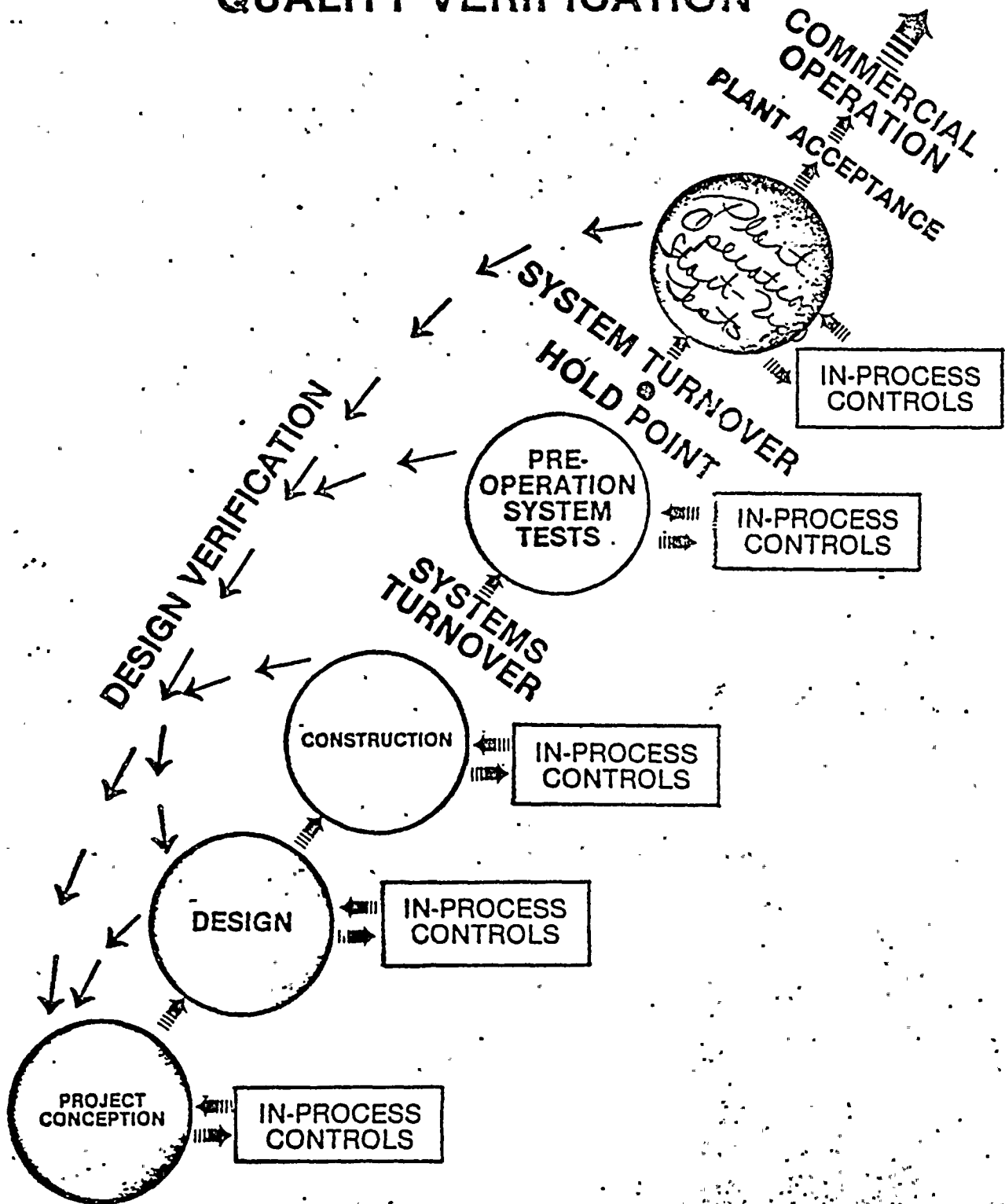


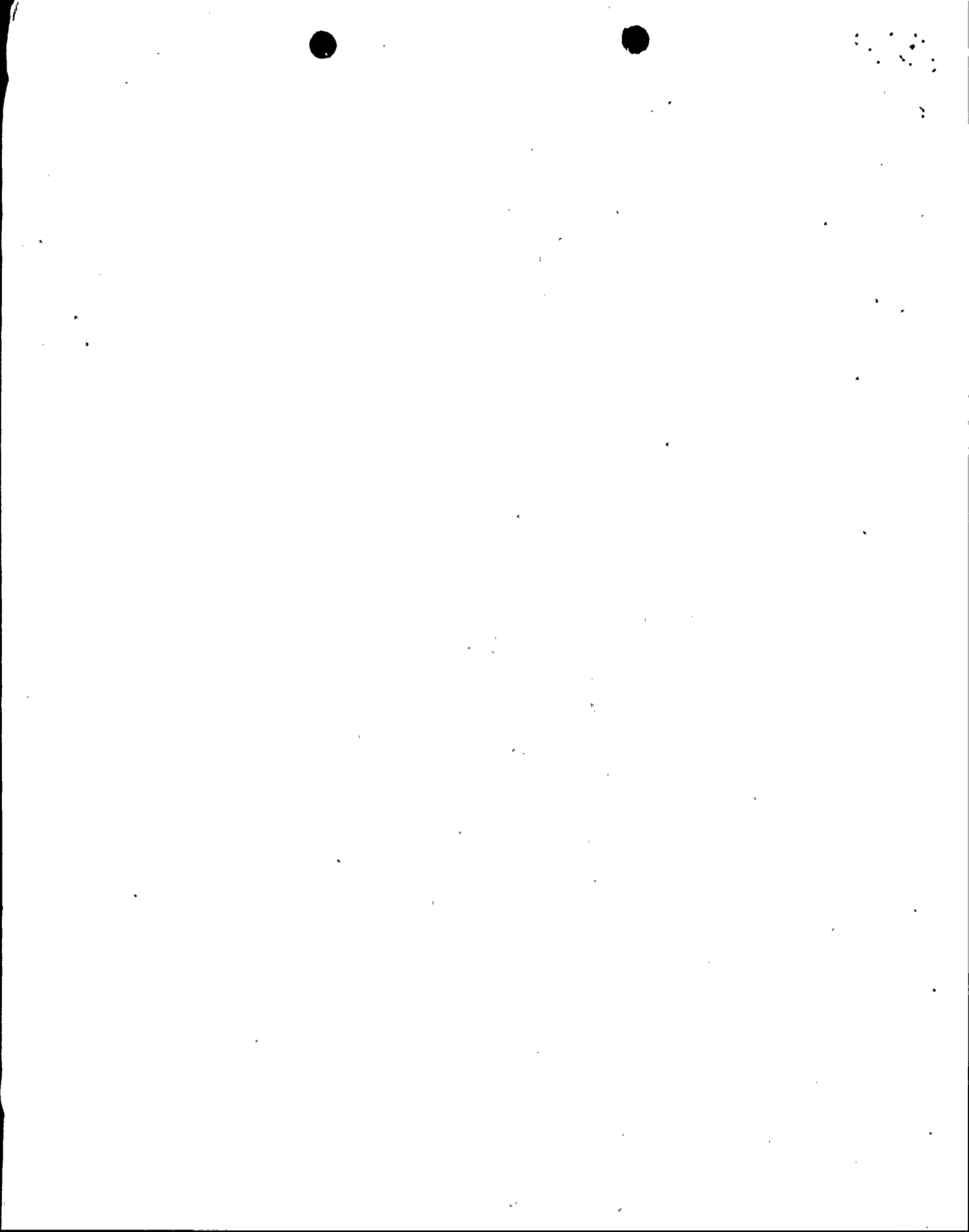
ATTACHMENT II

SLIDES PRESENTED DURING MEETING

8205050281 820430  
PDR ADCK 05000387  
A PDR

