Independent Market Operator

STEM Suspension Market Incident Report

30 October 2007

Report

Public

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Independent Market Operator
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1. Introduction

On 29 October 2007 a fire at the IMO market systems production site led to an attempted failover to the IMO backup site. However, due to the critical time at which this failover was required, and issues with operation at the backup site, the STEM was suspended for Trading Day 30 October 2007. The purpose of this report is to:

- Discuss the consequences of the fire at the production site;
- Discuss the operation steps taken; and
- Explain the backup site issues encountered and resolution.

As the market operates in Western Standard Time (WST), all references to time in this report are WST. (Daylight saving had commenced a day earlier than this incident on 28 October.)

2. The Incident

The IMO production market systems operate out of a computer room at the Department of Treasury and Finance (DTF). These market systems are provided secure power through an Uninterruptible Power Supply (UPS) owned by DTF.

For fire protection, the computer room is monitored by a "Very Early Smoke Detection Apparatus" (VESDA). The pipes that feed the sprinklers in the room are normally uncharged (dry). When the VESDA detects smoke in the room it will charge the sprinkler pipes with water and cut all electrical power to the computer rooms. From this point the sprinklers will only come on if the heat from the fire is sufficient to release the sprinkler nozzles.

In the early morning hours of Monday 29 October there was a small electrical fire caused by a fault within the UPS unit. This fire produced sufficient smoke to trigger the VESDA, cutting power to the computer room and charging the sprinkler pipes with water. The VESDA also triggered an alarm with the Fire Brigade and an external security company, who then notified DTF staff. The burnt out UPS circuitry is pictured alongside.

When DTF staff attended the site, the Fire Brigade had gained entry and ensured the safety of the building. There was still no power to the computer room and DTF contacted one of their external service providers to disconnect and replace the UPS. As the fire had been contained within the UPS there had been insufficient heat to trigger the sprinkler nozzles.

3. Operational Consequences

When it was found that the Market Systems were inoperable at the commencement of the operations shift, IMO staff inspected the computer room to investigate. It was discovered that there had been a leak in the sprinkler pipes triggered when the VESDA had charged the pipes and large quantities of water were found under the false floor of the computer room.

The electrical power supply cables are laid on trays under the false floor and were just above the waterline in places. Given the danger of powering on the servers it was decided that the production site should not be powered up and that a fail-over to the back-up site at East Perth should be initiated.

The process of failing over to the market system back-up site was commenced at 7:45 WST. A Market Advisory was sent to Participants advising of a new anticipated timeline for the Scheduling Day. Issues encountered when restoring the database on the backup site resulted in the process taking approximately 50 minutes longer than normal.

When the Operator on Duty attempted to access the Market Operator Interface (MOI) it was found that access was not available. IMO staff continued to analyse the system access problem. However, as no solution was found by 11:50 WST the IMO circulated a Market Advisory notifying Participants that the STEM had been suspended for Trading Day October 30.

After the water had been removed from under the false floor in the computer room, IMO IT staff rebooted the production site. Once the production site was restarted, the IMO operators had successful access to the backup site, confirming suspicions that the login issue was related to an underlying reliance to the production site.

Further investigation then revealed that the backup system was attempting to locate an authentication file on the production system, and failure to locate this had been preventing IMO Operators from successfully logging into the system.

4. Incident Analysis and Outcomes

4.1. UPS Issue

The cause of the fire in the UPS is being investigated by the equipment supplier. It is known that the unit was running at maximum capacity for an extended period. However, this in itself does not explain the subsequent electrical fault.

The damaged UPS was replaced by DTF on the day of the incident with a unit of twice the capacity as the original. The computer room main power outlets are being upgraded to reflect the new capacity of the UPS.

The leakage of the water pipes under the floor has also been resolved.

4.2. Database Recovery

During the database recovery, difficulty was experienced when the database was being restored. The IMO failover procedures had not previously been developed to distinguish between a “switch-over” and a “recovery”, exacerbating the process and leading to unrealistic expectations of failover time.

The failover procedures have now been updated to include this distinction.

4.3. Operator Login Configuration File

As discussed above, one of the configuration settings in the Application Server pointed the Market Operator Interface (MOI) to the Directory Service on the main site rather than the backup site. As a result, operator login to the system failed. Once discovered, this was resolved immediately by pointing the backup Application Service to the correct backup configuration file.

4.4. STEM Suspension

The Operator on Duty suspended the STEM for the Trading Day 30 October at 11:50 WST on the Scheduling Day. Suspension was required at this time as the recent changes to chapter 6 of the Market Rules only allow the IMO two hours to delay STEM processes and the normal STEM submission window closing time is 09:50. Therefore a valid STEM result could not be determined.

As there were no STEM submissions to determine prices, the half hourly balancing prices were set equal to the same prices seven days earlier, as required under the Market Rules.

The IMO considers that, given the low STEM trade amounts, and the appropriate cost reflectiveness of the balancing price substitutes used, the commercial effects of this suspension were likely to be minimal.

5. Conclusion

Early in the morning of 29 October 2007 a small fire in the IMO market system computer room resulted in the shut down of the market system production site. Due to issues arising in relation to the fire retardant equipment, the decision was taken to failover to the backup site at East Perth and to operate the market from this site.

However, issues with the failover process and the ability of IMO operators to log into the backup site resulted in the systems not being available with sufficient time and, subsequently, the IMO operators suspended the STEM for the following trading day.

All appropriate actions to address this issue have now been taken. The issues with the fire retardant equipment have also been addressed.