



Operation Report of the NNGS for the Year 2014

(In accordance with the provisions of the paragraph 2.z of Article 68 of the Law 4001/2011 on the operation of Energy Markets of Power Generation and Natural Gas, for Research, Production and Hydrocarbon Transportation Networks and other regulations)

Halandri, Attica
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TABLE OF CONTENTS

1	General description of the National Natural Gas System	3
2	Report for the operation of NNGS	5
2.1	Technical Characteristics of the System	5
2.2	Variations in Technical Characteristics of the System	5
2.3	NNGS Entry/Exit Points Capacity	6
2.4	Load Balancing	10
2.5	Maintenance Standard and Quality	14
2.6	Congestion and Congestion Management	19
2.7	Emergencies and Dealing with Emergencies	21
2.8	Operating characteristics of NNGS	21
2.9	Natural Gas Quantities historical data	23

1 General description of the National Natural Gas System



The National Natural Gas System (NNGS) transports Natural Gas to consumers connected to the NNGS in the Greek mainland from the Greek-Bulgarian borders, the Greek-Turkish borders and the Liquefied Natural Gas (LNG) terminal, which is installed at Revythoussa island at Megara.

The Natural Gas is delivered from the Users to three (3) Entry Points of the National Natural Gas Transmission System (NNGTS) and it is off-taken by the Users via forty-one (41) Exit Points in the Greek mainland.

It consists of:

- The main pipeline, with 512 Km length and 36" & 30" diameter, and the branches of total length 947 Km (containing the underwater pipeline of Aliveri branch, with 14.20 Km length and 20" diameter), which connect various areas of the country to the main pipeline;
- The Border Metering Stations at Sidirokastron, Serres and at Kipi, Evros;
- The Liquefied Natural Gas (LNG) Station at Revythoussa;
- The Compression Station at Nea Mesimvria, Thessaloniki;
- The Natural Gas Metering and Regulating Stations;
- The Control and Dispatching Centers;
- The Operation and Maintenance Centers at the Sidirokastron Border Metering Station, Eastern Greece, Northern Greece, Central Greece, Southern Greece and Peloponnese;
- The Remote Control and Communications system; and
- Two underwater pipes, each one a back-up of the other, of 24" diameter each and of 620 m and 510 m length that connect the Revythoussa LNG Station to the mainland.

The Revythoussa LNG Station is the only installation in the National Natural Gas System which can

temporarily store Natural Gas quantities, up to 130,000 m³ ≈ 882,700 MWh.

It consists of:

- Two (2) Liquefied Natural Gas tanks of 65,000 m³ LNG each;
- LNG unloading installations of a total unloading capacity of 7,250 m³ LNG/h; and
- LNG gasification installations of total capacity of 1,000 m³ LNG/h in continuous working conditions and 1,250 m³/h LNG when the back-up gasifiers are in use.

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2 Report for the operation of NNGS

2.1 Technical Characteristics of the System

Table 1 below shows the diameters and total lengths of the main pipeline and the branches of the National Natural Gas Transmission System (NNGTS).

N.G. Pipeline	DIAMETER (inch)	TOTAL LENGTH (Km)
Main Pipeline	36 & 30	512.42
Lavrion Branch	30	101.60
Keratsini Branch	30 & 24	24.42
HAR Branch	14	1.81
Oinofyta Branch	10	20.57
Volos Branch	10	40.87
EKO Branch	24 & 10	9.74
Thesaloniki East Branch	24	24.73
Platy Branch	10	10.97
Kavala-Kipi-Komotini Branch	36 & 24	300.25
Aloyminion Branch	20	28.06
Korinthos-Motor Oil Branch	30 & 20	42.00
Trikala-Karditsa Branch	10	71.93
Thisvi Branch	20	28.13
Heron Branch	14	0.65
Aliveri Branch	20	73.19
Megalopoli Branch	30 & 24	167.99
TOTAL		1,459.33
Revythoussa - Agia Triada Underwater Pipeline		
East Pipeline	24	0.62
West Pipeline	24	0.51

Table 1: Diameters and lengths of the Natural Gas pipeline

2.2 Variations in Technical Characteristics of the System

During the Year 2014 the technical characteristics of the NNGS varied as follows:

1. The Technical Capacities of the NNGTS Entry Points varied as follows since 05.06.2014:
 - ❖ At the Entry Point 'AGIA TRIADA' from 139,656.115 MWh/Day to 150,014.000 MWh/Day;
 - ❖ At the Entry Point 'KIPI' from 60,487.000 MWh/Day to 48,590.000 MWh/Day; and
 - ❖ At the Entry Point 'SIDIROKASTRON' from 131,000.000 MWh/Day to 122,040.000 MWh/Day.
2. On 19.12.2014 the high pressure pipeline from Ag. Theodoroi, Korinthia to PPC Megalopoli, Arkadia, of a total length of 167.99 km, 80 barg design pressure and dimensions 30 inch (from

Ag. Theodoroi to Korinthos) and 24 inch (from Korinthos to Megalopoli) was incorporated. Two (2) Scraper Stations in Korinthos area, one (1) Scraper Station in Megalopoli area and five (5) Line Valve Stations at the areas of Dervenakia, Argos, Achladokampos Argolida, Tripoli and Megalopoli are included in the above mentioned pipeline section.

3. On 25.05.2014 the works related to the bidirectional physical flow through the interconnection point 'SIDIROKASTRON' were concluded, resulting to the capability of transferring Natural Gas quantities from the NNGTS to the upstream Connected Natural Gas Transmission System of Bulgaria, meeting the requirements of the European Regulation 994/2010/EK on Security of Supply.
4. The following NNGTS Exit Points were inducted:
 - ❖ 'AG. THEODOROI' (at Agioi Theodoroi area, Korinthia), with Technical Capacity 3,000.000 MWh/Day, on 16.01.2014;
 - ❖ 'ELPE HAR' (at Thriassio area, Attica), with Technical Capacity 8,035.200 MWh/Day, on 14.08.2014; and
 - ❖ 'MEGALOPOLI (PPC)' (at Megalopoli area, Arkadia), with Technical Capacity 42,854.400 MWh/Day, on 19.12.2014.

2.3 NNGS Entry/Exit Points Capacity

Table 2 on the next page shows the Technical Capacities of the relative Entry/Exit Points of the NNGTS, and the Maximum Capacity of the relative Metering/Regulating Stations on 01.01.2015 at 08:00.

TECHNICAL CAPACITIES OF NATIONAL NATURAL GAS TRANSMISSION SYSTEM ENTRY/EXIT POINTS (RELATIVE POINTS)

A/A	ENTRY POINT	Technical Capacity [MWh/day] ⁽¹⁾	DESFA' s Metering/Regulating Station	Maximum Capacity of DESFA's Metering/Regulating Station [MWh/day]
1	SIDIROKASTRON	122,040.000 ⁽³⁾	M SIDIROKASTRO (U-2010)	177,363.648
2	AGIA TRIADA	150,014.000	M AGIA TRIADA (U-3020)	150,014.000
3	KIPI	48,590.000 ⁽³⁾	M KIPI (U-3900)	229,314.966

A/A	EXIT POINT	Technical Capacity [MWh/day] ⁽¹⁾	DESFA' s Metering/Regulating Station	Maximum Capacity of DESFA's Metering/Regulating Station [MWh/day]
1	ALOYMINION	26,784.000	M AdG (U-2820)	26,784.000
2	ALOYMINION II	20,777.632	M AdG II ⁽²⁾	20,777.632
3	ALOYMINION III	6,696.000	M AdG III (U-TM1/TM5)	6,696.000
4	MOTOR OIL	26,784.000	M MOTOR OIL (U-7130)	26,784.000
5	MOTOR OIL II	21,427.200	M MOTOR OIL II ⁽²⁾	21,427.200
6	AG. THEODOROI	3,000.000	M/R AG. THEODOROI	3,000.000
7	ATHENS	88,561.564	M/R NORTH ATHENS (U-2910)	29,521.057
			M/R EAST ATHENS (U-2940)	29,521.057
			M/R WEST ATHENS (U-2990)	29,519.450
8	ALEXANDROUPOLIS	7,499.520	M/R ALEXANDROUPOLIS (U-3630)	7,499.520
9	ALIBERI (PPC)	21,427.200	M ALIVERI	21,427.200
10	VIPE LARISSA	2,678.400	M/R VIPE LARISSA (U-2515)	2,678.400
11	VOLOS	13,832.061	M/R VOLOS (U-2680)	13,832.061
12	VFL	6,510.923	M VFL (U-2170)	6,510.923
13	DRAMA	7,499.520	M/R DRAMA (U-2410)	7,499.520
14	ELPE	4,828.352	M/R EKO (U-2250)	4,828.352
15	ENERGIAKI THESS. (ELPE)	26,784.000	M ENERGIAKI THESSALONIKI ⁽²⁾	26,784.000
16	HERONAS	10,713.600	M HERONAS (U-6020)	10,713.600
17	HERON II	22,500.000	M HERON II (U-6030)	22,766.400
18	THESSALONIKI	38,851.263	M/R THESSALONIKI NORTH (U-2240)	19,425.632
			M/R THESSALONIKI EAST (U-2220)	19,425.632
19	THISVI	23,800.000	M THISVI ⁽²⁾	23,837.760
20	THRIASSIO	13,580.827	M/R THRIASSIO (U-2960)	13,580.827
21	KAVALA	2,678.400	M/R KAVALA (TM4-A)	2,678.400
22	KARDITSA	5,356.800	M/R KARDITSA (TM3-A)	5,356.800
23	KATERINI	7,499.520	M/R KATERINI (U-2340)	7,499.520
24	KERATSINI (PPC)	27,360.660	M KERATSINI (U-3090)	27,360.660
25	KILKIS	11,784.960	M/R KILKIS (U-2260)	11,784.960
26	KOKKINA	2,678.400	M/R KOKKINA (U-2670)	2,678.400
27	KOMOTINI (PPC)	28,926.720	M/R PPC KOMOTINI (U-3570)	28,926.720
28	KOMOTINI	5,356.800	M/R KOMOTINI (TM3-C)	5,356.800
29	LAMIA	7,499.520	M/R LAMIA (U-2620)	7,499.520
30	LARISSA	13,879.469	M/R NORTH LARISSA (U-2520)	6,939.734
			M/R SOUTH LARISSA (U-2530)	6,939.734
31	LAVRIO (PPC)	64,281.600	M LAVRIO (U-3430)	64,281.600
32	SPATA	3,080.160	M/R MARKOPOULO (TM2)	3,080.160
33	XANTHI	11,784.960	M/R XANTHI (U-3530)	11,784.960
34	OINOFYTA	7,099.903	M/R INOFYTA (U-2880)	7,099.903
35	PLATY	5,755.346	M/R PLATY (U-2410)	5,755.346
36	SALFA ANO LIOSSIA	2,678.400	CNG I ⁽²⁾	2,678.400
37	SALFA ANTHOUSSA	2,678.400	CNG II ⁽²⁾	2,678.400
38	SERRES	11,784.960	M/R SERRES (U-2110)	11,784.960
39	TRIKALA	5,356.800	M/R TRIKALA (TM3-B)	5,356.800

