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MOD. #PN2Y89MX042

CONCEPTUAL ENGINEERING PACKAGE

FOR

REPLACEMENT OF UNINTERRUPTIBLE POWER SUPPLY (UPS)
2VBB-UPS1C AND 2VBB-UPS 1D

Prepared By: M. Ritzner
Project Engineer

3-13-91
Date

Approved By: [Signature]
Supervisor NMP2 Project Management

3/13/91
Date

[Signature]
General Supervisor NMP2 Design

3/15/91
Date

APPID 3/25/91
REFER TO LETTER
4/5/91, TECH REVIEW
COMMITTEE MEETING
MINUTES OF 3/25/91

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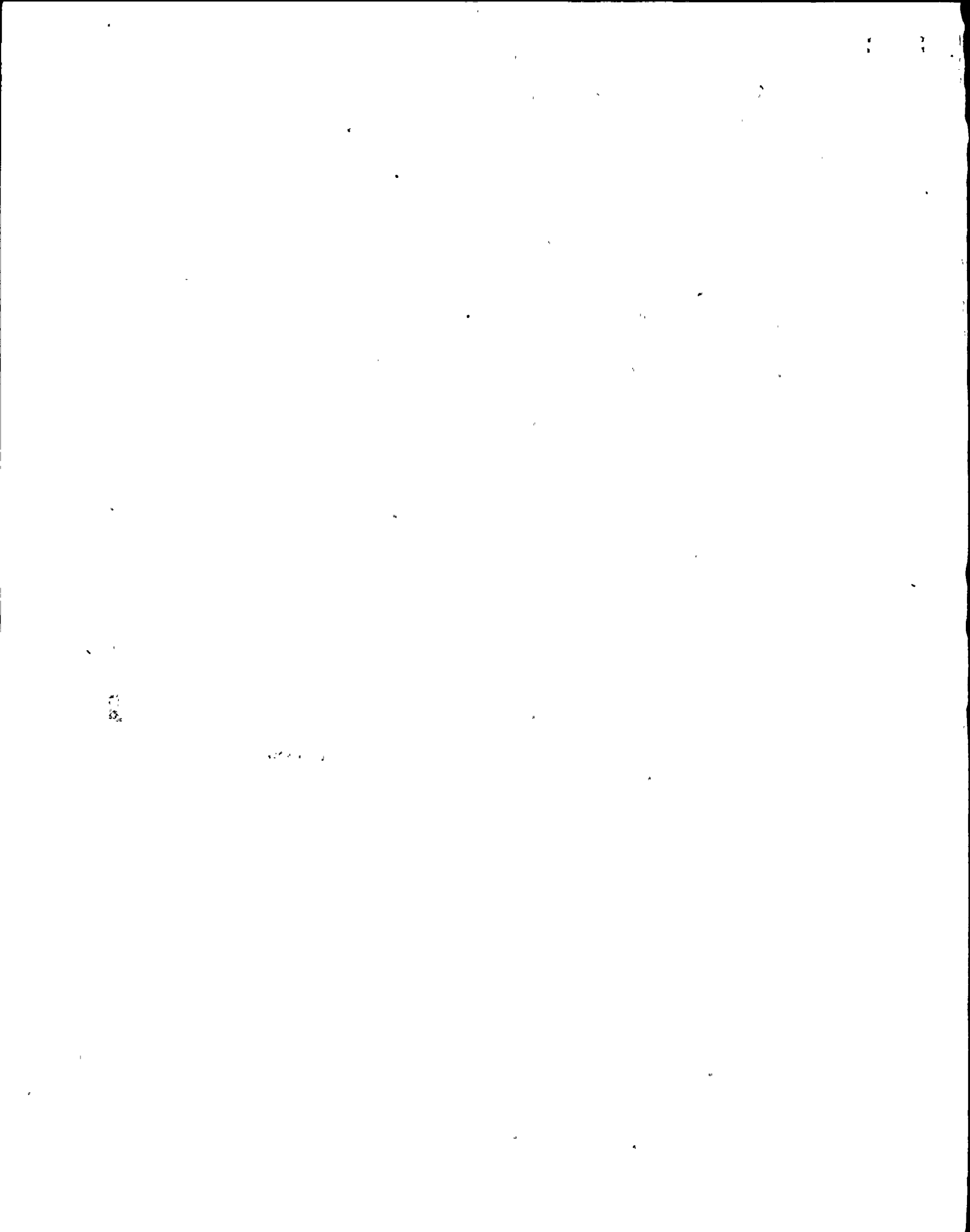
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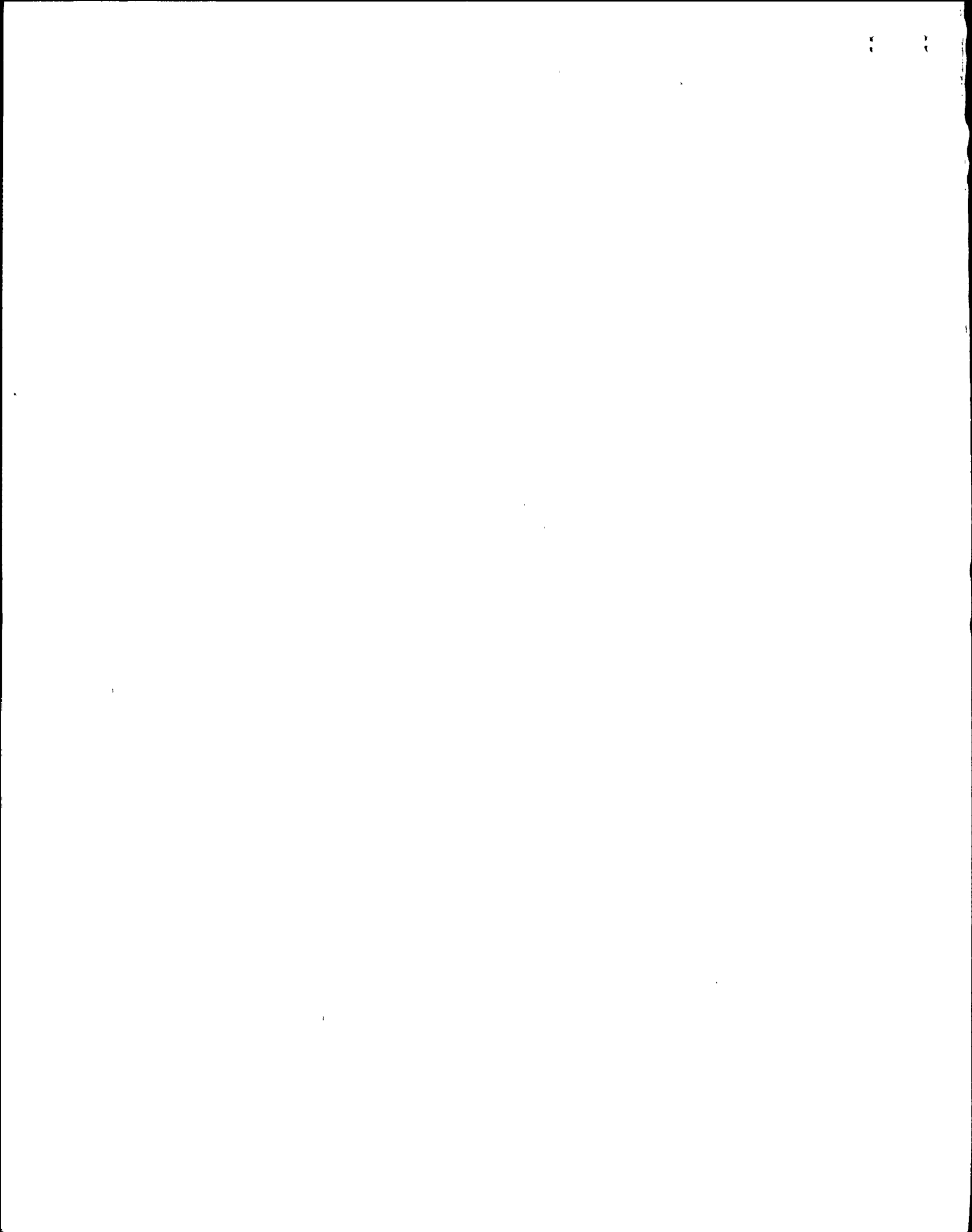
2.0 Conceptual Engineering Document Index

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1.0 Objective and Description of Modification

- 1.1 Uninterruptible Power Supply (UPS) components 2VBB-UPS 1C (Bus 1C) and 2VBB-UPS 1D (Bus 1D) are each rated at 75 KVA and each power portions of both the Essential Lighting System and the Plant Communication System (Gaitronics, strobe lights, dial telephone system and page party/public address system).
- 1.2 Both Buses have run, for extended periods of time, in excess of their full load rating of 60 KW. There have been multiple trips, in each, due to internal heat caused by overloading. It is felt that each of the units have undergone some degree of heat degradation that compromises their 40 year life.
- 1.3 Additionally, these components are a hybrid design. As a resultant:
 - a) There are no maintenance manuals for the units. Accordingly, maintenance and/or troubleshooting is difficult.
 - b) Spare parts are not readily available and, in turn, this causes extended downtime.
- 1.4 Both buses have an impact on personnel safety for the following reasons:
 - a) Plant emergency alarms and evacuation signals (as well as follow-up instructions on the Public Address System) are powered by the UPS.
 - b) The Dial Telephone System for communications between selected office areas and selected locations inside and outside the station (local fire department, local law enforcement authority) is powered by the UPS.
 - c) Communications between the Control Room and other plant areas as well as accountability of on site personnel are dependent on UPS.
- 1.5 The objective of this Conceptual Engineering Package (CEP) is to provide the corrective actions and/or alternatives that will improve plant operability, system reliability and improve personnel safety. Additionally, there will be reserve capacity to accommodate future load requirements.



The proposed design offers two corrective actions and, if required, two additional options:

- a) Due to the unreliability of Bus 1C and 1D (as well as there not being a maintenance manual, delays in obtaining spare parts, accelerated aging, etc.), they will be changed out with new, state-of-the-art 75KVA UPSs (since the new UPSs will be standard, there will be available spare parts, maintenance manual, etc.).
- b) A load shed evaluation will be performed which will evaluate existing loads and all working and potential loads to be powered by UPS 1C and 1D. The objective of this activity is to both eliminate any potential for future overloading as well as provide the capability of accommodating any future loads requiring UPS.
- c) If the evaluation shows that loads (existing and potential) can be reduced >30%, then the mod will be limited to the changeout of the 75KVA UPSs (Item 1.5.a).
- d) If the evaluation shows that loads can be reduced <30%, then the design will be supplemented with one of the following two options:

Option 1

The addition of 1 - 50 KVA UPS whose output would be split to both the Bus 1C and 1D distribution panels.

Option 2

The addition of 2 - 25 KVA UPSs (1 each dedicated to Bus 1C and 1D).

CONCEPTUAL ENGINEERING DOCUMENT INDEX

MOD. TITLE: REPLACE 2VBB-UPS 1C & 2VBB-UPS 1D

MOD. CONTROL NO.: N2-89-042

** DOCUMENTS ATTACHED **

<u>ITEM NO.</u>	<u>DOCUMENT TITLE</u>	<u>REVISION</u>
1.	ELECTRICAL CONCEPTUAL DESIGN INPUT	00
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8.	CONCEPTUAL LICENSING INPUT	0
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11.	ENGINEERING OVERVIEWS & SKETCHES	0
12.	PROJECT COST ESTIMATES (3)	0
13.	MASTER SCHEDULE	0
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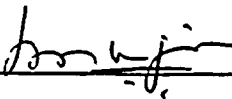
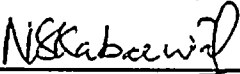
Figure 1

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NUCLEAR DESIGN-ELECTRICAL
CONCEPTUAL DESIGN INPUT
MOD. PN2Y89MX042

PROJECT TITLE: Replace 2VBB-UPS1C and 2VBB-UPS1D

<u>REVISION/DATE:</u>	00	03/11/91
		Date
<u>PREPARED BY/DATE:</u>		3-11-91
		Date
<u>REVIEWED BY/DATE:</u>		3-11-91
		Date

OBJECTIVE: The plant normal Uninterruptible Power Supply System (UPS) 2VBB-UPS1C and 1D are currently loaded to their full capacity of 75KVA/60KW and have been subjected to overloaded condition in the past. Because these UPS's have extended maintenance outages, they are not reliable and require replacement. This modification will:

- 1.0 Replace the subject 75KVA/60KW UPS's with new state of the art UPS's of the same size
- 2.0 Perform a load study of the existing loads on these two UPS's and determine the loads (that do not require UPS power) for possible load shedding.
- 3.0 If the load shedding evaluation concludes that greater than ^{31/219,112} 30% of the loads can be shed, then item 1.0 above will only be implemented by procuring and installing two new state of the art 75KVA/60KW UPS units to replace the existing units. In addition design changes are required to transfer the sheddable loads to Normal power.
- 4.0 If the load shedding evaluation concludes that less than 30% of the loads can be shed, action will be taken to procure and install additional UPS units(s). In addition design changes are required to transfer the sheddable loads to Normal power.

DESIGN CRITERIA ELECTRICAL:**1.0 Design Criterion: System and Scope of change**

1.1 Input: Change affects system "VBB" and the scope of change involves the following:

- a) Replacing 2VBB-UPS1C and 1D with new units of the same size.
- b) Recalculating the loading on batteries 2BYS-BAT1A and 1B and battery chargers 2BYS-CHGR1A1 and 1B1.
- c) Verification of 125V DC feeder cabling for ampacity, short circuit and voltage drops based on the manufacturer's data for the new UPS units.
- d) Verification of 600V AC and 208/120V AC feeder cabling for ampacity, short circuit and voltage drops based on new vendor information.
- e) Verification of ratings of protective devices associated with UPS 2VBB-UPS1C and 1D.
- f) Verification of ratings of all electrical equipment associated with UPS 2VBB-UPS1C and 1D.
- g) Evaluate by walkdown the feasibility of installing the new UPS units in Normal Switchgear room Elevation 237'-0".
- h) Evaluate the adequacy of HVAC system to the heat release by new UPS units.
- i) Evaluate the structural impact due to the weight of new UPS units.
- j) Walkdown and determine the actual loads on UPS 2VBB-UPS1C and 1D , prepare panel schedule for each panel fed from these UPS's and issue the panel schedules.
- k) Evaluate if the loads fed from these UPS's do really required to be powered by UPS and if not list the loads for possible load shedding.
- l) If the estimated load shedding loads is less than 30% of the anticipated total UPS loads, procure and install additional UPS unit(s).
- m) Evaluate normal power availability and transfer sheddable UPS loads to normal power supply.

1.2 Basis: Modification PN2Y89MX042

1952-1953

The following table shows the results of the survey conducted in the year 1952-1953. The data is presented in a tabular format, with columns representing different categories and rows representing specific data points. The table is organized into several sections, each corresponding to a different aspect of the survey. The first section deals with the general characteristics of the respondents, including their age, sex, and education level. The second section focuses on the respondents' employment status and the nature of their work. The third section examines the respondents' income levels and their sources of income. The fourth section discusses the respondents' housing conditions and their access to basic services. The fifth section explores the respondents' health status and their access to healthcare. The sixth section looks at the respondents' social and cultural activities. The seventh section addresses the respondents' political views and their participation in community activities. The eighth section discusses the respondents' attitudes towards various social issues. The ninth section examines the respondents' perceptions of the government and its policies. The tenth section looks at the respondents' expectations for the future. The final section provides a summary of the findings and conclusions drawn from the survey.

2.0 Design Criterion: Functional Requirements

2.1 Input: The UPS is normally fed from its normal AC source. In case of loss of normal AC source, the UPS is automatically fed from the backup DC source. In case of any fault in the inverter, the UPS loads are fed from the maintenance bypass AC source. The UPS output voltage is maintained within ± 2 percent of 120/208V, and the output frequency is maintained within ± 0.3 Hz of 60 Hz. The output voltage harmonic content will not exceed 5 percent of the fundamental. The transfer of load from normal AC to maintenance bypass AC in case of inverter trouble is automatic and is accomplished by a make-before-break static transfer switch so that no interruption of supply to UPS loads occurs due to such transfers. Each UPS system has a maintenance bypass circuit that enables servicing of either the static transfer switch or the rectifier inverter without affecting the UPS output. Ensure that the new UPS units are adequately loaded to prevent future trips of these units due to overloading.

2.2 Basis: FSAR Section 8.3.1.1.2 and NMP2 Spec.E-147.

3.0 Design Criterion: Safety Classification

3.1 Input: ~~The UPS-2VBB-UPS1C and 1D are non-safety related and are not required for safe operation or safe shutdown of the plant.~~

2.2 Basis: FSAR Sections 8.3.1.1.2, 8.3.2.1.3, 9.5.2.4 and 9.5.3.3.

4.0 Design Criterion: Quality Assurance Requirements

4.1 Input: None required.

4.2 Basis: FSAR Table 3.2-1

5.0 Design Criterion: Environmental Qualification Requirements

5.1 Input: None required.

5.2 Basis: Refer to design criterion 3.0 above.

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6.0 Design Criterion: Seismic Qualification Requirements

6.1 Input: None required.

6.2 Basis: Refer to design criterion 3.0 above.

7.0 Design Criterion: Electrical Requirements

7.1 Input: a) Power Supply - UPS 2VBB-UPS1C and 1D

1. are normally fed from 600V panel 2LAT-PNL300 and 600V MCC 2NHS-MCC006 respectively.
2. receives Maintenance bypass power from 2NJS-US5 and 6 respectively through their respective 600-208/120V low voltage and regulating transformers.
3. receives backup power from 2BYS-SWG001A and 1B respectively.

Verify the adequacy of existing electrical equipment associated with UPS 2VBB-UPS1C and 1D by revising or evaluating the impact of this modification on the following electrical calculations.

- a) EC-032
- b) EC-044
- c) EC-045
- d) EC-111
- e) EC-114
- f) EC-118
- g) EC-123
- h) EC-046 if required

b) Raceway - Any new cables required for this modification should be run through existing cable trays, existing conduit or new conduit. Cable tray loading criteria provided in Table 8.3-7 of USAR should be followed. For conduit fill, fill criteria provided in National Electrical Code should be followed.

Determinating existing raceways from existing UPS and terminating the raceways on the new Ups should be performed in accordance with the requirements of Spec. E061A.

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c) Cable - Verify the adequacy of existing cables by revising and or evaluating the impact of on the following NMP2 electrical calculations.

- 1. EC-049
- 2. EC-100
- 3. EC-111
- 4. EC-130
- 5. EC-131
- 6. EC-143

If the modification requires addition of new cables, its adequacy with respect to ampacity, short circuit and voltage drops should be established.

Determinating the existing cables from the existing UPS and terminating cables on new UPS should be performed in accordance with the requirements of Spec. E061A.

- d) Motors- Not applicable.
- e) Termination - Same as 7.1.c above.
- f) Protective Devices (Relays, Fuses, and Breakers) - Verify the adequacy of existing protective devices.
- g) Electrical Penetrations - Not applicable.
- h) Grounding - Verify the adequacy of existing grounding cables for the equipment grounding of new UPS units. Determinate the equipment grounding cables from the existing equipment and terminate on new equipment in accordance with the requirements of NMP2 Spec. E061A.
- i) Others (General)- New UPS units and should be located as for as possible near the location of existing equipment so that minimum amount of design changes result. A field walkdown should be performed prior to the issue of change documents to ensure the installation of new units can proceed with minimum disturbance to the equipment located inside Normal Switchgear Room. Removal of existing equipment and installation of new equipment should be performed in accordance with the requirements of NMP2 Spec. E061A.

7.2 Basis: FSAR Sections 8.1 thru 8.3.

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8.0 Design Criterion: Other Discipline Requirements

- 8.1 Input: a) Mechanical - Required.
b) Structural - Required.

8.2 Basis: In accordance with Procedure NEL-400

9.0 Design Criterion: Instrumentation and Control Requirements

- 9.1 Input: a) Instruments - Not required
b) Controls - Ensure the changes meets the requirements of the modification request.
c) Alarms - Ensure that existing alarms on UPS 2VBB-UPS1C and 1D are reconnected back on to the replacement UPS units. In addition if new UPS unit(s) added, alarms to annunciate UPS trouble and UPS on DC power need to be included as part of this modification.
d) Set Point Data Sheets - Not required.

9.2 Basis: NMP2 Spec. E-147

10.0 Design Criterion: Redundancy, Diversity, and Separation Requirements

10.0 Input: Ensure during the design process that there are no electrical interconnection between 2NJS-US5 and US6.

10.2 Basis: FSAR Sections 1.8, 8.1, 8.2, 8.3, Regulatory Guides 1.6 and 1.75, IEEE Standard 383-1974.

11.0 Design Criterion: Failure Effects Requirements

11.1 Input: None required.

11.2 Basis: FSAR Sections 1.8, 15.0, and FMEA Volumes, Regulatory Guide 1.53.

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12.0 Design Criterion: Testing Requirements

- 12.1 Input: a) Pre-operational - Perform all pre-operational testing to ensure the system operates as designed.
- b) Periodic - Develop testing procedures to periodically test the non-safety related UPS units.
- c) In Service Inspection - N/A

12.2 Basis: NMP2 Spec.E-147

13.0 Design Criterion: Human Factors

13.1 Input: Replacing existing 75KVA/60KW UPS with UPS of the same size will not impact control room panels. However if after load shedding evaluation, additional UPS unit(s) is added, alarms to annunciate the UPS trouble and UPS on DC power will be added to control room annunciator panels.

13.2 Basis: Changes to control room panels will be in accordance with the guidelines and conventions of Human Factors Manual.

14.0 Design Criterion: Fire protection Requirements

14.1 Input: Existing UPS units are replaced with the same capacity units and new UPS and cables may be added. Evaluate the need to revise combustible loading in Normal Switchgear Room.

14.2 Basis: FSAR Sections 9.5.1, and Appendices 9A and 9B.

15.0 Design Criterion: Installation Requirements

15.1 Input: All work to be performed in accordance with the requirements of NMP2 Spec. E061A.

15.2 Basis: Engineering requirement.

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16.0 Design Criterion: Maintenance Requirements

16.1 Input: The following maintenance procedures should be revised or new procedures developed to include the maintenance requirements specified for the new and or replacement UPS units.

- a) N2-EMP-GEN-624
- b) N2-EMP-VBA-623
- c) N2-IMP-UPS-@001
- d) N2-ESP-BYS-W001

16.2 Basis: NMP2 Spec.E-147 and Vendor maintenance manual.

17.0 Design Criterion: Other Requirements

17.1 Input: Installation of new UPS and/or replacement of the existing UPS will improve the reliability and maintainability of the subject UPS power supplies.

17.2 Basis: This modification

18.0 Design Criterion: Appendix R requirements

18.1 Input: Not applicable

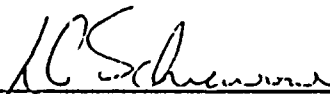
18.2 Basis: Safe shutdown equipment list in Appendix 9B of USAR.


Nuclear Design - Mechanical
Conceptual Design Input

Modification Number: PN2Y89MX042

Modification Title: Replace 2VBB-UPS1C and 2VBB-UPS1D

Revision: 1 Date: 3/25/91

Prepared By:  3/1/91
L. A. Schiavone
Design Engineer Date

Reviewed By:  3-25-91
Date

Objective:

Replace UPS units 2VBB-UPS1C and 1D with more efficient and reliable units. Reduce overloading of 2VBB-UPS1C and 1D by removing loads that do not require UPS power.

Design Criteria:

1.0 Design Criterion: Mechanical - General

1.1 Input:

The Normal Switchgear HVAC System shall be evaluated to be able to accommodate any revised heat loads generated by the new UPS equipment such that room temperature does not exceed 104°F.

1.2 Basis:

USAR Table 9.4-1.

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NUCLEAR DESIGN
STRUCTURAL CONCEPTUAL DESIGN INPUT

DESIGN CHANGE TITLE: Replace 2VBB-UPS1C & 2VBB-2UPS 1D

DESIGN CHANGE NO.: PN2Y89MX042

REVISION/DATE: 0 3/1/91
Date

PREPARED BY/DATE: [Signature] 3/1/91
Date
K. G. Wilborn/J. F. Cushman
Structural Designer/Engineer

REVIEWED BY/DATE: [Signature] 3/1/91
Date
L. P. Prunotto, Supervisor
Structural Design - Unit 2

OBJECTIVE: This modification will add state of the art UPS's that will have spare capacity for transient loads and loads growth. The new units will improve maintainability and operability.

The specification and codes considerations are the following:

The AISC Code 8th Edition shall be used for all structural steel design.

The AWS Code AWS D1.1 1977 shall be used for all welding.

The ACI 301 Code latest edition shall be used for all concrete.

Painting shall be in accordance with Specification S207M.

All new and existing penetrations to be sealed per Specification P306C.

Equipment support consideration are the following:

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New or existing penetrations will be utilized to accommodate the additional 4-6 cables per 25 KVA units. New conduit supports will be required for additional conduit runs per new 25 KVA units.

The new UPS's weight and center of gravity will be determined as part of its design calculation.

Based on the structural attachments and the configuration of the new UPS's units, any new embedments, structural supports and bolted connections will be designed accordingly.

General Issues

Codes and Standard - AISC, AWS, ACI

All interdiscipline drawings and vendor drawings (including structural supports/lifting attachments) shall be subject to the approval of Supervisor, Structural Design - Unit 2.

The USAR figure 1.2-32 addresses the general arrangement of the Normal Switchgear Building. Input to the safety evaluation (SER).

Constructability

Route to bring the new UPS's into the areas shall be considered during design.

The new UPS's assemblies will be sized to enter the Normal Switchgear Bldg. and lifted by crane from elev 261'-0" through the hoist space.

Impacted Document List - Structural

<u>Description</u>	<u>Document No.</u>
Foundation plan EL 237'-0", 249'-0", 250'-0" Normal Switchgear Building	EC-58CA
Sections and Details Normal Switchgear Building	EC-58CD
Arrangement - All details Normal Switchgear Building EL 237'-0"	EE-38P
Penetration location drawings (approximately 5)	EE-037 Series

Meeting the above listed design input will ensure that previous plant commitments are met.

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ALARA BENEFIT AND IMPACT REPORT

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Project Title: N2-89-042 Replace 2VBB-UPS 1C & 2VBB-2UPS 1D Rev. 1

A. PROJECT DESCRIPTION

An ALARA Benefit and Impact (ABI) review of the above referenced design change has been completed. The purpose was to review the expected impact upon worker and public exposures, examine the benefit relative to exposure impact, and identify ALARA issues that may be encountered during the design phase. Project information was obtained from the project file and discussion with Marty Ritzner, Project Engineer assigned to the design change.

On April 13, 1989, NMP2 experienced a plant scram due to a turbine trip, the root cause for this event was determined to be loose wire connections in the main generator P.T. Cubicle in circuit 2SPG203. During this event 2VBB-UPS 1D tripped and was described in LER 89-014 as follows: "Uninterruptible power supply 1D (UPS-1D) tripped due to an overload condition. This resulted in a loss of approximately one half of the gaitronics system in the plant, a total loss of the gaitronics in the Control Room (affecting communication with the plant operators outside the Control Room) and a partial loss of emergency lighting".

Subsequent to the above, Mod. 87-038 added numerous communication equipment which required powering from both UPS 2VBB-UPS 1C (BUS 1C) and 2VBB-UPS1D. It was during the development of Mod. 87-038 that it became evident that BUS 1C is overloaded also. Temp. Mod. 90-057 unloaded some of BUS 1D to accommodate part of Mod. 87-038. However, BUS 1C could not be unloaded.

Therefore, those items of Mod. 87-038 requiring power from BUS 1C cannot be completed until Mod. 89-042 is Ops accepted.

Rev. 1
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This modification will install state of the art UPS's that will have adequate spare capacity for transient loads and load growth.

Rev. 1
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B. WORKER-EXPOSURE

All work will be performed outside of the radiologically restricted area.

Unnecessary collective dose exposure of workers to sources of radiation will not occur as a result of the design change as it is currently reviewed. Neither installation nor consequent actions of the design change will result in unnecessary worker exposures as identified in NRC Reg. Guide 8.8-Section B.

C. RADIOACTIVE EFFLUENTS

Effective design of facilities and selection of equipment for systems that contain, collect, store, process, or transport radioactive material in any form will contribute to the effort to maintain radiation doses to station personnel ALARA.

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ALARA BENEFIT AND IMPACT REPORT

The proposed design change will not result in a significant increase of previously identified station radiological effluents or affect effluent isotopic characteristics.

An increase in radioactive effluents as defined in NRC Reg. Guide 8.8 Section C will not result from the implementation of this design change.

D. CONTAMINATION LEVELS

Exposure of station personnel can be reduced by minimizing the unnecessary formation of deposits of radioactive material and by designing or modifying equipment to minimize locations where radioactive contamination can deposit and accumulate.

An increase in contamination levels as defined in NRC Reg. Guide 8.8 Section C will not occur as a result of the implementation of this design change.

E. PLANT OPERATIONS AND SAFETY

Implementation will meet a commitment on LER 89-014 as well as enable Mod N2-87-038 to be completed and operable. The new units will improve personnel safety, maintainability and operability.

Res. 1
3/17/91
[Signature]

F. DESIGN ALTERNATIVES

The project description and design change have been reviewed.

No additional design alternatives are required to be implemented for ALARA. This review is consistent with the position identified in NRC Reg. Guide 8.8-Section D and 10 CFR Part 20 paragraph 20.1(c).

G. COST/BENEFIT ANALYSES

In order to facilitate monetary comparisons with other projects, an ALARA exposure reduction value has been approved as \$8,000 per Man-Rem saved. This value appears in NDMP-10 and has been approved by NMPC Nuclear Division senior management.

No additional design change is required for ALARA. The cost-effectiveness principle of maintaining occupational exposures As Low As Reasonably Achievable (ALARA) is not applicable to this design change consistent with NRC Reg. Guide 8.8-Section D and 10 CFR 20 paragraph 20.1(c).

H. POST-ACCIDENT SOURCES

This design change will not produce post-accident radiation fields which would unduly limit personnel access to areas necessary for mitigation or recovery from an accident.

ALARA BENEFIT AND IMPACT REPORT

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I. ALARA REVIEW EXEMPTIONS

Exempt from further ALARA design review given the current design. If during the design process the project team or engineer determines that the design or work scope has changed, the Corporate Health Physicist will be notified by the Project Engineer in compliance with NT-100.A ALARA/Radiation Safety Design Guide per section 6.1.2.

C. Jean 3/7/91
Corporate Health Physicist/Date
Salina Meadows, x-7387

M. Rymer 3/8/91
Reviewed: Project Engineer/Date
Salina Meadows, x-7032

xc: R. J. Cazzolli (Lead - Corporate Health Physics)
Preston Swafford (Radiation Protection Mgr. - NMP)
W. R. Aiken (ALARA Supervisor NMP-2)

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INTERNAL CORRESPONDENCE

FORM 112-2 R 02-80

55-01-013

5.1

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FROM R. C. Beller

DISTRICT Nuclear Division

M. A. Ritzner

DATE February 26, 1991 FILE CODE SM-CS91-0526

SUBJECT Design Input MOD N2-89-042
Replace 2VBB-UPS 1C &
2VBB-UPS 1D

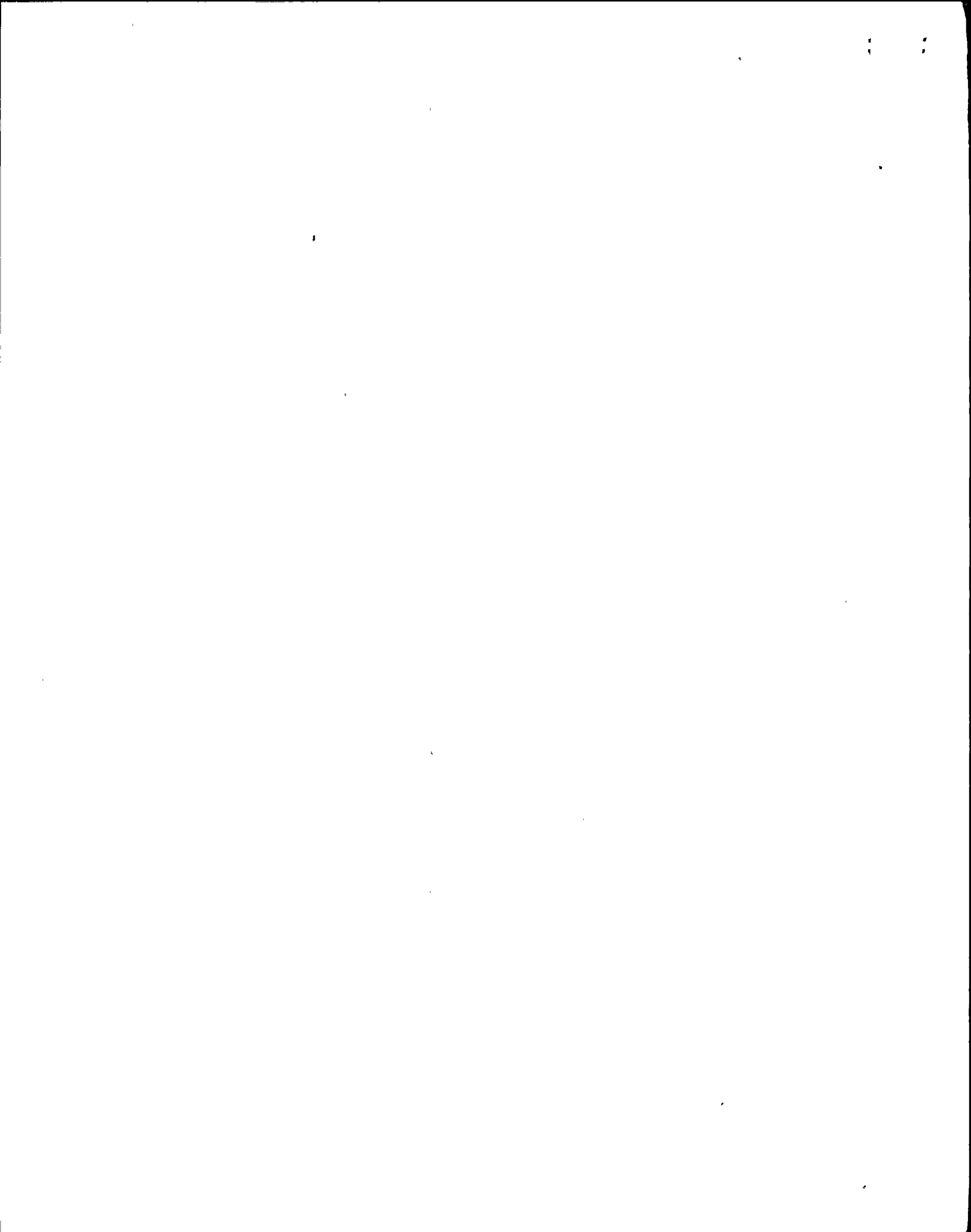
As long as all work associated with this modification is being performed in the Normal Switchgear Building, 237' General Floor Area - East, Fire Area 52 (Fire Zone 602XL), there is no fire protection input for this mod.

