AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE	PAGE OF PAGES	
J	1	13

2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO.(If applicable)
0004	22-May-2015		

6. ISSUED BY CODE N62470	7. ADMINISTERED BY (If other than item 6) CODE
COMMANDER NAVFAC ATLANTIC 6506 HAMPTON BLVD NORFOLK VA 23508-1278	**See Item 6**

8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and Zip Code)		
	X	9A. AMENDMENT OF SOLICITATION NO. N62470-15-R-5013
	X	9B. DATED (SEE ITEM 11) 11-Apr-2015
		10A. MOD. OF CONTRACT/ORDER NO.
		10B. DATED (SEE ITEM 13)
CODE FACILITY CODE		

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

[X] The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offer [X] is extended, [ ] is not extended.

Offer must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

[ ] A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.

[ ] B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(B).

[ ] C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:

[ ] D. OTHER (Specify type of modification and authority)

E. IMPORTANT: Contractor [ ] is not, [ ] is required to sign this document and return _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

See continuation page for details

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) TEL: EMAIL:	
15B. CONTRACTOR/OFFEROR (Signature of person authorized to sign)	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA BY (Signature of Contracting Officer)	16C. DATE SIGNED 22-May-2015

SECTION SF 30 BLOCK 14 CONTINUATION PAGE

SUMMARY OF CHANGES

SECTION SF 30 - BLOCK 14 CONTINUATION PAGE

The following have been added by full text:
AMENDMENT 0004
Amendment 0004 is being issued for the following:

1. Extend Proposal Due Date
2. Provide Site Visit Roster
3. Revise Section 00100, Item 6 INQUIRIES, PROPOSAL FORMAT AND DUE DATE
4. Provide Responses to PPI's 25-64
5. Revise Document 00 01 15 1.2 Contract Drawings
6. Revise Section 26 35 43 Static Frequency Converters (SFCs)
7. Revise Section 26 09 16.00 21 Generator Control System

REVISE SECTION 00100, ITEM 6 INQUIRIES, PROPOSAL FORMAT AND DUE DATE

FROM

ALL SUBMITTALS SHALL BE RECEIVED NO LATER THAN 2:00 PM (EDT), MONDAY, 1 JUNE 2015. LATE SUBMITTALS WILL NOT BE CONSIDERED.

TO

ALL SUBMITTALS SHALL BE RECEIVED NO LATER THAN 2:00 PM (EDT), MONDAY, 8 JUNE 2015. LATE SUBMITTALS WILL NOT BE CONSIDERED.

RESPONSES TO PPIS 25-64

25. **Question**: Please provide a list of names and contact information for attendees at the site visit.

Response: Please see attached site visit roster

26. **Question:** 66KV Puerto Santa Maria lines #1 & #2 are connected to Sevillana Tower 61735-2. Also new 66kV lines from Naval Base Substation will be connected to the Sevillana Tower 61735-2. Electrical protections in 66kv high voltage lines must be the same at both sides (Naval Base & Puerto Santa Maria). We need to know which electrical protections will have to equip 66kv high voltage line positions as standard normative Endesa .

Response: Government response will be provided in Amendment 0005.

27. **Question:** According to 2.2.2.1.b section 261222 page 5, transformer frequency must be 50 Hz because 66kv high voltage lines from Endesa will be connected to. At paragraph 2.2.2 states that the transformers must comply normative IEEE C57.12.00 but also ASTM A240/A240M. These two normative are not compatible,

IEEE is an European normative and ASTM is an American normative. Spanish Manufactures design these types of equipment according IEC normative including the testing. Which of the two normative applies?

Response: Provide as specified in 26 12 22 POWER TRANSFORMERS.

28. **Question:** Clarify if the meters have to be provided by the Contractor or they will be provided and installed with the Government Furnished Equipment (SUS#1, T9, and T10 y SWHouse.) Please advise

    Response: Refer to Section 01 11 00 SUMMARY OF WORK and coordinating GFE specifications.

29. **Question:** We have noticed that the clause 52.222-38 COMPLIANCE WITH VETERANS' EMPLOYMENT REPORTING REQUIREMENTS (SEP 2010) is included in the RFP. Since the project will be located in Spain, and we do not have such requirement for veterans' employment, we would like you to clarify if this requirement applies. Thank you

    Response: FAR 52.222-38 is required per the prescription at FAR 22.1310(c); however, it only applies to offerors that are subject to the reporting requirements of 38 U.S.C. 4212(d).

