



Operation Report of the NNGS for the Year 2013

(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
February 2014

TABLE OF CONTENTS

1	General description of the National Natural Gas System	3
2	Report for the operation of NNGS	4
2.1	Technical Characteristics of the System	4
2.2	Variations in Technical Characteristics of the System	4
2.3	NNGS Entry/Exit Points Capacity	5
2.4	Load Balancing	9
2.5	Maintenance Standard and Quality	12
2.6	Congestion and Congestion Management	17
2.7	Emergencies and Dealing with Emergencies	19
2.8	Operating characteristics of NNGS	19
2.9	Natural Gas Quantities historical data	21

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 Revythousa Island at Megara.

The Natural Gas is delivered from the Users to three (3) Entry Points of the National Natural Gas Transmission System and it is off-taken by the Users via thirty-six (36) 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 779 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 Sidirokastro, Serres and at Kipi, Evros,
- The Liquefied Natural Gas (LNG) Station at Revythousa,
- The Compressor Station at Nea Mesimvria, Thessaloniki,
- The Natural Gas Metering and Regulating Stations,
- The Control and Dispatching Centers,
- The Operation and Maintenance Centers at the Sidirokastro Border Metering Station, Eastern Greece, Northern Greece, Central Greece and Southern Greece,
- 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 Revythousa LNG Station to the mainland.

The Revythousa 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.

2 Report for the operation of NNGS

2.1 Technical Characteristics of the System

The 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
Thessaloniki 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
TOTAL		1.291,34
Revythousa - 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

The start of the testing operation period of the Compressor Station at Nea Mesimvria, Thessaloniki on the 17th.12.2012 resulted to the increase of the Technical Capacities at the Entry Points "SIDIROKASTRO" and "KIPI", on 01.02.2013, to 131,000 MWh/Day and 60,487 MWh/Day, respectively (from 109,000 MWh/Day and 30,400 MWh/Day, respectively).



Picture 1: Compressor Station at Nea Mesimvria, Thessaloniki

2.3 NNGS Entry/Exit Points Capacity

The Table 2, as follows, shows the Technical Capacities of the relative Entry/Exit Points of the NNGTS, and the Maximum Capacity of the relative Metering/Regulating Stations on 01.01.2013 08:00.

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

No.	ENTRY POINT	Technical Capacity [MWh/Day] ⁽¹⁾	DESFA Metering/Regulating Station	Maximum Capacity of DESFA Metering/Regulating Station [MWh/Day]
1	SIDIROKASTRO	131,000.000	M SIDIROKASTRO (U-2010)	177,363.648
2	AGIA TRIADA	139,656.115	M AGIA TRIADA (U-3020)	139,656.115
3	KIPI	60.487,000 ⁽³⁾	M/R KIPI (U-3900)	229,314.966

No.	EXIT POINT	Technical Capacity [MWh/Day] ⁽¹⁾	DESFA Metering/Regulating Station	Maximum Capacity of DESFA Metering/Regulating Station [MWh/Day]
1	ALOYMINION	26,784.000	M AdG (U-2820)	26,784.000
2	ALOYMINION II ⁽²⁾	20,777.632	M AdG II ⁽²⁾	20,777.632
3	ALOYMINION III ⁽²⁾	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 ⁽²⁾	21,427.200	M MOTOR OIL II ⁽²⁾	21,427.200
6	ATHENS	88,561.564	M/R ATHENS NORTH (U-2910)	29,521.057
			M/R ATHENS EAST (U-2940)	29,521.057
			M/R ATHENS WEST (U-2990)	29,519.450
7	ALEXANDROUPOLIS	7,499.520	M/R ALEXANDROUPOLIS (U-3630)	7,499.520
8	ALIVERI (PPC) ⁽²⁾	21,427.200	M ALIVERI (U-6370)	21,427.200
9	VIPE LARISSA	2,678.400	M/R VIPE LARISSA (U-2515)	2,678.400
10	VOLOS	13,832.061	M/R VOLOS (U-2680)	13,832.061
11	VFL	6,510.923	M/R VFL (U-2170)	6,510.923
12	DRAMA	7,499.520	M/R DRAMA (U-2140)	7,499.520
13	ELPE	4,828.352	M/R EKO (U-2250)	4,828.352
14	ENERGIAKI THESS. (ELPE)	26,784.000	M/R ENERGIAKI THESSALONIKI ⁽²⁾	26,784.000
15	HERONAS	10,713.600	M HERONAS (U-6020)	10,713.600
16	HERON II	22,500.000	M HERON II (U-6030)	22,766.400
17	THESSALONIKI	38,851.263	M/R THESSALONIKI NORTH (U-2240)	19,425.632
			M/R THESSALONIKI EAST (U-2220)	19,425.632
18	THISVI ⁽²⁾	23,800.000	M THISVI ⁽²⁾	23,837.760
19	THRIASIO	13,580.827	M/R THRIASIO (U-2960)	13,580.827
20	KAVALA	2,678.400	M/R KAVALA (TM4-A)	2,678.400
21	KARDITSA	5,356.800	M/R KARDITSA (TM3-A) ⁽²⁾	5,356.800
22	KATERINI	7,499.520	M/R KATERINI (U-2340)	7,499.520
23	KERATSINI (PPC)	27,360.660	M KERATSINI (U-3090)	27,360.660
24	KILKIS	11,784.960	M/R KILKIS (U-2260)	11,784.960
25	KOKKINA	2,678.400	M/R KOKKINA (U-2670)	2,678.400
26	KOMOTINI (PPC)	28,926.720	M/R PPC KOMOTINI (U-3570)	28,926.720
27	KOMOTINI	5,356.800	M/R KOMOTINI (TM3-C)	5,356.800
28	LAMIA	7,499.520	M/R LAMIA (U-2620)	7,499.520
29	LARISSA	13,879.469	M/R LARISSA NORTH (U-2520)	6,939.734
			M/R LARISSA SOUTH (U-2530)	6,939.734
30	LAVRION (PPC)	64,281.600	M LAVRION (U-3430)	64,281.600
31	SPATA	3,080.160	M/R MARKOPOULO (TM2)	3,080.160
32	XANTHI	11,784.960	M/R XANTHI (U-3530)	11,784.960
33	OINOFYTA	7,099.903	M/R OINOFYTA (U-2880)	7,099.903
34	PLATY	5,755.346	M/R PLATY (U-2410)	5,755.346
35	SALFA ANO LIOSSIA (2)	2,678.400	SALFA I ⁽²⁾	2,678.400
36	SALFA ANTHOUSA (2)	2,678.400	SALFA II ⁽²⁾	2,678.400
37	SERRES	11,784.960	M/R SERRES (U-2110)	11,784.960
38	TRIKALA	5,356.800	M/R TRIKALA (TM3-B) ⁽²⁾	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 Capacity of the Entry Point "KIPI" is not verified by the Upstream System's Operator.

Finally, the Table 3 below depicts the NNGTS Average Natural Gas Deliveries and Off-takes for the year 2013.