This is based on the following fire protection features and the apparent extent of the proposed modification:

- The area has total flooding CO2 protection;
- The area is bounded by three hour rated walls and floors which contain no unrated/deviated features;
- The new UPS units are not significantly (more than 100% larger) than the units they are replacing; and
- The total amount of new cabling will not exceed approximately 1000 pounds.

If any of these items appears to be in error, please let me know immediately.

Adding (or in this case replacing) equipment to an area with automatic fire suppression coverage generally causes no fire protection impact, unless the new equipment causes a new exposure which must be evaluated, or the new fire load exceeds the capabilities of the fire barriers involved. Since, this modification involves the replacement of existing UPS units with new, larger units, there is no new exposure to be evaluated. If the new equipment and cabling do not exceed the limits assumed above, the total fire loading for the area will remain less than two hours, and the three hour barriers provided remain more than adequate to contain the effects of a fire in the area.



Please note that fire Protection must be provided with the size of the new units as well as the amount (weight) of new cabling being added to the room as part of the modification in order to update the fire loading tables (3A) in the Fire Hazards Analysis (USAR Appendix 9A).

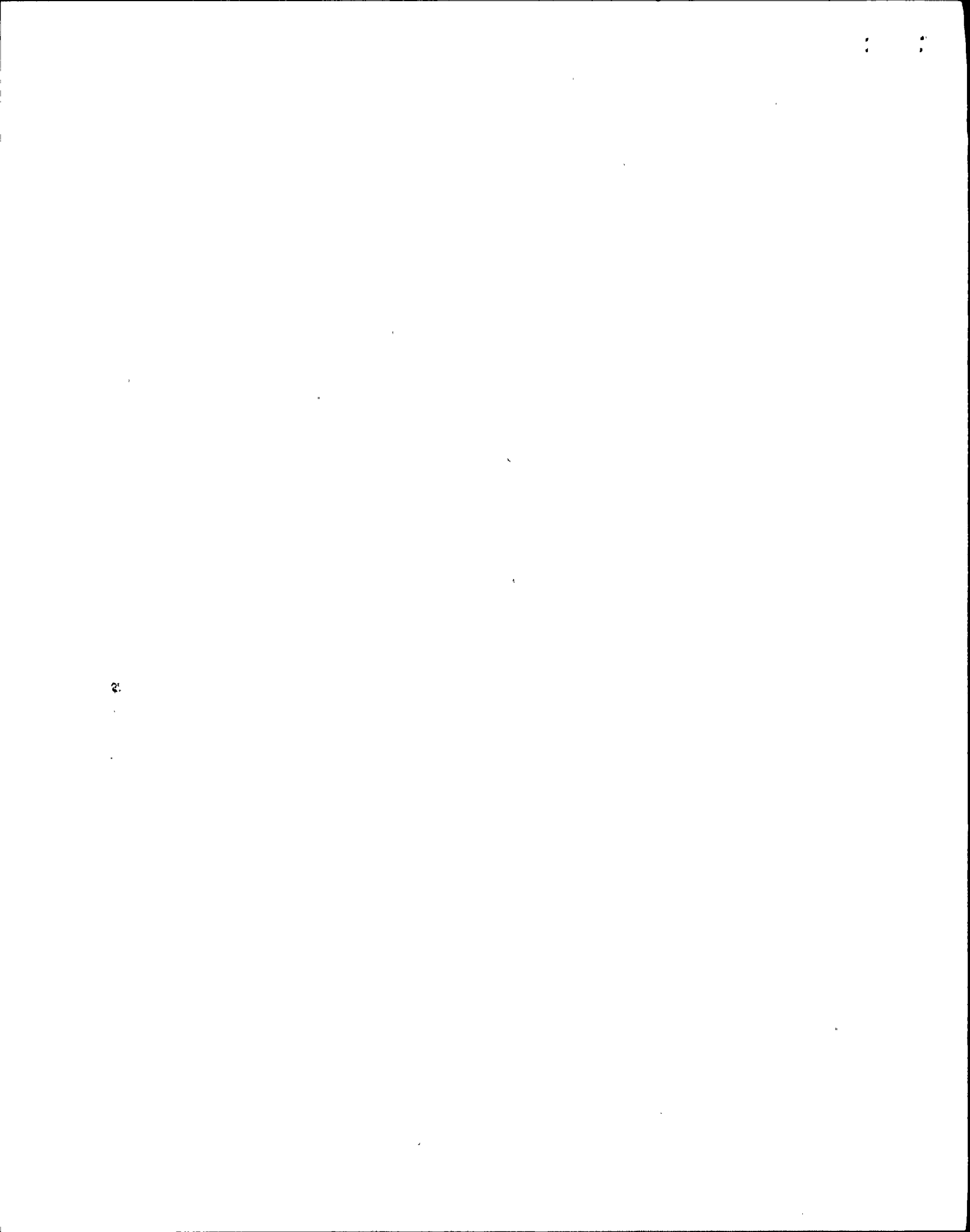
Robert C. Beller

R. C. Beller
Fire Protection Program Manager

RCB:nee

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xc: A. Andersen
J. Piontkowski
D. Pringle
NMP-2 FPE
Records Management



QA CONCEPTUAL DESIGN INPUT

Project Title: Replacement of Uninterruptible Power Supplies
2VBB-UPS1C AND 2VBB-UPS1D.

Modification Number: PN2Y89MX042

Prepared By: *[Signature]* 2/24/91 Title: QA Engineer

Approved By: *[Signature]* Title: Supervisor, Quality
Engineering
Surveillance-Unit 2

INPUT

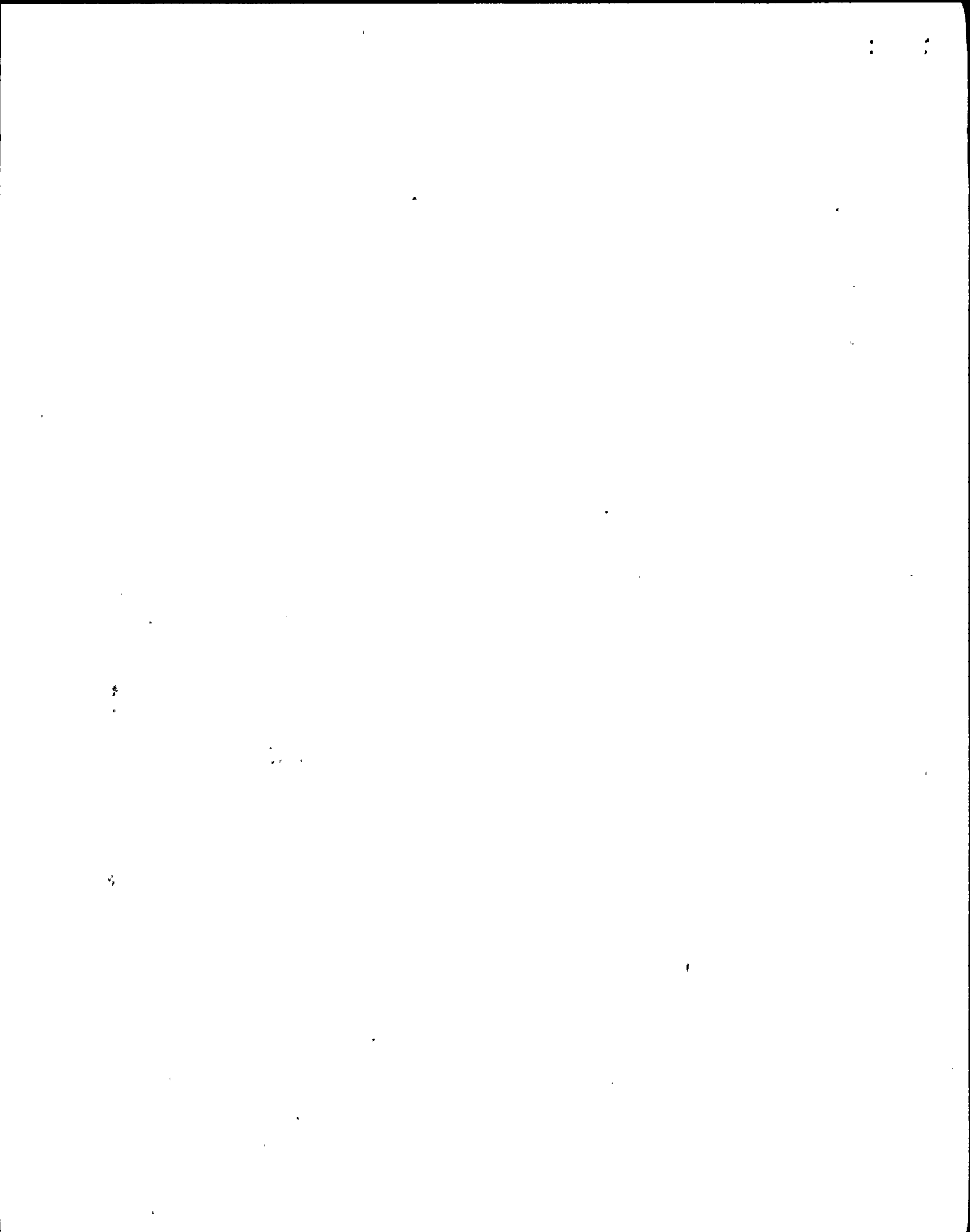
This Modification will replace the existing power supplies with larger state of the art UPS's that will have adequate spare capacity for transient loads and load growth.

Work associated with this modification is classified as Non Safety Related.

Therefore, specific requirements of 10CFR50 Appendix B are not applicable.

BASIS

ESK 10ANN608
ESK 10IHA518
Master Equipment List (MEL)



REVIEWER CHECKLIST TO DETERMINE EFFECT OF DESIGN CHANGES ON ELECTRICAL AND MECHANICAL EQUIPMENT REQUIRING ENVIRONMENTAL QUALIFICATION
Page 1 of 3

CHANGE DOCUMENT Modification NJ-89-042 MOD. NO. NJ-89-042

SPECIFICATION/DRAWING NO. _____

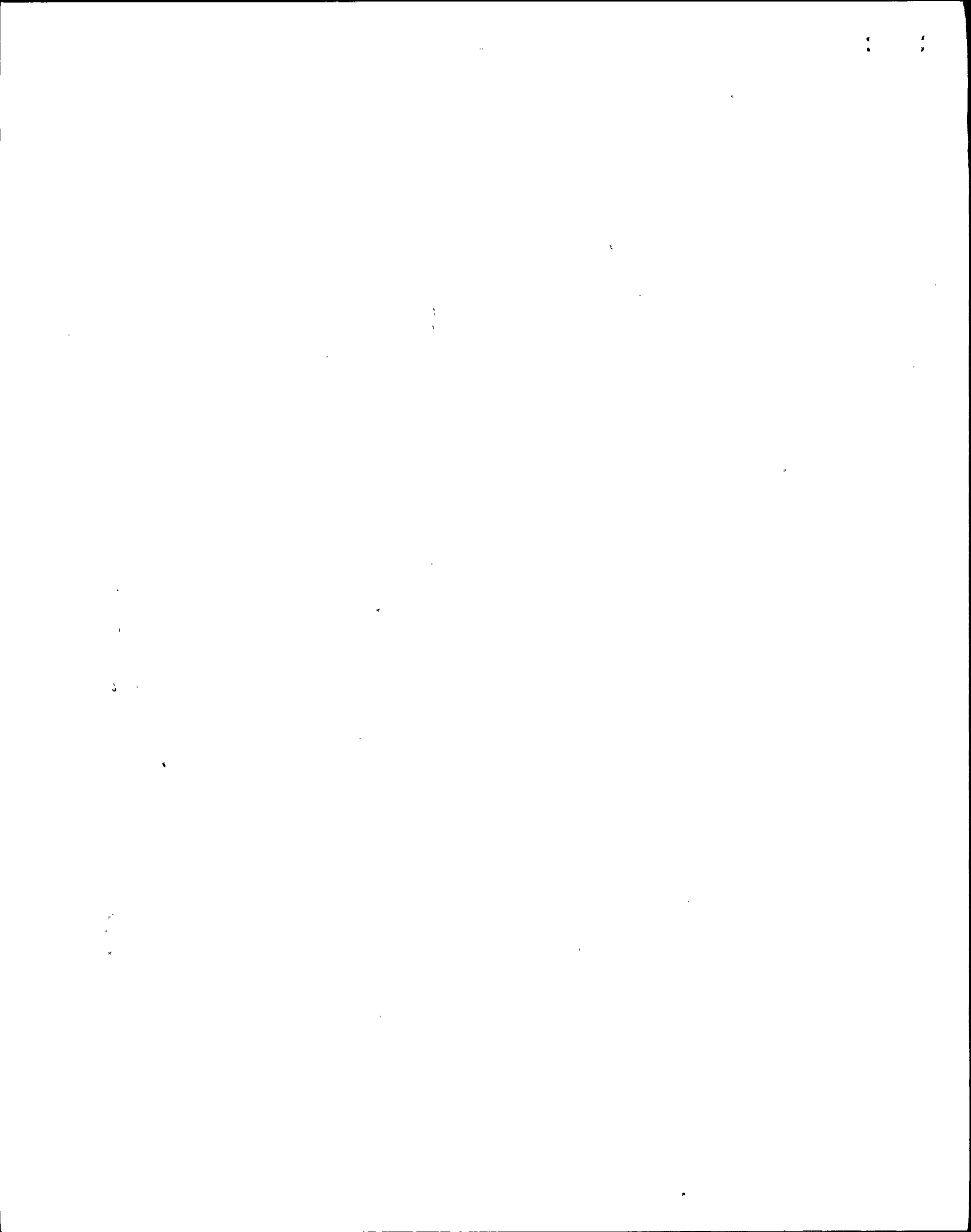
SECTION I - CATEGORY OF CHANGES: If the subject(s) of all changes in the change document are totally restricted to one or more of the following categories below, circle the appropriate category number(s), check this block and proceed to Section III of this form. If the block is not checked, proceed to Section II of this form.

- 1. Raceway Installation
- 2. Cable termination, wiring changes exclusive of methods/materials of termination; cable pull
- 3. Replacement with identical equipment/component at the same location and installed to the original requirements
- 4. Documentation not related to equipment qualification
- 5. Restoration of equipment to its original condition/configuration/identical equipment
- 6. Revision/rerouting/addition/deletion of pipe/tubing/cable/conduit/duct which does not include QA Category I equipment in-line or at the terminations
- 7. Revisions/additions/deletions/reconfiguration of supports which are only supporting pipe/tube/duct/conduit and not supporting equipment requiring qualification
- 8. Replacement of damaged equipment nameplates or revisions/replacement of internal wiring identification markings
- 9. QA Category II equipment not requiring qualification (Note: Reg. Guide 1.97 Category II equipment requires qualification)

SECTION II: Evaluate any changes not covered by Section I by use of the questions below:

- 1. Does this change affect the location of equipment requiring qualification? yes or no ^{8/2} _{2.5.2.}
- 2. Does this change add or delete QA Category I equipment, or add or delete equipment requiring qualification? yes or no

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3. Does this change revise/change/replace, in total or part, equipment requiring qualification? yes or no
4. Does this change affect the method/material of electrical termination? yes or no
5. Does this change specify a new or revised cable route? yes or no
6. Does this change affect electrical device moisture intrusion seals, e.g., Conax, Rosemont, C. Bisco, etc., of equipment requiring qualification? yes or no
7. Does this change affect the mounting configuration of equipment requiring qualification. yes or no
8. Does this change revise/affect specified design parameters related to equipment qualification (e.g. Environmental, Fluid, Seismic/Hydrodynamic Loads)? yes or no
9. Will this change increase ambient temperature for the general area in which it will be located? yes or no
10. Will this change add structural components/barriers that could affect the thermal conditions in the area? yes or no
11. Will this change add moisture sources by way of routed pipe, added tank(s), etc.? yes or no
12. Will this change add radiation sources, increase radiation levels, or change radiation shielding? yes or no

SECTION III

1. EQ Not Applicable: If the block in Section I is checked or if all questions in Section II are answered "No," an Equipment Qualification is not applicable.
- Sign off the change document and check the "No" block for Seismic and Environmental Qualification.
 - Sign and date (Section IV) and secure this checklist to the subject change document or to the specification review form for specification revision/addendum, (as applicable) and provide to the EQ Reviewer for concurrence signature.
2. Evaluation of Impact: If any one of the questions in Section II is answered "Yes," the EQ Reviewer shall evaluate the change document for EQ impact.
- No Impact: The EQ reviewer will provide a justification statement with his signature (see Section IV), and proceed with Section III

- b. Impact: If the EQ reviewer concludes that the change document impacts the qualification of equipment, the EQ reviewer shall check the "Yes" block for Seismic and/or Environmental Qualification and sign/initial the change document, initiate an Equipment Qualification Action Item (EQAI) form, record the EQAI form number on this attachment, and complete Section IV of this attachment. Consecutively number the EQAI form and forward with a copy of the change document to the EQ Program Manager.

SECTION IV - SIGNATURES

- PROJECT/DESIGN ENGINEER Mary Regina Date: 2/15/91
- EQ/SEISMIC NOT APPLICABLE Hay Edey NA Sec. NEL 053 Date: 2/15/91 -
- NO IMPACT: For use when Section II has a "Yes" but evaluation by EQ and Seismic Reviewer determines no impact.

EQ/Seismic _____ / _____ Date: _____ / _____

Justification for no impact: _____

IMPACT: For change documents which impact equipment qualification.

EQ/Seismic _____ / _____ Date: _____ / _____

EQAI Number/Date _____

SECURE THIS DOCUMENT TO THE SUBJECT CHANGE DOCUMENT OR SPECIFICATION REVIEW FORM AND PROCEED WITH SIGNOFF

- NOTE:
- a) The Project/Design Engineer shall complete Sections I, II and III.1 and shall sign and date Section IV.
 - b) The EQ and seismic reviewer shall evaluate the change and provide their conclusions/justifications and/or concurrence as appropriate.

CONCEPTUAL LICENSING INPUT

Page 1 of 3

PLANT Nine Mile Point Unit 2
 DESIGN CHANGE TITLE Replace 2VBB-UPS1C & 2VBB-UPS1D
 MAJOR ORDER Mod. No. PN2Y89MX042
 CONCEPTUAL LICENSING INPUT NO. CLI-088

This report constitutes the mechanism for providing initial Licensing design input. The following is a brief description of the modification:

Due to added loads under Modification 87-038, Uninterruptible Power Supply (UPS) 2VBB-UPS1C (Bus 1C) and 2VBB-UPS1D (Bus 1D) are now overloaded. Modification No. 89-042 will:

1. Replace the subject 75KVA UPSs with new state-of-the-art 75KVA UPSs.
2. A load shed evaluation will be performed to determine which users don't require UPS powering.
 - A. If the load shed $>30\%$, only Item 1 will be implemented.
 - B. If the load shed $<30\%$, supplementary UPSs will be provided.

This report is preliminary in nature and does not necessarily constitute Licensing's final position.

Prepared by: W. P. Cliffe Date 3/6/91
 Licensing Engineer

Approved by: Russ G. Wolnak Date 3/6/91
 Assistant Mgr., Licensing

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[Faint, illegible text covering the majority of the page]

CONCEPTUAL LICENSING INPUT NUMBER: CLI-088_____

The following items have been addressed for their applicability to this design change:

1. NRC Rules, Regulations, and Orders:
10 CFR 50.63, 10 CFR 50 Appendix A General Design Criteria 17, 18.
2. NMP License & Technical Specifications (Determine if a change in the Technical Specifications is required and initiate change in accordance with NEL-511).

This change does not impact the NMP2 Technical Specifications.
3. FSAR
Sections 1.2.8 and 8.3.
4. NRC Correspondence:

There is no known NRC correspondence that affects this modification.
5. NRC Guidance; Reg. Guides, SRP, STS, NUREGs, (IENs, IEBs):
IEN 88-57, IEN 89-64, RG 1.93, RG 1.155, RG 1.32*, RG 1.75*.
6. Industry Reports (INPO, EPRI, etc.):
GE SIL 418* (Rev. 0 & Rev. 1), IEEE 446, IEEE 493, IEEE 944, IEEE 308*.
7. Safety Classification (including power sources):

This change is not safety-related.

* For information; applies to safety-related components only.

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CONCEPTUAL LICENSING INPUT NUMBER: CLI-088_____

8. Heavy Loads: NUREG 0612 considerations should be included in the design: YES NO

This change does not include heavy loads.

9. Transients, Safe Shutdown, Radiological Releases, FSAR Accidents:

None would be affected by this change.

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MATERIAL AND EQUIPMENT LIST

- 2 - 75 KVA UNINTERRUPTIBLE POWER SUPPLIES (UPS)
- * 1 - 50 KVA UPS
- * 1 - VOLTAGE REGULATING TRANSFORMER
- * 1 - 35 KVA STEPDOWN TRANSFORMER
- * 800 FEET OF 4C/#4 POWER CABLE
- * 500 FEET OF 9C/#12 INSTRUMENT CABLE
- ** 2 - 25 KVA UPSs
- ** 2 - VOLTAGE REGULATING TRANSFORMERS
- ** 2 - 35 KVA STEPDOWN TRANSFORMERS
- ** 1600 FEET OF 4C/#4 POWER CABLE
- ** 1000 FEET OF 9C/#12 INSTRUMENT CABLE

* = OPTION 1
 ** = OPTION 2

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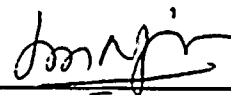
MOD. CONTROL NO. N2-89-042Impacted Document List

<u>Discipline</u>	<u>Document Title</u>	<u>Document No.</u>
STRUCTURAL	Foundation Plan EL 237'-0", 249'-0", 250'-0" Normal Switchgear Building	EC-58CA
	Sections and Details Normal Switchgear Building	EC-58CD
	Arrangement - All Details Normal Switchgear Building EL 237'-0"	EE-38P
	Penetration Location Drawings (approximately 5)	EE - 0 3 7 Series
ELECTRICAL	Listing of all Electrical Impacted Documents are included with Item 11, Engineering Overviews & Sketches.	

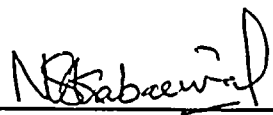
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MOD. # PN2Y89MX042

CONCEPTUAL ENGINEERING PACKAGE
FOR
REPLACEMENT OF UPS 2VBB-UPS1C AND 1D

Prepared by: 
A. RAJU

3-12-91
Date

Reviewed by: 

3/12/91
Date

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PURPOSE: The plant normal UPS 2VBB-UPS1C and 1D are currently loaded to their full capacity of 75KVA/60KW and were subjected to overloaded condition in the past. Because these two UPS's have extended maintenance outages, they are not reliable and require replacement. Modification PN2Y89MX042 recommends the following:

1.0 Perform a load study of the existing loads on these two UPS's and determine the loads that do not require UPS power for possible load shedding.

2.0 Procure and install two new 75KVA/60KW UPS units in place of UPS 2VBB-UPS1C and 1D because these units are unreliable, difficult to maintain and have gone through accelerated aging. In addition if the load shedding study concludes that greater than or equal to 30% of the the existing UPS loads can be shed, transfer the sheddable loads to distribution panels fed from the normal power source. The new 75KVA/60KW UPS units will be loaded only to 80% of their rated capacities.

3.0 If the load shedding study concludes that only less than 30% of the existing loads can be shed, then the following will be performed:

a) Procure and install two new 75KVA/60KW UPS units to replace the existing UPS units. The new UPS units will be loaded only to 80% of their capacity.

b) Procure and install either two new UPS units of 25KVA/20KW capacity or one new UPS unit of 50KVA/40KW capacity and transfer those loads that require UPS power and can not be fed from the new 75KVA/60KW UPS units.

c) Transfer those sheddable loads from UPS power to distribution panels fed from normal power source.

12/20/2011

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BACKGROUND: UPS 2VBB-UPS1C and 1D essentially feeds the plant essential lighting and communication systems loads and these loads are normally energized at all times. In the past, it has been reported that these UPS were overloaded and the degree of degradation to the UPS equipment due to overloading is unknown. In addition, any future loads requiring UPS can not be added to these UPS, unless these UPS are replaced with higher capacity units. It has also been reported that the existing 75KVA/60KW UPS units are not reliable any more and were recommended to be replaced because of operability and maintainability concerns.

In order to resolve the above concerns, design engineering evaluated the recommended options of this modification as part of this conceptual design engineering package .

DISCUSSION:

UPS 2VBB-UPS1C and 1D are rated for 75KVA/60KW and receive their DC backup power source from normal station batteries 2BYS-BAT1A and 1B respectively. In accordance with non-safety UPS sizing calc. EC-123, Rev.3 UPS 2VBB-UPS1C and 1D are loaded to 70KVA and 70.1KVA respectively. Battery sizing calculations (for normal batteries 2BYS-BAT1A and 1B) EC-44 and 45 estimated that input KW required by UPS 2VBB-UPS1C and 1D are 67.5KW and 67.6KW respectively. The battery sizing calculations assumed the load power factor to be equal to 0.9, efficiency of UPS unit to be equal to 84% and the utilization factor to be equal to be 0.9. Because these two UPS units mostly feed continuously energized essential lighting and communication systems, the actual loadings exceeded the estimated loadings and the rated capacities.

LOAD SHEDDING STUDY:

In order to avoid future overloads on UPS, it has been determined that the loading on UPS would be limited to 80% of its rated capacity. It means that the new replacement UPS units for UPS 2VBB-UPS1C and 1D will be rated 75KVA/60KW and will be loaded only to 48KW. To achieve the reduced loadings on these two new UPS units, a load study will be performed to determine the loads that do not require UPS power and possibly can be shed from these UPS units.

UPS 2VBB-UPS1C feeds the following essential lighting panels through UPS distribution panel 2LAT-PNL017:

- . 2LAR-PNLU02
- . 2LAT-PNLU02
- . 2LAX-PNLU01
- . 2LAT-PNLU02
- . 2LAT-PNLU05
- . 2LAN-PNLU01
- . 2LAW-PNLU01
- . 2LAR-PNLU05
- . 2LAR-PNLU01

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UPS 2VBB-UPS1D feeds the following essential lighting panels through UPS distribution panel 2LAS-PNL016:

- . 2LAC-PNLU01
- . 2LAT-PNLU03
- . 2LAC-PNLU03
- . 2LAT-PNLU01
- . 2LAR-PNLU03
- . 2LAR-PNLU04
- . 2LAC-PNLU02
- . 2LAR-PNLU06

The load shedding study on UPS 2VBB-UPS1C and 1D involves the following:

- 1.0 Walkdown all the essential lighting panels listed above and prepare a lighting panel schedule for each panel. The panel schedule will indicate the type of loads fed from each breaker located in that panel along with the total connected load.
- 2.0 Compare the lighting panel schedules prepared in item 1.0 above against the plant lighting drawings and ensure as built configuration is reflected on the drawings.
- 3.0 Resolve any discrepancies between the panel schedules and the lighting plan drawings and issue the panel schedules for field use.
- 4.0 Revise the following calculations and ensure the UPS equipment, batteries and battery chargers are adequately sized to handle the connected loads:
 - a) EC-123 Non-safety UPS sizing
 - b) EC-44 Normal station battery 2BYS-BAT1A and charger 2BYS-CHGR1A1 sizing
 - c) EC-45 Normal station battery 2BYS-BAT1B and charger 2BYS-CHGR1B1 sizing
- 5.0 Evaluate all the loads indicated on the panel schedules on a breaker by breaker basis and determine if the loads do really need to be powered from UPS power source. If the load does not require UPS power, then it will be included in the list for load shedding and action will be taken to power these loads from plant normal power source. The load shedding study will consider the following commitments in the USAR:
 - a) Communication system equipment - USAR section 9.5.2 states that the following systems require UPS power:
 1. Dial Telephone system
 2. Radio Communication system
 3. Page Party/Public Address system
 If any other communication system load is fed from UPS 1C and 1D, then it will be considered for load shedding.

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- b) Lighting system - UPS 1C and 1D feed essential and egress lighting systems. USAR section 9.5.3.2 states that:
1. The essential lighting system provides partial lighting for certain critical areas of the station requiring continuous lighting such as control room, relay and computer room, standby diesel generator rooms, emergency switchgear rooms, service water pump room, and for passageways to and from areas where safety-related equipment is located.
 2. The egress lighting system provides adequate lighting for all egress signs inside the plant, exit doors, hallways, corridors, passageways, stairways, and other areas leading to the outside building exits. The system is designed specifically for inside building egress emergency conditions in accordance with related standards, codes, and OSHA requirements. Internally illuminated exit signs are located... and walkways. All exit facilities are provided with adequate illumination, both vertical and horizontal. Minimum intensity of illumination, measured at the floor level, for all exit paths is maintained at 0.5 footcandle.

In addition to the essential and egress lighting systems described above, 8-hr battery pack lighting is also provided in all areas of the plant required for operation of any safe shutdown equipment, and in access and egress routes thereto, to meet the requirements of 10CFR50, Appendix R.

The following will be considered during the load shedding study:

- a) Essential lighting system for NMP2 has been designed prior to the implementation of 10CFR50, Appendix R. Therefore possibilities exist where both essential lighting and 8-hr battery pack lighting are provided in an area such as stairways and access and egress routes to safe shutdown equipment. If the evaluation indicates that 8-hr battery pack lighting is adequate in that area then consideration should be given to load shed the essential lighting from UPS power.
- b) USAR Table 9.5-1 indicates that 100% of the lighting in areas such as Turbine Building, Reactor Building, Auxiliary Bays, Auxiliary Services Building South, Screenwell Building, Water Treating Area, Heater Bay, Off-Gas Building, Radwaste Building except Control room, Auxiliary Boiler Building, Electrical Tunnels and Piping Tunnels will be provided from the normal power source. In addition to normal lighting, these areas will be provided with egress lighting as required from UPS fed egress lighting. Minimum illumination leveles for egress lighting is 0.5 footcandle. Egress lighting in the above areas will be evaluated as part of the load shedding study and extra lighting if any in these areas will be considered for shedding.

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- c) Miscellaneous Loads - Any miscellaneous loads such as receptacles located inside main and Radwaste control rooms connected to the essential lighting panels will be evaluated and considered for possible load shedding.
- 6.0 Complete the load shedding study and list the loads that can be shed from UPS power source and determine if the sheddable loads are greater than or equal to or less than 30% of UPS rating of 75KVA/60KW.
- 7.0 Evaluate the availability of spare capacity in normal lighting distribution panels and transfer the sheddable loads from UPS supplied essential lighting system panels to the normal lighting system panels.

OPTION NO.1 - PROCURE AND REPLACE EXISTING 75KVA/60KW UPS 2VBB-UPS1C AND 1D

SCOPE: A single line representation of the power supplies involved with 2VBB-UPS1C and 1D is provided in attachment 1 of this package. The scope of this option includes the following:

- 1.0 Perform a load shedding study as outlined in load shedding study of this package and ensure greater than or equal to 30% of the existing UPS loads from 2VBB-UPS1C and 1D can be shed.
- 2.0 Issue design changes to transfer the sheddable loads to lighting distribution panels fed from the plant normal power source.
- 3.0 Procure new 75KVA/60KW UPS units.
- 4.0 Issue design changes to replace the existing 75KVA/60KW UPS units.

Attachment 4 of this package provides the list of documents affected if this option is implemented.

DISCUSSION: This option reduces the loadings on UPS 2VBB-UPS1C and 1D and therefore the reliability, operability and the maintainability of these units are enhanced. In addition, its impact as outlined below on the existing associated equipment will be minimum:

- 1.0 Power Supplies - No changes is required except to revise the calculations listed in affected document list in attachment 1.
- 2.0 Raceway - None required. However the conduits that are connected to the existing UPS units will be determined and reterminated to the new UPS units. Because the size of the new units is unknown, some modifications to the conduits may be necessary.
- 3.0 Cables - Because of the reduced loadings, the existing cables are adequate. However when these cables are reterminated to the new UPS units, they may not reach the destinations within the units. Existing cables may have to be spliced with adequately sized pigtailed and then reterminated to the destinations inside the new UPS units. However certain calculations listed in the affected document list, attachment 4 may have to be revised.

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- 4.0 Grounding - Existing grounding cables require to be determined from the old units and reterminated to the new units.
- 5.0 Other Equipment and Components - Because of the reduced loadings, other components such as breakers and batteries are considered adequate.
- 6.0 Alarms - Existing alarms and annunciator windows are adequate.

