

**DETERMINATION OF THE MARKET SURVEILLANCE AND COMPLIANCE PANEL  
MSCP/2006/D3**

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**Market Surveillance and Compliance Panel (“MSCP”)**

Mr Joseph Grimberg, Chair  
Professor Lim Chin  
Mr Lee Keh Sai  
Mr TPB Menon  
Mr David Wong

**Date of Determination**

31 March 2006

**Party**

Energy Market Company Pte Ltd (“EMC”)

**Subject**

Failure to determine, release and publish real-time schedules and short-term schedules on 15 September 2005

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1. The Energy Market Company Pte Ltd (“EMC”) made a self-report on 12 October 2005 that on 15 September 2005 from 1549 hrs to 1628 hrs, real-time schedules for periods 33 and 34 and short-term schedules for periods 34 and 35 were missed and not sent to PSO on time. The trading website was unavailable, and market participants could not perform the normal Powerbid offer submission or the web offer submission and had to rely on the backup offer submission process using secured email. As a result, EMC could be in breach of the market rules.

**APPLICABLE MARKET RULES**

2. Section 9.2.1 of Chapter 6

“The EMC shall, prior to the commencement of each dispatch period and in accordance with the market operations timetable, use the market clearing engine to determine for that dispatch period:

- 9.2.1.1 a real-time dispatch schedule, containing schedules of energy, reserve and regulation for registered facilities, to be released to the PSO, which in accordance with section 9.1.2 of Chapter 5 shall be deemed to constitute the dispatch instructions issued by the PSO to the applicable dispatch coordinators unless and until further dispatch instructions are issued by the PSO to a given dispatch coordinator pursuant to section 9.1.3 of Chapter 5; and

9.2.1.2 a real-time pricing schedule determined by the market clearing engine...including:

- a. energy prices for each market network node;
- b. the uniform Singapore electricity price;
- c. reserve prices for each reserve class and for each reserve provider group; and
- d. regulation prices.”

The market operations timetable in Appendix 6A of Chapter 6 provides for the EMC to begin computing a real-time dispatch schedule using the market clearing engine 5 minutes prior to the beginning of the dispatch period.

The market operations timetable in Appendix 6A of Chapter 6 provides for the EMC to release the real-time dispatch schedule to the PSO prior to 30 seconds before the beginning of the dispatch period.

3. Section 9.2.3 of Chapter 6

“The EMC shall, in accordance with the market operations timetable, release to the dispatch coordinator for each registered facility a real-time dispatch schedule comprising that portion of the real-time dispatch schedule referred to in section 9.2.1.1 that describes the quantities of energy, reserve by reserve class and regulation scheduled in respect of that registered facility.”

The market operations timetable under Appendix 6A of Chapter 6 provides for the EMC to release the real-time dispatch schedule and real-time pricing schedule prior to 30 seconds before the beginning of the dispatch period.

4. Section 9.2.4 of Chapter 6

“The EMC shall, in accordance with the market operations timetable, publish the following information as it pertains to each dispatch period:

- 9.2.4.1 total load;
- 9.2.4.2 total transmission losses;
- 9.2.4.3 total reserve requirements by reserve class;
- 9.2.4.4 total regulation requirements;
- 9.2.4.5 energy prices associated with each market network node at which a generation registered facility or generation settlement facility is located...;
- 9.2.4.6 the uniform Singapore energy price...;
- 9.2.4.7 reserve prices for each reserve class and reserve provider group...;
- 9.2.4.8 regulation prices...;
- 9.2.4.9 any system energy shortfalls reported by the market clearing engine;
- 9.2.4.10 any system reserve shortfalls, by reserve class, reported by the market clearing engine;
- 9.2.4.11 any system regulation shortfalls reported by the market clearing engine; and
- 9.2.4.12 a list of security constraints and generation fixing constraints applied.”

The market operations timetable in Appendix 6A of Chapter 6 provides that the EMC must publish the market information set out in section 9.2.4 of Chapter 6 prior to 30 seconds before the beginning of the dispatch period.

6. Section 7.4A.1 of Chapter 6 provides that:

“The EMC shall, in accordance with section 7.6 and Appendix 6A, determine a short-term schedule corresponding to the nodal load forecast described in section 7.2.1.1.”

According to the market operations timetable, the EMC is required to commence computing the short-term schedule 4 minutes prior to the beginning of the dispatch period.

7. Section 7.7.2A of Chapter 6 provides that:

“Not later than 25 minutes prior to the commencement of the first dispatch period of the short-term schedule referred to in section 7.4A, the EMC shall, for each dispatch period included in the short-term schedule:

7.7.2A.1 release to the dispatch coordinator for each registered facility the projected schedules for energy, regulation and reserve, by reserve class, for that registered facility;

7.7.2A.2 publish the information described in section 7.7.3; and

7.7.2A.3 communicate to the PSO the projected schedules for energy, regulation and reserve, by reserve class, for each registered facility, together with the information described in section 7.7.3, in accordance with the system operation manual and any applicable market manual.”

