



Government of India
विद्युत मंत्रालय
Ministry of Power
पूर्वी क्षेत्रीय विद्युत समिति



Eastern Regional Power Committee

14, गॉल्फ क्लब रोड, टॉलीगंज, कोलकाता-700033
14 Golf Club Road, Tollygunj, Kolkata-700033

Tel No.:033-24239651, 24239659 FAX No.:033-24239652, 24239653 Web: www.erpc.gov.in

No. ERPC/MS/CORR./2018/ 2565

Date: 31st July, 2018

To

The Secretary,
Central Electricity Regulatory Commission,
3rd & 4th Floor, Chanderlok building, 36 Janpath
New Delhi-110001

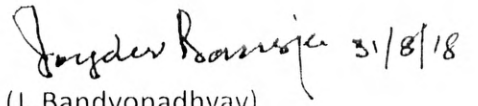
Subject: Comments/suggestions on draft "Central Electricity Regulatory Commission (Deviation Settlement Mechanism and related matters) (Fourth Amendment) Regulations, 2018"- regarding.

Sir,

With reference to the Public Notice No. L-1/132/2013-CERC dated 29th June, 2018 regarding comments/suggestion on the draft CERC (Deviation Settlement Mechanism and related matters) (Fourth Amendment) Regulations, 2018, the comments/suggestions from ERPC Secretariat are enclosed herewith for kind consideration of the commission.

Thanking you,

Yours faithfully,


(J. Bandyopadhyay)
Member Secretary

Copy to:

1. Chief (Engineering), CERC, 3rd & 4th Floor, Chanderlok building, 36 Janpath, New Delhi-110001

Comments/Suggestions from ERPC Secretariat on draft CERC (Deviation Settlement Mechanism and related matters) (Fourth Amendment) Regulations, 2018

Amendment of Regulation 5 (Charges for Deviations)

Para 3.1

ERPC's Comments:

1. Linking of Daily Average Area Clearing Price discovered in the Day Ahead Market segment of Power Exchange is a welcome change. In doing so, the DSM mechanism will be able to capture the market reality for that day in a better way.
2. If two extreme cases for ACP are considered, i.e. when $ACP=0$, and when $ACP \geq 800$, the following curves as shown in Figure-I are obtained. Area between these two curves i.e. the shaded portion will be the area of operation for DSM mechanism.

