POWER SHAVER
Energy Saving Systems

GSA Contract Holder
Contract Number GS-07F-0422W

Timed Interval Sampling Monitoring & Verification Report

For

GRANITE CONSTRUCTION COMPANY SINCE 1922

located at

Asphalt Plant
4001 Bradshaw Rd.
Sacramento, CA 95827

August 15, 2012

Prepared by:
John D. Knapp
President

Table of Contents

Power Conditioning and Energy Savings

TIS Report

August 15, 2012

For

GRANITE CONSTRUCTION COMPANY SINCE 1922

located at

Asphalt Plant
4001 Bradshaw Rd.
Sacramento, CA 95827

Prepared by:

Power Shaver, Energy Savings Systems

John D. Knapp, CEO/President
(888) 9-POWER-5
john@powershaver.com

Executive Summary and Conclusions

During August of 2012, the Granite Construction Company purchased and installed a USES® Shunt Efficiency System, manufactured by USES® MFG INC. The purpose of the USES® System is to reduce the overall demand and consumption of power and improve overall power quality. A total of eight (8) USES® Model CMES-3D-480V and one (1) USES® Model CMES-3Y-480V power conditioners were installed on the Asphalt Plant's main service entrances. These circuits supply power to several operational processes within the facility.

In accordance with the proposal offered to the Granite Construction Company by Power Shaver, Energy Saving Systems in April of 2012, the USES® System was evaluated to determine the average power conditioning results, power demand reductions and resultant monetary savings and return on investment (ROI). Power Shaver used Timed Interval Sampling (TIS) methods to determine the USES® System performance, and the results of the TIS testing from August 15, 2012 are presented herein. TIS analytical techniques conform to the International Performance Monitoring and Verification Protocols (IPMVP) as established by the U. S. Department of Energy as a mechanism to evaluate the performance of Energy Conservation Measures.

The installation of the USES® Shunt Efficiency System at the Granite Construction Company's Asphalt Plant, has significantly improved power quality and resulted in a substantial decrease in electrical demand according to the conservative Amprobe DM-II Pro®. The USES® System reduced the demand for electricity at low load by approximately **18.88 kW and 104.23 kVA.**

Due to the fact that utility customers are billed for Demand and Energy between the Real and Apparent Power powers, based on their Power Factor and power quality and the fact that our NIST certified and calibrated data logger Amprobe DM-II Pro® is very conservative to utility Revenue meters as to what it determines to be and measures as usable power, Power Shaver conservatively estimates the actual reduction in billed kWh to the Granite Construction Company's Asphalt Plant to be approximately **194,535 kWh per year** between the verified, extrapolated Real Power of 91,341 kWh and Apparent Power of 504,264 KVAH per year **for a cost reduction of $22,760.00 at 2011/2012 prices and ROI of approximately 1.97 years.**

The performance of the USES® Shunt Efficiency System at the Granite Construction Company's Asphalt Plant has proven to be consistent with all of the estimated power quality improvements as outlined in Power Shaver's proposal to Granite Construction Company in April of 2012. The USES® System was estimated to reduce annual consumption by approximately **174,162 kWh per year and cost by $20,377.00**.

The data tables and graphs presented in this report clearly show the beneficial results provided by the USES® System. All power quality data was averaged to take into account short term load variations and to determine the average levels of power quality when the USES® System was activated and de-activated. All of the data tables presented in this report are from the TIS testing and

evaluation conducted on August 15, 2012. Additional power quality improvements also realized by the installation of the USES® System are discussed later in this report.

The resultant power demand reductions during the TIS testing were used to calculate the net annual effect of the USES® system in terms of actual savings and return on investment (ROI). Power Shaver conducted an abbreviated verification test period about one (1) hour shorter than usual, at the request of the Granite representative, resulting in eight (8) separate interval samples.

Power Shaver President John Knapp conducted the recording with the Eaton Representative Ritchie O Pragale for approximately 40 minutes.

The load during the recording period was approximately 150 amps lower than had previously been measured during operation twice before. Because the Power Shaver system was designed for an average 800 plus amperage demand, the results presented within are on the lower side of reduction and we do consider this load to be on the low side of average based on all facility operational assessments and Granite provided information.

Power Shavers' Energy Saving Systems are truly "green" systems that reduce electric energy consumption. Installing the Power Shaver Energy Saving System at the Granite Construction Company's Asphalt Plant will beneficially impact the environment by reducing the consumption of our precious natural resources. According to the U.S. Energy Information Administration, the proposed reduction of electricity demand provided by the Power Shaver System, will reduce your companies consumption of **Crude Oil by 114.45 barrels, Coal by 32.91 tons, Natural Gas by 645,699.80 cubic feet, Gasoline by 5,341.79 gallons or Diesel Fuel and Heating Oil by 4,785.94 gallons per year**, depending on which resource your power company depends on. There is also a significant reduction in water consumption associated with each of the above quantities reduced as it is a necessary part of all fuel processing. Power Shaver is proud to partner with you to reduce your operational cost and help sustain our environment for future generations.

Power Shaver is glad to be part of Granite Construction Company's Asphalt Plant energy savings program and looks forward to assisting with any additional needs in the future. For any questions or comments on this report, please contact John D. Knapp, CEO/President of Power Shaver, Energy Savings Systems at (888) 9-POWER-5, or via email at john@powershaver.com.

Summary of Power Quality Improvements

Analysis of the low load TIS testing results from August 15, 2012 demonstrate that the USES® technology has provided substantial improvements in overall power quality. The following power quality improvements have been realized by Granite Construction Company:

- Real Power Demand Average (kW) – **Real Power demand was reduced by an average 18.88 kW (4.13%)** at low load operational levels with 9 USES® Power Conditioners activated. Each USES® unit was individually tested and found to be operational and contributing to the overall power quality improvements as presented in the Power Shaver proposal of April 2012. During the Off-Peak TIS testing of August 15, 2012, the average real power demand reduction was 18,884.71 watts. The results are used in the ROI and Savings calculations because they are representative of low circuit load conditions.

- Real Power Demand Instant (kW) – **Real Power demand was reduced instantly by 23.45 kW (5.14%)** at low load operational levels with 9 USES® Power Conditioners activated.

- Apparent Power Average – Apparent power was reduced from 588.014 KVA to 483.814 KVA when the USES® System was activated. The average apparent power reduction was 104.230 KVA (17.73%).

- Apparent Power Instant – The instant Apparent Power reduction was 113.571 kVA (19.31%) at low load operational levels with 9 USES® Power Conditioners activated.

- Reactive Power – Under low load, the Reactive Power was reduced from 370.045 KVAR to 193.863 KVAR when the USES® System was activated. The average reactive power reduction was 176.566 KVAR (47.7%).

- Power Factor – Under low load, the Power Factor improved from 78% to 92% (18%) and remained lagging when the USES® System was activated.

- Amperage – Under low load, the circuit Amperage was reduced by about 135.53 amps (19.2%) on each phase when the USES® System was activated.

- Voltage – Voltage improved by an average of 4.73 volts (.985%) per phase (VAB, VBC, VCA) when the USES® System was activated.

Savings and ROI Calculations

Evaluation of the USES® System installed at the Granite Construction Company's Asphalt Plant shows a range of demand reductions at low load when the USES® System is activated. During the TIS testing period, when the facility was operational, the average extrapolated billed demand reduction was estimated to be 40.21 kWh. The total annual reduction of power consumed is 40.21 kWh x 4838 hours per year = 194,535 kWh per year.