Annual profile of Natural Gas Deliveries/Off-takes and Daily peaks at the Entry/Exit Points of NNGTS					
Year 2013					
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	139,656.115	18,405.954	81,849.316	13.2	58.6
KIPI	60,487.000	19,930.955	25,765.579	33.0	42.6
SIDIROKASTRO	131,000.000	75,495.634	125,702.289	57.6	96.0
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 [%]
ATHENS	115,385.740	7,494.134	26,995.082	6.5	23.4
ALEXANDROUPOLIS	7,499.520	27.190	159.577	0.4	2.1
ALIVERI (PPC)	21,427.200	6,150.992	19,828.918	28.7	92.5
ALOYMINION	26,784.000	9,872.338	10,495.779	36.9	39.2
ALOYMINION II	20,777.632	9,140.618	16,590.312	44.0	79.8
ALOYMINION III	6,696.000	2,082.559	2,505.729	31.1	37.4
VIPE LARISSA	2,678.400	130.566	221.861	4.9	8.3
VOLOS	13,832.061	1,562.701	3,957.088	11.3	28.6
VFL	6,510.923	3,843.925	5,220.239	59.0	80.2
DRAMA	7,499.520	366.461	722.158	4.9	9.6
ELPE	4,828.352	468.749	1,386.502	9.7	28.7
ENERGIAKI THESS. (ELPE)	26,784.000	7,856.199	13,837.774	29.3	51.7
HERON II	22,500.000	8,454.996	15,512.543	37.6	68.9
HERONAS	10,713.600	1.049	329.453	0.0	3.1
THESSALONIKI	38,851.263	5,979.624	21,938.254	15.4	56.5
THISVI	23,800.000	8,018.034	15,118.634	33.7	63.5
THRIASIO	13,580.827	327.812	846.185	2.4	6.2
KAVALA	2,678.400	0.000	0.000	0.0	0.0
KARDITSA	5,356.800	135.588	565.844	2.5	10.6
KATERINI	7,499.520	286.362	333.511	3.8	4.4
KERATSINI (PPC)	27,360.660	12.746	1,943.777	0.0	7.1
KILKIS	11,784.960	756.671	1,436.235	6.4	12.2
KOKKINA	2,678.400	384.253	856.624	14.3	32.0
KOMOTINI	5,356.800	95.252	197.804	1.8	3.7
KOMOTINI (PPC)	28,926.720	4,415.576	18,168.409	15.3	62.8
LAMIA	7,499.520	107.245	241.405	1.4	3.2
LARISSA	13,879.468	1,284.854	5,023.680	9.3	36.2
LAVRION (PPC)	64,281.600	13,967.168	41,516.917	21.7	64.6
MOTOR OIL	26,784.000	7,459.649	11,074.768	27.9	41.3
MOTOR OIL II	21,427.200	8,701.223	16,029.321	40.6	74.8
XANTHI	11,784.960	140.201	266.404	1.2	2.3
OINOFYTA	7,099.903	2,492.468	3,381.972	35.1	47.6
PLATY	5,755.346	556.784	3,720.270	9.7	64.6
SALFA ANO LIOSSIA	2,678.400	225.836	305.264	8.4	11.4
SALFA ANTHOUSA	2,678.400	251.294	360.971	9.4	13.5
SERRES	11,784.960	470.428	2,195.629	4.0	18.6
SPATA	3,080.160	237.363	506.368	7.7	16.4
TRIKALA	5,356.800	103.876	447.29	1.9	8.3

Table 3

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. As for now, the balancing needs of the National Transmission System are covered solely by using the Liquefied Natural Gas (LNG) Installation at Revythousa. During the Year 2013, the Operator obtained the appropriate Natural Gas quantities for the load balancing of the NNGTS to the relative agreements signed with the Public Gas Corporation (DEPA) S.A. for the supply of Liquefied Natural Gas Quantities.

The Table 4 below presents the monthly Operator's predictions for the necessary Balancing Gas quantities, according to the modification of the Annual Planning of Load Balancing of the NNGTS for the Year 2013, which is approved from the Regulatory Authority for Energy (RAE) (RAE Decision 842/2012) and the total quantities of the Balancing Gas actually needed for the Year 2013.

	Balancing Gas Prediction according to Annual Planning of Load Balancing	Balancing Gas (Actual)
Year 2013	(MWh)	(MWh)
January	498,964	72,030
February	354,649	43,303
March	196,890	23,036
April	225,726	33,604
May	121,806	15,163
June	149,219	733
July	210,316	12,128
August	206,821	40,536
September	132,864	46,614
October	163,378	54,734
November	286,399	97,268
December	300,672	478,531
Total	2,847,704	917,682

Table 4: Monthly Operator's predictions according to the modification of the Annual Planning of Load Balancing of the NNGTS and the total Balancing Gas quantities for the Year 2013

The Balancing Gas that was injected in the NNGTS during the Year 2013 deviates significantly from the

initial Operator's predictions in the Annual Planning of Load Balancing of the NNGTS for the specific Year. Below there are examples of the most significant reasons of the above mentioned deviation:

- ✚ The estimated Balancing Gas quantities for the Year 2013 were related to the estimated by the Operator, Natural Gas Deliveries (i.e. Natural Gas consumption) for the Year 2013. In the Annual Planning of Load Balancing of the NNGTS, the Operator estimated that the Natural Gas consumption would rise to 54,701,262 MWh for the Year 2013, compared to the actual Natural Gas demand of the specific Year that was 41,559,916 MWh (i.e. a decrease of about 24 %). The significant reduction of the Natural Gas consumption, due to the economic crisis, the mild winter season 01.01.2013 – 15.03.2013 and the reduced function of the Power Plants using Natural Gas, due to a change in the regulatory framework of the Electricity Market during the summer of 2013, resulted in the reduction of the required Balancing Gas quantities for the Year 2013.
- ✚ The availability of the Compressor Station in Nea Messimvria, Thessaloniki during the Year 2013, minimized the demanded Balancing Gas quantities needed for the hydraulic stability of the NNGTS during the Year.
- ✚ In mid-December 2012 the cancellation of a scheduled LNG cargo unloading and the concomitant deterioration of weather conditions resulted in the rapid depletion of LNG and the declaration of an Emergency in the NNGS for the period 14 – 21.12.2012. The Emergency has been addressed, among other measures, with operational effects by DESFA for increased Natural Gas Deliveries at the Entry Point "SIDIROKASTRO", more than the Nominated quantities of the Transmission Users at that Entry Point. The above increased Natural Gas quantities at the Entry Point "SIDIROKASTRO", more than the Nominated quantities of the Transmission Users continued after the end of the Emergency and specifically until 31.01.2013, in order that DESFA would provide an additional guarantee for the uninterrupted supply of Natural Gas in Greece. The additional Delivery quantities of Natural Gas in the Entry Point "SIDIROKASTRO" would be injected, under normal conditions, via the LNG Revythousa Terminal as Balancing Gas.

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

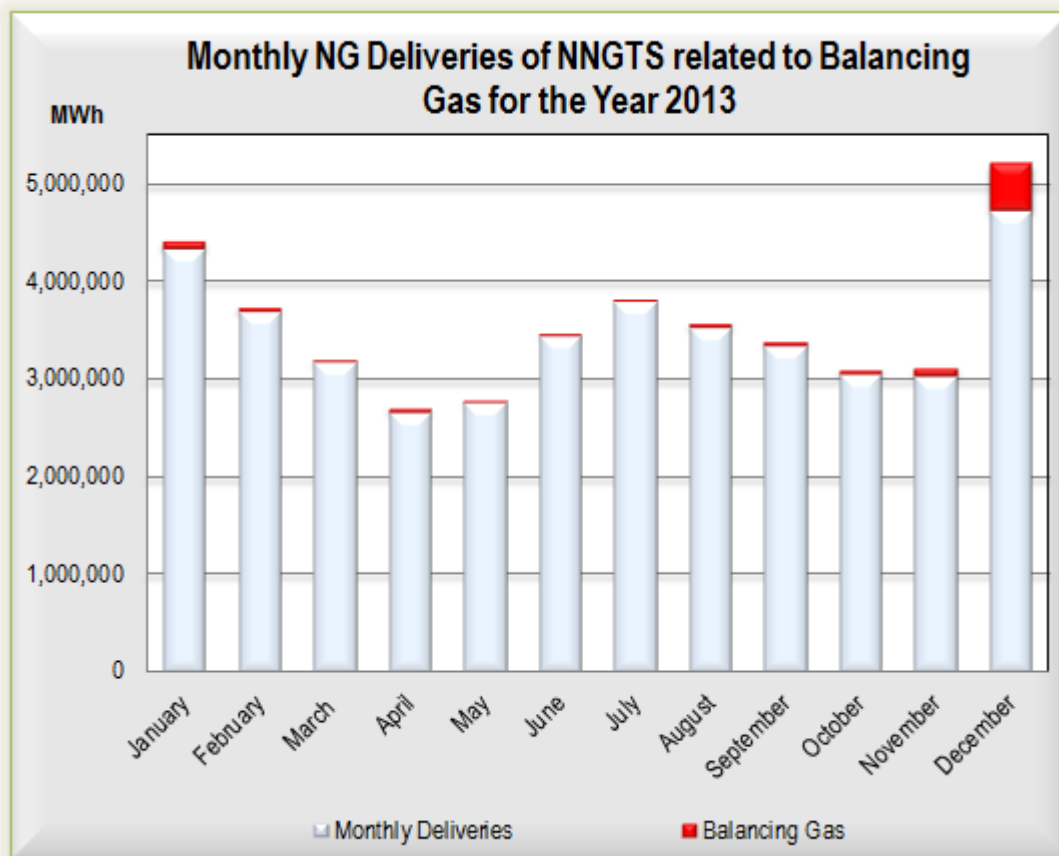


Diagram 1

In the year 2013 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 Transmission Users had an average negative Daily Imbalance (DGI).