30. **Question:** The RFP requires submitting the binders in "8 ½" x 11" format" but the point is that the format commonly used in Spain is A4. Therefore we would like to kindly request the possibility of submitting the proposal in A4 format. Thank you

    Response: Proposals are acceptable in A4 format.

31. **Question:** The drawing ES-406 shows and outdoor GIS configuration. In order to increase the GIS reliability avoiding the adverse weather effects in the area (radiation in the south of Spain, high humidity and saline environment, high speed winds..) we would like to know if the Government would accept an indoor solution. The manufacturer could provide the GIS in prefabricated enclosures that will mostly comply with the medium voltage equipment enclosure specification. An indoor substation increases the security and also maintenance tasks.

    Response: Provide as indicated on contract drawings and Section 26 13 12 GAS-INSULATED SWITCHGEAR specification.

32. **Question:** If the GIS is an outdoor configuration we would like to know about the control and protection cabinets placement (outdoor? Inside any other building?).

    Response: Provide as indicated on contract drawings ES600 series.

33. **Question:** Would it be acceptable by the Government a not direct connection through gas duct between the GIS and the transformer?

    Response: Provide as indicated on contract drawings and Section 26 13 12 GAS-INSULATED SWITCHGEAR specification.

34. **Question:** Where is located the metering for the electrical billing with Endesa? Has to be included in the GIS the equipment's for taxation measure? According with Spanish standards the measurement transformers must have use authorization for the taxation measure.

Response: The electricity meters located within the switchgear house will be used jointly (Navy and Local Utility) as the revenue meter.

35. **Question:** Does the Contractor or the GIS manufacturer have to take into account any seismic standard or seismic requirements?

    Response: Refer to contract drawing S-001 and Section 26 13 12 GAS-INSULATED SWITCHGEAR specification.

36. **Question:** Which standards does the Contractor/Manufacturer need to comply with about the connections GIS - insulated cable and GIS - power transformer?

    Response: Provide as indicated on contract drawings and Section 26 13 12 GAS-INSULATED SWITCHGEAR specification.

37. **Question:** Does the transformers to be demolished contain PCB? Please, confirm the disposal place for the Government in case of PCB presence.

    Response: It is our understanding that the transformers do not contain PCB. However, refer to Section 01 35 26 GOVERNMENTAL SAFETY REQUIREMENTS in regards to “Unforeseen Hazardous Material” for further information.

38. **Question:** During the substation demolition works the use of the existing generators will be necessary. Please confirm the total power of the available emergency generators.

    Response: The diesel generation can provide a total power of 12.25MW. However, refer to Section 01 14 00 WORK RESTRICTIONS, in regards to “Special Scheduling Requirements” for operations of the power plant.

39. **Question:** We kindly request more information about the cubicles indicated in drawings E-101 and E-102.

    Response: Refer to reference drawings as provided in Amend 0003.

40. **Question:** According with Drawing ES-101, Sevillana Tower #61735-2 has to be converted to accept 6-155 mm underground conduit and cable tray raisers. The tower also changes to "End line tower type" and we would like to know if Endesa has approved all the works and procedures if the different tensions affect to the tower.

    Response: This tower is not an “End-line” or “Dead End” structure. The “Dead End” structure is located at Tower #61735-1. This project has been coordinated with the Naval Base and Endesa.

41. **Question:** Please, provide a general SLD where both Motor-Generators, diesel gens and 15kV Swgr existing in building 64 can be seen.

    Response: Refer to reference drawings as provided in Amend 0003 and this amendment.

42. **Question:** In drawing ES602 some cabinets for SFC can be found. Please confirm that those cabinets are located in building 64A.

Response: Sheet ES602 reflects the 15kV electrical one-line diagram system. As indicated on ES602, the SFC circuit breakers are located in the 8kV/15kV switchgear house. Refer to ES101 and E-900 series drawings for the locations of the SFC Houses and interior distribution, respectively.

43. **Question:** Will the GFE provide an electric SCADA (different from the control system of motor-gens/diesel gens/SFCs)?

    Response: Provide the SCADA network in accordance with ES600 series drawings. SCADA network will terminate to "SCADA Devices" as provided in Section 26 13 13 METAL-CLAD SWITCHGEAR.