OPTION NO.2 - PROCURE AND REPLACE EXISTING 75KVA/60KW UPS 2VBB-UPS1C AND 1D. IN ADDITION PROCURE AND INSTALL TWO NEW UPS RATED FOR 25KVA/20KW

SCOPE: A single line representation of the power supplies involved with 2VBB-UPS1C and 1D and with the proposed two new UPS units rated for 25KVA/20KW is provided in attachment 2 of this package. The scope of this option includes the following:

- 1.0 Perform a load shedding study as outlined previously in the load shedding portion of this package and ensure only less than 30% of the existing UPS loads have been qualified for load shedding.
- 2.0 Issue design changes to transfer the sheddable loads to lighting distribution panels fed from normal power source.
- 3.0 Procure two 75KVA/60KW UPS units to replace 2VBB-UPS1C and 1D.
- 4.0 Procure two 25KVA/20KW UPS units and associated equipment as indicated in attachment 2.
- 5.0 Issue design changes to replace the existing 75KVA/60KW UPS units. Ensure that the new 75KVA/60KW UPS units are loaded only to 80% of their rated capacity.
- 6.0 Issue design changes to install new 25KVA/20KW UPS units and their associated equipment and components.
- 7.0 Issue design changes to transfer UPS loads that can not be accommodated in 2VBB-UPS1C and 1D to the new UPS units.

Attachment 4 also provides the list of affected design documents if this option is implemented.

DISCUSSION: This option also reduces the loadings on 2VBB-UPS1C and 1D to 80% of their capacity and therefore the reliability, operability and the maintainability of the units are enhanced. However it involves the addition of new units with their associated equipment and components. The impact of this option on the plant electrical distribution system is evaluated as indicated below:

- 1.0 Replacing existing 75KVA/60KW UPS units 2VBB-UPS1C and 1D with new units of the same rating impacts minimally and has already been discussed in option #1 above.

TABLE 1

TABLE 2

TABLE 3

TABLE 4

2.0 Impact due to addition of two new 25KVA/20KW units:

- a) Equipment :
- 2 - 25KVA/20KW UPS units
 - 2 - 25KVA Voltage Regulators,
208Y-120V/208Y-120V, 3PH., 4Wire
 - 2 - 45KVA Dry type stepdown transformers,
600V/208Y-120V, 3PH.,
 - 1 - 600V Molded case circuit breaker in 2LAT-
PNL300
 - 1 - 600V Molded case circuit breaker in 2NHS-
MCC008
 - 1 - 600V Molded case circuit breaker in 2NHS-
MCC006
 - 1 - 600V Molded case circuit breaker in 2NHS-
MCC009
 - 1 - 125V DC power circuit breaker in 2BYS-
SWG001A
 - 1 - 125V DC power circuit breaker in 2BYS-
SWG001B
 - 4 - Annunciator windows in 2CEC*PNL852
 - 2 - Lighting distribution panels

NOTE: Recommended new equipment locations are shown in attachment 2.

b) Power supplies :

1.0 2LAT-PNL300 - This panel is normal 600V distribution panel and is rated for 600Amps. and is currently loaded to 215Amps. (CALC. EC-118 REV.2). Addition of another 25Amps. load will not affect the ratings of this panel.

2.0 2NHS-MCC008 - This MCC is rated for 800Amps. and is currently loaded to 206Amps.(CALC.EC-118). Addition of another 45Amps. will not affect the ratings of this panel. However this MCC can be connected to EDG through stub bus 2NNS-SWG014 in the absence of a LOCA condition. Impact on EDG loading will be evaluated and is expected to be minimal.

3.0 2BYS-SWG001A - This switchgear is rated for 2000Amps. and is currently loaded to a continuous load of 1345Amps.(CALC.EC-44,Rev.10). Addition of another 250Amps. load will not affect the rating of this switchgear.

4.0 2BYS-BAT1A - This battery system consists of 2 batteries of 2550 Ampere-Hour (AH) capacity connected in parallel. Calc. EC-44, Rev.10 indicates that 41.66% of the battery capacity is available as spare. However due to an arithmetic mistake it has been found that only 13% of the battery capacity is available as spare. A review of the calculation has determined that when this new loading of UPS (25KVA/20KW) is added to the batteries, the subject battery will be fully loaded to its capacity. this is based on an assumption that UPS 2VBB-UPS1C will not be loaded to more than 55KW.

5.0 2NHS-MCC006 - This MCC is rated for 800Amps. and is currently loaded to 298Amps.(Calc. EC-118,Rev.2). Addition of another 25Amp. will not affect the capability of this MCC to carry

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the additional loads.

6.0 2NHS-MCC009 - This Mcc is rated for 800Amps. and is currently loaded to 143Amps. (Calc. EC-118, Rev.2). Addition of another 45 Amps. will not affect the capability of the MCC. However this MCC may be connected to EDG through stub bus 2NNS-SWG015. Impact of this added loading on EDG will be evaluated and is expected to be minimal.

7.0 2BYS-SWG001B -This switchgear is rated for 2000Amps. and is currently loaded to a continuous load of 920Amps. (Calc. EC-45, Rev.6). An additional load of approximately 250Amps. will not affect the capability of this switchgear.

8.0 2BYS-BAT1B - This battery system consists of 2 batteries of 2550 Ampere-Hour (AH) capacity connected in parallel. Calc. EC-45, Rev.2 indicates that 41.7% of this battery capacity is available as spare. Calculation EC-45 review has determined that addition of another 25KVA/20KW UPS uses up approximately 50% of the excess capacity that was available. Therefore addition of this option will not overload the battery capacity.

9.0 2CEC*PNL852 - Spare windows will be used for annunciation.

c) Cables - Refer to attachment 2 Cable Block Diagram

d) Raceways - Cables will be pulled through trays as for as possible. For cables routed within the room may be pulled through conduits.

e) Grounding - Existing grounding cables from adjacent equipment or from an existing ground pad will be extended.

OPTION NO.3 - PROCURE AND REPLACE EXISTING 75KVA/60KW UPS 2VBB-UPS1C AND 1D. IN ADDITION PROCURE AND INSTALL ONE NEW UPS RATED FOR 50KVA/40KW

SCOPE: A single line representation of the power supplies involved with 2VBB-UPS1C and 1D and the proposed one new UPS unit rated for 50KVA/40KW is provided in attachment 3 of this package. The scope of this option includes the following:

1.0 Perform a load shedding study as outlined previously in the load shedding study portion of this package and ensure only less than 30% of the existing UPS loads have been qualified for load shedding.

2.0 Issue design changes to transfer the sheddable loads to lighting distribution panels fed from normal power source.

3.0 Procure two 75KVA/60KW UPS units to replace 2VBB-UPS1C and 1D.

4.0 Procure one 50KVA/40KW UPS unit and associated equipment as indicated in attachment 3.

5.0 Issue design changes to replace existing UPS 2VBB-UPS1C and 1D. Ensure that these two UPS units are loaded only to 80% of their capacity.

6.0 Issue design changes to install the new 50KVA/40KW UPS unit and its associated equipment and components.

12 13 14 15

7.0 Issue design changes to transfer UPS loads that can not be accomodated in 2VBB-UPS1C and 1D to the new UPS unit.

Attachment 4 also provides a list of affected design documents if this option is implemented.

DISCUSSION: This option also reduces the loadings on 2VBB-UPS1C and 1D to 80% of their capacity and therefore the reliability, operability and the maitainability of the units are enhanced. However it requires the addition of one new UPS unit and their associated equipment as shown in attachment 3. The impact of this option on the plant electrical distribution systems is evaluated as follows:

1.0 Replacing existing 75KVA/60KW UPS units 2VBB-UPS1C and 1D with new units of the same rating impacts minimally and has already been discussed in option #1 above.

2.0 Impact due to the addition of new 50KVA/40KW unit:

- a) Equipment :
- 1 - 50KVA/40KW UPS unit
 - 1 - 50KVA Voltage Regulator, 208-120/208-120V, 3PH., 4Wire
 - 1 - 75KVA Dry type stepdown transformer, 600/208-120V, 3PH.,
 - 1 - 600V Molded case circuit breaker in 2NHS-MCC006
 - 1 - 600V Molded case circuit breaker in 2NHS-MCC009
 - 1 - 125V DC power circuit breaker in 2BYS-SWG001B
 - 1 - Annunciator windows in 2CEC*PNL852
 - 1 - Lighting distribution panel

NOTE: Recommended new equipment locations are shown in attachment 3.

b) Power supplies :

1.0 2NHS-MCC006 - This MCC is rated for 800Amps. and is currently loaded to 298Amps. (Calc.EC-118,Rev.2). An addition of another 50 Amps. load will not affect its ratings.

2.0 2NHS-MCC009 - This MCC is rated for 800Amps. and is currently loaded to 143Amps. (Calc.EC-118,Rev.2). Addition of another 75Amps. will not affect the rating if this MCC. However this MCC is supplied from stub bus 2NNS-SWG015 which may be loaded to EDG when LOCA is not present. Therefore impact on EDG loading should be evaluated also which will be minimal.

3.0 2BYS-SWG001B - This switchgear is rated for 2000Amps. and is currently loaded to a continuous load of 920Amps. Addition of approximately 475Amps. will not adversely affect the rating of this switchgear.

1781-1782

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1786

4.0 2BYS-BAT1B - This battery system consists of 2 batteries of 2550 Ampere-Hour capacity connected in parallel. Calc.EC-45, Rev.2 indicates that 41.7% of the battery capacity is available as spare. A review of this calc. EC-45 has determined that addition of 50KVA/40KW UPS unit will use all the spare capacity that is available on these batteries and can accomodate this additional loads without overloading it. However it should be noted that no future loads should be added to this batteries.

5.0 2CEC*PNL852 - Spare windows that are available will be utilized for this addition.

c) Cables - Refer to attachment 3 for the cables required.

d) Raceways - Cables will be pulled through cable trays as for as possible. Cables routed within the same room may be pulled through conduits.

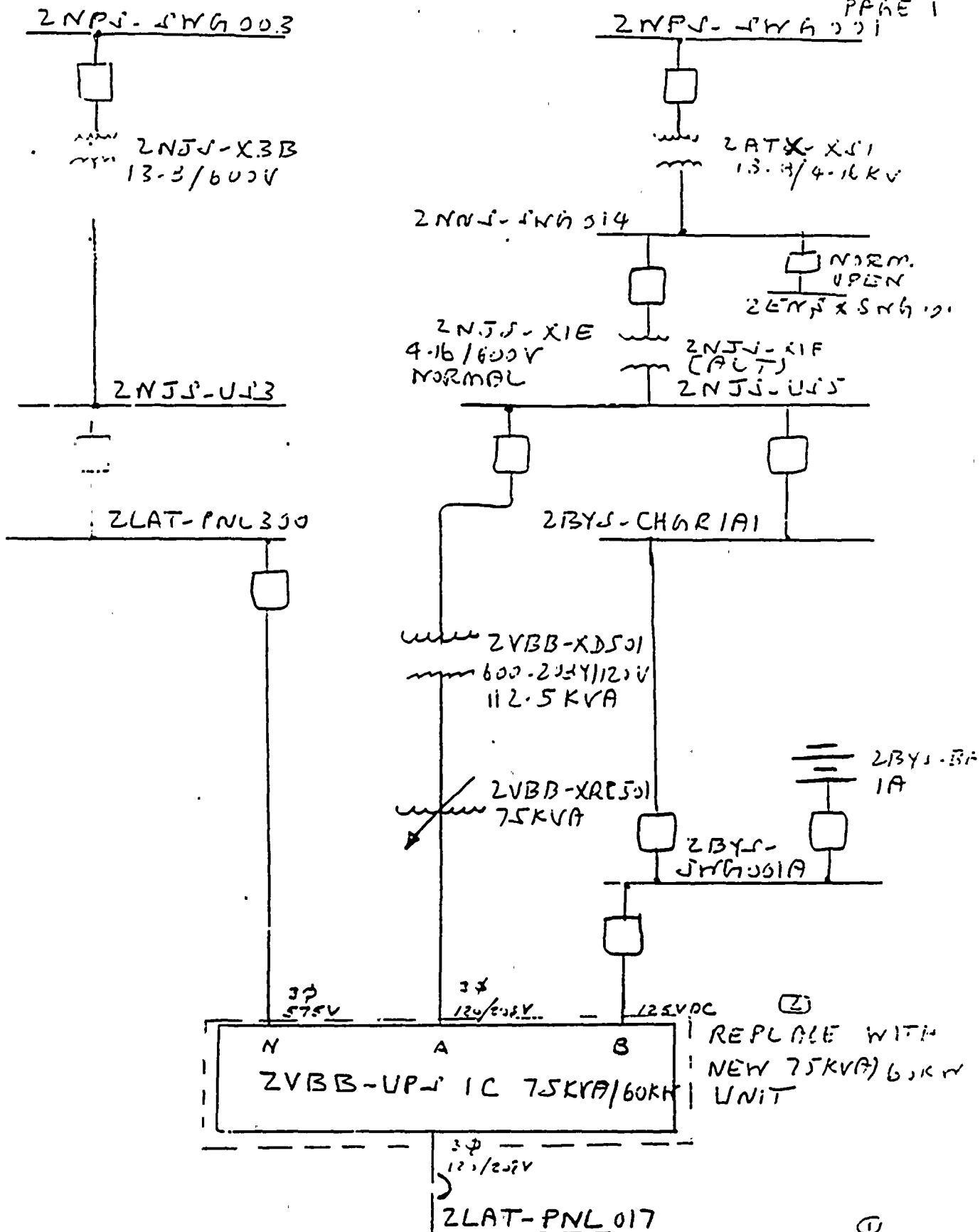
e) Grounding - Existing gronding cables from adjacent equipment or from an existing grounding pad will be extented.

CONCLUSION : Design Engineering, Electrical reviewed all three options listed above for this modification and recommends option 3, because it will resolve all the problems encountered by existing UPS units and will still provide additional UPS power when needed. In addition it involves lesser number of equipment and components and will be cost effective during all phases of this modification such as design, procurement and installation.

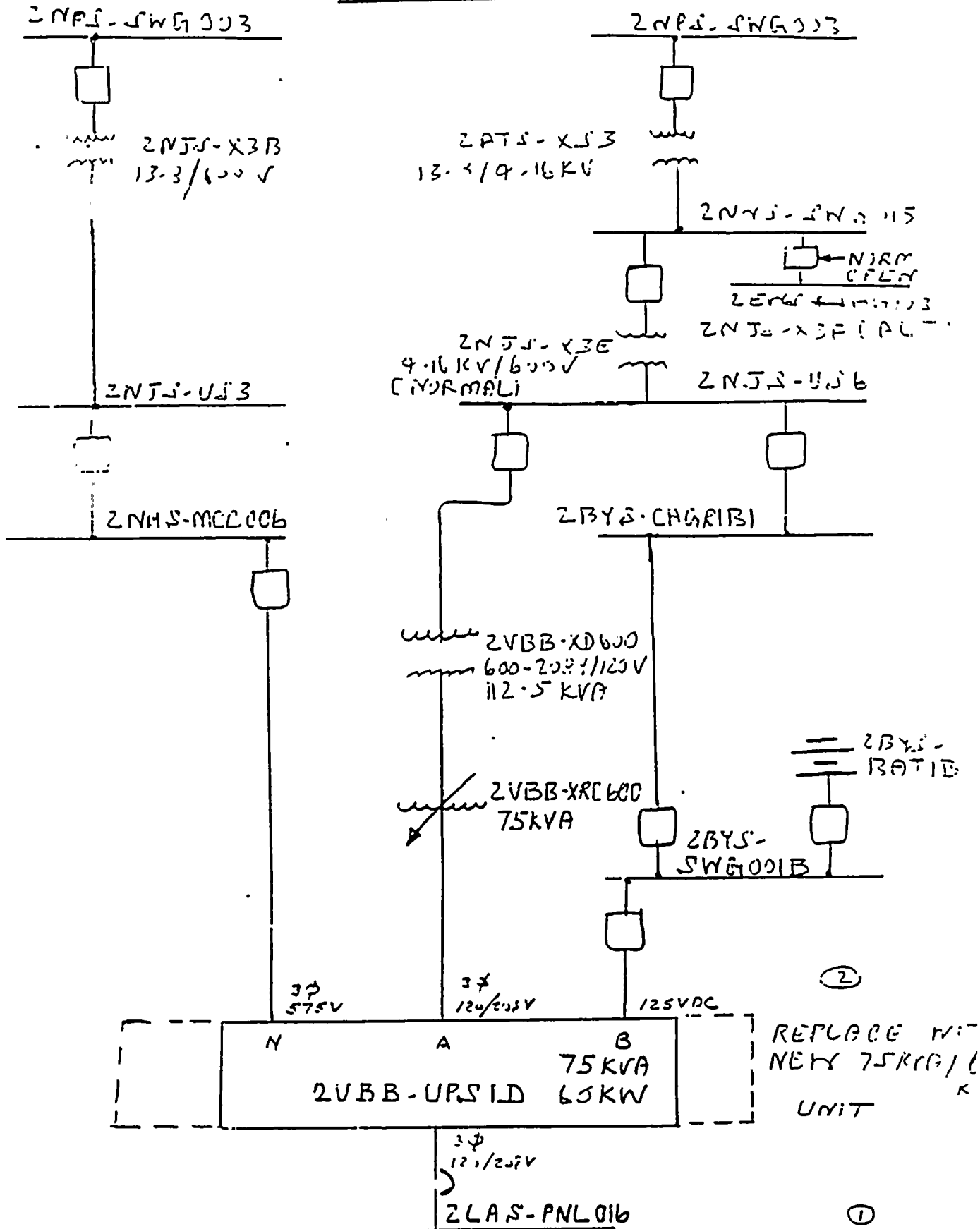
ATTACHMENTS :

- 1.0 Supporting documents for option# 1.
- 2.0 Supporting documents for option# 2.
- 3.0 Supporting documents for option# 3.
- 4.0 List of affected design documents

OPTION # 1

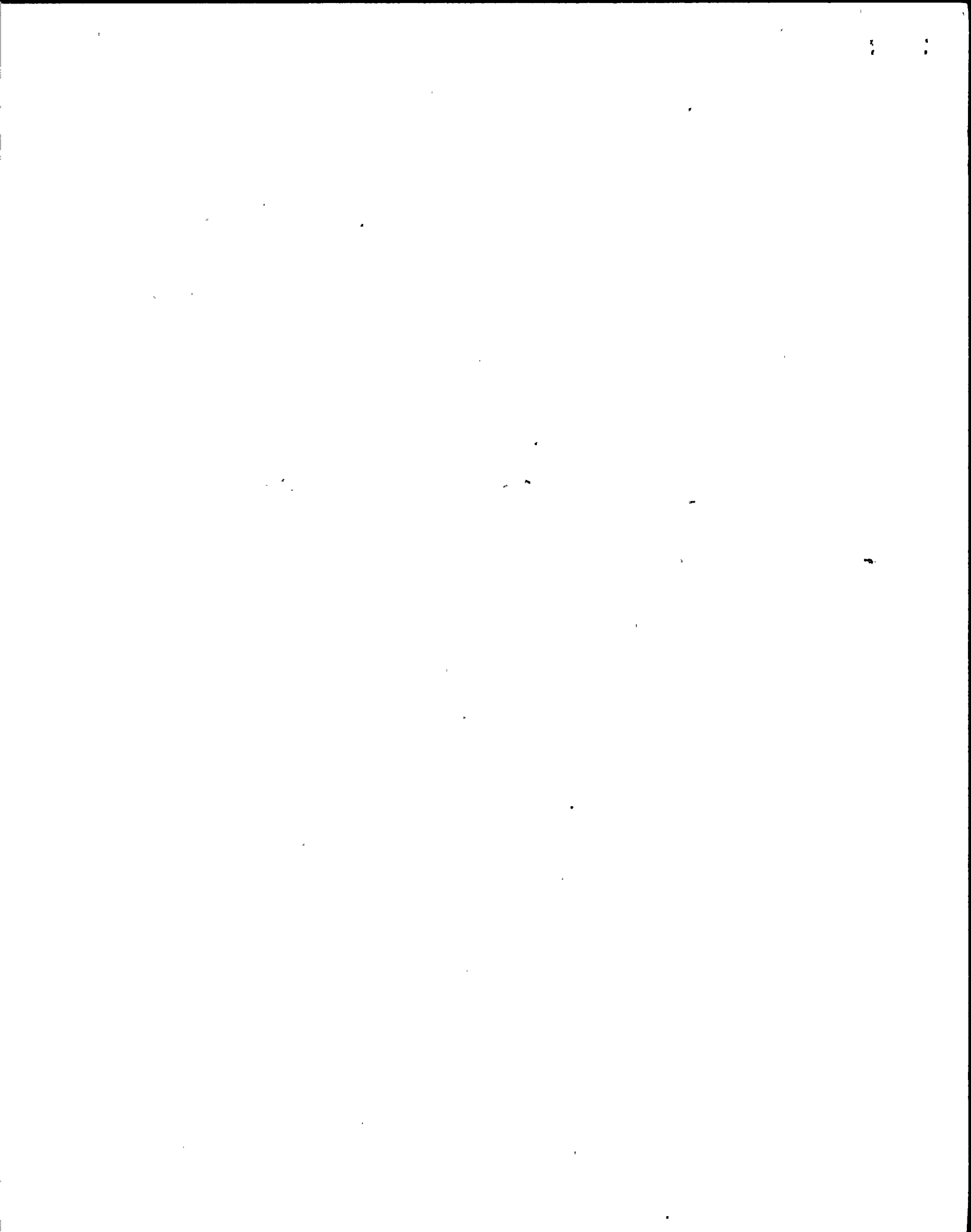


2LAR-PNLU01, 2LAT-PNLU02	PERFORM LOAD STUDY AND REDUCE TO 45KV > 3% OF UPS LOADS
2LAX-PNLU01, 2LAT-PNLU04	
2LAT-PNLU05, 2LAN-PNLU01	
2LAW-PNLU01, 2LAR-PNLU05	
2LAR-PNLU01	



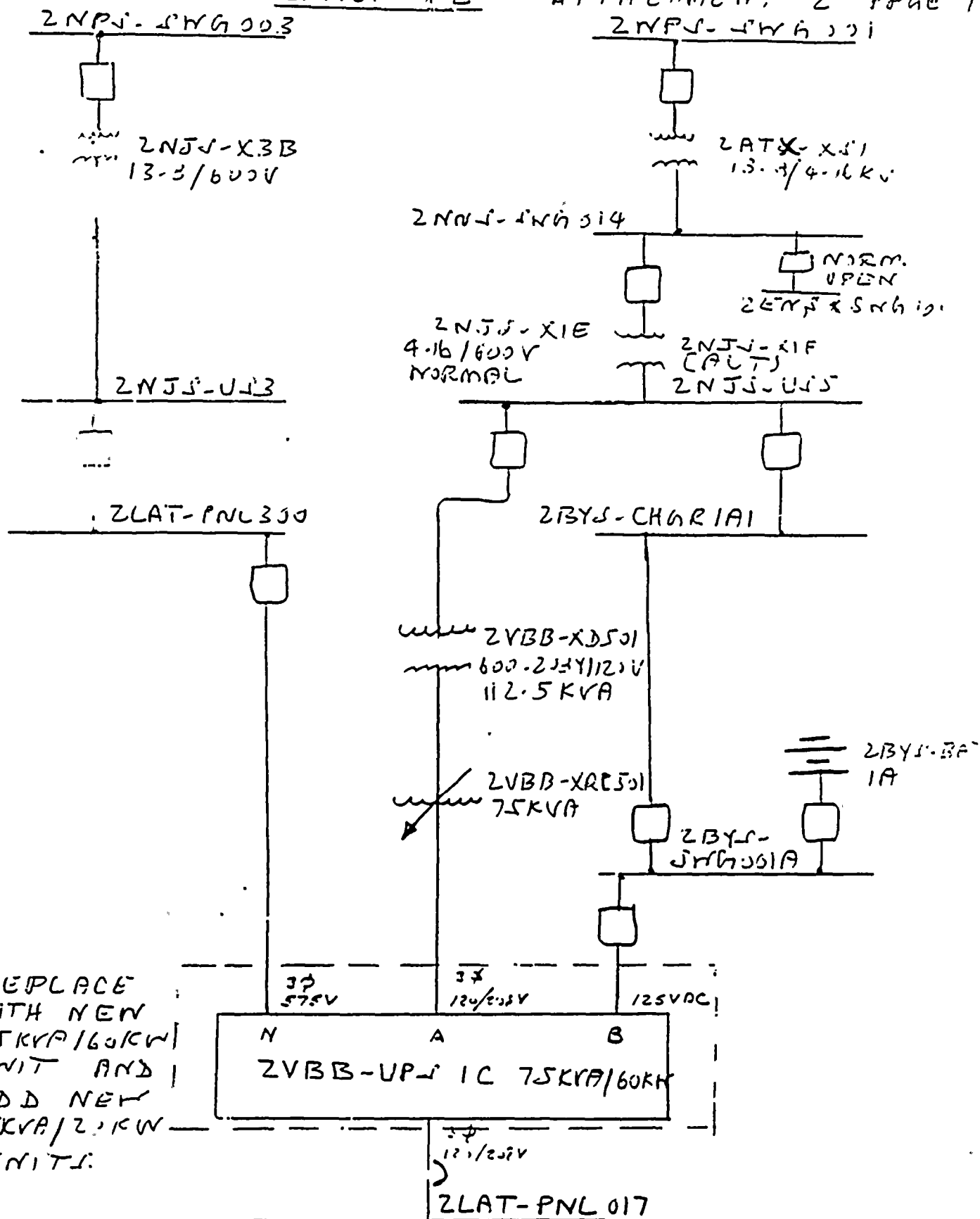
① PERFORM LOAD SHEDDING STUDY REDUCE LOAD TO < 45KW @ > 3% OF UPS LOADS

2LAC-PNL U01, 2LAT-PNLU03
2LAC-PNLU03, 2LAT-PNLU01
2LAR-PNLU04, 2LAR-PNLU03
2LAC-PNLU02, 2LAR-PNLU06



OPTION # 2

ATTACHMENT 2 PAGE 1



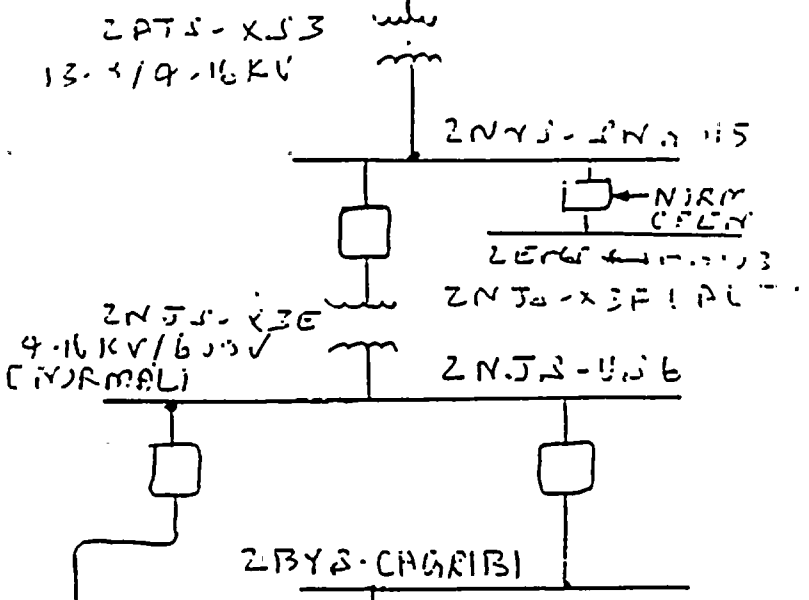
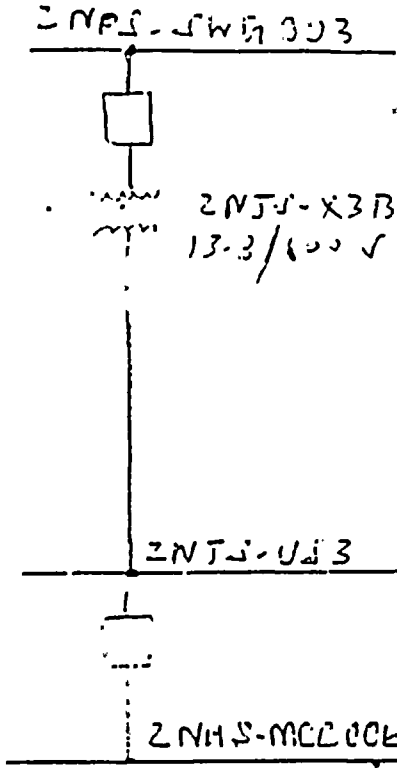
REPLACE WITH NEW 75KVA/60KW UNIT AND ADD NEW 25KVA/20KW UNITS.

PERFORM LOAD SHED STUDY AND ONLY <30% OF UPS CAN BE SHED

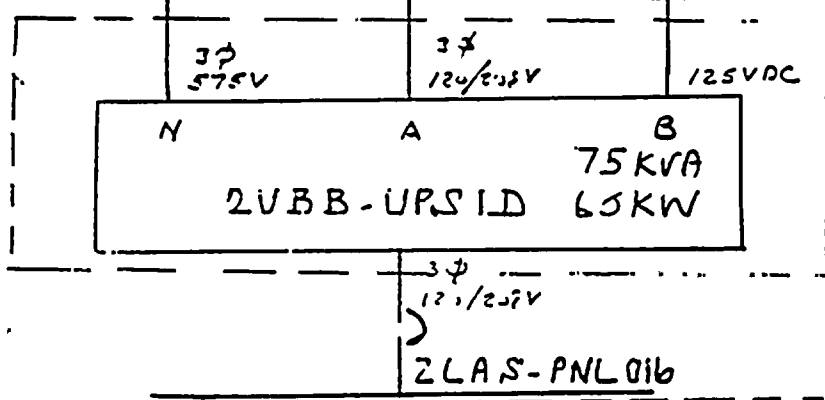
- | | |
|-------------|-------------|
| 2LAR-PNL001 | 2LAT-PNL002 |
| 2LAX-PNL001 | 2LAT-PNL004 |
| 2LAT-PNL005 | 2LAN-PNL001 |
| 2LAW-PNL001 | 2LAR-PNL005 |
| 2LAR-PNL001 | |

2LAT-PNL017

OPTION # 2 ATTACHMENT 2 PAGE 2

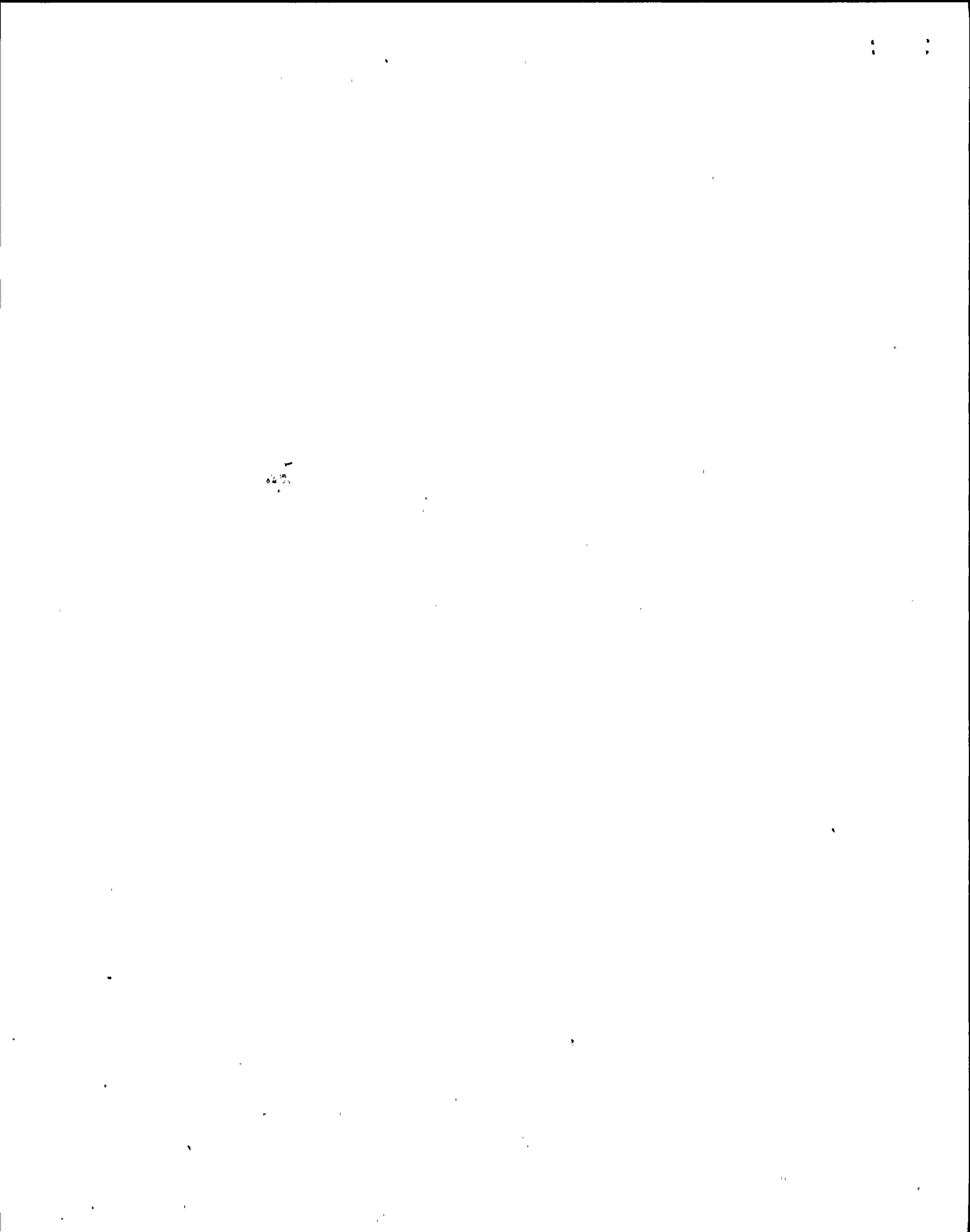


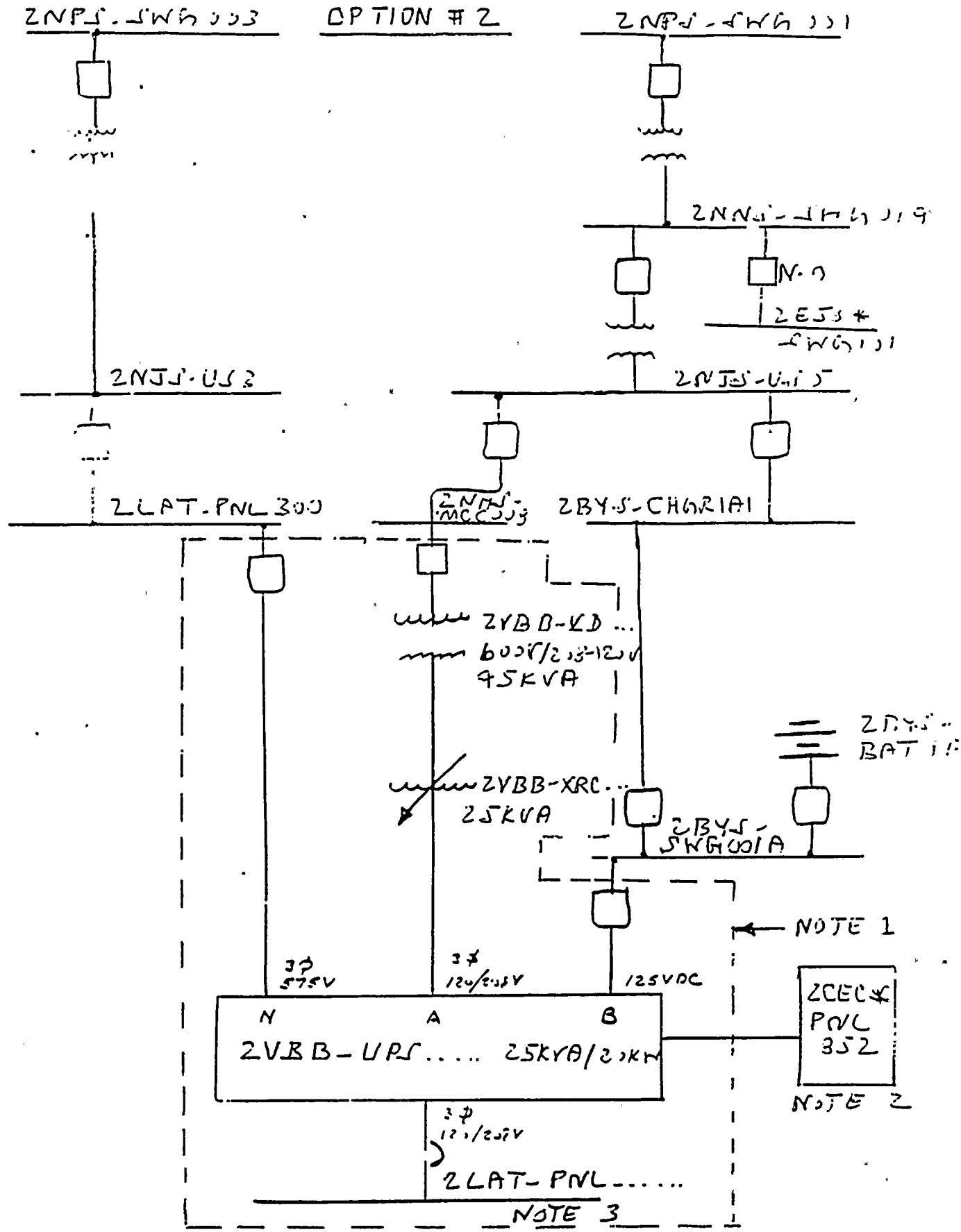
REPLACE WITH NEW 75KVA/60KW UNIT @ ADB 25KVA/20KW UNIT