Worth noting is the Day 08.01.2013, as it was the maximum quantity of the Natural Gas Deliveries for the Year 2013, which was in the level of 212,290 MWh with DGI -13,530 MWh (which is about the 6,37 % of the Natural Gas Total Deliveries). It is noted that the maximum quantity of Balancing Gas for the Year 2013 does not occurred at the above mentioned day, but it was observed the 12th.12.2013 and ranging in the level of 71,976.300 MWh.

The Diagram 2 shows the total DGI of the Users for the Year 2013.

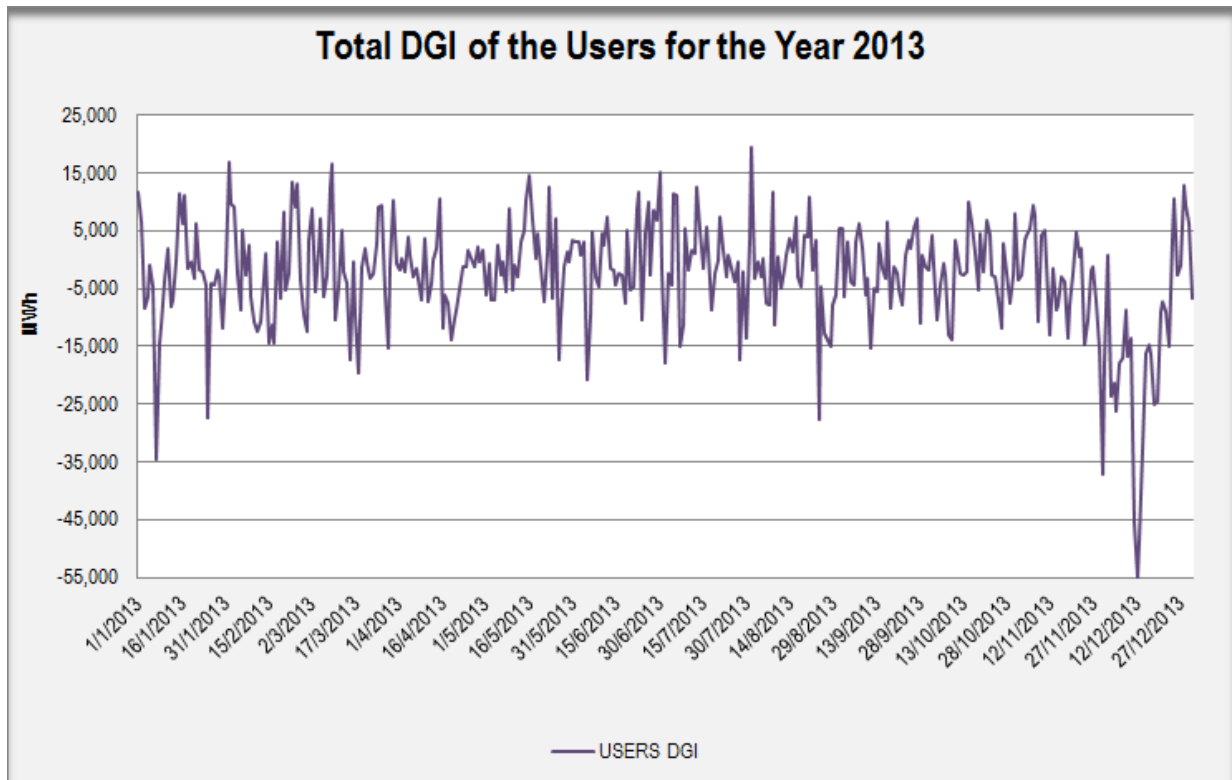


Diagram 2

The Operator, so as to offset the relatively frequent negative DGI of the Users, while ensuring continuous, normal, safe and efficient operation of the NNGS, used the smallest possible Balancing Gas quantities, considering the current pressure level of the network system, functional limitations as well as the estimated Natural Gas demand.

2.5 Maintenance Standard and Quality

The Table 5 shows the Maintenance Program of NNGS for the year 2013 as well as the revision of maintenance work that already had taken place. 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 provided in 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 the table 6 with only minor time deviations from the Annual Calibration Program that was uploaded in the Operator's website.

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.

tion

NNGTS MAINTENANCE PROGRAM - YEAR 2013						
A/A	NNGS POINT	DESCRIPTION OF WORKS	TRANSMISSION CAPACITY RESTRICTION	PERIOD OF WORKS	MAINTENANCE DAYS	NOTES
1	Entry Point 'SIDIROKASTRO'	Hardware and system software upgrade of Sidirokastro BMS Distributed Control System (DCS)	Available Transmission Capacity at Entry Point 'SIDIROKASTRO': 91,000.00 MWh/Day	September 18 - October 18	3	The works were not held due to that the project is included in the 2nd Upgrade of the BMS Sidirokastro, which is expected to be finished and be ready for comercial operation by February 2015.
2	Entry Point 'SIDIROKASTRO'	Electrical equipment replacement of Sidirokastro BMS Distributed Control System (DCS)	Available Transmission Capacity at Entry Point 'SIDIROKASTRO': 91,000.00 MWh/Day	September 18 - October 18	3	The works were not held due to that the project is included in the 2nd Upgrade of the BMS Sidirokastro, which is expected to be finished and be ready for comercial operation by February 2015.
3	LNG Terminal	Unloading arms inspection	Unloading Capacity : 3,500.00 m3 LNG/day	September	3	Small-scale Inspection & Maintenance works took place
4	LNG Terminal	Unloading arms inspection	Unloading Capacity : 3,500.00 m3 LNG/day	October	6	Small-scale Inspection & Maintenance works took place
EMERGENCY MAINTENANCE IN THE NNGTS - YEAR 2013						
1	Exit Point "MOTOR OIL II"	Entry/Exit Valves installation in the MOTOR OIL II Metering Station (U-7140) that is under construction	Available Transmission Capacity at Exit Point "MOTOR OIL II": 0.00 MWh/Day	September 16 - September 26	10	The emergency maintenance works of DESFA were held in conjunction with the planned non-operation of the power plant Korinthos Power during the said period.

Table 5: NNGS Maintenance Standard and Quality for the Year 2013

tion

CALIBRATION – YEAR 2013

ENTRY POINT / UNIT NUMBER	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
SIDIROKASTRO / U – 2010	21 - 25, 28,29	4			20 – 24, 27-30				16 - 20, 23, 24, 27			
AGIA TRIADA / U – 3020				15 - 17						16-17		
KIPI / U – 3900						11 - 13						9 - 11
EXIT POINT / UNIT NUMBER	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
LAVRIO (PPC) / U – 3430			4- 8				22 - 27				4 - 8	
KERATSINI (PPC) / U – 3090 ⁽¹⁾		OXI						OXI				
THRIASIO / U – 2960						11 – 12				14 – 15		
ATHENS / U – 2990 (WEST)						25 – 26						11 - 12
ATHENS / U – 2910 (NORTH)		11 – 12								7 - 8		
ATHENS / U – 2970 (ASPROPYRGOS) ⁽²⁾												
ATHENS / U – 2940 (EAST)				23						9 – 10		
INOFYTA / U – 2880						17 – 19						9 – 10
HERON / U – 6020									5		OXI	
HERON II / U – 6030									4		OXI	
SPATA / TM2						13,20						6
ALOYMINION / U – 2820							8 – 9					3
THIVA / U – 2740 ⁽³⁾												
MOTOR OIL / U – 7130	15 - 17						30 - 31					