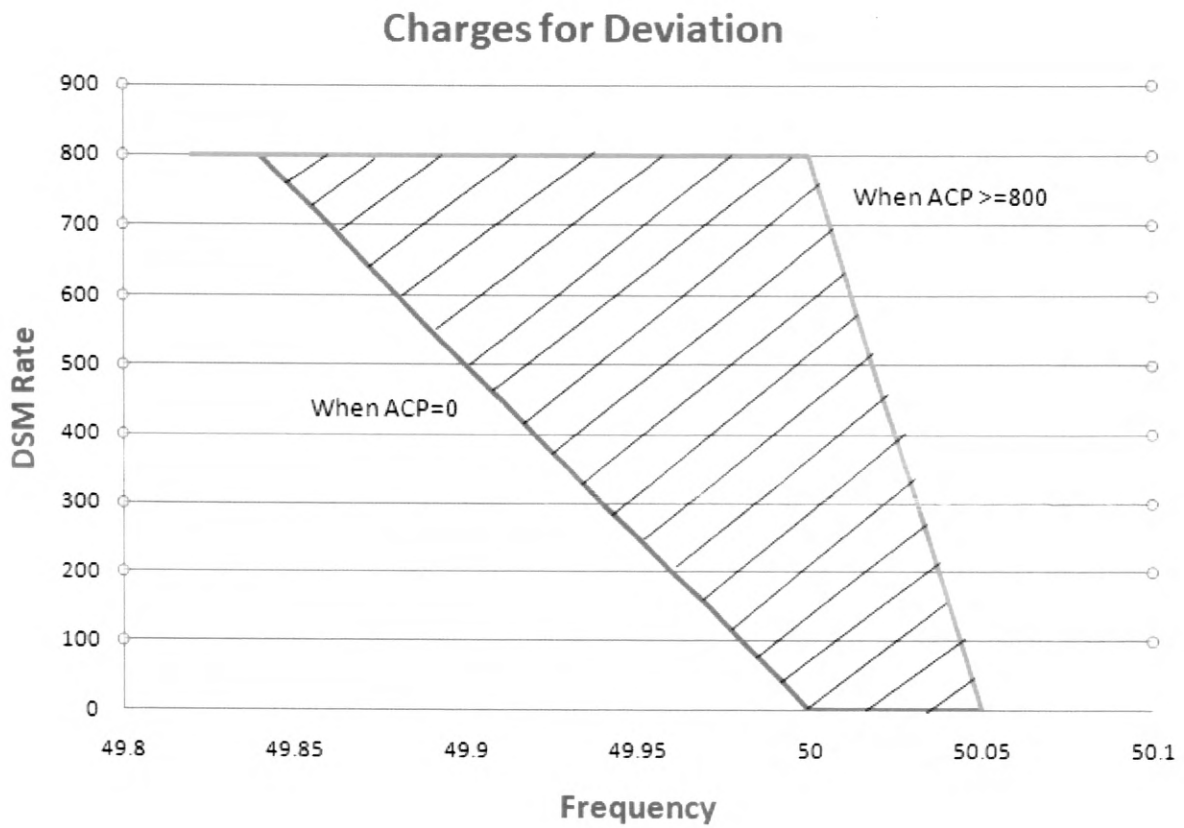


Figure-I

3. In the prevailing regulation as well as in the draft amendment, the rate of penalty or the rate of reward is linear in nature for frequency zones above and below 50 Hz. As it can be seen from the graph, the deviation vector is linear. That means the rate of change of DSM rate for buyers/sellers for under-drawl/over-injection at a relatively higher frequency is same as the rate of change of DSM rate for buyers/sellers for under-drawl/over-injection at a lower frequency for a frequency range either below or above 50 Hz. Similarly the rate of change of DSM rate for buyers/sellers for over-drawl /under-injection at a relatively higher frequency is same as the rate of change of DSM rate for over-drawl /under-injection at a lower frequency for a frequency range either below or above 50 Hz. Over-drawl/under-injection at a lower frequency has more severe effect than over-drawl /under-injection at a relatively higher frequency. So there is a requirement of different treatments for both the cases. The deviation rate vector may be made such that
 - a. The rate of change of DSM rate for under-drawl/over-injection at a relatively lower frequency should be more than the rate of change of DSM rate for under-drawl/over-injection at higher frequency for a frequency range either below or above 50 Hz.
 - b. The rate of change of DSM rate for over-drawl/under-injection at a relatively lower frequency should be more than the rate of change of DSM rate for over-drawl/under-injection at higher frequency for a frequency range either below or above 50 Hz.

In view of the above making the deviation vector's slope non-linear may be considered.

4. The current DSM prices do not capture the difference between the peak and off-peak value of electricity. Taking average area clearing price discovered in the Day Ahead Market segment of Power Exchange and linking it to the rate corresponding to frequency 50 Hz may not reflect the value of electricity at different times of the day. So the following suggestions may be considered:
 - a. Time blocks for peak and off-peak periods should be clearly defined and the treatment of deviation for peak and off-peak periods should also be different. To start with 9am-11am and 5pm-9pm i.e. total period of 6 Hrs may be defined as peak period and rest 18 Hrs may be defined as off-peak period.
 - b. For starters, charges for deviation in peak periods may be kept at 110% of the deviation charge of the corresponding time blocks.
 - c. For off-peak periods, charges for deviation may be kept at the 97% of the deviation charge for the corresponding time blocks.

Amendment of Regulation 7 (Limits on Deviation volume and consequences of crossing limits)

Para 4.4

ERPC's Comments:

1. In the draft amendment, it has been proposed that charges due to deviation in excess of 1% (for generators) or 3% (for drawee entities) on daily basis are fixed at 20% of the base DSM charge for that day. Accordingly those who are deviating marginally will end up paying the same amount as those who are deviating by a large margin. This seems a bit harsh for those who are marginally deviating from the schedule.

Illustration: **Annexure-I** can be referred in this context. Suppose for a particular day a utility's Sch Drawl is 39056.39025 MWh. According to the draft amendment the utility can deviate between 37884.69854 MWh and 40228.08196 MWh without paying any Additional Deviation Charge on the basis of total deviation from total daily schedule.

