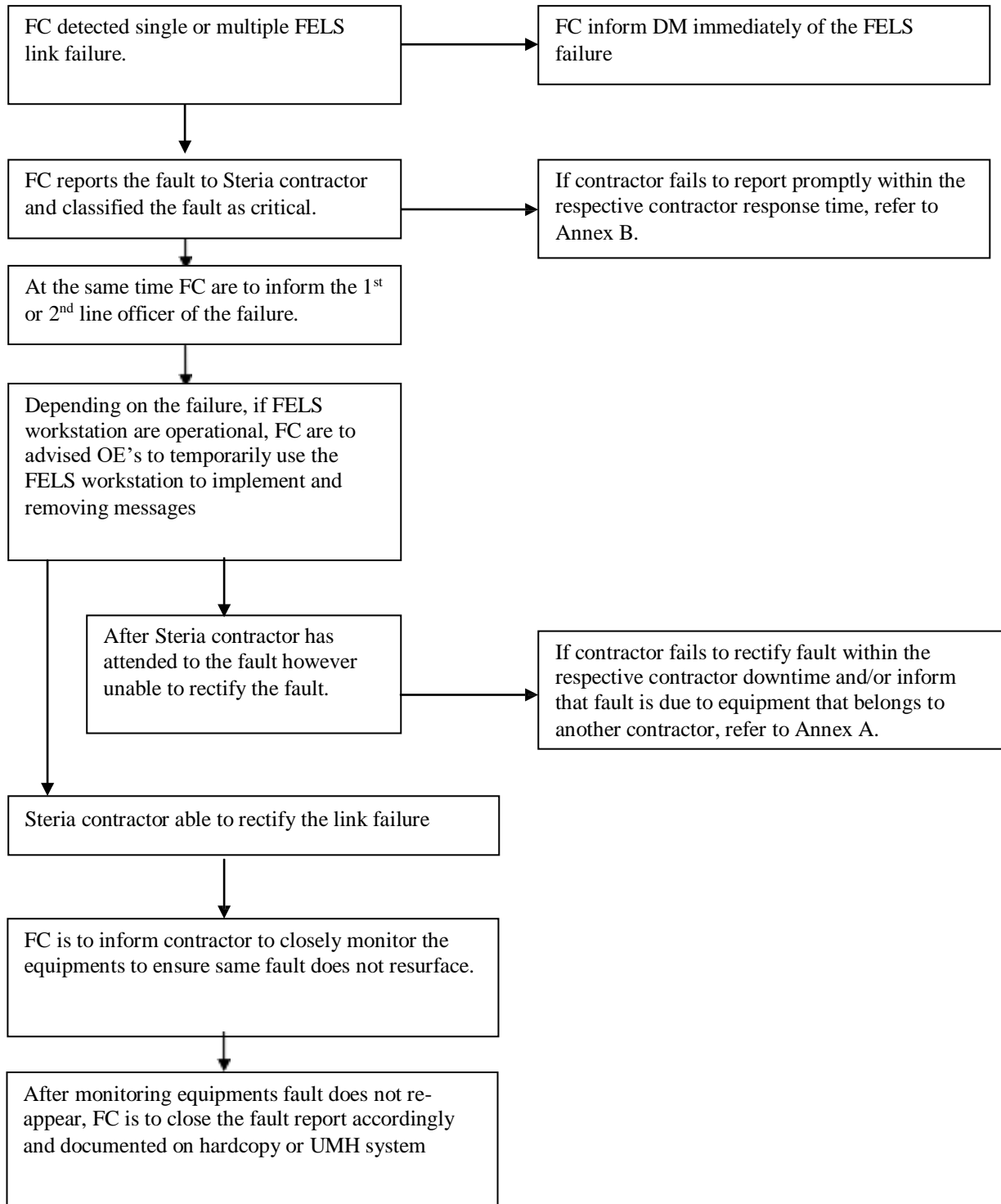
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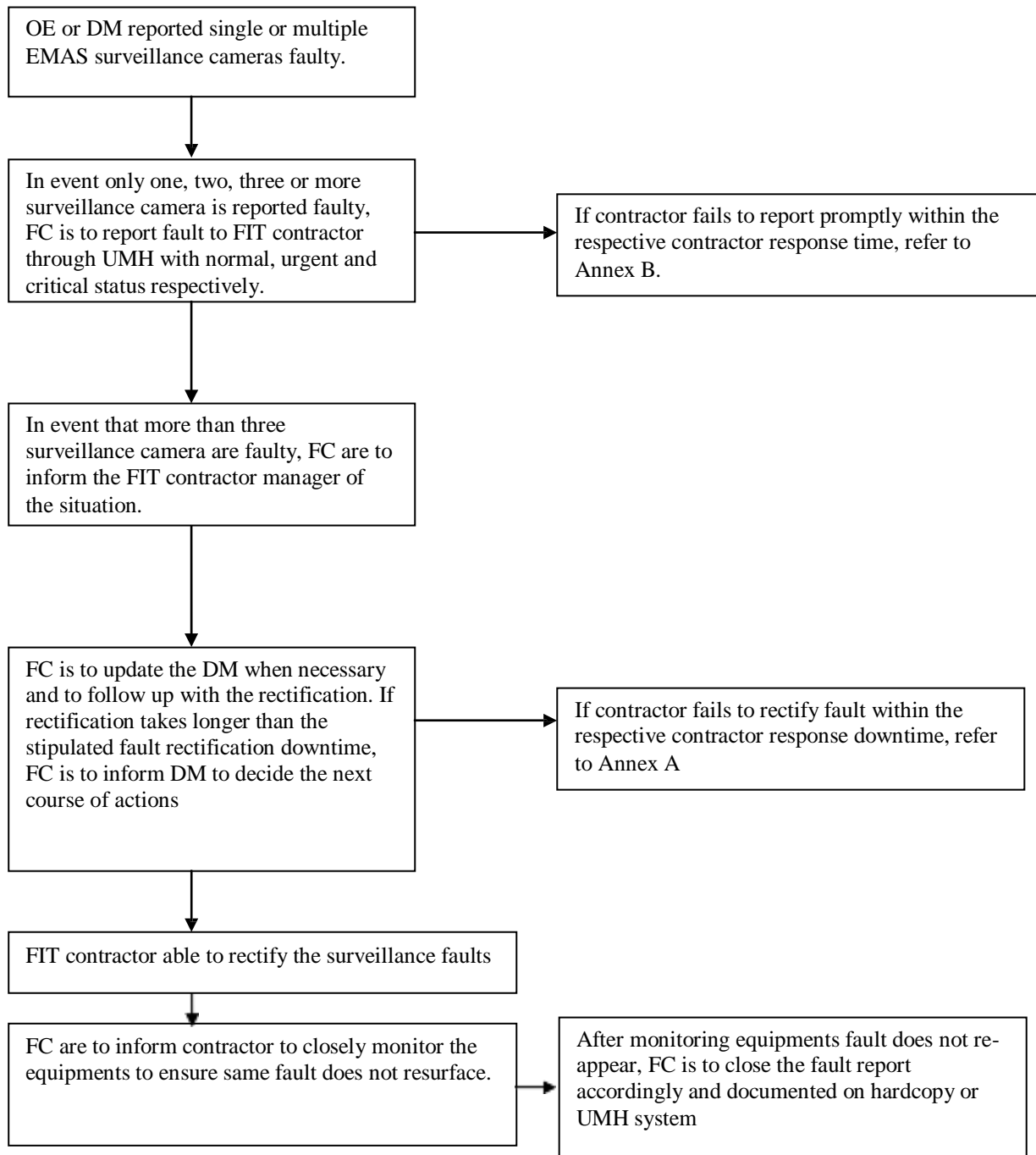
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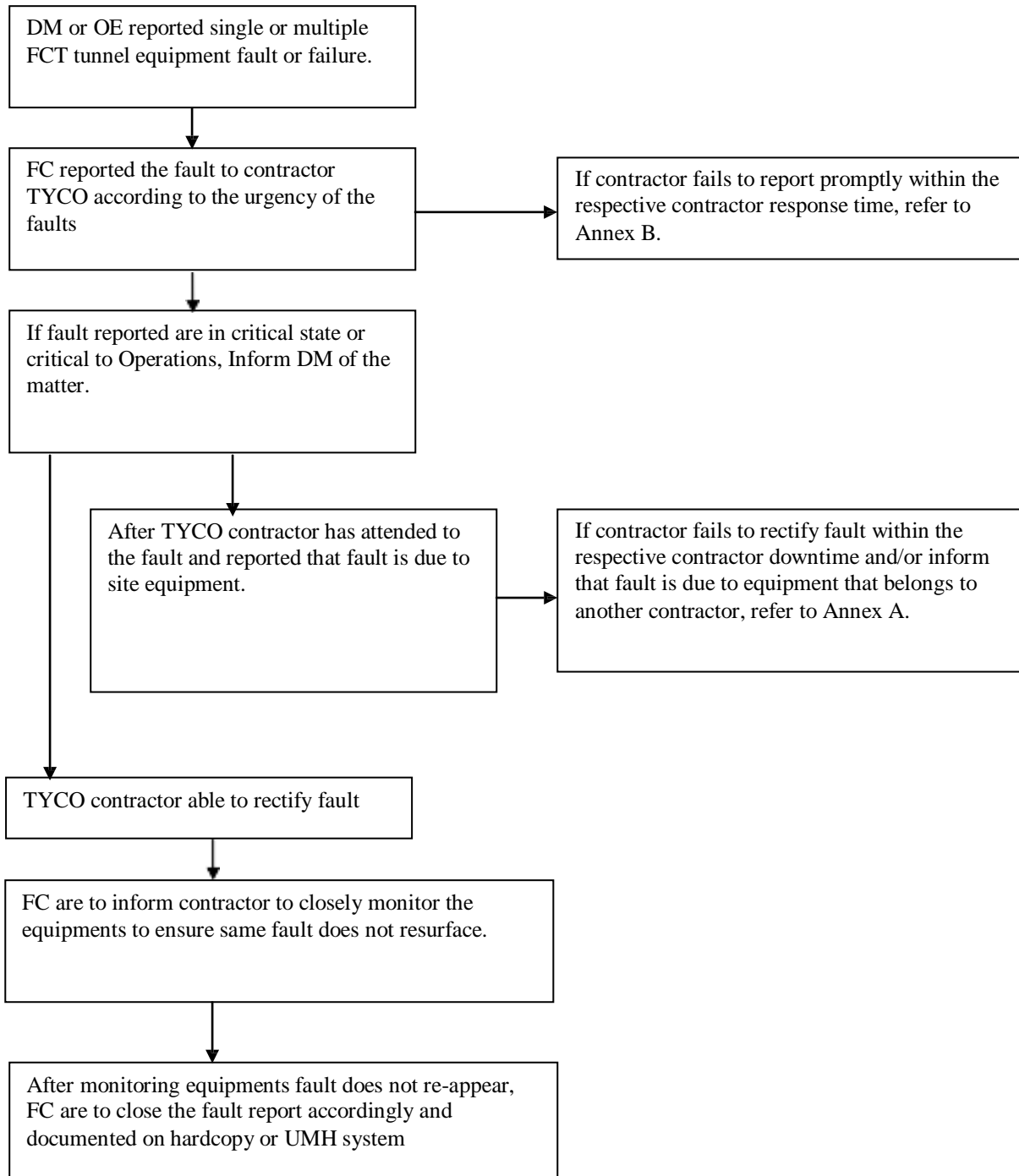
