

**COMBINED
SYSTEM IMPACT STUDY
and
FACILITIES STUDY**

December 16, 2014



**SOUTHERN CALIFORNIA
EDISON**
An EDISON INTERNATIONAL[®] Company

Prepared by:

Jacob Kory, P.E.

Approved by:

A handwritten signature in black ink, appearing to read 'R Salas', written over a horizontal line.

Roger Salas, P.E.

Division Manager, Field Engineering S/E

SOUTHERN CALIFORNIA EDISON COMPANY

EXECUTIVE SUMMARY

Southern California Edison Company (SCE) performed a combined System Impact Study and Facilities Study as requested by [REDACTED]

[REDACTED] Their request is for initial total site load of [REDACTED] by late 2014, and an ultimate total load of [REDACTED] by 2028.

[REDACTED] currently has [REDACTED] of contract load with SCE. The increased load would be served from SCE's [REDACTED] out of SCE's [REDACTED] Substation. The power would be delivered from the CAISO grid through the [REDACTED] at SCE's [REDACTED] Substation, then through various [REDACTED] system, then through the [REDACTED] and to the customer interface point on the [REDACTED]

The purpose of this combined study is to determine the impact of the proposed load addition on the SCE distribution and subtransmission systems, identify what modifications and/or additions would be necessary to accommodate the request while maintaining system reliability, and to determine the estimated costs and time required to complete those modifications and/or additions. This study was performed for expected years' 2014 through 2028 maximum load conditions.

[REDACTED] request for additional load through the existing [REDACTED] Substation would significantly impact SCE's distribution system with the interconnection of [REDACTED] total loads. The customer would incur Direct Assignment costs for any conductor, apparatus, or associated equipment necessary to maintain the customer interface point within good utility practice. The customer would also be responsible for the installation of any substructures required to create the customer interface point and to install necessary feeder conduits.

The estimated installed cost for the required interconnection facilities with the increased load is approximately \$1,700,000. This amount must be financed by the applicant and would be subject to ITCC, which has been calculated at \$596,000.

After the execution of an Interconnection Facilities Agreement, SCE would require 18 months lead time to procure the required equipment, schedule appropriate manpower, and construct the facilities.

CONTENTS

	<u>PAGE</u>
EXECUTIVE SUMMARY	ii
INTRODUCTION	1
SYSTEM IMPACT STUDY CONDITIONS & METHODOLOGY	2
INTERCONNECTION FACILITIES, NETWORK UPGRADES, AND DISTRIBUTION UPGRADES	2
COST AND CONSTRUCTION DURATION ESTIMATES	6
CONCLUSIONS	8
APPENDIX	
Figure 1: [REDACTED]	9
Table 2: [REDACTED]	10
Table 3: [REDACTED]	11
Table 4: [REDACTED]	12
Table 5: [REDACTED]	13
Table 6: [REDACTED]	14
Table 7: A [REDACTED]	15

INTRODUCTION

Southern California Edison Company (SCE) performed a combined System Impact Study and Facilities Study as requested by the [REDACTED] for a [REDACTED] and interconnection and distribution service [REDACTED] located at [REDACTED] and [REDACTED]. Their request is for initial total site load of [REDACTED] by late 2014, and an ultimate total load of [REDACTED] by 2028.

[REDACTED] currently has [REDACTED] of contract load with SCE. The new load would be served from [REDACTED]. The power would be delivered from the CAISO grid through the [REDACTED] at SCE's [REDACTED] Substation, then through various [REDACTED] then through the [REDACTED] and to the customer interface point on the [REDACTED].

The purpose of this combined study is to determine the impact of the proposed load addition on the SCE distribution and subtransmission systems, identify what modifications and/or additions would be necessary to accommodate the request while maintaining system reliability, and to determine the estimated costs and time required to complete those modifications and/or additions. This study was performed for expected years' 2014 through 2028 maximum load conditions.

The purpose of the Facilities Study is to detail the equipment required to be installed, based on the results of the System Impact Study, and to provide preliminary cost and scheduling estimates for the installation of that equipment.

This report describes the conditions and assumptions of each study and presents the results of the assessment. The report presents conclusions for any impacts of the [REDACTED] of load connected to the SCE distribution system at the [REDACTED].

SYSTEM IMPACT STUDY CONDITIONS & METHODOLOGY

SCE Distribution System Planning Criteria

- The thermal rating of any conductor, connector, or apparatus should not exceed 100% of its normal rated capacity with all facilities in service (base case).
- The thermal rating of any conductor, connector, or apparatus should not exceed 100% of its emergency rating under N-1 conditions.
- Operational flexibility and reliability of the distribution system shall be maintained at all times.
- Circuit voltage profiles should be maintained to comply within CPUC's Rule 2 requirements.
 - In the case of substations with regulated voltage bus, the acceptable high-side voltage will be allowed to operate at a minimum 90% of nominal voltage under normal conditions at the line side of the voltage regulators.