Drawl below 37884.69854 MWh or drawl above 40228.08196 MWh on daily basis will attract an additional deviation charge of 20% of Base Deviation Charge which is ₹ 11652982. So the utility has to pay an additional deviation charge of ₹ 2330596 (0.20*11652982). Now for a utility who is deviating marginally in excess of 3% of schedule (e.g. by 3.01%) will also end up paying the same amount as the utility which is deviating by a large margin (e.g. here the utility is over-drawing in excess of 3% of schedule by 7.47%) In such cases, quantum of deviation in excess of 1% or 3% could be taken into account for calculating additional deviation charge. The following suggestions may be considered for this anomaly:

For daily basis deviation of drawee entities:

- a. 3% < deviation <= 5% : 5% of base DSM charge
- b. 5% < deviation <= 7% : 10% of base DSM charge
- c. 7% and above : 20% of base DSM charge

For daily basis deviation of generators:

- a. 1% < deviation <= 2% : 5% of base DSM charge
- b. 2% < deviation <= 3% : 10% of base DSM charge
- c. 3% and above : 20% of base DSM charge

2. In the existing regulation, the volume limit for buyers/sellers, whose schedule is less than or equal to 400MW, is fixed at 48MW. The draft amendment doesn't mention anything about such cases while considering total deviation from schedule on day basis.

Illustration: From the **Annexure-II** it can be seen that the schedule is less than 400 MW and the deviation done by the utility is within the volume limit i.e. 48 MW. So it doesn't have to pay any additional deviation charge on account of violation of block-wise volume limit. But while considering the total deviation from the total schedule on daily basis it can be seen that the utility's over-drawl in excess of 3% is around 5.02%. And for this deviation, an additional deviation charge of ₹ 513765 is being levied, which is quite a high amount. In such cases the following may be considered:

- a. Either the fixed volume limit of 48 MW may be reduced proportionally w.r.t. schedule for the buyer/seller whose schedule in a time block is less than or equal to 400 MW.

Or

- b. Some relaxation while considering total deviation from total schedule on day basis may be given to the buyer/seller whose schedule in a time block is less than or equal to 400 MW.

Additional Suggestion Regarding Regulation 7 (Limits on Deviation volume and consequences of crossing limits)

1. In prevailing DSM regulation, generators and drawee entities have been given the same deviation limit i.e. 12% of schedule or 150 MW whichever is lower. But the generators have the ability to control the generation in a better way than the utilities' control over their withdrawal/load. Thus 12% deviation allowance for generators seems to be on a relatively higher side. In view of the above, the volume limit for the generators may be re-looked upon.

Para 4.11

ERPC's Comments:

1. Substituting the existing cap rate 303.04 p/u with the energy charges billed for the previous month is a good decision by the Commission.