Table 2

Comments on Table 2:

1. 'Technical Capacity' is the maximum invariable capacity that the Operator is able to offer to the Transmission Users, considering the operational demands of the NNGTS.
2. Given that the Operator has not completed the installation works for the measuring device, through which gas is injected from the Transmission System to the relative Natural Gas Extraction Installation and until the completion of the measuring device, Exit Point will be considered the connection point of the last link on the pipeline feeding, where Natural Gas is injected to the Natural Gas Extraction Installation inside a site, which has been given to the Operator for the construction of the corresponding measuring device.
3. The amount of the Technical Capacities of the Entry Points 'SIDIROKASTRON' and 'KIPI' are not verified by the Upstream System's Operator.

Finally, Table 3 on the next page depicts the NNGTS Average Natural Gas Deliveries and Off-takes for the Year 2014.

Annual profile of Natural Gas Deliveries/Off-takes and Daily peaks at the Entry/Exit Points of NNGTS					
Year 2014					
Entry Point Name	Technical Capacity [MWh/Day]	Annual Average of Natural Gas Delivery for the Point [MWh/Day]	Daily peak of the Point [MWh/Ημέρα]	Annual Average of Natural Gas Delivery for the Point as a percentage of Technical Capacity [%]	Daily peak of the Point as a percentage of Technical Capacity [%]
AGIA TRIADA	150,014.000	18,203.151	87,808.104	12.6	58.5
	139,656.115				
KIPI	48,590.000	18,477.552	26,097.434	34.3	43.1
	60,487.000				
SIDIROKASTRO	122,040.000	50,470.245	121,546.153	39.9	92.8
	131,000.000				
Exit Point Name	Technical Capacity [MWh/Day]	Annual Average of Natural Gas Off-takes for the Point [MWh/Day]	Daily peak of the Point [MWh/Ημέρα]	Annual Average of Natural Gas Off-takes for the Point as a percentage of Technical Capacity [%]	Daily peak of the Point as a percentage of Technical Capacity [%]
ALOYMINION	26,784.000	10,096.959	15,533.689	37.7	58.0
ALOYMINION II	20,777.632	2,681.694	15,715.567	12.9	75.6
ALOYMINION III	6,696.000	2,170.221	3,373.397	32.4	50.4
MOTOR OIL	26,784.000	7,409.964	10,946.969	27.7	40.9
MOTOR OIL II	21,427.200	1,930.106	16,062.883	9.0	75.0
AGIOI THEODOROI	3,000.000	18.680	64.506	0.6	2.2
ATHENS	88,561.564	7,284.940	26,314.545	8.2	29.7
ALEXANDROUPOLIS	7,499.520	76.827	196.733	1.0	2.6
ALIVERI (PPC)	21,427.200	8,549.665	18,509.078	39.9	86.4
VIPE LARISSA	2,678.400	126.573	212.166	4.7	7.9
VOLOS	13,832.061	1,599.177	4,015.222	11.6	29.0
VFL	6,510.923	4,242.241	5,128.155	65.2	78.8
DRAMA	7,499.520	587.590	1,075.393	7.8	14.3
ELPE	4,828.352	706.208	1,685.760	14.6	34.9
ENERGIAKI THESS. (ELPE)	26,784.000	2,510.859	15,998.610	9.4	59.7
HERONAS	10,713.600	24.714	5,979.448	0.2	55.8
HERON II	22,500.000	3,559.053	15,260.559	15.8	67.8
THESSALONIKI	38,851.263	6,105.897	24,757.848	15.7	63.7
THISVI	23,800.000	3,252.269	14,349.138	13.7	60.3
THRIASIO	13,580.827	425.963	1,105.742	3.1	8.1
KAVALA	2,678.400	0.000	0.000	0.0	0.0
KARDITSA	5,356.800	160.844	912.140	3.0	17.0
KATERINI	7,499.520	298.383	339.004	4.0	4.5
KERATSINI (PPC)	27,360.660	7.092	1,987.320	0.0	7.3
KILKIS	11,784.960	784.894	1,421.649	6.7	12.1
KOKKINA	2,678.400	267.029	882.126	10.0	32.9
KOMOTINI (PPC)	28,926.720	2,272.353	21,137.795	7.9	73.1
KOMOTINI	5,356.800	90.555	179.067	1.7	3.3
LAMIA	7,499.520	103.014	219.282	1.4	2.9
LARISSA	13,879.469	1,289.853	5,253.432	9.3	37.9
LAVRION (PPC)	64,281.600	13,385.813	33,041.539	20.8	51.4
SPATA	3,080.160	228.785	394.498	7.4	12.8
XANTHI	11,784.960	118.807	300.632	1.0	2.6
OINOFYTA	7,099.903	2,570.796	3,420.785	36.2	48.2
PLATY	5,755.346	850.185	3,680.517	14.8	63.9
SALFA ANO LIOSSIA	2,678.400	267.622	456.834	10.0	17.1
SALFA ANTHOUSA	2,678.400	222.102	310.813	8.3	11.6
SERRES	11,784.960	405.535	1,144.107	3.4	9.7
TRIKALA	5,356.800	131.529	821.95	2.5	15.3

Table 3

Comments on Table 3:

1. On 05.06.2014 the Technical Capacities of the NNGTS Entry Points were modified.
2. The Daily peak of the Entry Points occurred on:
 - the Day 08.02.2014 for the Entry Point 'SIDIROKASTRON';
 - the Day 04.02.2014 for the Entry Point 'KIPI'; and
 - the Day 26.11.2014 for the Entry Point 'AGIA TRIADA'.

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2.4 Load Balancing

Balancing Gas is considered the Natural Gas quantity that the Operator injects to the National Transmission System, during a certain period, so as to create a balance between Natural Gas deliveries and off-takes (during the same period) so as in every case the safe, reliable and efficient operation of the NNGS will be considered secure. As part of his responsibilities and obligations, the Operator ensures the above balance, taking into account the losses and the stored Natural Gas quantities in the National Transmission System. During the Year 2014, the balancing needs of the National Transmission System are covered solely by using the Liquefied Natural Gas (LNG) facility at Revythoussa. The Operator bought the necessary Natural Gas quantities for the load balancing of the NNGTS by making use of relative agreements signed with the Public Gas Corporation (DEPA) S.A. for the supply of Liquefied Natural Gas Quantities.

Table 4 below presents the monthly Operator's predictions for the necessary Balancing Gas quantities, according to the Annual Planning of Load Balancing of the NNGTS for the Year 2014, which is approved by the Regulatory Authority for Energy (RAE) (RAE Decision 637/2013) and the total quantities of the Balancing Gas actually needed for the Year 2014.

	Balancing Gas Prediction according to Annual Planning of Load Balancing	Balancing Gas (Actual)
Year 2014	(MWh)	(MWh)
January	339,168	190,417
February	260,749	226,574
March	110,260	116,535
April	74,252	233,828
May	104,917	169,081
June	59,727	177,268
July	126,186	244,848
August	88,000	77,925
September	81,322	87,247
October	88,594	244,825
November	116,770	235,136
December	228,870	169,023
Total	1,678,815	2,172,705

Table 4: Monthly Operator's predictions according to of the Annual Planning of Load Balancing of the NNGTS and the total Balancing Gas quantities for the Year 2014

The Balancing Gas that was injected in the NNGTS during the Year 2014 deviates significantly from the initial Operator's predictions in the Annual Planning of Load Balancing of the NNGTS for the specific Year. This is mainly due to the imbalance of the Natural Gas Off-takes at the NNGTS Exit Points,

particularly via those that Power Plants are supplied with Natural Gas, compared with the Natural Gas Deliveries Nominations of Users at the NNGTS Entry Points. Balancing of Natural Gas Off-takes and Deliveries at the NNGTS, and thus the continuity of the NNGS operation, was ensured by increasing the LNG regasification, leading to the injection of increased Natural Gas quantities in the NNGTS via the Entry Point 'AGIA TRIADA'.