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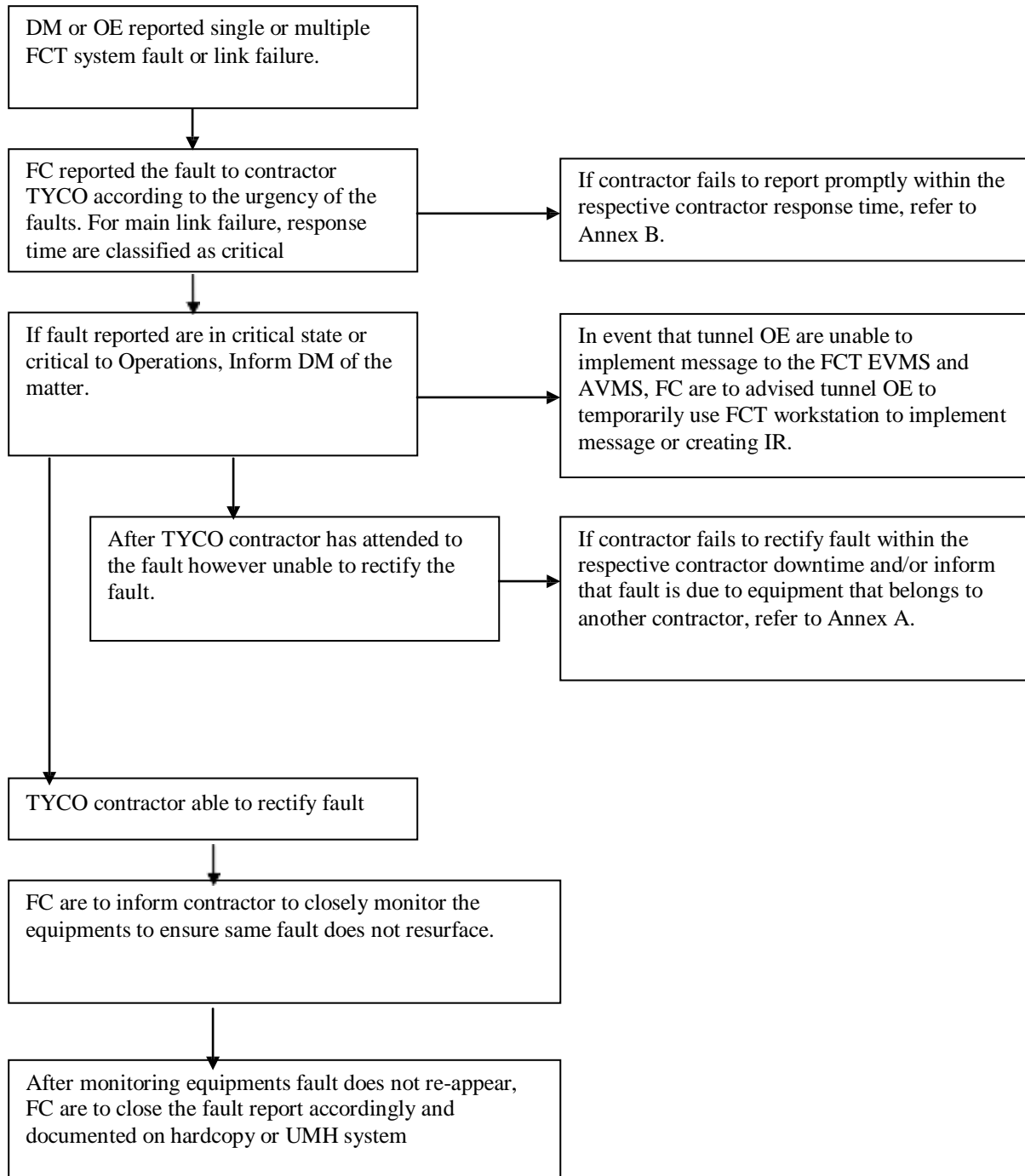
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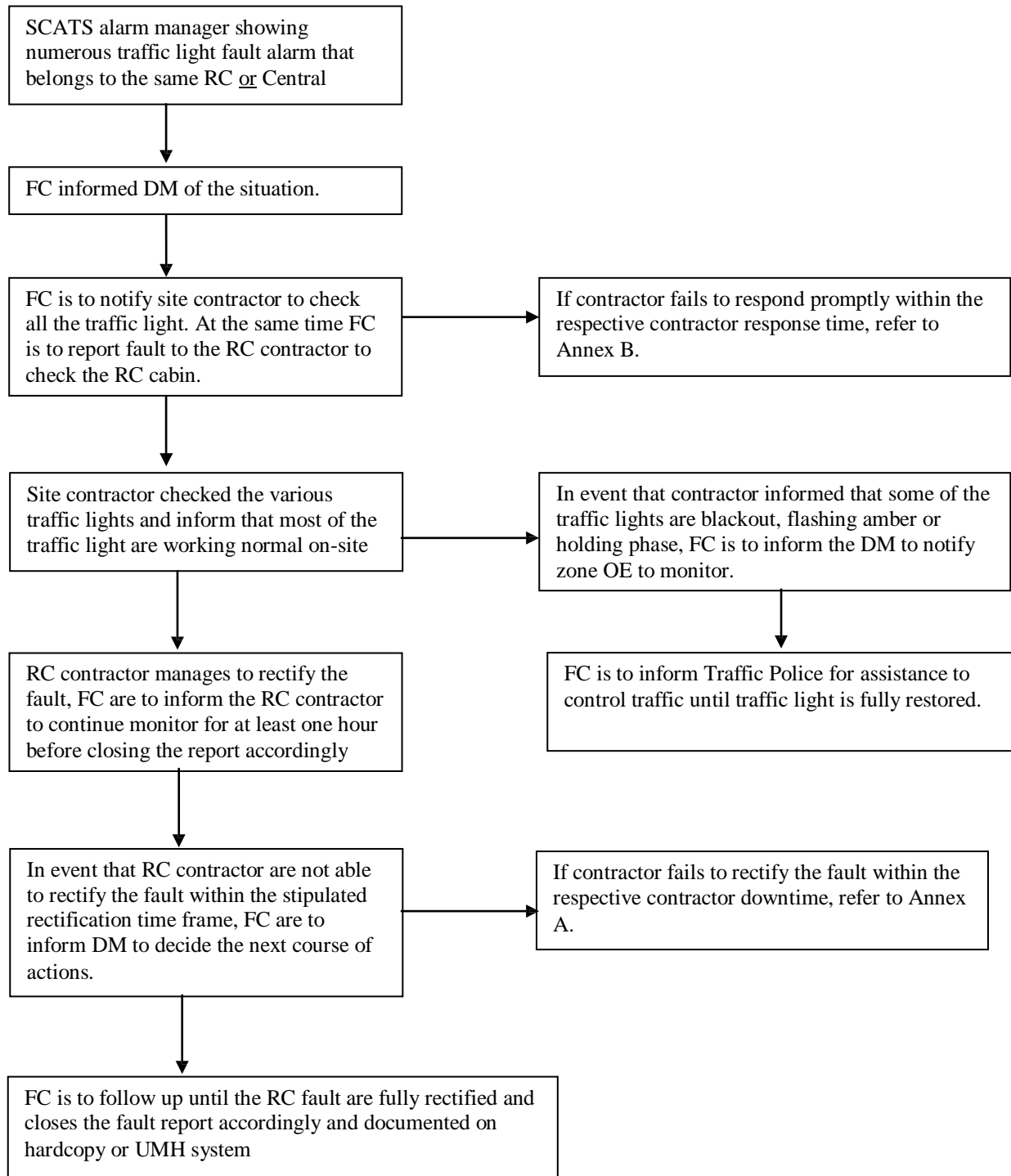