SCE Distribution System Planning Conditions

- The power factor for the facility is assumed to be within [REDACTED] lagging or leading, based on the facility's 5-year historical meter data.
- Expected loading on the distribution system as projected by the SCE 2014 – 2023 Distribution System Plan.
- Expected loading on the distribution system beyond 2023 is estimated on 10-year growth rates as projected by the SCE 2014 – 2023 Distribution System Plan.

Load Conditions

- Load analysis consists of modeling SCE's [REDACTED] system to evaluate the impact of the added load on the [REDACTED] as well as facilities upstream of the connection including up to and including the [REDACTED] Substation.
- [REDACTED] demand load is based upon submitted load schedule of initial [REDACTED] in 2018, with [REDACTED] increase per year through to the final [REDACTED] in 2028.

INTERCONNECTION FACILITIES, NETWORK UPGRADES, AND DISTRIBUTION UPGRADES

The Distribution Provider's Interconnection Facilities, Network Upgrades and Distribution Upgrades described in this section are based on the Distribution Provider's preliminary engineering and design. Such descriptions are subject to modification to reflect the actual facilities constructed and installed following the Distribution Provider's final engineering and design, identification of field conditions, and compliance with applicable environmental and permitting requirements.

1. Interconnection Facilities.

- (a) **Interconnection Customer's Interconnection Facilities.** The study assumes that the Interconnection Customer will:
 - (i) Install a [REDACTED] at a location approved by the Distribution Provider ("Last Structure") near the Interconnection Customer's property line, designed and engineered in accordance with the Distribution Provider's specification, to terminate the Distribution Provider's conductors.

- (ii) Install [REDACTED] in accordance with the Distribution Provider's Interconnection Handbook to comply with the Distribution Provider's switching and tagging procedures.
 - (iii) Install a [REDACTED] near the Interconnection Customer's property line in accordance with the Electrical Service Requirements to comply with the Distribution Provider's protection requirements. Additional protection requirements may be required.
 - (iv) Provide sufficient space for the Distribution Provider to install its [REDACTED] [REDACTED]. Such [REDACTED] must be placed at a location that would allow twenty-four hour access for the Distribution Provider's metering personnel.
 - (v) Allow the Distribution Provider to install [REDACTED] [REDACTED] required to meter the retail load at the Facility.
 - (vi) Provide all engineering and design drawings and bills of material associated with the Interconnection Customer-Constructed Interconnection Facilities.
- (b) **Distribution Provider Interconnection Facilities.** The Distribution Provider's Interconnection Facilities are comprised of the Interconnection Customer-Constructed Interconnection Facilities and the Distribution Provider-Constructed Interconnection Facilities.
- (i) **Interconnection Customer-Constructed:** The Interconnection Customer shall:
 1. Obtain all necessary permits and easements associated with installation of Interconnection Customer-Constructed Interconnection Facilities.
 2. Permit Distribution Provider to inspect the construction being done pursuant to this Section 1 (b) (i) 1. In the event the work is not being completed pursuant to Distribution Provider's requirements, Distribution Provider will be permitted to assume work, with costs to be charged to Interconnection Customer. Prior to any such assumption of work, Interconnection Customer shall be provided with thirty (30) days written notice of Distribution Provider's intention to assume work and to cure any defects in, or concerns relating to, that construction to Distribution Provider's satisfaction.
 3. Immediately transfer ownership of, and transfer title to each and every component part thereof, to Distribution Provider free and clear of all liens and encumbrances, upon Interconnection Customer's completed construction, and subject to Distribution Provider's approval of those facilities.
 4. If applicable, provide the following:
 - a. Completed Interconnection Customer information sheet.
 - b. Street improvement plans.
 - c. Unique address for point of interconnection.
 - d. Public right-of-way (street) base maps as required by the interconnection.
 - e. Site plot plan on a 30:1 scale digital file as follows:
 1. Easements/lease agreement

2. Grading plans
3. Sewer and storm plot plans
4. Landscape, sprinkler, pedestal locations
5. Complete construction of underground systems for the Distribution Provider's Interconnection Facilities and Distribution Provider's Distribution Upgrades.
6. Ensure all underground civil facilities are approved and released by the Distribution Provider's Underground Inspector.