Charges for Deviation

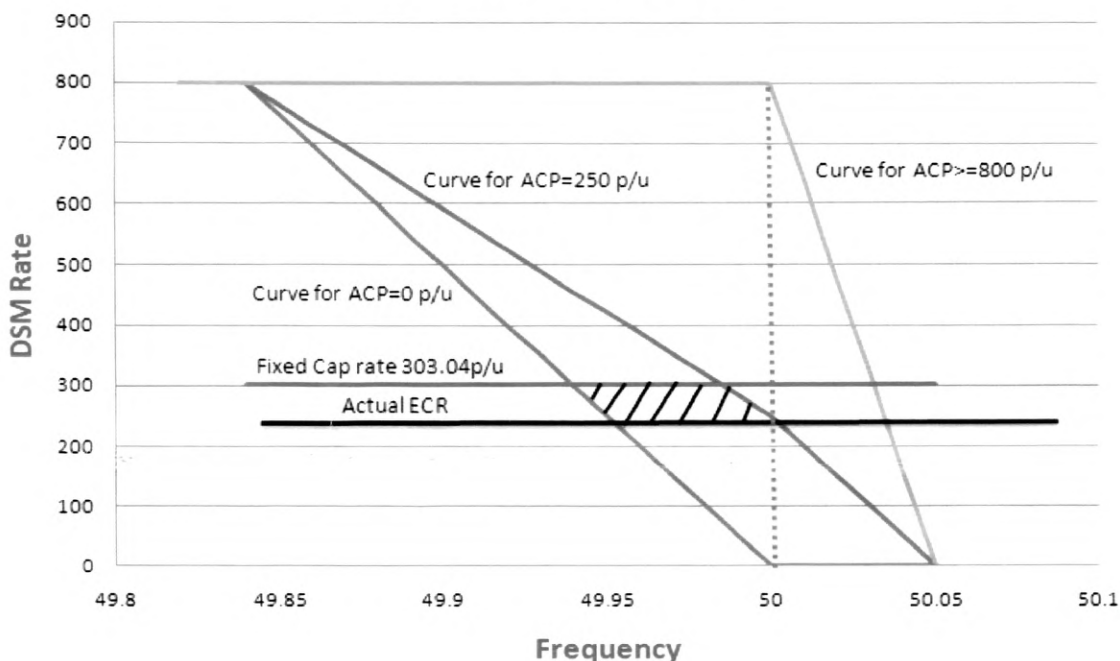


Figure-II

Suppose for a particular day $ACP = 250$ p/u. So the curve for $ACP = 250$ p/u will lie between the curves of $ACP \geq 800$ p/u and $ACP = 0$ p/u as shown in the figure-II. In the prevailing regulation, the cap rate for generators regulated by CERC under APM is fixed at 303.04 p/u. So when the actual ECR of the generating station is less than 303.04 p/u, there would have been a chance for gaming in the shaded portion as shown in Figure-II, which has now being removed as the cap rate is substituted by the energy charge rate of the generators.

Charges for Deviation

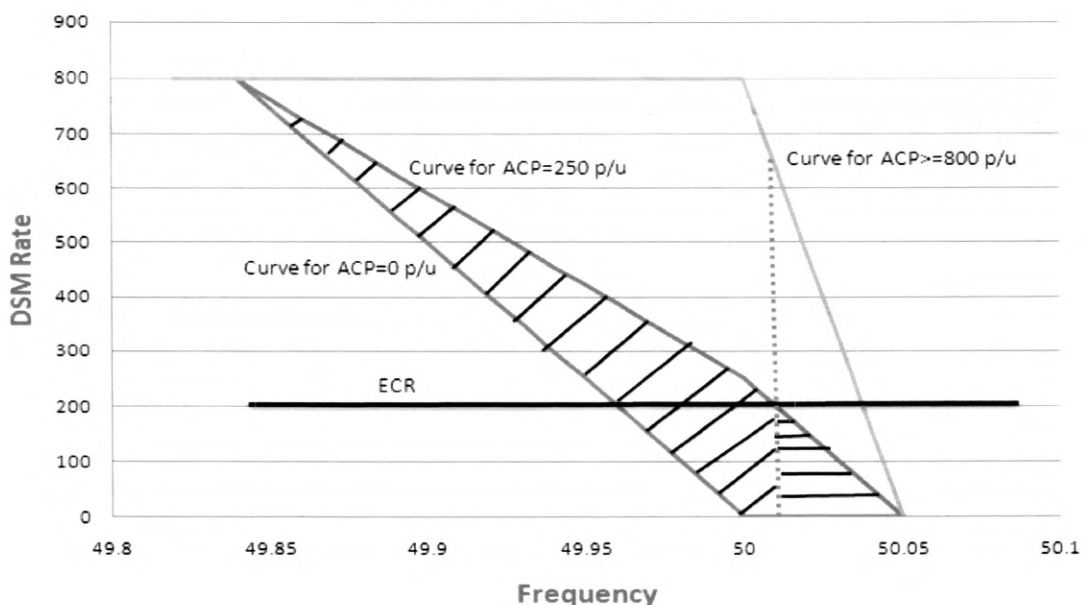


Figure-III

Now according to the draft 4th amendment, the area of operation for DSM mechanism for any generating station or drawee entity will be the shaded portion as shown in Figure-III. The area of operation for generating stations regulated by CERC under APM will be the shaded area below ECR. For the left portion of the dotted vertical line, DSM Rate is more than the ECR of a generator and for right portion of the dotted vertical line; DSM rate is less than the ECR of any generator. So for the left portion, a generator should over-inject in order to avoid loss in revenue and for the right portion, a generator should under-inject to avoid loss in revenue.

2. Energy Charges, which are different for different generating stations, may not be available to RPC secretariat on timely basis for calculation of DSM statement of the first week of a month.
3. ECR provided by the generating station on monthly basis will be provisional in nature. So if the ECR is revised at a later stage, any retrospective settlement of DSM account would be a very cumbersome task.
4. ECR of the previous month might not be the true representative of the cap rate for the current month. Either of the following methodologies based on the ECR may be considered for calculating the cap rate.

a.
$$ECR = \frac{3*m_3 + 2*m_2 + 1*m_1}{6},$$

Where m_3 being the latest month for which ECR is available.