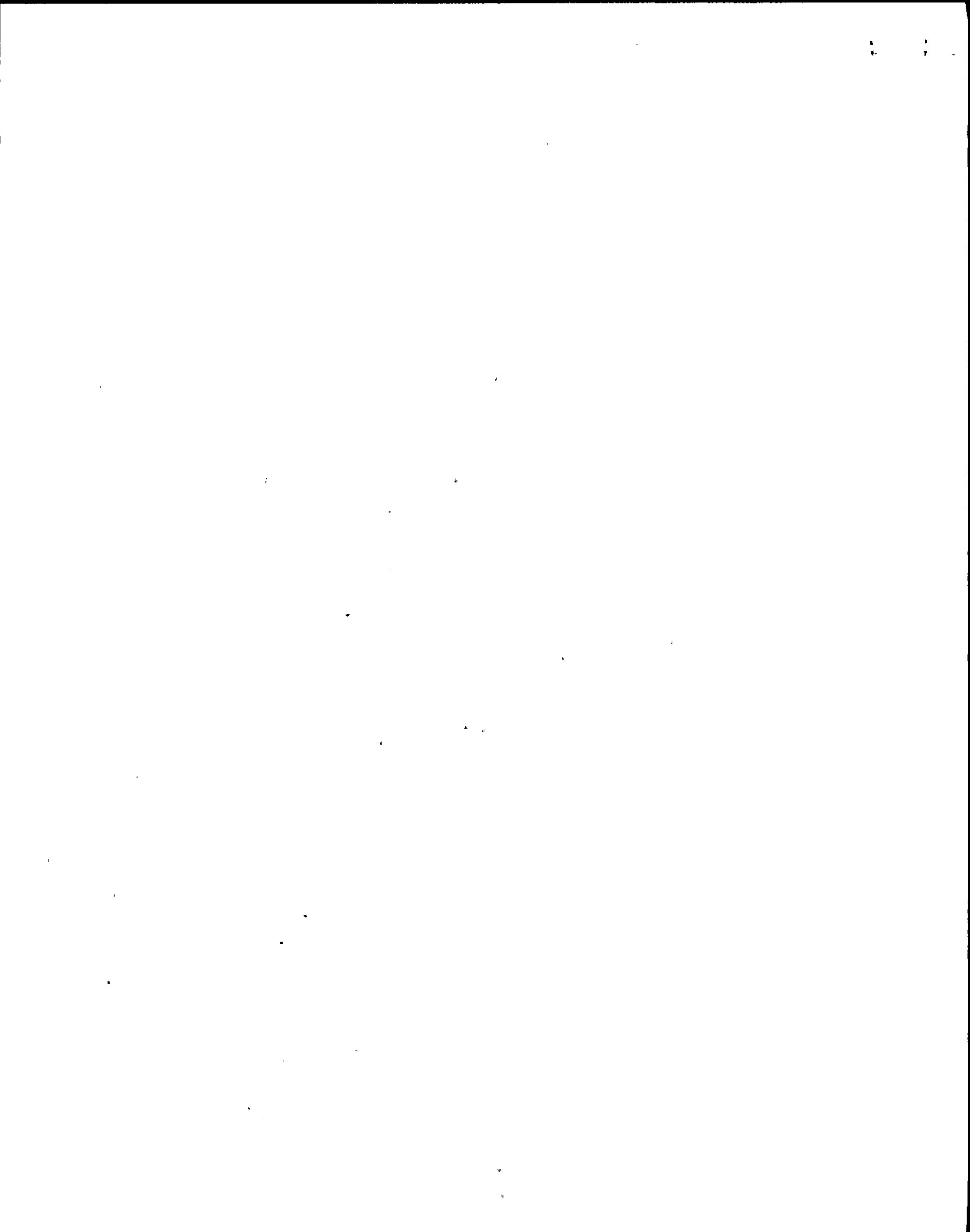
PERFORM LOAD SHED STUDY AND ONLY 230% OF UPS LOAD CAN BE SHED

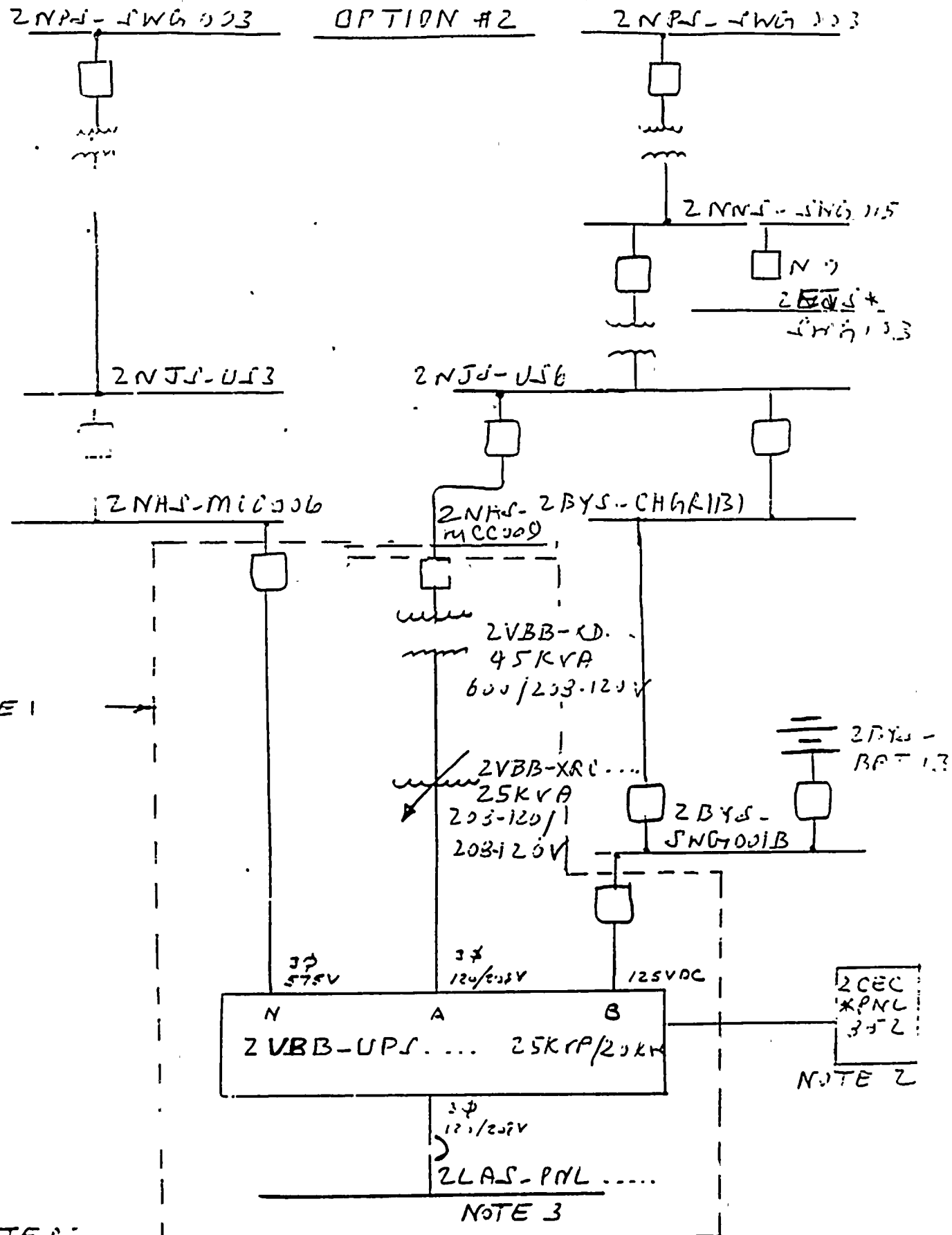
- 2LAC-PNL U01, 2LAT-PNLU03
- 2LAC-PNLU03, 2LAT-PNLU01
- 2LAR-PNLU04, 2LAR-PNLU03
- 2LAC-PNLU02, 2LAR-PNLU06





- NOTES:
1. ITEMS ENCLOSED IN DASHED LINES ARE TO BE PROCURED AND INSTALLED.
 2. NEW ANNUNCIATOR WINDOW IN PNL 352 FOR ALARMS
 3. LOADS WILL BE TRANSFERRED FROM 2LAT-PNL 017





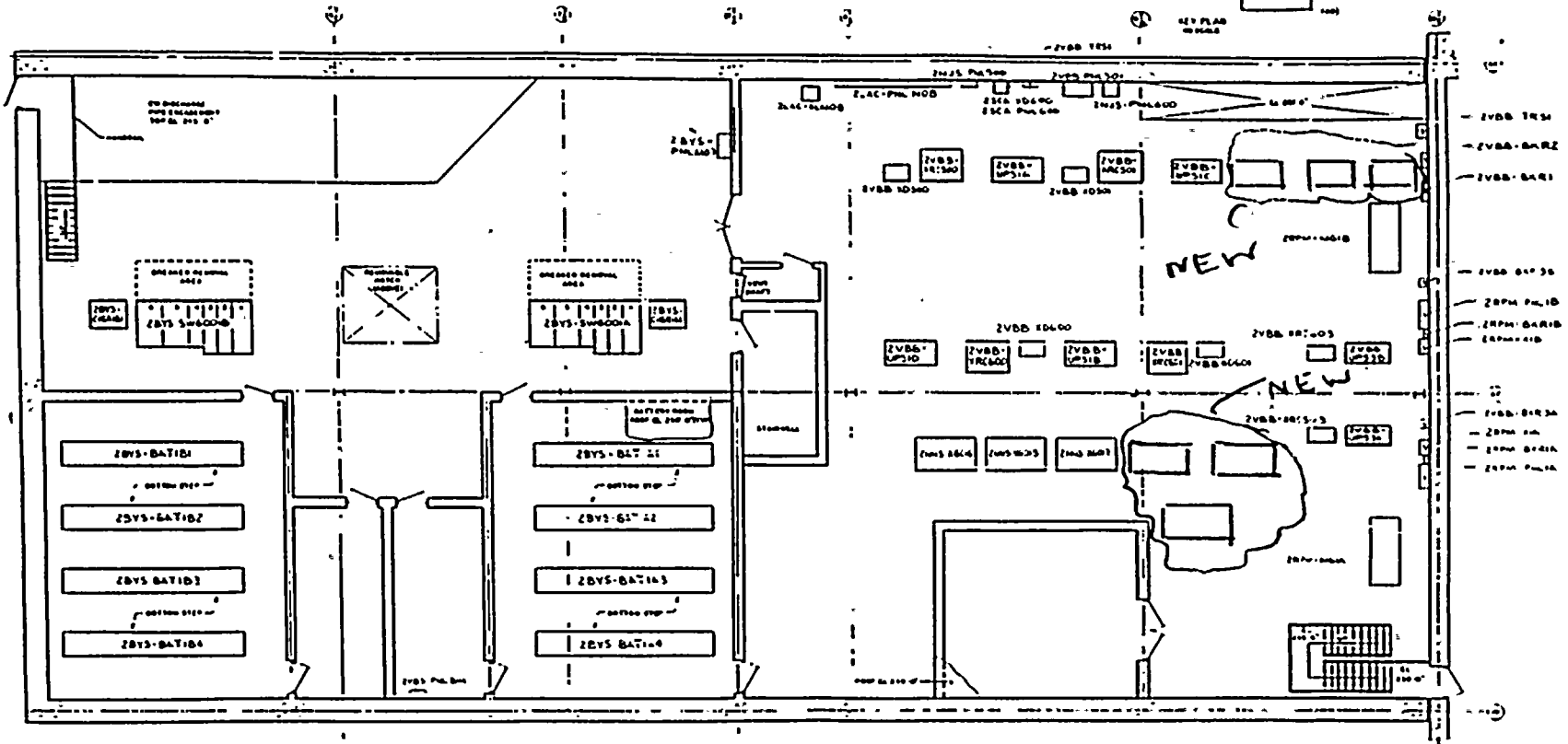
NOTE 1

NOTE 2

NOTE 3

- NOTES:
1. ITEMS ENCLOSED IN DASHED LINES ARE TO BE PROVIDED AND INSTALLED.
 2. NEW ANNUNCIATOR WINDOW
 3. LOADS WILL BE TRANSFERRED FROM 2LAS-PNL 016

OPTION #2



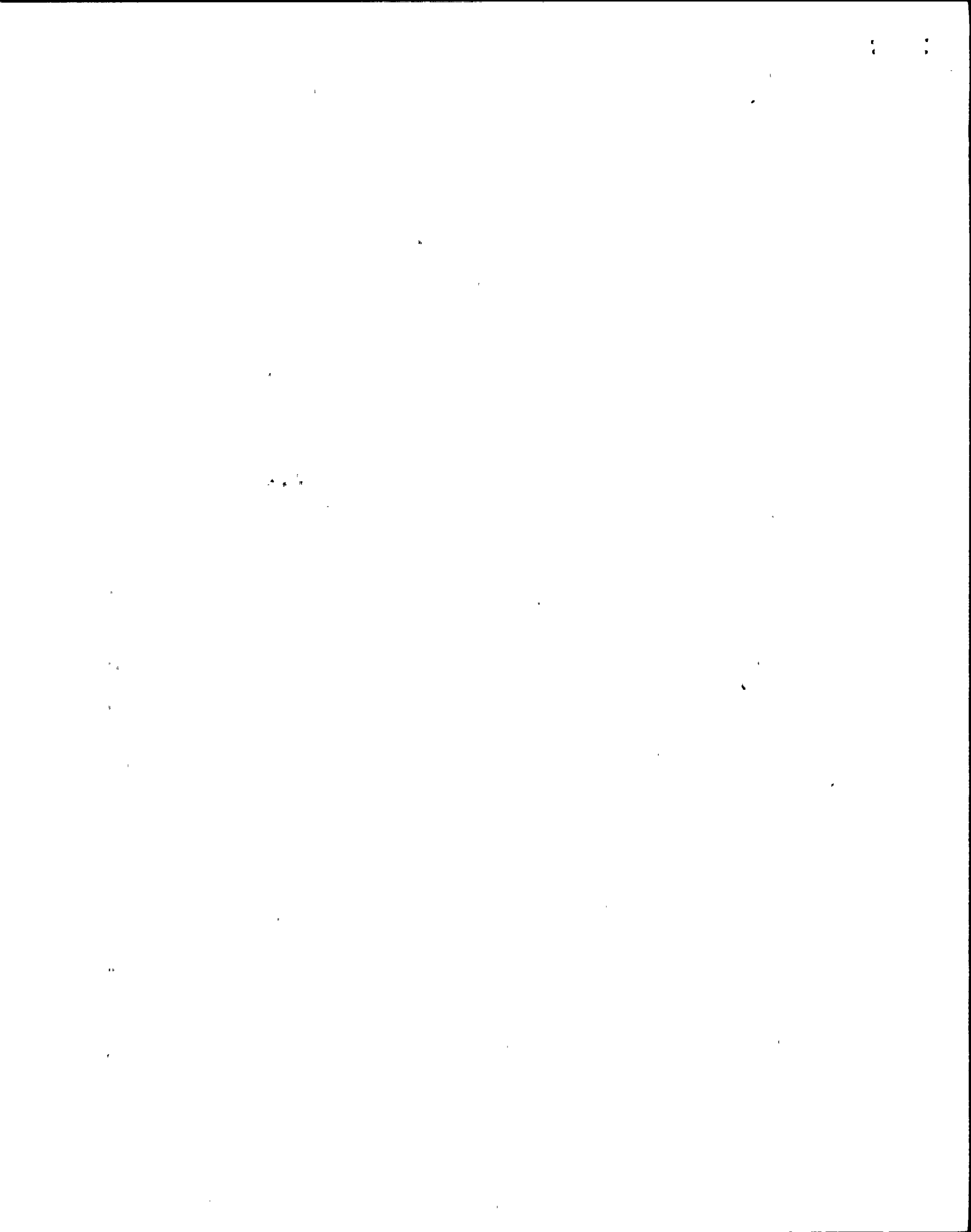
PLAN EL. 237'-0"

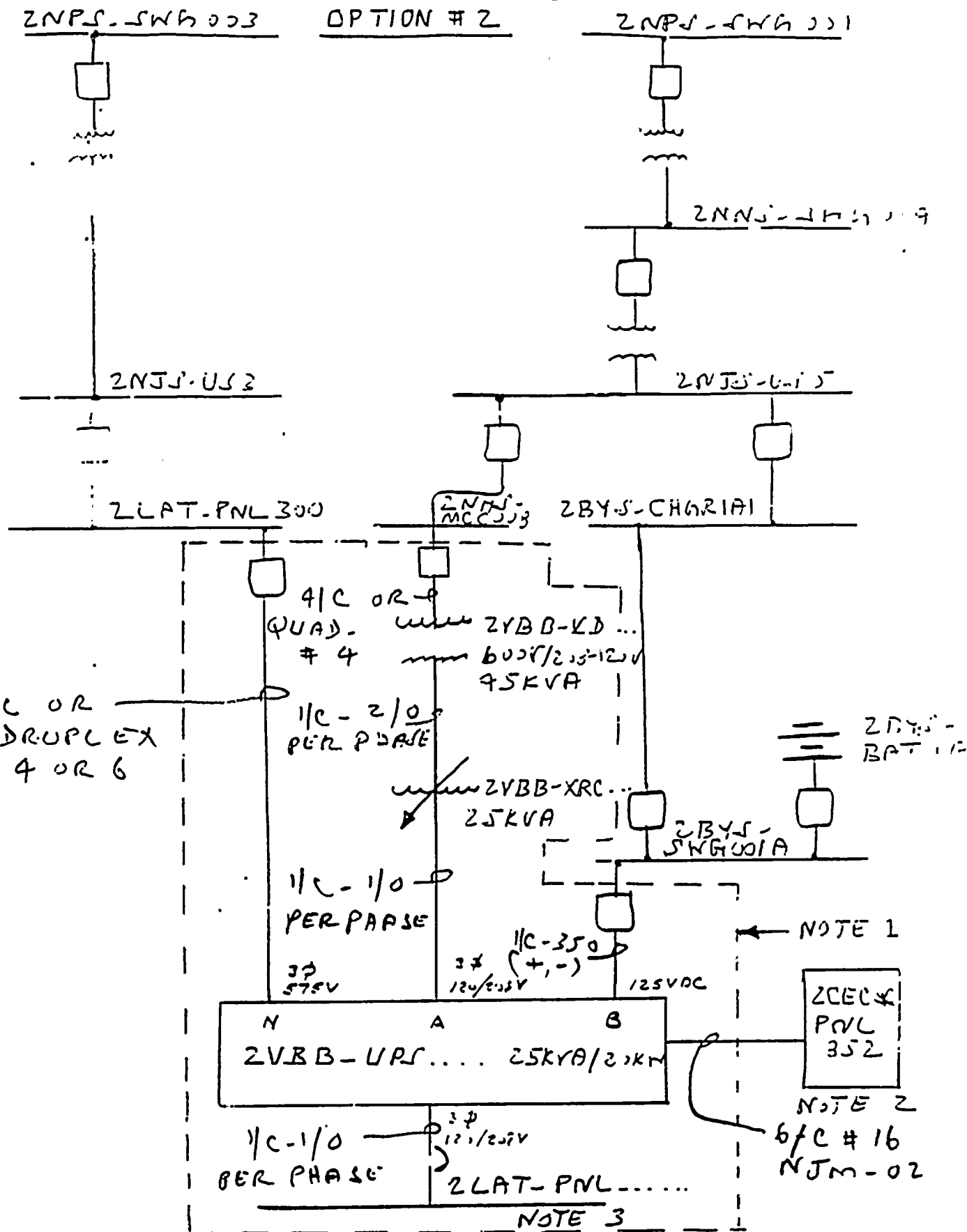
FIGURE 1.2-32
 GENERAL ARRANGEMENT
 NORMAL SWITCHGEAR
 BUILDING PLANS SHEET 1 OF 3
 NIAGARA MOHAWK POWER CORPORATION
 NINE MILE POINT-UNIT 2
 UPDATED SAFETY ANALYSIS REPORT

USAR REVISION 0

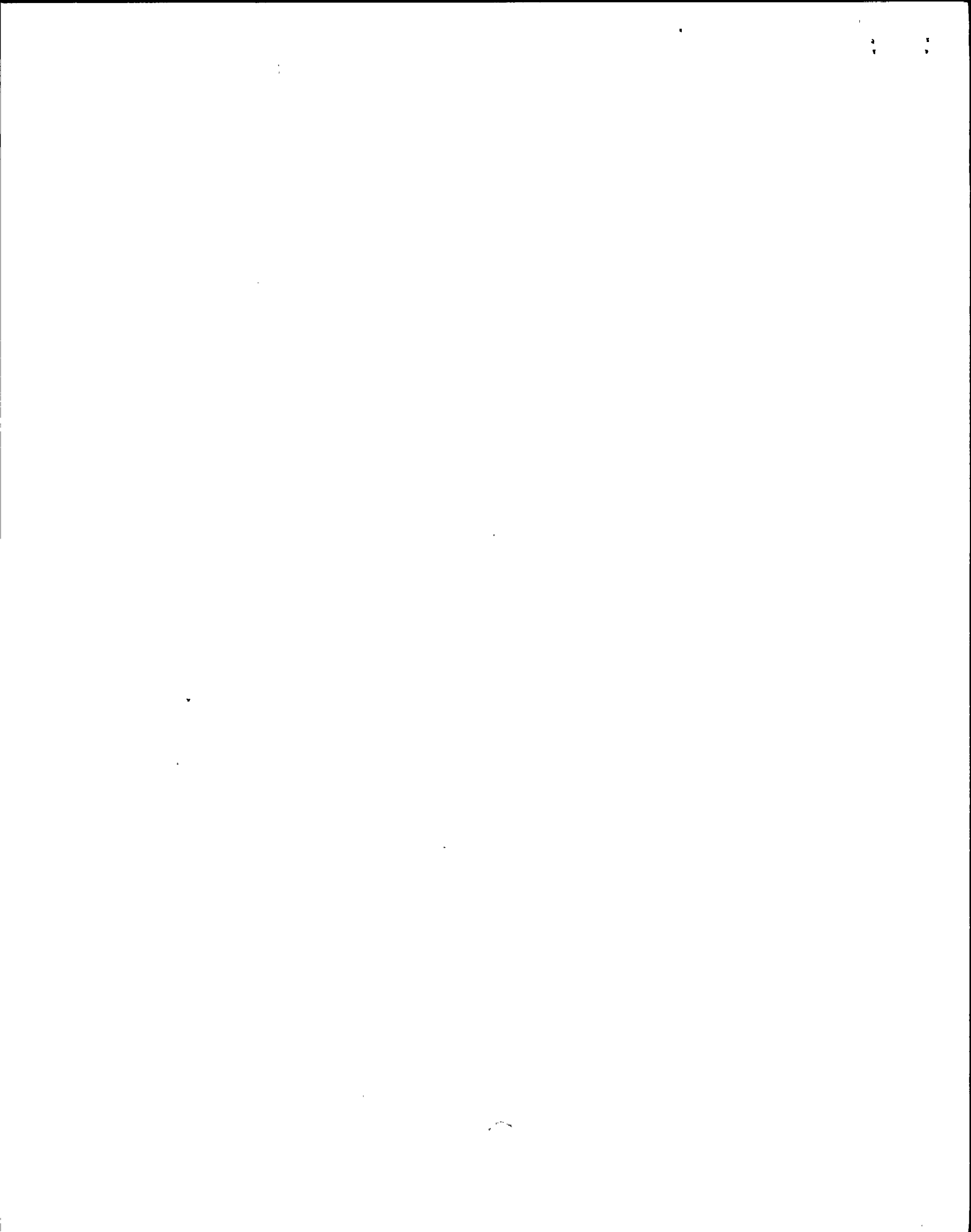
APRIL 1989

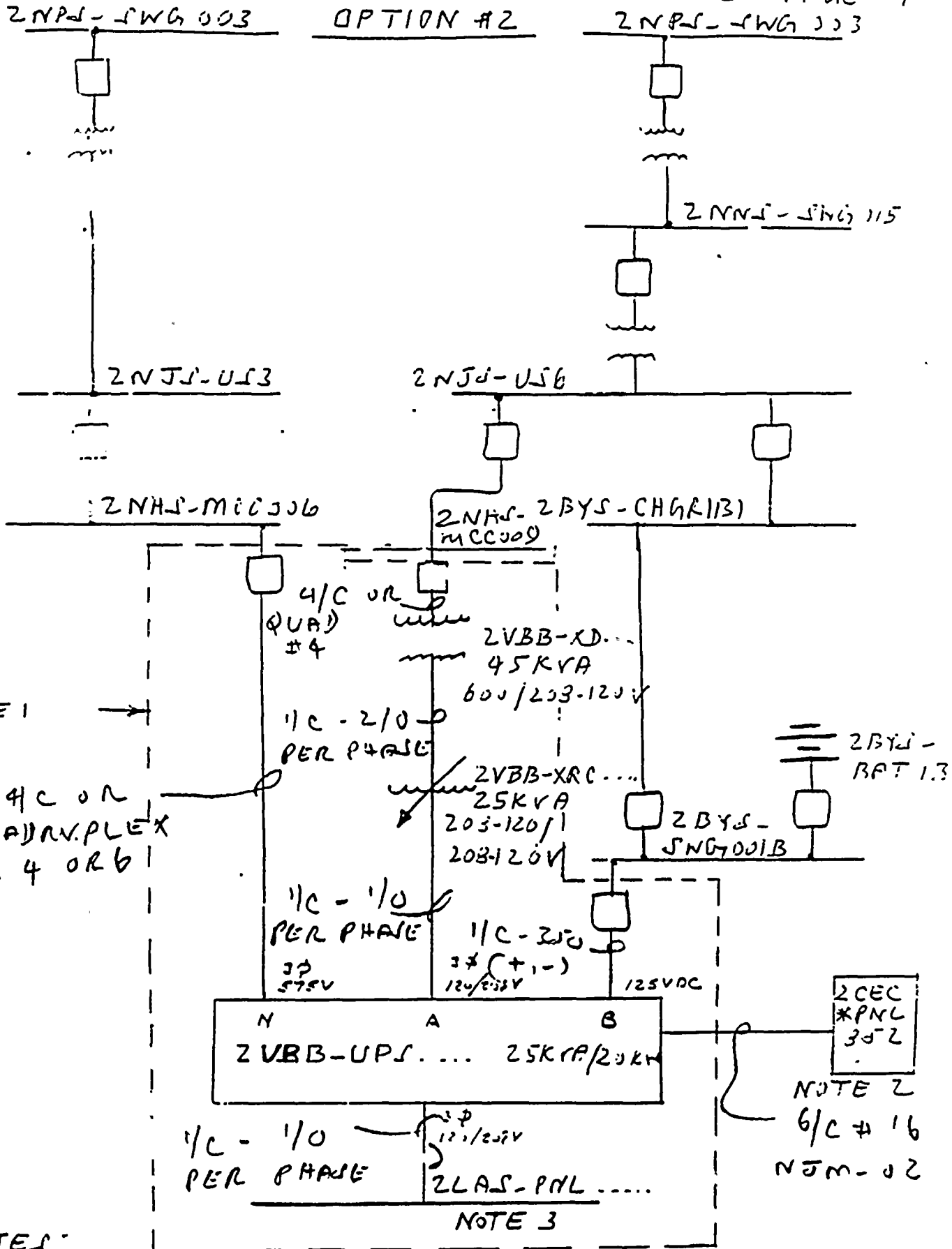
ATTACHMENT 2 PAGE 5-11-18





- NOTES: 1. ITEMS ENCLOSED IN DASHED LINES ARE TO BE PROCURED AND INSTALLED.
2. NEW ANNUNCIATOR WINDOW IN PNL 352 FOR ALARMS
3. LOADS WILL BE TRANSFERRED FROM 2LAT-PNL 017





NOTE 1

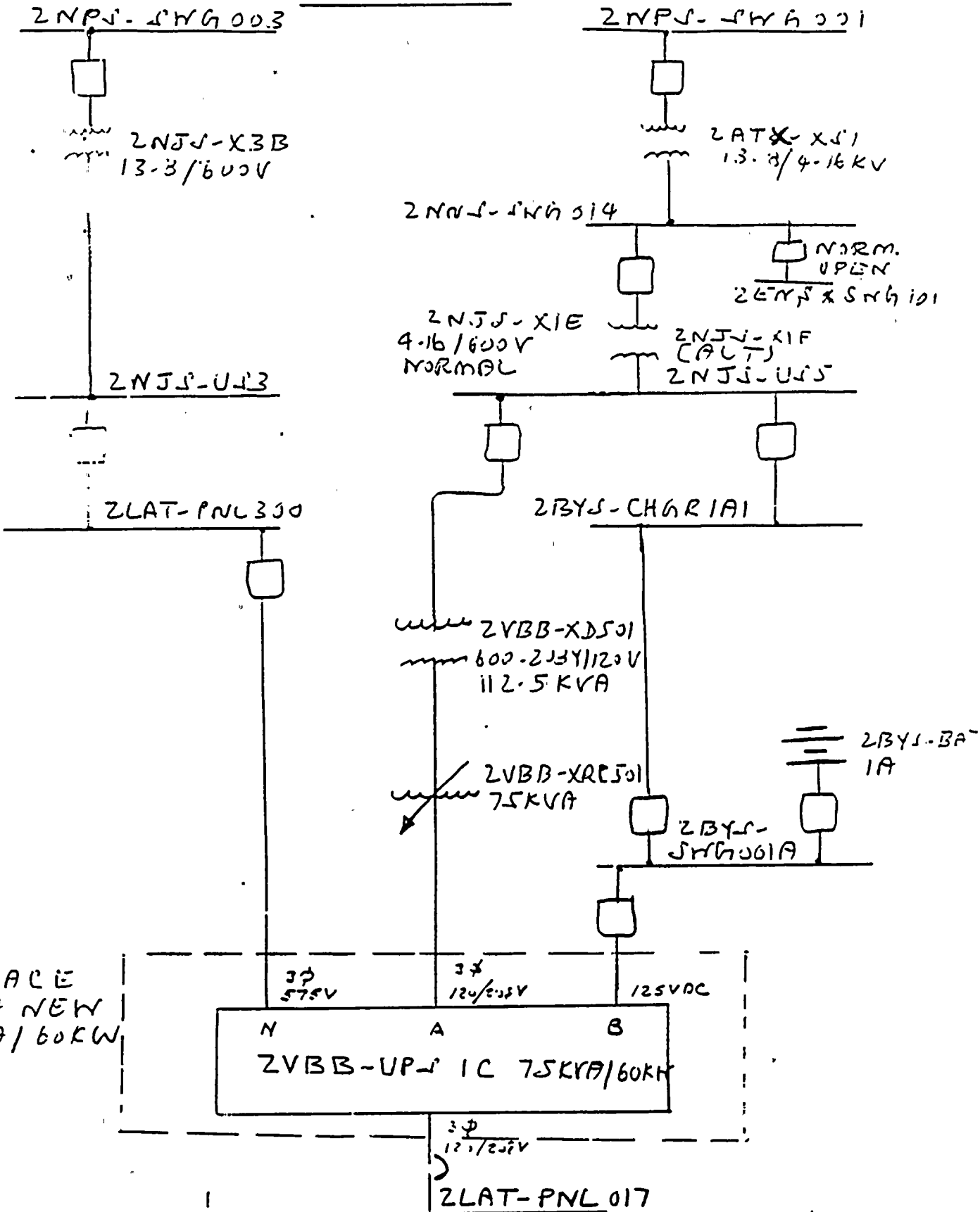
4/C OR QUADPLEX #4 OR 6

NOTE 2
6/C #16
NEM-02

NOTE 3

- NOTES
1. ITEMS ENCLOSED IN DASHED LINES ARE TO BE PROVIDED AND INSTALLED.
 2. NEW ANNUNCIATOR WINDOW
 3. LOADS WILL BE TRANSFERRED FROM 2LAS-PNL 016

OPTION # 3

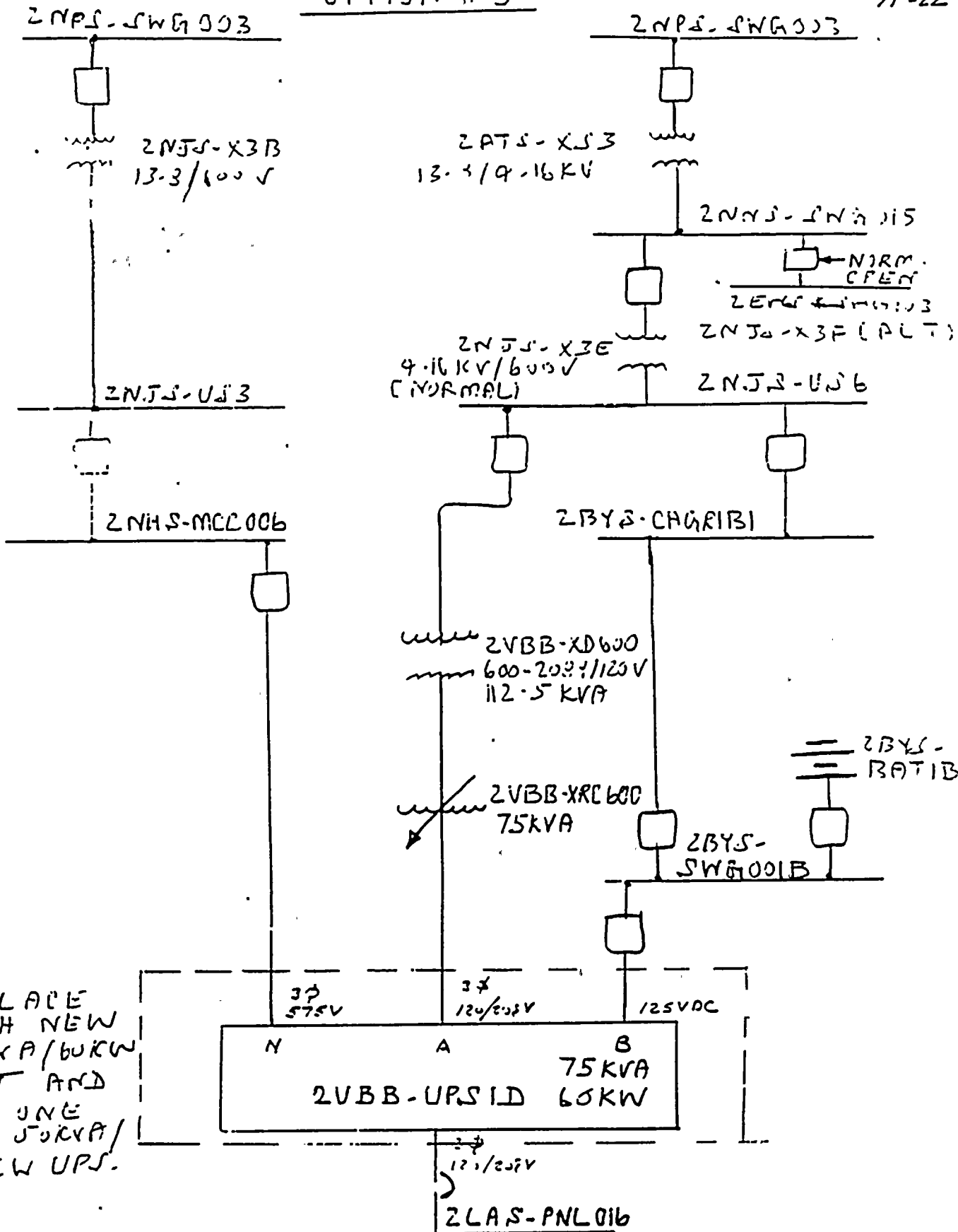


REPLACE WITH NEW 75KVA/60KW UNIT

PERFORM LOAD STUDY AND DETERMINE 130% OF LOADS CAN BE SHED.