(ii) **Distribution Provider-Constructed:** The Distribution Provider shall:

1. [REDACTED]
[REDACTED] Substation feed point to meet thermal ratings.
Need Date: 2024

2. Network Upgrades.

- (a) **Stand Alone Network Upgrades - None.**
- (b) **Other Network Upgrades - None.**

3. Distribution Upgrades.

The following distribution upgrades are identified in the load study located in Attachment A. The listed upgrades maintain the system voltage profiles that help meet CPUC's Rule 2 requirements for SCE customers located around [REDACTED]

- (a) [REDACTED] with all associated breakers, switches, and remote monitoring at or near [REDACTED] to maintain system voltage profiles.
Need Date: 2018
- (b) [REDACTED]
Need Date: 2018
- (c) [REDACTED]
Need Date: 2020

4. Point of Change of Ownership.

The Point of Change of Ownership shall be the point where the conductors of the Distribution Provider's [REDACTED] are attached to the Interconnection Customer's [REDACTED] (Last Structure). The Interconnection Customer shall own and maintain the Last Structure, the conductors, insulators and jumper loops from such Last Structure to the Interconnection Customer's Facility. The Distribution Provider will own the insulators that are used to attach the Distribution Provider-owned conductors to the Last Structure.

5. Point of Interconnection.

[REDACTED]

COST AND CONSTRUCTION DURATION ESTIMATES

Table 1 below provides the cost responsibility of the Project in 'constant' 2014 dollars and their escalations to the estimated operating year date for Interconnection Facilities, Reliability Network Upgrades, Delivery Network Upgrades, and Distribution Upgrades which the Project was allocated cost.