44. **Question:** If previous answer is positive, will the new 66kV control and protections relays, as well as existing protection relays, have to be integrated in new SCADA. In case all these relays have to be integrated, please provide the type and quantity.

    Response: Provide the SCADA network in accordance with ES600 series drawings. SCADA network will terminate to "SCADA Devices" as provided in Section 26 13 13 METAL-CLAD SWITCHGEAR.

45. **Question:** Will the electric SCADA need to be integrated in the motor-gens/diesel gens/SFCs control system?

    Response: Provide the SCADA network in accordance with ES600 series drawings. SCADA network will terminate to "SCADA Devices" as provided in Section 26 13 13 METAL-CLAD SWITCHGEAR.

46. **Question:** In building 64A there is an automatic transfer system. Is it needed to modify this system in order to integrate new SFCs or will new equipment be supplied in new 8/15kV Sgr House?

    Response: Government response will be provided in Amendment 0005.

47. **Question:** 20MW must be available all the time without the use of diesel gens. Please provide the power of existing power transformers, the power of existing diesel gens and the power of existing motor generators.

    Response: The diesel generation can provide a total power of 12.25MW. The power transformers/MGs can provide a total power of 31MVA.

48. **Question:** When it is time to energize the new substation, is it allowed to have a shutdown of some hours? How many?

    Response: Refer to 01 14 00 WORK RESTRICTIONS, in regards to "Special Scheduling Requirements".

49. **Question:** On Motor Generator Metal Clad Switchgear #1 it appears that 1A CB, 1B CB, 1C CB and 1D CB are to be added to the existing switchgear, is that correct? If so, which manufacturer has supplied the existing gear?

    Response: The contractor will provide a section (cubicle) for the circuit breakers. The manufacturers are Merlin Gerlin (MGSG #1) and WAT SA (MGSG#2) each line up has a main bus 2000A.

50. **Question:** The 8KV Switchgear lineup and the 15 KV lineup. Where are the details of what is to be supplied in the sections? Is this included in this contract?

Response: Refer to Section 01 11 00 SUMMARY OF WORK, its coordinating GFE specifications, and E-700 series drawings. E-700 series drawings are GFE.

51. **Question:** This seems to be a reference to the communication system. Is this an existing system? Are automation controllers supposed to be included in this scope?

    Response: Refer to Section 01 11 00 SUMMARY OF WORK, its coordinating GFE specifications, and E-700 series drawings. E-700 series drawings are GFE.

52. **Question:** We understand that the switchgear on this drawing is GFE, is that correct? This is for contractor installation only?

    Response: Refer to Section 01 11 00 SUMMARY OF WORK, its coordinating GFE specifications, and E-800 series drawings.

53. **Question:** We noted the SCADA and HMI Diagram on this page. Is this system to be supplied with this contract, or is this an existing system? If this is to be provided, can a specification or scheme of operation be provided?

    Response: Refer to Section 01 11 00 SUMMARY OF WORK, its coordinating GFE specifications, and E-800 series drawings.

54. **Question:** Does the SFC #1 House currently exist? What is to be supplied on this contract within the house?

    Response: SFC #1 and SFC #2 do not exist, as shown on contract drawings. Refer to Section 26 35 53 STATIC FREQUENCY CONVERTER (SFC) HOUSE specifications for SFC house interior components.

55. **Question:** Taking into consideration the working mode for which the existing MG sets are designed. Please, confirm that the required function is the installation of microprocessor-based synchronizer and load controller on all MG sets which is capable of load sharing with the diesel generator synchronizer and load controller as well as the static frequency converter.

    Response: Refer to applicable revisions to Section 26 09 16.00 21 GENERATOR CONTROL SYSTEM and Section 26 35 43 STATIC FREQUENCY CONVERTERS (SFCs). Also, refer to provided reference drawings.

56. **Question:** Please confirm if the contractor has to install a new SCADA system or has to be modified and upgrade the existing SCADA system

    Response: Provide the SCADA network in accordance to ES600 series drawings. SCADA network will terminate to “SCADA Devices” as provided in Section 26 13 13 METAL-CLAD SWITCHGEAR.

57. **Question:** We would like to get more details about the existing MG controls. Operation manuals, schematics, panel layouts and wiring diagram are required. Please advise if possible.