- 2LAR-PNL001, 2LAT-PNL002
- 2LAX-PNL001, 2LAT-PNL004
- 2LAT-PNL005, 2LAN-PNL001
- 2LAW-PNL001, 2LAR-PNL005
- 2LAR-PNL001

OPTION # 3



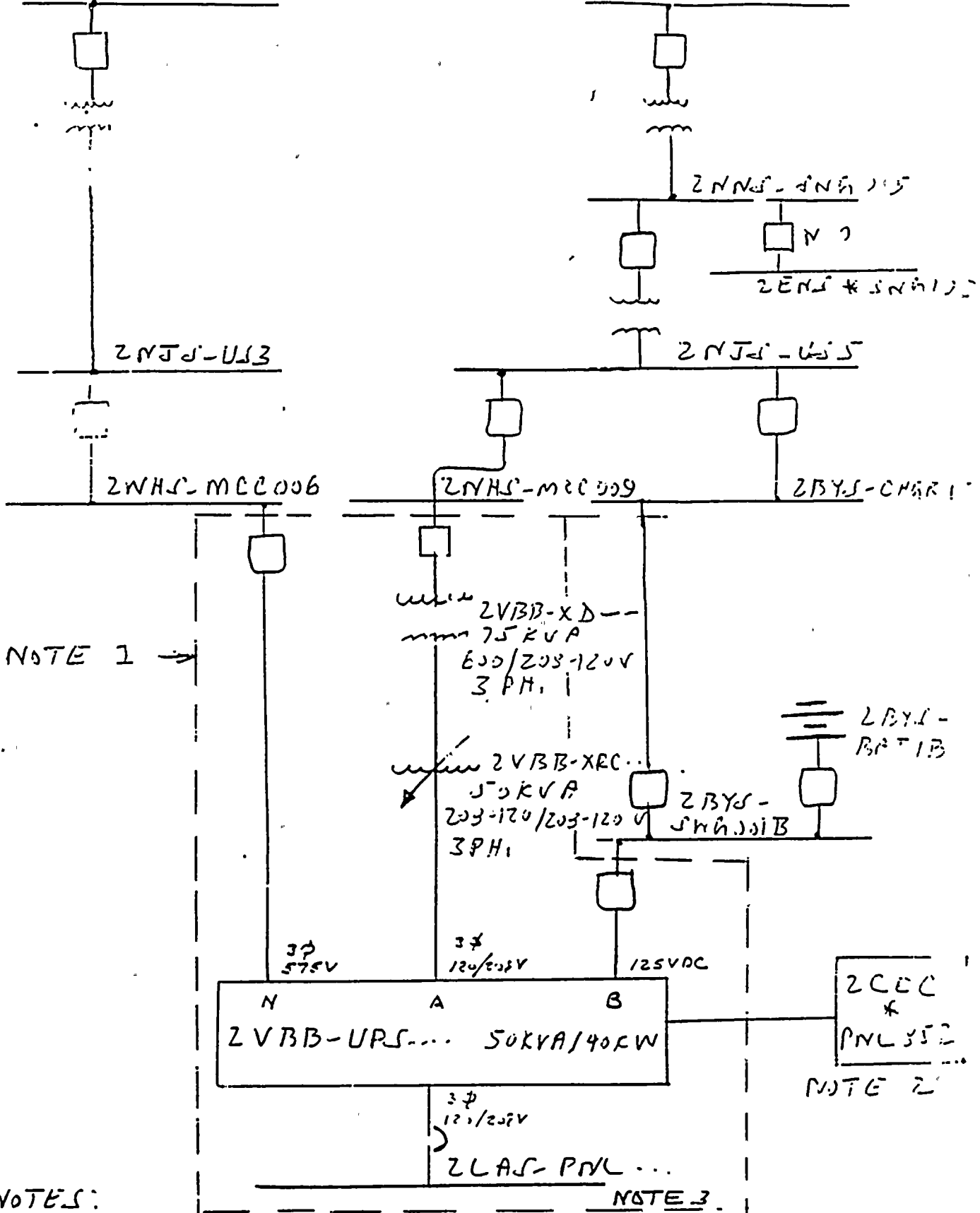
REPLACE WITH NEW 75KVA/60KW UNIT AND ADD ONE NEW 50KVA/40KW UPS.

PERFORM LOAD STUDY AND DETERMINE LOADS CAN BE SHED

2LAC-PNL U01	2LAT-PNLU03
2LAC-PNLU03	2LAT-PNLU01
2LAR-PNLU04	2LAR-PNLU03
2LAC-PNLU02	2LAR-PNLU06

ZNPS-SWG003 OPTION # 3

ZNPS-SWG003 11-25



NOTE 1 →

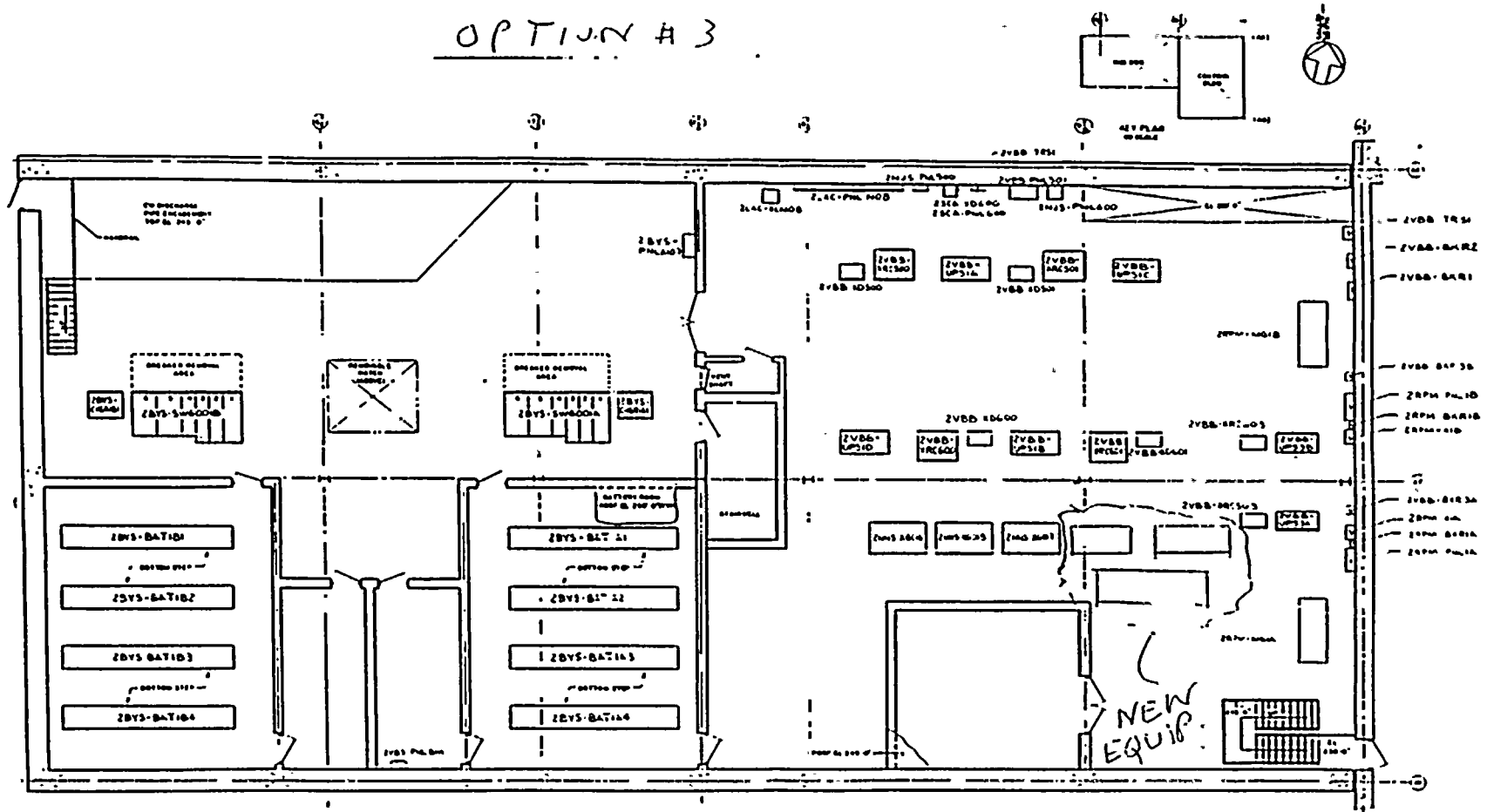
NOTE 2

NOTE 3

NOTES:

- 1.0 ITEMS ENCLOSED IN DASHED LINES ARE TO BE PROCURED AND -INSTALLED.
- 2.0 NEW ANNUNCIATOR WINDOW.
- 3.0 LOADS TO BE TRANSFERRED FROM ZLAT-PNL 017 AND ZLAS-PNL 010

OPTION #3



PLAN EL. 237'-0"

FIGURE 12-32
 GENERAL ARRANGEMENT
 NORMAL SWITCHGEAR
 BUILDING PLANS SHEET 1 OF 3
 NIAGARA MOHAWK POWER CORPORATION
 NINE MILE POINT-UNIT 2
 UPDATED SAFETY ANALYSIS REPORT

USAR REVISION 0

APRIL 1985

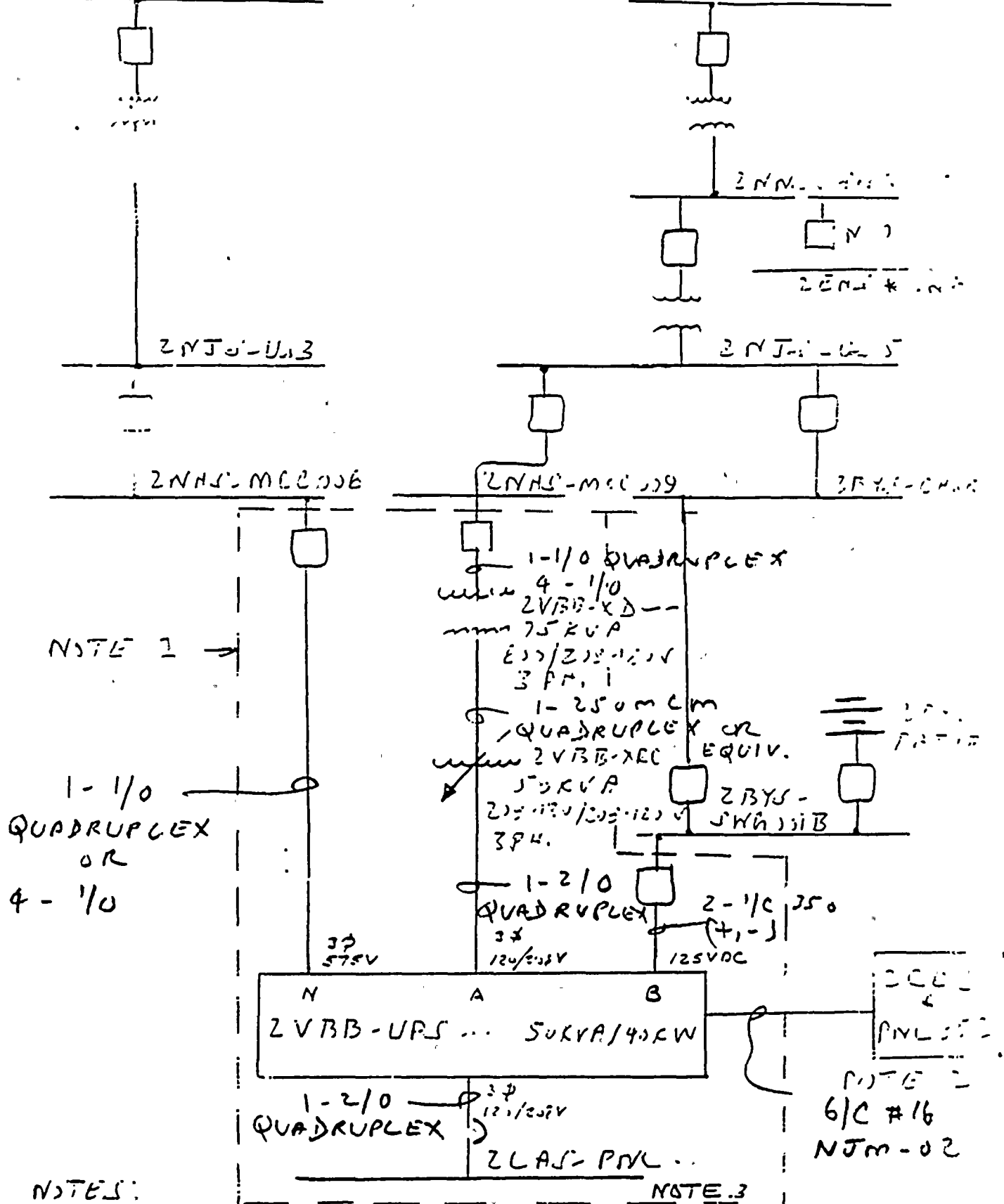
ATTACHMENT 3

PAGE 4

11-24

ZNFI-SWH 003 OPTION 4 3

ZNFI-SWH 003 11-25



NOTE 1 →
1-1/0
QUADRUPLEX
OR
4-1/0

- NOTES:
- 1.0 ITEMS ENCLOSED IN DASHED LINES ARE TO BE PROCURED AND INSTALLED.
 - 2.0 NEW ANNUNCIATOR WINDOW.
 - 3.0 LOADS TO BE TRANSFERRED FROM ZLAT-PNL 010 TO ZLAS-PNL 010
- NOTE 2
6/C #16
NJM-02
- NOTE 3

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MODIFICATION # 89-042

List of documents affected:

USAR IMPACT:

- 1.0 Section 8.3.1.1.2
- 2.0 Table 8.3-1
- 3.0 Table 8.3-11
- 4.0 Table 8.3-12
- 5.0 Figure 8.3-3 Sh. 1 and 2
- 6.0 Section 9.5.2.4
- 7.0 Section 9.5.3.3
- 8.0 Prepare LDCN
- 9.0 Assist PE to prepare SER

CALCULATION IMPACT:

- 1.0 EC-032 EDG Loading Calc.
- 2.0 EC-035 Heat Release in Normal Switchgear Bldg.
- 3.0 EC-044 Normal Station Battery Sizing (Bat. 1A)
- 4.0 EC-045 Normal Station Battery Sizing (Bat. 1B)
- 5.0 EC-049 DC short circuit calc.
- 6.0 EC-100 DC cable sizing
- 7.0 EC-111 600V Normal panel Bd. SC voltage drop
- 8.0 EC-114 75KVA UPS loads cable sizing
- 9.0 EC-118 Load study for Normal load centers
- 10.0 EC-123 Non-safety UPS sizing
- 11.0 EC-130 Cable verification for L cables
- 12.0 EC-131 Cable verification for K level cables
- 13.0 EC-143 Short circuit study (UPS 1C)
- 14.0 AE-003 Molded case circuit breaker trip setting

PROCUREMENT ACTIVITY:

- 1.0 Revise Spec.E-147 to include various sizes of UPS units
- 2.0 Prepare requisition and PREF
- 3.0 Issue requisition for quote
- 4.0 Obtain Quote
- 5.0 Evaluate quote and determine vendor
- 6.0 Issue Purchase Order
- 7.0 Receive vendor drawings, manuals
- 8.0 Interface vendor info. with other affected disciplines
- 9.0 Resolve comments with the vendor
- 10.0 Obtain final drawings and issue for construction
- 11.0 Procurement of Cables and circuit breakers if required

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DESIG DWGS. IMPACT:

- 1.0 EE-27AA Arrangement Normal swgr.bldg. EL-237'
- 2.0 EE-33J Grounding system normal swgr. bldg.
- 3.0 EE-34G Cable tray arrangement Normal swgr. bldg.
- 4.0 EE-34HR, HS, and HT Cable tray Ident.
- 5.0 EE-37AP and AQ Arrangement Elec. Sleeves.
- 6.0 EE-42R Conduit Plan Normal swgr. bldg.
- 7.0 EE-1BB One-line diagram 2LAT-PNL300
- 8.0 EE-1X One-line diagram 2NJS-US5
- 9.0 EE-1BR One- line diagram 125V DC
- 10.0 EE-1BX One-line diagram Low voltage pwr. distn.
- 11.0 EE-1AH One-line diagram 2NHS-MCC006
- 12.0 EE-1Y One-line diagram 2NJS-US6
- 13.0 EE-1BA One-line diagram Normal bus pwr. distn.
- 14.0 EE-M01C Plant master one-line
- 15.0 EE-M01D Plant master one-line
- 16.0 EE-M01G Plant master one-line
- 17.0 EE-11AA External Connection diagram UPS 1A thru 1D
- 18.0 EE-11DB External connection diagram UPS
- 19.0 EE-10IHA518 Annunciator system
- 20.0 EE-10ANN608 Window arrgt.
- 21.0 INST. MANUAL 101.710.343.77223
- 22.0 Vendor dwgs. 110.071.306
- 23.0 Cable and raceway systems (CRS)
- 24.0 Various lighting plan drawings
- 25.0 Essential lighting panel schedules

Long Lead Time Material to be procured :

OPTION# 1 :

- 1.0 2 - 75KVA/60KW UPS units

OPTION# 2 :

- 1.0 2 - 75KVA/60KW UPS units
- 2.0 2 - 25KVA/20KW UPS units
- 3.0 4 - 600V rated Molded case circuit breakers
- 4.0 2 - 125V DC power circuit breakers
- 5.0 2 - Lighting distribution panels if required
- 6.0 Power cables of various sizes

OPTION# 3 :

- 1.0 2 - 75KVA/60KW UPS units
- 2.0 1 - 50KVA/40KW UPS unit
- 3.0 2 - 600V rated Molded case circuit breakers
- 4.0 1 - 125V DC power circuit breaker
- 5.0 1 - Lighting distribution panel if required
- 6.0 Power cables of various sizes

ESTIMATE SUMMARY

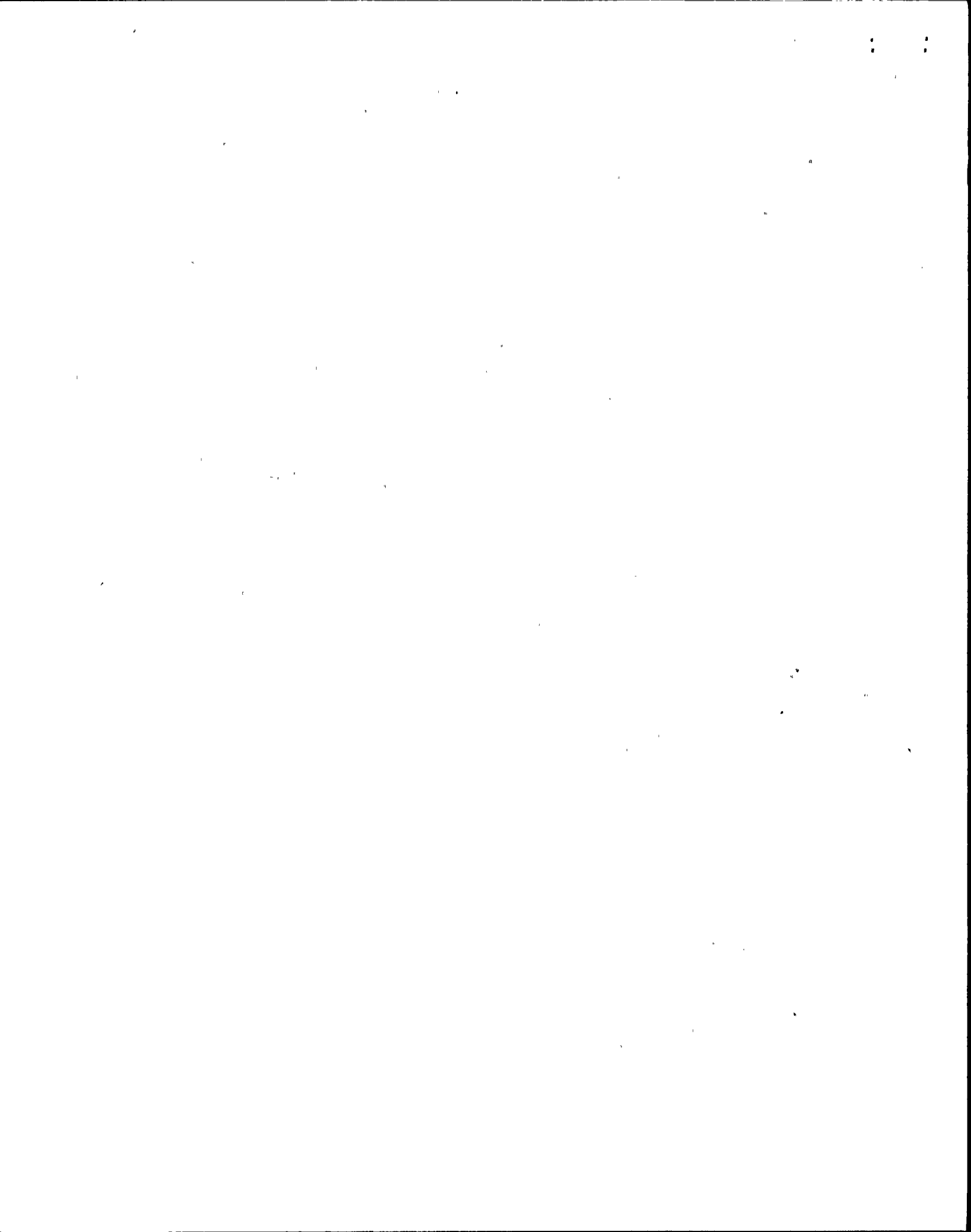
 Est No: 89042A REPL 75KVA 2VBB UPS 1C & 1D Bid Due: 02/25/91
 Client Company: NINE MILE POINT - UNIT 2 Client Name: MARTY RITZNER
 Job Location: SWITCHGEAR BLDG Client Phone: (315)428-7032
 Estimate By: JRM Checked By: RNB

PHASE --> From: 89 Thru: 92

Div	Description	Mat'l (\$)	<----Labor-----> (Hr) (\$)		S/C (\$)	Equip (\$)	<----Other-----> (Hr) (\$)		TOTAL (\$)
A2	210 ENGR LAB NUC-NMPC	0	2154	53643	0	0	0	0	53643
B-	200 OTHER LABOR NUC-NMPC	0	340	7176	0	0	0	0	7176
C1	ENG CONSULTING SERVICES:	0	0	0	71154	0	0	0	71154
D1	CONTRACTOR SERVICES	0	0	0	161902	0	0	0	161902
E1	PURCHASED MATERIAL:	185350	0	0	0	0	0	0	185350
F1	EMPLOYEE EXPENSES:	0	0	0	0	0	80	2000	2000
G1	RENTAL EXPENSES:	0	0	0	0	0	0	5000	5000
H4	STOCK MATERIALS:	49000	0	0	0	0	0	0	49000
Z0	CONTINGENCY	0	0	0	0	0	0	153275	153275
ESTIMATE TOTAL..		234350	2494	60819	233056	0	80	160275	688500

COMMENTS:

1. Design by NMPC/Consultant.
2. Installation by CBI.
3. Overhead charges for CBI are not included in funds listed under division D1 CONTRACTOR SERVICES.
4. Items marked with "*" indicates funds expended prior to this estimate.



NIAGARA MOHAWK POWER CORPORATION

03/11/91 CPR/EST

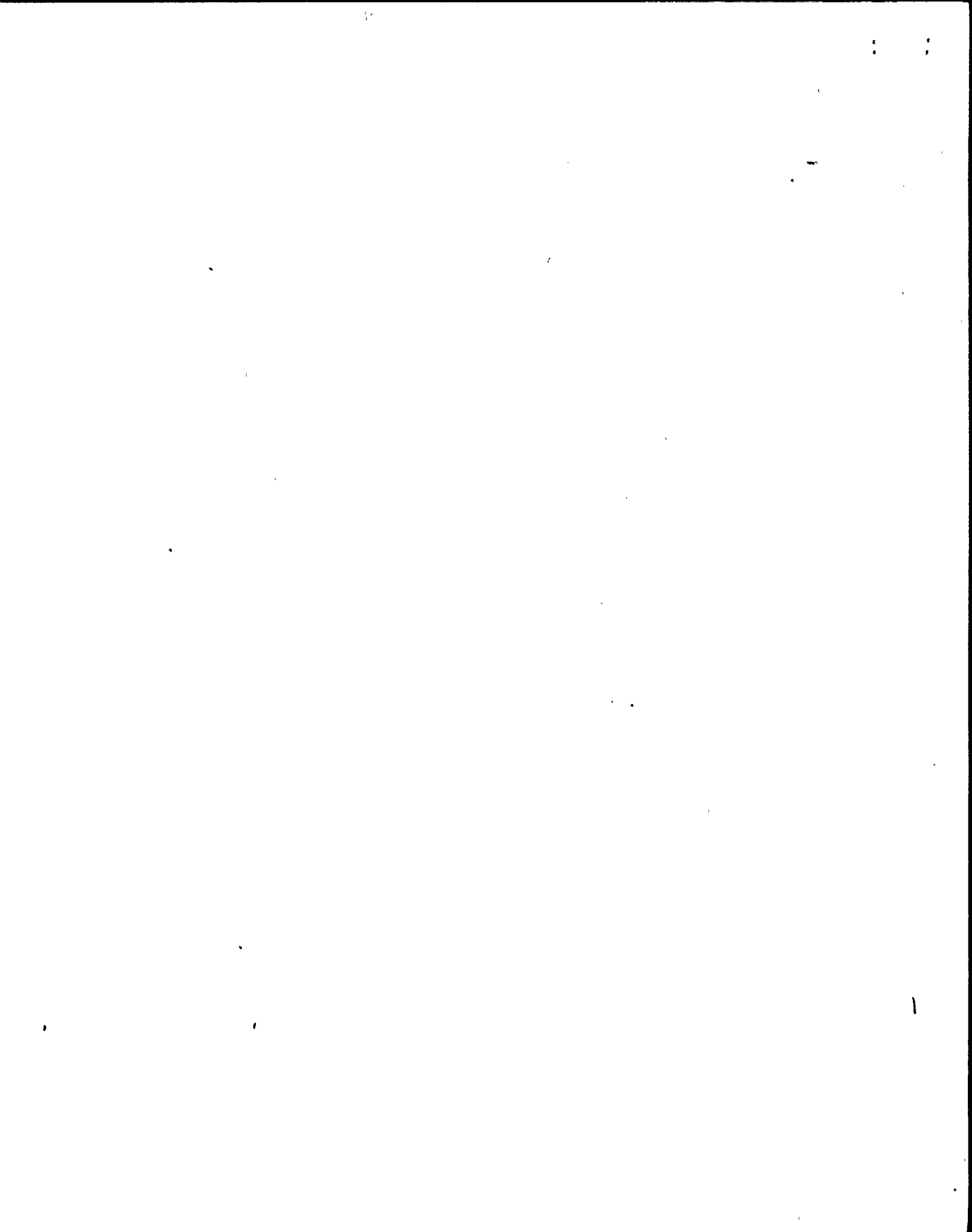
Page 1

ESTIMATE SUMMARY

Est No: 89042A REPL 75KVA 2VBB UPS IC & 1D Bid Due: 02/25/91
 Client Company: NINE MILE POINT - UNIT 2 Client Name: MARTY RITZNER
 Job Location: SWITCHGEAR BLDG Client Phone: (315)428-7032
 Estimate By: JRM Checked By: RNB

PHASE --> 92

Div	Description	Mat'l (\$)	<----Labor----> (Hr)	(\$)	S/C (\$)	Equip (\$)	<----Other----> (Hr)	(\$)	TOTAL (\$)
A2	210 ENGR LAB NUC-NMPC	0	374	9510	0	0	0	0	9510
B-	200 OTHER LABOR NUC-NMPC	0	168	3632	0	0	0	0	3632
C1	ENG CONSULTING SERVICES:	0	0	0	50312	0	0	0	50312
D1	CONTRACTOR SERVICES	0	0	0	159080	0	0	0	159080
E1	PURCHASED MATERIAL:	185350	0	0	0	0	0	0	185350
F1	EMPLOYEE EXPENSES:	0	0	0	0	0	40	1000	1000
G1	RENTAL EXPENSES:	0	0	0	0	0	0	5000	5000
H4	STOCK MATERIALS:	47000	0	0	0	0	0	0	47000
Z0	CONTINGENCY	0	0	0	0	0	0	138310	138310
ESTIMATE TOTAL..		232350	542	13142	209392	0	40	144310	599194



NIAGARA MOHAWK POWER CORPORATION

03/11/91 CPR/EST

Page 1

ESTIMATE SUMMARY

 Est No: 89042A REPL 75KVA 2VBB UPS 1C & 1D Bid Due: 02/25/91
 Client Company: NINE MILE POINT - UNIT 2 Client Name: MARTY RITZNER
 Job Location: SWITCHGEAR BLDG Client Phone: (315)428-7032
 Estimate By: JRM Checked By: RNB