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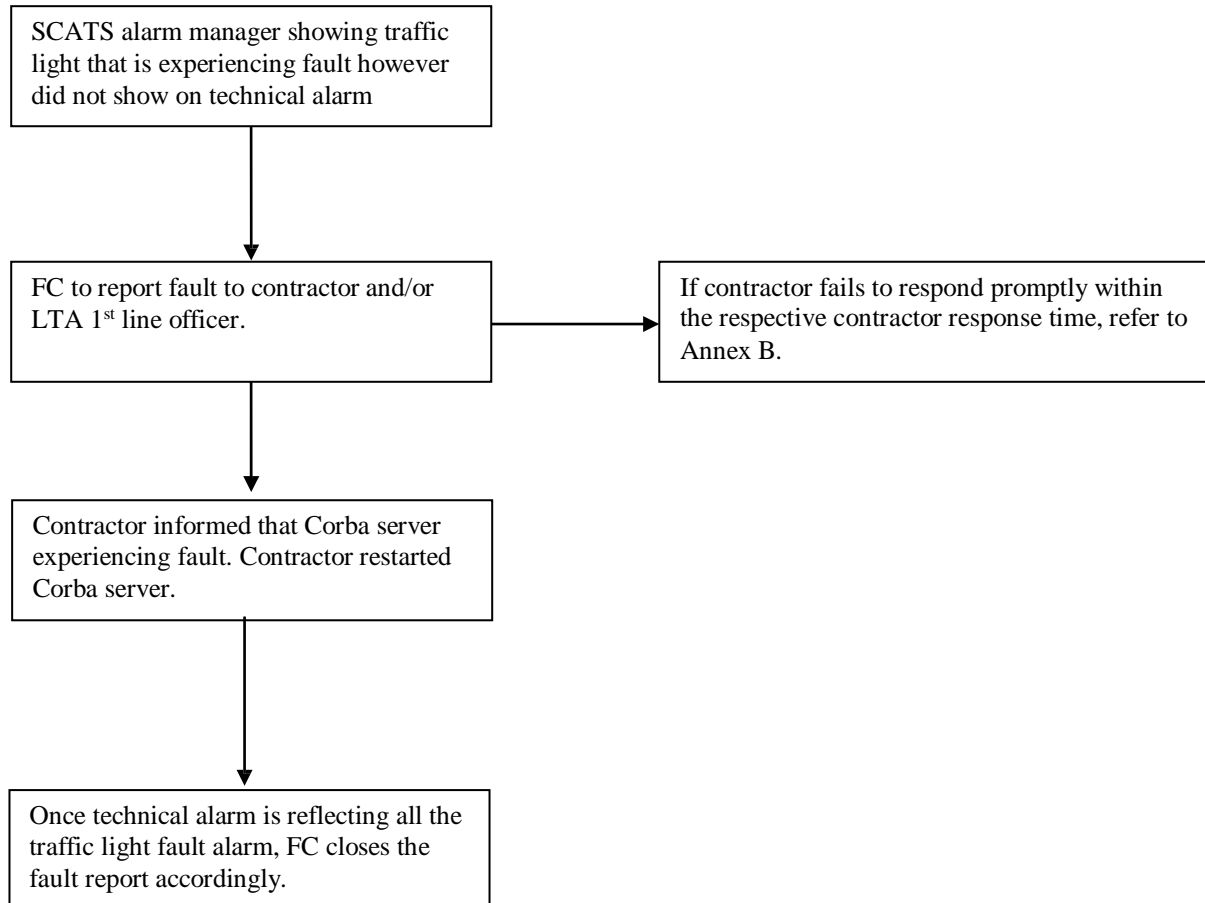
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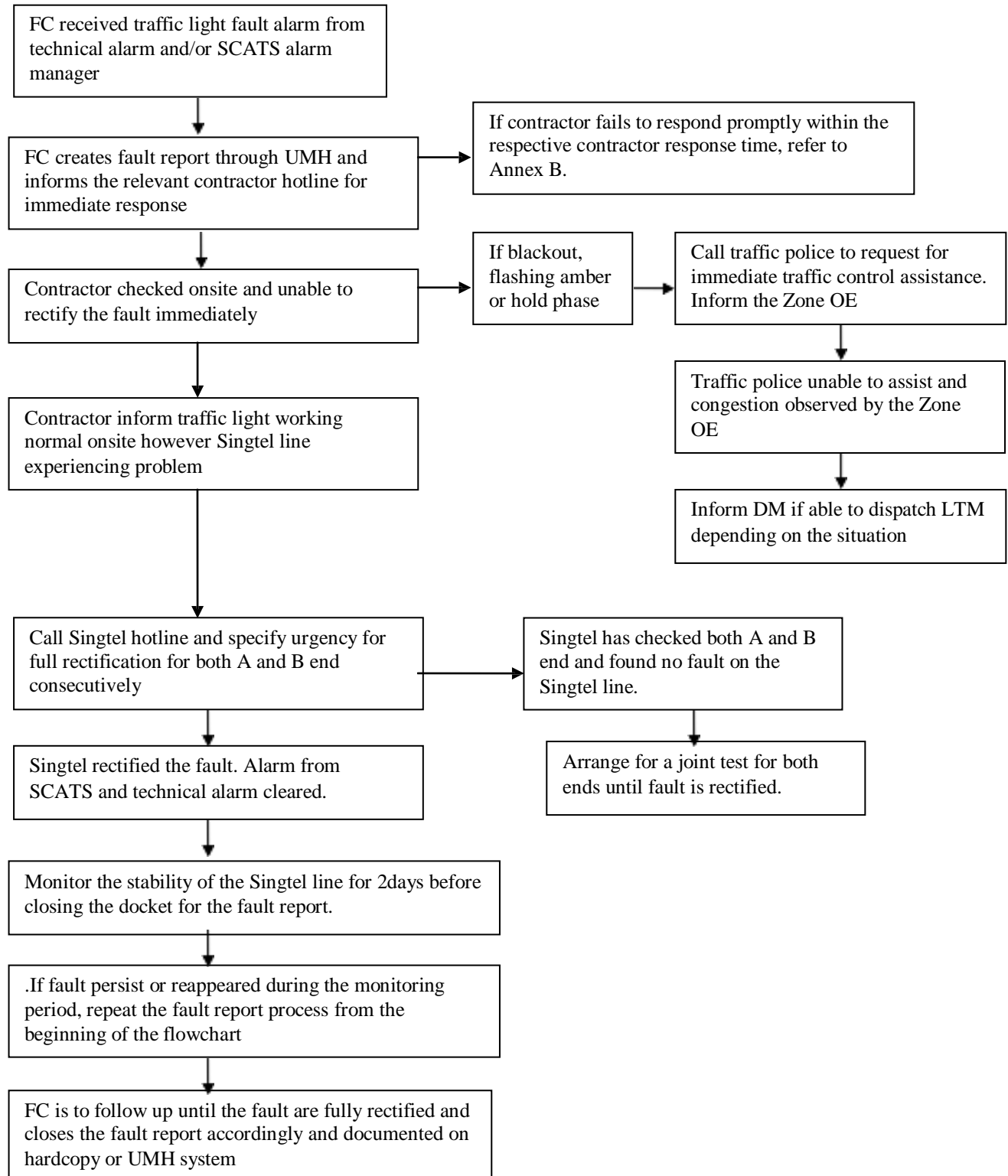