Diagram 1 shows the monthly Balancing Gas quantities, related to the monthly Natural Gas Deliveries in all the NNGTS Entry Points.

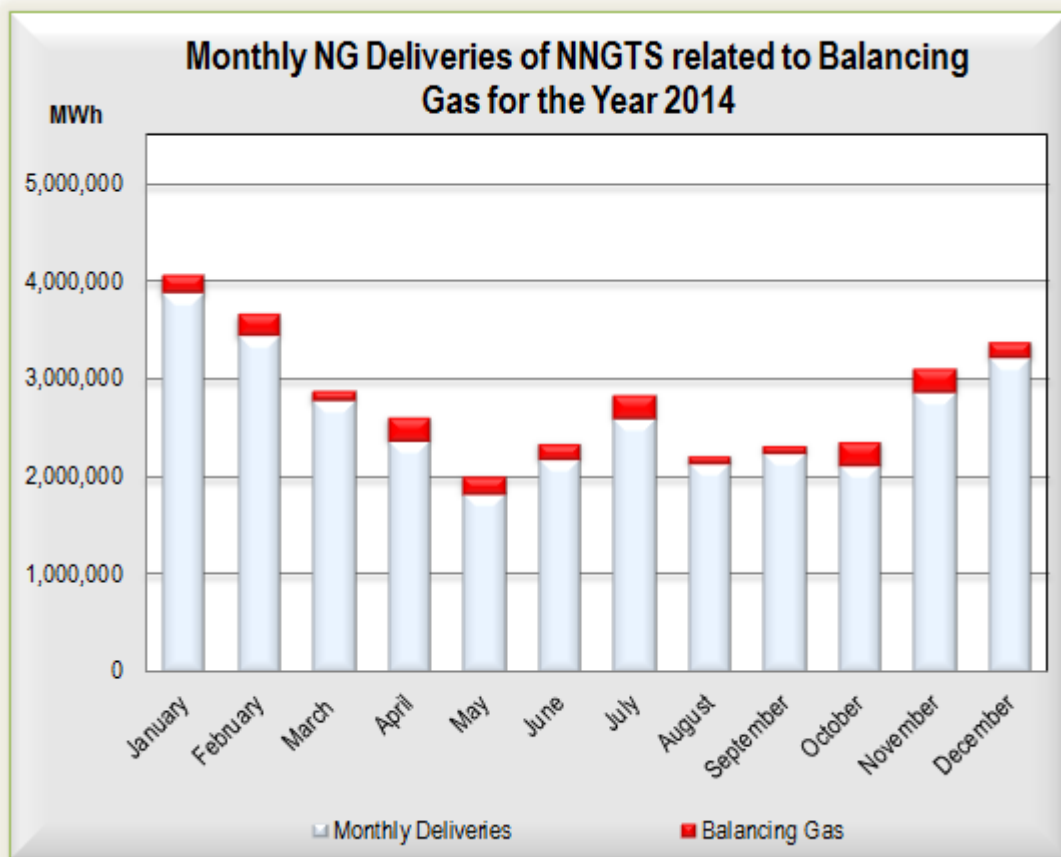


Diagram 1

◀ In the Year 2014 the Natural Gas quantity that the Transmission Users delivered at the Entry Points is lower than the Natural Gas quantity received from the Exit Points of NNGTS, leading to an average negative Daily Imbalance (DGI) of the Transmission Users.

Worth noting is the Day 05.02.2014, as it was the maximum quantity of the Natural Gas Deliveries for the Year 2014, which was in the level of 191,279 MWh with DGI -18,330 MWh (which is about the 9.58 % of the Natural Gas Total Deliveries). It is also noted that the maximum quantity of Balancing Gas for the Year 2014 does not occurred at the above mentioned Maximum Delivery Day, but it was observed on the

Day 24.04.2014 and raging in the level of 35,570.048 MWh.

Diagram 2 shows the total DGI of the Users for the Year 2014.

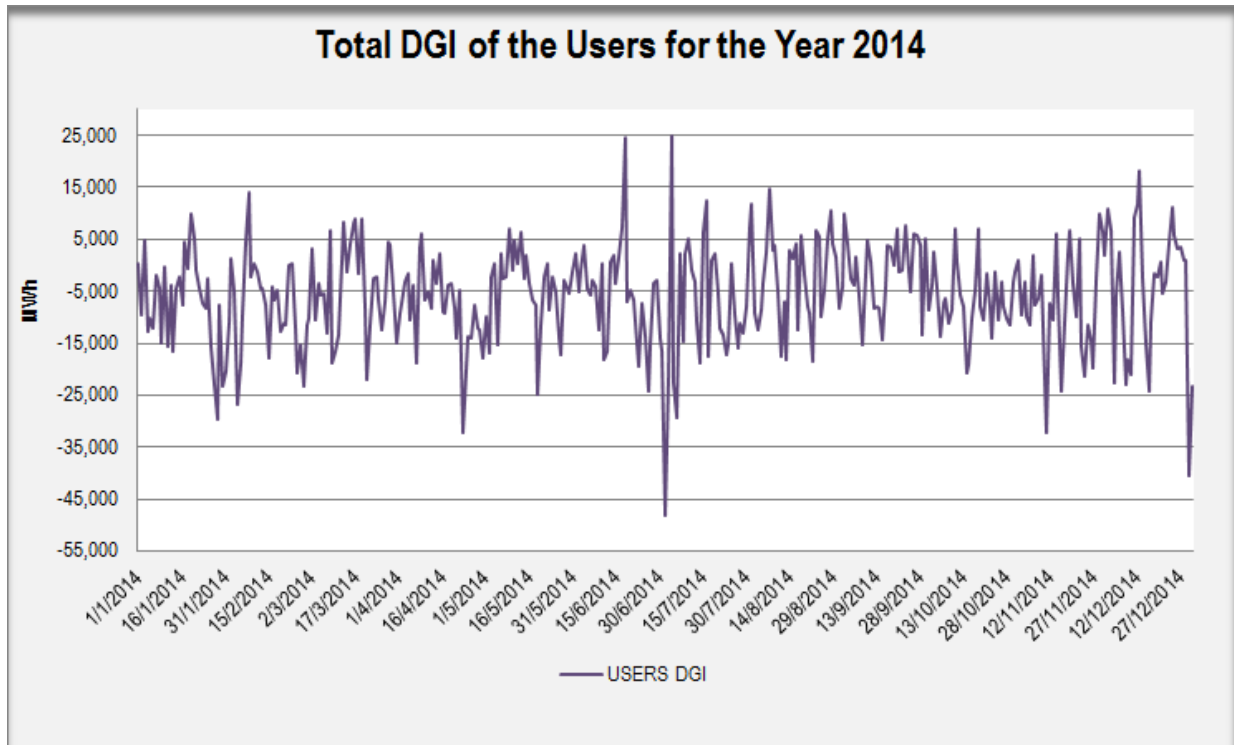


Diagram 2

The Operator, so as to offset the relatively frequent imbalance between the Transmission Users Off-takes and Deliveries in the NNGTS, made balancing actions aiming at minimizing the injection of Balancing Gas quantities by taking into account the pressure level of the network system, functional limitations as well as the estimated Natural Gas demand.

2.5 Maintenance Standard and Quality

Table 5 shows the Maintenance Program of NNGS for the Year 2014, as it was announced in the Operator's website on 2013, as well as its revision. Preventive maintenance and repair of all electrical and mechanical installations, the inspections, the management and control of the cathodic and lightning protection of the pipeline and installations were done according to the maintenance manuals, the legislation in use and the so far gained experience due to the running of the system for years.

The calibration of the measuring systems was done according to table 6 with only minor time deviations from the Annual Calibration Program that was uploaded in the Operator's website on December 2013.

The Operator is certified with ISO 9001:2008, OHSAS 18001:2004 & EN ISO 14001:2004 for all his activities, including the procedures of preventive and repairing maintenance and calibration of measuring systems. Furthermore, the Operator has a Pressure Laboratory certified by the Hellenic Accreditation System (E.SY.D.) with ELOT EN ISO/IEC 17025:2005.