Not included in the cost estimates is the real property's value in order to accommodate elements identified in the Distribution Upgrades portion shown in Table 1.

In addition, the customer would be responsible for the cost of installing all underground substructures and conduit systems per SCE's design drawing related to the Interconnection Facility portion of the project.

After the execution of an Interconnection Facilities Agreement, SCE would require a lead time of roughly 18 months to procure the required equipment, schedule manpower, and construct the facilities.

Table 1: Summary of Estimated Costs and Estimated Time to Construct for Interconnection Facilities, Reliability Network Upgrades, Delivery Network Upgrades, and Distribution Upgrades

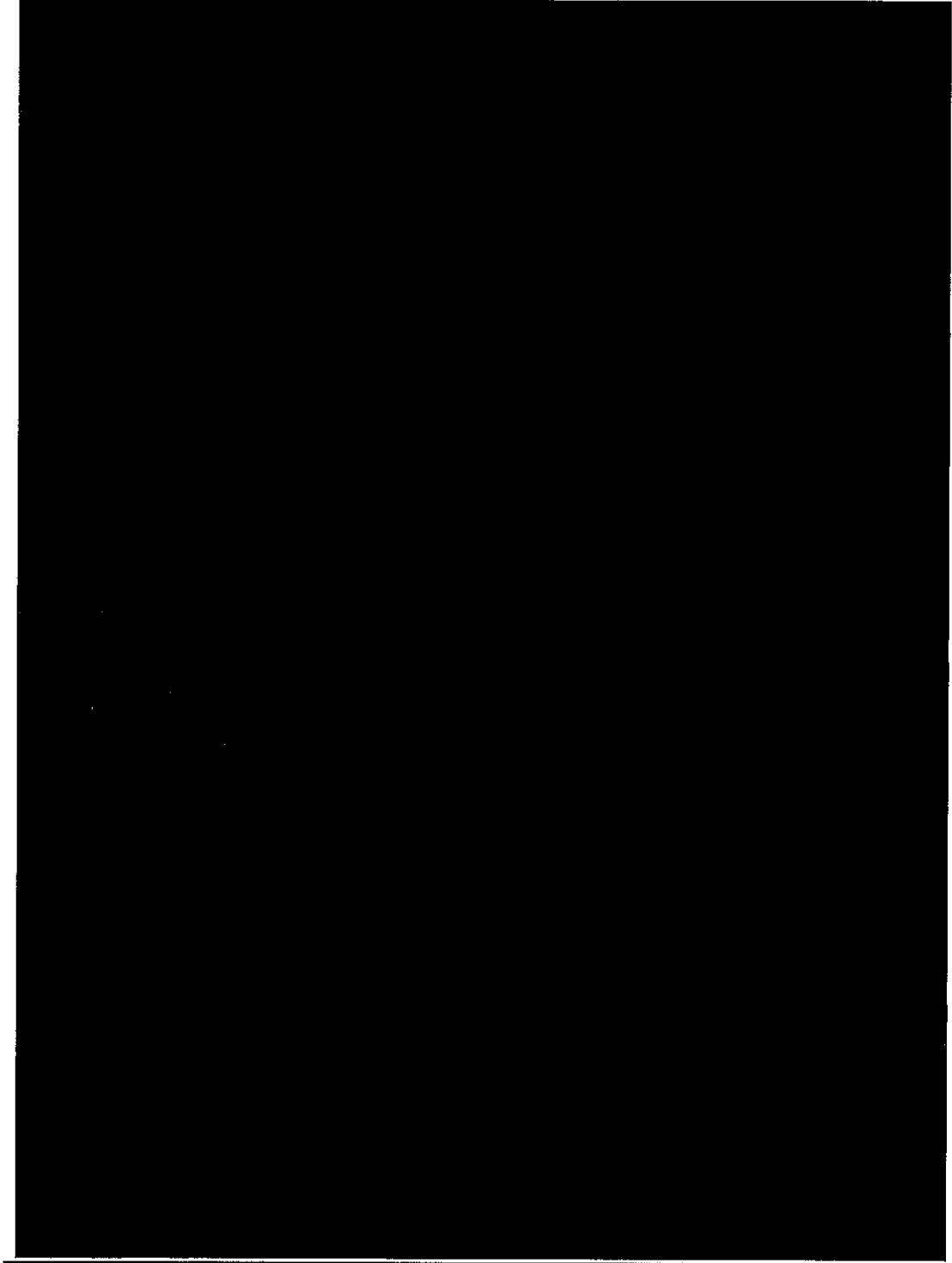
Element	Interconnection Facilities Cost x 1,000 Constant Dollar (2013)	Reliability Network Upgrades Cost x 1,000 Constant Dollar (2013)	Delivery Network Upgrades Cost x 1,000 Constant Dollar (2013)	Distribution Upgrades Cost x 1,000 Constant Dollar (2013)	ITCC* x 1,000 Constant Dollar (2013)	One Time Cost x 1,000 Constant Dollar (2013)	Total Estimated Cost w/o ITCC x 1,000 Constant Dollar (2013)	Total Estimated Cost x 1,000 Constant Dollar (2013)	Estimated Time to Construct (months) (Note 3)
DP's Interconnection Facility (Note 1)									
(1) 5 poles, ~1,500 ft of single conductor 336 ACSR	\$ 126				\$ 44			\$ 170	3
Corporate Environmental Services									
Subtotal	\$ 126				\$ 44			\$ 170	
Distribution Upgrades (Note 2)									
(1) [REDACTED]				\$ 814	\$ 285			\$ 1,098	18
(2) [REDACTED]				\$ 250	\$ 88			\$ 338	6
(3) [REDACTED]				\$ 510	\$ 179			\$ 689	12
Subtotal				\$ 1,574	\$ 552			\$ 2,126	
Total	\$ 126			\$ 1,574	\$ 596			\$ 2,296	18