Assuming the 2011/2012 average cost of power of $0.117/kWh will increase in 2013 to $0.127/kWh and by $0.01/kWh each year thereafter, ROI savings are shown on the following pro-forma:

Year	COP	kWh/yr SVGS	SVGS/yr	
1	$0.117	194,535	$22,760.60	
2	$0.127	194,535	$24,705.95	
3	$0.137	194,535	$26,651.30	
4	$0.147	194,535	$28,596.65	
5	$0.157	194,535	$30,542.00	**Years 1-5**
6	$0.167	194,535	$32,487.35	**$133,256.48**
7	$0.177	194,535	$34,432.70	
8	$0.187	194,535	$36,378.05	
9	$0.197	194,535	$38,323.40	
10	$0.207	194,535	$40,268.75	**Years 6-10**
11	$0.217	194,535	$42,214.10	**$181,890.23**
12	$0.227	194,535	$44,159.45	
13	$0.237	194.535	$46,104.80	
14	$0.247	194,535	$48,050.15	
15	$0.257	194,535	$49,995.50	**Years 11-15**
Total		**2,918,025**	**$545,670**	**$230,523.98**

- **Actual ROI = 23 Months**
- **Year 1 savings = $22,760.60**
- **Purchase Cost, excluding installation cost = $45,000.00**
- **Total Savings over 15 years = $545,670 – $45,000 = $500,670**

USES® Power Quality Benefits

The installation of the USES® System at Granite Construction Company's Asphalt Plant has resulted in measurable and verifiable power quality improvements, as well as other benefits which cannot be measured. A discussion of the power quality improvements resulting from the USES® System is presented below:

Real Power Demand - The USES® System reduces Real Power Demand in two principal ways: Through amperage reductions on the circuit, which reduce "Copper Losses", and through the reduction of Total Harmonic Distortion (THD) in the amperage and voltage supplied to operating loads, which improves motor efficiency. The amount of Real Power Demand reduction associated with the USES® System exceeds that of comparable power factor correction capacitor (PFCC) equipment because of the reduced THD in addition to the improvement in power factor.

Power Factor – Power Factor is the ratio of Real Power to Apparent Power. Because the USES® System reduces both Real Power Demand and Apparent Power Demand, the Power Factor is improved and approaches unity, or 100%. Because the USES® System does not create RLC resonance, any leading Power Factor will have no effect on the performance or reliability of the equipment.

Reactive Power, Apparent Power and Amperage – The USES® System reduces the Reactive Power on the circuit in a manner which does not create RLC resonance. Each USES® Model CMES-3D-480 power conditioner reduces Reactive Power by 21-23 KVAR and each USES® Model CMES-3Y-480 power conditioner reduces Reactive Power by 14-16 KVAR. A reduction in Reactive Power results in a corresponding decrease in the Apparent Power on the circuit. This, in turn, results in a decrease in the amount of amperage on the circuit, which results in a decrease in Real Power Demand as a result of reduced "Copper Losses" on the circuit. Copper Losses manifest themselves as heat in motors and conductors and can reduce the useful life of motors, transformers and sensitive electronic equipment. The reduction in Reactive Power on the circuit also acts to "stiffen" the circuit by reducing overall circuit impedance. A "stiff" circuit will reduce the creation of voltage Total Harmonic Distortion as a result of current harmonics.

Voltage Improvement - By improving voltage across each of the three phases (VAB, VBC, VCA), circuit amperage is further reduced and motors will run cooler and last longer. Increased voltage will also lessen the likelihood of equipment tripping off due to utility voltage sags. Fluctuations in voltage are dampened by the coupling of the three phases of power supplied, which will lessen any likelihood of equipment tripping problems associated with voltage fluctuations.

Harmonics – The USES® System reduces the Harmful Harmonic Distortion (HHD) of the amperage and voltage on the circuit by passing all power generated within the USES® System through 60 Hz band-pass Filters. Because the USES® System is connected to the electrical circuit in parallel, some HD will continue to pass on to the operational loads. However, because a significant portion of the power supplied to the load is "choked" to 60 Hz, total HD supplied to the load is reduced. This action significantly reduces the HHD in the voltage and current provided to the operating motors, thus

increasing motor efficiency. This also drastically reduces the amount of NON POWER CURRENT or harmonic current, which the utility meter charges for as kWh. Problems associated with circuit harmonics include:

- Excessive Neutral Currents, where voltage harmonics result in additional current on the circuit neutral conductor, resulting in additional heat, possible overloading and the need to install additional neutral conductors.

- Overheated transformers, where harmonics generated on the secondary side of a delta-wye transformer will circulate on the primary side of the transformer. Some types of transformer losses, such as skin losses and eddy currents will increase by the square of the harmonic order.

- Overheated solenoid coils and lighting ballasts.

- Positive, negative and zero sequence voltages on motors and generators, where certain harmonic frequencies will try to rotate the motor forward or backward, or simply heat up the motor.

- Incorrect reading power meters, especially disc type watt-hour meters and averaging type current meters.

- Failure of electronic equipment, including nuisance tripping and overload.

- Nuisance tripping of circuit protection devices including false tripping of relays and failure of UPS devices to properly transfer.

- Blown fuses and overheated power factor correction capacitors due to the cumulative effects of harmonic THD and RLC resonance.

Spike and Surge Protection - Inherent in the USES® System, but not measured, is the ability to provide superior spike and surge suppression capabilities. A surge is any voltage increase lasting 3 or more nanoseconds. A spike is any voltage increase lasting less than 3 nanoseconds. The USES® device detects any surges or spikes traveling along one of the active phases and shunts it to the other two phases. From there, the transformer/choke sets within the USES® device attenuate the surge/spike through the action of the “chokes”, which use capacitors and inductors to resist the change in voltage and associated change in current, and flatten out the waveform. The surge/spike is recycled as usable power for the circuit. Because USES® “Wye” units were specified for this application, the USES® System will protect the circuit against ground fault transients or lightning strikes which can enter the circuit through the neutral conductor.

Timed Interval Sampling (TIS) Techniques

Timed Interval Sampling (TIS) techniques are used to determine actual performance of the USES® System. In order to ensure the accuracy, transparency and repeatability of the TIS evaluation, Power Shaver, Energy Saving Systems has developed TIS methods which adhere to the International Performance Measurement & Verification Protocols (IPMVP). The IPMVP, endorsed by the U.S. Department of Energy, provides an overview of the best practice techniques available for verifying the results of energy savings projects.

Timed Interval Sampling is a statistical method of energy measurement with regard to electrical consumption, measured as average wattage demand reductions over a short span of time. It is used in facilities with dynamic electrical loads where energy use is a function of manufacturing, environmental loads, and related equipment. TIS techniques are utilized to minimize the high degree of variables present when measuring energy consumption. These variables often include: weather conditions, facility operational techniques, and load variations.

When the USES® System is being evaluated, it is alternately activated and deactivated at timed intervals such as 5, 10 or 15 minutes, to compare the average demand of real power by the loads in the facility under equal conditions. All samples are recorded and averaged in each respective operating condition (on vs. off), in order to demonstrate the effects that the USES® System has on the circuit when activated and deactivated. Power Shaver used an Amprobe DM-II Pro® Multi-meter and Data Logger to perform TIS metering and recording. This "True RMS" meter meets the standards of the National Institute of Standards and Technology and the IPMVP.

Evaluation of the USES® System performance was made through analysis of the data recorded from the TIS testing. The Amprobe DM-II Pro® Multi-meter was connected at a point at or near the main service breaker serving the entire facility in order to measure overall circuit power quality and average energy savings. The USES® System was activated and deactivated for intervals of 5 minutes during the test period to measure the changes in overall power quality in each operating condition. A separate test of the cumulative effect of the USES® power conditioners was also conducted to confirm that each of the units is operating properly. The differences between conditioned and unconditioned power quality was determined and averaged to demonstrate the overall effect that the USES® System has on the circuit.

- All recorded data was evaluated and averaged in the following manner to determine the overall average performance of the USES® System: The average power quality for each full interval was calculated and compared to the next interval before and after each transition from on to off, and off to on.

- Each instantaneous change in power quality was determined by comparing the last one-second with the USES® System on to the first one-second with the USES® System off, and vice-versa.

- The average power quality was calculated before and 15-seconds after each transition from on to off, and off to on.

- The average power quality was calculated before and 30-seconds after each transition from on to off, and off to on.

- The average power quality was calculated before and 45-seconds after each transition from on to off, and off to on.

- The average power quality was calculated before and 60-seconds after each transition from on to off, and off to on.

- All representative transitional changes are averaged to derive the overall average performance of the USES® System.