NINGTS MAINTENANCE PROGRAM - YEAR 2014						
A/A	NINGTS POINT	DESCRIPTION OF WORKS	TRANSMISSION CAPACITY RESTRICTION	PERIOD OF WORK	MAINTENANCE DAYS	REMARKS
1	Entry Point 'SIDIROKASTRON'	Works at the Border Metering Station (BMS) at Sidirokastron for completion of permanent ability of physical bidirectional flow through the Station.	Available Transmission Capacity at Entry Point 'SIDIROKASTRON': 17.05.2014: 0.000 MWh/Day 18.05.2014: 45,080,000 MWh/Day 19-24.05.2014: 62,973.207 MWh/Day	17-24 May	8	The works included the connection of a new line-valve before the inlet and after the outlet of the Metering Station in the Entry Point "SIDIROKASTRON" and carried out according to the initial planning (17.05.2014 08:00 - 25.05.2014 08:00).
2	Entry Point 'SIDIROKASTRON'	Hardware and system software upgrade of BMS Sidirokastron Distributed Control System (DCS)	Available Transmission Capacity at Entry Point 'SIDIROKASTRON': 67,620.000 MWh/Day	July - September	3	The works involved the replacement of the System of Uninterruptible Power Supply (UPS) Station and of batteries and carried out in the period 19.08.2014 08:00 - 23.08.2014 08:00.
3	Line Valve 'MANDRA'	Triple Hot Tapping (30"x10", 10"x6", 10"x4") at the 'MANDRA' Line Valve (U-3040) facilities	Potential NNGTS Transmission Capacity restriction due to specific requirements of Natural Gas velocity during the period of the maintenance works	August		The relevant works did not take place.
4	Exit Point 'THESSALONIKI'	Installation, commissioning and start-up of third metering line at Thessaloniki East (U-2220) and Thessaloniki North (U-2240) M/R stations	Available Transmission Capacity at Exit Point 'THESSALONIKI': 19,425.632 MWh/Day	August 15 - October 15	4	The works were rescheduled for the two month period of September - October 2015 and will be included in the NNGTS Maintenance Program - Year 2015.
5	Entry Point 'SIDIROKASTRON'	Second Upgrade of Border Metering Station (BMS) Sidirokastron		August 15 - October 15	30	The works were rescheduled for September 2015 and will be included in the NNGTS Maintenance Program - Year 2015.
6	Pipeline Section: ANO LIOSSIA-LAVRION	Intelligent pigging inspection works	Potential NNGTS Transmission Capacity restriction due to specific requirements of Natural Gas velocity during the period of the maintenance works	September - November	2	The relevant works did not take place.
7	Pipeline Section: REVYTHOUSA-AGIA TRIADA (two (2) offshore pipelines)	Intelligent pigging inspection works	Potential NNGTS Transmission Capacity restriction due to specific requirements of Natural Gas velocity during the period of the maintenance works	September - November	2	The relevant works did not take place.
8	Pipeline Section: PATIMA-KERATSINI	Intelligent pigging inspection works	Potential NNGTS Transmission Capacity restriction due to specific requirements of Natural Gas velocity during the period of the maintenance works	September - November	2	The relevant works did not take place.
9	Pipeline Section: AMPELIA-VOLOS	Intelligent pigging inspection works	Potential NNGTS Transmission Capacity restriction due to specific requirements of Natural Gas velocity during the period of the maintenance works	September - November	2	The relevant works did not take place.
10	Pipeline Section: PENTALOFOS-DIAVATA	Intelligent pigging inspection works	Potential NNGTS Transmission Capacity restriction due to specific requirements of Natural Gas velocity during the period of the maintenance works	September - November	2	The relevant works did not take place.
11	Pipeline Section: DRIMOS-ASVESTOKHORI	Intelligent pigging inspection works	Potential NNGTS Transmission Capacity restriction due to specific requirements of Natural Gas velocity during the period of the maintenance works	September - November	2	The relevant works did not take place.
12	Pipeline Section: AMPELIA-MAVRONERI	Intelligent pigging inspection works	Potential NNGTS Transmission Capacity restriction due to specific requirements of Natural Gas velocity during the period of the maintenance works	September - November	2	The relevant works did not take place.
13	LNG Terminal	Maintenance of Revythoussa LNG Terminal's unloading arms	Available LNG Injection Rate: 5,500.00 m ³ LNG/hour	May - June	60	Was carried out in a lesser time that the planned maintenance of the unloading arms, without affecting the LNG Injection Rate. Larger scale maintenance of the unloading arms will be carried out on the two month period of September - October 2015 and will be included in the NNGTS Maintenance Program - Year 2015.
14	LNG Terminal	Installation, commissioning and start-up of a new Distributed Control System (DCS) at the Revythoussa LNG Terminal	Available LNG Terminal's Regasification Capacity: 0.000 MWh/Day Available Transmission Capacity at Entry Point 'AGIA TRIADA': 0.000 MWh/Day	June	3	The works were rescheduled for the two month period of June July 2015 and will be included in the NNGTS Maintenance Program - Year 2015.
EMERGENCY MAINTENANCE IN THE NNGTS - YEAR 2014						
1	Entry Point 'AGIA TRIADA'	Excavation, disclosure and repair a part of the high pressure pipeline downstream of the Entry Point "AGIA TRIADA" in the region Vourkari-Megara	Available Transmission Capacity at Entry Point 'AGIA TRIADA': 78.260,000 MWh/Day	7 October - 9 October	3	Emergency Maintenance was carried out directly, in order to restore damage that has been detected in a specific point on the high pressure pipeline, so as to ensure the secure operation of the NNGS.

Table 5: NNGS Maintenance Standard and Quality for the Year 2014

CALIBRATION – YEAR 2014

ENTRY POINT / UNIT NUMBER	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
SIDIROKASTRO / U – 2010	20-24, 27-28				19-23 26-28				15-19,22-23			
AGIA TRIADA / U – 3020				2 - 3			10					
KIPI / U – 3900				8-10							4-7	
EXIT POINT / UNIT NUMBER	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
LAVRIO (PPC) / U – 3430			10 - 14				14 - 18				3 - 7	
KERATSINI (PPC) / U – 3090 ⁽¹⁾				NO							25 - 26	
THRIASIO / U – 2960					20 – 23						17 - 18	
ALIVERI / U – 6370	28-29						29-30					
ATHENS / U – 2990 (WEST)						24-25						8-9
ATHENS / U – 2910 (NORTH)		10	7							13-14		
ATHENS / U – 2970 (ASPROPYRGOS) ⁽²⁾				29-30						8-9		
ATHENS / U – 2940 (EAST)												
INOFYTA / U – 2880						3-4						2-3
HERON / U – 6020			17							20-21		
HERON II / U – 6030			17-18							20-21		
SPATA / TM2							2					10

ALOYMINION / U – 2820					10-12					
ALOYMINION III / TM1/TM5					11-12					
THIVA / U – 2740 ⁽³⁾										
MOTOR OIL / U – 7130	22-23						27-28			
AGIOI THEODOROI / U – 7045								15		
VOLOS / U – 2680				26-27					19-20	
LARISA / U – 2520 (NORTH)				19-20					17-18	
LARISA / U – 2530 (SOUTH)				21-22					25-26	
VIPE LARISA / U – 2515				9					5	
KARDITSA / TM3-A				13					13	
LAMIA / U – 2620								22-24		
TRIKALA / TM3-B				13					13	
KOKKINA / U – 2670				12					6	
THESSALONIKI / U – 2240 (NORTH)				14-15					11-12	
THESSALONIKI / U – 2220(SOUTH)				12-13					5-6	
PLATY / U – 2410			15-16						14-15	
ELPE / U – 2250 (EKO)				26-27					27,29	
KILKIS / U – 2260			24-25						16-17	
ENERGIAKI THESS. (ELPE) / U – 2270 ⁽⁴⁾										
KATERINI / U – 2340 ⁽⁵⁾			24,28,29						22-23	
KOMOTINI (PPC) / U – 3570		18-21				8-11			18-21	

KOMOTINI / TM3-C				23				13	
KAVALA / TM4-A				21				24	
VFL / U – 2170					19-20				11-12
XANTHI / U – 3530			27-28					23-24	
KOSMIO / U – 2550 ⁽³⁾									
ALEXANDROUPOLIS / U – 3630				15-16					13-14
DRAMA / U – 2140			10-11					24-25	
SERRES / U – 2110			12-13					10,12	

Table 6: NNGTS Stations Calibrations – Year 2014

Comments on Table 6:

- (1) The programmed calibration for April 2014 for the Station U-3090 of the Exit Point 'KERATSINI (PPC)' did not take place, due to the fact that there were no Natural Gas Off-takes during the Year at that Point.
- (2) The programmed calibration for May 2014 for the Station U-2620 of the Exit Point 'LAMIA' for the Year 2014 did not take place, due to malfunction of the Station's flow computers.
- (3) During the Year 2014 the Operator's Exit Points 'THIVA' and 'KOSMIO' were not disclosed by the Operator.
- (4) The completion of the construction of the Station U-2270 at the Exit Point 'ENERGIAKI THESS. (ELPE)' is pending.

2.6 Congestion and Congestion Management

According to the paragraph [3] of Article 20 of the Network Code for the regulation of National Natural Gas System, 'congestion' occurs when the Transmission available Capacity at an Entry or Exit Point is not sufficient in order to fulfill User's request for Transmission Capacity Booking at that point to the effect of servicing a new Natural Gas Consumer (Congestion). Furthermore, in accordance with paragraph [2] Article 20 of the Network Code for the regulation of NNGS, the above notification obligation shall not apply in case of an Exit Point serving exclusively one (1) Natural Gas Consumer.

Pursuant to paragraph [1] of Article 2 of Regulation (EC) No 715/2009 of the European Parliament and of the Council of 13 July 2009, 'congestion management' means the management of the capacity of transmission system operator with a view to optimal and maximum use of technical capacity and the timely detection of future congestion and saturation points. Moreover, under the same Article of the above Regulation, contractual congestion means a situation where the level of firm capacity demand exceeds the technical capacity, and physical congestion is a situation where the level of demand for actual deliveries exceeds, at some point in time, the technical capacity.