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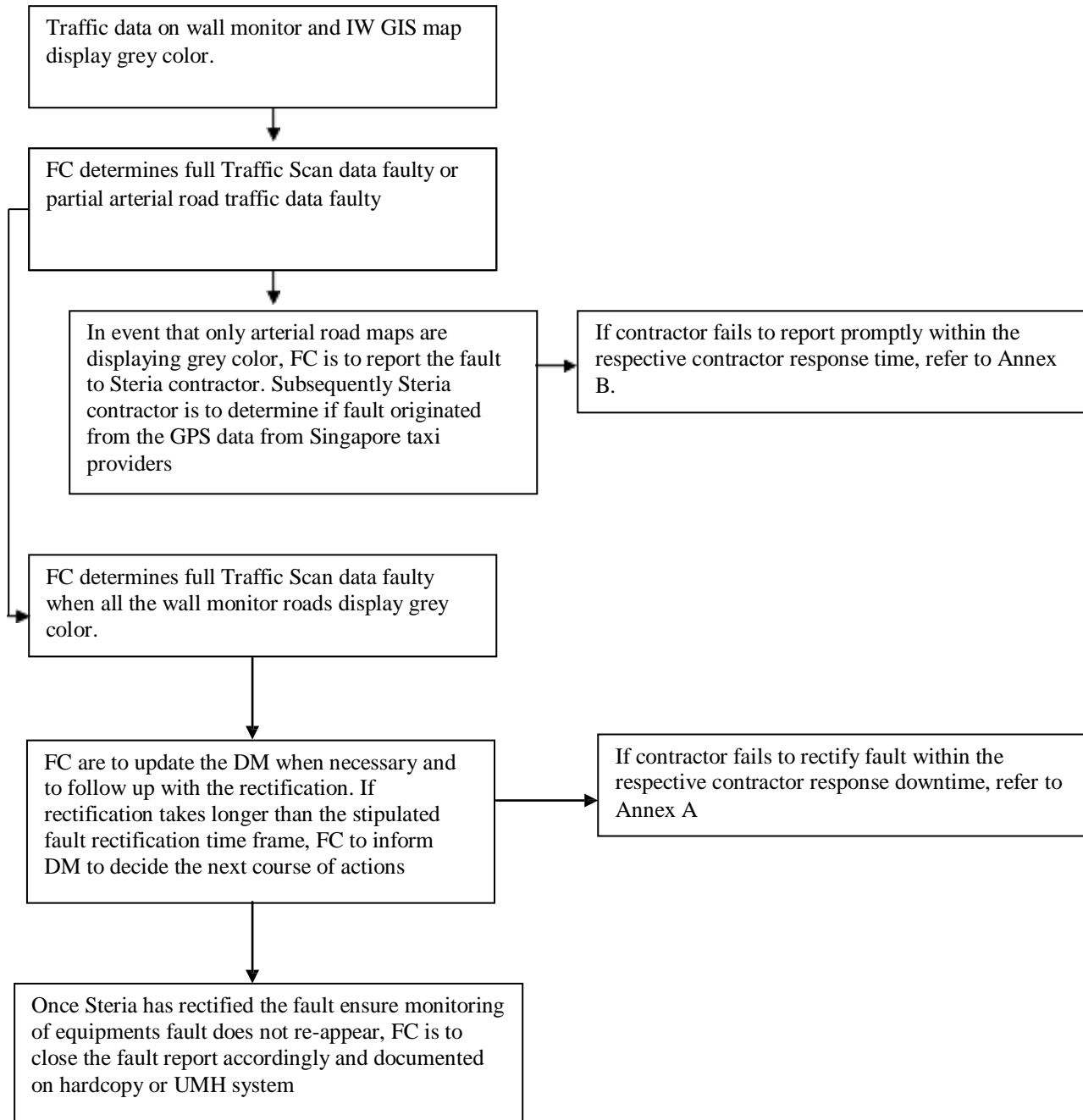
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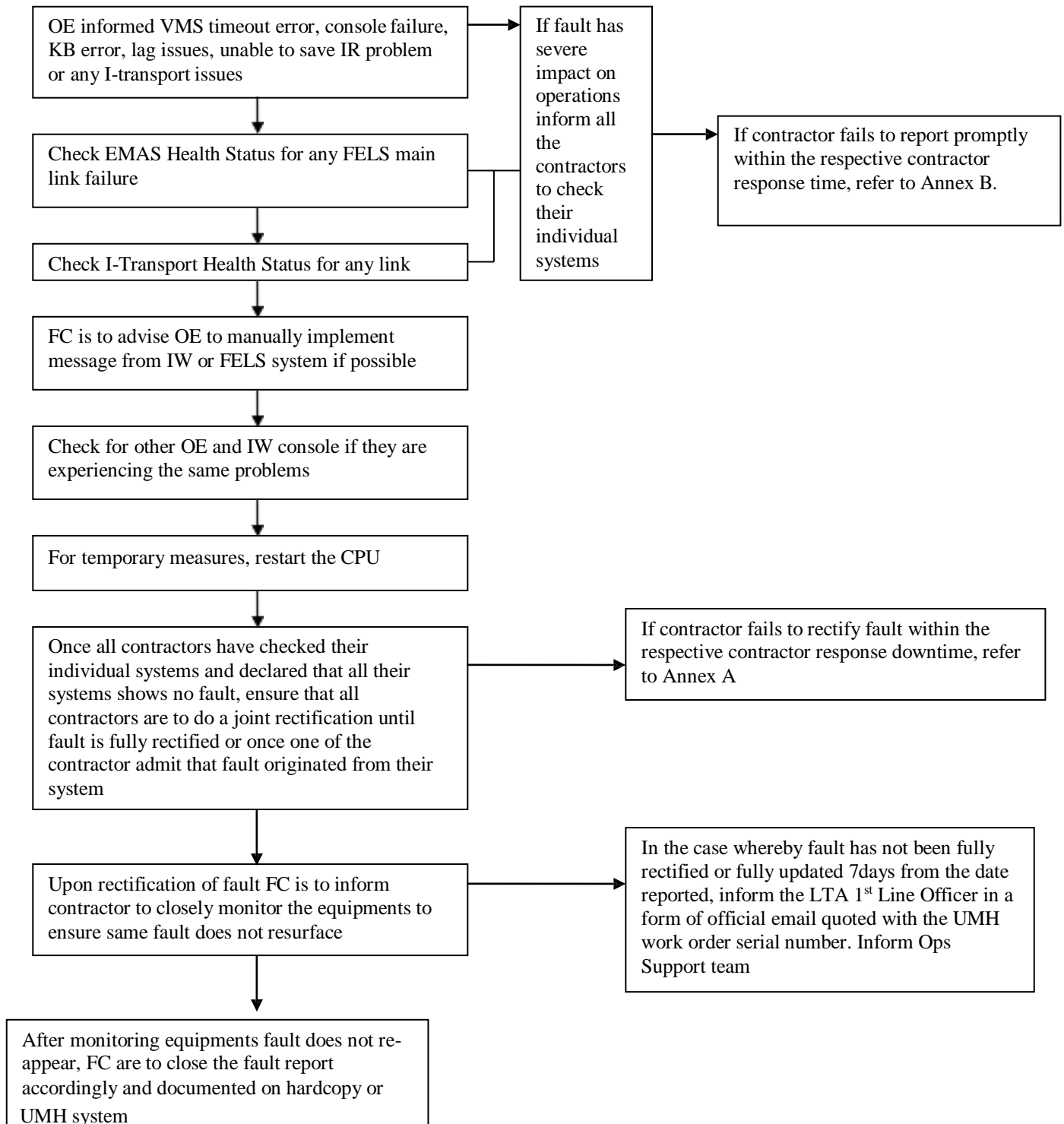