This report shows all differences in electrical performance with the USES® System activated and deactivated including:

- Real Power Demand reductions (Watts)
- Voltage improvements across each phase (Volts)
- Amperage reductions across each phase (Amps)
- Reactive Power reductions (VAR)
- Apparent Power reductions (VA)
- Power Factor improvement (%)

Graphs and Data Tables

Through evaluation of the Amprobe DM-II Pro® Power Multi-meter and Data Logger recordings collected on August 15, 2012, we have prepared a series of graphs and data tables to show the effect of the USES® System. The following graphs are presented below, showing all changes to power quality when the USES® System is activated or de-activated:

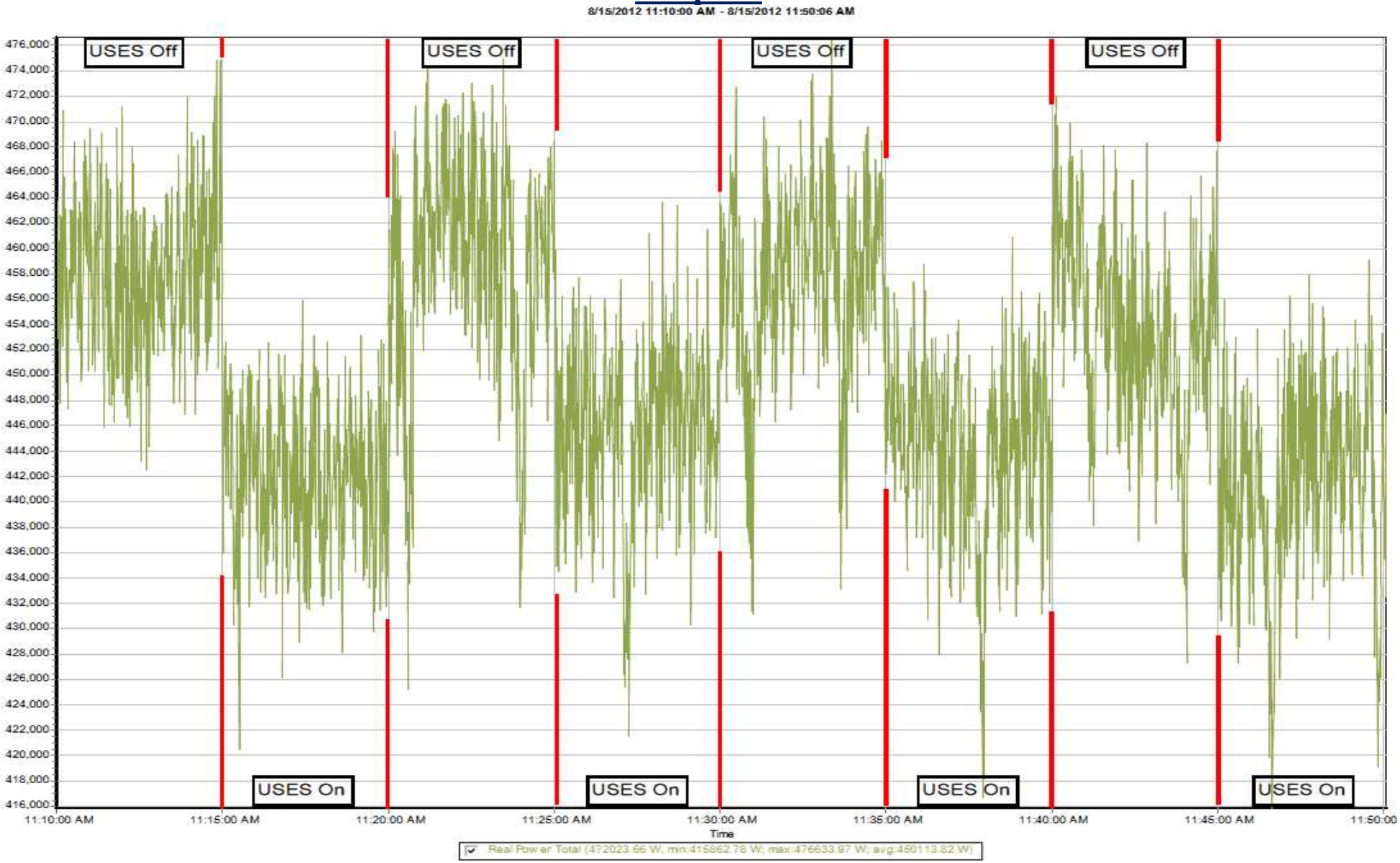
- Graph 1 – Real Power (watts) – This graph shows Real Power in watts during the August 15, 2012 TIS testing.
- Graph 2 – Apparent Power (VA) – This graph shows Apparent Power during the August 15, 2012 TIS testing.
- Graph 3 – Reactive Power (VAR) – This graph shows Reactive Power during the August 15, 2012 TIS testing.
- Graph 4 – Power factor – This graph shows Power Factor as a decimal during the August 15, 2012 TIS testing.
- Graph 5 – Amperage (Amps) – This graph shows amperage in amps for 3 phases during the August 15, 2012 TIS testing.
- Graph 6 – Voltage (Volts) – This graph shows the voltage in volts for 3 phases during the August 15, 2012 TIS testing.

The following data tables are presented to show the average observed performance of the USES® System during the August 15, 2012 TIS testing. Please note that during the testing, each USES® unit was tested individually to ensure performance and evaluate circuit improvements.

- Table 1 – Real Power (Watts) from the August 15, 2012 TIS testing.
- Table 2 – Apparent Power (VA) from the August 15, 2012 TIS testing.
- Table 3 – Reactive Power (VAR) from the August 15, 2012 TIS testing.
- Table 4 – Power Factor from the August 15, 2012 TIS testing.
- Table 5 – Amperage (Amps) 3 phases from the August 15, 2012 TIS testing.
- Table 6 – Voltage (Volts) 3 phases from the August 15, 2012 TIS testing.

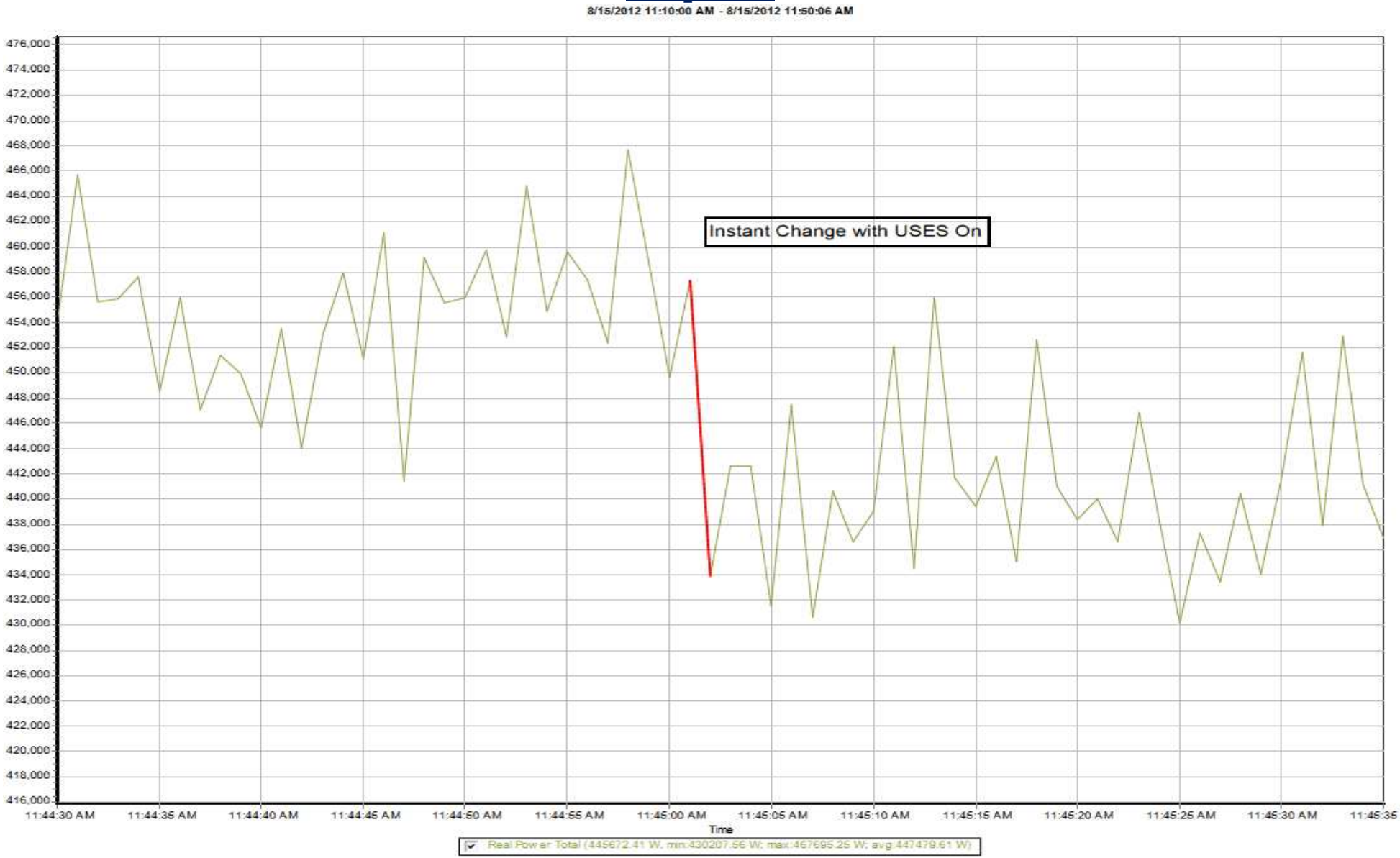
All Data Tables and Graphs, together with all raw data are included.