# SUSQUEHANNA STEAM ELECTRIC STATION QUALITY VERIFICATION



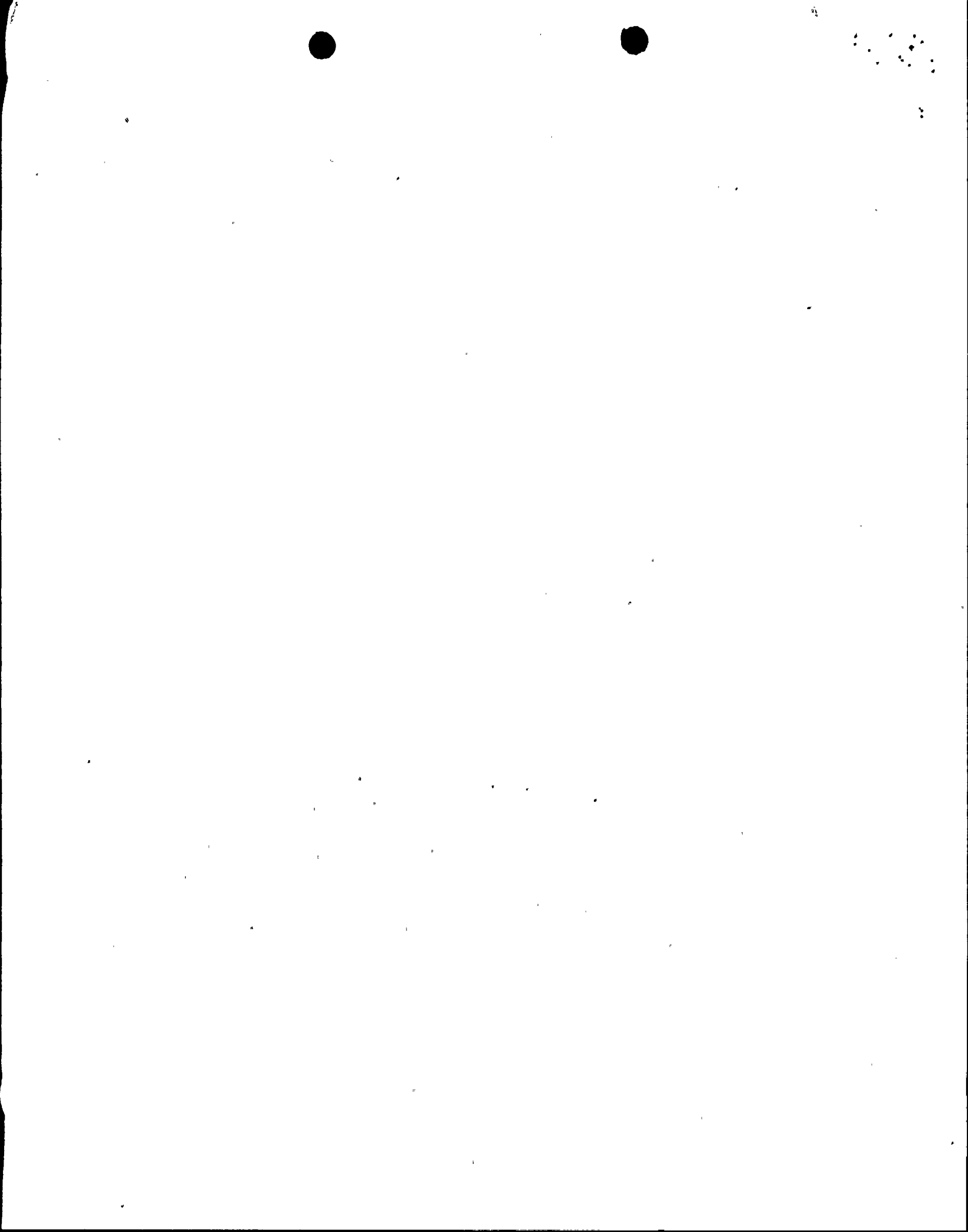


PENNSYLVANIA POWER & LIGHT COMPANY.  
SUSQUEHANNA STEAM ELECTRIC STATION.