VOLOS / U – 2680				22 – 23						18 – 19	
LARISA / U – 2520 (NORTH)				15 – 16						20 – 21	
LARISA / U – 2530 (SOUTH)				20 – 21						25 – 26	
VIPE LARISA / U – 2515				14						8	
KARDITSA / TM3-A				13						11	
LAMIA / U – 2620				9						5 – 6	
TRIKALA / TM3-B				13						11	
KOKKINA / U – 2670				10						7	
THESSALONIKI / U – 2240 (NORTH)				13 - 14						20 - 21	
THESSALONIKI / U – 2220(SOUTH)				15 - 16						18- 19	
PLATY / U – 2410				20 - 21						27 - 28	
ELPE / U – 2250 (EKO)				22 - 23						25 - 26	
KILKIS / U – 2260			15 - 16						21 - 22		
ENERGIAKI THESS. (ELPE) / U – 2270 ⁽⁴⁾											
KATERINI / U – 2340 ⁽⁵⁾			30 - 31						23	14	
KOMOTINI (PPC) / U – 3570		19 - 22					16 - 19			19 - 22	
KOMOTINI / TM3-C			9						8		
KAVALA / TM4-A			10						15		
VFL / U – 2170			4 - 5						10 - 11		
XANTHI / U – 3530		14 - 15							OXI		
KOSMIO / U – 2550 ⁽³⁾											

ALEXANDROUPOLIS / U – 3630					14 - 15							12 - 13	
DRAMA / U – 2140			14 - 15							25 - 26			
SERRES / U – 2110			12 - 13							23 - 24			

Table 6: NNGTS Stations Calibrations – Year 2013

Comments on Table 6:

- (1) The programmed calibration for February and September 2013 for the Unit 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 Exit Point.
- (2) The programmed calibrations for the Unit U-2970 of the Exit Point “ATHENS” for the Year 2013 did not take place, due to the fact that the Natural Gas Off-takes at the specific Unit were zero during the Year 2013.
- (3) During the Year 2013 the Operator’s Exit Points “THIVA” and “KOSMIO” were not disclosed by the Operator.
- (4) The completion of the construction of the Unit Σταθμού U-2270 at the Exit Point “ENERGIAKI THESS. (ELPE)” is pending.
- (5) The programmed calibrations for the Unit U-3530 of the Exit Point “XANTHI” for the Year 2013 did not take place, due malfunction of the Unit’s Flow Computers.

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.

The Table 7 below presents the Technical Capacities of the NNGTS Entry/Exit Points, the Booked Transmission Capacity (BTC) of the Points, the Maximum Allocated Quantity of the Points, the Contractual Percentage of the Maximum Booking of the Technical Capacity, the Percentage of the Maximum Usage 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 2013					
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	131,000.000	108,000.000	125,702.289	82	96
AG. TRIADA	139,656.115	84,466.049	81,849.316	60	59
KIPI	60,487.000	26,000.000	25,765.579	43	43
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 [%]
ALIVERI (PPC)	21,427.200	19,315.000	19828.92	90	93
ALOYMINION	26,784.000	26,784.000	10,495.779	100	39
ALOYMINION II	20,777.632	19,898.240	16,590.312	96	80
ALOYMINION III	6,696.000	3,800.000	2,505.729	57	37
MOTOR OIL	26,784.000	13,000.000	11,074.768	49	41
MOTOR OIL II	21,427.200	20,017.456	16,029.321	93	75
ATHENS	115,385.740	57,900.000	26,995.082	50	23
ALEXANDROUPOLIS	7,499.520	1,000.000	159.577	13	2
VIPE LARISSA	2,678.400	1,344.000	221.861	50	8
VOLOS	13,832.061	6,936.000	3,957.088	50	29
VFL	6,510.923	6,250.000	5,220.239	96	80
DRAMA	7,499.520	1,000.000	722.158	13	10
ELPE	4,828.352	3,500.000	1,386.502	72	29
ENERGIAKI THESS. (ELPE)	26,784.000	18,553.560	13,837.774	69	52
HERON II	22,500.000	19,385.106	15,512.543	86	69
HERONAS	10,713.600	9.000	329.453	0	3
THESSALONIKI	38,851.263	27,999.999	21,938.254	72	56
THISVI	23,800.000	19,621.000	15,118.634	82	64
THRIASIO	13,580.827	6,816.000	846.185	50	6
KAVALA	2,678.400	965.000	0.000	36	0
KARDITSA	5,356.800	2,600.000	565.844	49	11
KATERINH	7,499.520	365.000	333.511	5	4
KERATSINI (PPC)	27,360.660	24,423.465	1,943.777	89	7
KILKIS	11,784.960	4,200.000	1,436.235	36	12
KOKKINA	2,678.400	1,344.000	856.624	50	32
KOMOTINI (PPC)	28,926.720	24,102.300	18,168.409	83	63
KOMOTINI	5,356.800	628.000	197.804	12	4
LAMIA	7,499.520	1,400.000	241.405	19	3
LARISSA	13,879.469	6,960.001	5,023.680	50	36
LAVRION (PPC)	64,281.600	58,664.762	41,516.917	91	65
XANTHI	11,784.960	1,700.000	266.404	14	2
OINOFYTA	7,099.903	6,650.000	3,381.972	94	48
PLATY	5,755.346	4,218.000	3,720.270	73	65
SALFA ANO LIOSSIA	2,678.400	960.000	305.264	36	11
SALFA ANTHOUSA	2,678.400	960.000	360.971	36	13
SERRES	11,784.960	4,049.000	2,195.629	34	19
SPATA	3,080.160	1,296.000	506.368	42	16
TRIKALA	5,356.800	2,600.000	447.285	49	8

Table 7

Notes on Table 7:

1. Concerning the forthcoming congestion that can be seen at the Entry Point "AGIA TRIADA", the Operator will increase the Technical Capacity of the Point on 2016, after the upgrade of the Revythousa LNG Station (as it is provided in the "NNGS DEVELOPMENT PROGRAM, PERIOD 2013 – 2022").
2. Concerning the Exit Point "OINOFYTA", it is not expected to have congestion during the Year 2014, because during that Year the Metering/Regulating Station at Thiva will start its operation and will supply the distribution network of Oinofyta-Schimatari-Thiva along with the existing Metering/Regulating station at Oinofyta.
3. Concerning the forthcoming congestion that can be seen at the Exit Point "THESSALONIKI", DESFA intends to increase the Technical Capacity of the specific point in 2015 with an upgrade of the Metering/Regulating Stations of Thessaloniki East and Thessaloniki North (as it is provided in the "NNGS DEVELOPMENT PROGRAM, PERIOD 2013 – 2022").

2.7 Emergencies and Dealing with Emergencies

During the period 12 – 16.12.2013, DESFA noted Early Warning Level in the NNGS, under the terms of the Emergency Plan as defined at the Regulation 994/2010 of the European Parliament and the 20 October 2010 Council concerning the measures to safeguard the security of Natural Gas supply, replacing the Directive 2004/67/EC (Law 691/B/26.03.2013).

Specifically, the period in question, the NNGTS Natural Gas Off-takes were relatively high, in the range of 170,000 MWh/Day, due to bad weather conditions prevailing in the Greek Territory, while the next LNG cargo unloading was scheduled for 02.01.2014 for the LNG User. The significant increase of the Natural Gas demand coincided with the violation of the Minimum Delivery Pressure (50 barg) condition at the Entry Point "KIPI" on, which resulted to the complete interruption of Natural Gas Deliveries on 11.12.2013 at the certain Point on behalf of the unique Transmission User, who had bound Delivery Capacity in that Point.

The Emergency Condition 1 in the NNGS ended on Monday 16.12.2013, due to gradual startup of the Natural Gas Deliveries in the Entry Point "KIPI" in conjunction with the appearance of upward trend in the Delivery Pressure in that Point and the expected LNG Cargo Unload in the LNG Revithousa Terminal on the 25st.12.2013 for the LNG User account.

In the Diagram 3 (see next page) the Daily Deliveries in the Entry Point "KIPI" for December 2013.