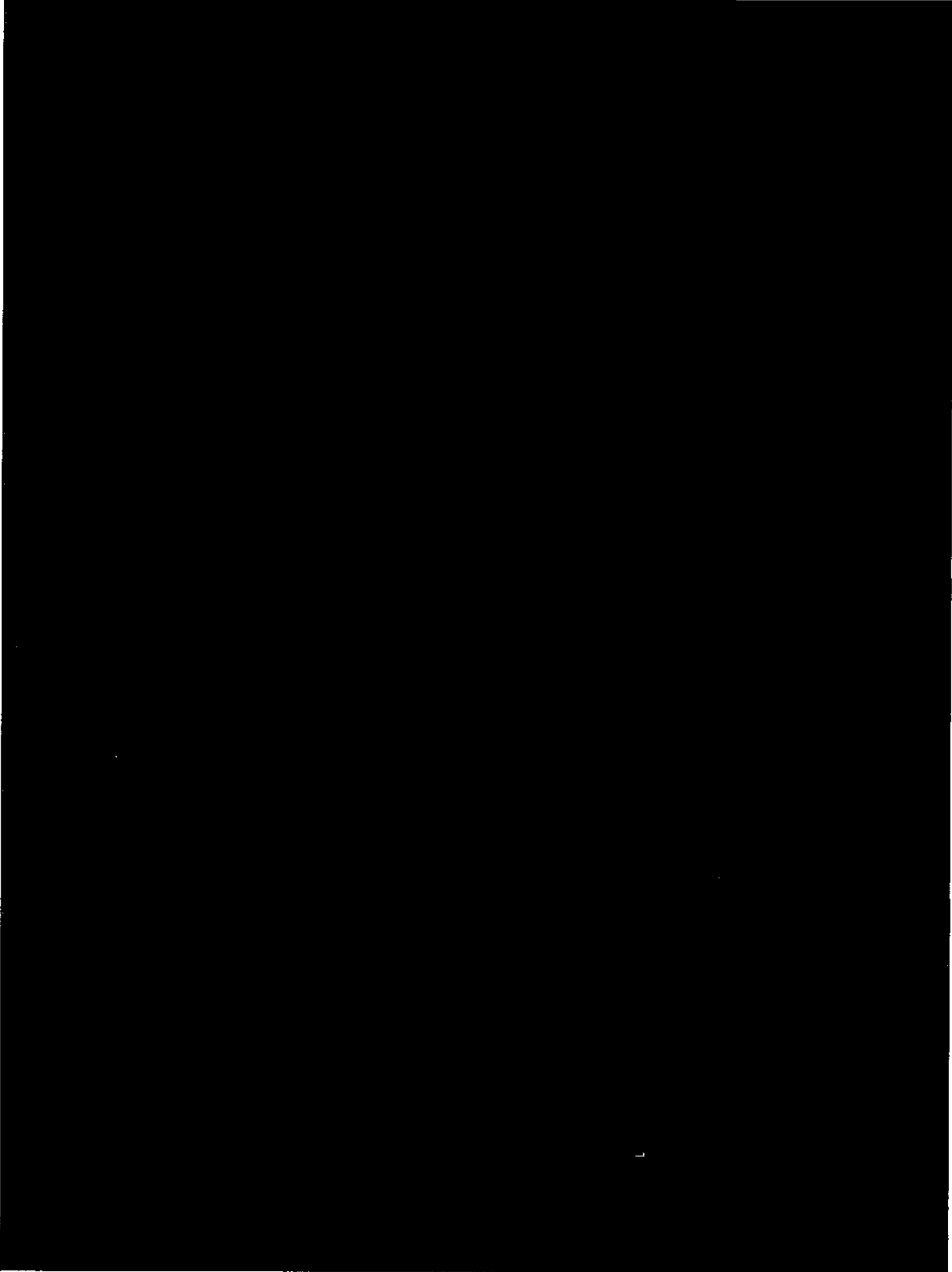
Note 1: The Interconnection Customer is obligated to fund these upgrades and will not be reimbursed.
 Note 2: The Interconnection Customer is obligated to fund these upgrades and will not be reimbursed. Allocated costs may change if all projects responsible for these upgrades do not execute GIAs.
 Note 3: The estimated licensing cost and durations applied to this project are based on the project scope details presented in this study. These estimates are subject to change as project environmental and real-estate elements are further defined. Upon execution of the Interconnection Agreement, additional evaluation including but not limited to preliminary engineering, environmental surveys, and property-right checks may enable licensing cost and/or duration updates to be provided.