Graph 1



Graph 1 Above shows the Real Power Demand in watts during the TIS testing on August 15, 2012 between 11:10 am and 11:50 am. With 8 USES® model CMES-3D-480V and 1 USES® model CMES-3Y-480V power conditioners operating, the Real Power Demand is reduced an average of **18,884 watts.**

Graph 1A



Graph 1A Above shows the Instant change in Real Power Demand in watts during the TIS testing on August 15, 2012 at 11:45:01 am. With 8 USES® model CMES-3D-480V and 1 USES® model CMES-3Y-480V power conditioners operating, the Real Power Demand is reduced **23,454.91 watts.**

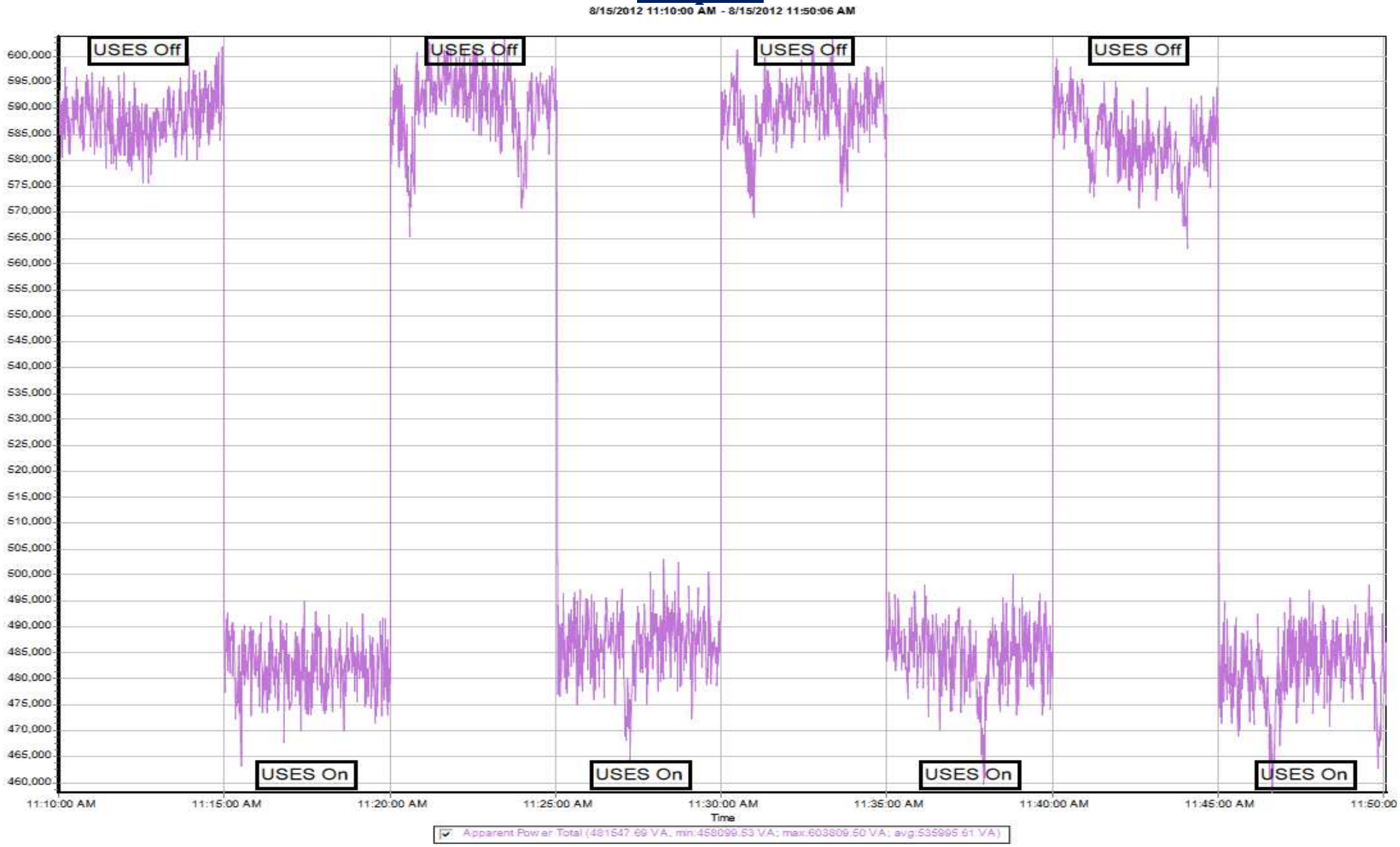
Table 1

Real Power Demand (Watts)

Intervals						Full Interval		Instant	15 Sec	30 Sec	45 Sec	60 Sec
Interval Time Frame		# USES	Status	System On Average	System Off Average	Difference Off to On	Difference On to Off	Change At Transition	Change At Transition	Change At Transition	Change At Transition	Change At Transition
11:10:00 AM	11:15:00 AM		off		458055.70							
11:15:01 AM	11:20:00AM		on	441969.34		16086.35		4206.85	6349.16	17039.97	6632.22	11057.75
11:20:01 AM	11:25:03 AM		off		458543.93		16574.58	15615.22	5384.69	-1696.56	17879.34	17309.50
11:25:04 AM	11:30:00 AM		on	445827.12		12716.80		14382.44	13204.97	7950.72	13792.85	11990.60
11:30:01 AM	11:35:00 AM		off		457630.19		11803.06	11604.91	6358.22	8935.91	-1168.12	-4840.72
11:35:01 AM	11:40:00 AM		on	443969.31		13660.88		14704.15	8490.06	14363.15	12207.34	15937.62
11:40:01 AM	11:45:01 AM		off		453572.14		9602.83	22503.75	27203.15	27578.34	26572.53	12472.28
11:45:02 AM	11:50:05 AM		on	441295.25		12276.89		23454.91	22342.69	19422.13	16026.85	17556.88
Average - System Off				456950.49								
Average - System On				443265.25								
Difference				13685.23								
Transition Avg - Off to On						13685.23		17513.83	17773.83	16941.75	14009.01	14135.71
Transition Avg - On to Off							12660.16	16574.63	27203.15	27578.34	22225.94	14890.89
Average - All Transitions				18884.71								