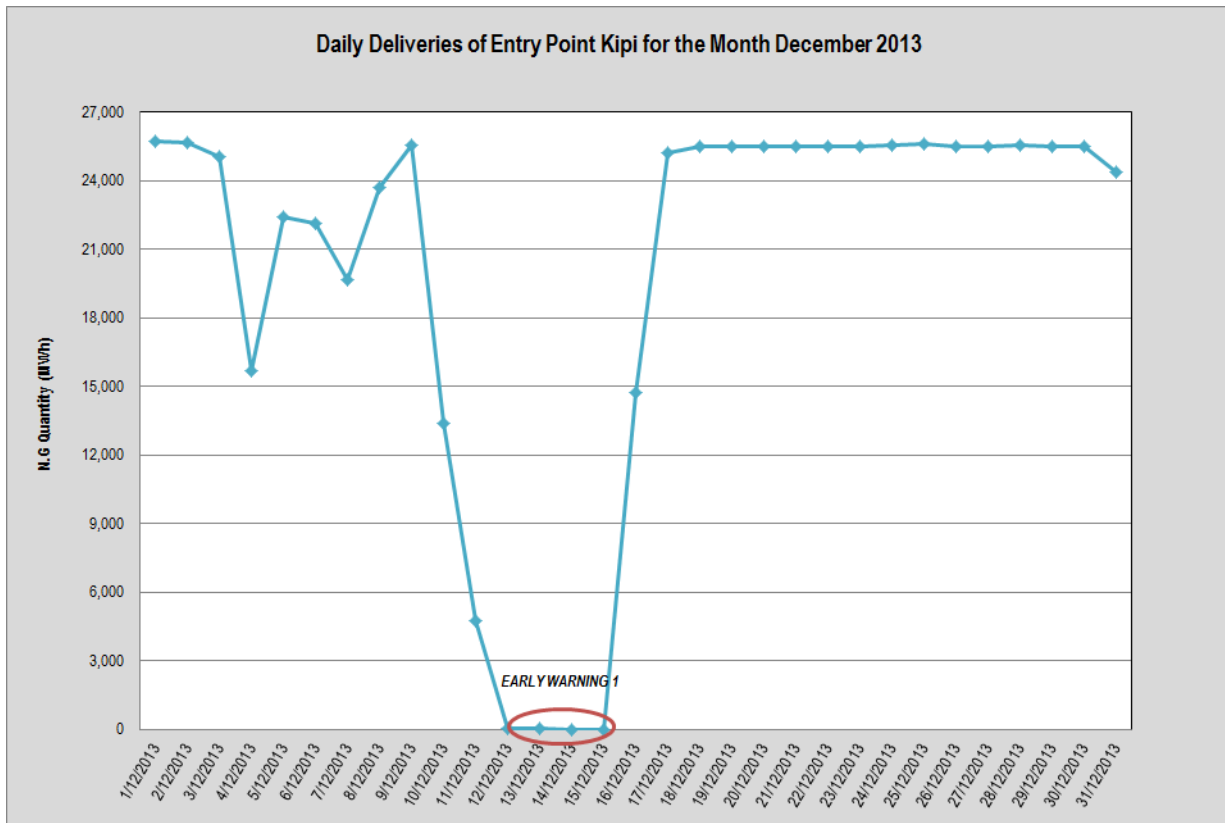


Diagram 3

2.8 Operating characteristics of NNGS

According to the NNGS Measurements Regulation of DESFA, the Minimum Inlet Pressure at Entry Points “SIDIROKASTRO” and “KIPI” is 47.75 and 50.00 barg respectively. The Diagram 4 below shows the average Daily Inlet Pressure at Entry Points “AGIA TRIADA”, “SIDIROKASTRO” and “KIPI” for the Year 2013.

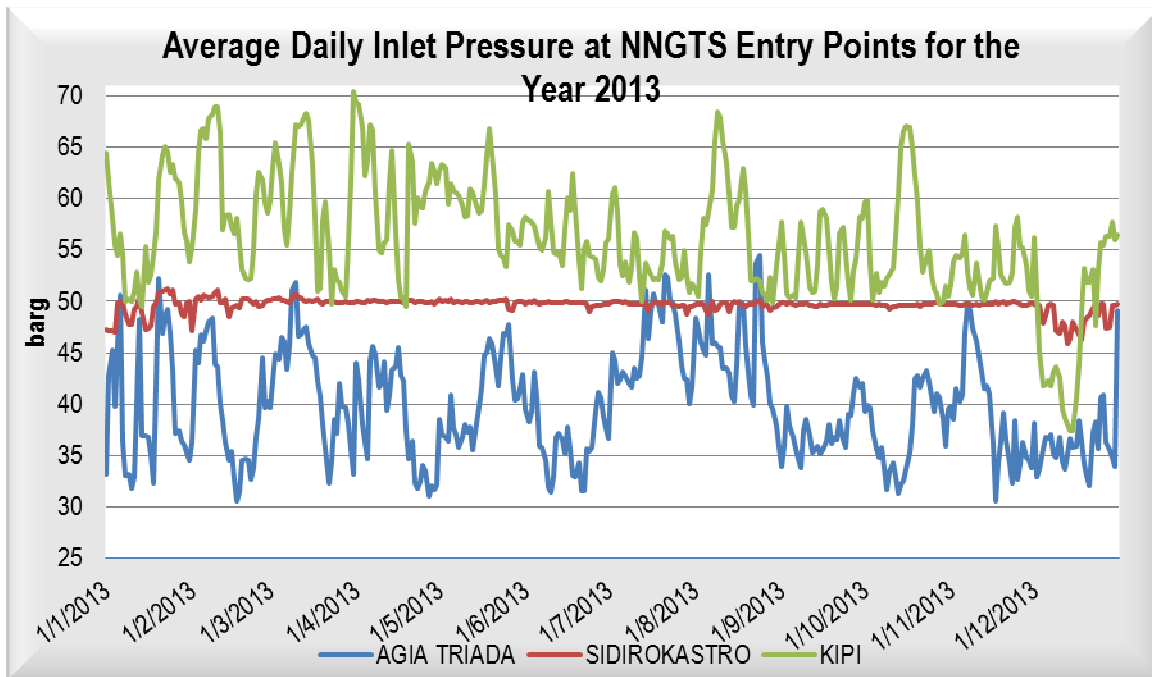


Diagram 4

Furthermore, the Diagram 5 below shows the average Daily Pressure of the NNGTS for the Year 2013, as recorded by DESFA's SCADA system.

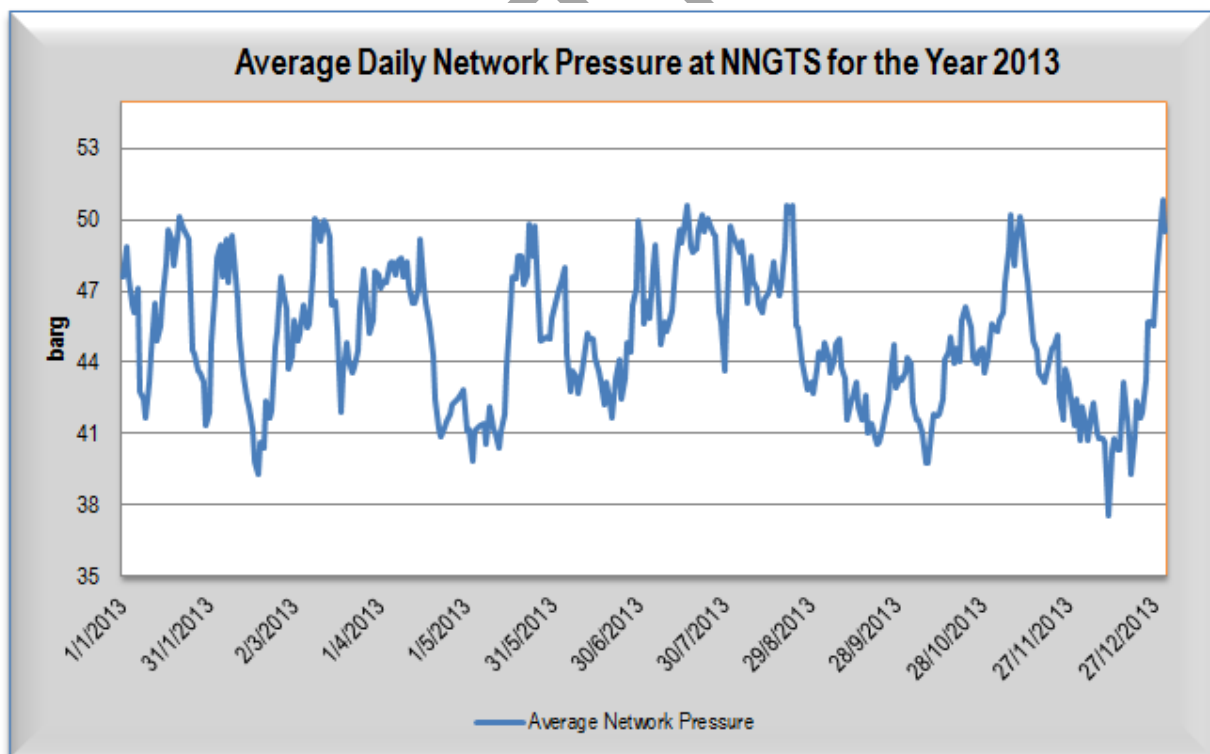


Diagram 5

2.9 Natural Gas Quantities historical data

2.9.1 Daily Natural Gas Off-takes/Deliveries

During the Year 2013 the total Natural Gas Off-Takes at NNGTS Exit Points was 41,559,916 MWh (compared to 47,086,750 MWh during the Year 2012). The Diagram 6 below shows the Daily Natural Gas Off-Takes of all the NNGTS Exit Points (as a sum) for the Year 2013. It is worth mentioning that the Day 08.01.2013, the maximum Natural Gas consumption for the Year 2013 was recorded, i.e. 212,290 MWh.