Table 7 below presents the annual Technical Capacities of the NNGTS Relative Entry/Exit Points, the Maximum Booked Transmission Capacity (BTC) of the Points in absolute terms and as a percentage of the Technical Capacity, the Maximum Measured Quantity of the Points in absolute terms and as a percentage of the Technical Capacity.

Annual profile of Technical Capacity, maximum Booked Transmission Capacity and maximum Measured Natural Gas Quantity of Entry/Exit Points of NNGTS					
Year 2014					
ENTRY POINT	Technical Capacity [MWh/Day]	Maximum Booked Transmission Capacity of Point [MWh/Day]	Maximum Measured Natural Gas Quantity of Point [MWh/Day]	Congestion (Contractual) Maximum Booked Transmission Capacity of Point as a percentage of Technical Capacity [%]	Congestion (Physical) Maximum Measured Natural Gas Quantity of Point as a percentage of Technical Capacity [%]
SIDIROKASTRO	122,040.000	108,001.000	121,546.153	82%	93%
	131,000.000				
AG. TRIADA	150,014.000	69,917.049	87,808.104	47%	59%
	139,656.115				
KIPI	48,590.000	26,451.000	26,097.434	54%	43%
	60,487.000				
EXIT POINT	Technical Capacity [MWh/Day]	Maximum Booked Transmission Capacity of Point [MWh/Day]	Maximum Measured Natural Gas Quantity of Point [MWh/Day]	Congestion (Contractual) Maximum Booked Transmission Capacity of Point as a percentage of Technical Capacity [%]	Congestion (Physical) Maximum Measured Natural Gas Quantity of Point as a percentage of Technical Capacity [%]
ALOYMINION	26,784.000	18,000.000	15,533.689	67%	58%
ALOYMINION II	20,777.632	15,300.000	15,715.567	74%	76%
ALOYMINION III	6,696.000	3,800.000	3,373.397	57%	50%
MOTOR OIL	26,784.000	11,000.000	10,946.969	41%	41%
MOTOR OIL II	21,427.200	14,500.000	16,062.883	68%	75%
AG. THEODOROI	3,000.000	100.000	64.506	3%	2%
ATHENS	88,561.564	24,811.000	26,314.545	28%	30%
ALEXANDROUPOLIS	7,499.520	179.000	196.733	2%	3%
ALIBERI (PPC)	21,427.200	18,001.000	18,509.078	84%	86%
VIPE LARISSA	2,678.400	221.000	212.166	8%	8%
VOLOS	13,832.061	3,616.000	4,015.222	26%	29%
VFL	6,510.923	5,660.000	5,128.155	87%	79%
DRAMA	7,499.520	901.000	1,075.393	12%	14%
ELPE	4,828.352	1,701.000	1,885.760	35%	35%
ENERGIAKI THESS. (ELPE)	26,784.000	1,701.000	15,998.610	6%	60%
HERONAS	10,713.600	59.000	5,979.448	1%	56%
HERON II	22,500.000	15,800.000	15,260.559	70%	68%
THESSALONIKI	38,851.263	24,140.999	24,757.848	62%	64%
THISVI	23,800.000	13,339.000	14,349.138	56%	60%
THRIASSIO	13,580.827	1,030.000	1,105.742	8%	8%
KAVALA	2,678.400	0.000	0.000	0%	0%
KARDITSA	5,356.800	581.000	912.140	11%	17%
KATERINI	7,499.520	341.000	339.004	5%	5%
KERATSINI (PPC)	27,360.660	12,501.000	1,987.320	46%	7%
KILKIS	11,784.960	1,461.000	1,421.649	12%	12%
KOKKINA	2,678.400	754.000	882.126	28%	33%
KOMOTINI (PPC)	28,926.720	156.000	21,137.795	1%	73%
KOMOTINI	5,356.800	14,461.000	179.067	270%	3%
LAMIA	7,499.520	216.000	219.282	3%	3%
LARISSA	13,879.469	4,051.001	5,253.432	29%	38%
LAVRIO (PPC)	64,281.600	30,000.000	33,041.539	47%	51%
SPATA	3,080.160	451.000	394.498	15%	13%
XANTHI	11,784.960	296.000	300.632	3%	3%
OINOFYTA	7,099.903	3,501.000	3,420.785	49%	48%
PLATY	5,755.346	3,676.000	3,680.517	64%	64%
SALFA ANO LIOSSIA	2,678.400	381.000	456.834	14%	17%
SALFA ANTHOUSSA	2,678.400	376.000	310.813	14%	12%
SERRES	11,784.960	1,054.000	1,144.107	9%	10%
TRIKALA	5,356.800	523.300	821.945	10%	15%

Table 7

Notes on Table 7:

1. On 05.06.2014 the Technical Capacities of the NNGTS Entry Points were modified.
2. The maximum Booked Transmission Capacity at the Entry Points occurred on:
 - the period 27.01.2014 08:00 – 28.02.2014 08:00 at the Entry Point 'SIDIROKASTRON';
 - the Period 28.08.2014 08:00 – 25.09.2014 08:00 at the Entry Point 'KIPI'; and
 - the Day 25.11.2014 at the Entry Point 'AGIA TRIADA'.
3. The maximum measured Natural Gas Quantity delivered at the Entry Points occurred on:
 - the Day 08.02.2014 at the Entry Point 'SIDIROKASTRON';
 - the Day 04.02.2014 at the Entry Point 'KIPI'; and
 - the Day 26.11.2014 at the Entry Point 'AGIA TRIADA'.
3. With regards to the Entry Point 'AGIA TRIADA', DESFA is going to increase the Technical Capacity of the Point to 230,400 MWh/Day on 2016, after the upgrade of the Revythoussa LNG Station (as it is provided in the 'NNGS DEVELOPMENT PROGRAM, PERIOD 2014 – 2023', already approved by RAE).
4. With regards to the Exit Point 'THESSALONIKI', DESFA is going to increase the Technical Capacity of the Point in 2015 by upgrading the Metering/Regulating Stations of Thessaloniki East and Thessaloniki North (as it is provided in the 'NNGS DEVELOPMENT PROGRAM, PERIOD 2014 – 2023', already approved by RAE).

2.7 Emergencies and Dealing with Emergencies

During the Year 2014 there was no any crisis in the National Natural Gas System in accordance with the Emergency Plan in force (Law 691/B/26.03.2013) (in accordance with Regulation No 994/2010 of the European Parliament and of the Council concerning measures to safeguard security of gas supply and repealing Council Directive 2004/67/EC) and Chapter 10 of the NNGS Network Code.

2.8 Operating characteristics of NNGS

According to the NNGS Measurements Regulation of DESFA, the Minimum Inlet Pressure at Entry Points 'SIDIROKASTRON' and 'KIPI' is 47.75 and 50.00 barg, respectively. Diagram 3 below shows the average Daily Inlet Pressure at Entry Points 'AGIA TRIADA', 'SIDIROKASTRON' and 'KIPI' for the Year 2014.

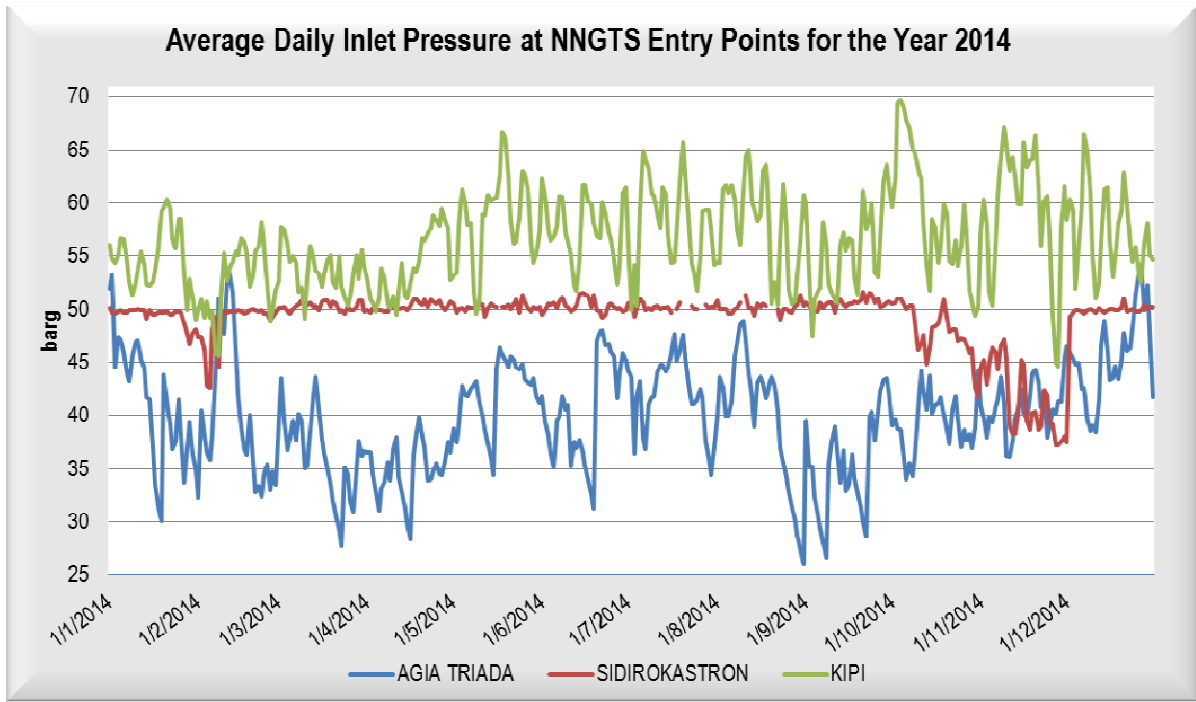


Diagram 3

Furthermore, Diagram 4 below shows the average Daily Pressure of the NNGTS for the Year 2014, as recorded by DESFA's SCADA system.