ENGINEERING DESIGN CONTROL PROGRAM

PP&L HAS A COMPETENT PROGRAM OF DESIGN CONTROL  
FOR THE SUSQUEHANNA PROJECT

- I. DESIGN QUALITY
- II. PP&L INVOLVEMENT
- III. DESIGN CONTROL
- IV. DESIGN VERIFICATION
- V. HIGH CONFIDENCE LEVEL

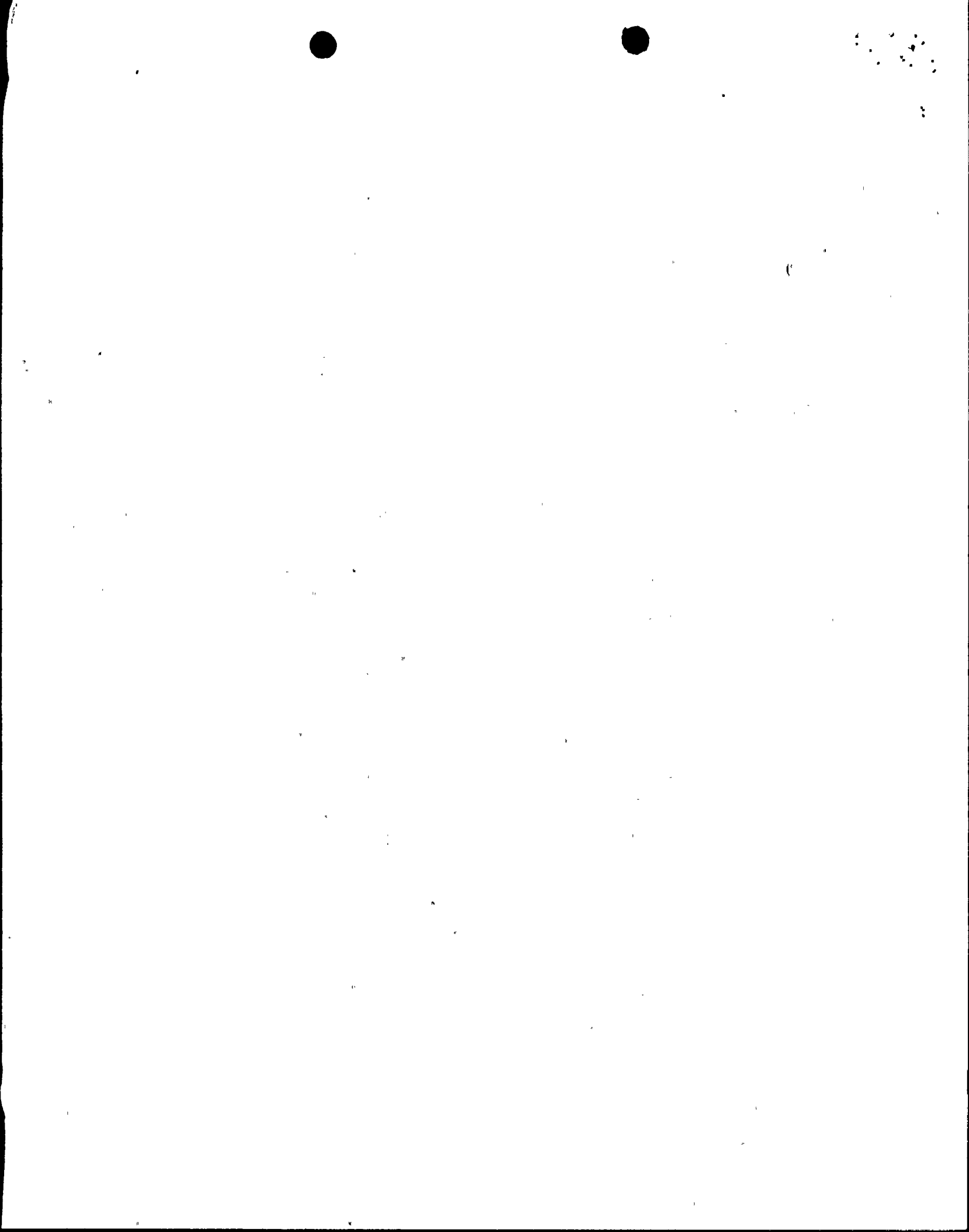


SSES

I. DESIGN QUALITY

PP&L POLICY REQUIRES HIGH STANDARDS OF DESIGN  
QUALITY

- A. PP&L EXPERIENCE RANGES FROM OWNER-BUILDER TO TURN-KEY CONCEPTS
- B. BEST INVESTMENT EMPHASIZES HIGH QUALITY OF DESIGN AND CONSTRUCTION
- C. SELECTED BECHTEL FOR HIGH QUALITY CORPORATE PHILOSOPHY, EXPERIENCE AND STAFF COMPETENCE
- D. SELECTED GE-BWR NSSS SYSTEM DUE TO "PROVEN" RECORD OF QUALITY
- E. PP&L STAFF HAS CONTINUOUS, SIGNIFICANT INVOLVEMENT IN ESTABLISHING AND MAINTAINING HIGH QUALITY DESIGN STANDARDS



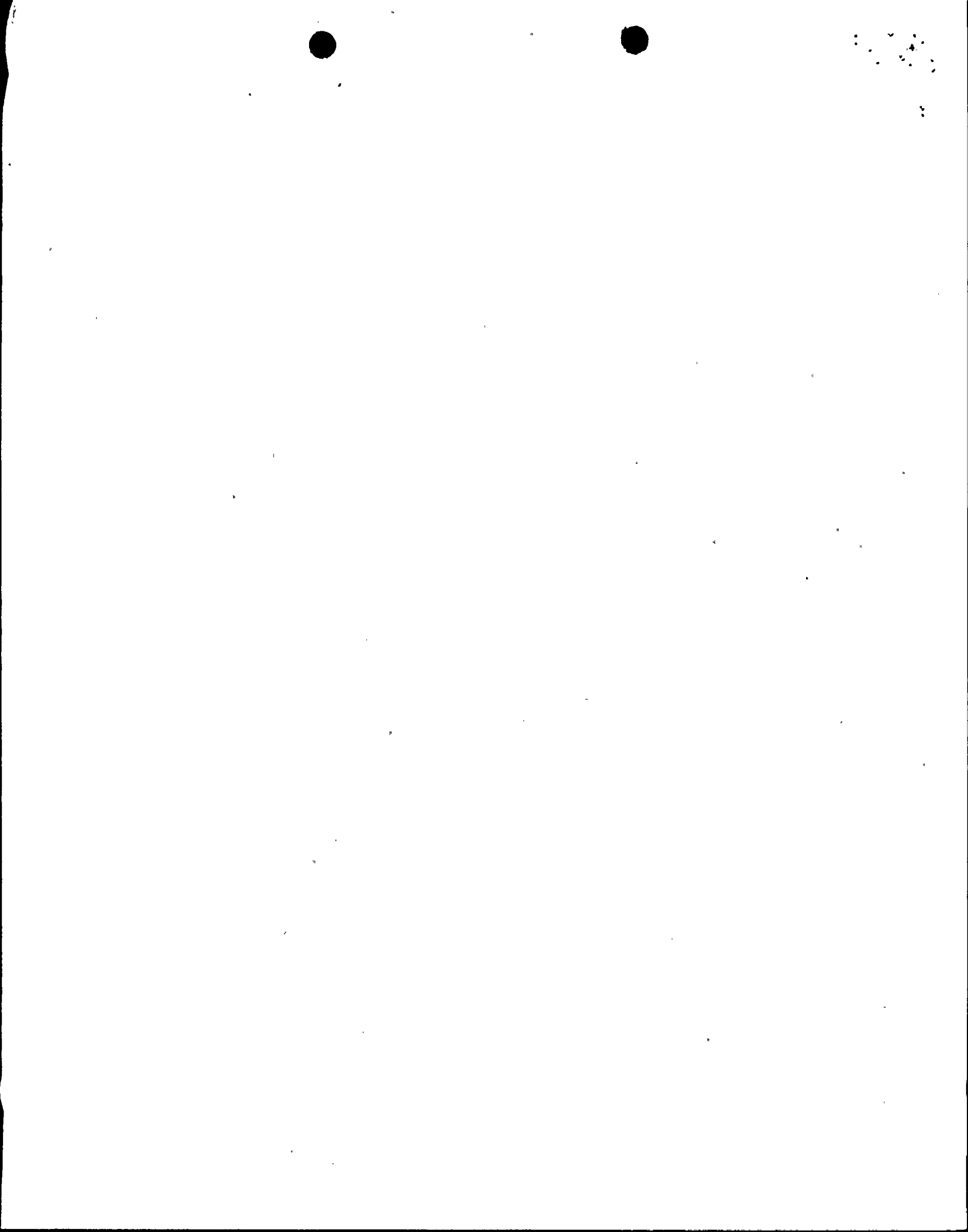
II.