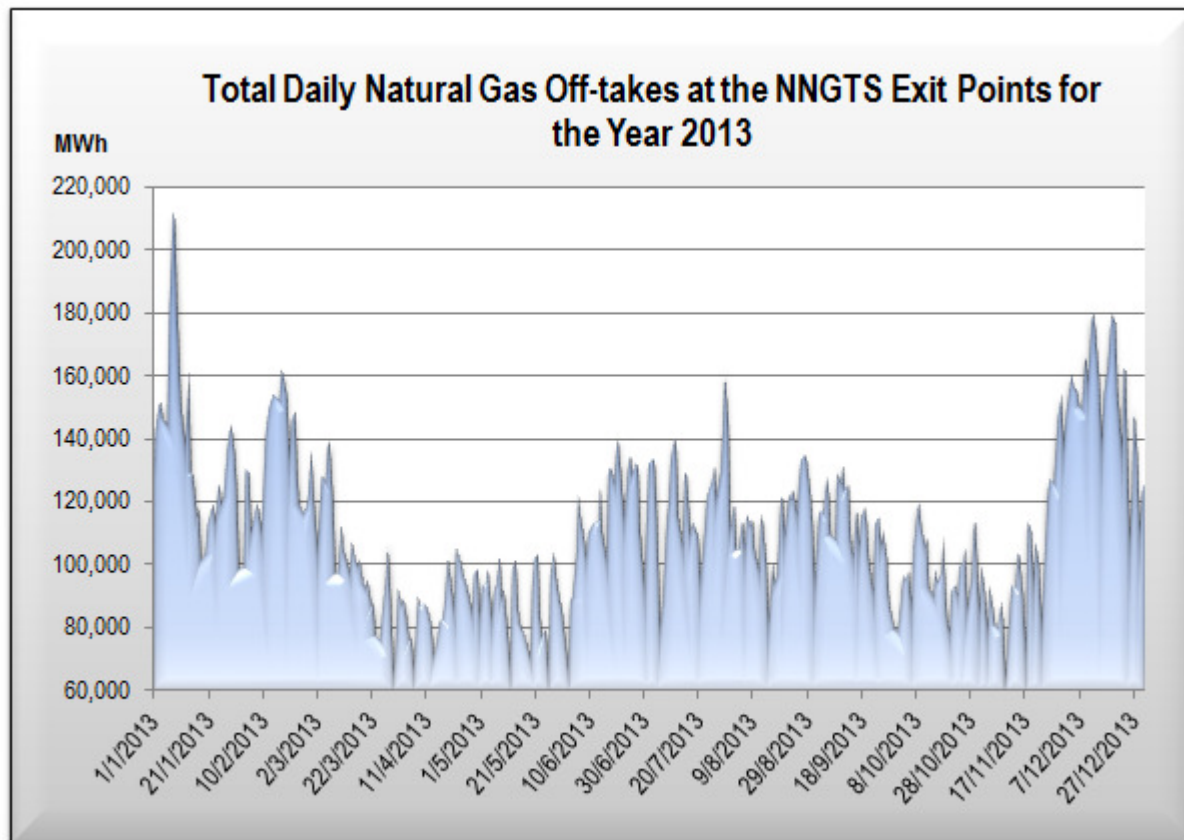


Diagram 6

During the Year 2013 the total Natural Gas Deliveries at NNGTS Entry Points was 41,548,878 MWh (compared to 46,977,074 MWh during the Year 2012). The Diagram 7 below shows the Cumulative Daily Natural Gas Deliveries of all the NNGTS Entry Points (as a sum) for the Year 2013.

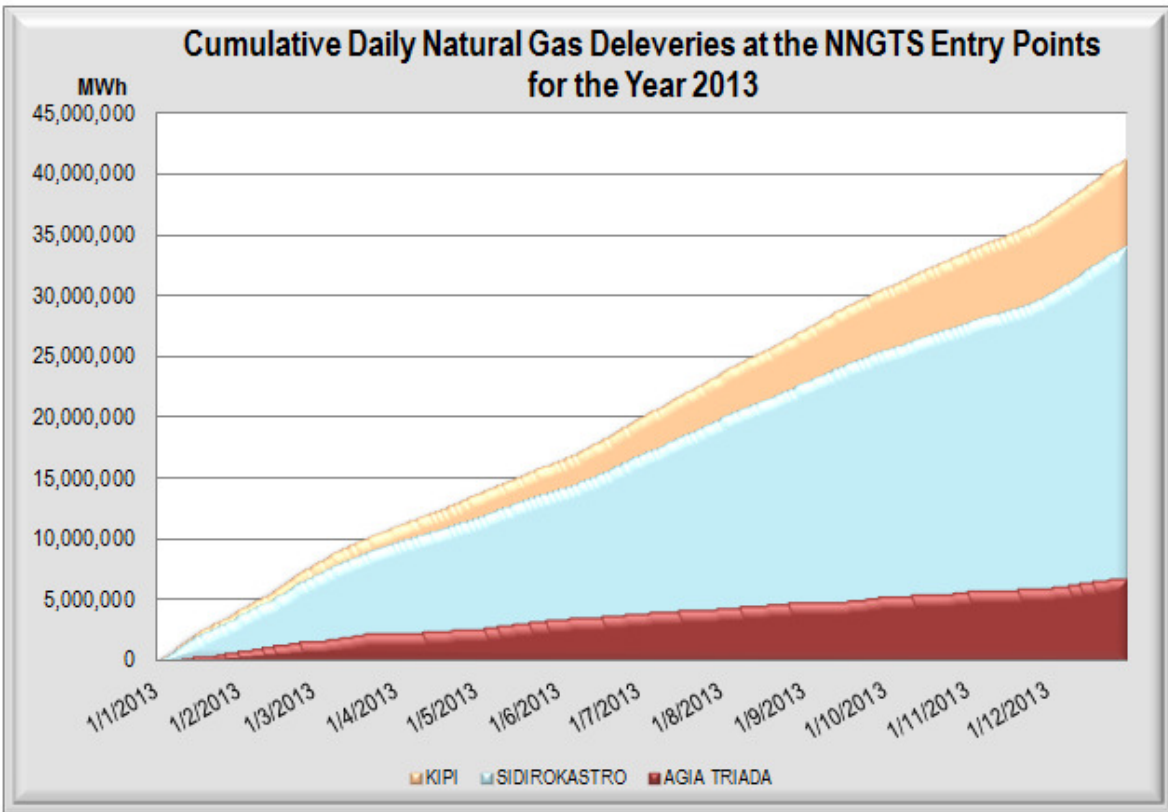


Diagram 7

The Diagram 8 below shows the shares of Daily Natural Gas quantities per NNGTS Entry Point for the Year 2013.