CONCLUSIONS

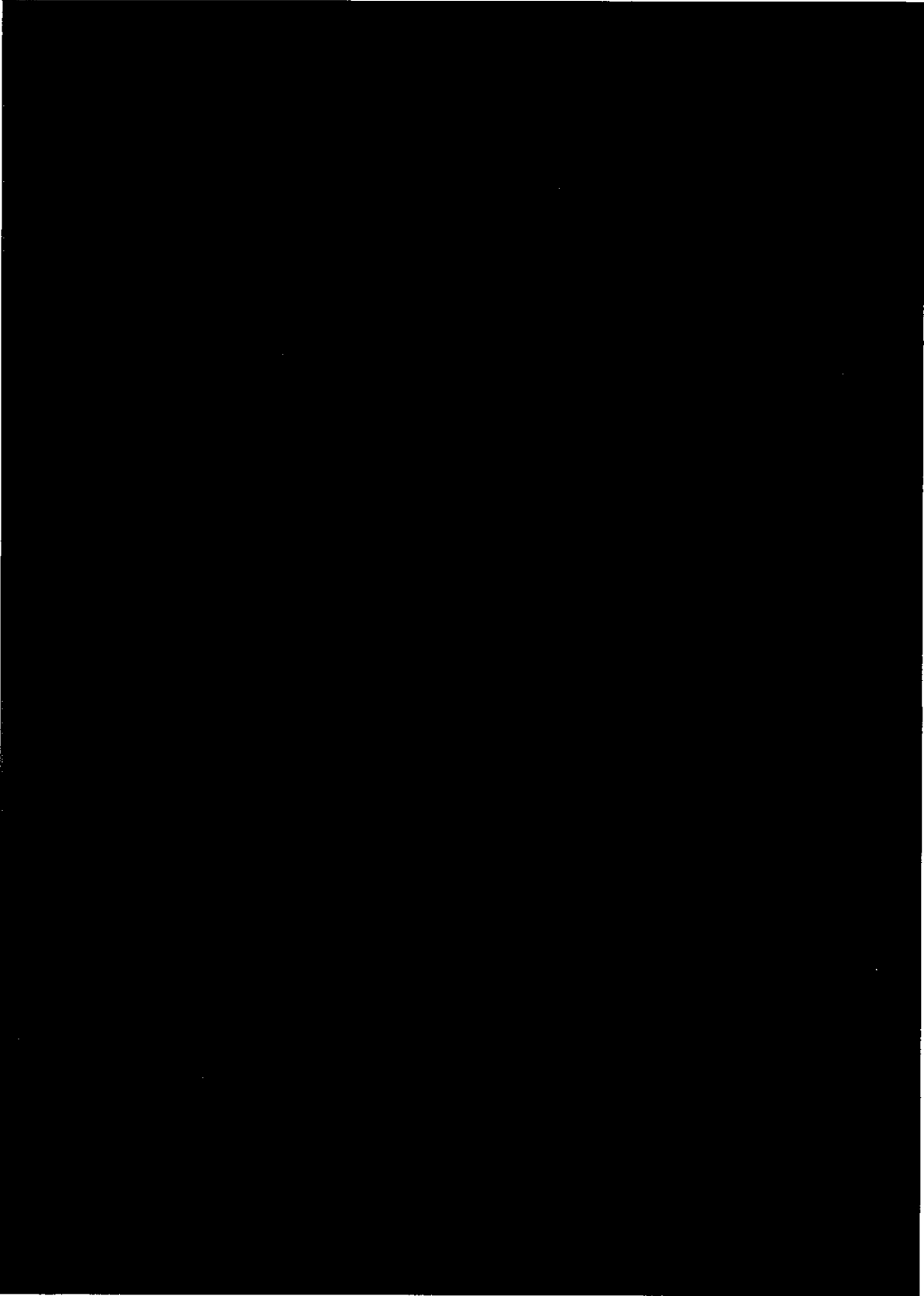
1. The requested load addition would significantly impact the SCE's existing distribution or subtransmission systems. Based on the System Impact study, several Distribution facilities would need new or upgraded equipment to accommodate the load increase at Mountain Center Sub.
2. The estimated cost of all required interconnection and protection facilities is approximately \$1,700,000 which shall be financed by the customer and is subject to ITCC calculated to be \$596,000.
3. SCE would require approximately 18 months for material procurement, scheduling of manpower, and construction of facilities.
4. The costs indicated are 2014 dollars and are not firm. The costs indicated are preliminary estimates only. These cost estimates are based on conceptual engineering and system unit costs, and are subject to change based on final design and actual material costs. The Facilities Study and cost estimates as presented are valid for a period of 90 days.
5. This System Impact Study and Facility Study do not include cost associated with environmental studies which may be required for the licensing or permitting of the proposed project.
6. This System Impact Study/Facility Study does not include cost associated with Real Properties evaluations which may be required for acquiring easements and rights checks of the proposed SCE scope of work related to the project. Additionally, this report does not account for the costs associated with securing the land necessary for some Distribution upgrades identified.
7. This combined System Impact and Facilities Study is based on various technical data previously provided by the [REDACTED]. If any of that information changes significantly, the results of this study may not be appropriate and may necessitate a new study.