8. Section 7.7.3 of Chapter 6 provides that:

“In accordance with sections 7.7.1, 7.7.2 and 7.7.2A, the EMC shall publish the following information for each dispatch period and for each market outlook scenario, pre-dispatch schedule scenario and short-term schedule:

7.7.3.1 the projected total load;

7.7.3.2 the projected transmission losses;

7.7.3.3 total reserve requirements by reserve class;

7.7.3.4 total regulation requirements;

7.7.3.5 projected energy prices associated with each market network node at which a generation registered facility or generation settlement facility is located....;

7.7.3.6 the projected uniform Singapore energy price....;

7.7.3.7 projected reserve prices for each reserve class and reserve provider group....;

7.7.3.8 projected regulation prices....;

7.7.3.9 any predicted system energy shortfalls;

7.7.3.10 any predicted system reserve shortfalls, by reserve class;

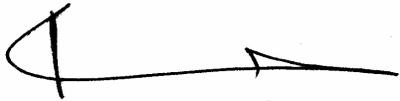
7.7.3.11 any predicted system regulation shortfalls; and

7.7.3.12 a list of security constraints and generation fixing constraints applied.”

## INVESTIGATION FINDINGS

9. According to EMC, during the period from 1549hrs to 1628 hrs on 15 September 2005, the NEMS network at its production site was down. As a result, the real-time schedules for periods 33 and 34, and short-term schedules for periods 34 and 35 on 15 September 2005 were not determined, released and published within the deadline required in the market rules. The trading website was also unavailable and market participants were not able to perform the usual offer submission via the trading website and had to rely on the backup offer submission process using secured email.
10. EMC reported that the incident was caused by the halting of the two firewalls at EMC's production system which had resulted in the failure of the incoming and outgoing connectivity of the production NEMS system. The market clearing engine was therefore unable to process the schedules for the relevant periods. This had also resulted in the unavailability of the EMC trading website during these periods. Upon the re-starting of the production site switches, routers and firewalls, the network was re-established. The NEMS was then back to normal operation.
11. Investigation by EMC showed no evidence of "hacking" or virus attack at its firewall. According to EMC, the firewall logs showed that the firewalls were halted by a command initiating a proper shutdown of the firewall. The shutdown appears to have been done via the privileged account of an EMC staff.
12. EMC has investigated the possible causes for the halt state command being issued. All persons with privileged accounts have been reminded to ensure that appropriate change requests are submitted prior to any system changes or commands being made.
13. Based on the facts of this incident, it would appear that EMC had breached:
  - (a) sections 9.2.1, 9.2.3 and 9.2.4 of Chapter 6 of the market rules due to its failure to determine and release the real-time schedules and to publish information for periods 33 and 34; and
  - (b) sections 7.4A.1 and 7.7.2A of Chapter 6 of the market rules due to its failure to determine and release the short-term schedules and to publish information for periods 34 and 35.
14. On 8 February 2006, MSCP issued a notice to EMC pursuant to section 7.2.3 of Chapter 3 that it was prima facie of the view that EMC had breached sections 9.2.1, 9.2.3, 9.2.4, 7.4A.1 and 7.7.2A of Chapter 6 of the market rules and invited EMC to make written representations to MSCP before MSCP made its final determination, including, if thought fit, regarding enforcement action against EMC. In the notice, it was pointed out that EMC would have the right to request a hearing before MSCP.
15. EMC submitted written representations on 15 February 2006 to MSCP.
16. In its written representations, EMC admitted the breach. EMC said that there was a failure by an individual staff to comply with EMC processes established to prevent inadvertent system changes. EMC took any disruption to the NEMS system seriously. It believed that there was no malice by the individual who initiated the shutdown of the firewalls. According to EMC, steps had been taken to re-emphasize to all staff that EMC's controls and processes are complied with strictly. The individual who was responsible had been internally disciplined.

17. In mitigation, EMC said that it had expedited the resolution of the situation as soon as it became aware of the event and there was minimal impact on market participants as a result of the breach. EMC said it recognized the severity of circumstances leading to the breach and steps had been taken to ensure that it would not reoccur. Additional monitoring steps had also been introduced following the incident. EMC requested MSCP to take into consideration EMC's diligence in responding to the matter, its immediate and timely action, and its commitment to ensuring the smooth and reliable operation of the NEMS system.
18. MSCP has carefully considered EMC's representations. MSCP finds that EMC has breached sections 9.2.1, 9.2.3, and 9.2.4 and 7.4A.1 and 7.7.2A of chapter 6 of the market rules. While it is true that there was no significant market impact as a result of the breach, MSCP observes that the breach was likely the result of negligence on the part of an employee who had shortly before the incident in question, committed a similar breach. A system security hazard resulted from the breach. MSCP accordingly takes a serious view of the breach and imposes a fine of \$10,000.00. In addition, MSCP orders the payment by EMC of costs in the sum of \$1,000.

A handwritten signature in black ink, consisting of a large, stylized 'J' followed by a horizontal line that ends in a small upward-pointing flourish.

Joseph Grimberg  
Chair  
Market Surveillance and Compliance Panel