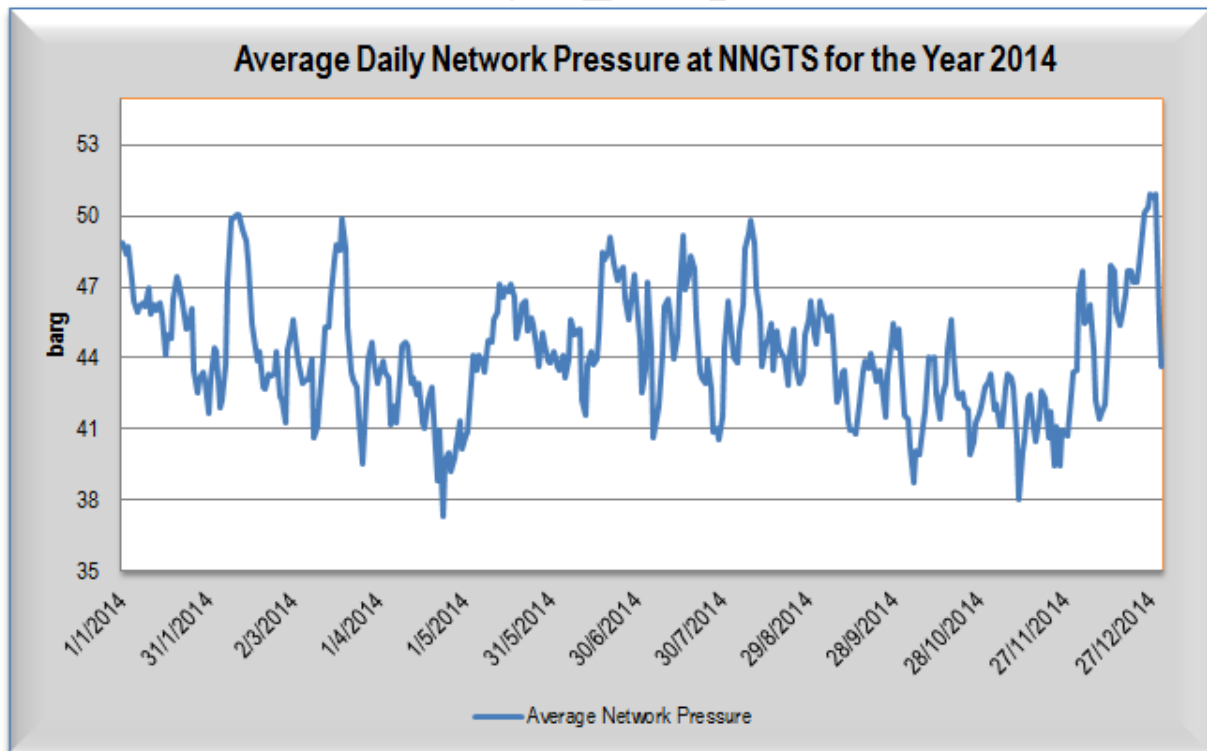


Diagram 4

2.9 Natural Gas Quantities historical data

2.9.1 Daily Natural Gas Off-takes/Deliveries

During the Year 2014 the total Natural Gas Off-Takes at NNGTS Exit Points was 31,685,157 MWh (compared to 41,559,916 MWh during the Year 2013). Diagram 5 below shows the Daily Natural Gas Off-Takes of the NNGTS Exit Points (as a sum) for the Year 2014. It is worth mentioning that the maximum Natural Gas consumption for the Year 2014 was recorded in the Day 05.02.2014, i.e. 191,279 MWh.

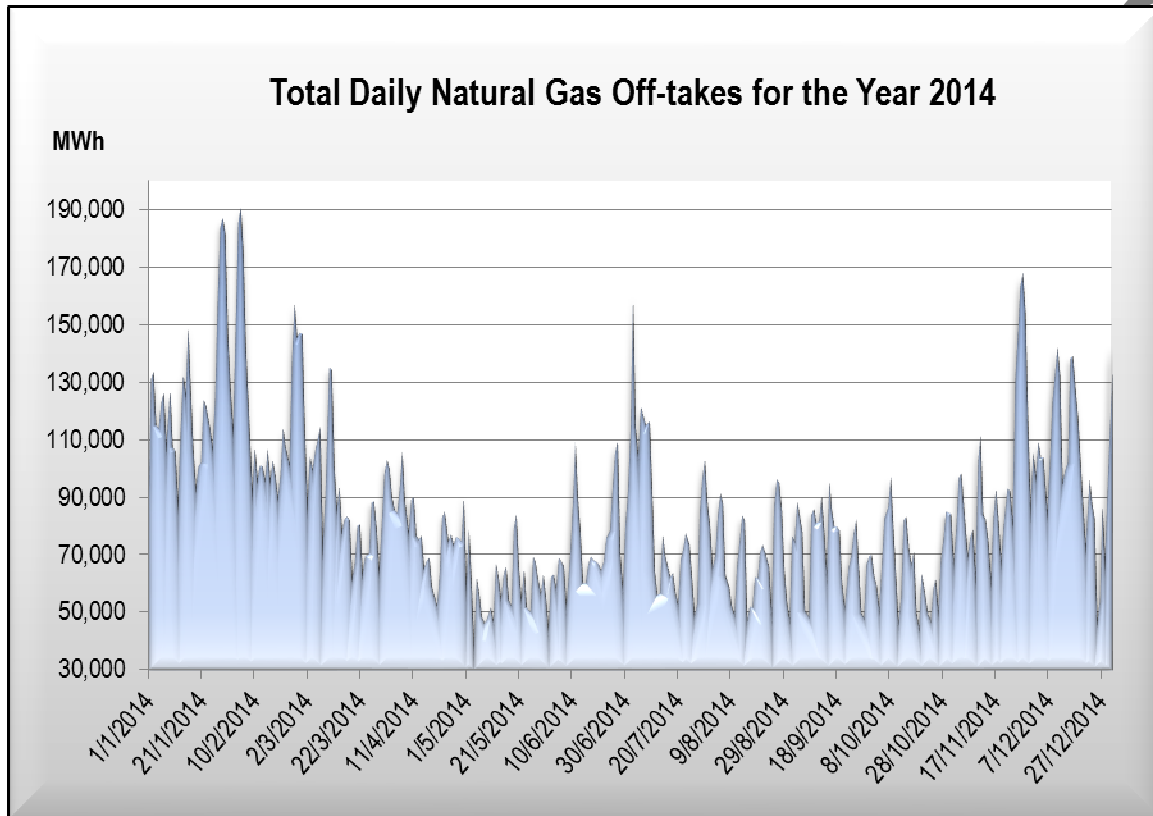


Diagram 5

During the Year 2014 the total Natural Gas Deliveries at NNGTS Entry Points was 31,810,096 MWh (compared to 41,548,878 MWh during the Year 2013). Diagram 6 below shows the Cumulative Daily Natural Gas Deliveries of the NNGTS Entry Points (as a sum) for the Year 2014.