PHASE --> 91

Div	Description	Mat'l (\$)	<----Labor-----> (Hr)	(\$)	S/C (\$)	Equip (\$)	<----Other-----> (Hr)	(\$)	TOTAL (\$)
A2	210 ENGR LAB NUC-NMPC	0	1740	43210	0	0	0	0	43210
B-	200 OTHER LABOR NUC-NMPC	0	172	3544	0	0	0	0	3544
D1	CONTRACTOR SERVICES	0	0	0	130	0	0	0	130
F1	EMPLOYEE EXPENSES:	0	0	0	0	0	40	1000	1000
H4	STOCK MATERIALS:	2000	0	0	0	0	0	0	2000
Z0	CONTINGENCY	0	0	0	0	0	0	14965	14965
ESTIMATE TOTAL..		2000	1912	46754	130	0	40	15965	64849

1990-11-10

NIAGARA MOHAWK POWER CORPORATION

03/11/91 CPR/EST

Page 1

ESTIMATE SUMMARY

Est No: 89042A REPL 75KVA 2VBB UPS 1C & 1D Bid Due: 02/25/91
 Client Company: NINE MILE POINT - UNIT 2 Client Name: MARTY RITZNER
 Job Location: SWITCHGEAR BLDG Client Phone: (315)428-7032
 Estimate By: JRM Checked By: RNB

PHASE --> 90

Div	Description	Mat'l (\$)	<----Labor-----> (Hr) (\$)		S/C (\$)	Equip (\$)	<----Other-----> (Hr) (\$)		TOTAL (\$)
C1	ENG CONSULTING SERVICES:	0	0	0	4140	0	0	0	4140
D1	CONTRACTOR SERVICES	0	0	0	2692	0	0	0	2692
	ESTIMATE TOTAL..	0	0	0	6832	0	0	0	6832

10/10/10

1

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1

ESTIMATE SUMMARY

 Est No: 89042A REPL 75KVA 2VBB UPS 1C & 1D Bid Due: 02/25/91
 Client Company: NINE MILE POINT - UNIT 2 Client Name: MARTY RITZNER
 Job Location: SWITCHGEAR BLDG Client Phone: (315)428-7032
 Estimate By: JRM Checked By: RNB

PHASE --> 89

Div	Description	Mat'l (\$)	<----Labor-----> (Hr)	(\$)	S/C (\$)	Equip (\$)	<----Other-----> (Hr)	(\$)	TOTAL (\$)
A2	210 ENGR LAB NUC-NMPC	0	40	923	0	0	0	0	923
C1	ENG CONSULTING SERVICES:	0	0	0	16702	0	0	0	16702
	ESTIMATE TOTAL..	0	40	923	16702	0	0	0	17625

11/11/11

11/11/11

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11/11/11

ESTIMATE DETAIL - TABLE FORM

 Est No 89042A REPL 75KVA 2VBB UPS 1C & 1D Bid Due 02/25/91
 Client Company NINE MILE POINT - UNIT 2 Client Name MARTY RITZNER
 Job Location SWITCHGEAR BLDG Client Phone (315)428-7032
 Estimate By JRM Checked By RNB

PHASE --> From: 89 Thru: 92

Cost Code	Description	Quantity	Un Phs	<-----Mat'l----->		<-----Labor----->		<-----S/C----->		Equip (\$)	Other (\$)	Total (\$)
				Unit \$	Tot \$	Unit \$	Tot \$	Unit \$	Tot \$			
*** Division A2												
A20000	*210 ENGR LAB NUC-NMPC	38.35	LOT 89	0.00	0	23.00	882	0.00	0	0	0	882
A23015	IS - CONST N2	20.00	MHR 91	0.00	0	24.00	480	0.00	0	0	0	480
A23051	*NE - COST & SCHED	1.64	MHR 89	0.00	0	25.00	41	0.00	0	0	0	41
A23051	NE - COST & SCHED	100.00	MHR 91	0.00	0	27.00	2700	0.00	0	0	0	2700
A23051	NE - COST & SCHED	20.00	MHR 92	0.00	0	28.00	560	0.00	0	0	0	560
A23091	NE - PROJ MGNT N2	400.00	MHR 91	0.00	0	27.00	10800	0.00	0	0	0	10800
A23091	NE - PROJ MGNT N2	200.00	MHR 92	0.00	0	27.00	5400	0.00	0	0	0	5400
A23092	NE - MECH DSG N2	50.00	MHR 91	0.00	0	24.00	1200	0.00	0	0	0	1200
A23093	NE - ELECT DSG N2	80.00	MHR 91	0.00	0	24.00	1920	0.00	0	0	0	1920
A23093	NE - ELECT DSG N2	80.00	MHR 92	0.00	0	24.00	1920	0.00	0	0	0	1920
A23093	LOAD STUDY-ELECT DSG N2	500.00	MHR 91	0.00	0	24.00	12000	0.00	0	0	0	12000
A23093	LOAD STUDY REWORK DSGN E	500.00	MHR 91	0.00	0	24.00	12000	0.00	0	0	0	12000
A23094	NE - C/S N2	50.00	MHR 91	0.00	0	23.00	1150	0.00	0	0	0	1150
A23094	NE - C/S N2	50.00	MHR 92	0.00	0	23.00	1150	0.00	0	0	0	1150
A23096	NE - SITE ENGR N2	40.00	MHR 91	0.00	0	24.00	960	0.00	0	0	0	960
A28027	RECORDS MGNT (SITE)	24.00	MHR 92	0.00	0	20.00	480	0.00	0	0	0	480
Subtotal Divison A2				0		53643		0	0	0	0	53643
*** Division B-												
B-0600	QA OPER N1 460600	40.00	MHR 91	0.00	0	22.00	880	0.00	0	0	0	880
B-1255	FIRE PROT N2	16.00	MHR 91	0.00	0	15.00	240	0.00	0	0	0	240
B-1257	ELECT MAINT N2	20.00	MHR 91	0.00	0	20.00	400	0.00	0	0	0	400
B-1257	ELECT MAINT N2	80.00	MHR 92	0.00	0	21.00	1680	0.00	0	0	0	1680
B-1258	I & C N2	40.00	MHR 91	0.00	0	21.00	840	0.00	0	0	0	840
B-1258	I & C N2	80.00	MHR 92	0.00	0	22.00	1760	0.00	0	0	0	1760
B-1264	TECH SUPT N2	40.00	MHR 91	0.00	0	20.00	800	0.00	0	0	0	800
B-1387	ADMIN SVCS/GEN BDGTS	16.00	MHR 91	0.00	0	24.00	384	0.00	0	0	0	384
B-1387	ADMIN SVCS/GEN BDGTS	8.00	MHR 92	0.00	0	24.00	192	0.00	0	0	0	192
Subtotal Divison B-				0		7176		0	0	0	0	7176
*** Division C1												
C14400	*ENG CONSULTING SERVICES	35.42	MHR 89	0.00	0	0.00	0	65.00	2302	0	0	2302
C14401	*SPEERCONSULTANT	5.89	MHR 90	0.00	0	0.00	0	45.00	265	0	0	265
C14409	*TRANSPORTATION	44.00	MHR 90	0.00	0	0.00	0	45.00	1980	0	0	1980
C14410	*SWEC	228.57	MHR 89	0.00	0	0.00	0	63.00	14400	0	0	14400
0	*SWEC	29.15	MHR 90	0.00	0	0.00	0	65.00	1895	0	0	1895

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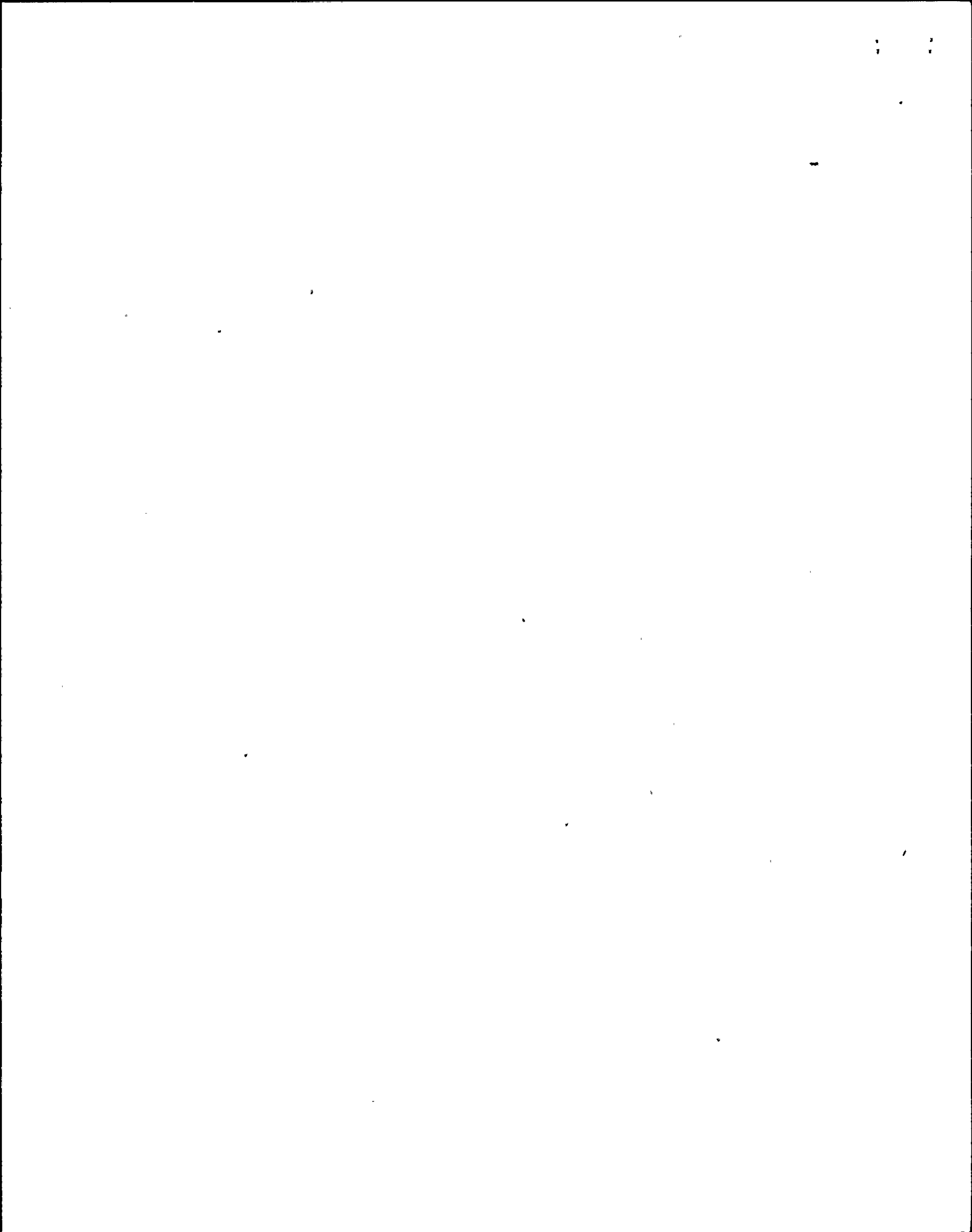
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ESTIMATE DETAIL - TABLE FORM

Cost Code	Description	Quantity	Un	Phs	<-----Mat'l----->		<-----Labor----->		<-----S/C----->		Equip (\$)	Other (\$)	Total (\$)
					Unit \$	Tot \$	Unit \$	Tot \$	Unit \$	Tot \$			
C14410	SWEC (ELECT)	662.00	MHR	92	0.00	0	0.00	0	76.00	50312	0	0	50312
Subtotal Divison C1						0		0		71154	0	0	71154
*** Division D1													
D17001	*SWEC-CONSTR:SP.SERVICE	24.34	MHR	90	0.00	0	0.00	0	67.00	1631	0	0	1631
D17003	*SPEERCONSU	21.80	MHR	90	0.00	0	0.00	0	45.00	981	0	0	981
D17012	CBI LOAD STUDY REWORK	1800.00	MHR	92	0.00	0	0.00	0	71.00	127800	0	0	127800
D17014	CARP-EQ PAD	20.00	MHR	92	0.00	0	0.00	0	60.00	1200	0	0	1200
D17014	CARP-SCAFFOLDING	20.00	MHR	92	0.00	0	0.00	0	60.00	1200	0	0	1200
D17015	LABRRS-PAD INSTALLATION	40.00	MHR	92	0.00	0	0.00	0	60.00	2400	0	0	2400
D17020	CPS ELEC:INSTLN	40.00	MHR	92	0.00	0	0.00	0	60.00	2400	0	0	2400
D17020	CPS ELEC:UPS REMOVAL	120.00	MHR	92	0.00	0	0.00	0	60.00	7200	0	0	7200
D17020	CPS ELEC:EQ INSTLN	80.00	MHR	92	0.00	0	0.00	0	60.00	4800	0	0	4800
D17020	CPS ELEC: TERMINATIONS C	100.00	MHR	92	0.00	0	0.00	0	60.00	6000	0	0	6000
D17303	*SPEERCONSU	1.78	MHR	90	0.00	0	0.00	0	45.00	80	0	0	80
D17303	*SPEERCONSU	2.71	MHR	91	0.00	0	0.00	0	48.00	130	0	0	130
D17313	SWEC - STRUC	40.00	MHR	92	0.00	0	0.00	0	76.00	3040	0	0	3040
D17314	SWEC - INSTR	40.00	MHR	92	0.00	0	0.00	0	76.00	3040	0	0	3040
Subtotal Divison D1						0		0		161902	0	0	161902
*** Division E1													
E17500	75KVA UPS:	2.00	EA	92	85000.00	170000	0.00	0	0.00	0	0	0	170000
E17500	LOAD STUDY REWORK MATERI	1.00	LOT	92	15350.00	15350	0.00	0	0.00	0	0	0	15350
Subtotal Divison E1						185350		0		0	0	0	185350
*** Division F1													
F18000	EMPLOYEE EXPENSES:	40.00	EA	91	0.00	0	0.00	0	0.00	0	0	1000	1000
F18000	EMPLOYEE EXPENSES:	40.00	EA	92	0.00	0	0.00	0	0.00	0	0	1000	1000
Subtotal Divison F1						0		0		0	0	2000	2000
*** Division G1													
G19000	RENTAL CHERRY PICKER	1.00	EA	92	0.00	0	0.00	0	0.00	0	0	5000	5000
Subtotal Divison G1						0		0		0	0	5000	5000
*** Division H4													
H40000	STOCK MATERIALS:	1.00	LOT	91	2000.00	2000	0.00	0	0.00	0	0	0	2000
H41000	STORES HANDLING:	1.00	LOT	92	47000.00	47000	0.00	0	0.00	0	0	0	47000
Subtotal Divison H4						49000		0		0	0	0	49000
*** Division Z0													
.....000	CONTINGENCY	30.00	†	91	0.00	0	0.00	0	0.00	0	0	14965	14965

Continued next page..



NIAGARA MOHAWK POWER CORPORATION

03/11/91 CPR/EST

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ESTIMATE DETAIL - TABLE FORM

Cost Code	Description	Quantity	Un	Phs	<-----Mat'l----->		<-----Labor----->		<-----S,C----->		Equip (\$)	Other (\$)	Total (\$)
					Unit \$	Tot \$	Unit \$	Tot \$	Unit \$	Tot \$			
200000	CONTINGENCY	30.00	3	92	0.00	0	0.00	0	0.00	0	0	138310	138310
	Subtotal Divison 20					0		0		0	0	153275	153275
	TOTAL (Before Markups)..					234350		60819		233056	0	160275	688500

MAKING A FORM

BENEFIT - COST SUMMARY

PROJECT TITLE: REPLACE 75KVA 2VBB UPS 1C & 1D

0

System/Bldg:	SWITCHGEAR BLDG	B/C Rev # :	0
Prepared By:	J.R. MATHEWS	MOD #	89-042A
Project Eng:	M. RITZNER	Unit #	2
Prep. Date:	February 26, 1991	Major Order #	3458
Actual ISD:	1992	Budget #	5392
Project Life:	37 Years	Type :	CAPITAL

CAPITAL COST OF PROJECT

S5) DIRECT COSTS (C4)	-----	\$716,497
S6) INDIRECT COSTS (C6)	-----	\$385,553
S7) AFDC (C6)	-----	\$79,223
=====		
S9) TOTAL CAPITAL INVESTMENT	1992 Dollars-----	\$1,181,273
=====		
ANNUAL LEVELIZED REVENUE TAXES	-----	\$4,132
=====		
TOTAL ANNUAL LEVELIZED CAPITAL COSTS	-----	\$353,797

EXPENSES

1992 Dollars

TOTAL DIRECT AND INDIRECT EXPENSE COSTS	-----	\$0
COST OF REPLACEMENT POWER	-----	\$0
FUTURE RETIREMENT COSTS	-----	\$0

Subtotal Expenses		\$0
ANNUAL LEVELIZED REVENUE TAXES	-----	\$0
=====		
TOTAL ANNUAL LEVELIZED EXPENSES	-----	\$0

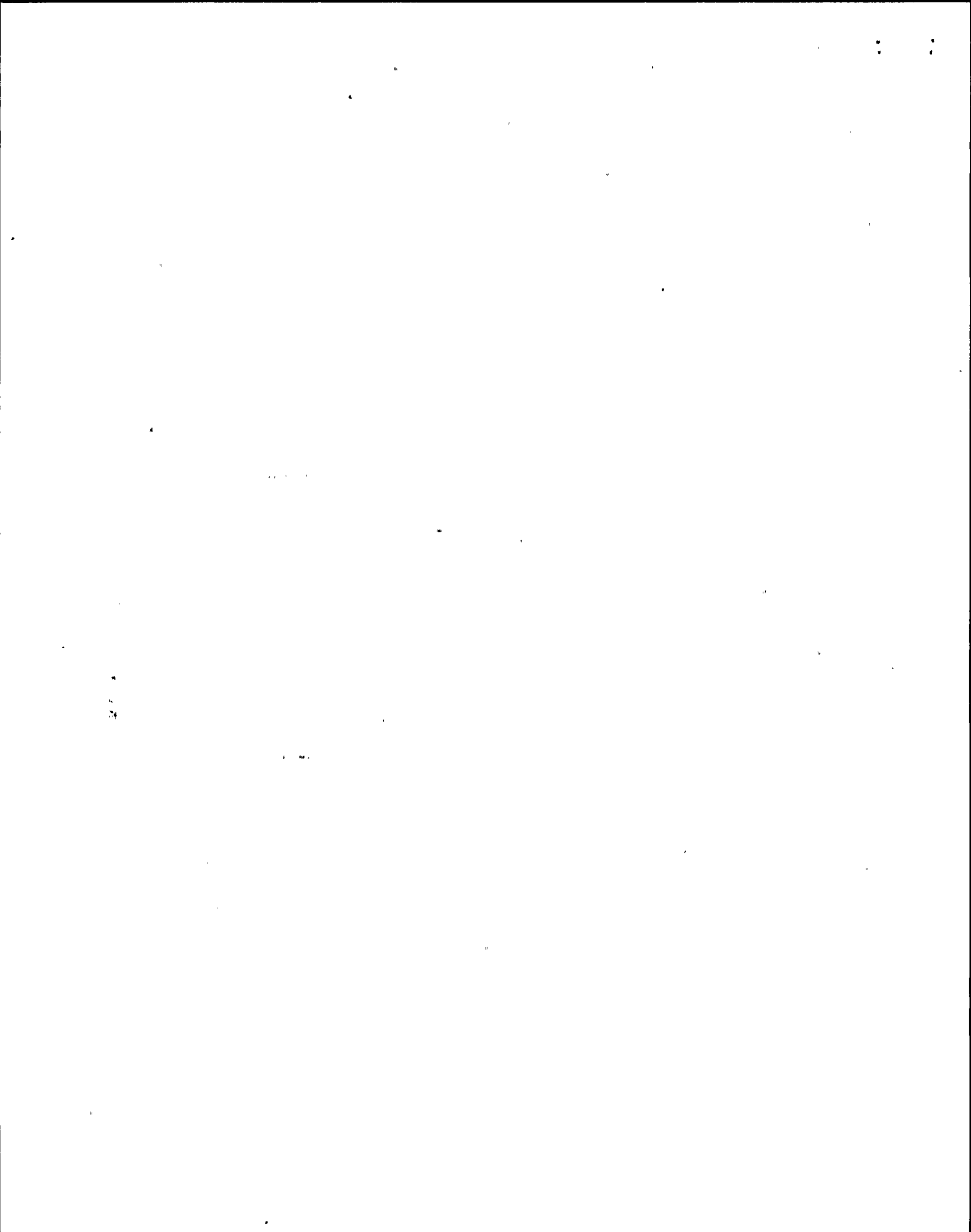
S13) TOTAL ANNUAL COSTS PLUS ANNUAL EXPENSES (C22)---- \$353,797

BENEFITS

S10) TOTAL ANNUAL LEVELIZED ELIMINATED COSTS (B11)----	\$0
S11) TOTAL ANNUAL LEVELIZED AVOIDED COSTS (B19)-----	\$8,347

S12) TOTAL ANNUAL LEVELIZED BENEFITS (B20)-----	\$8,347
=====	

 *
 * S14) BENEFIT/COST RATIO = S12/S13 0.02 *
 *



NIAGARA MOHAWK POWER CORPORATION

03/11/91 CPR/EST

Page 1

ESTIMATE SUMMARY

Est No: 89042B REPL 75KVA UPS ADD 2-25KVA UPS Bid Due: 02/25/91

Client Company: NINE MILE POINT - UNIT 2 Client Name: MARTY RITZNER

Job Location: SWITCHGEAR BLDG Client Phone: (315)428-7032

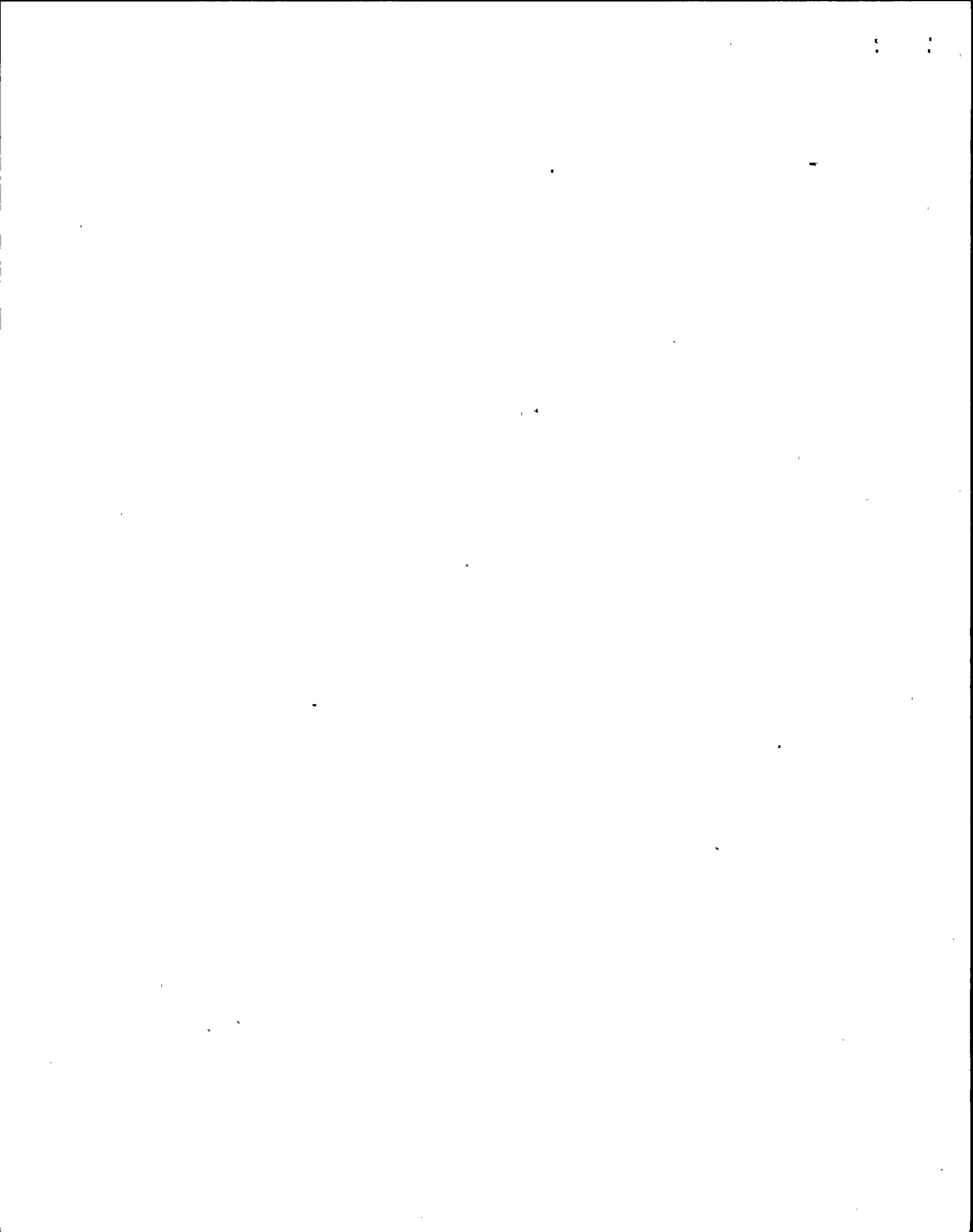
Estimate By: JRM Checked By: RNB

PHASE --> From: 89 Thru: 92

Div	Description	Mat'l (\$)	<----Labor-----> (Hr)	(\$)	S/C (\$)	Equip (\$)	<----Other-----> (Hr)	(\$)	TOTAL (\$)
A2	210 ENGR LAB NUC-NMPC	0	3344	82283	0	0	0	0	82283
B-	200 OTHER LABOR NUC-NMPC	0	1136	23856	0	0	0	0	23856
C1	ENG CONSULTING SERVICES:	0	0	0	121466	0	0	0	121466
D1	CONTRACTOR SERVICES	0	0	0	295262	0	0	0	295262
E1	PURCHASED MATERIAL:	294350	0	0	0	0	0	0	294350
F1	EMPLOYEE EXPENSES:	0	0	0	0	0	80	2000	2000
G1	RENTAL EXPENSES:	0	0	0	0	0	0	5000	5000
H4	STOCK MATERIALS:	78000	0	0	0	0	0	0	78000
Z0	CONTINGENCY	0	0	0	0	0	0	263283	263283
ESTIMATE TOTAL..		372350	4480	106139	416728	0	80	270283	1165500

COMMENTS:

1. Design by NMPC/Consultant.
2. Installation by CBI.
3. Overhead charges for CBI are not included in funds listed under division D1 CONTRACTOR SERVICES.
4. Items marked with "*" indicates funds expended prior to this estimate.



NIAGARA MOHAWK POWER CORPORATION

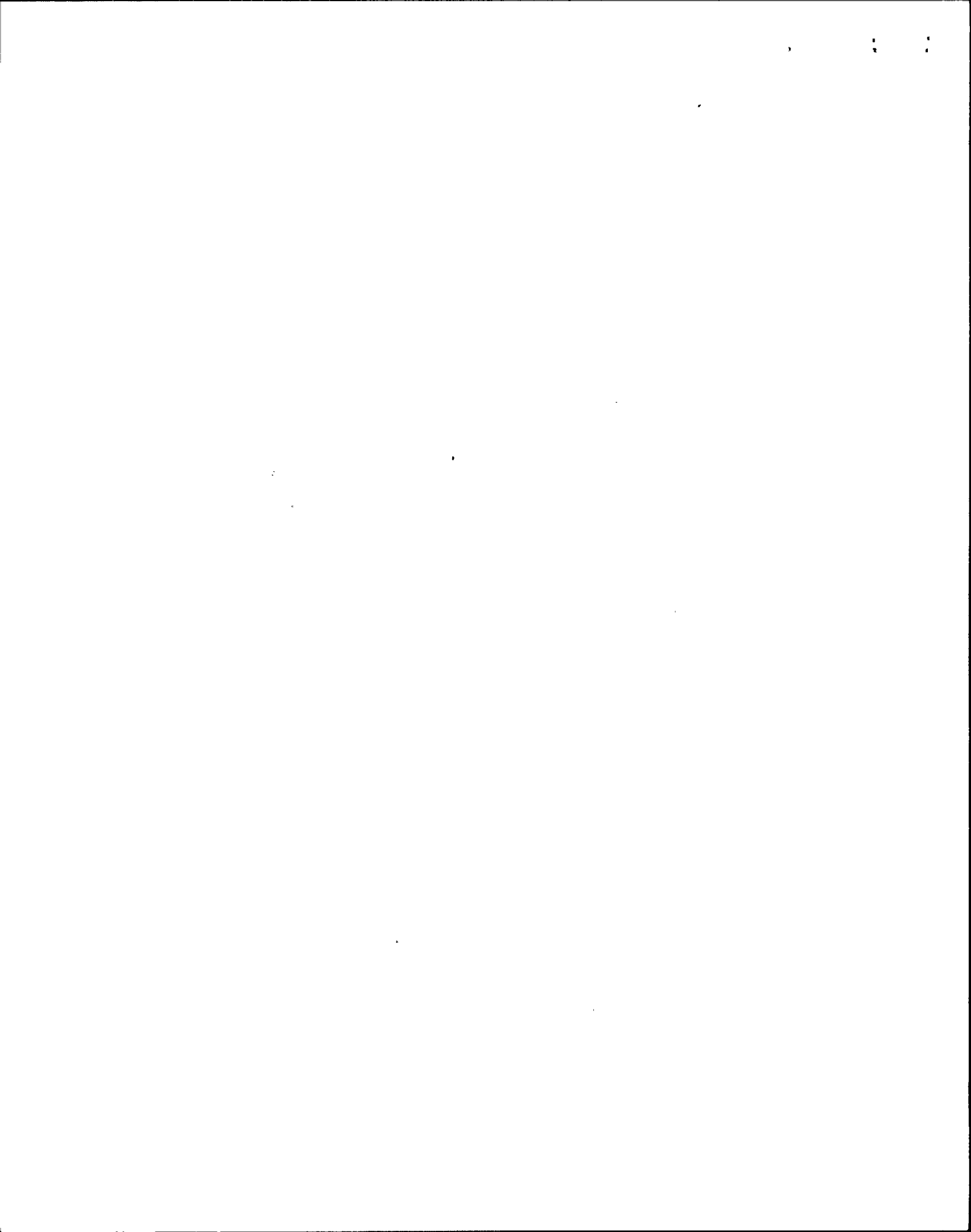
03/11/91 CPR/EST
Page 1

ESTIMATE SUMMARY

 Est No: 89042B REPL 75KVA UPS ADD 2-25KVA UPS Bid Due: 02/25/91
 Client Company: NINE MILE POINT - UNIT 2 Client Name: MARTY RITZNER
 Job Location: SWITCHGEAR BLDG Client Phone: (315)428-7032
 Estimate By: JRM Checked By: RNB

PHASE --> 92

Div	Description	Mat'l (\$)	<----Labor-----> (Hr)	(\$)	S/C (\$)	Equip (\$)	<----Other-----> (Hr)	(\$)	TOTAL (\$)
A2	210 ENGR LAB NUC-NMPC	0	944	23120	0	0	0	0	23120
B-	200 OTHER LABOR NUC-NMPC	0	648	13952	0	0	0	0	13952
C1	ENG CONSULTING SERVICES:	0	0	0	100624	0	0	0	100624
D1	CONTRACTOR SERVICES	0	0	0	292440	0	0	0	292440
E1	PURCHASED MATERIAL:	294350	0	0	0	0	0	0	294350
F1	EMPLOYEE EXPENSES:	0	0	0	0	0	40	1000	1000
G1	RENTAL EXPENSES:	0	0	0	0	0	0	5000	5000
H4	STOCK MATERIALS:	78000	0	0	0	0	0	0	78000
Z0	CONTINGENCY	0	0	0	0	0	0	242501	242501
ESTIMATE TOTAL..		372350	1592	37072	393064	0	40	248501	1050987



NIAGARA MOHAWK POWER CORPORATION

03/11/91 CPR/EST

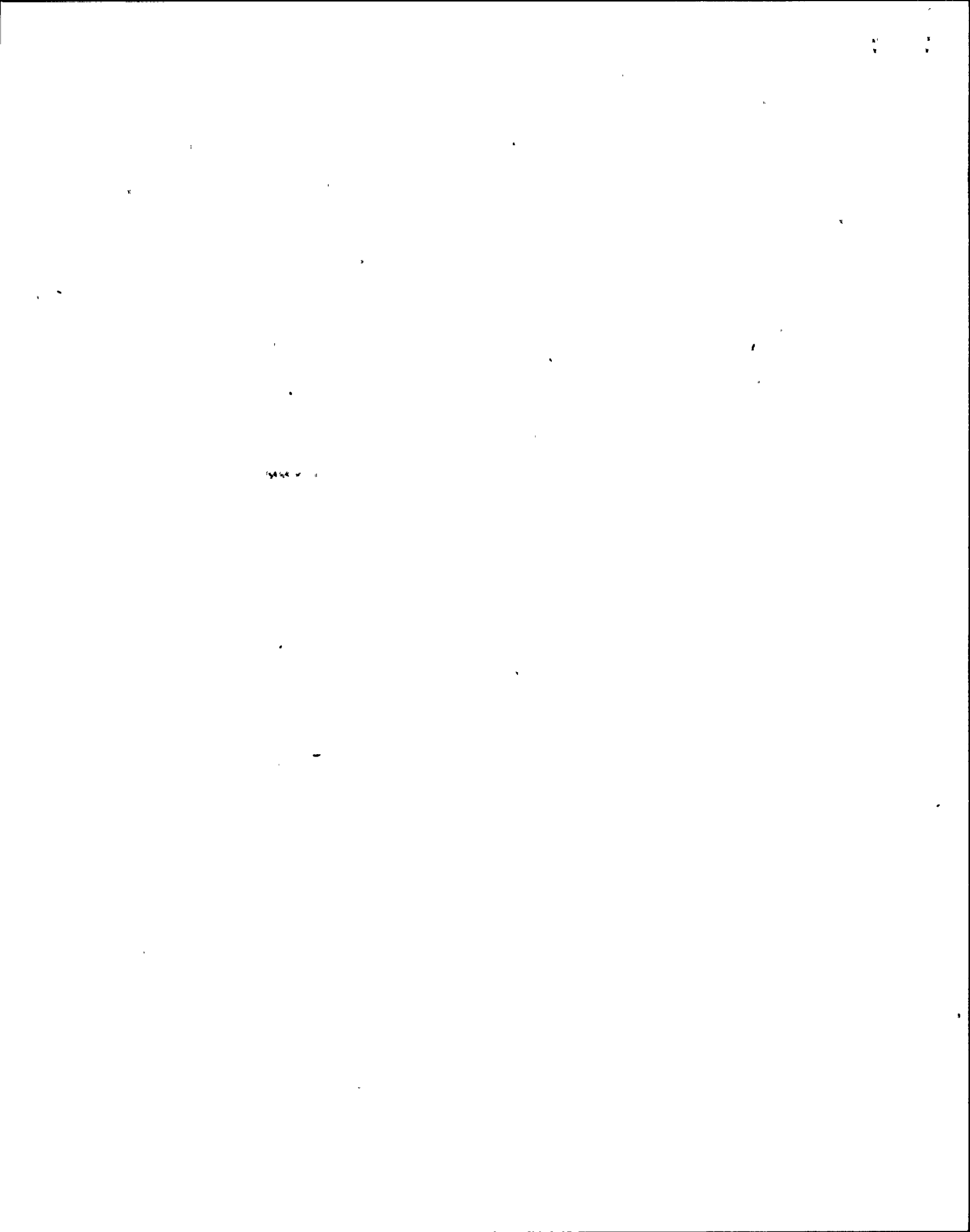
Page 1

ESTIMATE SUMMARY

 Est No: 89042B REPL 75KVA UPS ADD 2-25KVA UPS Bid Due: 02/25/91
 Client Company: NINE MILE POINT - UNIT 2 Client Name: MARTY RITZNER
 Job Location: SWITCHGEAR BLDG Client Phone: (315)428-7032
 Estimate By: JRM Checked By: RNB