APPENDIX

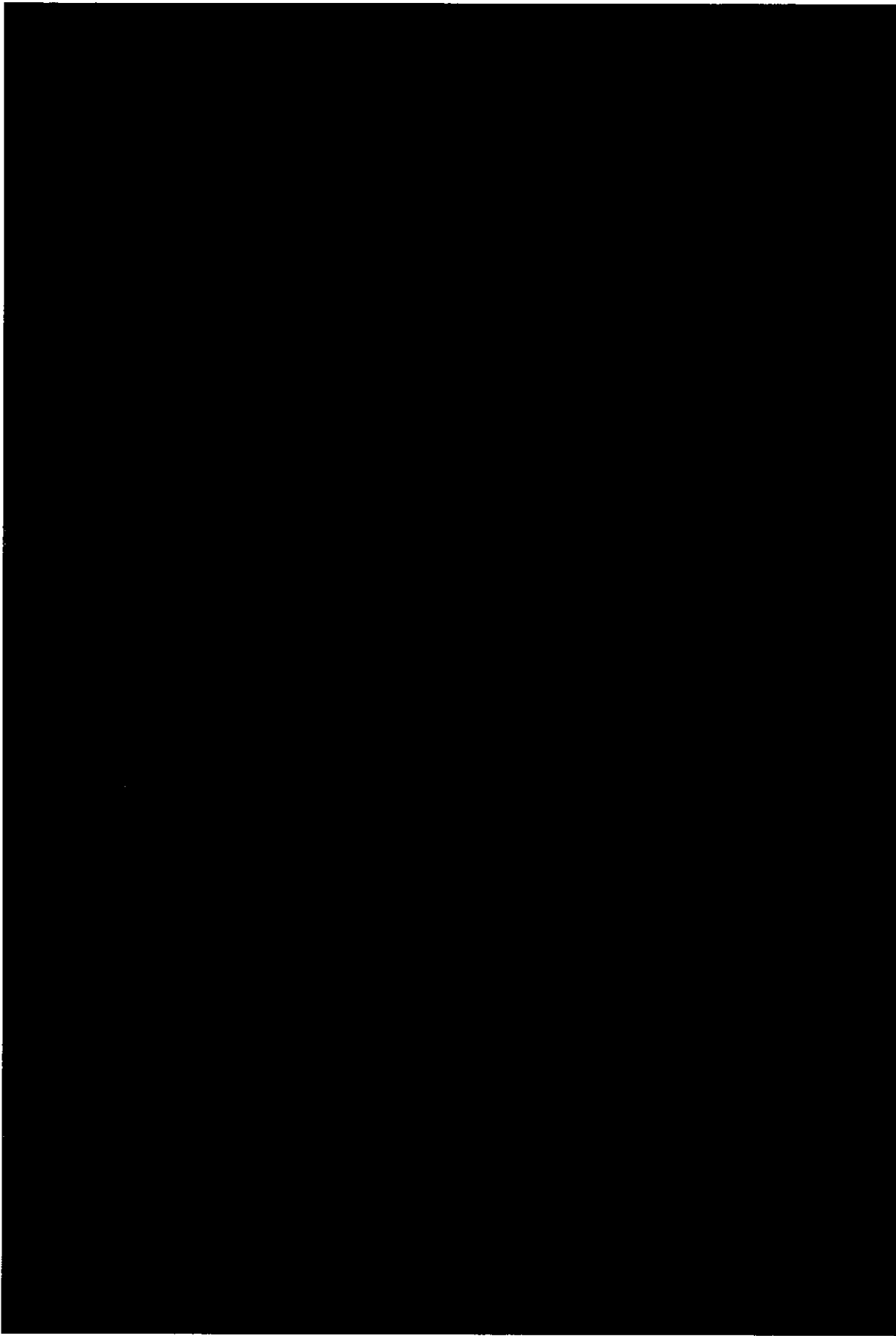


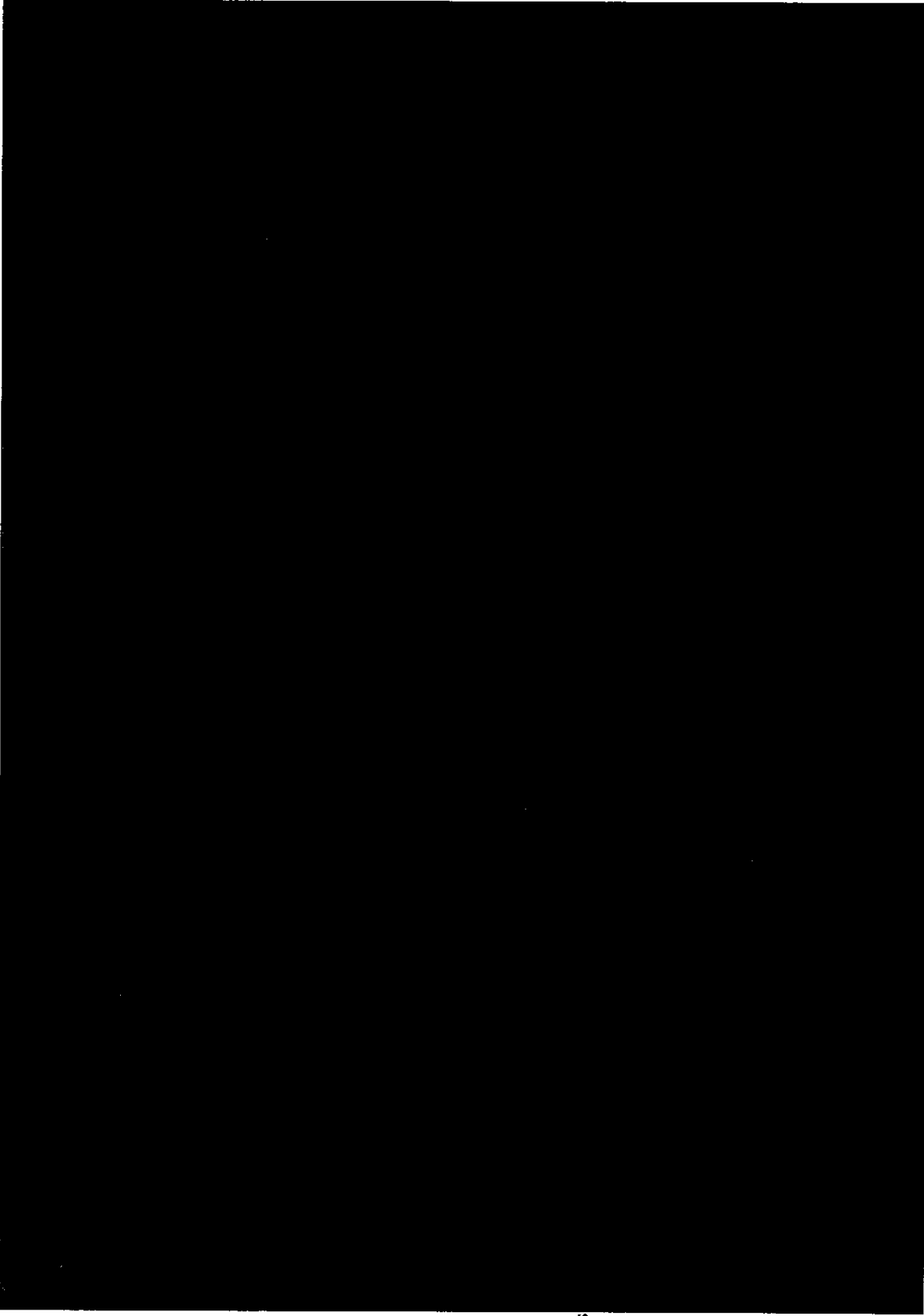


- Notes:
- (1)
 - (2)
 - (3)
 - (4)