PP&L INVOLVEMENT

PP&L HAS CONTINUOUSLY MAINTAINED EXTENSIVE INVOLVEMENT AND CONTROL OF THE QUALITY OF DESIGN WORK.

- A. EXPERIENCED, CAPABLE ENGINEERING STAFF
- B. ACTIVE ROLE IN DESIGN DEVELOPMENT
- C. APPROVES KEY ENGINEERING DECISIONS
- D. CONTINUAL COMMUNICATIONS POLICY
- E. TECHNICAL LEADERSHIP TO SOLVE PROBLEMS
- F. SPECIAL REVIEWS





### III. DESIGN CONTROL PROGRAM

A HIGH -QUALITY DESIGN CONTROL PROGRAM HAS BEEN  
IMPLEMENTED THROUGHOUT THE PROJECT.

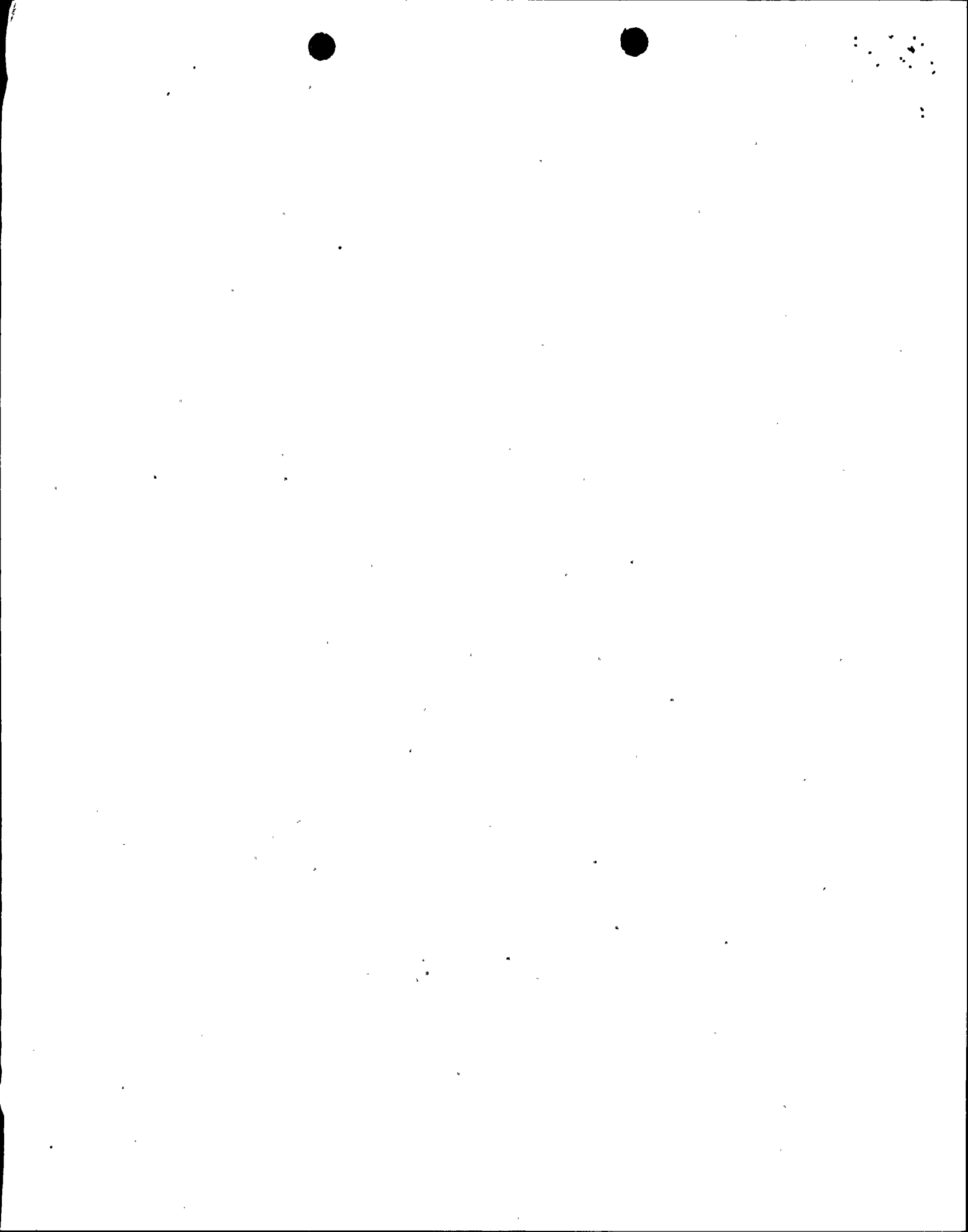
---

#### A. BASIC PROGRAM

1. FORMAL PROCEDURES
2. DESIGN CRITERIA DEVELOPMENT & EVOLUTION
3. DESIGN IMPLEMENTATION, CHECKS & REVIEWS
4. CHIEF ENGINEERS' OVERVIEW
5. CONFIGURATION/CHANGE CONTROL