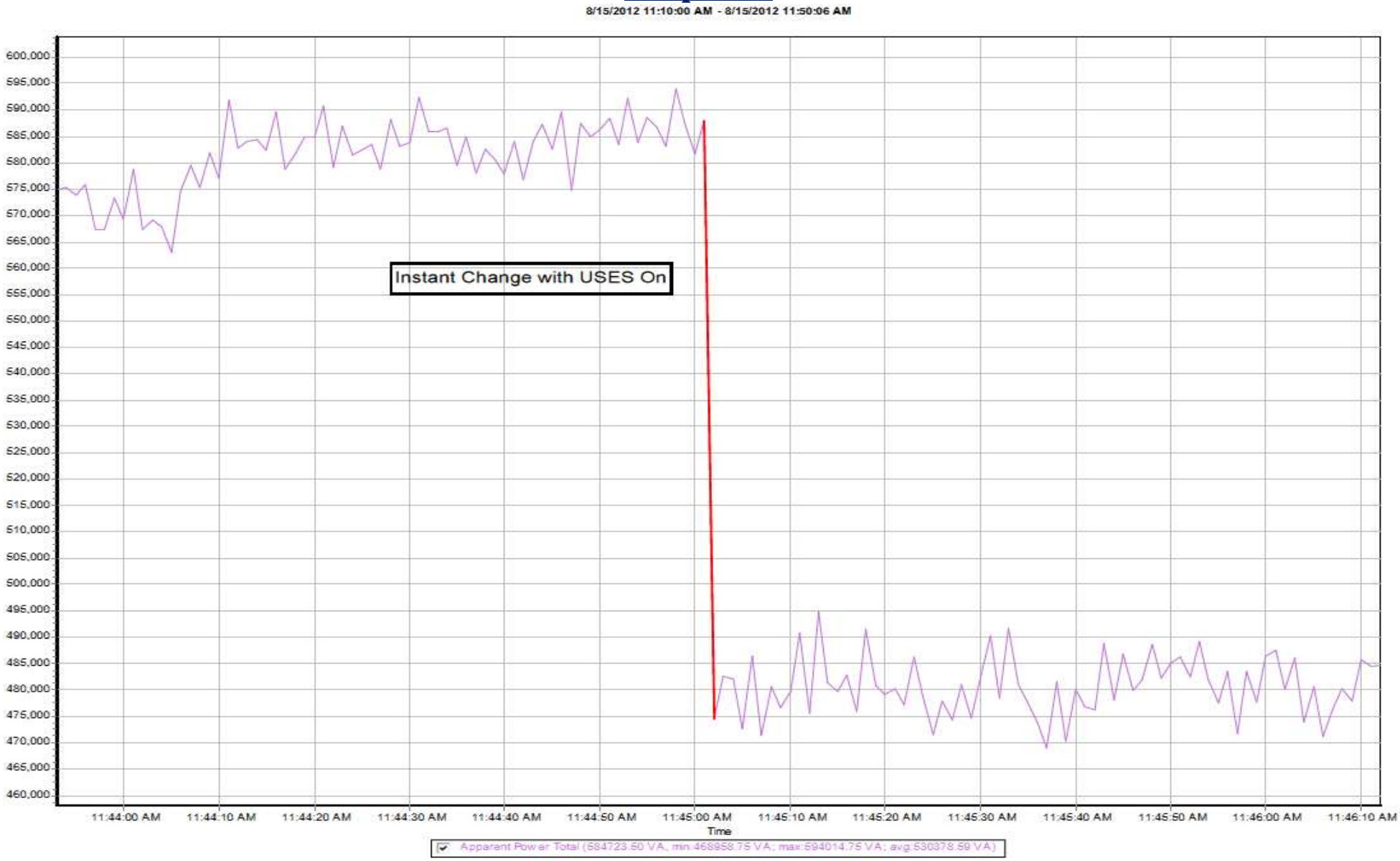
Table 1 Above shows analysis of the wattage data of eight (8) USES® model CMES-3D-480V and one (1) USES® model CMES-3Y-480V power conditioners collected by the Amprobe DM-II Pro® Multi-Meter and Data-Logger during the TIS testing on August 15, 2012. Each interval is 5 minutes in duration. The Real Power Demand is reduced an average of **18.884 kW.** At the completion of the test period, each unit was tested individually. Shaded cells are not included in the average performance calculations because load changes unrelated to the performance of the USES® system occurred during the averaging period.

Graph 2



Graph 2 Above shows the Apparent Power in VA during the TIS testing on August 15, 2012 between 11:10 am and 11:50 am with eight (8) USES® model CMES-3D-480V and one (1) USES® model CMES-3Y-480V power conditioners operating. The Apparent Power is reduced an average of **104.23 KVA.**

Graph 2A



Graph 2A Above shows the Instant change in Apparent Power in VA during the TIS testing on August 15, 2012 at 11:45:01 am with eight (8) USES® model CMES-3D-480V and one (1) USES® model CMES-3Y-480V power conditioners operating. The Apparent Power is reduced **113.571 KVA.**

Table 2

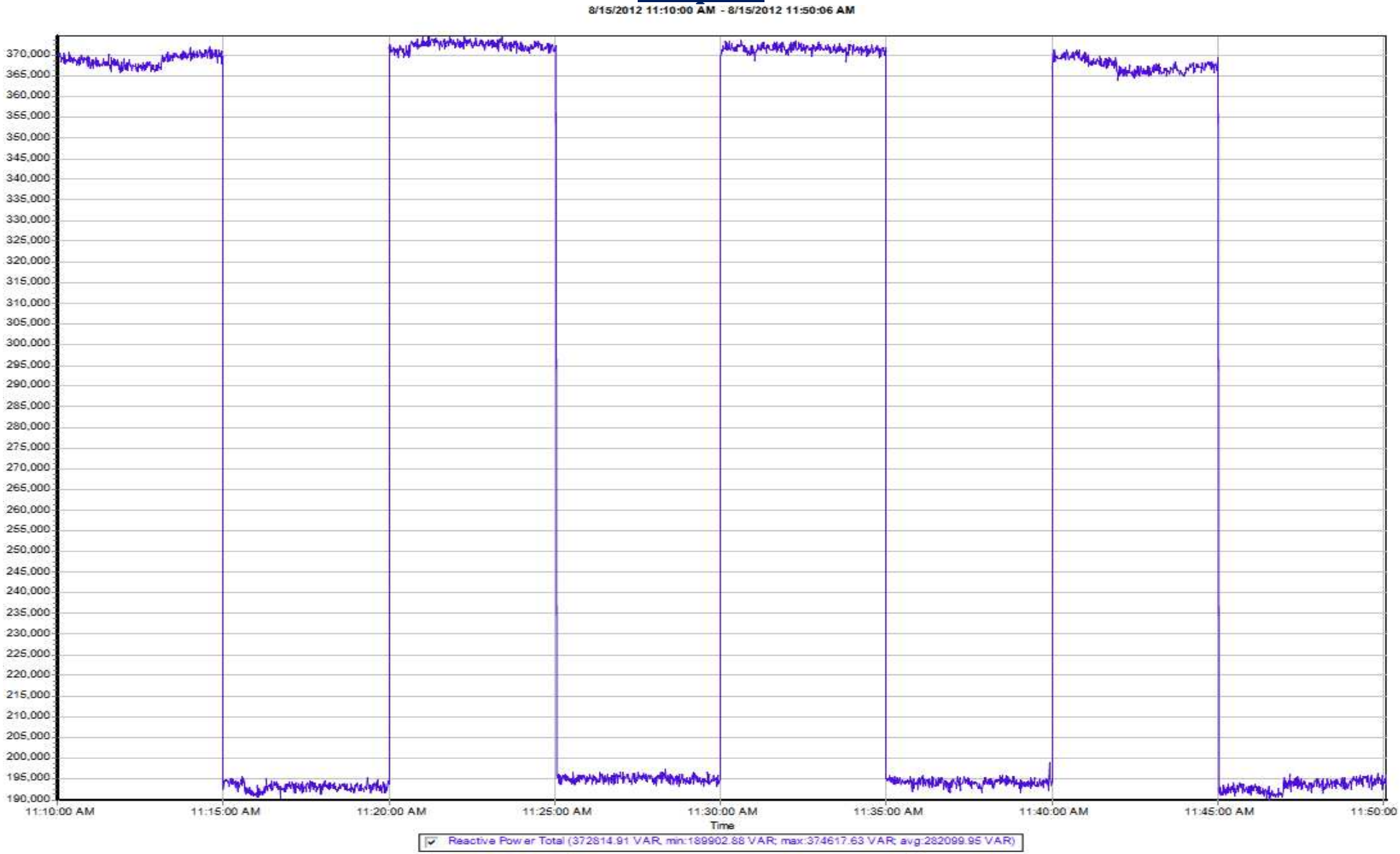
Apparent Power (VA)