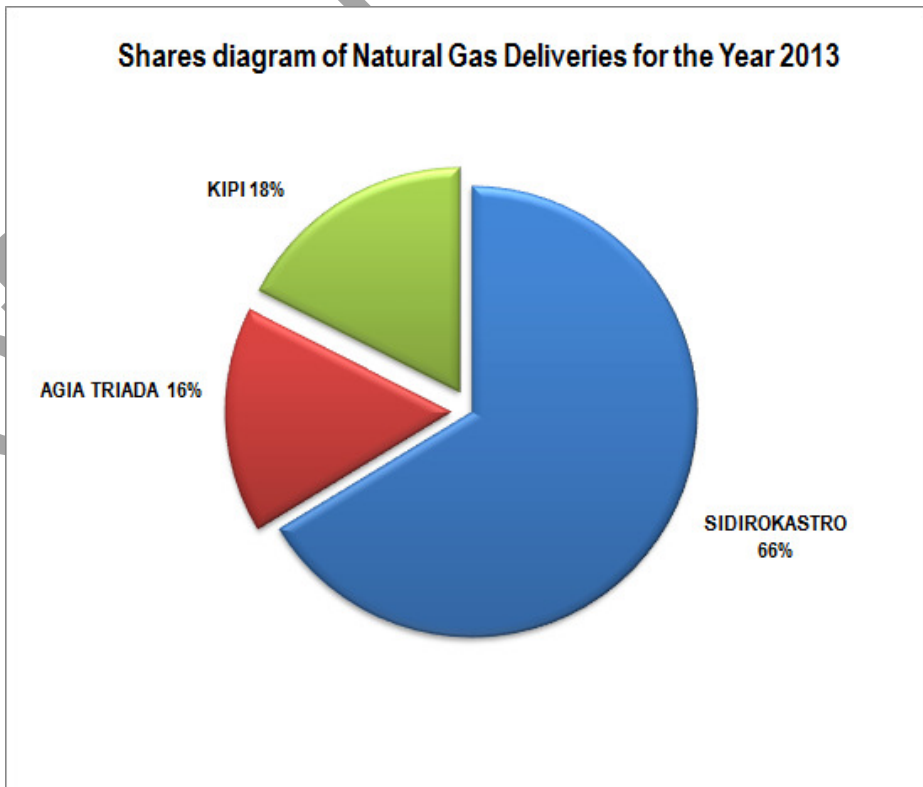


Diagram 8

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 16,943,756 MWh (Day 12.12.2013) to 23,484,056 MWh (Day 31.12.2013). The Diagram 9 below shows the Daily variation of the Natural Gas quantity stored in the network of NNGTS (Line Pack) for the Year 2013.

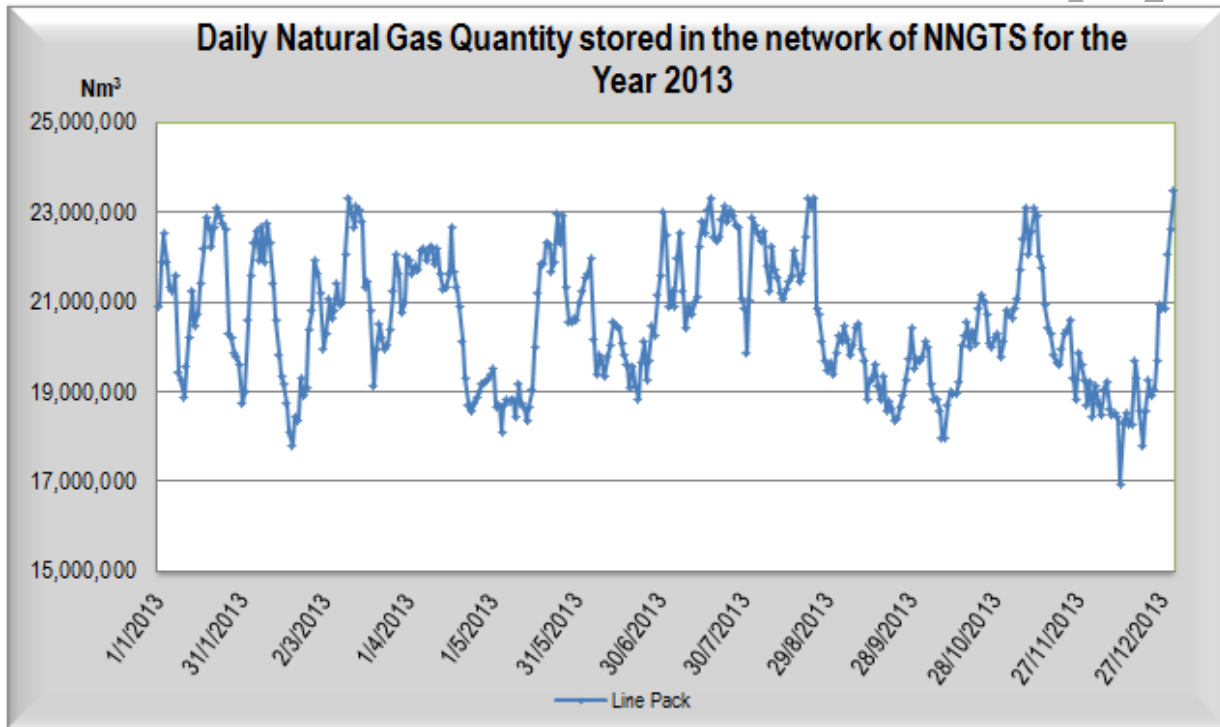


Diagram 9

2.9.3 Total Daily LNG Stock

In the Entry Point "AGIA TRIADA" 6,718,173 MWh of Re-gasified Natural Gas were injected to the NNGTS (decrease of about 53.03% compared to the Year 2012), while the LNG unloads led to 7,010,818 MWh (decrease of about 76.31% compared to the Year 2012).

The Diagram 10 below shows the total Daily configuration of the inventory of LNG Facility Users, including the Balancing Gas that DESFA had for Balancing reasons, during the Year 2013.

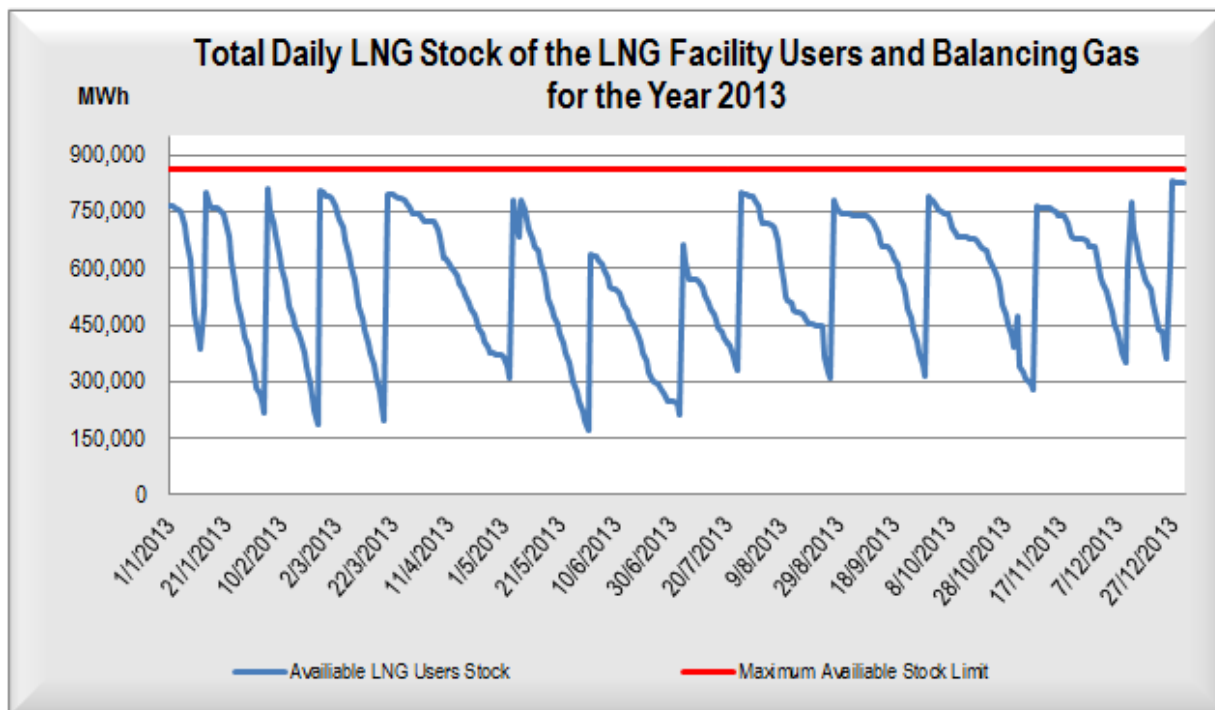


Diagram 10

2.9.4 Historical Operational data of the Compressor Station in Nea Messimvria

The Compressor Station in Nea Messimvria, Thessaloniki, worked during the Year 2013 for 4,410 hours, consuming 66,552.410 MWh of Natural Gas as fuel. That amount corresponds to the 91.12% of the Operational Gas that was used in the NNGTS during the Year 2013, which was at the level of 73,036.834 MWh.