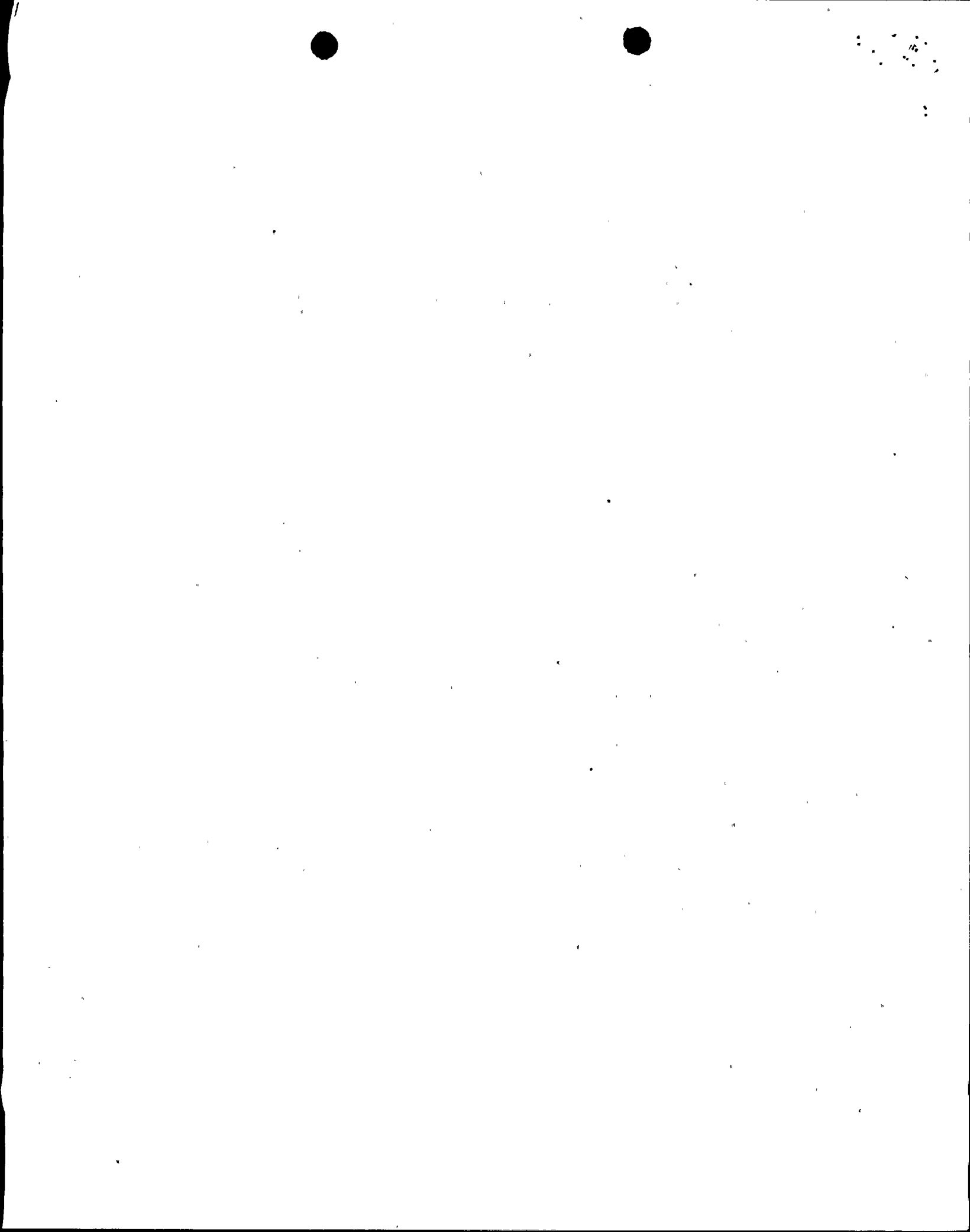
#### B. SPECIAL FEATURES OF DESIGN CONTROL PROGRAM

1. FORMAL TRANSMITTAL OF DESIGN DATA
2. FORMALLY DOCUMENTED DESIGN INPUTS
3. BECHTEL PROJECT CONTROL OVER ALL DESIGN ENTITIES
4. STRONG AE/NSSS INTERFACE
5. SPECIAL DESIGN REVIEWS
6. SYSTEMS APPROACH
7. CONFIGURATION CONTROL - SYSTEMS VERIFICATION



AN EFFECTIVE DESIGN VERIFICATION PROGRAM HAS BEEN MAINTAINED THROUGHOUT THE PROJECT

- A. DESIGN CONTROL CONFIRMATION
  - Design adequacy confirmed by interdisciplinary reviews, Feedback from Field, ISG, Vendors, etc.
- B. ENGINEERING TURNOVER
  - Adequate documentation to substantiate design, support plant operation, maintenance and emergencies.
- C. SYSTEM DESIGN TEAM EVALUATIONS
  - System design teams provide integrated approach to final design verification, construction support, operations support, emergency response.
- D. INDEPENDENT VERIFICATION BY ISG
  - System start-up program verifies design and construction completion, equipment performance as specified, documentation complete.
- E. AS-BUILT DRAWING PROGRAM
  - Design drawings maintained in updated condition by design control program. Special as-builts for piping, hangers, supports, block walls, containment liner.
- F. FSAR VERIFICATION
  - Design changes must comply with FSAR commitments or FSAR must be revised to reflect modifications.
- G. INDEPENDENT, THIRD-PART TECH.
  - PP&L program includes many third-party design reviews to augment in-house reviews and ensure compliance with commitments.
- H. SPECIAL DESIGN VERIFICATION TESTS
  - Testing to verify design adequacy has been a valuable part of the PP&L program.
- J. COMPLETE REEVALUATION FOR DYNAMIC LOADS
  - Reanalysis for new hydrodynamic loads and current seismic criteria confirmed that the original design was very conservative.
- K. INDEPENDENT NRC VERIFICATION ANALYSIS
  - Independent NRC consultant verified PP&L's piping design methodology and its application to a safety-related piping system (the SRV discharge line).



