



Report on
Fire Incident
At
XXXX Premise

Vadodara
Gujarat
India

Prepared By
IBS Gulf Design Pvt Ltd

Version R1

July 2015



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Document Authority

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Reviewed by Person:

Document Information

Document Number:IBSGD/XXXX Vadodara/R1
Date Issued:27th July 2015
Project Description: Report on Fire Incident

Customer Distribution

XXXX Group : Mr.XXXXX
: Mr.XXXXX

Document History

Version	Date Issued	Status	Description
R0	23 rd July 2015	Copy	1 st Issue
R1	27 th July 2015	Copy	2 nd Issue



Executive Summary

XXXX has a premise at XXXXX road, Vadodara.

The Premise is a Basement + Ground + 3 floors one , of which XXXX occupies Ground floor and 1st floor.

On 20th July, a Fire incident occurred in the 1st floor of the premise and a substantial part of the floor got damaged before the fire could be doused. This report aims to provide an insight to the possible cause of fire based on the investigation carried out.

The Chronology of the event based on the feedback received from the operations team present at the time of incident and the review of other documents was as under:

20th July – Around 0630 hrs – Security guard hears a fire alarm in the Security room, Immediately informs the Facility Manager. The Fire alarm panel indicates detector latch in the Zone 8 of the First floor.

0700 Hrs – Facility Manager reaches the site and observes that smoke is coming out of the First floor.

Around 0725 hrs – Facility Manager (FM) observes that the intensity of the smoke has increased, immediately switches off the main power and informs Fire brigade. FM is unable to switch off the UPS battery power as the branch is locked and UPS is in the ground floor of the branch.

0725 hrs – Fire brigade reaches the site , starts fighting the fire.

0820 hrs – FM gets access to the G.floor of the branch , switches off the UPS battery output breaker. UPS log indicates UPS inverter going off at 0816 hrs . Till this point in time, the power to the CPU and Emergency lights in the floors has been available. Now, the entire power to the premise is switched off.

0840 hrs – Fire is quenched.

Water used for quenching the fire had come down to the ground floor primarily through the dumbwaiter shaft and the staircase and the ground floor was having around 2 " of water. There were a few locations where some water had seeped through the false ceiling.

Observations:

The following were the initiatives taken during the investigation:

- A site visit was carried out on the 22nd July and a visual inspection was carried out on the extent of damage and identify any clue that could lead to ascertaining the possible cause.
- Discussions were held with the Facilities team members that were there during and after the incident.
- Available CCTV footage was reviewed.
- UPS log data was retrieved after powering up the UPS on 24th July and reviewed.

The entire floor was affected by the Fire though the intensity of the damage varied between locations. Please refer to the drawing attached in Annexure 1:

The 1st floor areas are divided into various zones starting from Zone 1 indicating the most affected and the degree of damage reducing in subsequent zones in ascending order:



The incident took place early in the morning when the premise was not operational. Hence, it can be assumed that the AC was not operational though the power supply to the ACs and other Equipment in the floor such as the Printers, CPUs etc would have been live. Emergency lights were in ON condition.

Since the premise was unoccupied, the probable cause could be attributed to an electrical fault and hence the following were examined:

As a first step, the CCTV footage was examined.

At around 6:30 am, smoke starts to appear along the surface of the gypsum false ceiling from the RM area side (Left side of the camera along the toilet passage from behind) and within a minute, the intensity of the smoke increases significantly, the colour of the smoke is darker and flow of the smoke is from the RM area side. The flow of smoke appears to be from a lower level to the gypsum ceiling and by 6:32 am the entire area covered by the camera is filled with smoke.

The UPS event log was also examined and the following events were noted.

At 6:17 am, the main incoming voltage and frequency have been abnormal and the UPS has gone on battery mode for 20 sec. Again, at 6:20 am, the main incoming voltage has been abnormal and UPS has gone on battery mode for 10 sec.

Based on the CCTV footage and the UPS log of events, an abnormal event in the raw power circuit in and around the RM area has happened and triggered a fire.