    Response: Refer to applicable revisions to Section 26 09 16.00 21 GENERATOR CONTROL SYSTEM and provided reference drawings.

58. **Question:** The existing operator work stations and the touchscreen in the diesel control house have to be replaced with new equipment. We would like to know if the HMI software has to be updated.

    Response: Refer to applicable revisions to Section 26 09 16.00 21 GENERATOR CONTROL SYSTEM. Also, refer to provided reference drawings.

59. **Question:** We are requesting a time extension

    Response: The proposal due date is extended via Amendment 0004. Please refer to Section 00100 change above for details.

60. **Question:** After visiting the site and analyzing in detail the documentation received, we are requesting a time extension in the submission date until June 15, 2015

    Response: The proposal due date is extended via Amendment 0004. Please refer to Section 00100 change above for details.

61. **Question:** Please, provide detailed information for the associated equipment to be provided by the Government along with the 8kV/15kV Switchgear House. After reading specifications, it is not clear for us.

    Response: Refer Section 01 11 00 SUMMARY OF WORK, paragraph 1.10 GOVERNMENT-FURNISHED MATERIAL AND EQUIPMENT.

62. **Question:** From July 1st, 2015 there is a new Standard in Europe nº 548/2014 comission May 21st, 2014 that develops the Standard 2009/125/CE European Parlament about the power transformers design (Ecologic Design). For the new power transformers to install in Base is it necessary to comply with this new standard?
    Response: Provide as specified in 26 12 22 POWER TRANSFORMERS.

63. **Question:** The current and voltage transformers for the meters are included in the 8KV/15 KV Switchgear? Are they delivered by the Government or the Contractor? These transformers must be for 66 KV.

    Response: Provide current and voltage transformers as indicated on contract drawings and Section 26 13 12 GAS-INSULATED SWITCHGEAR specification. Gas-Insulated Switchgear is a contractor provided item.

64. **Question:** Please confirm that all the associated equipment described in drawings for the switchgear 8KV/15KV indicated in 01 11 00 Section is provided by the Government.

    Response: Refer to Section 01 11 00 SUMMARY OF WORK, paragraph 1.10 GOVERNMENT-FURNISHED MATERIAL AND EQUIPMENT.

REVISE DOCUMENT 00 01 15 1.2 CONTRACT DRAWINGS

1.2 CONTRACT DRAWINGS

On NAVFAC DWG NO. 14043291 (E-001)

General Notes: Delete Note 1 in its entirety and replace with the following:

1. THIS DESIGN PACKAGE INCLUDES GOVERNMENT FURNISHED CONTRACTOR INSTALLED EQUIPMENT. THE CONTRACTOR MUST PROVIDE PATHWAYS, CABLING, AND TERMINATIONS TO AND FROM ELECTRICAL EQUIPMENT, INCLUDING ITS COMPONENTS, IDENTIFIED AS GOVERNMENT FURNISHED CONTRACTOR INSTALLED EQUIPMENT.

REVISE SECTION 26 35 43 STATIC FREQUENCY CONVERTERS (SFCs)

2.1.4 System Operation

Delete in its entirety and replace with the following:

"2.1.4 System Operation

Provide static frequency converters (SFCs) as indicated. Each SFC must be suitable for connection to an input of 5,500-volt, three-phase, 50 hertz and an output of 12,470-volt, three-phase, 60 hertz power distribution system as currently configured at Naval Station Rota, Spain. Each SFC input and output feeder, by way of SFC transformers, are required to terminate at designated medium voltage circuit breakers located within the 8kV/15kV switchgear house. Each SFC must be configured to base load and load share with existing motor-generators and emergency diesel generators, this includes existing and upgrades to the control systems, as provided in Section 26 09 16.00 21 GENERATOR CONTROL SYSTEM."