V.

HIGH CONFIDENCE LEVEL

PP&L HAS A HIGH CONFIDENCE LEVEL IN THE SAFETY  
AND OPERABILITY OF THE PLANT

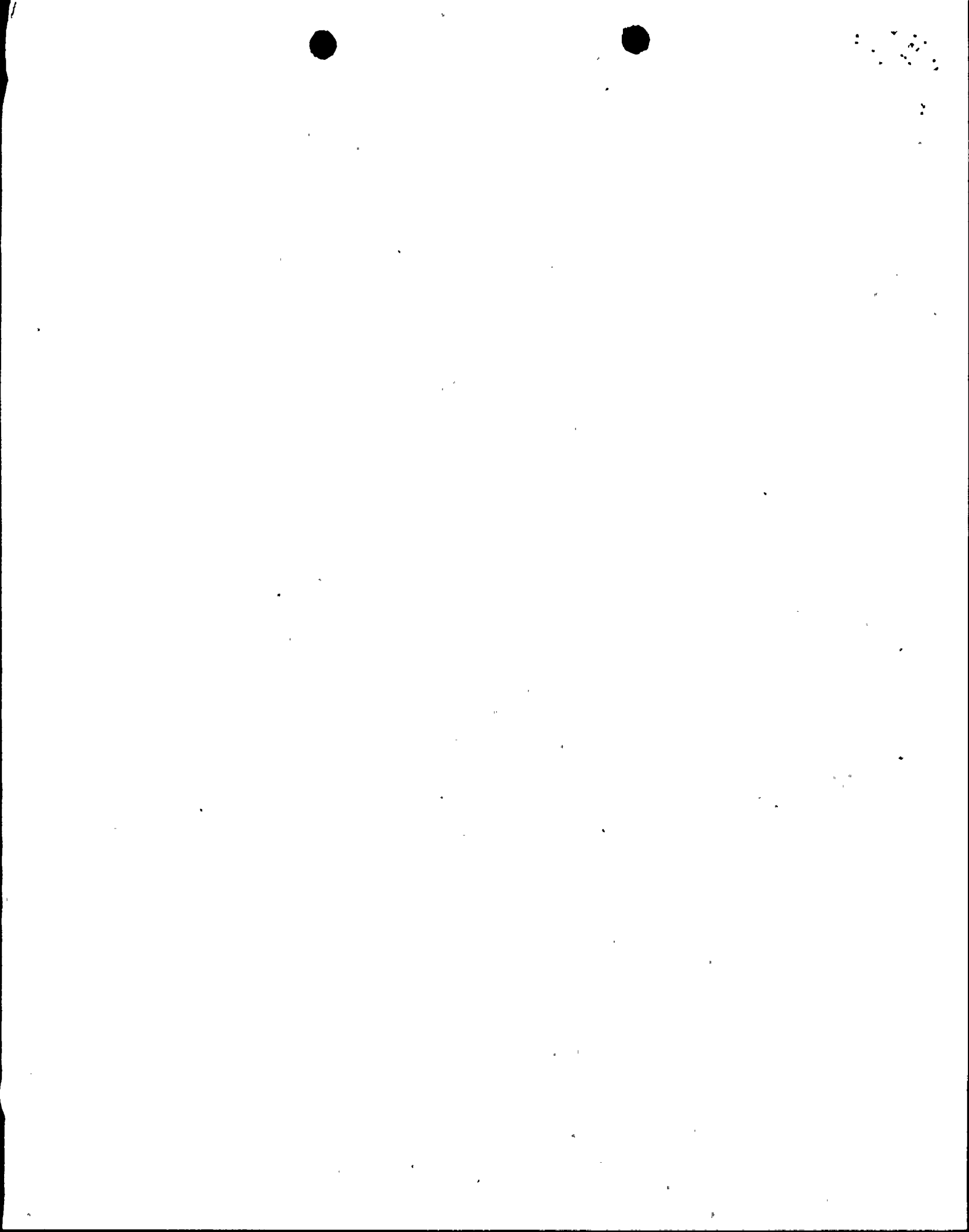
- A. STRONGLY POSITIVE INDICATIONS FROM EXTENSIVE NUMBER AND VARIETY OF DESIGN REVIEWS THROUGHOUT THE PROJECT. (-REFER TO BACKUP DATA BY PLNQA)
- B. SUCCESSFUL PRE-OP TEST PROGRAM
- C. FACTORED OTHER PLANT EXPERIENCE INTO DESIGN TO ENSURE LOW RISK
- D. HIGH QUALITY ARCHITECT-ENGINEER-CONSTRUCTOR AND NSSS CONTRACTOR
- E. PP&L HAS A STRONG, COMPETENT NUCLEAR DEPARTMENT WITH SIGNIFICANT INVOLVEMENT WHICH REINFORCES CONFIDENCE LEVEL

SUSQUEHANNA STEAM ELECTRIC STATION

SPECIAL THIRD-PARTY REVIEWS BY OUTSIDE CONSULTANTS

(II-F)

Review Title	Scope Description	Consultant	Date
Quality Assessment of the Advanced Control Room	An independent review of the engineering, documentation and project quality controls for the Susquehanna Advanced Control Room.	EG&G - WASC, Inc.	1980
Piping Analysis Methodology	An assessment of the acceptability of the methodology used by Bechtel to perform stress analyses of safety related nuclear piping systems.	Teledyne Engineering Services, Inc.	1980
Design Review of HVAC System Calculations	HVAC Systems in Safety-Related and non-Safety Related areas were reviewed for design adequacy to maintain specified temperature, pressure and flow conditions.	EDS Nuclear	1981
Safety System Walkdown	Field walkdown and system evaluation to verify the adequacy of the design and construction of the following system: <ul style="list-style-type: none"> <li>- RHR System (Loop B)</li> <li>- Core Spray System (Loop A)</li> <li>- High Pressure Coolant Injection System</li> <li>- Reactor Core Isolation Cooling System</li> <li>- Diesel Generator System</li> <li>- Station Battery Systems</li> </ul>	MPR Associates	1980





SUSQUEHANNA STEAM ELECTRIC STATION

SPECIAL THIRD-PARTY REVIEWS BY OUTSIDE CONSULTANTS

(II-F)