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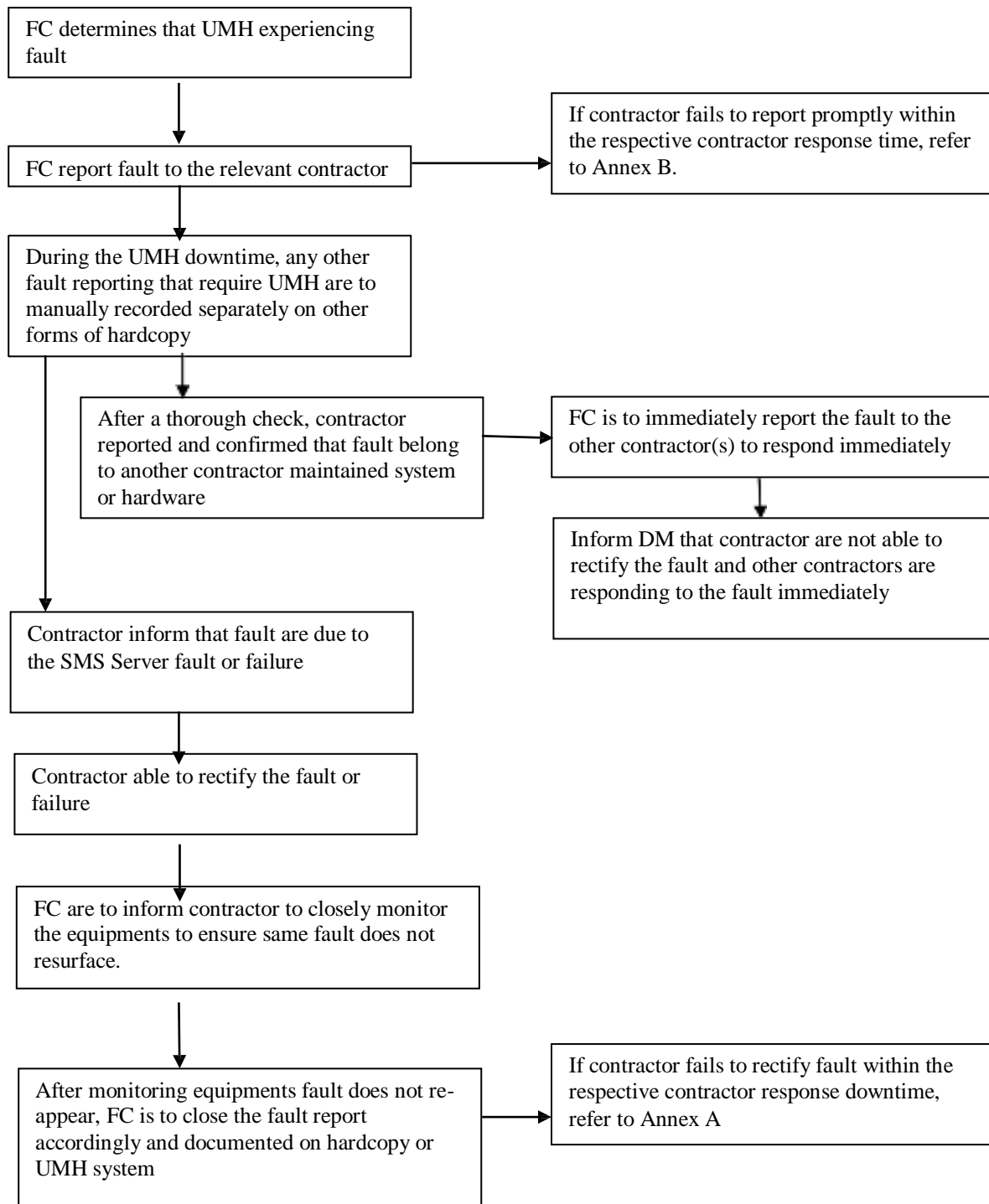
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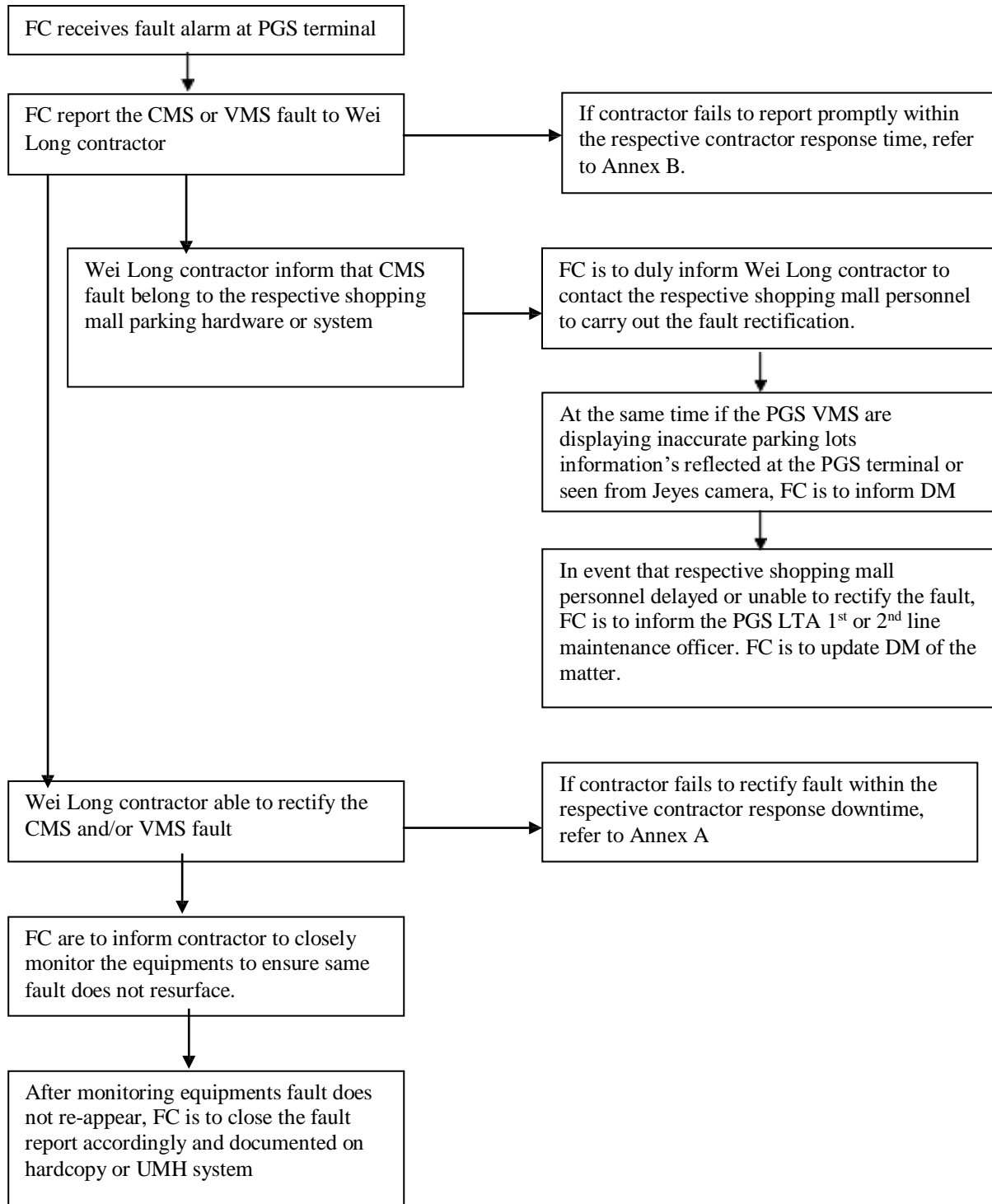