- b. While calculating DSM for any week in a month

$$ECR = [(ECR \text{ of the same month of the previous year}) + (ECR \text{ of the previous month of the current year})] / 2$$

Para 4.19

ERPC's Comments:

1. Reduction in number of time blocks (from 12 to 6 time blocks) for change of sign in case of sustained deviation is a welcome step. However, methodology for calculating number of violations for sustained deviations needs more clarification.

Illustration: Suppose a utility has sustained unidirectional deviation for 15 blocks. According to the draft amendment, the utility should change its sign in the 7th block otherwise it will be counted as a violation. Now the number of violations can be calculated in the following ways:

Sign	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Blocks	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

- a. From block 1st to 7th one violation and from block 8th to 14th another violation and so on.
 - b. From block 1st to 7th one violation and then for calculating the 2nd violation the base block can be taken as 7th block; so 7th-13th another violation and so on.
 - c. It can be considered as a single violation until a sign reversal takes place.
2. For multiple instances of sustained deviations of 7 blocks or more, whether the additional deviation charge is fixed at 20% of base DSM charge for the day or it will also be dependent on the number of such violations, needs clarification.

Illustration: Suppose a utility has 3 nos. of violations of sustained deviation for 7 blocks or more. Whether the additional deviation charge levied will be fixed at 20% of base DSM charge irrespective of the no. of violations or it will be 3*20% i.e. 60% of the base DSM charge. If the latter case is considered whether the no of violations is taken into account; in that case such amount of additional deviation charge will be a huge burden on the utility.

From the **Annexure-III** it can be seen that for a particular day according to the existing regulation a utility has to pay a deviation charge of ₹ 9220503 and an additional deviation charge of ₹ 1165456. So total deviation charge payable for the utility is ₹ (9220503 +1165456)= ₹ 1.03859 Crore. Total deviation by the utility for that day is 4064.4 MWh.

So per unit Deviation charge comes out to be around ₹ 2.56.

Now for the same day, if the proposed mechanism is applied, it can be seen from the **Annexure-IV** that deviation charge payable by the utility is ₹ 11652982 and additional deviation charge will have 3 components now:

- a. Block-wise Additional deviation for exceeding volume limit: ₹ 1470998
- b. Additional deviation for total deviation from total schedule on day basis: ₹2330596.
- c. Additional Deviation for unidirectional sustained deviation : As discussed in comments under para 4.19 i.e. 1a, 1b, and 1c, there could be multiple possible ways for calculating no. of violations:

- i) If we consider the methodology mentioned in 1a, no. of violations coming out to be 12 and Additional Deviation Charge= ₹ 27967197
- ii) If we consider the methodology mentioned in 1b, no. of violations coming out to be 14 and Additional Deviation Charge= ₹32628350.
- iii) If we consider the methodology mentioned in 1c, no. of violations coming out to be 3 and Additional Deviation Charge= ₹ 6991789.

For method 1a

Net Deviation Charge= ₹ 43421734 (11652982+1470998+2330596+27967197)

So deviation charge per unit= ₹ 10.68

For method 1b

Net Deviation Charge= ₹ 48082926 (11652982+1470998+2330596+32628350)

So deviation charge per unit= ₹ 11.83

For method 1c

Net Deviation Charge= ₹ 22446366 (11652982+1470998+2330596+6991789)

So deviation charge per unit= ₹ 5.52

It is observed that in first two cases there is a huge increase in the per unit cost of deviation which seems a bit harsh. In such cases, the following methodology may be considered:

- i. Up to 2 violations: 10% of the base DSM charge
- ii. Up to 4 violations: 20 % of the base DSM Charge
- iii. More than 4 violations: 10 % of the base DSM charge for each violation

Illustration: For violation of 1 or 2 times a utility has to pay an additional deviation charge of 10% of Base DSM Charge. If the utility has violated for 3 or 4 times, an additional deviation charge of 20% of the base DSM charge will be levied. And suppose the utility has violated for 6 times, the additional deviation charge would be 6*10% i.e. 60% of the base DSM charge.