Intervals						Full Interval		Instant	15 Sec	30 Sec	45 Sec	60 Sec
Interval Time Frame		# USES	Status	System On Average	System Off Average	Difference Off to On	Difference On to Off	Change At Transition	Change At Transition	Change At Transition	Change At Transition	Change At Transition
11:10:00 AM	11:15:00 AM	0	off		588040.05							
11:15:01 AM	11:20:00AM	0	on	482291.67		105748.39		95896.78	96948.91	107238.10	98358.06	102938.78
11:20:01 AM	11:25:03 AM	0	off		590742.28		108450.61	107492.13	99387.25	94591.50	109819.32	110448.75
11:25:04 AM	11:30:00 AM	0	on	486625.50		104116.79		106522.81	105315.19	100337.88	105909.78	104219.78
11:30:01 AM	11:35:00 AM	0	off		589496.17		102870.67	100780.44	98968.25	99443.81	92011.81	88018.62
11:35:01 AM	11:40:00 AM	0	on	484566.68		104929.48		105267.78	100178.59	105343.66	103453.53	106397.91
11:40:01 AM	11:45:01 AM	0	off		583778.34		99211.66	109432.62	114491.43	114622.93	114546.37	102760.12
11:45:02 AM	11:50:05 AM	0	on	481773.27		102005.07		113571.97	112109.56	109493.50	106055.28	107905.00

Average - System Off				588014.21								
Average - System On				483814.28								
Difference				104199.93								
Transition Avg - Off to On						104199.93		105314.84	103638.06	105603.29	103444.16	105365.37
Transition Avg - On to Off							103510.98	105901.73	104282.31	102886.08	105459.17	100409.16
Average - All Transitions				104230.42								

Table 2 Above shows analysis of the Apparent Power data of eight (8) USES® model CMES-3D-480V and one (1) USES® model CMES-3Y-480V Power Conditioners collected by the Amprobe DM-II Pro® Multi-Meter and Data-Logger during the TIS testing on August 15, 2012 between 11:10 am and 11:50 am. The test data shows an Apparent Power reduction of about **104.23 KVA.** Shaded cells are not included in the average performance calculations because load changes unrelated to the performance of the USES® system occurred during the averaging period.

Graph 3



Graph 3 Above shows the Reactive Power in KVAR during the TIS testing on August 15, 2012 between 11:10 am and 11:50 am with eight (8) USES® model CMES-3D-480V and one (1) USES® model CMES-3Y-480V power conditioners operating. The Reactive Power is reduced an average of **176.566 KVAR.**

Table 3

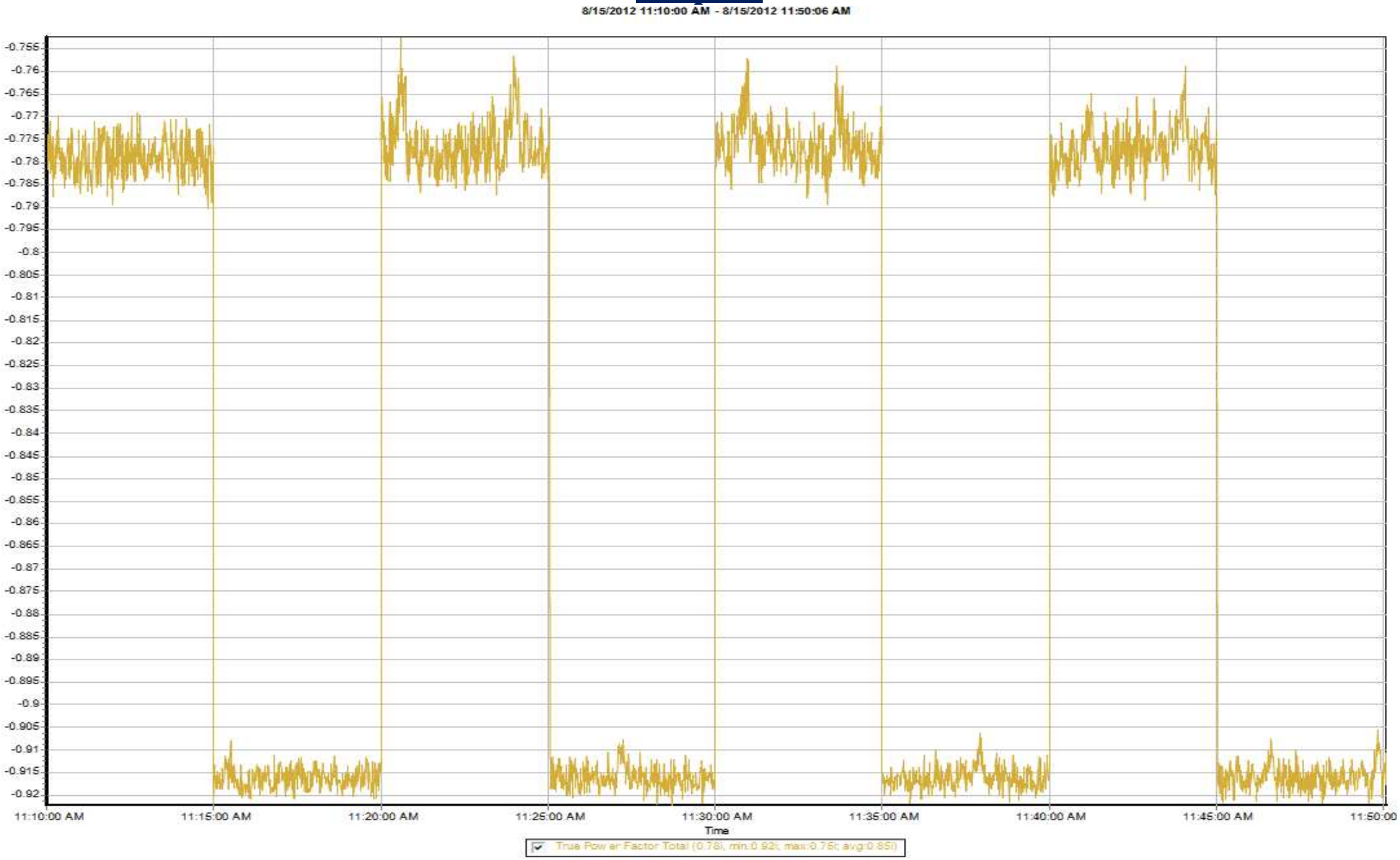
Reactive Power (VAR)

Intervals						Full Interval		Instant Change At Transition	15 Sec Change At Transition	30 Sec Change At Transition	45 Sec Change At Transition	60 Sec Change At Transition
Interval Time Frame		# USES	Status	System On Average	System Off Average	Difference Off to On	Difference On to Off					
11:10:00 AM	11:15:00 AM	0	off		368727.90							
11:15:01 AM	11:20:00AM	0	on	193030.90		175697.00		177276.47	174951.21	176178.27	177863.13	179163.66
11:20:01 AM	11:25:03 AM	0	off		372403.19		179372.29	177954.04	177601.26	178551.17	178861.76	180550.42
11:25:04 AM	11:30:00 AM	0	on	195021.47		177381.71		176500.97	176174.75	175731.38	176317.25	176205.28
11:30:01 AM	11:35:00 AM	0	off		371560.48		176539.00	174892.80	178514.67	176086.55	176724.36	174900.70
11:35:01 AM	11:40:00 AM	0	on	194132.69		177427.79		175983.67	177500.38	176947.52	177160.06	175988.14
11:40:01 AM	11:45:01 AM	0	off		367489.96		173357.27	172541.22	174756.66	174494.10	175640.63	174360.25
11:45:02 AM	11:50:05 AM	0	on	193270.24		174219.72		177734.84	176634.48	176771.94	175952.36	177069.59

Average - System Off				370045.38								
Average - System On				193863.83								
Difference				176181.56								
Transition Avg - Off to On						176181.56		176873.99	176315.21	176407.28	176823.20	177106.67
Transition Avg - On to Off							176422.85	175129.35	176957.53	176377.27	177075.58	176603.79
Average - All Transitions				176566.99								

Table 3 Above shows analysis of the Reactive Power data of eight (8) USES® model CMES-3D-480V and one (1) USES® model CMES-3Y-480V power conditioners collected by the Amprobe DM-II Pro® Multi-Meter and Data-Logger during the TIS testing on August 15, 2012 between 11:10 am and 11:50 am. The test data shows a Reactive Power reduction of about **176.566 KVAR.** Shaded cells are not included in the average performance calculations because load changes unrelated to the performance of the USES® system occurred during the averaging period.