The Diagram 11 below shows the Operational Gas consumed in the NNGTS and the fuel Natural Gas used for the operation of the Compressor Station in Monthly basis during the Year 2013.

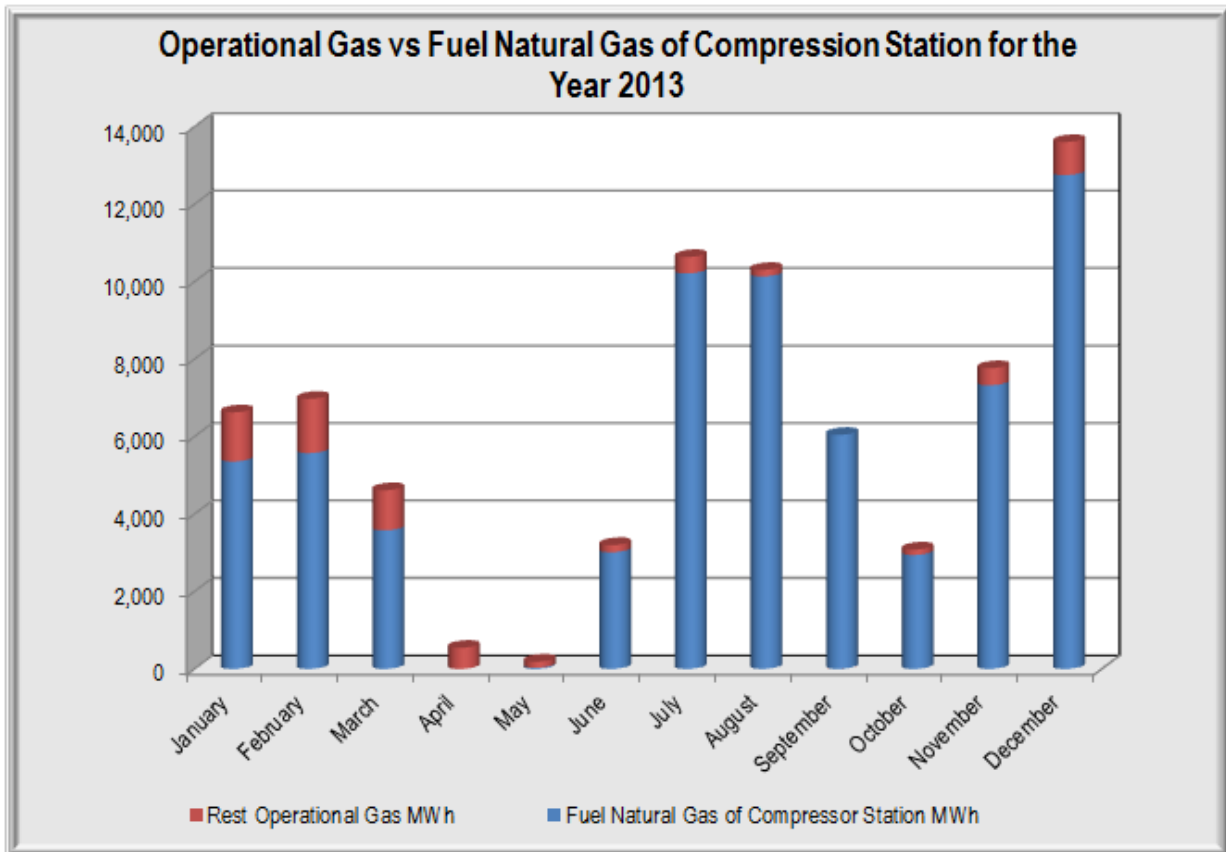


Diagram 11

The Diagram 12 below shows the Natural Gas quantity that was handled by the Compressor Station in Monthly basis during the Year 2013.

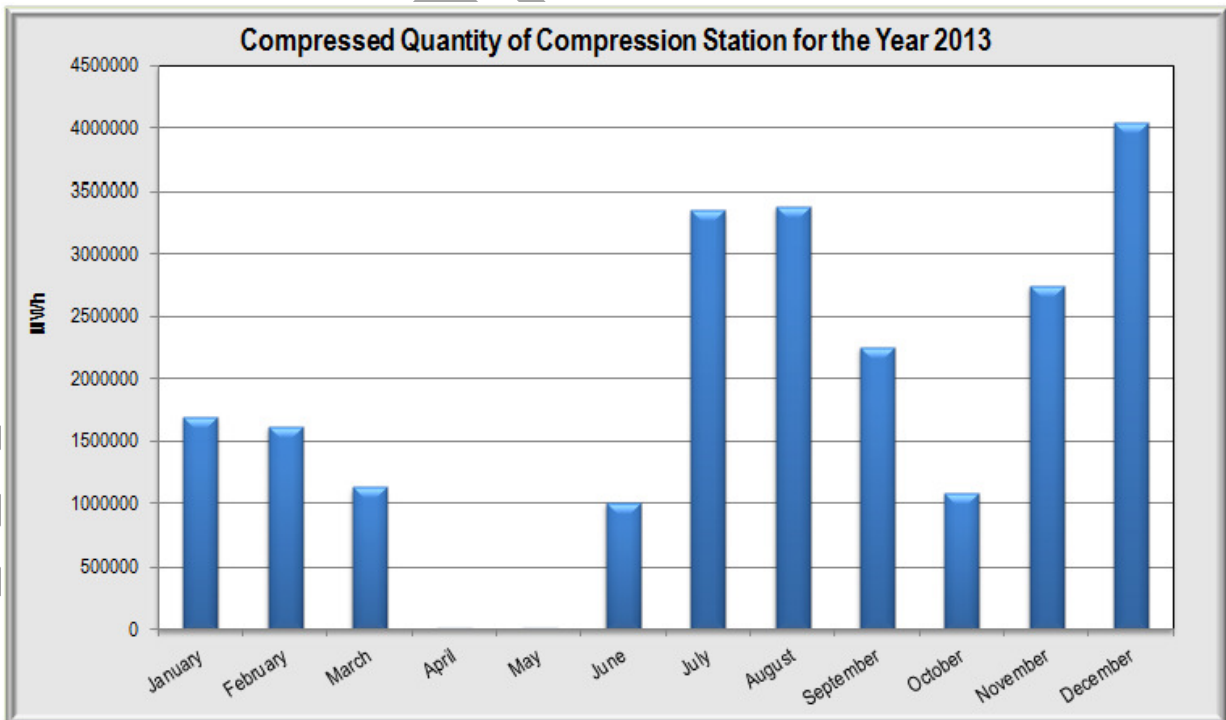


Diagram 12

2.9.5 Natural Gas out of specifications during the Year 2013

During the Year 2013 the following violations of Minimum Entry/Exit Pressure in the Entry/Exit Points of the NNGTS:

1. The Delivery Pressure in the Entry Point "SIDIROKASTRO" was for nineteen (19) Days less than the Minimum Delivery Pressure, i.e. 47.75 barg, at the certain Point.
2. The Delivery Pressure at the Entry Point "KIPI" was for twenty (20) Days less than the Minimum Delivery Pressure, i.e. 50 barg, at the certain Point.

Finally, during the Year 2013 the following violations of Natural Gas quality standards were noted, as specified in the Annex I of the NNGS Network Code:

1. The Water Dew Point (WDP) of the Natural Gas in the Entry Point "SIDIROKASTRO" was for one (1) Day higher than the maximum limit as defined in the NNGS Network Code (5 °C at 80 barg).
2. The Off-taken Natural Gas temperature at the Exit Points "ALOYMINION III" and "THESSALONIKI" was for twenty-nine (29) and two (2) Days, respectively, less than the minimum limit as defined in the NNGS Network Code (-5 °C).