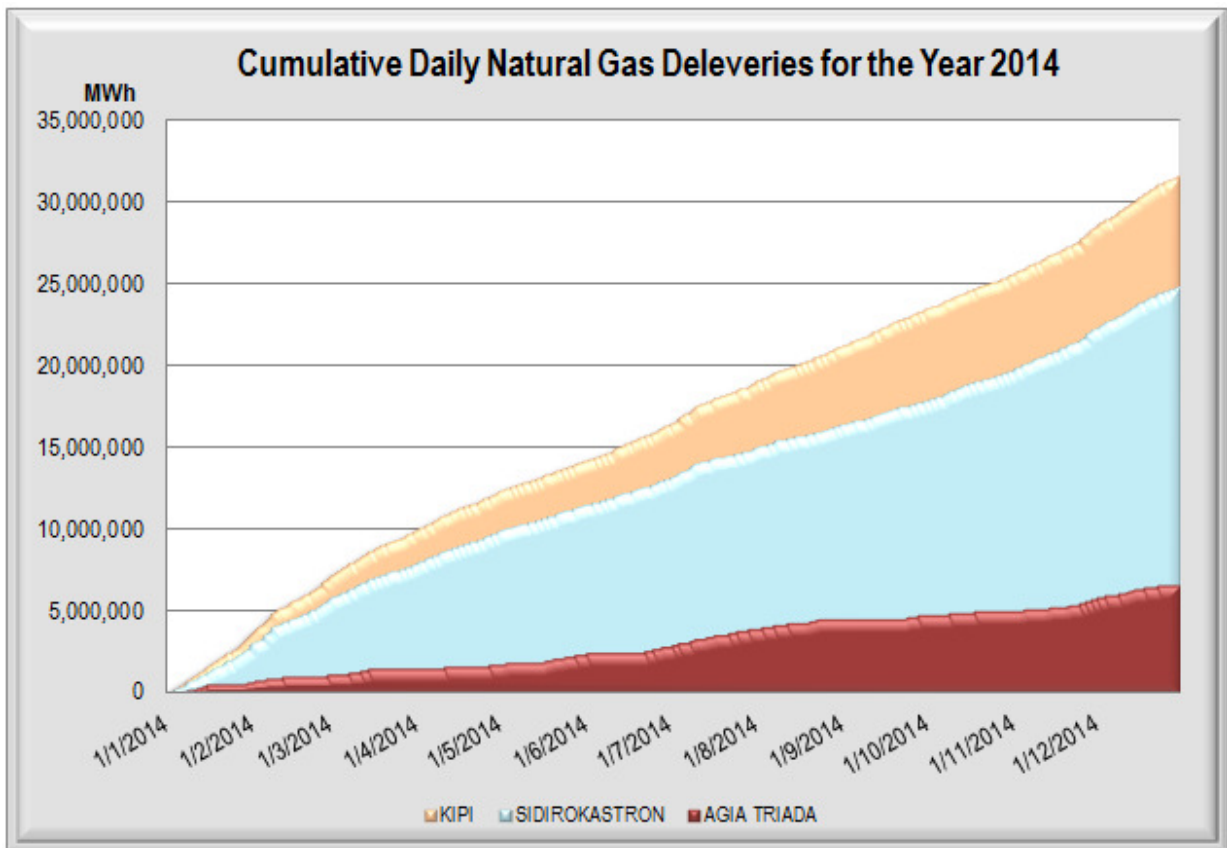


Diagram 6

Diagram 7 below shows the shares of Daily Natural Gas quantities per NNGTS Entry Point for the Year 2014.

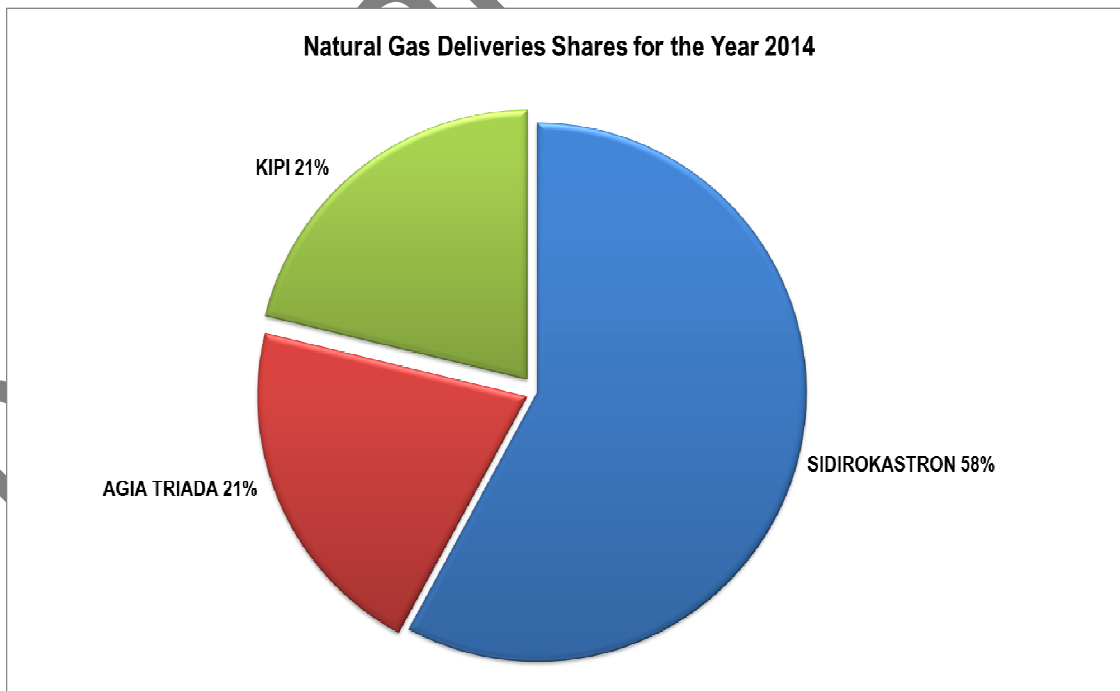


Diagram 7

2.9.2 Daily Natural Gas Quantity stored in the network of NNGTS

The Daily Natural Gas quantity stored in the NNGTS (i.e. Line Pack) varied from 16,864,859 Nm³ (Day 24.04.2014) to 26,215,529 Nm³ (Day 30.12.2014). Diagram 8 below shows the Daily variation of the Line Pack for the Year 2014. It is worth mentioned that the induction of the Ag. Theodoroi – Megalopoli branch increased the minimum and maximum NNGTS Line Pack to 18,400,000 Nm³ and 27,950,000 Nm³, respectively.

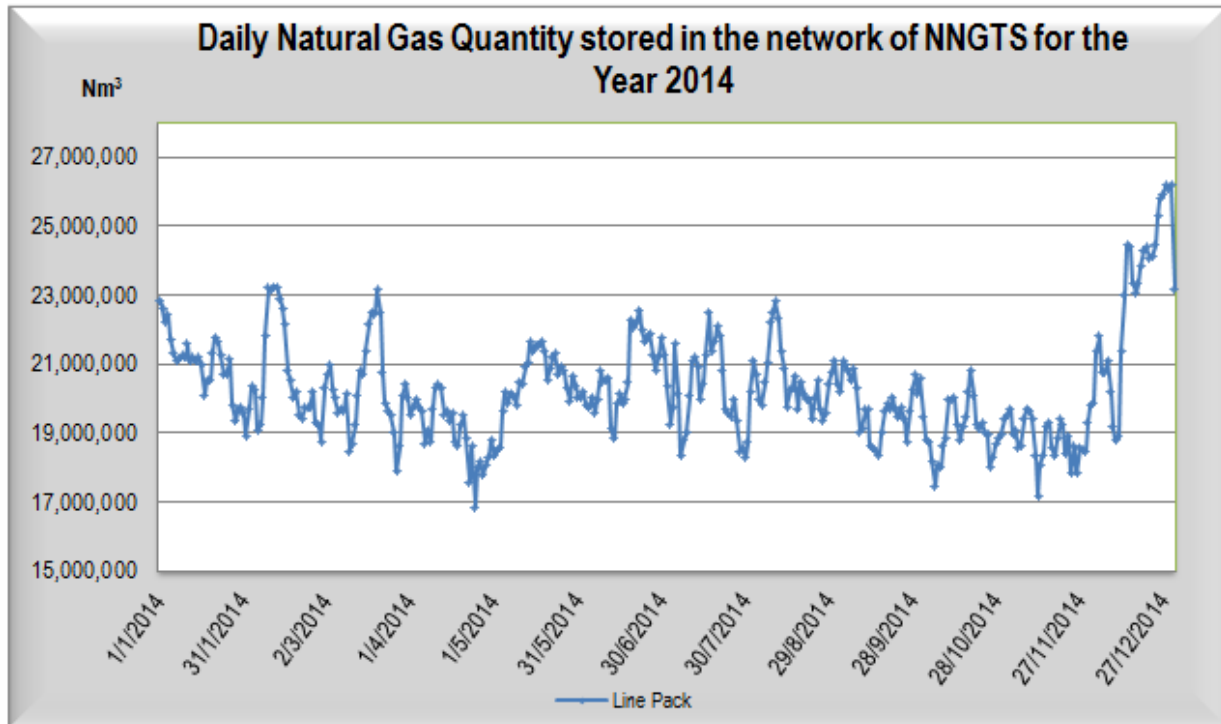


Diagram 8

2.9.3 Total Daily LNG Stock

In the Entry Point 'AGIA TRIADA' 6,644,150 MWh of Re-gasified Natural Gas were injected to the NNGTS (decrease of about 1.1% compared to the Year 2013), while the LNG unloads led to 6,708,182 MWh (decrease of about 4.32% compared to the Year 2013).

Diagram 9 below shows the total Daily configuration of the inventory of LNG Facility Users, including the Balancing Gas that DESFA had for Balancing purposes, during the Year 2014.