PHASE --> 91

Div	Description	Mat'l (\$)	<----Labor-----> (Hr)	(\$)	S/C (\$)	Equip (\$)	<----Other-----> (Hr)	(\$)	TOTAL (\$)
A2	210 ENGR LAB NUC-NMPC	0	2360	58240	0	0	0	0	58240
B-	200 OTHER LABOR NUC-NMPC	0	488	9904	0	0	0	0	9904
D1	CONTRACTOR SERVICES	0	0	0	130	0	0	0	130
F1	EMPLOYEE EXPENSES:	0	0	0	0	0	40	1000	1000
Z0	CONTINGENCY	0	0	0	0	0	0	20782	20782
	ESTIMATE TOTAL..	0	2848	68144	130	0	40	21782	90056



NIAGARA MOHAWK POWER CORPORATION

03/11/91 CPR/EST

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ESTIMATE SUMMARY

 Est No: 89042B REPL 75KVA UPS ADD 2-25KVA UPS Bid Due: 02/25/91
 Client Company: NINE MILE POINT - UNIT 2 Client Name: MARTY RITZNER
 Job Location: SWITCHGEAR BLDG Client Phone: (315)428-7032
 Estimate By: JRM Checked By: RNB

PHASE --> 90

Div	Description	Mat'l (\$)	<----Labor-----> (Hr)	(\$)	S/C (\$)	Equip (\$)	<----Other-----> (Hr)	(\$)	TOTAL (\$)
C1	ENG CONSULTING SERVICES:	0	0	0	4140	0	0	0	4140
D1	CONTRACTOR SERVICES	0	0	0	2692	0	0	0	2692
	ESTIMATE TOTAL..	0	0	0	6832	0	0	0	6832

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NIAGARA MOHAWK POWER CORPORATION

03/11/91 CPR/EST

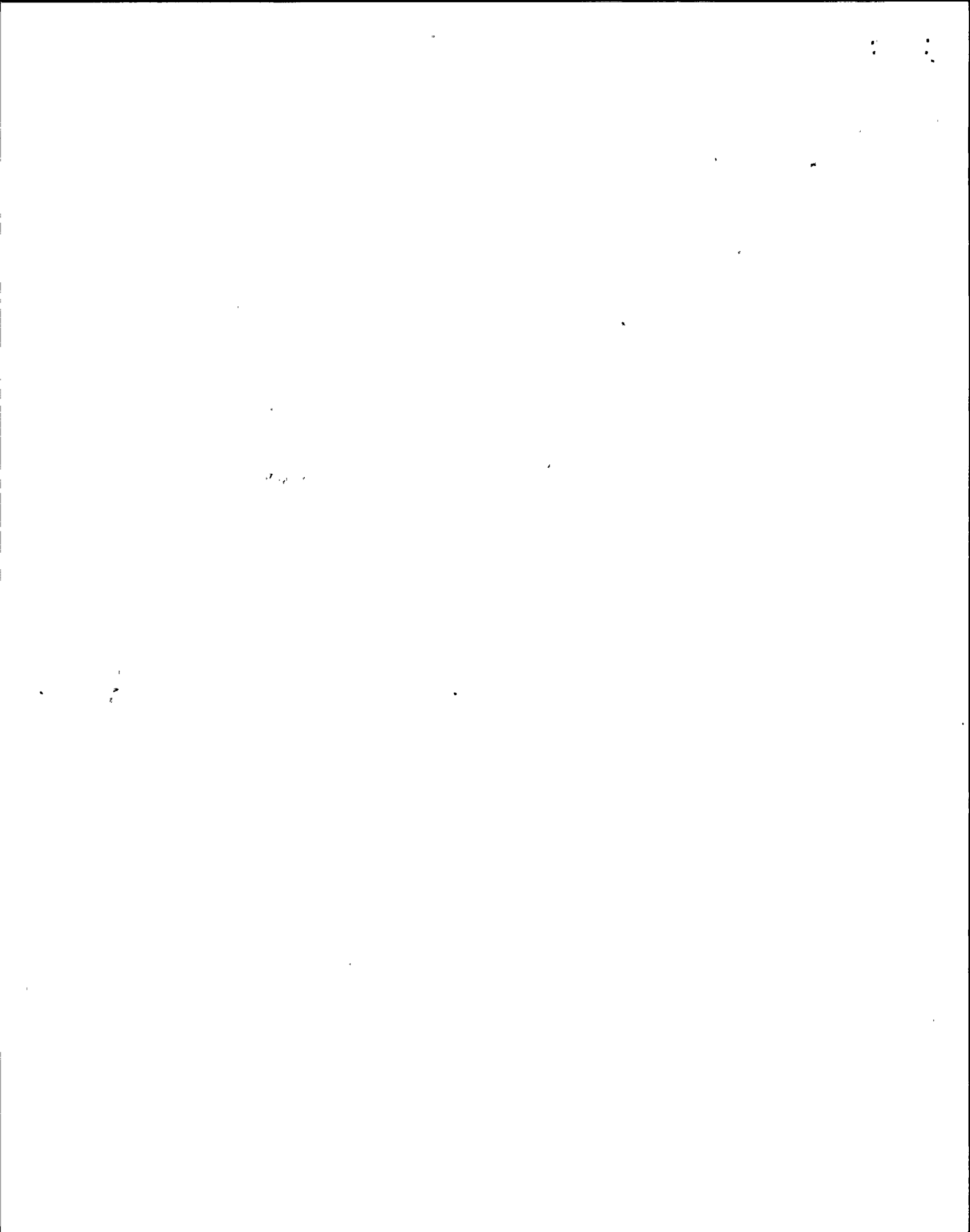
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ESTIMATE SUMMARY

 Est No: 89042B REPL 75KVA UPS ADD 2-25KVA UPS Bid Due: 02/25/91
 Client Company: NINE MILE POINT - UNIT 2 Client Name: MARTY RITZNER
 Job Location: SWITCHGEAR BLDG Client Phone: (315)428-7032
 Estimate By: JRM Checked By: RNB

PHASE --> 89

Div	Description	Mat'l (\$)	<----Labor-----> (Hr)	(\$)	S/C (\$)	Equip (\$)	<----Other-----> (Hr)	(\$)	TOTAL (\$)
A2	210 ENGR LAB NUC-NMPC	0	40	923	0	0	0	0	923
C1	ENG CONSULTING SERVICES:	0	0	0	16702	0	0	0	16702
ESTIMATE TOTAL..		0	40	923	16702	0	0	0	17625



ESTIMATE DETAIL - TABLE FORM

Est No 89042B REPL 75KVA UPS ADD 2-25KVA Bid Due 02/25/91
 Client Company NINE MILE POINT - UNIT 2 Client Name MARTY RITZNER
 Job Location SWITCHGEAR BLDG Client Phone (315)428-7032
 Estimate By JRM Checked By RNB

PHASE --> From: 89 Thru: 92

Cost Code	Description	Quantity	Un Phs	<-----Mat'l----->		<-----Labor----->		<-----S/C----->		Equip (\$)	Other (\$)	Total (\$)
				Unit \$	Tot \$	Unit \$	Tot \$	Unit \$	Tot \$			
*** Division A2												
A20000	*210 ENGR LAB NUC-NMPC	38.35	LOT 89	0.00	0	23.00	882	0.00	0	0	0	882
A23015	IS - CONST N2	80.00	MHR 91	0.00	0	24.00	1920	0.00	0	0	0	1920
A23051	*NE - COST & SCHED	1.64	MHR 89	0.00	0	25.00	41	0.00	0	0	0	41
A23051	NE - COST & SCHED	200.00	MHR 91	0.00	0	27.00	5400	0.00	0	0	0	5400
A23051	NE - COST & SCHED	40.00	MHR 92	0.00	0	28.00	1120	0.00	0	0	0	1120
A23091	NE - PROJ MGNT N2	400.00	MHR 91	0.00	0	27.00	10800	0.00	0	0	0	10800
A23091	NE - PROJ MGNT N2	200.00	MHR 92	0.00	0	27.00	5400	0.00	0	0	0	5400
A23092	NE - MECH DSG N2	80.00	MHR 91	0.00	0	24.00	1920	0.00	0	0	0	1920
A23093	NE - ELECT DSG N2	320.00	MHR 91	0.00	0	24.00	7680	0.00	0	0	0	7680
A23093	NE - ELECT DSG N2	480.00	MHR 92	0.00	0	24.00	11520	0.00	0	0	0	11520
A23093	LOAD STUDY-ELECT DSG N2	500.00	MHR 91	0.00	0	24.00	12000	0.00	0	0	0	12000
A23093	LOAD STUDY REWORK DSGN E	500.00	MHR 91	0.00	0	24.00	12000	0.00	0	0	0	12000
A23093	NE - C/S N2	200.00	MHR 91	0.00	0	23.00	4600	0.00	0	0	0	4600
A23094	NE - C/S N2	200.00	MHR 92	0.00	0	23.00	4600	0.00	0	0	0	4600
A23096	NE - SITE ENGR N2	80.00	MHR 91	0.00	0	24.00	1920	0.00	0	0	0	1920
A28027	RECORDS MGNT (SITE)	24.00	MHR 92	0.00	0	20.00	480	0.00	0	0	0	480
Subtotal Divison A2				0		82283		0	0	0	0	82283
*** Division B-												
B-0600	QA OPER N1 460600	40.00	MHR 91	0.00	0	22.00	880	0.00	0	0	0	880
B-1255	FIRE PROT N2	32.00	MHR 91	0.00	0	15.00	480	0.00	0	0	0	480
B-1257	ELECT MAINT N2	80.00	MHR 91	0.00	0	20.00	1600	0.00	0	0	0	1600
B-1257	ELECT MAINT N2	320.00	MHR 92	0.00	0	21.00	6720	0.00	0	0	0	6720
B-1258	I & C N2	160.00	MHR 91	0.00	0	21.00	3360	0.00	0	0	0	3360
B-1258	I & C N2	320.00	MHR 92	0.00	0	22.00	7040	0.00	0	0	0	7040
B-1264	TECH SUPT N2	160.00	MHR 91	0.00	0	20.00	3200	0.00	0	0	0	3200
B-1387	ADMIN SVCS/GEN BDGTS	16.00	MHR 91	0.00	0	24.00	384	0.00	0	0	0	384
B-1387	ADMIN SVCS/GEN BDGTS	8.00	MHR 92	0.00	0	24.00	192	0.00	0	0	0	192
Subtotal Divison B-				0		23856		0	0	0	0	23856
*** Division C1												
C14400	*ENG CONSULTING SERVICES	35.42	MHR 89	0.00	0	0.00	0	65.00	2302	0	0	2302
C14401	*SPEERCONSULTANT	5.89	MHR 90	0.00	0	0.00	0	45.00	265	0	0	265
C14409	*TRANSPORTATION	44.00	MHR 90	0.00	0	0.00	0	45.00	1980	0	0	1980
C14410	*SWEC	228.57	MHR 89	0.00	0	0.00	0	63.00	14400	0	0	14400
C14410	10 *SWEC	29.15	MHR 90	0.00	0	0.00	0	65.00	1895	0	0	1895

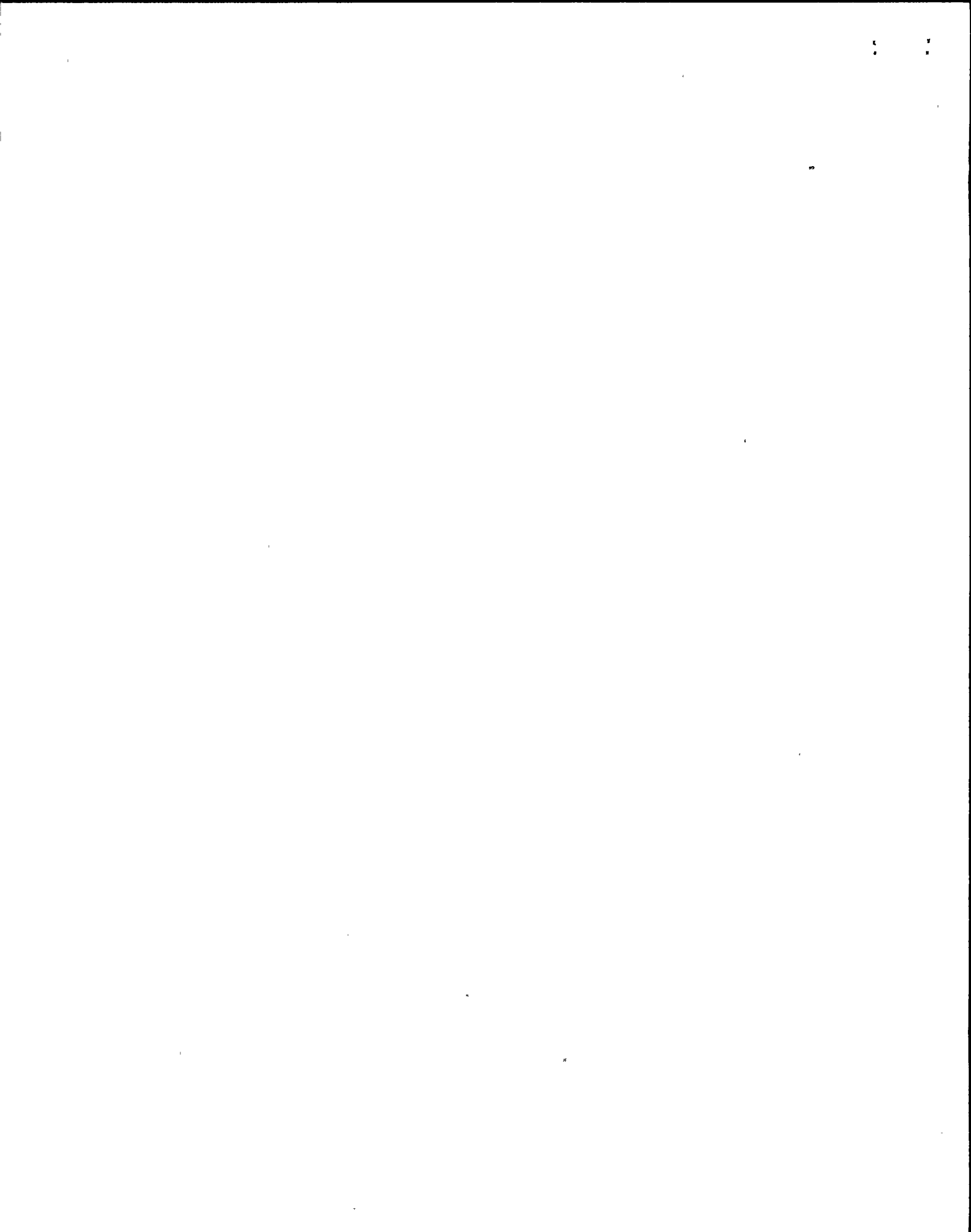
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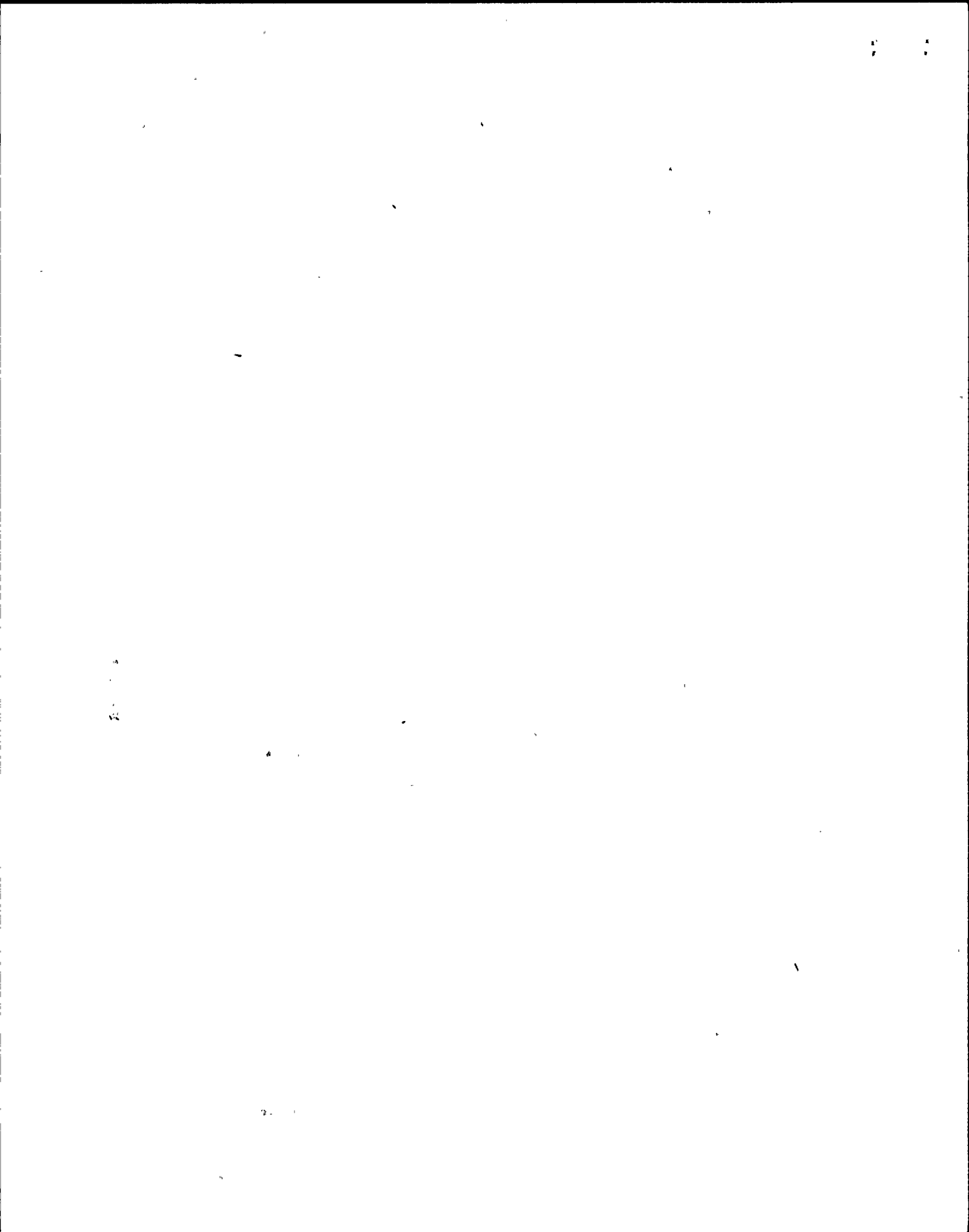
ESTIMATE DETAIL - TABLE FORM

Cost Code	Description	Quantity	Un Phs	<-----Mat'l----->		<-----Labor----->		<-----S/C----->		Equip (\$)	Other (\$)	Total (\$)
				Unit \$	Tot \$	Unit \$	Tot \$	Unit \$	Tot \$			
C14410	*SWEC (ELECT)	1324.00	MHR 92	0.00	0	0.00	0	76.00	100624	0	0	100624
Subtotal Divison C1					0	0	0	0	121466	0	0	121466
*** Division D1												
D17001	*SWEC-CONSTR:SP.SERVICE	24.34	MHR 90	0.00	0	0.00	0	67.00	1631	0	0	1631
D17003	*SPEERCONSU	21.80	MHR 90	0.00	0	0.00	0	45.00	981	0	0	981
D17012	CBI LOAD STUDY REWORK	1800.00	MHR 92	0.00	0	0.00	0	71.00	127800	0	0	127800
D17014	CARP-EQ PAD	80.00	MHR 92	0.00	0	0.00	0	60.00	4800	0	0	4800
D17014	CARP-SCAFFOLDING	80.00	MHR 92	0.00	0	0.00	0	60.00	4800	0	0	4800
D17015	LABRRS-PAD INSTALLATION	320.00	MHR 92	0.00	0	0.00	0	60.00	19200	0	0	19200
D17020	CPS ELEC:INSTLN	160.00	MHR 92	0.00	0	0.00	0	60.00	9600	0	0	9600
D17020	CPS ELEC:UPS REMOVAL	120.00	MHR 92	0.00	0	0.00	0	60.00	7200	0	0	7200
D17020	CPS ELEC:EQ INSTLN	256.00	MHR 92	0.00	0	0.00	0	60.00	15360	0	0	15360
D17020	CPS ELEC: XFMR INSTLN	96.00	MHR 92	0.00	0	0.00	0	60.00	5760	0	0	5760
D17020	CPS ELEC:WIRE/CABLE PULL	600.00	MHR 92	0.00	0	0.00	0	60.00	36000	0	0	36000
D17020	CPS ELEC: TERMINATIONS C	200.00	MHR 92	0.00	0	0.00	0	60.00	12000	0	0	12000
D17020	CPS ELEC: CONDUIT INSTLN	400.00	MHR 92	0.00	0	0.00	0	60.00	24000	0	0	24000
D17020	CPS ELEC: TRANSPORTATION	80.00	MHR 92	0.00	0	0.00	0	60.00	4800	0	0	4800
D17032	ICMS: PENETRN STOPS/SEALS	160.00	MHR 92	0.00	0	0.00	0	56.00	8960	0	0	8960
D17033	*SPEERCONSU	1.78	MHR 90	0.00	0	0.00	0	45.00	80	0	0	80
D17303	*SPEERCONSU	2.71	MHR 91	0.00	0	0.00	0	48.00	130	0	0	130
D17313	SWEC - STRUC	80.00	MHR 92	0.00	0	0.00	0	76.00	6080	0	0	6080
D17314	SWEC - INSTR	80.00	MHR 92	0.00	0	0.00	0	76.00	6080	0	0	6080
Subtotal Divison D1					0	0	0	0	295262	0	0	295262
*** Division E1												
E17500	75KVA UPS:	2.00	EA 92	85000.00	170000	0.00	0	0.00	0	0	0	170000
E17500	LOAD STUDY REWORK MATERI	1.00	LOT 92	15350.00	15350	0.00	0	0.00	0	0	0	15350
E17500	25KVA UPS	2.00	EA 92	30000.00	60000	0.00	0	0.00	0	0	0	60000
E17500	ELECT DIST EQUIP	1.00	LOT 92	49000.00	49000	0.00	0	0.00	0	0	0	49000
Subtotal Divison E1					294350	0	0	0	0	0	0	294350
*** Division F1												
F18000	EMPLOYEE EXPENSES:	40.00	EA 91	0.00	0	0.00	0	0.00	0	0	1000	1000
F18000	EMPLOYEE EXPENSES:	40.00	EA 92	0.00	0	0.00	0	0.00	0	0	1000	1000
Subtotal Divison F1					0	0	0	0	0	0	2000	2000
*** Division G1												
G19000	RENTAL CHERRY PICKER	1.00	EA 92	0.00	0	0.00	0	0.00	0	0	5000	5000
Subtotal Divison G1					0	0	0	0	0	0	5000	5000
*** Division H4												
H40000	STOCK MATERIALS:	1.00	LOT 92	4000.00	4000	0.00	0	0.00	0	0	0	4000



ESTIMATE DETAIL - TABLE FORM

Cost Code	Description	Quantity	Un Phs	<-----Mat'l----->		<-----Labor----->		<-----S/C----->		Equip (\$)	Other (\$)	Total (\$)
				Unit \$	Tot \$	Unit \$	Tot \$	Unit \$	Tot \$			
H41000	STORES HANDLING:	1.00	LOT 92	74000.00	74000	0.00	0	0.00	0	0	0	74000
	Subtotal Divison H4				78000		0		0	0	0	78000
	*** Division 20											
Z00000	CONTINGENCY	30.00	91	0.00	0	0.00	0	0.00	0	0	20782	20782
Z00000	CONTINGENCY	30.00	92	0.00	0	0.00	0	0.00	0	0	242501	242501
	Subtotal Divison 20				0		0		0	0	263283	263283
	TOTAL (Before Markups)..				372350		106139		416728	0	270283	1165500



BENEFIT - COST SUMMARY

PROJECT TITLE: REPLACE 75KVA UPS ADD 2-25KVA UPS

0

System/Bldg:	SWITCHGEAR BLDG	B/C Rev # :	0
Prepared By:	J.R. MATHEWS	MOD #	89-042B
Project Eng:	M. RITZNER	Unit #	2
Prep. Date:	February 26, 1991	Major Order #	3458
Actual ISD:	1992	Budget #	5392
Project Life:	37 Years	Type :	CAPITAL

CAPITAL COST OF PROJECT

S5) DIRECT COSTS (C4) -----	\$1,216,083
S6) INDIRECT COSTS (C6)-----	\$655,817
S7) AFDC (C6) -----	\$123,401

S9) TOTAL CAPITAL INVESTMENT 1992 Dollars-----	\$1,995,301
=====	
ANNUAL LEVELIZED REVENUE TAXES-----	\$6,979
=====	
TOTAL ANNUAL LEVELIZED CAPITAL COSTS -----	\$597,603

EXPENSES 1992 Dollars

TOTAL DIRECT AND INDIRECT EXPENSE COSTS -----	\$0
COST OF REPLACEMENT POWER -----	\$0
FUTURE RETIREMENT COSTS-----	\$0

Subtotal Expenses	\$0
ANNUAL LEVELIZED REVENUE TAXES -----	\$0
=====	
TOTAL ANNUAL LEVELIZED EXPENSES -----	\$0

S13) TOTAL ANNUAL COSTS PLUS ANNUAL EXPENSES (C22)---- \$597,603

BENEFITS

S10) TOTAL ANNUAL LEVELIZED ELIMINATED COSTS (B11)----	\$0
S11) TOTAL ANNUAL LEVELIZED AVOIDED COSTS (B19)-----	\$8,347

S12) TOTAL ANNUAL LEVELIZED BENEFITS (B20)-----	\$8,347
=====	

 * S14) BENEFIT/COST RATIO = S12/S13 0.01 *

ESTIMATE SUMMARY

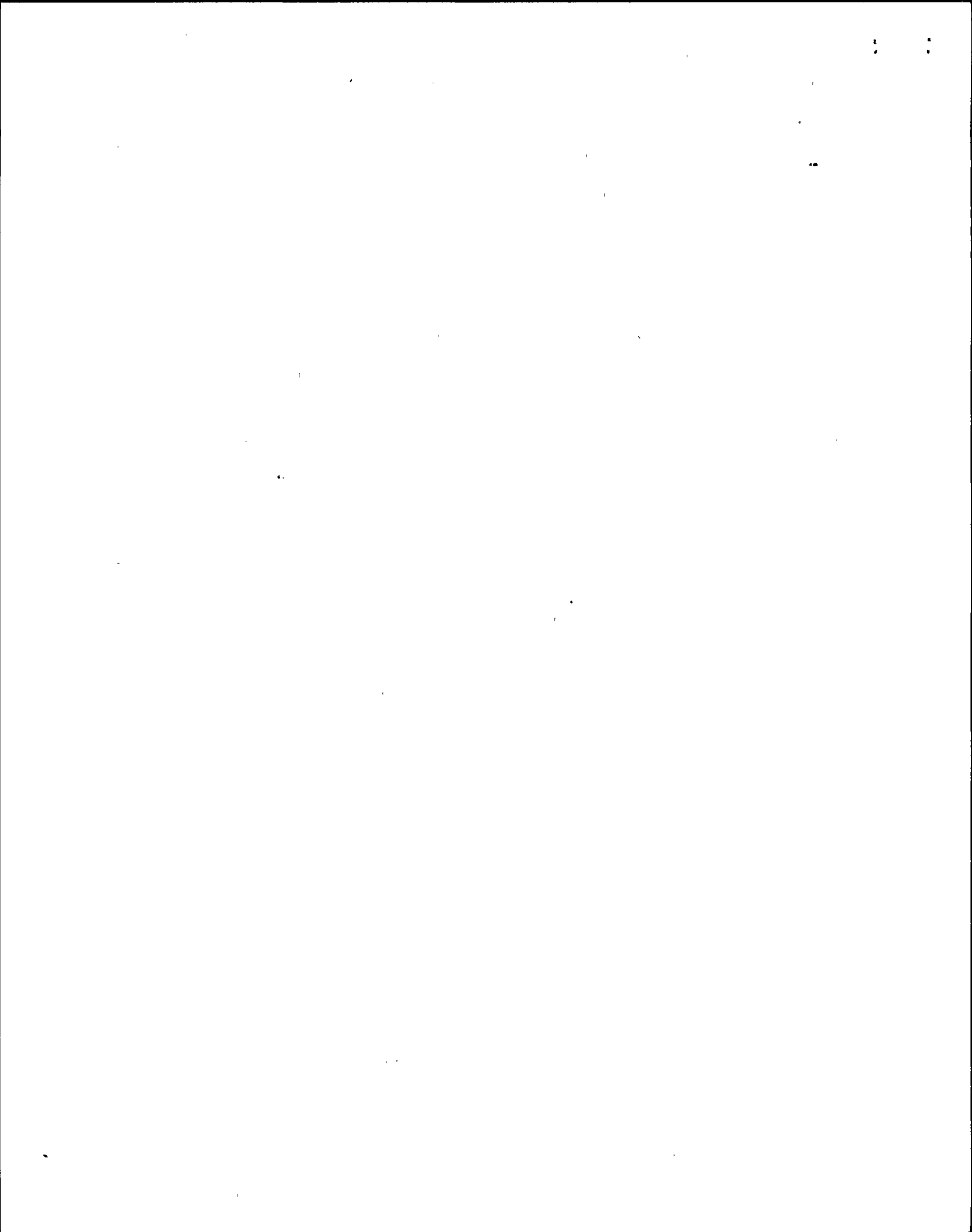
 Est No: 89042C REPL 75KVA UPS ADD 1-50KVA UPS Bid Due: 02/25/91
 Client Company: NINE MILE POINT - UNIT 2 Client Name: MARTY RITZNER
 Job Location: SWITCHGEAR BLDG Client Phone: (315)428-7032
 Estimate By: JRM Checked By: RNB

PHASE --> From: 89 Thru: 92

Div	Description	Mat'l (\$)	<----Labor----->		S/C (\$)	Equip (\$)	<----Other----->		TOTAL (\$)
			(Hr)	(\$)			(Hr)	(\$)	
A2	210 ENGR LAB NUC-NMPC	0	2684	66643	0	0	0	0	66643
B-	200 OTHER LABOR NUC-NMPC	0	608	12776	0	0	0	0	12776
C1	ENG CONSULTING SERVICES:	0	0	0	54859	0	0	0	54859
D1	CONTRACTOR SERVICES	0	0	0	216702	0	0	0	216702
E1	PURCHASED MATERIAL:	274850	0	0	0	0	0	0	274850
F1	EMPLOYEE EXPENSES:	0	0	0	0	0	80	2000	2000
G1	RENTAL EXPENSES:	0	0	0	0	0	0	5000	5000
H4	STOCK MATERIALS:	72000	0	0	0	0	0	0	72000
Z0	CONTINGENCY	0	0	0	0	0	0	136970	136970
ESTIMATE TOTAL..		346850	3292	79419	271561	0	80	143970	841800

COMMENTS:

1. Design by NMPC/Consultant.
2. Installation by CBI.
3. Overhead charges for CBI are not included in funds listed under division D1 CONTRACTOR SERVICES.
4. Items marked with "*" indicates funds expended prior to this estimate.