This was also supported by the fact that the maximum affected area -Zone 1 of the drawing was this area and the smoke detector had also latched from this Zone in the Fire alarm panel.

Hence, the equipment fed by raw power in the RM area were closely examined.

The following equipment were powered by the raw power in that area

1. Air conditioning units
2. General lighting
3. AHP make MFP M630 Laser jet printer.

The Airconditioning units were examined closely. There were no indications that the fire had started from the unit and the extent of damage of the refrigerant piping, Pipe insulation and the flexible wiring etc were minimal as compared to other areas.(Pls refer to the Photo below) Hence probability of AC being the cause can be ruled out. Please see the picture below for reference.

AC Machine



The general lighting being the source of fire was unlikely as they were off. Moreover, the CCTV footage clearly indicated that smoke was coming from a lower level and climbing up. Hence this probability of lighting being the cause can be ruled out.

The area next to ID0023 seat (pls refer to the floor plan) houses the MFP M630 Laser jet printer. It was observed that the printer (see photo below) was the most affected equipment with practically the entire equipment including the internals charred beyond recognition. It must also be noted that the extent of damage is almost complete in the compartment housing the operating mechanism and the upper tray.



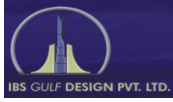
The area above the printer was also the most affected one with a structural beam taking the maximum heat and the plasters of the beam had given away due to excessive heat. The wooden partition besides the printer was totally damaged and the wall mounted storages mounted on the partition had fallen over the workstation desks and damaged the worktables.

It was also noticed that there were bundles of papers kept on the workstation desks in the ICG area which have been totally burnt. The portion below the workstation desks where the CPUs and dust bins were kept were comparatively less damaged. In fact the dust bin in the ICG area below the workstation exactly behind the printer has not even got deformed in shape (See attached picture).



This indicates that the probable source of fire was not from below the workstations where CPUs were kept. The Fire had started elsewhere and started climbing upto the wooden partition, false ceiling and to the structural beam. Once in the false ceiling, the smoke had spread through AC ducts and the ceiling void.

The Emergency light points near the most affected zone were found to be damaged but with the terminations still intact and the lamp enclosure hanging on the terminated wire. The Emergency lights were connected to the UPS and in case of a short circuit in the wiring , the UPS should have tripped which didn't happen as it was supplying power till 08:16 hours as per the UPS log eliminating short circuit in emergency lighting as a possible cause.



Conclusions:

Following is the summary of observations:

1. The most affected area is the ICG area and the printer outside ICG area.
2. The CCTV footage shows the source of fire from the RM area behind the camera closer to the toilet passage.
3. The UPS log indicates an abnormality in the Raw power circuit twice between 06:17-06:20 hours and within 10 minutes from then CCTV footage captures smoke in the toilet passage. This indicates that an equipment connected to raw power circuit could have been the cause for fire.
4. The movement of the smoke indicates from a lower level climbing to the gypsum ceiling.
5. The AC machine and Lighting equipment are ruled out as explained earlier in the report.
6. The Printer has been the most affected equipment and is on the Raw power.
7. The area directly above the printer has suffered the maximum damage with the beam plasters coming apart.
8. The wooden partition with wall mounted enclosures just besides the printer has got badly damaged and the fall of the storages on the workstations had propagated the fire.

From the above, we conclude the following

The abnormality in the raw power voltage (could be an overvoltage as under voltage at early mornings when the grid is not loaded is unlikely) could have entered the Power supply unit of the printer and damaged the capacitors. This could have resulted in a spark or fire due to damage to capacitors. The toner in the printer would have acted as a catalyst to propagate it.

The Fire, from the printer, with its natural tendency to rise up had caught on the adjacent wooden partitions and reached upto the ceiling damaging the plaster around the beam. The wooden partition had collapsed and fallen on the workstations which had heaps of paper kept over it and the fire had spread further.

However, we recommend that YY, the OEM vendor of the printer, should carry out a thorough investigation of the affected parts of the printer and come out with a report.