2.2.4 Load Sharing

Delete in its entirety and replace with the following:

"2.2.4 Load Sharing

Each SFC must be integrated into control schemes as provided in Section 26 09 16.00 21 GENERATOR CONTROL SYSTEM and as indicated on contract drawings. Each SFC must provide, but not be limited to, the following functions:

a. Under normal operating conditions, each SFC must carry the load connected to its designated bus up to 5 MVA (i.e. 15kV tie circuit breaker is in the open position). Each SFC must load share with existing on-line motor-generators.

b. When the total SFC system load is less than or equal to 5 MVA, switching must take place on the 60 hertz system load. The 15kV tie circuit breaker must transition from open to close, in order that the remaining SFC serves the entire load on the bus. The remaining SFC must be capable of carrying the entire load up to its 5MVA capacity.

c. When the total SFC system load is greater than 5 MVA, but less than or equal to 10 MVA, and there is loss of a single SFC or both SFCs, the existing base emergency generators must start and assume full load.

d. Under certain conditions, it will be desirable to start the existing base emergency generators and then shut down each SFC. A closed transition will be required and each SFC must be capable of performing this transfer. During the closed transition transfer, each SFC will operate in parallel (i.e.

15kV tie circuit breaker closed). Each SFC must have all required controls, cables, and wiring to support closed transition transfer.

e. When the load is served by the base emergency generators, a closed transition will be performed to transfer back to utility power. Each SFC control system must be capable of interaction and integration with control equipment of the existing base motor-generators and emergency generators."

REVISE SECTION 26 09 16.00 21 GENERATOR CONTROL SYSTEM

1.7.1.1 Motor-Generator Controls

Delete in its entirety and replace with the following:

"1.7.1.1 Motor-Generator Controls

The existing motor-generator controls are analog and are not compatible with the existing diesel generator controls. The existing control system cannot be configured to coordinate with the static frequency converter load sharing controls. The controls for motor-generators 1, 2, and 3 are located in the first floor operators room within cabinets M1P (motor protective relays and associated controls), M1R (motor regulation and associated controls), G1P (generator protective relays and associated controls), M2P, M2R, G2P, M3P, M3R, G3P, SYNC1 (DC drive capable of controlling the turning motors for all six motor generators) and SYNC2. The controls for motor generators 1, 2, and 3 are also located on the ground floor in cabinets G1R (generator regulation and associated controls), G2R and G3R. The controls for motor-generators 1, 2, and 3 were manufactured by Jeumont and installed in approximately 1967. The controls for motor-generators 4, 5 and 6 are located in the first floor operators room within cabinets SM4 (motor metering and remote reporting and controls), SG4 (generator metering and remote reporting and controls), SM5, SG5, SM6 and SG6. The controls for motor-generators 4, 5, and 6 are also located on the ground floor in cabinets M4P (motor protective relays and associated controls), M4R (motor regulation and associated controls), G4P (generator protective relays and associated controls), G4R (generator regulation and associated controls), M5P, M5R, G5P, G4R, M6P, M6R, G6P, and G6R. The controls for motor-generators 4, 5, and 6 were manufactured by Wat and installed in approximately 1989. All six motor-generators use a brushed excitation system for the generators whose thyristors are located in cabinets G1E, G2E, G3E, G4E, G5E, G6E. The protective relays for all motor-generator sets are electro-mechanical."

1.7.1.3 Plant Control Room Controls

Delete in its entirety and replace with the following:

"1.7.1.3 Plant Control Room Controls

The existing control room contains 15 analog control cabinets for the operator to manually adjust the six motor-generator sets and two synchronization control cabinets for manual control of motor-generator synchronization. In addition to the manual controls, there is an operator station with a work station computer and monitor for remote monitoring of all motor-generator sets and remote operation of switchgear generator breakers, diesel generators and diesel generator breakers."

2.1.1 Scope

After this paragraph add the following:

“2.1.2 System Operation

The control software must be capable of the following sequences of operation.

2.1.2.1 Normal Operation

In normal operation, the utility provides 5,500-Volt, 50 hertz power to the input of the motor-generator sets and static frequency converters. The motor-generator sets and static frequency converters will be operating in parallel and in a proportional load sharing configuration to provide 20MW of output capacity at 12,470-Volt, 60 hertz. The static frequency converters must be able to be set to operate in base load or set to proportionally load share through the use of the motor-generator curve.

2.1.2.2 Emergency Operation

In emergency operation, when both the motor-generators and static frequency converters are out of service, either due to technical issues or loss of utility service, the diesel generators must start and assume 60 hertz system load. This operation must take place automatically through switching. A maximum of 12.25MW of output capacity at 12,470V, 60 hertz can be provided when in emergency operations. Validate that the existing load shedding algorithm is functional. When utility or technical issues are resolved, a closed transition will be made back to the utility source. During this transition, the diesel generators and either the static frequency converters or the motor-generator sets will operate in parallel. Upon completion of transitions, the diesel generators will be unloaded and shut down, leaving the 60 hertz load served from the static frequency converters and motor-generator sets.”