Graph 4



Graph 4 Above shows the Power Factor in decimals during the TIS testing on August 15, 2012 between 11:10 am and 11:50 am with eight (8) USES® model CMES-3D-480V and one (1) USES® model CMES-3Y-480V power conditioners operating. The Power Factor is increased from **78% to 92%.**

Table 4

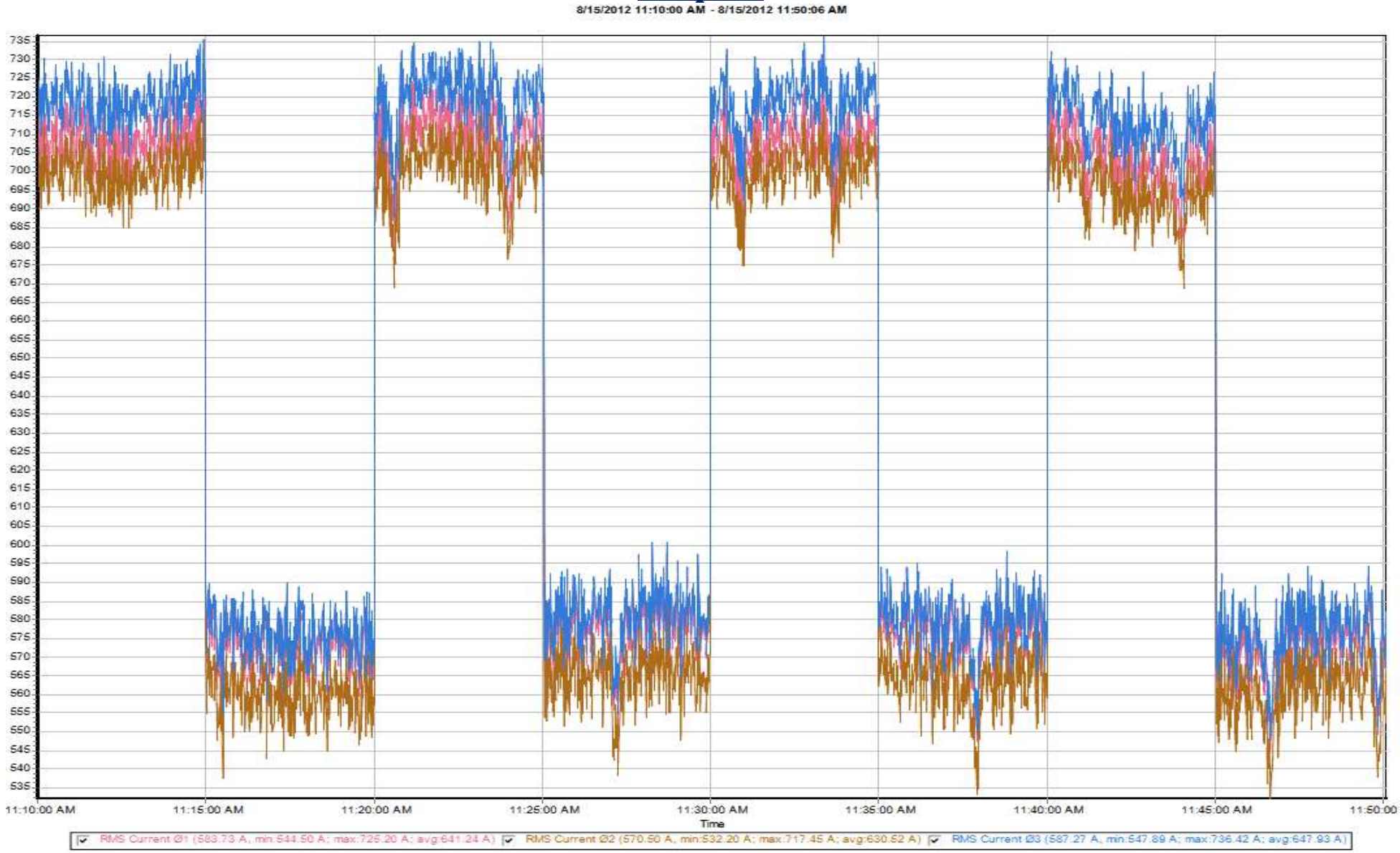
Power Factor

Intervals						Full Interval		Instant Change At Transition	15 Sec Change At Transition	30 Sec Change At Transition	45 Sec Change At Transition	60 Sec Change At Transition
Interval Time Frame		# USES	Status	System On Average	System Off Average	Difference Off to On	Difference On to Off					
11:10:00 AM	11:15:00 AM	0	off		0.78							
11:15:01 AM	11:20:00AM	0	on	0.92		0.14		0.14	0.14	0.14	0.14	0.14
11:20:01 AM	11:25:03 AM	0	off		0.78		0.14	0.14	0.14	0.15	0.14	0.14
11:25:04 AM	11:30:00 AM	0	on	0.92		0.14		0.14	0.14	0.14	0.14	0.14
11:30:01 AM	11:35:00 AM	0	off		0.78		0.14	0.14	0.14	0.14	0.15	0.15
11:35:01 AM	11:40:00 AM	0	on	0.92		0.14		0.13	0.14	0.14	0.14	0.13
11:40:01 AM	11:45:01 AM	0	off		0.78		0.14	0.13	0.13	0.13	0.13	0.14
11:45:02 AM	11:50:05 AM	0	on	0.92		0.14		0.13	0.13	0.14	0.14	0.14

Average - System Off				0.78								
Average - System On				0.92								
Difference				0.14								
Transition Avg - Off to On						0.14		0.14	0.14	0.14	0.14	0.14
Transition Avg - On to Off							0.14	0.14	0.14	0.14	0.14	0.14
Average - All Transitions				0.14								

Table 4 Above shows analysis of the Power Factor data of eight (8) USES® model CMES-3D-480V and one (1) USES® model CMES-3Y-480V power conditioners collected by the Amprobe DM-II Pro® Multi-Meter and Data-Logger during the TIS testing on August 15, 2012 between 11:10 am and 11:50 am. The test data shows the Power Factor is increased from **78% to 92%.** Shaded cells are not included in the average performance calculations because load changes unrelated to the performance of the USES® system occurred during the averaging period.

Graph 5



Graph 5 Above shows the Current in Amps per phase during the TIS testing on August 15, 2012 between 11:10 am and 11:50 am with eight (8) USES® model CMES-3D-480V and one (1) USES® model CMES-3Y-480V power conditioners operating. The Current is reduced an average of **135.53 Amps per phase.**