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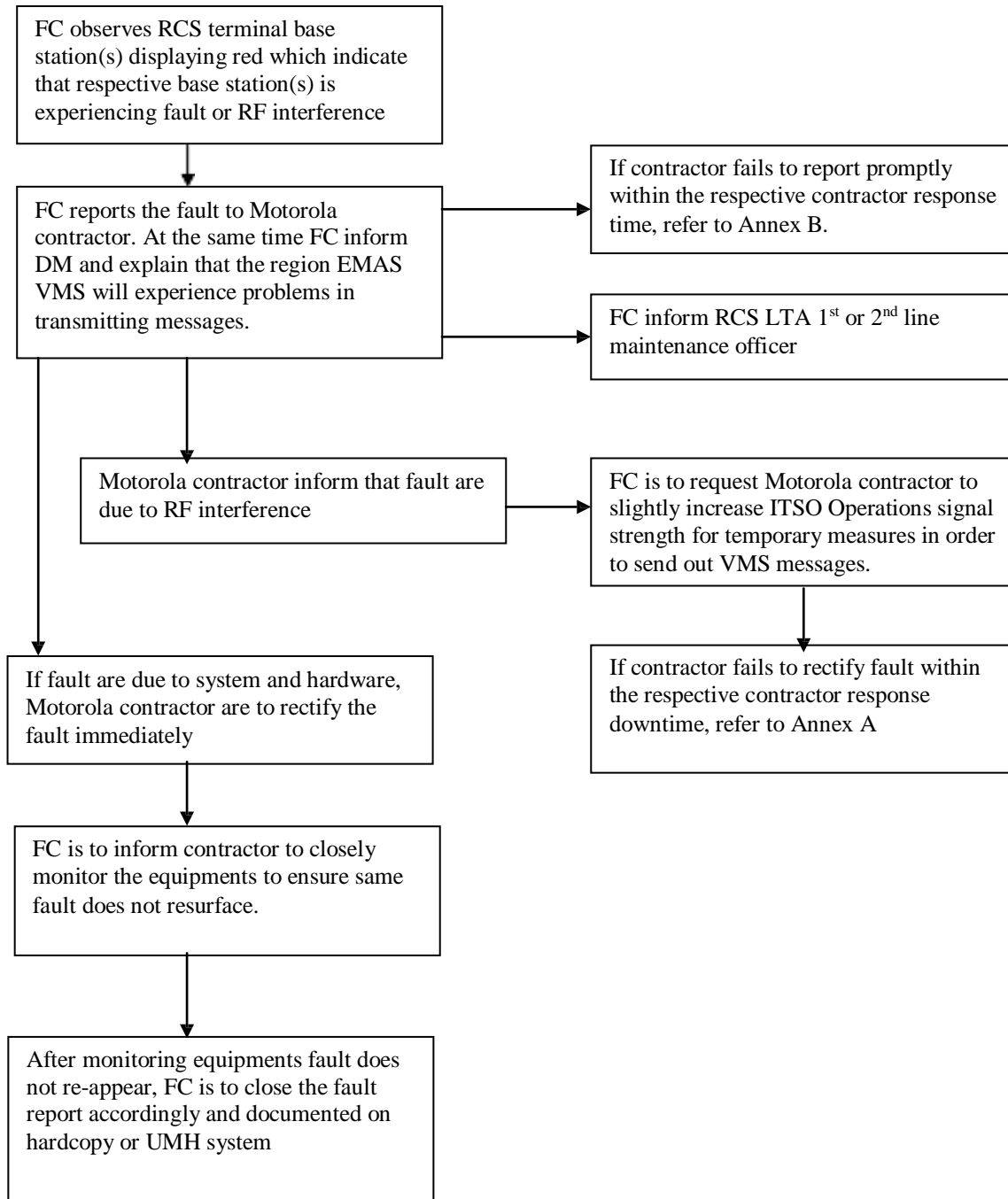
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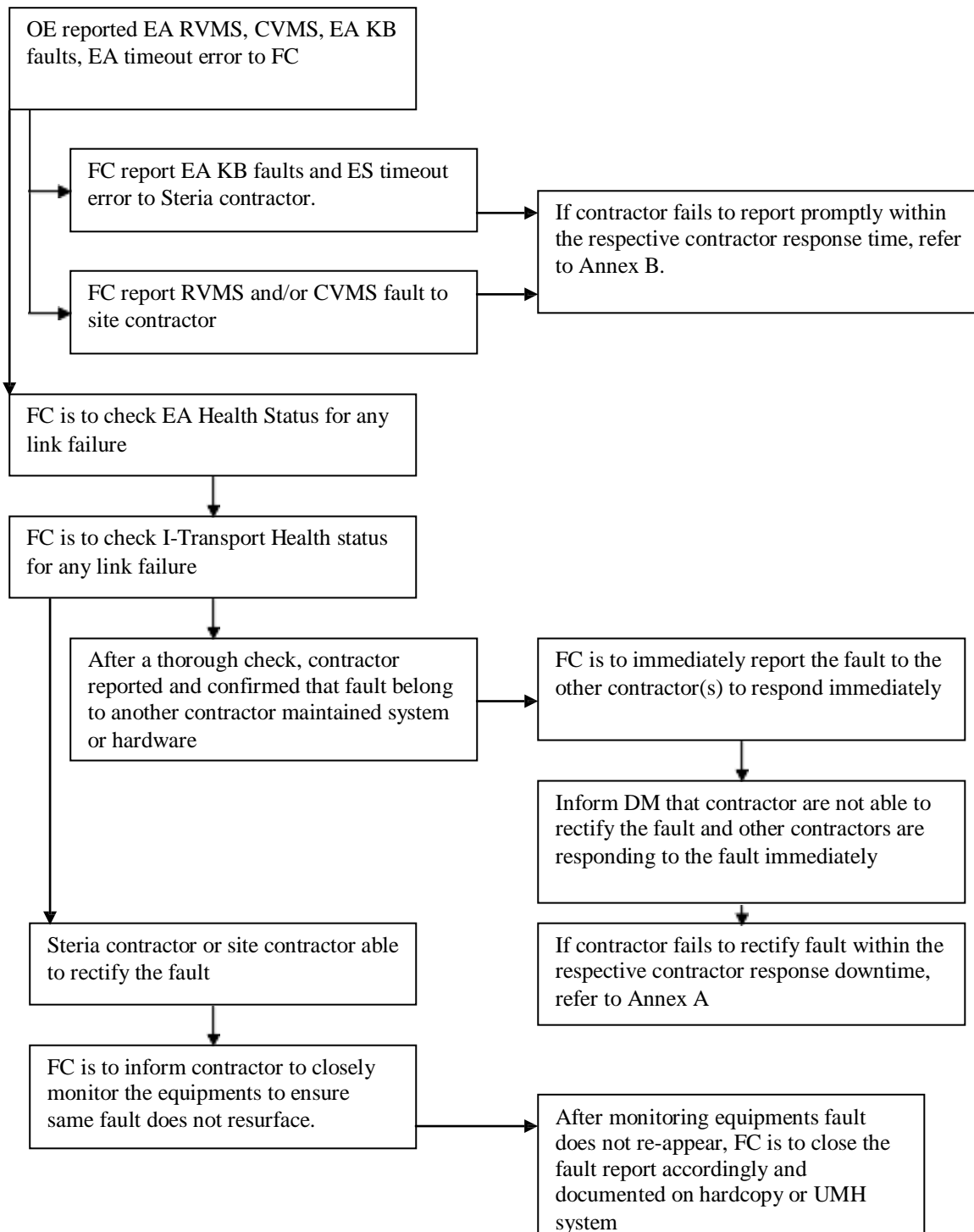