Review Title	Scope Description	Consultant	Date
Intergranular Stress Corrosion Cracking	An assessment of the integrity and performance expectations for the Recirculation Inlet Safe End to Thermal Sleeve connection	Failure Analysis Assoc., Inc.	1979
Safety Impact Review (2/1)	Walkdowns and evaluations to ensure that the failure of a non-safety-related item will not impact a safety-related item.	EDS Nuclear	1981
Containment SRV and Chugging Load Definition	An evaluation of the adequacy of the dynamic forcing function methodology and test verification developed for PP&L Quenchers by Kraftwerk-Union	SRI International	1980

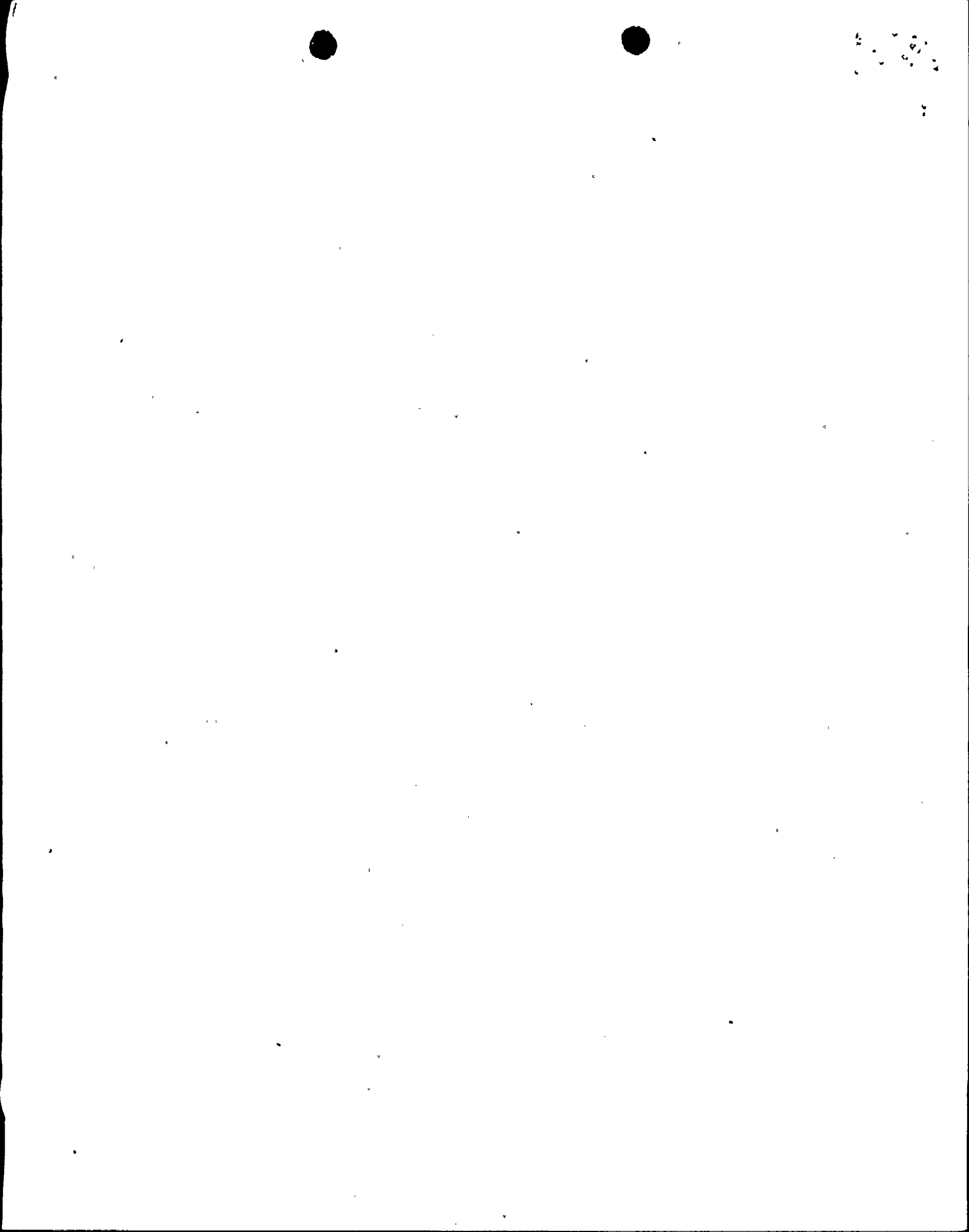


AUDITS CONDUCTED BY PP&L  
1973 THRU 1981 -

BECHTEL ACTIVITIES - TOTAL OF 356  
HOME OFFICE  
CONSTRUCTION SITE  
SUPPLIERS

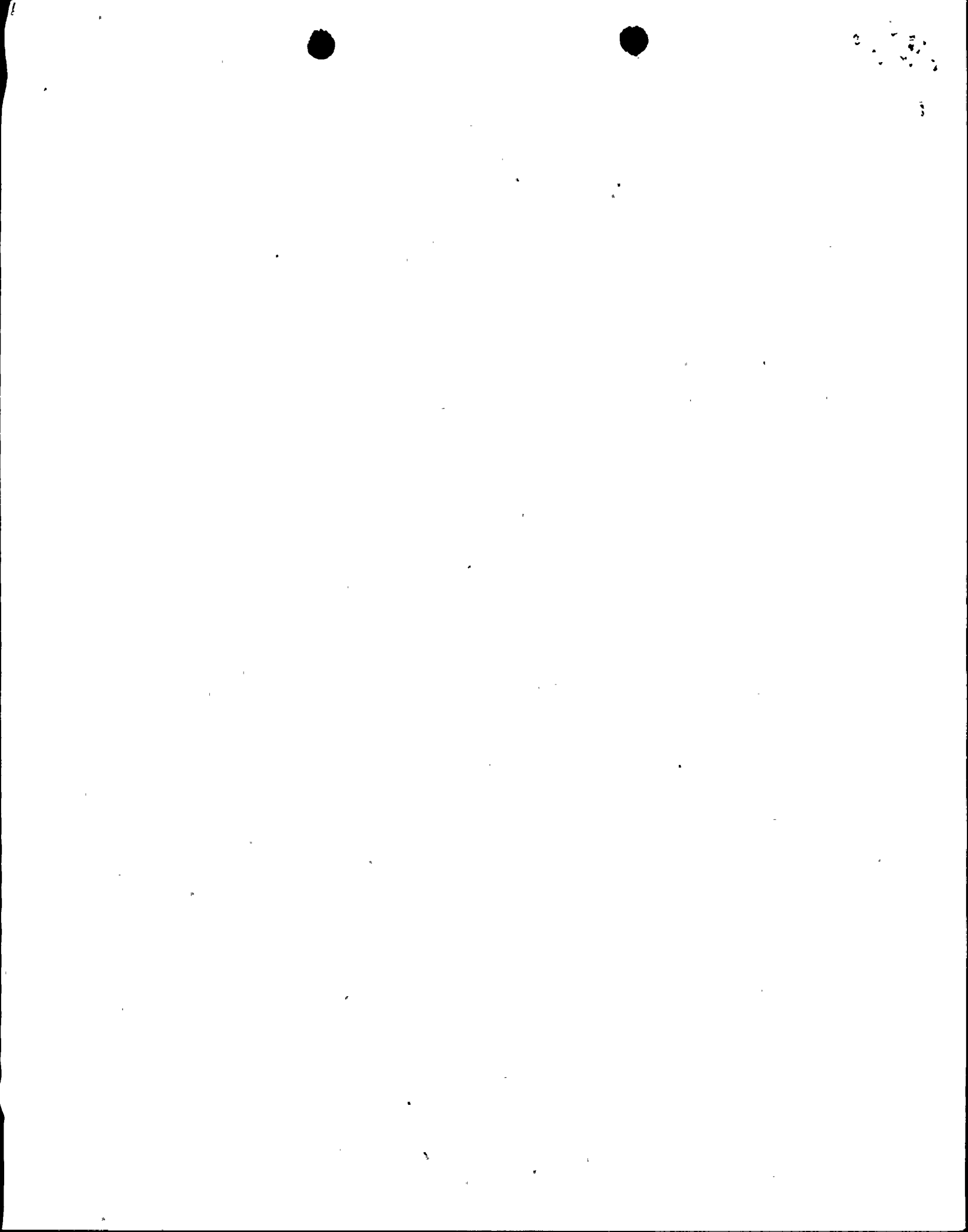
G.E. ACTIVITIES - TOTAL OF 54  
SAN JOSE  
WILMINGTON - NSSS  
FUELS  
SUPPLIERS

INTERNAL OF PP&L - TOTAL OF 64  
AUDITS OF PL ENGINEERING - 45  
AND OTHER INTERNAL SUPPORT  
  
AUDITS OF NQA STAFF FUNCTION - 18  
BY MANAGER'S STAFF AUDITOR



NOA AUDITS OF BECHTEL SFHO  
DESIGN CONTROL FUNCTION

B-1	PROGRAM IMPLEMENTATION & ADEQUACY.	2/23/72
B-4	" " " "	7/19/73
B-18	" " " "	6/25/74
B-44	" " " "	2/4/75
B-109	" " " "	2/2/76
B-116	BECHTEL/GE DESIGN INTERFACE	9/20/76
B-122	PROGRAM IMPLEMENTATION & ADEQUACY	6/13/77
B-129	" " " "	2/13/78
B-132	" " " "	10/2/78
B-138	MECH. CALCS.	6/4/79
B-139	PROGRAM IMPLEMENTATION & ADEQUACY	7/23/79
B-140	CIVIL CALCS.	7/30/79
B-144	ELEC. CALCS.	1/7/80
B-146	BECHTEL FIELD INSTRUCTIONS	2/25/80
B-147	ASME SECTION III PIPE SUPPORT DESIGN	2/25/80