NIAGARA MOHAWK POWER CORPORATION

03/11/91 CPR/EST

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ESTIMATE SUMMARY

 Est No: 39042C REPL 75KVA UPS ADD 1-50KVA UPS Bid Due: 02/25/91
 Client Company: NINE MILE POINT - UNIT 2 Client Name: MARTY RITZNER
 Job Location: SWITCHGEAR BLDG Client Phone: (315)428-7032
 Estimate By: JRM Checked By: RNB

PHASE --> 92

Div	Description	Mat'l (\$)	<----Labor----> (Hr)	(\$)	S/C (\$)	Equip (\$)	<----Other----> (Hr)	(\$)	TOTAL (\$)
A2	210 ENGR LAB NUC-NMPC	0	604	15060	0	0	0	0	15060
B-	200 OTHER LABOR NUC-NMPC	0	328	7072	0	0	0	0	7072
C1	ENG CONSULTING SERVICES:	0	0	0	50312	0	0	0	50312
D1	CONTRACTOR SERVICES	0	0	0	213880	0	0	0	213880
E1	PURCHASED MATERIAL:	274850	0	0	0	0	0	0	274850
F1	EMPLOYEE EXPENSES:	0	0	0	0	0	40	1000	1000
G1	RENTAL EXPENSES:	0	0	0	0	0	0	5000	5000
H4	STOCK MATERIALS:	70000	0	0	0	0	0	0	70000
Z0	CONTINGENCY	0	0	0	0	0	0	119122	119122
ESTIMATE TOTAL..		344850	932	22132	264192	0	40	125122	756296

1

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NIAGARA MOHAWK POWER CORPORATION

03/11/91 CPR/EST

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ESTIMATE SUMMARY

 Est No: 89042C REPL 75KVA UPS ADD 1-50KVA UPS Bid Due: 02/25/91
 Client Company: NINE MILE POINT - UNIT 2 Client Name: MARTY RITZNER
 Job Location: SWITCHGEAR BLDG Client Phone: (315)428-7032
 Estimate By: JRM Checked By: RNB

PHASE --> 91

Div	Description	Mat'l (\$)	<----Labor----->		S/C (\$)	Equip (\$)	<----Other----->		TOTAL (\$)
			(Hr)	(\$)			(Hr)	(\$)	
A2	210 ENGR LAB NUC-NMPC	0	2040	50660	0	0	0	0	50660
B-	200 OTHER LABOR NUC-NMPC	0	280	5704	0	0	0	0	5704
D1	CONTRACTOR SERVICES	0	0	0	130	0	0	0	130
F1	EMPLOYEE EXPENSES:	0	0	0	0	0	40	1000	1000
H4	STOCK MATERIALS:	2000	0	0	0	0	0	0	2000
Z0	CONTINGENCY	0	0	0	0	0	0	17848	17848
ESTIMATE TOTAL..		2000	2320	56364	130	0	40	18848	77342

20000

NIAGARA MOHAWK POWER CORPORATION

03/11/91 CPR/EST

Page 1

ESTIMATE SUMMARY

Est No: 89042C REPL 75KVA UPS ADD 1-50KVA UPS Bid Due: 02/25/91
 Client Company: NINE MILE POINT - UNIT 2 Client Name: MARTY RITZNER
 Job Location: SWITCHGEAR BLDG Client Phone: (315)428-7032
 Estimate By: JRM Checked By: RNB

PHASE --> 90

Div	Description	Mat'l (\$)	<----Labor----> (Hr) (\$)		S/C (\$)	Equip (\$)	<----Other----> (Hr) (\$)		TOTAL (\$)
C1	ENG CONSULTING SERVICES:	0	0	0	2245	0	0	0	2245
D1	CONTRACTOR SERVICES	0	0	0	2692	0	0	0	2692
	ESTIMATE TOTAL..	0	0	0	4937	0	0	0	4937

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NIAGARA MOHAWK POWER CORPORATION

03/11/91 CPR/EST

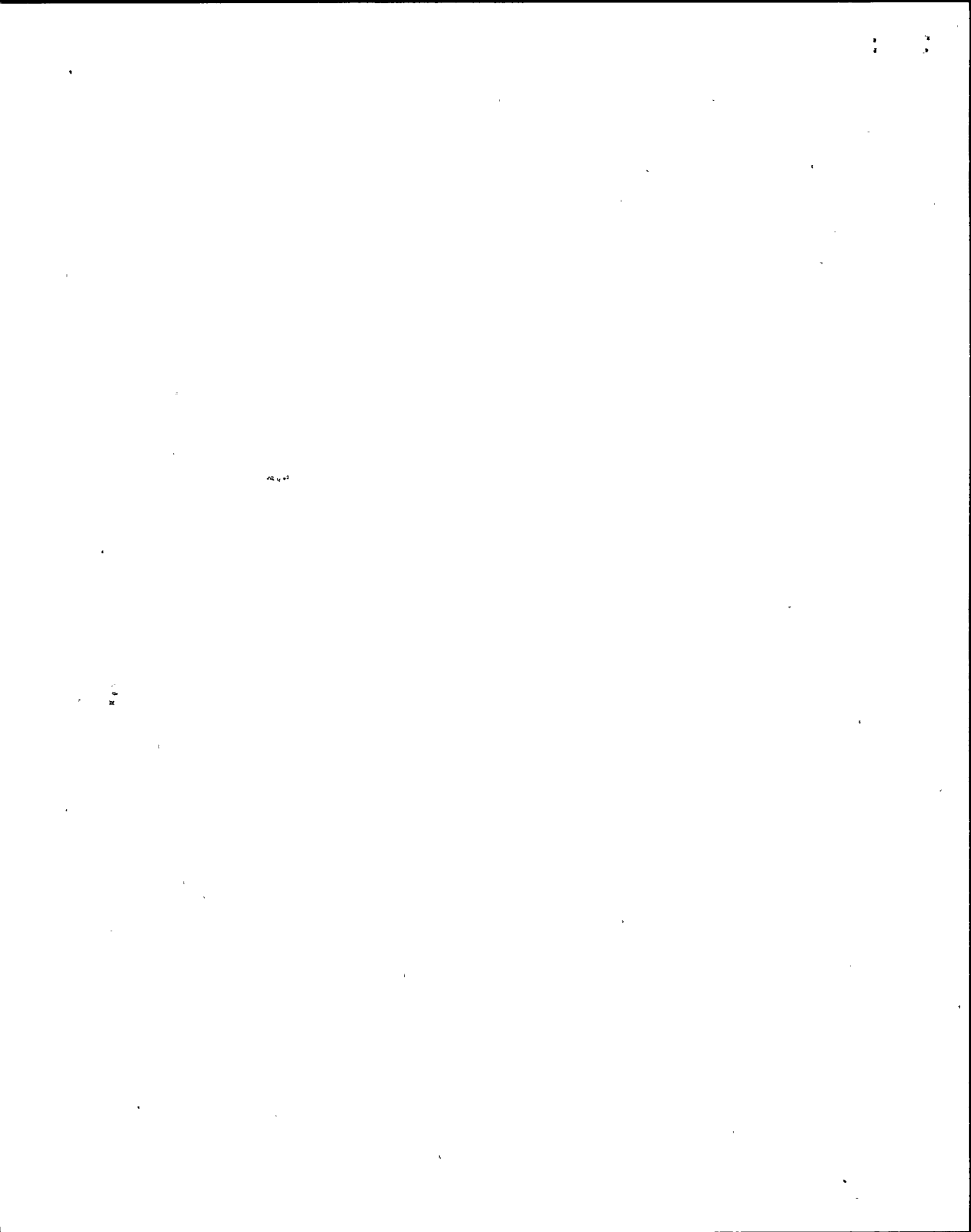
Page 1

ESTIMATE SUMMARY

Est No: 89042C REPL 75KVA UPS ADD 1-50KVA UPS Bid Due: 02/25/91
 Client Company: NINE MILE POINT - UNIT 2 Client Name: MARTY RITZNER
 Job Location: SWITCHGEAR BLDG Client Phone: (315)428-7032
 Estimate By: JRM Checked By: RNB

PHASE --> 89

Div	Description	Mat'l (\$)	<----Labor-----> (Hr)	(\$)	S/C (\$)	Equip (\$)	<----Other-----> (Hr)	(\$)	TOTAL (\$)
A2	210 ENGR LAB NUC-NMPC	0	40	923	0	0	0	0	923
C1	ENG CONSULTING SERVICES:	0	0	0	2302	0	0	0	2302
ESTIMATE TOTAL..		0	40	923	2302	0	0	0	3225



ESTIMATE DETAIL - TABLE FORM

 Est No 89042C REPL 75KVA UPS ADD 1-50KVA - Bid Due 02/25/91
 Client Company NINE MILE POINT - UNIT 2 Client Name MARTY RITZNER
 Job Location SWITCHGEAR BLDG Client Phone (315)428-7032
 Estimate By JRM Checked By RNB

PHASE --> From: 89 Thru: 92

Cost Code	Description	Quantity	Un Phs	<-----Mat'l----->		<-----Labor----->		<-----S/C----->		Equip (\$)	Other (\$)	Total (\$)
				Unit \$	Tot \$	Unit \$	Tot \$	Unit \$	Tot \$			
*** Division A2												
A20000	*210 ENGR LAB NUC-WMPC	38.35	LOT 89	0.00	0	23.00	882	0.00	0	0	0	882
A23015	IS - CONST N2	80.00	MHR 91	0.00	0	24.00	1920	0.00	0	0	0	1920
A23051	*NE - COST & SCHED	1.64	MHR 89	0.00	0	25.00	41	0.00	0	0	0	41
A23051	NE - COST & SCHED	200.00	MHR 91	0.00	0	27.00	5400	0.00	0	0	0	5400
A23051	NE - COST & SCHED	40.00	MHR 92	0.00	0	28.00	1120	0.00	0	0	0	1120
A23091	NE - PROJ NGMT N2	400.00	MHR 91	0.00	0	27.00	10800	0.00	0	0	0	10800
A23091	NE - PROJ NGMT N2	200.00	MHR 92	0.00	0	27.00	5400	0.00	0	0	0	5400
A23092	NE - MECH DSG N2	40.00	MHR 91	0.00	0	24.00	960	0.00	0	0	0	960
A23093	NE - ELECT DSG N2	160.00	MHR 91	0.00	0	24.00	3840	0.00	0	0	0	3840
A23093	NE - ELECT DSG N2	240.00	MHR 92	0.00	0	24.00	5760	0.00	0	0	0	5760
A23093	LOAD STUDY-ELECT DSG N2	500.00	MHR 91	0.00	0	24.00	12000	0.00	0	0	0	12000
A23093	LOAD STUDY REWORK DSGN E	500.00	MHR 91	0.00	0	24.00	12000	0.00	0	0	0	12000
A23094	NE - C/S N2	100.00	MHR 91	0.00	0	23.00	2300	0.00	0	0	0	2300
A23094	NE - C/S N2	100.00	MHR 92	0.00	0	23.00	2300	0.00	0	0	0	2300
A23096	NE - SITE ENGR N2	60.00	MHR 91	0.00	0	24.00	1440	0.00	0	0	0	1440
A28027	RECORDS NGMT (SITE)	24.00	MHR 92	0.00	0	20.00	480	0.00	0	0	0	480
Subtotal Divison A2				0		66643		0	0	0	0	66643
*** Division B-												
B-0600	QA OPER N1 460600	40.00	MHR 91	0.00	0	22.00	880	0.00	0	0	0	880
B-1255	FIRE PROT N2	24.00	MHR 91	0.00	0	15.00	360	0.00	0	0	0	360
B-1257	ELECT MAINT N2	40.00	MHR 91	0.00	0	20.00	800	0.00	0	0	0	800
B-1257	ELECT MAINT N2	160.00	MHR 92	0.00	0	21.00	3360	0.00	0	0	0	3360
B-1258	I & C N2	80.00	MHR 91	0.00	0	21.00	1680	0.00	0	0	0	1680
B-1258	I & C N2	160.00	MHR 92	0.00	0	22.00	3520	0.00	0	0	0	3520
B-1264	TECH SUPT N2	80.00	MHR 91	0.00	0	20.00	1600	0.00	0	0	0	1600
B-1387	ADMIN SVCS/GEN BDGTS	16.00	MHR 91	0.00	0	24.00	384	0.00	0	0	0	384
B-1387	ADMIN SVCS/GEN BDGTS	8.00	MHR 92	0.00	0	24.00	192	0.00	0	0	0	192
Subtotal Divison B-				0		12776		0	0	0	0	12776
*** Division C1												
C14400	*ENG CONSULTING SERVICES	35.42	MHR 89	0.00	0	0.00	0	65.00	2302	0	0	2302
C14401	*SPEERCONSULTANT	5.89	MHR 90	0.00	0	0.00	0	45.00	265	0	0	265
C14409	*TRANSPORTATION	44.00	MHR 90	0.00	0	0.00	0	45.00	1980	0	0	1980
C14410	*SWEC (ELECT)	662.00	MHR 92	0.00	0	0.00	0	76.00	50312	0	0	50312
Subtotal Divison C1				0		0		54859	0	0	0	54859
*** Division D1												
D17001	*SWEC-CONSTR:SP.SERVICE	24.34	MHR 90	0.00	0	0.00	0	67.00	1631	0	0	1631

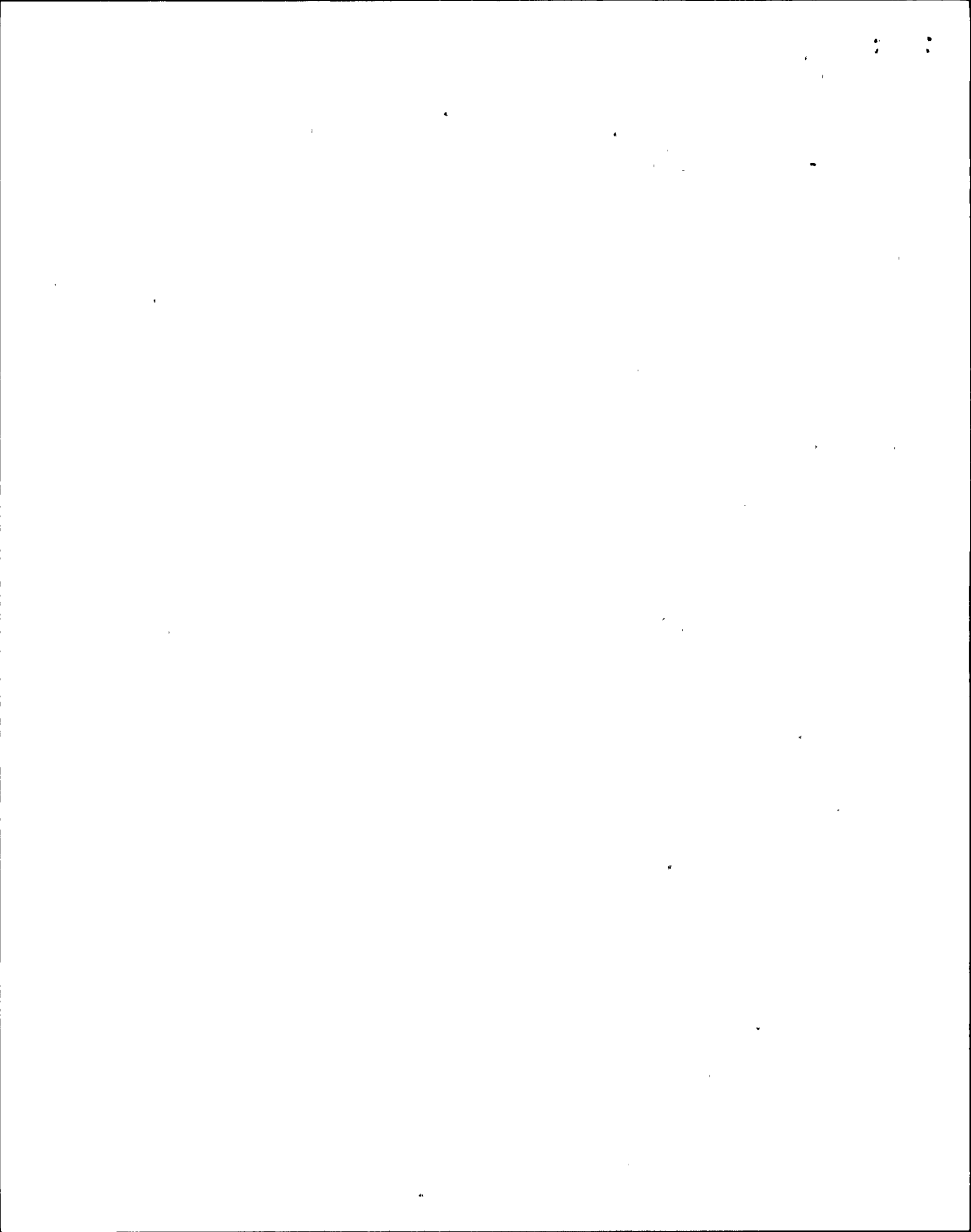
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1000

ESTIMATE DETAIL - TABLE FORM

Cost Code	Description	Quantity	Un	Phs	<-----Mat'l----->		<-----Labor----->		<-----S/C----->		Equip (\$)	Other (\$)	Total (\$)
					Unit \$	Tot \$	Unit \$	Tot \$	Unit \$	Tot \$			
D17003	*SPEERCONSU	21.80	MHR	90	0.00	0	0.00	0	45.00	981	0	0	981
D17012	CBI LOAD STUDY REWORK	1800.00	MHR	92	0.00	0	0.00	0	71.00	127800	0	0	127800
D17014	CARP-EQ PAD	40.00	MHR	92	0.00	0	0.00	0	60.00	2400	0	0	2400
D17014	CARP-SCAFFOLDING	40.00	MHR	92	0.00	0	0.00	0	60.00	2400	0	0	2400
D17015	LABRRS-PAD INSTALLATION	160.00	MHR	92	0.00	0	0.00	0	60.00	9600	0	0	9600
D17020	CPS ELEC:INSTLN	80.00	MHR	92	0.00	0	0.00	0	60.00	4800	0	0	4800
D17020	CPS ELEC:UPS REMOVAL	120.00	MHR	92	0.00	0	0.00	0	60.00	7200	0	0	7200
D17020	CPS ELEC:EQ INSTLN	128.00	MHR	92	0.00	0	0.00	0	60.00	7680	0	0	7680
D17020	CPS ELEC: XFMR INSTLN	48.00	MHR	92	0.00	0	0.00	0	60.00	2880	0	0	2880
D17020	CPS ELEC:WIRE/CABLE PULL	300.00	MHR	92	0.00	0	0.00	0	60.00	18000	0	0	18000
D17020	CPS ELEC: TERMINATIONS C	100.00	MHR	92	0.00	0	0.00	0	60.00	6000	0	0	6000
D17020	CPS ELEC: CONDUIT INSTLN	200.00	MHR	92	0.00	0	0.00	0	60.00	12000	0	0	12000
D17020	CPS ELEC: TRANSPORTATION	40.00	MHR	92	0.00	0	0.00	0	60.00	2400	0	0	2400
D17032	ICMS: PENETR N STOPS/SEALS	80.00	MHR	92	0.00	0	0.00	0	60.00	4800	0	0	4800
D17303	*SPEERCONSU	1.78	MHR	90	0.00	0	0.00	0	45.00	80	0	0	80
D17303	*SPEERCONSU	2.71	MHR	91	0.00	0	0.00	0	48.00	130	0	0	130
D17313	SWEC - STRUC	40.00	MHR	92	0.00	0	0.00	0	76.00	3040	0	0	3040
D17314	SWEC - INSTR	40.00	MHR	92	0.00	0	0.00	0	72.00	2880	0	0	2880
Subtotal Divison D1					0		0		216702		0	0	216702
*** Division E1													
E17500	75KVA UPS:	2.00	EA	92	85000.00	170000	0.00	0	0.00	0	0	0	170000
E17500	LOAD STUDY REWORK MATERI	1.00	LOT	92	15350.00	15350	0.00	0	0.00	0	0	0	15350
E17500	ELECT MATERIAL:	1.00	LOT	92	24500.00	24500	0.00	0	0.00	0	0	0	24500
E17500	50 KVA UPS	1.00	EA	92	65000.00	65000	0.00	0	0.00	0	0	0	65000
Subtotal Divison E1					274850		0		0		0	0	274850
*** Division F1													
F18000	EMPLOYEE EXPENSES:	40.00	EA	91	0.00	0	0.00	0	0.00	0	0	1000	1000
F18000	EMPLOYEE EXPENSES:	40.00	EA	92	0.00	0	0.00	0	0.00	0	0	1000	1000
Subtotal Divison F1					0		0		0		0	2000	2000
*** Division G1													
G19000	RENTAL CHERRY PICKER	1.00	EA	92	0.00	0	0.00	0	0.00	0	0	5000	5000
Subtotal Divison G1					0		0		0		0	5000	5000
*** Division H4													
H40000	STOCK MATERIALS:	1.00	LOT	91	2000.00	2000	0.00	0	0.00	0	0	0	2000
H41000	STORES HANDLING:	1.00	LOT	92	70000.00	70000	0.00	0	0.00	0	0	0	70000
Subtotal Divison H4					72000		0		0		0	0	72000
*** Division Z0													
Z00000	CONTINGENCY	30.00	3	91	0.00	0	0.00	0	0.00	0	0	17848	17848

Continued next page..



ESTIMATE DETAIL - TABLE FORM

Cost Code	Description	Quantity	Un	Phs	<-----Mat'l----->		<-----Labor----->		<-----S/C----->		Equip (\$)	Other (\$)	Total (\$)
					Unit \$	Tot \$	Unit \$	Tot \$	Unit \$	Tot \$			
Z00000	CONTINGENCY	30.00	1	92	0.00	0	0.00	0	0.00	0	0	119122	119122
	Subtotal Divison 20					0		0		0	0	136970	136970
	TOTAL (Before Markups)..					346850		79419		271561	0	143970	841800

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BENEFIT - COST SUMMARY

PROJECT TITLE: REPLACE 75KVA UPS ADD 1-50KVA UPS

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System/Bldg:	SWITCHGEAR BLDG	B/C Rev # :	0
Prepared By:	J.R. MATHEWS	MOD #	89-042C
Project Eng:	M. RITZNER	Unit #	2
Prep. Date:	February 26, 1991	Major Order #	3458
Actual ISD:	1992	Budget #	5392
Project Life:	37 Years	Type :	CAPITAL

CAPITAL COST OF PROJECT

S5) DIRECT COSTS (C4)	-----	\$879,080
S6) INDIRECT COSTS (C6)	-----	\$475,319
S7) AFDC (C6)	-----	\$86,519

S9) TOTAL CAPITAL INVESTMENT	1992 Dollars-----	\$1,440,917
=====		
ANNUAL LEVELIZED REVENUE TAXES	-----	\$5,040
=====		
TOTAL ANNUAL LEVELIZED CAPITAL COSTS	-----	\$431,562

EXPENSES	1992 Dollars	

TOTAL DIRECT AND INDIRECT EXPENSE COSTS	-----	\$0
COST OF REPLACEMENT POWER	-----	\$0
FUTURE RETIREMENT COSTS	-----	\$0

	Subtotal Expenses	\$0
ANNUAL LEVELIZED REVENUE TAXES	-----	\$0
=====		
TOTAL ANNUAL LEVELIZED EXPENSES	-----	\$0

S13) TOTAL ANNUAL COSTS PLUS ANNUAL EXPENSES (C22)	-----	\$431,562
=====		

BENEFITS

S10) TOTAL ANNUAL LEVELIZED ELIMINATED COSTS (B11)	-----	\$0
S11) TOTAL ANNUAL LEVELIZED AVOIDED COSTS (B19)	-----	\$8,347

S12) TOTAL ANNUAL LEVELIZED BENEFITS (B20)	-----	\$8,347
=====		

*		*
*	S14) BENEFIT/COST RATIO = S12/S13	0.02
*		*

GROUP 100 - 1000000

1000000

1000000

1991
J F M A M J J A S O N D

PROJECT INITIATION

904220005 START DEVELOPMENT PROJECT REPORT -M-R 31JAN91

904220140 PREPARE PRELIMINARY PROJECT REPORT 6FEB91 0=17 1MAR91

904220160 FINALIZE PROJECT REPORT -M-R 4MAR91 0=11 18MAR91

904220180 CERC APPROVAL 15APR91

CONCEPTUAL DESIGN

904220220 SCHEDULE INPUT / SCH DEVELOPMENT -ALL/SCH 26JAN91 0=8 6FEB91

904220210 KICK-OFF MEETING -ALL 6FEB91 0=1 6FEB91

904220231 PREPARE CONCEPTUAL DSGN / WKDN / LEAD 5/0 -ELEC 6FEB91 0=27 15MAR91

904220262 TECH REVIEW & APPROVAL CONCEPTUAL DESIGN -TRC 18MAR91 0=5 22MAR91

904220265 SORC REVIEW AND APPROVAL CONCEPTUAL DESIGN -SORC 25MAR91 0=10 8APR91

904220270 CONCEPTUAL DESIGN APPROVED 8APR91

FINAL DESIGN

904220312 DEVELOP LOAD SHEDING EVALUATION 1MAR91 0=84 31MAY91

904220310 FINAL DESIGN - EDC/BOM -MECH/ELEC/STRUCT 9APR91 0=64 9JUL91

904220311 DEVELOP LOCN -MECH/ELECT/STRUCT 9APR91 0=64 9JUL91

904220313 DEVELOP EDC S FOR LOAD SHED DECISION 3JUN91 0=64 30AUG91

904220315 EDC / BOM COMPLETE -MECH/ELEC/STRUCT 30AUG91

904220330 DEVELOP TRAVELER & TEST PLANS -NMPC SEQ/CBI 3SEP91 0=25 7OCT91

904220340 PREPARE SER / 50-59 -M-R/MOD TEAM 3SEP91 0=20 30SEP91

904220345 SER/50-59 COMPLETE 30SEP91

904220360 TECT REVIEW AND APPROVAL -TRC 1OCT91 0=10 14OCT91

904220335 TRAVELER PKG COMPLETE 7OCT91

904220351 SORC REVIEW FINAL DESIGN PKO -SORC 15OCT91 0=10 28OCT91

904220360 MOD PACKAGE RELEASED TO OPS -M-R 28OCT91

PROCUREMENT

904220212 DEVELOP SPEC & ISSUE TO BID UPS 1C.D & AUX -M-R 15JAN91 0=33 1MAR91

904220214 BIDS REVIEWED & EVALUATED -ELECT 4MAR91 0=30 15APR91

904220410 ISSUE PURCHASE ORDER(S) -PURCHASE 16APR91 0=5 22APR91

904220420 FAB &/OR DELIVER MATL/EQUIP -PURCHASE 23APR91 0=19 24JAN92

904220412 DELIVER DRAWINGS & MANUALS 29APR91

904220415 PRE-SHIPMENT INSPECTION -QA 1NOV91 0=10 15NOV91

DATA DATE

PROJECT 90REFUEL PLOT PRELIM PROJ SHEET 1	NUCLEAR ENGINEERING / MODIFICATIONS	NIAGARA MOHAWK POWER CORP.	PROJECT 2 8685 SCHEDULE BAR CHART
START 3 JAN 87 FINISH 6 JUN 84 DATA DATE 28 FEB 91	TARGET SCHEDULE PAGE BREAK VALUE: 9042 - 89-042 REMOVE/BAL LOADS 2V88-UP3IC.0 LINE BREAK ON PHASE SORT BREAKS & START NODES	MODE T/FE INTERVAL: 1 MONTH(S) TARGET SCHEDULE 20 TARO FINISH 13 SEP 98 TARO DATA DATE 28 SEP 90	13-2

1992
J F M A M J J A S O N D

6 ACUREMENT	904220420 FAB 4/OR DELIVER MATL/EQUIP	-PURCHASE ... 23 APR 91	0=191	<input type="checkbox"/>	24 JAN 92
	904220430 MATL / EQUIP DELIVERED TO SITE			<input checked="" type="checkbox"/>	24 JAN 92
6 INSTALLATION	904220510 INSTALLATION	-MM/CBI	28 FEB 92	<input type="checkbox"/> 0=50	8 MAY 92
	904220590 INSTALLATION COMPLETE			<input checked="" type="checkbox"/>	8 MAY 92
6 TEST / OPS ACCEPT	904220610 OPERATIONAL TESTING	-OPS	11 MAY 92	0=5	15 MAY 92
	904220621 TESTING COMPLETE / APPROVED			<input checked="" type="checkbox"/>	15 MAY 92
	904220622 PREP MOD ACCEPT FORM	-OPS	18 MAY 92	0=10	<input type="checkbox"/> 1 JUN 92
	904220630 MOD OPS ACCEPTANCE - APPROVED			<input checked="" type="checkbox"/>	1 JUN 92
7 MOD CLOSEOUT	904220700 PROJECT CLOSEOUT REPORT	-M-R	2 JUN 92	0=20	<input type="checkbox"/> 29 JUN 92
	904220710 PREPARE CLOSEOUT FORMS	-OPS	2 JUN 92	<input type="checkbox"/> 0=125	30 NOV 92
	904220720 UPDATE AS-BUILTS (INCL. REPRO 4 ISSUE)	-SITE	2 JUN 92	<input type="checkbox"/> 0=125	30 NOV 92
	904220730 PROJECT CLOSEOUT			<input checked="" type="checkbox"/>	30 NOV 92

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MODIFICATION TEAM ASSIGNMENTS

MODIFICATION NUMBER N2-89-042 UNIT NO. 2

MODIFICATION TITLE Replace 2VBB-UPS1C & 2VBB-UPS1D

ENGINEERING CONTACTS

Engineering Team Members & contractors are as follows: (N/A if not req'd)

Project Engineer	<u>M. Ritzner</u>	Ext.	<u>7032</u>
Electrical Design	<u>A. Raju</u>	Ext.	<u>7401</u>
Mechanical Design	<u>L. Schiavone</u>	Ext.	<u>7312</u>
Structural Design	<u>J. Cushman</u>	Ext.	<u>7047</u>
Licensing Eng.		Ext.	
Health Physicist	<u>J. Sears</u>	Ext.	<u>7387</u>
QA (System)	<u>A. Lepore</u>	Ext.	<u>7242</u>
Materials Engineer	<u>W. Weaver</u>	Ext.	<u>7283 (4158)</u>
Site Engineer		Ext.	
Nuclear Fuels		Ext.	
Other Fire Prot.	<u>R. Beller</u>	Ext.	<u>7121</u>
Consultants		Phone	
Planning Engr.	<u>M. Heller</u>	Phone	<u>7026</u>
Construction Services		Ext.	
Contractor		Phone	
Construction Services		Ext.	
Contractor		Phone	

By Project Engineer: M. Ritzner Date 2-1-91

SITE CONTACTS

The Site Team Members are as follows: (N/A if not req'd.)

Construction Services	<u>H. Mastin</u>	Ext.	<u>7448</u>
Site Contact	<u>B. Crandall</u>	Ext.	<u>4640</u>
Operations	<u>J. Poindexter</u>	Ext.	<u>2032</u>
Electrical Installation	<u>S. Doty</u>	Ext.	<u>4594</u>
I&C Installation	<u>J. Kinsley</u>	Ext.	<u>7502</u>
Mechanical Installation		Ext.	
Site ALARA Cord	<u>Bill Aiken</u>	Ext.	<u>7800</u>
Test Engineer		Ext.	
Pre-op Writer	<u>N/A</u>	Ext.	
ISI		Ext.	
QA (Site)		Ext.	
Training (Sim. Impact)		Ext.	
Other	<u>D. Stevenson</u>	Ext.	<u>7011</u>
I & I	<u>B. Callahan</u>		<u>4470</u>

By Site Contact: Robert J. Crandall Date 2-20-91

DISTRIBUTION

- Project File (original)
- Engineering Planning
- Modification Team

Al

Design Verification Decision Form

PART I - DESIGN VERIFICATION DECISION CHECKLIST

PROJECT TITLE: REPLACE 2VAB-UPS IC & IO MOD. NO.: N2-89-042

PROJECT ENGINEER: M RITZNER DATE: 2-19-91

PROJECT DESCRIPTION: SEE ATTACHED PROJECT SUMMARY

1. Is this design, or part of the design safety-related?

 YES X NO

2. Is the design important to plant, public, or personnel safety?
i.e. Is it highly likely that failure of this design to perform its function would result in a catastrophic accident or costly damage to the plant, or an uncontrolled release of radiation to the environment, or injury to personnel?

 X YES NO

3. Has this type of design been previously verified?

 X YES NO

*UPS EXISTS BUT IS BEING
UPGRADED. SYSTEM IS
DEFINED IN USAR*

If yes, state previous Project Title: SECT 8.3.1.1.2

4. Is this design (answer YES or NO):

 YES State of the Art?
 YES Standard Design?
 NO Multi-Disciplined?
 NO Complex?

5. Is design verification required?

 X YES
 NO Describe reason: NEL-027, 2.1.3, "SINGLE DISCIPLINE"

DESIGN VERIFICATION --- NOT COVERED BY THIS PROCEDURE

single discipline mult. function p. 2.1.3 verification
Approved: K. O. [Signature] Date: 2/21/91

~~Manager of Design Engineering~~ MR 2-19-91
GENERAL SUPERVISOR
UNIT 2 DESIGN

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MOD. NO.: PN2Y89MX042

PRIORITY: 2

I/P MERIT: 3-084

MOD. TITLE: Replace 2VBB-UPS 1C & 2VBB-2UPS 1D

SUMMARY:

On April 13, 1989, NMP2 experienced a plant scram due to a turbine trip, the root cause for this event was determined to be loose wire connections in the main generator P.T. Cubicle in circuit 2SPG203. During this event 2VBB-UPS 1D tripped and was described in LER 89-014 as follows: "Uninterruptible power supply 1D (UPS-1D) tripped due to an overload condition. This resulted in a loss of approximately one half of the gaintronics system in the plant, a total loss of the gaintronics in the Control Room (affecting communication with the plant operators outside the Control Room) and a partial loss of emergency lighting".

Subsequent to the above, Mod. 87-038 added numerous communication equipment which required powering from both UPS 2VBB-UPS 1C (BUS 1C) and 2VBB-UPS1D. It was during the development of Mod. 87-038 that it became evident that BUS 1C is overloaded also. Temp. Mod. 90-057 unloaded some of BUS 1D to accommodate part of Mod. 87-038. However, BUS 1C could not be unloaded. Therefore, Mod 87-038 cannot be completed until Mod 89-042 is OPS Accepted. Also UPS-1C & 1D are not reliable. They have history of extended maintenance outages.

This mod will:

1. Replace the subject 75KVA UPSs with new state-of-the-art 75KVA UPSs.
2. A load shed evaluation will be performed to determine which users don't require UPS powering
 - A. if the load shed > 30%, only Item 1 will be implemented
 - B. if the load shed < 30%, supplementary UPSs will be provided

JUSTIFICATION:

This mod's implementation will:

1. Meet a commitment on LER 89-014
2. Enable Mod 87-038 to be completed and operable
3. Closeout Temp Mod 90-057
4. The new units will improve personnel safety, maintainability & operability

MR - 2/27/91, Rev. 3
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