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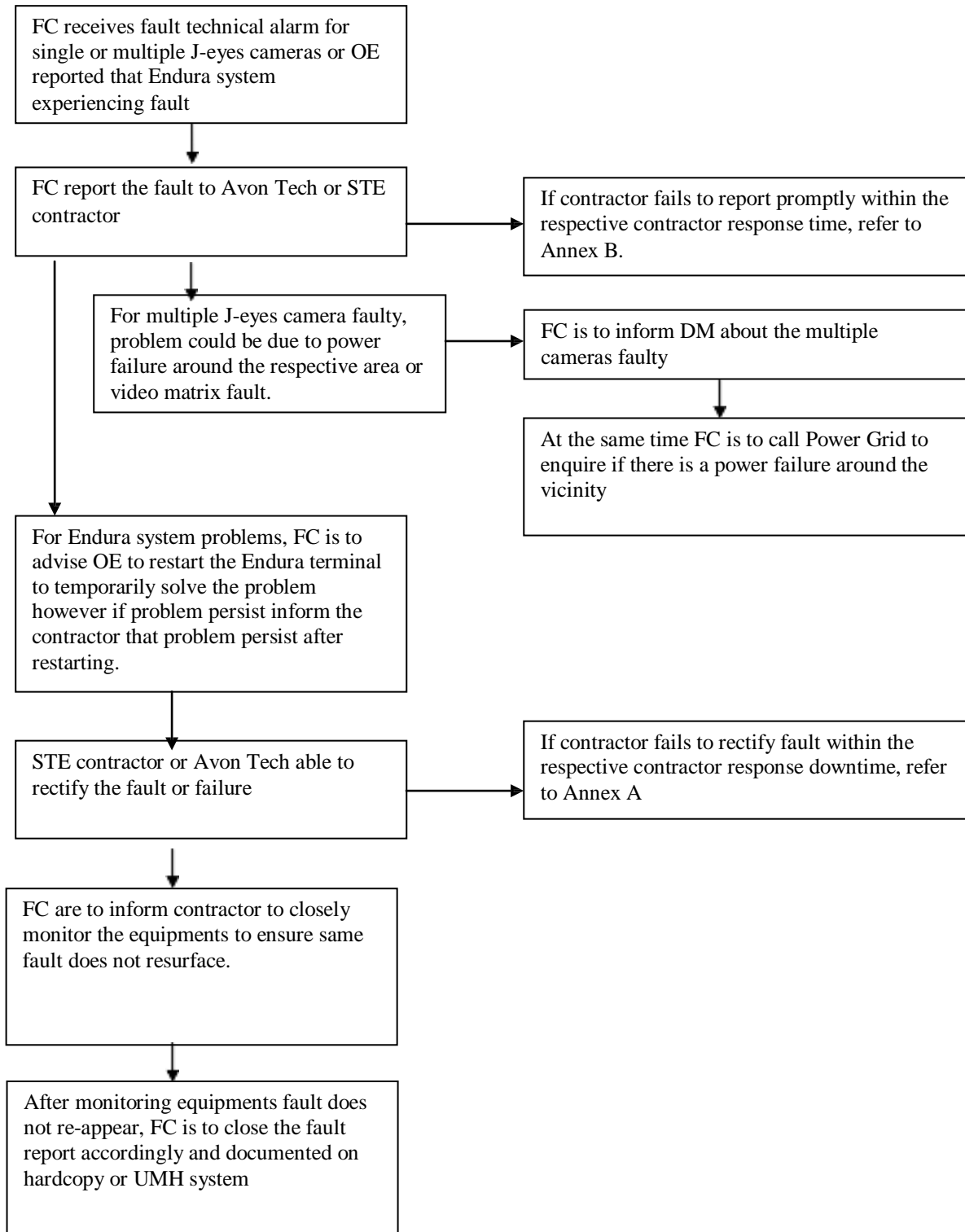
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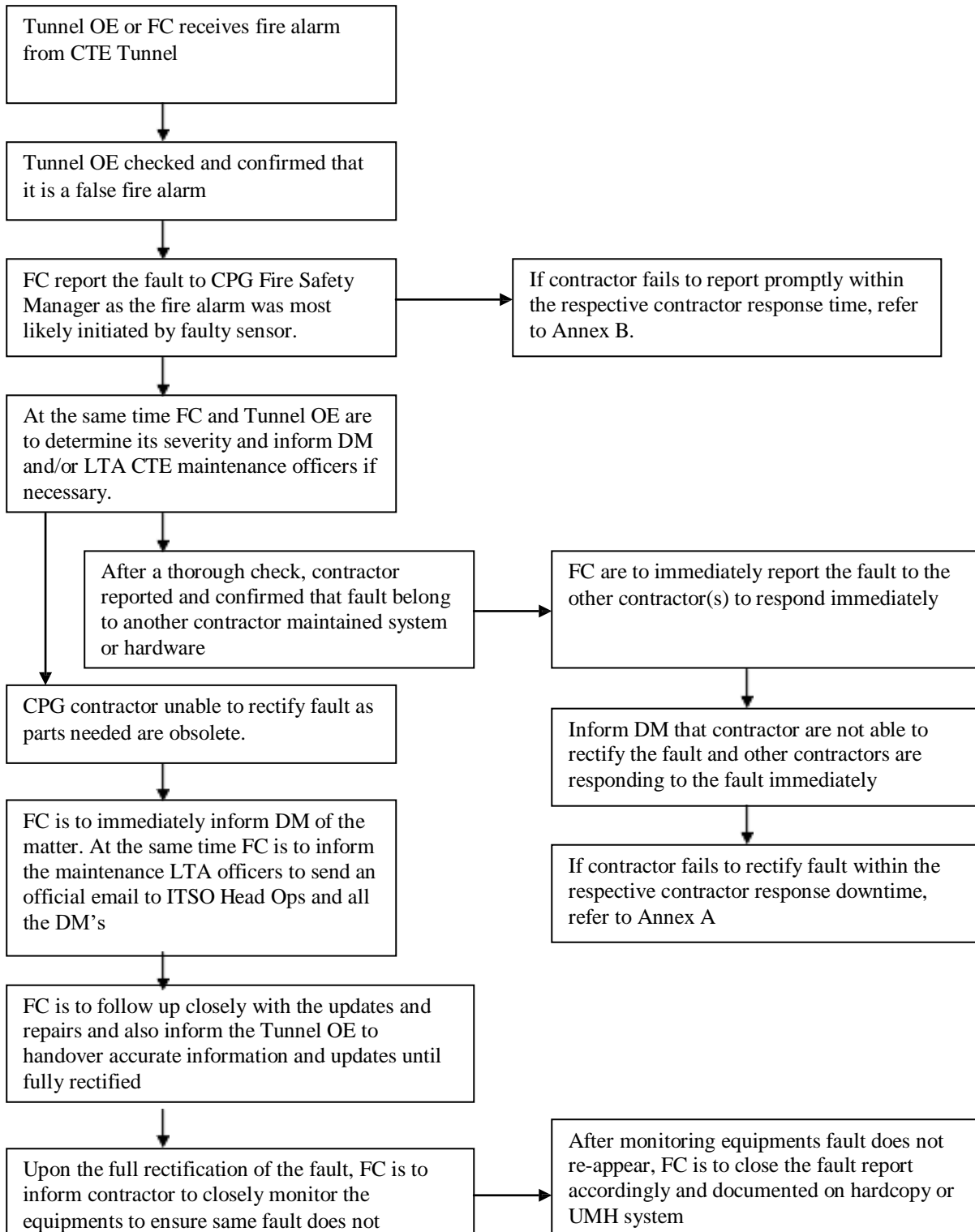
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