Calculation of Additional Deviation Charge on the basis of total deviation from total daily schedule when schedule<=400 MW

ACP(P/ij) 178 (Say)	TIME	ACTUAL DRAWAL(MWH)	SCH. DRAWAL (MWH)	DEVIATION= Actual-Schedule. (-) means under-drawl	FREQUENCY in HZ	DEVIATION RATE(IN Rs/MWh)	TOTAL DEVIATION CHARGES RECEIVABLE (IN RS.)	ADDITIONAL CHARGES FOR DEVIATION BEYOND VOL LIMIT(PAYABLE(IN RS.))	ADDITIONAL CHARGES FOR TOTAL DEVIATION FROM TOTAL DAILY SCHEDULE (PAYABLE)(IN RS.)
	00:00	-111	-100	-12	49.81	8000.00	-9600.00	0	0
	00:15	-111	-100	-11	49.9	5667.50	-6234.25	0	0
	00:30	-112	-100	-12	49.86	7222.50	-8657.00	0	0
	00:45	-112	-100	-12	49.89	6056.25	-7267.50	0	0
	01:00	-112	-100	-12	49.99	2168.75	-2602.50	0	0
	01:15	-112	-100	-12	49.99	2168.75	-2602.50	0	0
	01:30	-112	-100	-12	49.96	3335.00	-4002.00	0	0
	01:45	-112	-100	-12	49.95	3723.75	-4468.50	0	0
	02:00	-112	-100	-12	49.96	3335.00	-4002.00	0	0
	02:15	-112	-100	-12	49.93	4501.25	-5401.50	0	0
	02:30	-112	-100	-12	49.96	3335.00	-4002.00	0	0
	02:45	-112	-100	-12	49.95	3723.75	-4468.50	0	0
	03:00	-112	-100	-12	49.99	2168.75	-2602.50	0	0
	03:15	-112	-100	-12	50.01	1424.00	-1708.00	0	0
	03:30	-112	-100	-12	50	1780.00	-2136.00	0	0
	03:45	-112	-100	-12	50.02	1068.00	-1281.00	0	0
	04:00	-112	-100	-12	49.98	2557.50	-3069.00	0	0
	04:15	-112	-100	-12	49.94	4112.50	-4950.00	0	0
	04:30	-112	-100	-12	49.9	5667.50	-6801.00	0	0
	04:45	-112	-100	-12	49.89	6056.25	-7267.50	0	0
	05:00	-112	-100	-12	49.94	4112.50	-4950.00	0	0
	05:15	-103	-100	-3	49.96	3335.00	-1000.50	0	0
	05:30	-103	-100	-3	49.97	2946.25	-838.75	0	0
	05:45	-103	-100	-3	49.98	2557.50	-717.25	0	0
	06:00	-103	-100	-3	50.01	1424.00	-427.20	0	0
	06:15	-103	-100	-3	49.96	3335.00	-1000.50	0	0
	06:30	-103	-100	-3	50.03	712.00	-213.60	0	0
	06:45	-103	-100	-3	50.03	712.00	-213.60	0	0
	07:00	-103	-100	-3	50.02	1068.00	-320.40	0	0
	07:15	-103	-100	-3	49.97	2946.25	-838.75	0	0
	07:30	-99	-100	1	50.04	356.00	356.00	0	0
	07:45	-99	-100	1	50.07	0.00	0.00	0	0
	08:00	-97	-100	3	50.06	0.00	0.00	0	0
	08:15	-99	-100	1	50.01	1424.00	1424.00	0	0
	08:30	-98	-100	2	50.04	356.00	712.00	0	0
	08:45	-99	-100	1	50	1780.00	1780.00	0	0
	09:00	-103	-100	-3	50	1780.00	-534.00	0	0
	09:15	-103	-100	-3	50.04	356.00	-1068.00	0	0
	09:30	-103	-100	-3	50	1780.00	-534.00	0	0
	09:45	-103	-100	-3	50.03	712.00	-213.60	0	0
	10:00	-103	-100	-3	50.05	0.00	0.00	0	0
	10:15	-103	-100	-3	50.02	1068.00	-320.40	0	0
	10:30	-103	-100	-3	49.99	2168.75	-6506.25	0	0
	10:45	-103	-100	-3	50.03	712.00	-213.60	0	0
	11:00	-103	-100	-3	50.04	356.00	-1068.00	0	0
	11:15	-103	-100	-3	49.98	2557.50	-7672.50	0	0