B-148	REVIEW/APPROVAL OF SUPPLIER ENGINEERING DOCS.	3/17/80
B-150	DESIGN CHANGE PACKAGES & CONFIGURATION CONTROL	7/28/80
B-151	ASME SECTION III PIPING & HANGER DESIGN	7/28/80
B-156	ENVIRONMENTAL QAL PHASE II PROGRAM BY BECHTEL	2/18/81
B-157	COMPUTER CODES CALCS.	4/14/81
B-158	FSAR TABLE 3.11-6 DESIGN BASIS CALCS.	5/19/81
B-159	CONFIGURATION CONTROL CHANGE CONTROL	3/16/81
B-160	ASME SEC. III AS BUILT DWG. DESIGN RECONCILIATION	6/22/81
	INTERFACE CONTROL FOR SUBLET PIPING & HANGER DESIGN WORK	9/12/81



## DIRECT PP&L CONTRACTS

KRAFTWERK UNION

- QUENCHER DEVELOPMENT & TEST
- CHUGGING CONDENSATION OSCILLATOR  
LOAD DEFINITION & TEST

SRI

- CONFIRMATION OF DYNAMIC LOAD  
DEFINITION BY IN PLANT TESTS

CREARE INC.

- OPEN VENT TESTS

EG&G

- ACR/PGCC QUALITY ASSESSMENT

TORREY PINES TECH.

- ENVIRONMENTAL QUAL. OF THE  
NSSS SCOPE OF IE EQUIP.

NOONAN ENGR. & CONST.

- DESIGN OF THE EGF BLDG.

GE-FUEL WILMINGTON

- INITIAL LOAD OF FUEL FOR  
SSES UNITS 1 & 2

THIRD PARTY AUDITS OF  
PP&L QA PROGRAM

<u>YEAR</u>	<u>PERFORMED BY</u>	<u>No. OF FINDINGS</u>
1974	GENERAL ELECTRIC	7
1975	EDS NUCLEAR INC.	4
1976	GILBERT COMMONWEALTH	0
1977	NUCLEAR ENERGY SERVICES	0
1978	COOPERATIVE MANAGEMENT AUDIT PROG.	2
1979	COOPERATIVE MANAGEMENT AUDIT PROGRAM	25
1980	COOPERATIVE MANAGEMENT AUDIT PROGRAM	14
1981	COOPERATIVE MANAGEMENT AUDIT PROGRAM	22

COOPERATIVE MANAGEMENT AUDIT PROGRAM TEAMS WERE MADE UP OF QA  
PERSONNEL FROM THE FOLLOWING UTILITIES: PUBLIC SERVICE ELECTRIC  
AND GAS, GENERAL PUBLIC UTILITIES, OHIO EDISON, AND DUQUESNE LIGHT.

RECEIVED  
SEP 30 1985