 - (5)
 - (6)
 - (7)
 - (8)
 - (9)

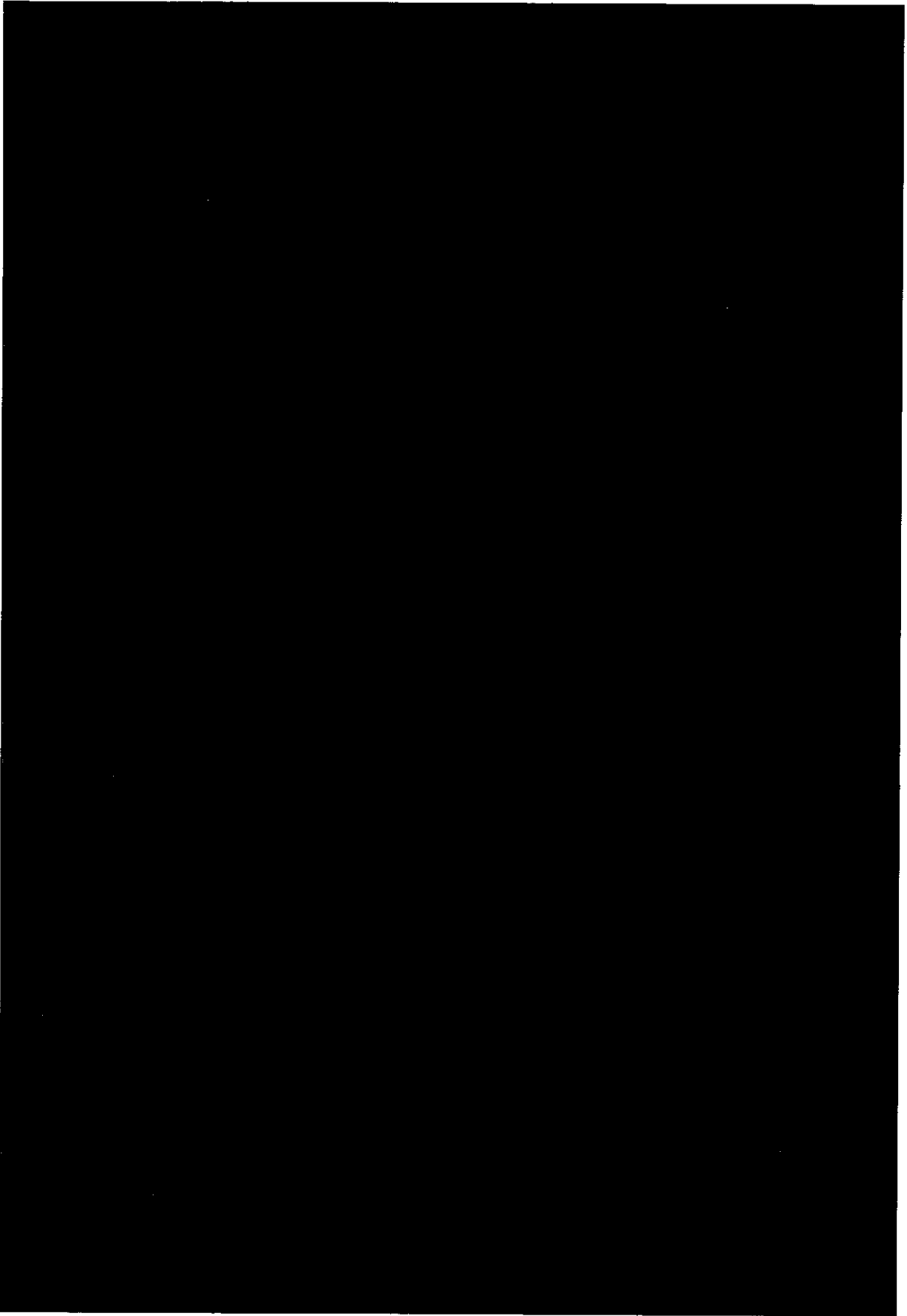


Not





Notes
(
(
(
(
(
(
(
(
(
(



[REDACTED]

[REDACTED]