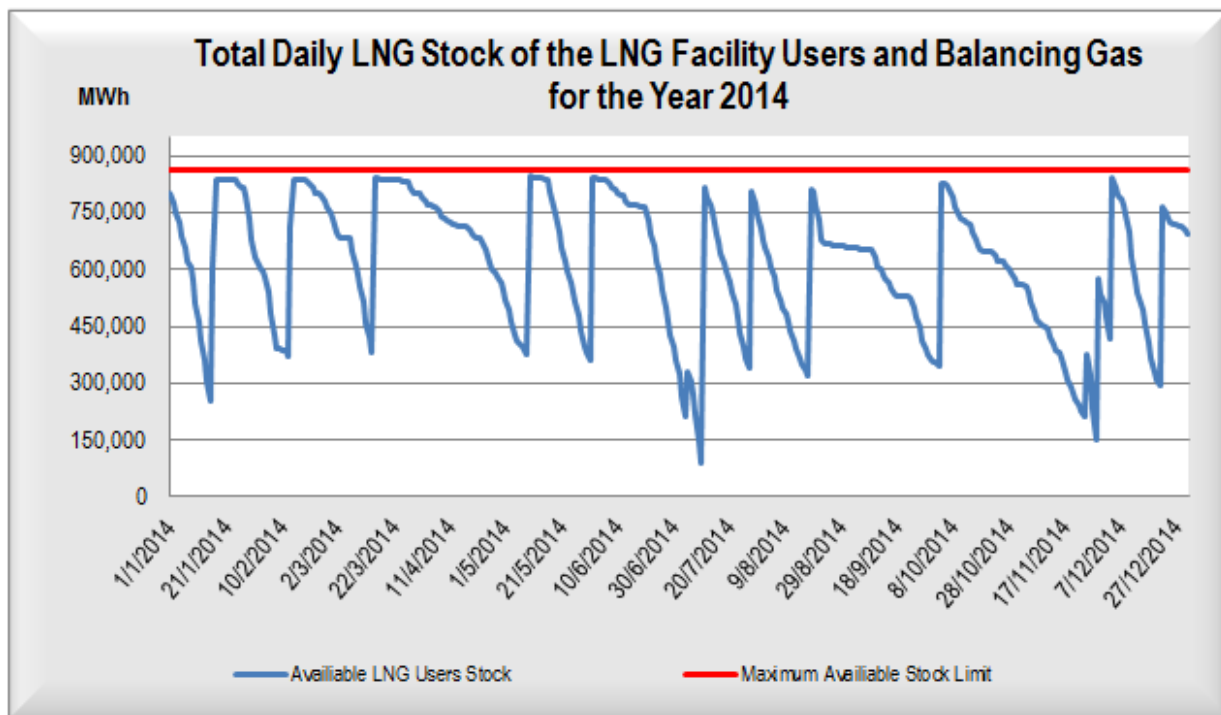


Diagram 9

2.9.4 Historical Operational data of the Compression Station in Nea Messimvria

The Compression Station in Nea Messimvria, Thessaloniki, operated during the Year 2014 for 3,216 hours, consuming 39,621.41 MWh of Natural Gas as fuel. That amount corresponds to the 90.55% of the Operational Gas that was used in the NNGTS during the Year 2014, which was at the level of 43,755.870 MWh.

Diagram 10 below (see next page) shows the Operational Gas consumed in the NNGTS and the fuel Natural Gas used for the operation of the Compression Station on Monthly basis during the Year 2014.

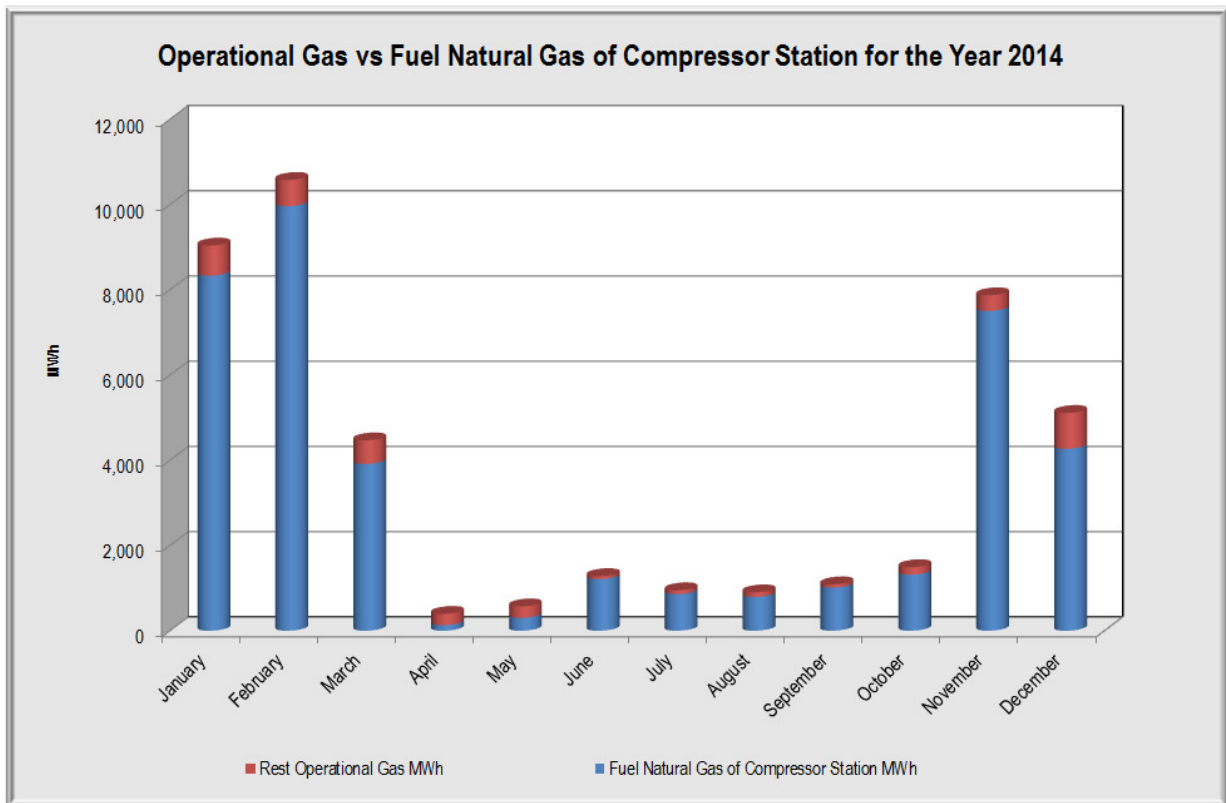


Diagram 10

Diagram 11 below shows the Natural Gas quantity that was handled by the Compression Station on Monthly basis during the Year 2014.

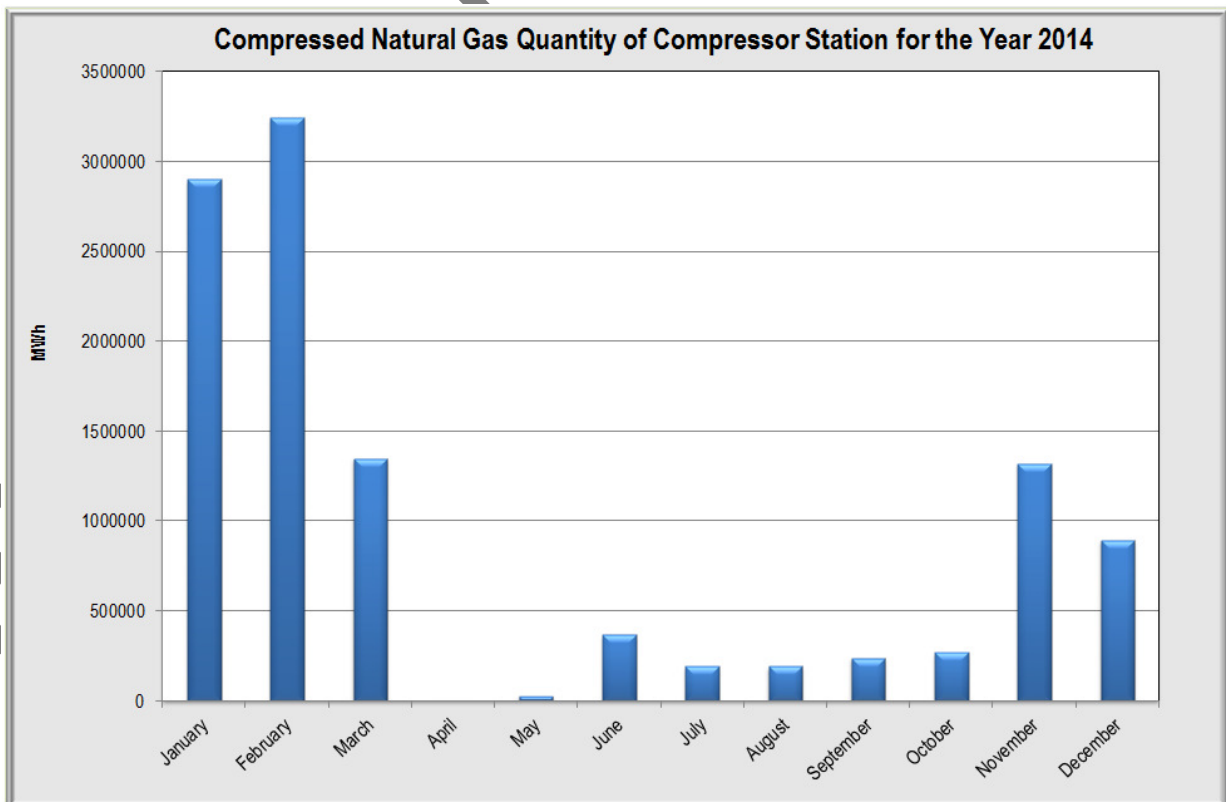


Diagram 11

2.9.5 Natural Gas out of specifications during the Year 2013

During the Year 2014 the following violations of Minimum Entry/Exit Pressure in the Entry/Exit Points of the NNGTS were occurred:

1. The Delivery Pressure in the Entry Point 'SIDIROKASTRON' was for sixty three (63) Days less than the Minimum Delivery Pressure, i.e. 47.75 barg, of the Point.
2. The Delivery Pressure at the Entry Point 'KIPI' was for fifteen (15) Days less than the Minimum Delivery Pressure, i.e. 50.00 barg, of the Point.

Unofficial Translation