2.2 MOTOR GENERATOR CONTROL SYSTEM

Delete in its entirety and replace with the following:

“2.2 MOTOR GENERATOR CONTROL SYSTEM

Provide a microprocessor-based synchronizer and load controller for each of the motor-generator sets which is capable of controlling the stator position of the selected motor-generator to establish proportional load sharing among the motor generators and static frequency converters. The synchronizer and load controller must be able to close transition from diesel generator only operation to motor-generator operation. Each motor-generator set must be able to be operated locally as well as remotely from the control room. Provide a local control screen for each motor-generator set located on the ground floor.

2.2.1 Interfacing with Existing Analog Controls

The interface with the existing motor-generator controls must execute the following automatic motor starting and stopping sequences:

a. Actuate the existing start motor circuits. The 5.5kV motor supply circuit breaker will close and the "discrepancy lamp" will go out.

b. When the motor reaches rate speed, actuate the existing generator exciter circuits. The generator voltage will rise to rated and the "discrepancy lamp" will go out.

c. When the generator reaches rated speed and voltage, synchronize the generator to the bus and close its associated circuit breaker. The generator voltage is adjusted to match the bus via the existing generator voltage adjust circuits and regulator. Phase matching is achieved by rotating the existing generator stator via the stator turning motor as controlled by the DC drive located in SYNC1 or SYNC2 cabinet. The initial stator position will determine which

direction the stator needs to be rotated. Note that if sufficient travel is not available in the direction that the stator needs to be rotated in order to achieve a phase match, then the generator exciter circuits must be turned off and reversed, and then reset. Once voltage and phase matching is achieved, close the generator breaker and load the motor to an operator preset value. Loading the motor is also accomplished by rotating the existing generator stator via the stator turning motor as controlled by the DC drive.

d. Unload the motor prior to opening the generator and motor circuit breakers. Unloading the motor is the same operation as loading the motor.

2.2.2 All Motor-Generator Controls on the Ground Floor

Install all motor-generator controls in new cabinets located on the ground floor.

a. Provide new motor and generator regulation to control the brushed excitation thyristors.

b. Provide a minimum of two synchronization controls (DC drive). Each synchronization control must be able to control all six motor generator sets.

c. Provide solid state or microprocessor motor protection units that provide at a minimum the following motor protective relaying applications: Undervoltage, phase-sequence voltage, overvoltage, instantaneous overcurrent, AC time overcurrent, ground fault detection, synchronism check.

d. Provide solid state or microprocessor motor protection units that provide at a minimum the following generator protective relaying applications: Undervoltage, phase-sequence voltage, overvoltage, instantaneous overcurrent, AC time overcurrent, ground fault detection, synchronism check.

2.2.3 Diesel Generator Control System

Provide a microprocessor-based synchronizer and load controller for each of the diesel generators which is capable of a closed transition parallel and load transfer to the motor-generator sets or to the static frequency converters. Each diesel generator must be able to be operated locally as well as remotely from the control room. Provide a local control screen for each diesel generator set located in the diesel generator control house.

2.2.4 Static Frequency Converter Control System

Provide a microprocessor-based controller for communication to each of the static frequency converters control systems which is capable of proportional load sharing with the motor-generator sets, operating in base mode, as well as load sharing with the diesel generator sets. Each static frequency converter must be able to be operated locally as well as remotely from the control room including changing of the load sharing curves.

2.2.5 Operator Interface Software

The software must provide real-time graphical control and monitoring of the Control System. The programming of the control software must provide the following control and monitoring features for the motor-generator sets, diesel generators and static frequency converters. The system must be configured for a redundant system. The "master" control must be located on the first floor in the operators’ room. The redundant, or backup, "slave" control must be located in the diesel generator control house or the switchgear house. The redundant control will have one human machine interface with multiple screen views. This control must have all of the functionality of the "master" control in case of an outage in the operators’ room.