	11:30	-103	-100	-3	49.99	2168.75	-6506.25	0	0
	11:45	-103	-100	-3	49.98	2557.50	-7672.50	0	0
	12:00	-103	-100	-3	50.01	1424.00	-427.20	0	0
	12:15	-103	-100	-3	49.96	3335.00	-1000.50	0	0
	12:30	-103	-100	-3	49.95	3723.75	-11171.25	0	0
	12:45	-103	-100	-3	49.94	4112.50	-12337.50	0	0
	13:00	-110	-100	-10	49.96	3335.00	-3335.00	0	0
	13:15	-110	-100	-10	50.01	1424.00	-1424.00	0	0
	13:30	-110	-100	-10	49.94	4112.50	-4112.50	0	0
	13:45	-110	-100	-10	49.98	2557.50	-2557.50	0	0
	14:00	-110	-100	-10	50.01	1424.00	-1424.00	0	0
	14:15	-110	-100	-10	49.97	2946.25	-2946.25	0	0
	14:30	-110	-100	-10	49.93	4501.25	-4501.25	0	0
	14:45	-110	-100	-10	49.93	4501.25	-4501.25	0	0
	15:00	-110	-100	-10	50	1780.00	-1780.00	0	0
	15:15	-110	-100	-10	50.01	1424.00	-1424.00	0	0
	15:30	-110	-100	-10	50.03	712.00	-712.00	0	0
	15:45	-110	-100	-10	50.02	1068.00	-1068.00	0	0
	16:00	-110	-100	-10	50.01	1424.00	-1424.00	0	0
	16:15	-110	-100	-10	49.98	2557.50	-2557.50	0	0
	16:30	-110	-100	-10	49.99	2168.75	-2168.75	0	0
	16:45	-110	-100	-10	49.95	3723.75	-3723.75	0	0
	17:00	-110	-100	-10	50.01	1424.00	-1424.00	0	0
	17:15	-110	-100	-10	49.94	4112.50	-4112.50	0	0
	17:30	-110	-100	-10	49.96	3335.00	-3335.00	0	0
	17:45	-110	-100	-10	49.97	2946.25	-2946.25	0	0
	18:00	-110	-100	-10	50.02	1068.00	-1068.00	0	0
	18:15	-110	-100	-10	50.03	712.00	-712.00	0	0
	18:30	-110	-100	-10	50.02	1068.00	-1068.00	0	0
	18:45	-110	-100	-10	49.99	2168.75	-2168.75	0	0
	19:00	-110	-100	-10	50.01	1424.00	-1424.00	0	0
	19:15	-110	-100	-10	49.94	4112.50	-4112.50	0	0
	19:30	-110	-100	-10	49.92	4890.00	-4890.00	0	0
	19:45	-110	-100	-10	49.95	3723.75	-3723.75	0	0
	20:00	-110	-100	-10	49.98	2557.50	-2557.50	0	0
	20:15	-110	-100	-10	49.92	4890.00	-4890.00	0	0
	20:30	-110	-100	-10	49.95	3723.75	-3723.75	0	0
	20:45	-111	-100	-11	49.93	4501.25	-4951.375	0	0
	21:00	-111	-100	-11	49.85	7811.25	-8372.375	0	0
	21:15	-111	-100	-11	49.9	5667.50	-6234.25	0	0
	21:30	-111	-100	-11	49.95	3723.75	-4096.125	0	0
	21:45	-111	-100	-11	49.94	4112.50	-4523.75	0	0
	22:00	-111	-100	-11	49.89	6056.25	-6661.875	0	0
	22:15	-111	-100	-11	49.91	5278.75	-5806.25	0	0
	22:30	-111	-100	-11	49.96	3335.00	-3668.50	0	0
	22:45	-111	-100	-11	49.9	5667.50	-6234.25	0	0
	23:00	-111	-100	-11	49.97	2946.25	-3240.875	0	0
	23:15	-111	-100	-11	49.98	2557.50	-2813.25	0	0
	23:30	-111	-100	-11	49.96	3335.00	-3668.50	0	0
	23:45	-111	-100	-11	49.98	2557.50	-2813.25	0	0
		10370	9600	-758.0000			-256825.2	0	-513765

Allowed Deviation	
0.97% of Sch(UD)	103% of Sch(OD)
9312	9888

Over-draw in excess of schedule(%)=	8.020833333
Over-draw in excess of 3% of schedule(%)=	5.020833333