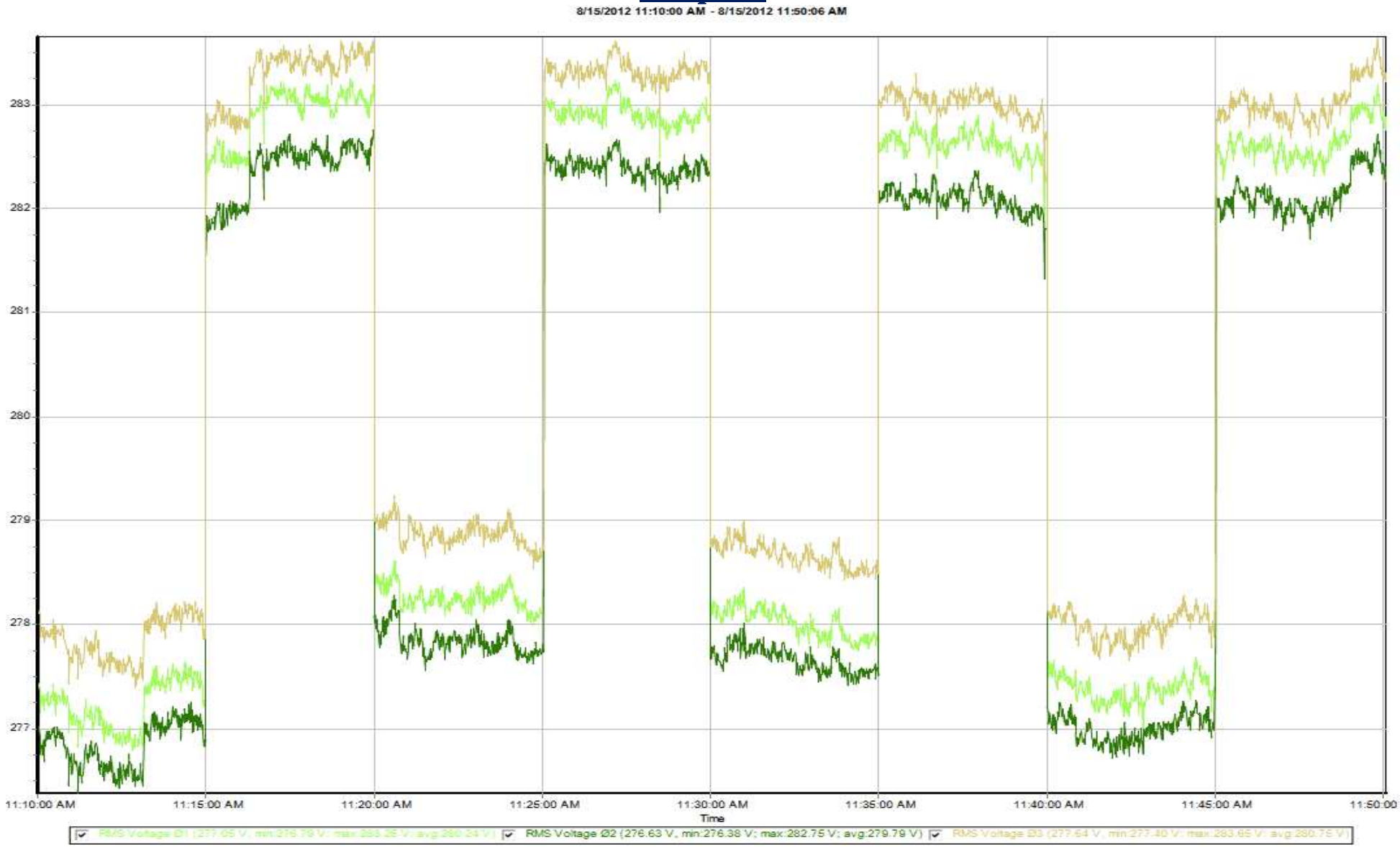
Table 5

RMS Current (Amps)

Intervals						Full Interval		Instant	15 Sec	30 Sec	45 Sec	60 Sec
				System On	System Off	Difference	Difference	Change	Change	Change	Change	Change
Interval Time Frame		# USES	Status	Average	Average	Off to On	On to Off	At Transition	At Transition	At Transition	At Transition	At Transition
11:10:00 AM	11:15:00 AM	0	off		709.07							
11:15:01 AM	11:20:00AM	0	on	569.75		139.32		125.83	127.92	140.11	129.52	134.97
11:20:01 AM	11:25:03 AM	0	off		709.72		139.97	138.76	128.91	123.19	142.01	142.97
11:25:04 AM	11:30:00 AM	0	on	574.82		134.90		137.92	136.53	130.46	137.37	135.27
11:30:01 AM	11:35:00 AM	0	off		708.76		133.94	131.28	129.15	129.26	120.39	115.56
11:35:01 AM	11:40:00 AM	0	on	573.00		135.75		136.62	130.69	136.84	134.33	138.21
11:40:01 AM	11:45:01 AM	0	off		703.55		130.55	141.72	148.22	148.29	148.22	134.15
11:45:02 AM	11:50:05 AM	0	on	569.64		133.92		146.80	144.98	142.14	138.23	140.21
Average - System Off				707.78								
Average - System On				571.80								
Difference				135.97								
Transition Avg - Off to On						135.97		136.79	135.03	137.39	134.86	137.17
Transition Avg - On to Off							134.82	137.25	135.43	133.58	136.88	130.89
Average - All Transitions				135.53								

Table 5 Above shows analysis of the Current data of eight (8) USES® model CMES-3D-480V and one (1) USES® model CMES-3Y-480V power conditioners collected by the Amprobe DM-II Pro® Multi-Meter and Data-Logger during the TIS testing on August 15, 2012 between 11:10 am and 11:50 am. The test data shows the Current is reduced an average of **135.53 Amps per phase.** Shaded cells are not included in the average performance calculations because load changes unrelated to the performance of the USES® system occurred during the averaging period.

Graph 6



Graph 6 Above shows the Voltage in Volts per phase during the TIS testing on August 15, 2012 between 11:10 am and 11:50 am with eight (8) USES® model CMES-3D-480V and one (1) USES® model CMES-3Y-480V power conditioners operating. The Voltage is increased an average of **4.73 Volts per phase.**

Table 6

RMS Voltage (Volts)

Intervals						Full Interval		Instant	15 Sec	30 Sec	45 Sec	60 Sec
Interval Time Frame		# USES	Status	System On Average	System Off Average	Difference Off to On	Difference On to Off	Change At Transition	Change At Transition	Change At Transition	Change At Transition	Change At Transition
11:10:00 AM	11:15:00 AM	0	off		277.30							
11:15:01 AM	11:20:00AM	0	on	282.85		5.55		4.66	5.06	5.08	5.03	5.04
11:20:01 AM	11:25:03 AM	0	off		278.32		4.52	4.57	4.53	4.54	4.76	4.83
11:25:04 AM	11:30:00 AM	0	on	282.87		4.55		4.70	4.71	4.61	4.79	4.74
11:30:01 AM	11:35:00 AM	0	off		278.11		4.76	4.63	4.64	4.47	4.49	4.47
11:35:01 AM	11:40:00 AM	0	on	282.57		4.45		4.65	4.69	4.71	4.58	4.79
11:40:01 AM	11:45:01 AM	0	off		277.45		5.12	4.65	4.81	4.77	4.79	4.83
11:45:02 AM	11:50:05 AM	0	on	282.60		5.15		4.79	4.75	4.87	4.94	4.84

Average - System Off		277.80	x 1.732	481.15								
Average - System On		282.72	x 1.732	489.68								
Difference				8.53								
Transition Avg - Off to On						4.92		4.70	4.80	4.82	4.83	4.85
Transition Avg - On to Off							4.80	4.62	4.66	4.59	4.68	4.71
Average - All Transitions per Phase				4.73								

Table 6 Above shows analysis of the Voltage data of eight (8) USES® model CMES-3D-480V and one (1) USES® model CMES-3Y-480V power conditioners collected by the Amprobe DM-II Pro® Multi-Meter and Data-Logger during the TIS testing on August 15, 2012 between 11:10 am and 11:50 am. The test data shows the Voltage is increased by **4.73 Volts per phase.** Shaded cells are not included in the average performance calculations because load changes unrelated to the performance of the USES® system occurred during the averaging period.

Installation Configuration

The photographs above show the installation of the USES® Shunt Efficiency System by Power Shaver, Energy Saving Systems at the Granite Construction Company's Asphalt Plant located at 4001 Bradshaw Rd., Sacramento, CA 95827.

Test Configuration

The photographs above show the configuration for the Timed Interval Sampling. The Current Transformers for the Amprobe DM II Pro® meter are placed around the incoming Buss bars for the service entrances.

Acceptance of TIS Report

Having read the USES® System Evaluation for the Granite Construction Company's Asphalt Plant, dated August 24, 2012, I hereby accept the results and agree that Power Shaver, Energy Saving Systems has sufficiently validated the guarantees as provided in the Purchase Agreement dated April 25, 2012.

GRANITE CONSTRUCTION COMPANY SINCE 1922

Asphalt Plant
4001 Bradshaw Rd.
Sacramento, CA 95827

_____

David Noble Title Date