2.2.5.1 Password Protection

The operator interface must have multiple levels of password protection. All levels of passwords must be provided to the Contracting Officer and selected government representatives prior to the beneficial occupancy date. Provide, at a minimum, the following levels of password protection. Provide a user lockout if an incorrect password is entered three consecutive times.

a. The plant operator passwords must provide access to the control screens for every motor-generator set, every diesel generator, every static frequency converter, every generator circuit breaker and the base feeder breakers. The operators must be able to monitor the system status, address alarms, open and close breakers. Provide for a minimum of 10 plant operators.

b. The training password must provide access to a dummy control screen which mimics the views and information provided to the plant operator during plant operations including alarms. The training password must not cause actual physical system changes in the plant control system. Provide for a minimum of 10 training users.

c. The administrator password must provide access to user accounts. The administrator must be able to add new users at the operator, training, and administrator level. The administrator must be able to delete operator, training, and administrator accounts. The administrator must be able to reset accounts which have been locked due to the incorrect entry of passwords.

c. The system maintenance password must provide access to the programming of the control screens. The system maintenance password must be able to add machines or remove machines in the control system if the plants configuration changes in the future. Provide one system maintenance password to the Government.

2.2.5.2 Control Screens

a. Power Plant Control Screen: Graphically represent the power plant in one-line diagram format. Include animation which shows the status of each generator (running, selected load control, and load), each switchgear generator breaker and static frequency converter breaker (opened, closed), each static frequency converter(online, selected load control, and load), and each feeder breaker (MW, amperes, open, closed).

b. Running Motor-Generator Control Screens: Graphically represent the status for each motor-generator that is currently running in a six tile configuration. The status must include all motor-generator I/O points and generation points (voltage, current, power factor, total running time, total KWH demand, and stator position). If a motor-generator is off-line the tile will display a blank area with a "button" for the operator that is labeled with the generator name. If the operator selects this button, the screen will shift to a control screen for that generator. If no motor-generators are running, the screen will default to showing all of the motor-generators status on one screen.

c. Running Diesel Generator Control Screens: Graphically represent the status for each diesel generator that is currently running in a four tile configuration. The status must include all generator I/O points and generation points (voltage, current, power factor, total running time, fuel consumption per KWH, total KWH demand).If a diesel generator is off-line the tile will display a blank area with a "button" for the operator that is labeled with the generator name. If the operator selects this button, the screen will shift to a control screen for that generator. If no diesel generators are running, the screen will default to showing all of the diesel generators status on one screen.

d. Generator Control Screen: Selecting a generator or its respective generator breaker on any control screen will bring up the respective Generator Control Screen. This screen will display all real time monitored values and alarms.

e. Base Feeder Control Screen: Graphically represents the status of the base feeder breakers in one-line diagram format. Displays the status of each feeder breaker (MW, amperes, open, closed).

f. Event Log Screen: Selecting the event log for any generator from the running motor-generator, running diesel generator, or generator control screen will bring up the respective generator event log screen. Selecting the event log for any static frequency converter from the static frequency converter control screen must bring up the respective event log screen. The event log screen must include the date and time of all start, stop, alarm, and shutdown events, and 24 hour maximum KWH demand for the last 30 days.

g. Data Trend Screens: Selecting a generator or static frequency converter I/O point or generation point on the respective control screen must bring up the respective I/O trend screen. The trend screen must show hourly recorded data of that I/O point for up to 180 days of operation.

h. Static Frequency Converter Control Screens: Graphically represent the status for each frequency converter in a two tile configuration. The status must include all I/O points such as (voltage, current, power factor, total running time, total KWH demand).

i. Alarms: An alarm dialog box shall appear for each generator alarm, shutdown, and maintenance warning, and each switchgear and switchyard breaker protective trip, each static frequency converter alarm, shutdown or warning, and all tank monitor system (TMS) alarms. The alarm dialog box shall pop-up prominently in the center of the operators screen. The control screen must automatically shift to the respective generator control screen, base feeder diagram, or static frequency control screen. If there are multiple alarms for different systems, the control screen must automatically shift to the power plant control screen. The dialog box must include a description of the alarm, value of the alarm, normal operating range of the alarm parameter, and time of the alarm. Acknowledgement of the alarm must remove the alarm dialog box and log the alarm to an Alarm Status Screen. The Alarm Status Screen must show all active alarms. Alarms must be deleted from the Alarm status screen upon resetting the alarm after the alarm status has been restored to normal. The dialog box for all active alarms must continue to reappear at operator selected time intervals until the alarm is deleted. When the dialog box reappears, it must not change the operator's screen view.”

(End of Summary of Changes)