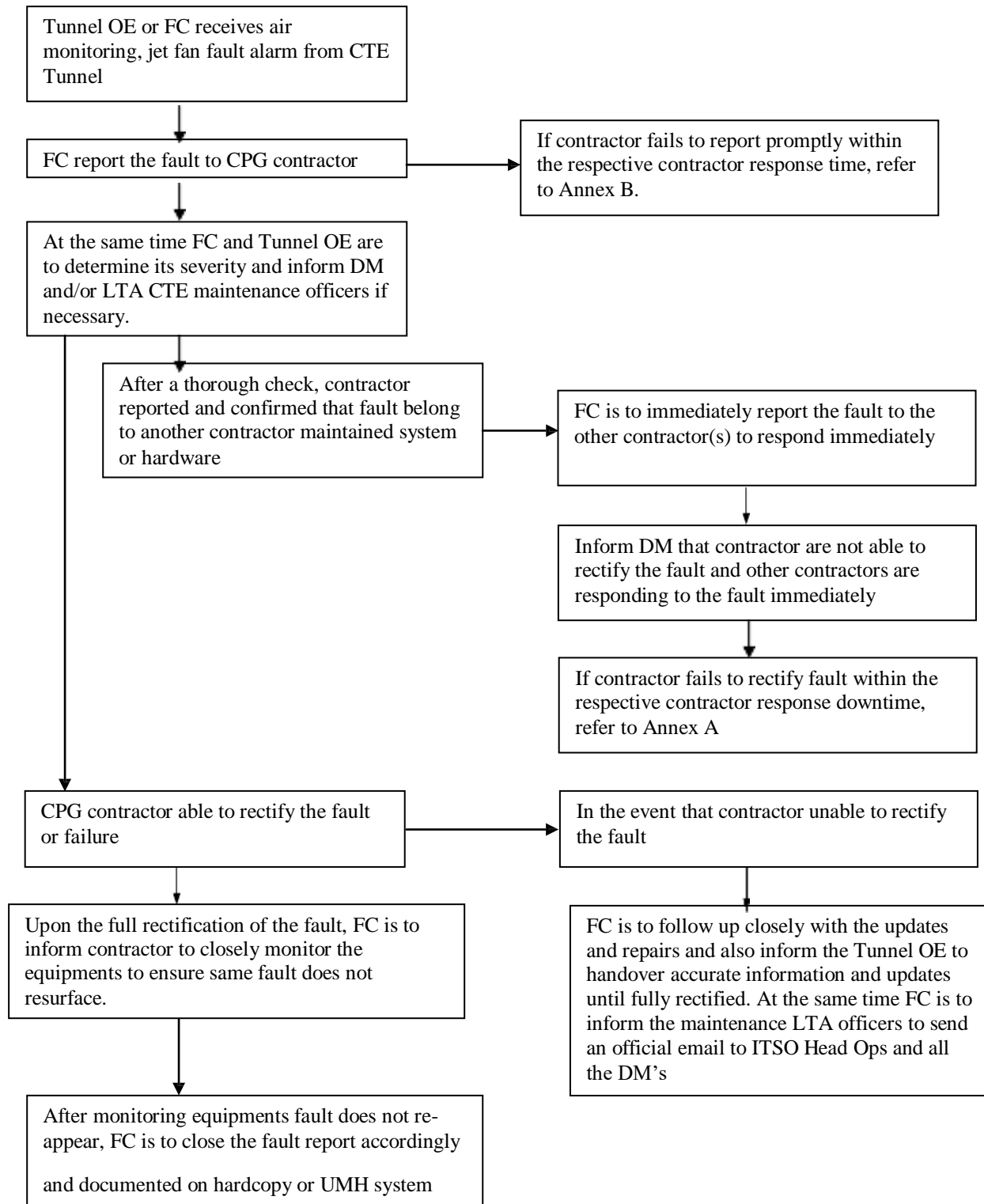
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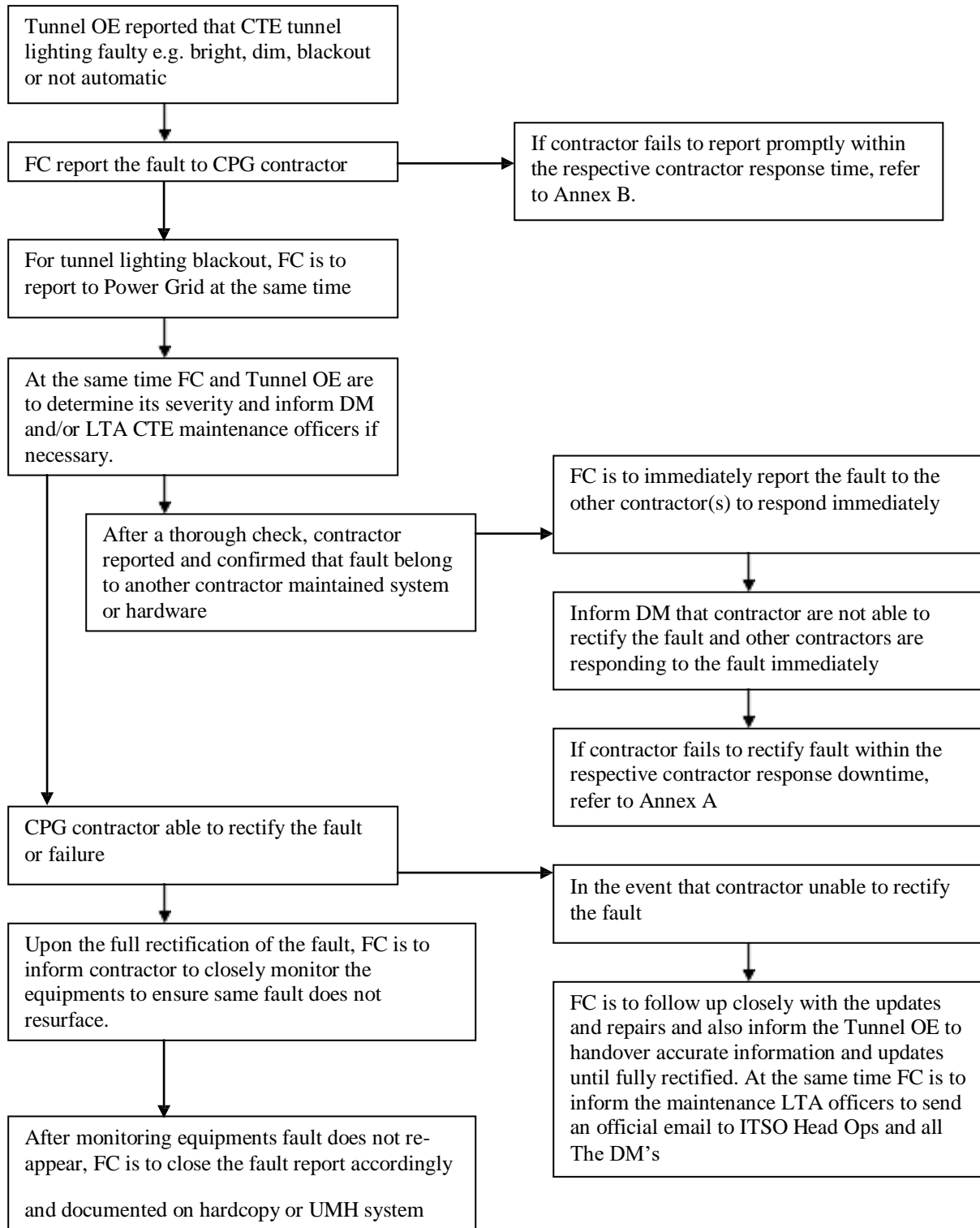
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